Market Intelligence
& Analytics

CRISIL
An S&P Global Company

Industry Report on Infrastructure

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Consulting

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1 Macro-economic overview of India

1.1 Review of India's GDP growth

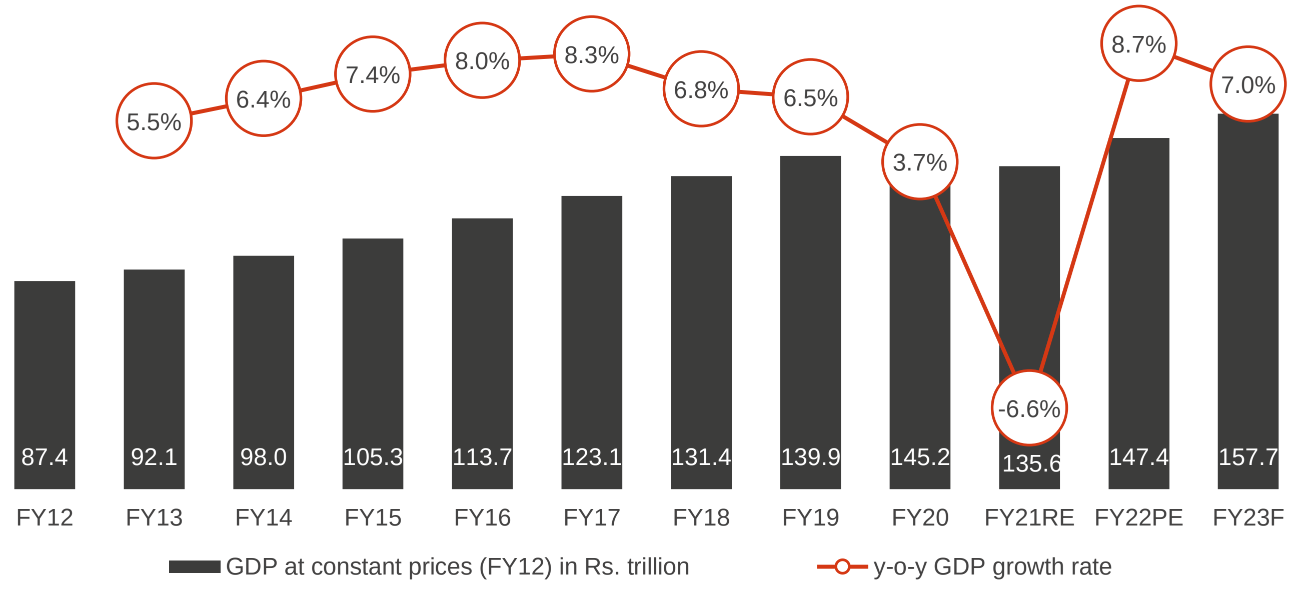
GDP logged 6.6% CAGR between fiscals 2012 and 2020

In 2015, the Ministry of Statistics and Programme Implementation (MoSPI) changed the base year for calculating India's GDP between fiscals 2005 and 2012. Based on this, the country's GDP logged a CAGR of 5.5%, growing to Rs.157.7 trillion in fiscal 2023 from Rs. 87 trillion in fiscal 2012.

Fiscal 2021 was a challenging year for the Indian economy because of the covid-19 related distress, which was already experiencing a slowdown before the pandemic struck. GDP contracted 6.6% (in real terms) after growing 3.7% in fiscal 2020. India's GDP (in absolute terms) dropped to Rs.136 trillion in fiscal 2021.

Following this the economy recovered in FY22 as the shocks of the covid-19 pandemic subsided leading to a growth of 8.7% y-o-y resulting in India's real GDP reaching Rs.147 trillion in FY22.

Real GDP growth in India (new GDP series, in Rs. trillion)



RE: Revised estimates. PE: Provisional Estimate. F: Forecast

Source: Second advance estimates of national income 2020-21, Central Statistics Office (CSO), MoSPI, CRISIL Research

Economy rebounded in second half of fiscal 2021, recovery continued in fiscal 2022

After contracting in the first half because of Covid-19, the economy rebounded in the second half of fiscal 2021, growing 0.5% and 1.6% on-year in the third and fourth quarters, respectively. While the economy shrank as a whole in fiscal 2021, agriculture and allied activities, and electricity, gas, water supply and other utility services were the outliers, logging positive growth. On the other hand, contact-intensive trade, hotels and transport sectors, and services related to broadcasting were hit the most, and continued to contract in all the quarters. Construction – a labour-intensive sector – was also severely hit in the first half but rebounded in the second half.

The economy got into recovery mode, with GDP expanding 20.1% on-year in the first quarter of fiscal 2022, 8.4% in the second quarter and 5.4% in the third quarter. Slower third quarter growth was partly due to the waning away of the low-base effect of the previous year, when the economy begun expanding post the first pandemic wave. Third quarter growth also seemed to have been impacted by lower government investment spend, with the growth being 5.4% y-o-y. In absolute terms, GDP for the second quarter only just crossed the value reported in the first quarter of fiscal 2020 (pre-Covid), representing a rise of 1.1%. The economic rebound came on the back of reduced pandemic restrictions and improving vaccination coverage. Real GDP growth slowed to 4.1% on-year in Q4 from 5.4% in Q3, led by a sharp slowdown in private final consumption expenditure (PFCE). That said, both government final consumption expenditure (GFCE) and GFCF registered higher growth in Q4. To be sure, a part of the slowdown in Q4 GDP growth is also attributed to base effect.

GDP in fiscal 2022 grew at 8.7% on-year

Fiscal 2022 is also seen as a story of two halves — the first half characterised by a base effect-driven recovery amid the challenges associated with resurgence in Covid-19 infections, and the second half seeing a more broad-based growth, as vaccine rollout and less stringent nationwide restrictions supporting lagging sectors. The gains made by the economy in the fourth quarter of fiscal 2021 have fizzled out in the first quarter of fiscal 2022 because of the fierce second wave, which led to localised lockdowns in most states.

As per the provisional estimates released by the National Statistical Office, India’s real gross domestic product (GDP) grew at 8.7% in fiscal 2022, compared with 8.9% estimated in February. This is largely a reflection of a lower base (as the economy had shrunk 6.6% in fiscal 2021). It is noteworthy that given the large output loss last fiscal, GDP is still only 1.5% above the pre-pandemic (fiscal 2020) level.

While the provisional estimates show a mild reduction in the overall size of the GDP, estimates of private final consumption expenditure (PFCE) and gross fixed capital formation (GFCF) – the biggest two demand-side drivers – were marginally notched up. The latter suggests the government’s continued focus on capital expenditure (capex). PFCE is still just 1.4% above the fiscal 2020 level and was the slowest to recover. Moreover, it faces strong headwinds from rising inflation

Also, stronger global growth should support India’s exports to some extent. Revival will not be uniform across sectors, though. So far, the rural economy has been more resilient than the urban.

From a supply side perspective, i.e. gross value add (GVA), a much clearer measure of the economy’s performance for last fiscal emerges. Based on this metric, the economy shrank by 4.8% (compared with 3.8% growth in fiscal 2020). In absolute terms, real GVA was Rs.125.9 trillion in fiscal 2021, down from Rs.127.3 trillion in fiscal 2019.

Gross value added (GVA) at basic prices (constant 2011-12 prices)

Rs. Trillion	FY20	FY21RE	FY22PE	FY23FAE	Percentage share in GVA	On year growth FY22
Agriculture, Forestry and Fishing	19.8	20.5	21.1	21.8	15.03%	3.44%
Mining and Quarrying	3.2	2.9	3.3	3.4	2.31%	1.76%
Manufacturing	22.6	22.5	24.7	25.1	17.28%	1.59%
Electricity, Gas, Water supply and Other Utility Services	3.0	2.9	3.1	3.4	2.34%	9.57%
Construction	10.4	9.6	10.7	11.7	8.07%	9.47%
Trade, Hotels, Transport, Communication and Services Related to Broadcasting	26.9	21.5	23.9	27.1	18.68%	13.48%
Financial, Real Estate and Professional Services	29.0	29.6	30.9	32.8	22.62%	6.28%
Public Administration, Defence and Other Services	17.3	16.3	18.4	19.8	13.66%	7.80%
GVA at basic prices	132.2	125.9	136.1	145.2		6.68%

RE: Revised estimates FAE: First Advanced estimate PE: Provisional Estimate

Source: CRISIL Research, Press Note on FAE: First Advance Estimate 2022-23, NSO

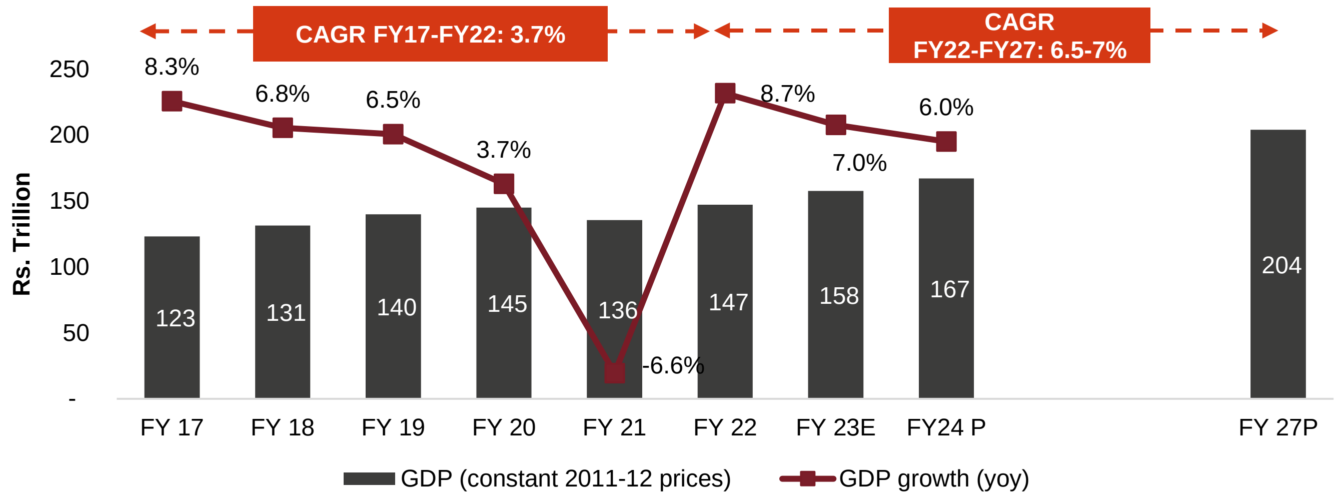
CRISIL estimates India's GDP growth at 7.0% in fiscal 2023 with downside risk

The Indian economy logged a 3.7% CAGR over fiscals 2017-22. Economy contracted 6.6% during fiscal 21 due to impact of COVID-19 in third quarter of fiscal 2020 and fiscal 2021.

GDP growth between fiscal 2017 and fiscal 2019 was robust at 6.6% CAGR driven by rising consumer aspirations, rapid urbanisation, the government's focus on infrastructure investment and growth of the domestic manufacturing sector. The economic growth was supported by benign crude oil prices, softer interest rates and lower current account deficit. The Indian government also undertook key reforms and initiatives, such as implementation of the Goods and Services Tax (GST) and Insolvency and Bankruptcy Code (IBC); Make in India and financial inclusion initiatives; and gradual opening of sectors such as retail, e-commerce, defence, railways, and insurance for foreign direct investments (FDIs).

India's economic growth was led by services, followed by the industrial sector, over fiscals 2017-22. Growth over fiscals 2017-22 was, however, impacted by demonetisation, the non-banking financial company (NBFC) crisis, slower global economic growth, and COVID-19.

GDP growth pace to slow down to 7% in FY23, long term growth expected at 6.5-7% CAGR



Note: P – Projected; E – Estimated, FY22 – Second advance estimate

Source: National Statistical Office (NSO), CRISIL MI&A estimates

Impact of Covid-19 was more pronounced on contact sensitive services as social distancing norms impacted many services such as entertainment, travel, and tourism sector while many industries in the manufacturing sector also faced issues with shortage of raw materials/components as lockdown in various parts of the world wreaked havoc on their supply chains. As lockdowns were gradually lifted, economic activity revived in the second half of fiscal 2021. After a steep contraction in the first half, owing to the rising number of Covid-19 cases, GDP growth moved into positive territory towards the end of fiscal 2021. India's real GDP grew 8.7% in fiscal 2022 from the low base of fiscal 2021.

According to the National Statistical Office estimates released on November 30, 2022, India's real gross domestic product (GDP) growth slowed down to 6.3% on-year in the second quarter (Jul-Sep) of fiscal 2023. During the first quarter of the fiscal, GDP had grown at 13.5%. The economy was first hit by the pandemic during the first quarter of fiscal 2021 and again affected in the second wave by the delta variant in the first quarter of fiscal 2022. In contrast, there was no pandemic-led disruption in the first quarter of this fiscal. Hence, first quarter data of this fiscal 2023 continues to be statistically boosted by the favourable base effect. Despite headwinds due to the Russia-Ukraine conflict, the growth momentum (in seasonally adjusted terms) improved sequentially during the quarter.

India's real gross domestic product (GDP) rose 6.3% on-year in the second quarter of fiscal 2023. GDP was dragged down by weakening industrial growth as well, particularly in the manufacturing sector that was hit by slowing global growth and compressed margins.

On the supply side, gross value added (GVA) grew 5.6% on-year in the second quarter of fiscal 2023, compared to the 6.3% growth in GDP during the period. The reason for the slowdown was industry, with improving agriculture and services arresting a further slowing down.

Agriculture GVA growth rose to 4.6% in the second quarter vis-à-vis 4.5% in the first quarter. A normal monsoon for the fourth year in a row appears to have supported production, despite uneven temporal and spatial distribution and a heatwave.

While services posted slowing on-year growth, it was primarily the result of an unfavourable base. In fact, activity continued to improve sequentially across all major components.

Within the industry basket, manufacturing GVA turned negative 4.3% in the second quarter vs. 4.8% in the previous quarter, as weakening global growth hit export demand. Narrowing margins added pressure, as cost pressures for producers rose at a faster pace than retail prices. This was indicated by Wholesale Price Index-linked inflation averaging 12.4% on-year in the quarter compared with 7.0% for Consumer Price Index (CPI). But the slide in manufacturing growth was at odds with Purchasing Managers' Index manufacturing, which was in the expansion zone in the July-September quarter, at ~55. Historical data further shows the first estimates of GVA based on Index of Industrial Production underestimate the actual manufacturing growth. Hence, there is a possibility of an upside to manufacturing as more data becomes available over the next few quarters

Private final consumption expenditure (PFCE) increased 9.7% in the second quarter compared with 25.9% in the previous quarter. It continued to contribute positively to growth.

Fixed investment, as measured by gross fixed capital formation (GFCF), slowed to 10.4% in the second quarter vs. 20.1% in the previous corresponding quarter. This suggests that private sector investment activity was yet to pick up materially, with the Centre driving the capex agenda. Also, while the Centre’s capex growth was robust at 42.4% on-year in the second quarter, it was lower than the 57.0% increase in the previous quarter. That said, state capex could accelerate in the second half of this fiscal, thereby supporting overall capex growth.

Meanwhile, the government’s consumption spending, as measured by government final consumption expenditure (GFCE), turned negative 4.4% on-year in the second quarter vs. 1.3% in the previous quarter, reflecting ebbing of Covid-19-related spending. Also, real export growth of goods and services slowed sharply to 11.5% in the second quarter from 14.7% in the previous quarter. Exports slowed considerably to major destinations – the US and the EU – as tightening financial conditions weighed on growth of these economies. In contrast, imports were strong at 25.7% in the second quarter (although lower than 37.2% in the first quarter) on relatively resilient domestic demand. Taken together, net exports continued to subtract from overall GDP growth.

Share in GDP expanded materially for PFCE (58.4% in the second quarter of fiscal 2023 vs. 56.6% in the second quarter of fiscal 2022) and imports (31.9% vs. 27%), while it fell for GFCE (8.8% vs. 9.8%) and was stable for GFCF (34.6% vs. 33.4%) and exports (23.3% vs. 22.2%).

Nominal GDP was much higher at 16.2% in the second quarter compared with real GDP. Also, while the GDP deflator moderated to 9.3% on-year in the second quarter from 11.6% in the previous quarter, it was higher than the pre-pandemic level (0.2% in the second quarter of fiscal 2020)

Domestic macroeconomic outlook for fiscal 2023

Macro variables	FY22	FY23E	FY24P	Rationale for outlook
GDP (%, on-year)	8.7%	7.0%	6.0%	CRISIL has revised down forecast for India's real gross domestic product (GDP) growth to 7.0% for the current fiscal (2022-23) from 7.3% estimated previously. This is primarily because the slowdown in global growth has started to impact India's exports and industrial activity. However, domestic demand remains supportive this fiscal, helped by a catch-up in contact-based services, government capital expenditure (capex), relatively accommodative financial conditions, and overall normal monsoon for the fourth time in a row. The impact is expected to be more next fiscal (2023-24) as global growth decelerates faster. Additionally, domestic demand could come under pressure as interest rate hikes gets transmitted more to consumers, and the catch-up in contact-based services fades. Consequently, CRISIL expects India's GDP growth to slow to 6.0% in fiscal 2024, down from 6.5% estimated previously. The risks to the forecast remain tilted downwards.
CPI-linked inflation (%, on-year)	5.5%	6.8%	5.0%	High crude prices pushed the commodity prices during fiscal 2023 translating into record high inflation during the year. CPI inflation may moderate in the coming few months as base effect comes into play and with the expectation of a healthy rabi crop. Yet, inflation will remain elevated above the RBI's upper tolerance band of 6%, with pressure from both, food, and core. Even during the next year, inflation is expected to remain sticky.
10-year government security yield (%, March-end)	6.8%	7.5%	7.0%	Yields on 10-year G-secs in November were influenced more by volatile external factors, viz., crude oil prices and expectations of US Fed rate hikes. Both factors have been on a roller coaster ride since the start of the Russia-Ukraine conflict and the US rate hike cycle, respectively. Going ahead, pressure on yields is likely to remain. Domestically, the RBI has flat out stated that the battle with inflation is not over yet; hence, another rate hike in February remains an option, which would eventually transmit to higher G-sec yields. Further, the US Fed chief has signalled that though the pace of rate hike may be slower going ahead, the terminal rate may still be higher than expected. CRISIL thus expects yields on 10-year G-sec to average 7.5% in March 2023, compared with 6.8% in March 2022. As inflation cools down next fiscal, and as the RBI takes a pause in its rate hike cycle, yields are expected to come down to 7% by March 2024.

Macro variables	FY22	FY23E	FY24P	Rationale for outlook
CAD/GDP (%)	-1.2	-3.2	-2.4	The rise in international commodity prices, exacerbated by the Russia-Ukraine crisis, is expected to soften with the slowdown in global growth. Several key economies are on the brink of recession. Crude prices have already eased to below $85/barrel after remaining above $120/barrel in June. At the same time, India's exports face further headwinds, given the moderation in global growth. A greater slowdown in exports vis-à-vis imports, with services trade surplus too coming under mild pressure, will widen the CAD some more in the second quarter. But financing of CAD has not posed a challenge so far, with FPI flows showing a reversal since July. Overall, CRISIL projects India's CAD at 3.2% of GDP in the current fiscal, with risks tilted to the downside.
Rs/$ (year-end)	76.2	79.5	80.5	The rupee continues to face headwinds amid global growth slowdown, heightened geopolitical tensions, elevated commodity prices, and aggressive rate hikes by the US Fed, which is continuing to strengthen the dollar. That said, a similar story is playing out across most other economies, with their currencies falling for the same reasons. The rupee is also facing domestic pressure from elevated inflation and deteriorating outlook on the current account deficit (CAD). The CAD is expected to widen to 3.2% of gross domestic product as against 1.2% in the previous fiscal. Some support for the rupee, though, can be expected from the Reserve Bank of India, which remains committed towards preventing large bouts of volatility in the currency. CRISIL expects the rupee to average 79.5 against the dollar in March 2023 compared with 76.2 in March 2022.

Note: E: Estimated, P - Projected

Source: Reserve Bank of India (RBI), NSO, CRISIL

CRISIL has revised down the forecast for India's real g4ross domestic product (GDP) growth to 7.0% for the current fiscal (2022-23) from 7.3% estimated previously. This is primarily because the slowdown in global growth has started to impact India's exports and industrial activity.

However, domestic demand remains supportive this fiscal, helped by a catch-up in contact-based services, government capital expenditure (capex), relatively accommodative financial conditions, and overall normal monsoon for the fourth time in a row.

The impact is expected to be more next fiscal (2023-24) as global growth decelerates faster. Additionally, domestic demand could come under pressure as interest rate hikes gets transmitted more to consumers, and the catch-up in contact-based services fades. However, with the general elections looming ahead in fiscal 2025, the budget for fiscal 2024 will be the last and full budget by the current government before the same. Generally, it is observed that the pre-election year sees higher spending by the government to accelerate approval and execution of lagging government projects and more spending on social sector schemes which could buffer the impact of adverse economic conditions to some extent.

The second quarter fiscal 2023 data reflected how global slowdown had begun to spill over to the Indian economy. Long-term growth movements suggest that despite diverging now, India's growth cycles have been remarkably synchronised with that of advanced economies since the 2000s. Major developed economies are expected to fall into a shallow recession by next year. This will weaken the export prospects for India, thereby weighing on domestic industrial activity. And while domestic demand has stayed relatively resilient so far, it would be tested next year by weakening industrial activity. It will feel the pressure from increasing transmission of interest rate hikes to consumers as well, and as the catch-up in contact-based services fades. Also, rural income prospects remain dependent on the vagaries of the weather. Therefore, increasing frequency of extreme weather events remain a key monitorable. While lowering demand for Mahatma Gandhi National Rural Employment Guarantee Act jobs is an encouraging sign for the rural economy from a job perspective, depressed wages are a matter of concern for rural demand. Because of these factors, CRISIL projects GDP growth to slow to 6% in fiscal 2024 from 7% in fiscal 2023, with risks to the downside.

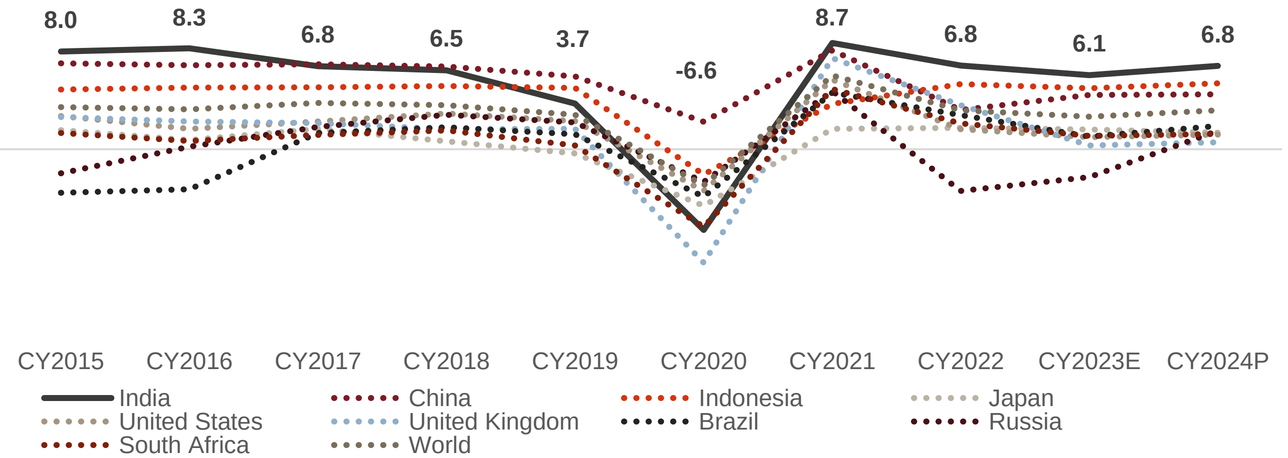
India to remain a growth outperformer globally

Despite the markdown in near-term growth, India is expected to remain a growth outperformer over the medium run. CRISIL expects India's GDP growth to average 6.6% between fiscals 2024 and 2026, compared with 3.1% globally — as estimated by the International Monetary Fund (IMF). India would also outgrow emerging market peers such as China (4.5% growth estimated in calendar years 2023-2025), Indonesia (5.2%), Turkey (3.0%) and Brazil (1.6%).

Drivers for Indian economic growth

- Stronger domestic demand is expected to drive India's growth premium over peers in the medium run
- Investment prospects are optimistic given the government's capex push, progress of Production-linked Incentive (PLI) scheme, healthier corporate balance sheets, and a well-capitalised banking sector with low non-performing assets (NPAs)
- India is also likely to benefit from China-plus-one policy as global supply chains get reconfigured with shifting focus from efficiency towards resilience and friend shoring
- Private consumption (~57% of GDP) will play a supportive role in raising GDP growth over the medium run

India is one of the fastest-growing major economies (GDP growth, % on-year)



E: Estimated; P: Projected

Note: GDP growth is based on constant prices

Source: IMF (World Economic Outlook – October 2022 update), CRISIL

Increasing per-capita income

Per-capita income (per-capita NNI) is estimated to have grown 2.3% in fiscal 2020, compared with 5.2% in fiscal 2019. In fiscal 2021, per-capita income declined by 9.7% owing to GDP contraction amid the pandemic's impact on this lower base of fiscal 2021, per capita income rose 7.5% in fiscal 2022.

However, per-capita income is forecast to improve in line with GDP growth. This will be an enabler for domestic consumption. According to IMF estimates, India's per-capita income (at current prices) is expected to increase at a 10.5% CAGR over calendar years 2022-27.

Tighter financial conditions could test resilience of domestic demand next year

So far, the Reserve Bank of India (RBI) has raised the policy repo rate by 225 basis points (bps) in fiscal 2023. While the repo rate is higher than the pre-pandemic level of 5.15%, it remains lower than 6.50% peak reached in 2018 during the last rate hike cycle. Similarly, bank lending rates remain lower than the pre-pandemic five-year average so far. The impact on domestic demand and lending activity, therefore, is still not adverse.

For instance, bank credit is still supporting demand recovery, growing to a decadal high of 17.9% in October 2022, and is forecast at 15% for this fiscal. The offtake is strongest to retail loans. Besides, given cleaner balance sheets, banks are more willing to lend to corporates and households.

However, some of this is expected to change soon with the transmission of rate hikes and lower liquidity to the system picking up. As transmission increases, higher borrowing costs could take some steam off from the current strength in domestic demand.

1.2 Near-term outlook on agriculture, industrial and services GDP

The services sector is the main growth driver

In fiscal 2020, the services sector accounted for 55.3% of India's GDP, compared with 52.4% in fiscal 2015. However, its share dipped to 53.6% in fiscal 2021 due to the pandemic. Fiscal 2022 witnessed marginal improvement in its share with gradual normalization of market operations.

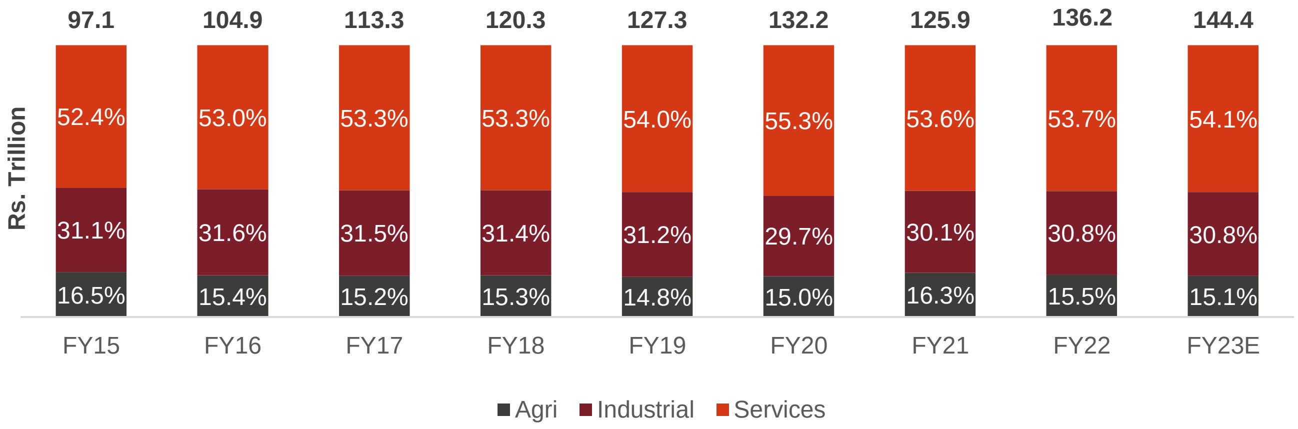
The industrial sector, which is the second-largest contributor, maintained its share in GDP, as the sector logged a 7.1% CAGR over fiscals 2015-19. Industrial contribution declined in fiscal 2020 with the slowdown in economic development. Before overall economic activity slowed down in fiscal 2020, India's industrial sector output growth was supported by the Make in India initiative, rising domestic consumption and GST implementation. The initiatives improved India's position on the World Bank's Ease of Doing Business index to 63 in fiscal 2019 from 142 in fiscal 2014.

The Covid-19 pandemic and subsequent lockdowns exacerbated the economic slowdown in fiscal 2021. The services segment was the worst affected and declined 7.8% on-year, followed by industrial, which declined 3.3% on-year. Agriculture was the only sector that grew 3.3% on-year and restricted the fall in GDP.

In fiscal 2021, the agriculture sector's share in GVA at constant prices expanded, while the share of services and industrial contracted.

Agriculture GVA continued to growth at a steady 3.0% in fiscal 2022. Faster GDP growth in fiscal 2022 saw share of agriculture decline in fiscal 2022 in contrast to fiscal 2021 when agriculture sector saw robust growth, a rare bright spot in a period when almost all sectors of the economy were impacted due to Covid-19 causing GDP to decline. Share of industrial sector in GDP grew marginally in fiscal 2022 dragged by utility services with a respectable 7.8% growth but below other industrial sectors of mining and manufacturing which grew strongly 12.6% and 10.5% in fiscal 2022 respectively. The lower base of fiscal 2021 supported the stronger growth of the industrial sector in FISCAL 2022. Services sector lost share in in the GDP pie since the onset of Covid-19 in early 2020 due to 20% decline in the trade, hotel, transport and communication (THTC) in fiscal 2021. Covid restrictions had a more pronounced impact on THTC growth as the sector is more contact intensive. Social distancing and travel restriction had a more pronounced impact on the sector. However, in fiscal 2022, supported by a low base, it saw growth bounce back to 8.4%.

Share of sectors in GVA at constant prices



Source: RBI, CRISIL

During fiscal 2023, agri sector is expected to continue its growth momentum of ~3% y-o-y. Services sector is expected to provide the thrust to the economy with 6.8% growth while industry sector growth is estimated to decelerate to ~6.4% during fiscal 2023 helping it maintain its contribution in fiscal 2023.

CRISIL expects further expansion in services contribution while agri sector to lose some ground during the year.

1.3 Review and outlook on inflation

Inflation, as measured by the Consumer Price Index (CPI), moderated sharply to 5.88% on-year in November, from 6.77% October. This is the first print below 6% (the RBI's upper tolerance limit for inflation) since January 2022. While a moderation was expected (due to lower vegetable prices and some sequential easing of post-festive demand), the fall is a positive surprise. The headline number was largely brought down by sharper-than-expected easing of vegetable prices. But pricey cereals and milk continue to exert pressure on overall inflation.

Food and beverage inflation saw the maximum softening to 4.7% from 7% in October. Vegetable prices, notorious for imparting volatility to overall inflation, lived true to its characteristic in November: vegetables experienced deflation (prices fell) of 8.1% on-year (vs 7.8% inflation last month). The fall was a combination of both, high base effect from last year and sequential easing in prices (with winter arrivals, prices of vegetables tend to go down). Prices of most 'winter vegetables' — that is, cauliflower, cabbage, leafy vegetables, peas- declined more than 10% on-month.

Fuel inflation broke its moderating trend of the past four months and rebounded to 10.6% on-year in November (from 9.9% in October and 10.4% in September). This was largely due to a high-base effect from last year — though there was some sequential uptick, too, from rising kerosene and coal prices

Elevated international coal prices are having their bearing on domestic fuel inflation: Australian coal prices are up 117% on-year in November. Accordingly, domestic coal inflation has been elevated in and in fact, jumped to 13.3% in November (from 12.3% in previous month)

Core inflation components across ‘transportation and communication’ (particularly, conveyance), ‘personal care and effects’, ‘household goods and services’, ‘medical costs’, either jumped on-year or remained same (compared to previous month)

Sticky core inflation is partly due to passthrough of elevated input prices to consumers. Despite wholesale input prices coming down since last quarter, wholesale output prices remain elevated- implying the passthrough to retail prices will continue if demand continues to recover. Ratio of input to output wholesale prices remained high at 1.0 in October 2022, above the decadal average of 0.94

WPI inflation sliding down

Inflation based on the Wholesale Price Index (WPI) eased sharply again in November -to 5.8% from 8.4% in October (and 10.7% in September).

WPI inflation is easing largely on base effect, and some sequential easing of some food groups. Just as with CPI, vegetable wholesale prices pulled down the headline WPI. But inflation in some food categories: wheat, pulses and some coarse cereals jumped between October and November.

Non-food WPI inflation eased too: 7.3% vs 9.2% in the previous month, as cost pressures eased for producers of metals, textiles, chemicals, etc.

Fuel and power inflation slowed in November: 17.4% vs 23.2% in October, but within the broad group, inflation in some categories (such as kerosene) increased. Also, crude petroleum and natural gas inflation rose in the month- both because of low base effect and momentum effect.

Outlook

The November CPI inflation print undershot our expectations largely due to sharp correction in vegetable prices. Going ahead, food inflation may moderate with winter arrivals and expectation of rabi harvest (sowing so far has been robust in on-year terms). But elevated inflation in cereals and milk remains a monitorable.

Some relief on fuel inflation can be expected if the recent decline in Brent crude oil prices is sustained (which would bring down domestic fuel prices at the pump).

Core inflation remains the biggest worry- as producers continue to pass on elevated input prices to consumers. That said, household inflation expectations have inched down in December for both three month and one-year horizons- this would come as some relief for the RBI as it seeks to tackle these second order effects of inflation.

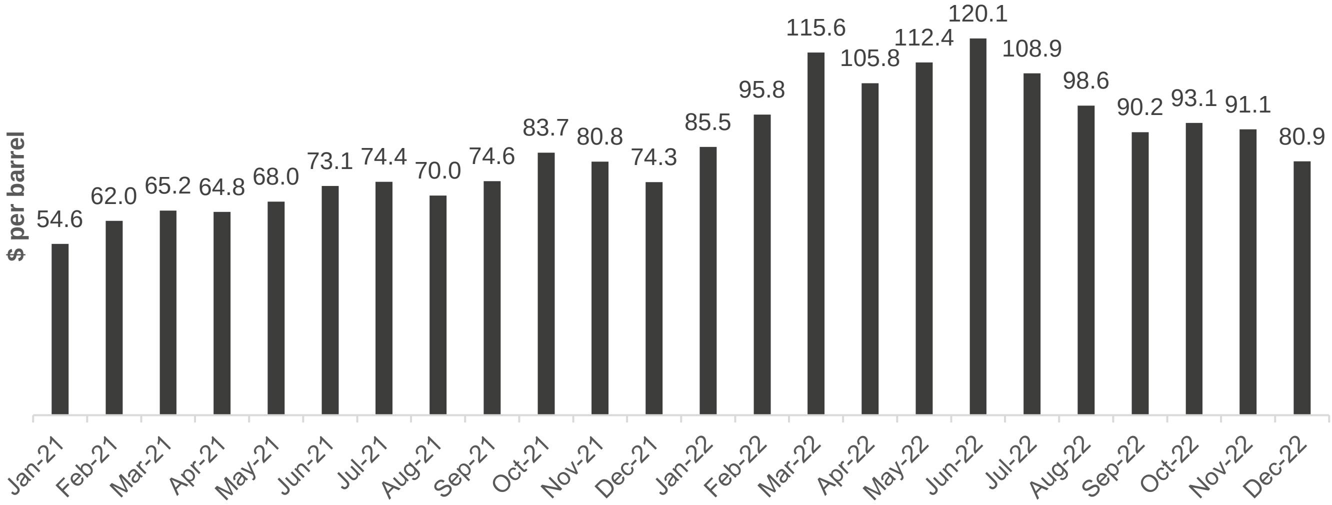
Considering the risks emanating from sticky core inflation and pressure from cereals on food inflation, CRISIL retains its CPI inflation forecast at 6.8% for this fiscal, with the upcoming last quarter inflation likely to average below 6%.

1.4 Crude oil price skyrocketed to $100 per barrel in 2022; Prices to moderate to $80-85 per bbl in 2023

Crude oil prices have continued to be on an upward trajectory since end-2021. They became even higher with the Russia-Ukraine conflict, which led to the prices averaging $98-103 per barrel (bbl) in 2022. The prices averaged $106 per barrel in the first half of 2022 owing to the Russia-Ukraine conflict, which resulted in a significant shift in the overall crude oil supply chain. However, increasing recessionary fears stemming from inflation coupled with interest rate hikes globally have cast a significant shadow over consumption and economic growth, pushing prices downward.

Dated Brent averaged ~$99 per bbl in the third quarter of 2022 over elevated tensions, with anticipation of incremental sanctions and a price cap on Russian crude by the European Union and G7 countries.

Brent crude oil price trend



Note: Dated Brent price is the price of physically delivered crude oil in the North Sea that has specific delivery date

Source: Industry, CRISIL MI&A

During H2 CY2022, prices averaged $97.5 per barrel pulling the annual average to $100 per barrel for 2022. Going forward, with further de-escalation of the crisis and balancing of global crude oil trade, CRISIL expects prices to cool down further, settling between $80-85 per barrel in 2023. However, any decision by OPEC to cut production as well as further decision on the ban of Russian crude oil are key monitorables which are expected to impact global crude oil prices.

1.5 Rupee clawing back

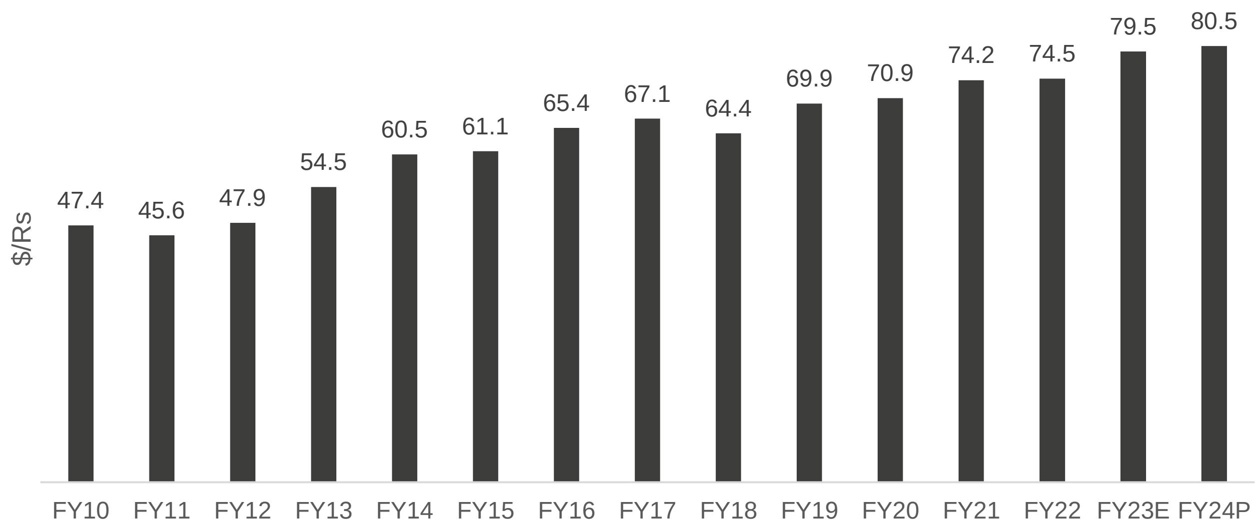
The rupee has faced headwinds amid the global growth slowdown, heightened geopolitical tensions, elevated commodity prices, and aggressive rate hikes by the US Fed. That said, a similar story is playing out across most other economies, with their currencies falling for the same reasons.

Global growth slowdown, along with resilient domestic growth momentum, means current-account deficit (CAD) is expected to widen to 3.2% of gross domestic product in fiscal 2023 from 1.2% in the previous fiscal, as exports falter and imports remain buoyant.

Some support for the rupee, though, can be expected from the Reserve Bank of India (RBI), which remains committed towards preventing large bouts of volatility in the currency.

Net-net, while the rupee is expected to remain volatile in the near term, it is expected to gradually appreciate from current levels with the softening in crude oil prices amid weaker global demand, a slowdown in the pace of rate hikes by the US Fed, and India's foreign inflows because of relatively better growth outlook.

Exchange rate INR-USD



Source – RBI, CRISIL

Rupee is expected to settle at 79.5/$ on average by March 2023 (from the current Jan 2023 ~82/$ levels) as the extraordinary rise in US Dollar index this year has started to moderate with slowdown in the pace of rate hikes by the US Fed.

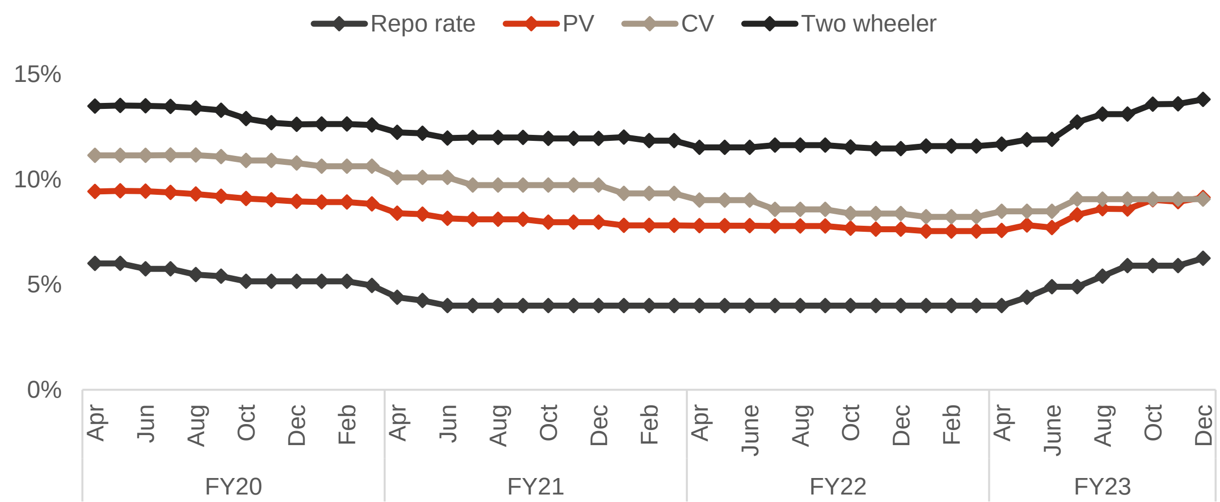
CRISIL expects rupee at 80.5/$ by next fiscal end (i.e., March 2024) as it moves along its long-term depreciating trend. Moderation in India's CAD next fiscal suggests rupee should depreciate by a lesser degree than this fiscal.

1.6 Steep hike in auto finance rates

Auto finance rates were on a downward trend during the pandemic as the RBI cut the repo rate by 40 bps over March 2020- June 2021. In fiscal 2021, passenger vehicle (PV) and commercial vehicle (CV) finance rates softened significantly. Two-wheeler financing rates, however, dropped by a lesser extent, given the relatively humble credit profile of customers. In fiscal 22, financing rates remained competitive with improvement in economy as well as subdued repo rates.

However, during fiscal 2023, RBI intermittently hiked repo rates to limit the rise in inflation levels pushing the interest rates. So far in fiscal 2023, RBI has hiked the repo rate by 225 bps to 6.25% (as of January 2023), which is the highest level since August 2018.

Average auto finance rates offered by banks (%)



Source: Industry, CRISIL MI&A

The sharp rise in repo rates has translated into hike in financing rates across automotive segments. Passenger vehicle segments have witnessed nearly 160 bps hike while for two-wheeler segment, the hike was higher and in tandem with repo rate hike.

Interest rates have reached pre Covid levels and are expected to remain firm in the short term. CRISIL expects some softening in the repo rate during fiscal 2024, which might translate into easing of interest rates during the next fiscal.

1.7 Rising demand for underlying assets to back disbursement growth

After a consecutive contraction, auto finance disbursement showed healthy revival in fiscal 2022. Most sub-segments witnessed underlying asset sales recovered to pre-Covid levels. Two-wheeler and passenger vehicle segments gained on account of pent-up demand and increased preference for personal mobility as lockdowns were lifted and people were wary of using public transport. In the CV segment, while sales of medium and heavy commercial vehicles (M&HCV) and buses remain tepid, that of light commercial vehicles (LCV) improved.

YoY growth in auto finance disbursement (%)

Segment	FY20	FY21	FY22	FY23E	FY24E
PV – new	-9%	-4%	24%	30-35%	7-12%
CV – new	-36%	-6%	46%	47-52%	13-18%
Two-wheelers	-2%	-5%	-6%	14-19%	6-11%

Source: Industry, CRISIL MI&A

During fiscal 2023, auto industry sales are witnessing healthy growth, thrusting the auto finance disbursements. Disbursements for PV segment are estimated to witness a sharp growth backed by the expectation of a record (24-26%) rise in PV sales. Moreover, increased traction for high priced UVs coupled with price hike undertaken to compensate for increase in commodity prices are expected to provide an additional push to the disbursement levels.

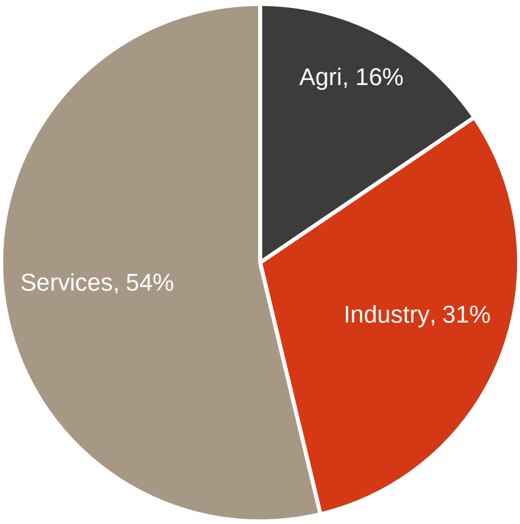
Recovery in two-wheeler sales after consecutive contraction is expected to support the disbursement growth in fiscal 2023. Price rises during the year are expected to provide the additional kicker. Healthy growth in underlying asset sale is expected to zoom the disbursement growth for commercial vehicles.

During 2024, CRISIL expects the disbursement growth pace to taper down from the high base of fiscal 2023. This tapering is expected amidst the expected deceleration in the underlying asset growth across segments. Expected price hikes for compliance with emission, safety norms coupled with the normal price hike is expected to provide some push to the disbursement growth.

Government policies to boost manufacturing in India

Indian economic output is majorly driven by the high productivity services sector which contributes 54% of the economic output. The share of industry is a distant second at 31% of which manufacturing account nearly 60%. Manufacturing sector growth can not only increase job in the sector but also reduce forex outgo on imported goods. Hence the government has introduced several incentives in the past decade to boost the manufacturing sector in India.

Sectoral GDP share FY2022



Source: CRISIL

Make in India

The Make in India initiative was launched in September 2014, to give a push to manufacturing in India and encourage FDI in manufacturing and services. The objective of the initiative was to increase manufacturing share in GDP to 25% by 2020 by boosting investment, foster innovation, and intellectual property, and build best-in-class infrastructure for manufacturing across sectors including but not limited to automobile, auto components, aviation, biotechnology, chemicals, construction, defence manufacturing, electrical machinery, electronic systems, food processing, mining, oil and gas, pharmaceuticals, renewable energy, thermal power, hospitality and wellness.

To achieve this objective, a dedicated Investor Facilitation Cell (IFC) was setup to assist investors in seeking regulatory approvals, hand-holding services through the pre-investment phase, execution, and after-care support. Key facts and figures, policies and initiatives and relevant contact details were made available through print and online media. The Indian embassies and consulates proactively disseminate information on the potential for investment in the identified sectors in foreign countries while domestically, regulations and policies were modified to make it easier to invest in India.

FDI inflows have seen a leg up, as India jumped to the 8th position in the list of world's largest FDI recipients in 2020 compared to the 12th position in 2018, according to the World Investment Report 2022. FDI to India almost doubled to $83.6 billion in fiscal 2022 from $ 45.15 billion in fiscal 2015. India is on track to attract $100 billion FDI during fiscal 2023 according to Ministry of Commerce and Industry.

However, the share of manufacturing in GDP has not made a meaningful move since the introduction of the programme. Additional policies were announced, and targets rolled forward initially to 2022 and then to 2025. Domestically, there were multiple steps taken to improve to make sectors more attractive and ease investment processes. Some of the major steps taken were announcement of National Infrastructure Pipeline, reduction in corporate tax, various sectors such as defence manufacturing, railways, space, and single brand retail have been opened up for FDI. Measures to boost domestic manufacturing were also taken through Public Procurement Orders (PPO), Phased Manufacturing Programme (PMP) and Production Linked Incentives (PLI) schemes etc. Many states also launched their own initiatives on similar like to boost manufacturing their respective states.

De-coupling of global supply chains

As traditional supply chains are threatened by large scale global events, a rising trend in protectionism and wage inflation, there is a greater need for rethinking supply chain models to remain competitive. Considering the global disruptions like Covid, geopolitical crises, environmental disruption, etc., significant decoupling of supply chains is happening to bring key supply links closer home, particularly the ones situated in China, creating less integrated supply chains than in the past.

To establish collective supply chains that would improve their resilience in the long terms, 18 economies, including India, US and the EU unveiled a roadmap in July 2022 which included steps to counter supply chain dependencies and vulnerabilities. This was done as a part of China plus one strategy, in which global companies are diversifying their businesses away from their reliance on a single large supplier, i.e., China to alternative destinations. Beijing's Zero-Covid policy and the attendant disruptions to global supply chains, container shortage and higher lead times have served as an impetus to the China plus one strategy. This reorientation has benefitted other Asian economies in southeast Asia and India. India can take advantage of the same as the enormous quantum of Chinese exports coupled with India's cost advantage in manufacturing, would serve as a highly lucrative opportunity for Indian manufacturers. The government realising this opportunity has introduced many reforms and incentive schemes to increase domestic manufacturing and attract global manufacturing firms to India.

Atmanirbhar Bharat

Atmanirbhar Bharat Abhiyan or the self-reliant India campaign was launched in May 2020 amid the Covid-19 pandemic, with a special and comprehensive economic package of Rs 20 trillion, equivalent to 10% of the country's GDP.

The scheme was launched with the primary intent of fighting the pandemic and making the country self-reliant based on five pillars: economy, infrastructure, technology-driven system, demography and demand. The stimulus package announced by the government under the scheme consisted of five tranches, intended to boost businesses including Micro, Small and Medium Enterprises (MSMEs), help the poor (including farmers), boost agriculture, expand the horizons of industrial growth, and bring in governance reforms in business and health and education sectors.

The mission emphasises the importance of encouraging local products and aims to reduce import dependence through substitution. It also aims to enhance compliance and quality requirements to meet international standards and gain global market share.

The government has also rolled out other reforms — namely, supply-chain reforms for agriculture, rational tax systems, simple and clear laws, capable human resource, and a strong financial system.

Production Linked Incentive (PLI) scheme

The PLI scheme's prime objective is to make manufacturing in India globally competitive by removing sectoral disabilities, creating economies of scale and ensuring efficiency. It is designed to create a complete component ecosystem in India and make India an integral part of the global supply chain. Furthermore, the government hopes to reduce India's dependence on raw material imported from China. The scheme is expected to boost economic growth over the medium term and create more employment opportunities, as many of the sectors covered under the scheme are labour-intensive. It will be implemented over fiscals 2022-29.

Construction spends across Industrial investments in fiscal 2023 are seen rising 6-10% due to high base in fiscal 2022 where the sector grew due to deferred investments from fiscal 2021 and capex investments from PLI scheme coming online. The PLI scheme is a time bound incentive scheme by the Government of India which rewards companies in the range on 5-15% of their annual revenues based on the companies meeting pre-decided targets for incremental production and/or exports and capex over a base year. The stronger than expected pickup in demand and larger companies gaining share from smaller companies has also led to revival of capex in fiscal 2022. The rise in fiscal 2023 is on account of the expansion plans underway by India Inc.

Budgeted incentives for each sector under the PLI scheme

Sector	Segment	Budgeted (Rs bn)*
Automobile	Automobiles and auto components	259.4
Chemical	Advance chemistry cell (ACC) battery	181.0
Electronics	Mobile manufacturing and specified electronic components	409.5
	Electronic/technology products/IT Hardware	73.25
	White goods (ACE and LED)	62.4
Pharmaceuticals	Critical key starting materials/drug intermediaries and active pharmaceutical ingredients	69.4
	Pharmaceuticals drugs	150
Telecom	Telecom and networking products	122
Medical Devices	Manufacturing of medical devices	184.2
Textile	Textile products: man-made fibre (MMF) and technical textiles	106.8
Metals & Mining	Speciality steel	63.2
Energy	High-efficiency solar PV modules	240
Aviation	Drones and drone components	1.2

**Approved financial outlay over a five-year period*

ACE: Appliance and consumer electronics; LED: Light-emitting diode

Source: Government websites, CRISIL

1.8 Global trade agreements

India-UAE Comprehensive Economic Partnership Agreement (CEPA)

The historic India-UAE Comprehensive Economic Partnership Agreement (CEPA) which was signed between the two nations on 18 February 2022, officially entered into force from 1 May 2022.

As per the Ministry of commerce, India will benefit from preferential market access provided by the UAE on over 97% of its tariff lines which account for 99% of Indian exports to the UAE in value terms particularly from labour-intensive sectors such as Gems and Jewellery, Textiles, leather, footwear, sports goods, plastics, furniture, agricultural and wood products, engineering products, pharmaceuticals, medical devices, and Automobiles. For trade in services, Indian service providers will have enhanced access to around 111 sub-sectors from the 11 broad service sectors.

India Australia Economic Cooperation and Trade Agreement

India and Australia have entered into an Economic Cooperation and Trade Agreement on 2nd April 2022. The Agreement has come into force on 29th December 2022.

Few benefits under the agreement:

- Indian goods on all tariff lines to get access to Australian market with zero customs duty
- 90% of Australian exports by value to get zero duty access to Indian market

India is also negotiating trade agreements at a fast pace with complementary economies and talks are ongoing with UK, Canada and EU.

Key fiscal measures announced by the Centre to deal with pandemic implications

The government announced a series of fiscal measures under the Atmanirbhar Bharat initiative to contain the human and economic damage from the COVID-19 pandemic. Following are the details of key measures announced under three packages announced in the months of May, October and November of fiscal 2021.

Fiscal stimulus 1.0

The government announced measures worth Rs.11 trillion in five tranches. This was in addition to the earlier announced measures worth Rs.9.9 trillion (RBI liquidity support and others), taking the total financial support amount to Rs.20.9 trillion. It was announced by government of India with the aim to revive the economy by liquidity infusion and income support. The actual committed fiscal outgo of Rs.1 trillion, translating to 9% of the Rs.11 trillion of measures outlined over the five tranches. The bulk of this direct support was through the Pradhan Mantri Garib Kisan Yojana. The government also ploughed in some earlier discussed structural reforms, especially in tranches 4 and 5, to help drive India’s medium-term growth story. The announcements pertained especially to sectors such as mining, aviation, urban infrastructure, power, and agriculture.

Further, the government increased the borrowing limit for state governments from 3% of their GDP to 5% of GDP. However, of this additional 2 percentage points, 1.5 percentage point is conditional upon states achieving certain targets.

For addressing near-term issues, apart from direct benefit transfers and additional spending through MNREGA, the government mobilised credit to micro, small and medium enterprises (MSMEs), agriculture, and the affordable housing sector. Like the 100% guarantee on Rs.3 trillion loans to MSMEs with one year moratorium to help these units, which are typically strapped for working capital. It was also aimed at spurring credit growth for both banks and non-banks in fiscal 2021 and contain delinquencies in the segment, which would have increased otherwise.

Fiscal stimulus 2.0

The government measures targeted increasing the demand in the economy. Government has proposed a scheme where central government employees can spend their tax-exempt travel concessions on certain goods and services. It also made provisions for them to receive a part of their wages in advance to spend on their choice of festival before the end of March 2021. The stimulus also includes infrastructure spending of Rs.250 billion and interest free loan to states which stands at Rs.120 billion. The measures announced under this package amounted to Rs.0.7 trillion.

Fiscal stimulus 3.0

This Rs.2.65 trillion stimulus package is aimed at job creation, access to credit and farm support with. The key highlight of this stimulus is to provide production linked incentives to 10 sectors which is estimated at around 1.45 trillion. This is proposed to be spent over next 4-6 years i.e. till FY28 to encourage domestic manufacturing across 10 sectors – namely, textiles, food, pharma, consumer durables, auto, telecom, specialty steel, solar, electronic, and battery. The stimulus package also provides Rs.650 billion additional outlay for subsidy towards fertilisers sector. The stimulus also includes outlay of Rs.180 billion for housing for all plan besides it also includes package of Rs.100 billion to support rural economy.

1.9 Key Measures announced by government for Infrastructure sector to deal with Covid-19

The outbreak of Covid-19, the subsequent lockdown and its financial fallout will impact construction spending across construction sub-sectors in fiscal 2021. All sub-sectors are expected to be impacted with building & construction and industrial sectors expected to be the most impacted. Central government have announced some key measures to address the implications caused by Covid-19. Some of the key measures announced by government are as follows

- Up to 6 month extensions for completion of infrastructure projects: Central government has given extension of up to 6 months to contractors whose operations are hit by Covid-19. This extension is given with no additional penalty for missing out on milestones. All central agencies like Railways, Ministry of Road transport and highways and central public works department will grant extensions to its contractors engaged in different projects work under PPP mode.
- Covid-19 loans were extended by NHAI to BOT concessionaires at 2% + Bank rate. The loan amount would be lower of i) Debt obligation plus the O&M expenses or ii) Estimated toll collection minus actual collection during the period. NHAI had tried to compensate the concessionaires for the loss in toll collections incurred by the concessionaires due to the suspension of tolling operations from 26th March-19th April, 2020 by NHAI as well as disruption in traffic post 19th April due to lockdowns in various states of the country.
- Extension in concession period was granted to road asset operators due to suspension in tolling activity from 26th March to 19th April, 2020. Extension in concession period would be in proportion for period where daily toll collection would be less than 90% of average daily collection. Also waiver of concession fee/premium was announced for 26th March to 19th April period. Extension and waiver of premium/concession fee helped mitigate the extent of impact on decline in return on the assets.

- RERA granted 6 to 9 months extension for real estate project completion: Due to Covid-19, majority of works on real estate projects got stalled as supply chain disruptions and labour shortages hampered projects. To safeguard the interests of consumers many state RERA authorities have extended the completion timeline of project by 6 to 9 months.
- Release of retention money in proportion of work done and no further deduction of retention money for 3-6 months from contractors: Ministry of Road transport and highways have directed all central agencies to release retention money in proportion to work completed by the contractor and not to deduce any retention money from the bills raised by the contractor in the period 3 to 6 months
- Enabled monthly payments based on work completed instead of milestone based payments
- Performance security on contracts reduced to 3% instead of 5-10%: The performance security deposit which is the proportion of total cost of project that contractor keeps with the client. The rate of deposits have been slashed in view of Covid-19 pandemic. As these fees usually have to be paid upfront, reduction in the rate of deposit is expected to bring respite to stressed construction companies
- Earnest Money Deposit (EMD) for tenders to be replaced by bid security self-declaration: Government of India have provided relaxation on Earnest money deposit on government tenders. EMD is to be replaced by bid security self-declaration.

1.10 Key budgetary proposals for Infrastructure sector

Budget impact and capital outlay of different infrastructure segments

Aggregate capex of Rs.12.2 trillion for next fiscal is up 17% over fiscal 2022RE, excluding equity infusion for Air India Assets Holding Limited (AIAHL). Interestingly, the GBS is up a steeper 39% on-year. This increases the government's direct spend to 62% of aggregate capex next fiscal from 55% in the current fiscal. This reflects a shift in the government's financing pattern — an increase in the reliance on direct budgetary support and a reduction in funding from central public sector enterprises (CPSE).

With direct budgetary support for infrastructure rising a faster 30% for next fiscal, the share of infrastructure segments, which account for 54% of the aggregate capex, rises a modest 11% over fiscal 2022RE. In the infrastructure basket, the railways, water, and green energy get a stronger impetus.

Asset monetisation as an infrastructure funding mechanism was largely missing in the budget proposals. It found mention only in the roads sector, where it is expected to generate Rs.200 billion and fund 10% of the National Highways Authority of India's (NHAI) requirement for the next fiscal.

Table 1: Outlay for core infrastructure ministries (Budget Documents – February 2023)

Figures in Billions	FY22				FY23BE				FY23RE				FY24BE				Growth in outlay	
Ministry	GBS	IEBR	GIA	Total	GBS	IEBR	GIA	Total	GBS	IEBR	GIA	Total	GBS	IEBR	GIA	Total	Vs FY23RE	Vs FY23BE
Ministry of Railways	1172.7	733.9	0.0	1906.6	1371.0	1085.0	0.0	2456.0	1591.0	959.4	0.0	2550.4	2400.0	527.8	0.0	2927.8	15%	19%
Ministry of Road Transport and Highways	1133.1	651.5	69.5	1784.6	1877.4	0.0	83.4	1877.4	2063.0	8.0	77.3	2071.0	2586.1	0.0	87.5	2586.1	25%	38%

Figures in Billions	FY22				FY23BE				FY23RE				FY24BE				Growth in outlay	
Ministry	**GBS**	**IEBR**	**GIA**	**Total**	**GBS**	**IEBR**	**GIA**	**Total**	**GBS**	**IEBR**	**GIA**	**Total**	**GBS**	**IEBR**	**GIA**	**Total**	**Vs FY23RE**	**Vs FY23BE**
National Highways Authority of India	570.6	651.5	0.0	1222.1	1340.2	0.0	0.0	1340.2	1416.1	8.0	0.0	1424.0	1622.1	0.0	0.0	1622.1	14%	21%
Ministry of Defence	1447.9	28.6	0.0	1476.4	1604.2	28.4	0.0	1632.6	1579.8	28.4	0.0	1608.2	1713.8	31.0	0.0	1744.8	8%	7%
Ministry of Petroleum and Natural Gas	3.5	1066.9	18.2	1088.5	6.0	1113.5	4.6	1119.5	0.4	837.7	19.8	838.1	355.1	1064.0	22.0	1419.1	69%	27%
Ministry of Rural Development	0.0	0.0	1380.8	1380.8	0.0	0.0	1070.2	1070.2	0.0	0.0	1525.1	1525.1	0.0	0.0	1305.2	1305.3	14%	22%
Ministry of Housing and Urban Affairs	259.5	99.7	247.7	606.9	273.4	178.7	374.1	826.3	236.8	194.3	310.6	741.7	260.0	169.6	418.3	847.9	14%	3%
Ministry of Power	28.3	481.4	181.7	691.3	0.1	514.7	162.6	677.4	0.2	528.8	120.5	649.6	0.2	608.1	194.7	802.9	24%	19%
Ministry of New and Renewable Energy	25.8	158.8	40.9	225.5	0.1	285.7	67.1	352.9	0.1	275.5	69.3	344.9	0.1	378.3	97.5	475.9	38%	35%
Pradhan Mantri Gram Sadak Yojana	139.9	0.0	0.0	139.9	190.0	0.0	0.0	190.0	190.0	0.0	0.0	190.0	190.0	0.0	0.0	190.0	0%	0%
Ministry of Water Resources	1.8	0.0	110.6	112.4	4.2	0.2	106.7	111.0	3.0	0.0	69.1	72.1	3.6	0.0	120.8	124.5	73%	12%
Ministry of Shipping	6.1	31.7	3.4	41.2	5.7	44.8	4.1	54.5	6.7	31.1	4.2	42.0	10.7	36.3	3.8	50.8	21%	7%
Ministry of Civil Aviation	45.6	0.0	12.3	57.9	0.8	45.7	6.7	53.2	0.9	41.9	13.6	56.4	0.9	34.5	10.5	45.8	19%	14%
Total GBS - infra	4264.2	0.0	0.0	0.0	5333.0	0.0	0.0	0.0	5671.9	0.0	0.0	0.0	7520.3	0.0	0.0	0.0	0%	0%
Total IEBR - infra	3252.3	0.0	0.0	0.0	3296.6	0.0	0.0	0.0	2905.1	0.0	0.0	0.0	2849.6	0.0	0.0	0.0	0%	0%
Total Outlay - infra	0.0	0.0	2064.9	9581.4	0.0	0.0	1879.5	10509.1	0.0	0.0	2209.4	10786.5	0.0	0.0	2260.4	12630.3	17%	20%

Impact

- Aggregate capex - including capital outlay, grants for capital creation, and internal and extra budgetary resources (IEBR) - of Rs 18.6 lakh crore next fiscal is up 28% over fiscal 2023RE. The share of gross budgetary support and grants allocated for capital creation has been increased to 74% from 69% of overall capital outlay - this indicates the government' reliance on direct budgetary support, thereby improving fiscal transparency
- The 11 core infra ministries account for ~65% of overall capex. In the infrastructure basket, railways (25% growth), water (73%), renewables (38%), and petroleum and natural gas (69%) have received a stronger impetus. Roads and railways account for ~44% of the overall infra capex

Note: *The 11 core infra ministries are Road Transport and Highways, Housing and Urban Affairs, Civil Aviation, Power, Railways, Shipping, Rural Development, Water Resources, New and Renewable Energy, Defence, and Petroleum and Natural Gas

Roads and highways

- Capex for roads and highways next fiscal has been increased a sharp 25% over fiscal 2023RE. Similar to the previous fiscal, the entire Rs 2.59 lakh crore is via gross budgetary support as the IEBR limit has been completely eliminated in order to reduce dependence on the National Highways Authority of India's (NHAI's) borrowings. On the other hand, the asset monetisation target has been slashed by half to Rs 10,000 crore (RE) from Rs 20,000 crore (BE), in line with the limited success in awarding toll-operate-transfer (TOT) bundles. This assumes greater significance because roads account for close to 30% of the National Monetisation Pipeline (MP) targets, and the slower-than-expected progress of monetisation in the sector indicates a delay in achievement of MP targets and continued dependency on budgetary support for the sector
- Budgetary allocation of Rs 1.62 lakh crore to the NHAI next fiscal is up 15% over fiscal 2023RE. However, the contribution of cess towards NHAI funding for fiscal 2024BE is around 1% of fiscal 2023RE as the reduction in value-added tax (VAT) on crude oil and diesel adversely impacted receipts in the Central Road and Infrastructure Fund (CRIF). Fiscal 2024BE CRIF receipts are as much as 31% lower than fiscal 2023RE. Coupled with the elimination of IEBR, this implies that a significantly large portion of NHAI funding would be met through gross budgetary support. Nonetheless, the sources of NHAI funding remain a key monitorable
- The budget introduced provisions for making unit redemption of infrastructure investment trusts (InviTs) taxable at the hands of the unitholders - it was non-taxable earlier. The move is aimed at widening the tax base. While this would increase the tax outgo for investors, attractive risk-reward dynamics are expected to keep investor interest buoyant in InviTs in the roads sector .

Railways

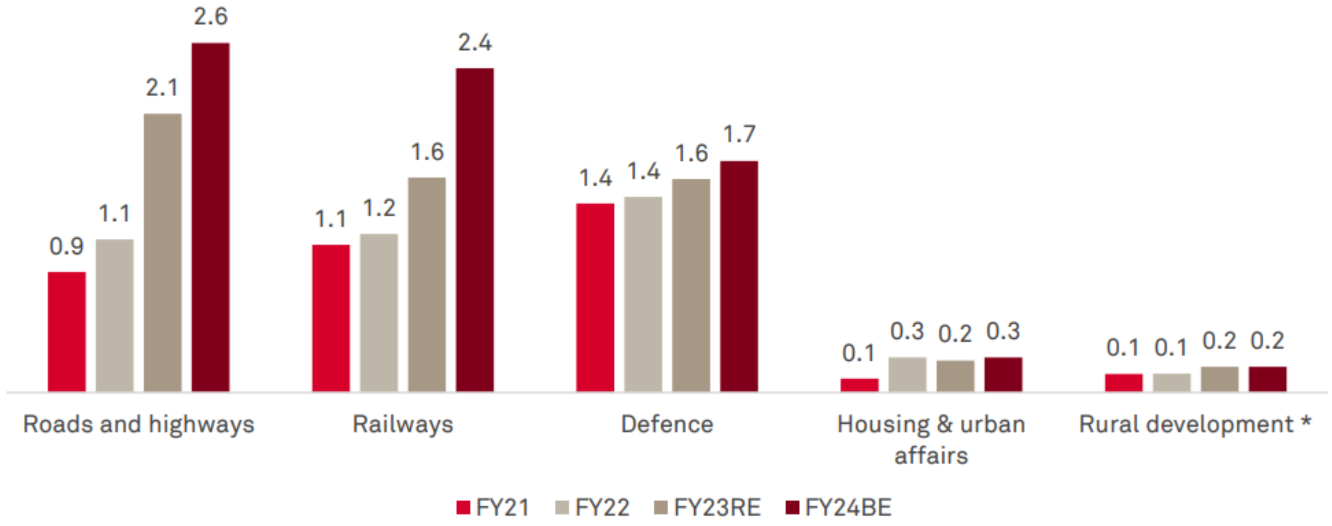
- Railways cape for next fiscal has been increased 15% over fiscal 2023RE. The share of gross budgetary support in railways cape has been increased from 62% to 82%, while that of IEBR has been reduced to 18% from 38% - this implies a shift in the government's reliance towards gross budgetary support, thereby reducing its reliance on external budgetary sources.
- The rise in allocation to railways will drive completion of dedicated freight corridors and national high-speed corridors, as well as infrastructure modernisation. Allocation of -Rs 0.37 lakh crore, up nearly 2.5 times over fiscal 2023RE, in rolling stock accounts for - 13% of overall budgetary expenditure for railways

Housing

- Outlay for Pradhan Mantri Awas Yojana (PMAY), both urban and rural, to rise a modest 3% to Rs 0.79 lakh crore against fiscal 2023RE
- Deduction from capital gains on investment in residential property under Sections 54 and 54F to be capped at Rs 10 crore for better targeting of tax concessions and exemptions

Income distributed through redemption of units by business trusts such as REITs and InvITs to be taxed in the hands of unit holders.

Infrastructure Sector wise funds allocation (Rs. Trillion)



*Note: *Rural Development includes cape of Department of Rural Development and expenditure under PMGSY*

Source: Budget documents, CEIC, CRISIL

As seen in previous years, the highest budgetary allocation under cape is directed towards major infrastructure-related sectors such as roads (Rs 2.6 lakh crore, 25.4% growth over fiscal 2023RE) and railways (Rs 2.4 lakh crore, growing 50.8%).

Capital outlay of Ministry of Road, Transport and Highways

Capital outlay (In Rs. billion)	FY16	FY17	FY18	FY19	FY20	FY21	FY22RE	FY23BE	FY23RE	FY24BE	Growth FY24BE Vs FY23RE
Ministry of Road, Transport and Highways	275.33	411.93	507.52	676.46	683.74	892	1213	1877	2071	2586	25%

Source: CRISIL Research

Allocation for the PMGSY for the next fiscal is Rs.190 billion, up 0% over fiscal 2023BE. But, over the past two years, achievement ratio under the scheme has been a low 70-75%. Therefore, actual expenditure against the allocation remains a monitorable.

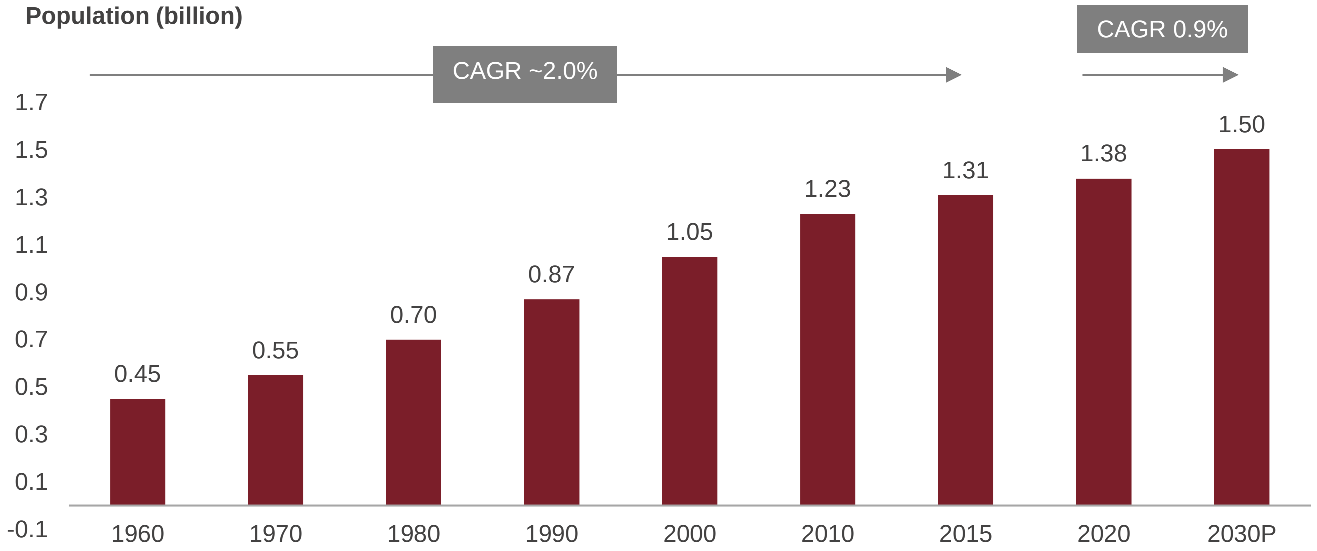
1.11 Review of population growth and urbanisation

India’s population is projected to touch 1.5 billion by 2030

India’s population clocked a CAGR of ~1.6% from 2001 to 2011 to reach ~1.2 billion, and comprised nearly 246 million households, as per Census 2011.

According to the World Urbanization Prospects: The 2018 Revision by the United Nations, India and China – the top two countries in terms of population – accounted for nearly 37% of the world’s population in 2015. India’s population is expected to increase at 0.9% CAGR from 2020 to 1.5 billion by 2030, making it the world's most populous country, surpassing China (with 1.4 billion people by 2030).

India's population growth



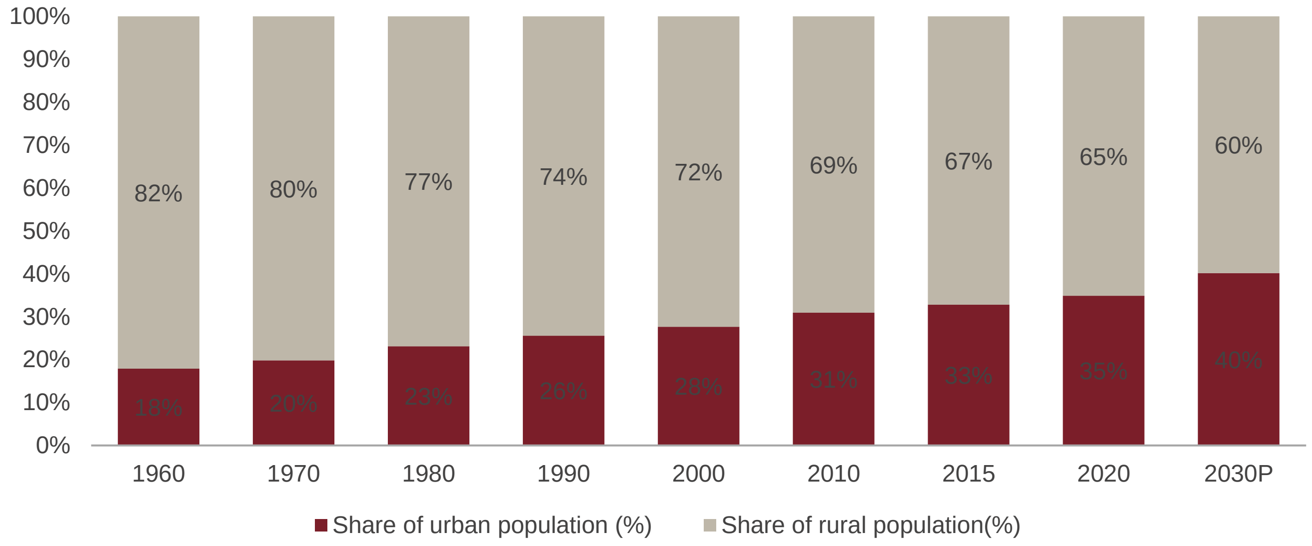
P: Projected

Source: United Nations, Department of Economic and Social Affairs, Population Division (2019); Probabilistic Population Projections Rev. 1 based on the World Population Prospects 2019 Rev. 1; CRISIL Research

Urbanisation likely to reach 40% by 2030

The share of urban population in India's total population has been rising over the years and stood at ~31% in 2010. People from rural areas move to cities for better job opportunities, education and quality of life. The entire family or only a few individuals (generally an earning member or students) may migrate, while the rest of the family continues to live in the native, rural house. This trend is expected to continue, with a United Nations report projecting that nearly 40% of the country's population will live in urban areas by 2030.

India's urban versus rural population



P: Projected

Source: World Urbanization Prospects: The 2018 Revision, United Nations; CRISIL Research

1.12 Review of per-capita income growth

India's per capita income rose at a healthy pace between fiscals 2012 and 2020

India's per capita income, a broad indicator of living standards, rose from Rs.63,462 in fiscal 2012 to Rs.94,270 in fiscal 2020, at 5.1% CAGR. This growth was led by better job opportunities, propped up by overall GDP growth. Moreover, population growth remained stable at ~1% CAGR. However per capita income declined in fiscal 2021 owing to economic impact of Covid-19, per capita income declined by 9.7% on-year in fiscal 2021. The per capita income saw rise in fiscal 2022 growing at 7.5% on-year, but in absolute terms it is yet to recover to pre-pandemic levels.

Per capita net national income at constant prices

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21RE	FY22PE	FY23FAE
Per-capita net national income (Rs)	63,462	65,538	68,572	72,805	77,659	83,003	87,586	92,133	94,270	85,110	91,481	96,522
On-year growth (%)		3.3	4.6	6.2	6.7	6.9	5.5	5.2	2.3	-9.7	7.5	5.5

RE: Revised estimates; PE: Provisional estimates; AE: Advanced Estimates

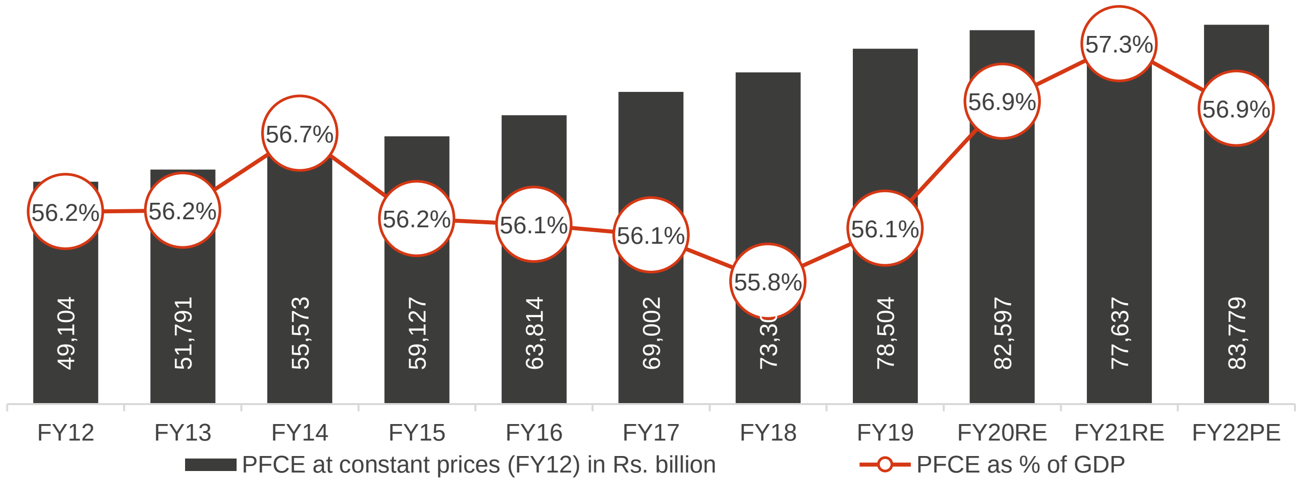
Source: Provisional Estimates of National Income for 2021-2022 (May 2022), Press note on FAE 2022-23, CRISIL Research

1.13 Review of private final consumption growth

Private final consumption expenditure to maintain dominant share in GDP

Private final consumption expenditure (PFCE) at constant prices clocked 5.5% CAGR between fiscals 2012 and 2022, maintaining its dominant share in the GDP pie, at ~57% or Rs.83,779 billion as of FY22. Factors contributing to the growth included good monsoons, wage revisions due to the implementation of the Pay Commission's recommendations, benign interest rates, and low inflation. PFCE, had declined in fiscal 2021 to Rs.77,637 billion from Rs.82,597 billion in FY20 on account of the pandemic, when consumption demand was impacted on account of strict lockdowns, employment loss, limited discretionary spending, and disruption in demand-supply dynamics. PFCE increased by 7.9% to Rs. 83,779 billion in fiscal 2022, but as % of GDP remained at 56.9% as personal expenditure had negative impact of COVID-19 pandemic and Government spending expenditure saw an increase for boosting the economy from COVID-19 slump.

PFCE at constant prices



Note: RE - revised estimates

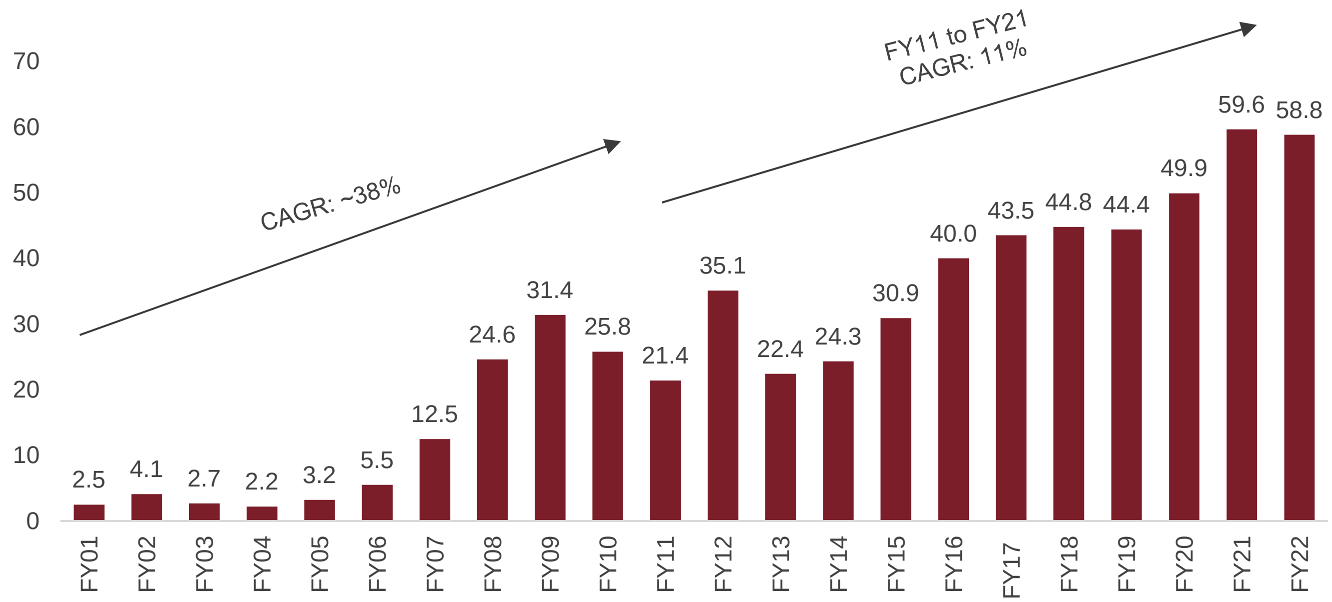
Source: MoSPI, CRISIL Research

1.14 Past trends in FDI inflows

Under the new foreign investment policy, the government of India constituted the Foreign Investment Promotion Board (FIPB), whose main function was to invite and facilitate foreign investment. The FIPB ceased to exist as per the decision taken by the Finance Ministry in 2017. The government has now empowered individual departments to clear FDI proposals in consultation with the Department of Industrial Policy and Promotion (DIPP) with set timelines. From a baseline of less than $1 billion in 1990, India has become one of the most important FDI destinations in the world.

FDI inflows in India have grown rapidly at a ~17% CAGR to $49.9 billion in fiscal 2020 from $2.5 billion in fiscal 2001. The pace of growth was faster from fiscal 2001 to fiscal 2009 (a ~38% CAGR), but the global slowdown affected investments in fiscals 2010 and 2011. During the fiscal 2021 India recorded highest ever FDI inflows of $59.6 billion, up ~20% on-year.

FDI equity inflows to India ($ billion)



Source: DIPP, CRISIL Research

According to the quarterly factsheet on FDI prepared by the Department of Industrial Policy and Promotion (DIPP) up to the fourth quarter of fiscal 2022, Mauritius was the leader in cumulative FDI inflows over April 2000 to March 2021 with a share of 27%, followed by Singapore (22%), U.S.A (9%), the Netherlands (7%), Japan (6%) and the UK (5%). During the same period (April 2000 to March 2021), services sector accounted for 16% of the cumulative FDI inflows, followed by computer software and hardware (14%), telecommunications (7%), trading (6%), automobile (6%) and construction development (5%). The FY22 FDI inflow stood at $ 58.8 billion, registering a slight decline over FY21 levels.

2 Review of roads infrastructure in India

2.1 Overview of infrastructure sector in India

Developing and modernising the infrastructure sector has been a priority area for the Government of India and has witnessed increasing public investments and budgetary support. Further, the government has also undertaken several reforms and initiatives in the infrastructure sector which has resulted in robust secular growth in most of the segments within the sector. Road sector registered a strong pace in construction by NHAI, growing to 4,673 kms (12.8 km per day) in fiscal 2022 from 3,071 (8.4 kms per day) in fiscal 2018. The investment in Roads and highways sector has risen from Rs.1.7 trillion in fiscal 2018 to ~Rs.2.9 trillion in fiscal 2022, registering a rise of more than ~1.7x during the period. Civil aviation has witnessed strong growth as well. India's passenger traffic grown at a CAGR of ~8% from around 165 million in fiscal 2017 to around 209 million in fiscal 2020 before declining to 107 million in fiscal 2022 majorly on led by restrictions on account of COVID-19 pandemic. In ports and shipping sector, the installed capacity of major ports in India increased to 2456 million tonnes in fiscal 2022 as compared to 2283 million tonnes in fiscal 2018.

National Infrastructure Pipeline ("NIP") has been launched by the government for fiscal 2020 to 2025, to boost infrastructure. As per the Final Report of NIP Task Force, National Infrastructure Pipeline ("NIP") is expected to have an investment of ₹111 trillion during the period fiscal 2020 to 2025. Investments in energy (24%), roads (18%), urban (17%), and railways (12%) will amount to over 70% of the projected capital expenditure during the said period. As per the economic survey, NIP will be funded from Central Government (39%), State Government (40%), and the private sector (21 per cent). As per the official India investment grid website accessed on 20th June 2022, 2,420 projects are currently under development covering over 34 sub sectors.

The Public Private Partnership Appraisal Committee (PPPAC) setup by the government has been responsible for the appraisal of PPP projects in the Central sector. The committee recommended 4 projects with total project cost of ₹50.41 billion in fiscal 2020. Out of these 4 projects, 2 are tourism sector projects overseen by Ministry of Home Affairs, 1 is a railways project pertaining to upgradation of railway stations and one is a port expansion project administered by the Ministry of Shipping. Further, the PPPAC recommended 6 projects with total project cost of ₹444 billion in fiscal 2021. Out of these 6 projects, 3 are railways projects, 1 is an MHA project (eco-tourism), 1 is a Ministry of shipping project while 1 is a telecom project pertaining to deployment of Bharat Net optical fibre. While in fiscal 2022, PPPAC approved 3 projects worth Rs.316 billion, of which 2 are railways projects and 1 is a Ministry of Home Affairs project.

In fiscal 2021, the government approved the continuation of the revamped Infrastructure Viability Gap Funding (VGF) scheme till fiscal 2025. The objective of the revamped VGF scheme is to attract PPP projects and aid private investment in the social infrastructure (Health, Education, Waste Water, Solid Waste Management, Water Supply etc.)

2.2 Road sector's contribution to Indian gross value added (GVA)

The road transport sector's share in Indian GDP stood at 2.6% in fiscal 2021. The share of road transport in India's GDP has hovered around ~3.3% from fiscals 2012 to 2020.

GVA share (%)	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Road transport (at constant prices)	3.2%	3.3%	3.3%	3.3%	3.3%	3.2%	3.3%	3.3%	3.3%	2.6%

Source: Ministry of Statistics and Programme Implementation (MoSPI), CRISIL Research

2.3 Road network in India

India has the second-largest road network in the world, spanning 6.372 million km as of fiscal 2022. Road transportation, the most frequently used mode of transportation in India, accounts for about ~86% of passenger traffic and close to ~64% of freight traffic as of fiscal 2022. Although Indian national highways span nearly 140,995 km, constituting just 2% of road length, they accounted for about 40% of total road traffic in fiscal 2022. The secondary system of roads comprises of state roads and major district roads, which accounted for the remaining 60% of traffic and 98% of road length.

Road network in India in fiscal 2022

Road network	Length ('000km)	Percentage of total - length	Percentage of total - traffic	Connectivity to
National highways	141.0	~2%	40%	Union capital, state capitals, major ports, foreign highways
State highways	171.0	~3%	60%	Major centres within the states, national highways
Other roads	6,059.8	~95%		Major and other district roads, rural roads - production centres, markets, highways, railway stations

Source: MoRTH Annual Report 2021-22, CRISIL Research

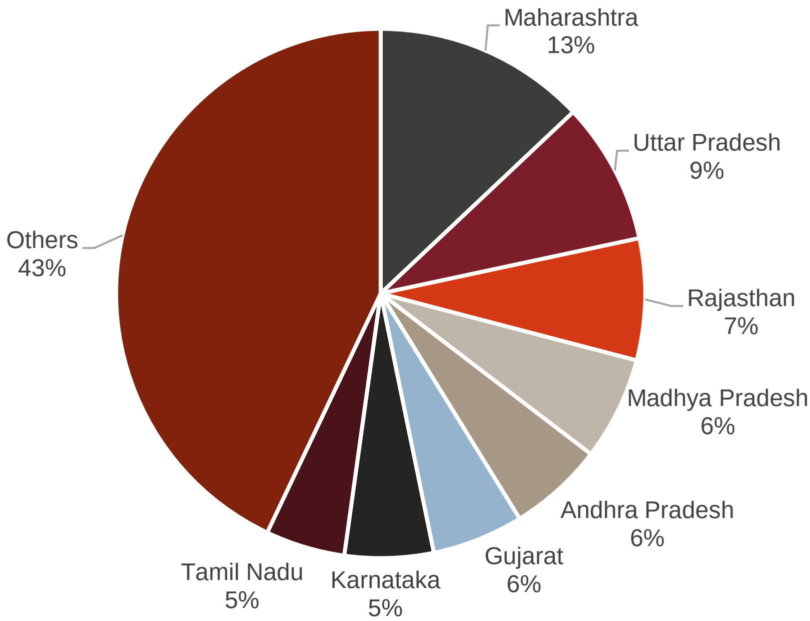
Total length and break-down of national, state, and rural roads

Break-down of road length across different regions (in KMs) as of Dec 2021

KM	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22
National highways	97,991	101,011	114,158	126,350	132,500	132,995	136,440	140,995
State highways	167,109	176,166	175,036	186,908	186,528	194,900	176,818	171,039
Other roads	5,207,044	5,326,116	5,608,477	5,902,539	6,067,269	6,165,660	5,902,539	6,059,813
Total	54,72,144	56,03,293	58,97,671	62,15,797	63,86,297	64,93,555	6,215,797	6,371,847

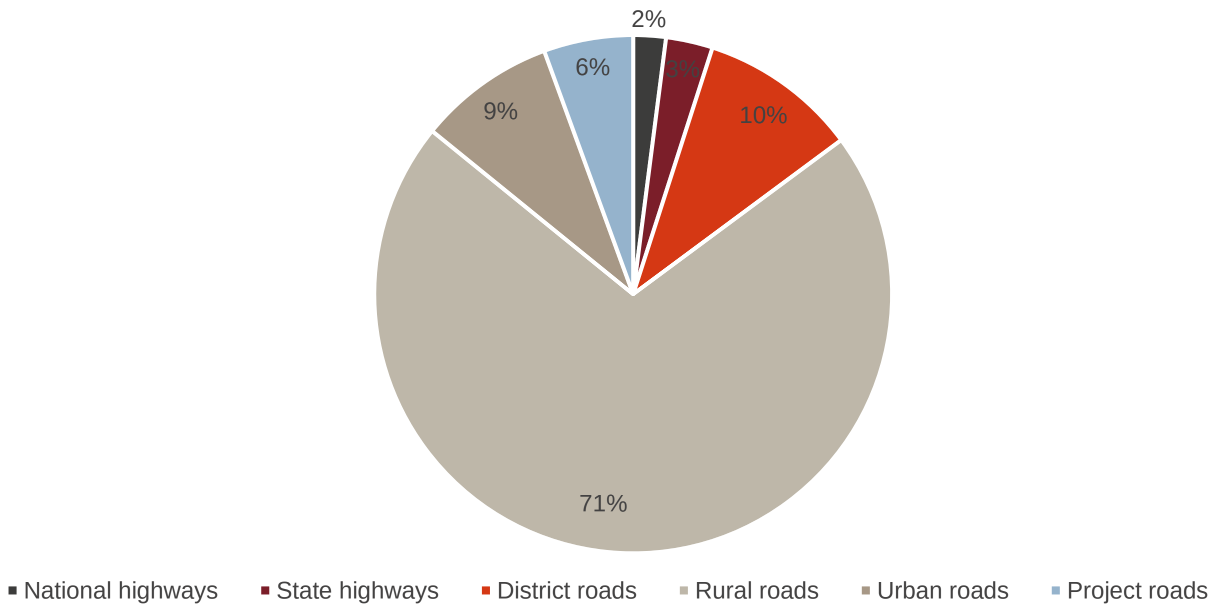
Source: MoRTH Annual Report 2021-22, CRISIL Research

State-wise length of national highways in India as 31st Dec 2021



Source: MoRTH Annual Report 2021-22, CRISIL Research

Road length break-up by segment as a percentage of total road length in India for FY19



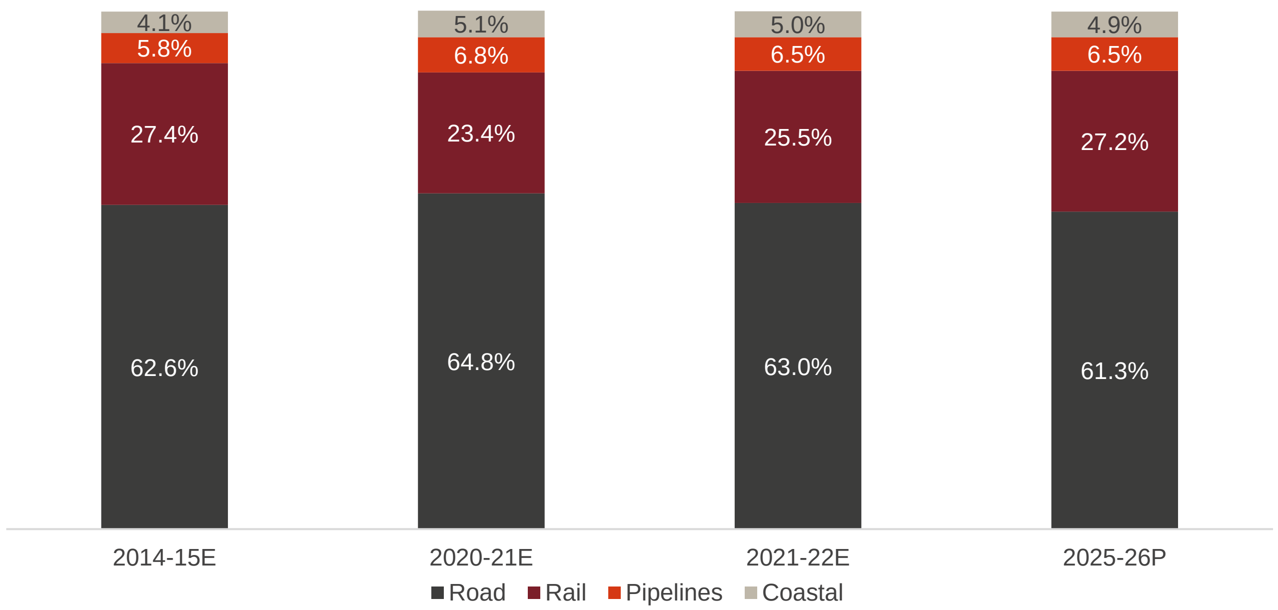
Source: MoRTH Annual Report 2021-22, CRISIL Research

2.4 Indian freight traffic scenario

Roads to continue to have a dominant share in the overall freight movement

Roads is estimated to have a share of ~63 % in overall freight movement as compared to the ~25.5% of rail mode of transport as of fiscal 2022 We expect growth in road freight traffic to increase at a compounded annual growth rate (CAGR) of 4-6% in BTKM terms between fiscals 2022 and 2026. In the same period, railways is expected to grow at a CAGR of 6-8%, growing faster than roads.

Share of roads in total freight movement (in terms of BTKM)



E: Estimated; P: Projected

Source: CRISIL Research

Overall, 6-8% of growth is expected by FY27

Mode	BTKM growth forecast			
	2021-22E	2022-23P	2023-24P	CAGR FY22-27P
Road	7-9%	6-8%	5-7%	5-7%
Rail	20-22%	9-11%	7-9%	7-9%
Coastal	9-11%	4-6%	4-6%	4-6%
Primary BTKM	**10-12%**	**7-9%**	**5-7%**	**6-8%**

E: Estimated; P: Projected

Source: CRISIL Research

Road freight movement is expected to grow at 6-8% in fiscal 2023 with revival in production across all segments and investment-focused government spending. However, road is expected to lose share to railways in the coming years due to commissioning of the dedicated rail freight corridors and higher road freight rates compared to other modes of transport. Road movement in BTKM terms is estimated to have grown by 7-9% in fiscal 2022, recovering to pre-covid levels as the economy rebounded on a low base of fiscal 2021 and consumption improved. Road freight is estimated to have declined by ~9% in billion-tonne-km (BTKM) terms in fiscal 2021 after decelerating by ~5% in fiscal 2020.

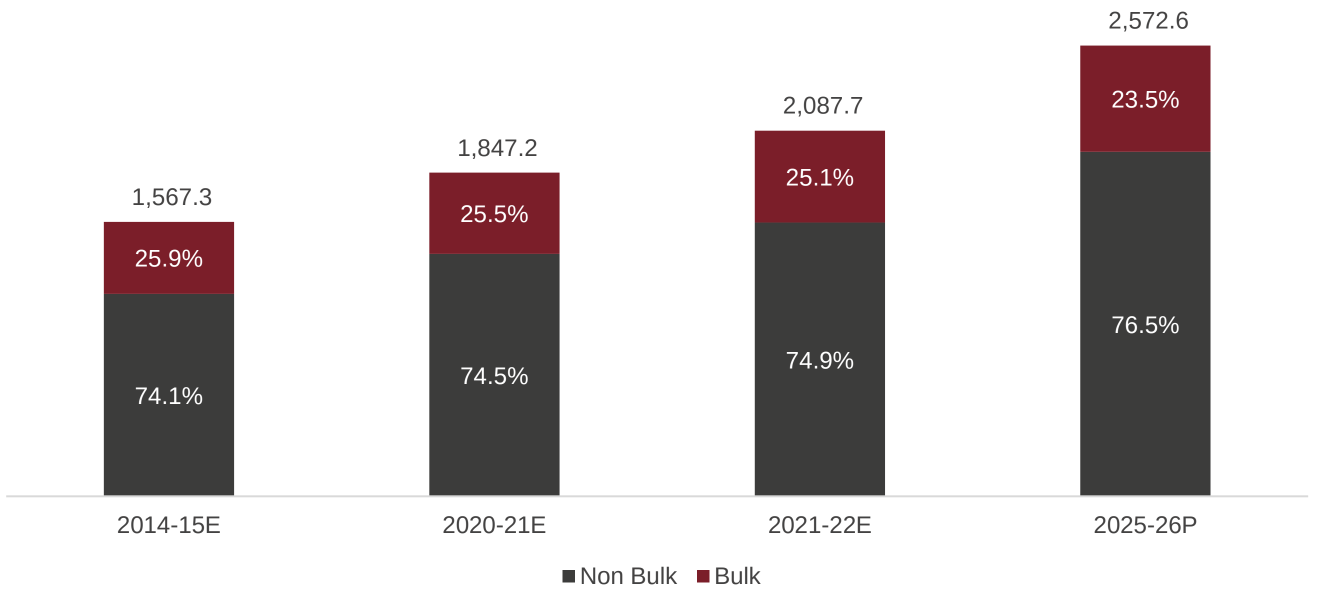
Roads remain the preferred mode for non-bulk transportation

Roads generally account for a significant share in non-bulk commodity transportation, as:

- Rail does not cater to piecemeal freight transportation. Entire rakes are provided for transportation and not just single wagons (although Indian Railways is looking into multi-point loading, it would still not attract small-sized cargo).
- Road transport has better service quality and is more reliable.
- Road transporters operate on a much smaller scale. Also, given the large number of road-transport operators, customers have better bargaining power. These transporters also add a personal touch to their service, which is important, as these commodities are typically expensive and fragile.
- Roads provide end-to-end connectivity and safer handling, which is an important factor while transporting low-volume, but high-value commodities.

Consequently, CRISIL Research expects the share of non-bulk commodities in the total road primary BTKM to increase to 76.5% by fiscal 2026 from 74.9% in fiscal 2022.

Roads predominantly transfer non-bulk freight (in terms of BTKM)



E: Estimated; P: Projected

Source: CRISIL Research

2.5 Key challenges faced by roads sector in India

Issues and challenges for road sector

Given the share of roads in the overall transport of goods and passenger traffic, it is critical to develop the roads sector. Although the government has been continuously making efforts to give a fillip to the sector, several issues and challenges hamper the pace of development.

NHAI trying to reduce risk associated with BOT projects with changes in MCA

In order to improve private participation via the BOT-toll mode, NHAI & the ministry also introduced changes to the BOT MCA aimed at key issues such as land acquisition, revenue assessment in case of traffic shortfall and stuck projects. Key amendments to the MCA are as below:

Land Acquisition:

- Minimum 90% Right of Way before issue of Appointed Date as against 80% earlier, providing more comfort to lenders & developers
- Balance 10% to be granted within 180 days of appointed date, else it would be removed from the scope of work. Automatic de-scoping clause would enable the developer to receive PCOD/COD on the completed stretch and start tolling
- Termination clause if appointed date is not received within one year of concession signing date

Traffic risk

- Revenue assessment of project to be done every 5 years instead of 10 years (or once in a life time of a project) earlier. In case of traffic either exceeding or seeing a shortfall from the Target traffic, the concession period would be adjusted according providing more comfort to lenders & developers

Stuck Projects

- In case the project has not achieved COD one year post its scheduled completion date, the project will be mutually foreclosed and the Authority shall pay the concessionaire an amount equal or lower of:
  - 90% of the debt due less insurance cover and
  - Value of work done
- This will prevent dragging of projects that would lead to time and cost overruns that happened in the earlier BOT era

Subdued private participation due to limited financial flexibility witnessing strong revival

Funding constraints and financial stress have thwarted the pace of development in the roads sector. The PPP model for road construction and development acted as a catalyst and provided an impetus to the sector's growth. In fiscal 2008-12, of the total 10,600 km of national highways completed under the National Highways Development Programme, 50% was funded through the BOT (build-operate-transfer)-toll model and 10% through the BOT-annuity model. The rise of PPP in the road sector has also had some adverse effects. Period of 2007 to 2011 was considered to be the golden age for PPP in the road sector, wherein the road developers bid aggressively to bag more BOT-toll projects.

In the subsequent years, developers faced viability issues with the projects. Issues pertaining to subdued financing, lower traffic, high gearing ratio and delayed execution have stressed their balance sheets. Bidders for PPP toll projects have become limited on account of the said issues. This led to rise in EPC contracts, but the quality of the roads constructed has been usually poor as the EPC contractor has no stake in the roads once these are constructed and handed over to the government. Further, maintenance of the roads has been poor after handover to the government since there is no proper accountability on quality in the case of state-owned roads. In case of PPP projects, the developer ensures that the roads are in a good condition for a longer period, i.e., the concession period. In the recent years, the private participation has revived with the introduction of HAM model in 2016 and the subsequent favourable changes to the concession agreements in 2020 for the HAM and BOT model.

Delays in project execution and resultant cost overruns

Delays in project execution have posed one of the major hurdles in the development of the road sector. Delays lead to significant cost overruns which lower returns for developers as well as adversely affect their debt-servicing ability. Reasons for the delays are numerous and include:

- Issues in land acquisition
- Environmental clearances
- Forest clearances
- Railway clearances
- Shifting of utilities, religious structures and encroachments

It is observed that the duration of delay and project cost escalation is on the higher side for projects involving interstate road construction owing to the involvement of different state agencies. In view of these issues, NHAI is working towards fast track resolution and hence it has adopted Conciliation Committees which targets to settle arbitration disputes within a period of 18-20 months (Arbitration Act - amendment in 2019). As per the April 2022 press release, 251 cases have been referred to CCIE and claims worth Rs, 387.4 billion have been settled for an amount of Rs. 130.6 billion.

Hurdles in bank funding for road projects

Banks are reluctant to fund road sector projects as they are approaching the sector exposure limits. Moreover, to ensure delays on account of land acquisition do not hinder the progress of a project, they demand 80-100% of the land to be available with the developer at the time the project is awarded. Given the dependence of infrastructure projects on banks for funding, the projects are not able to take off owing to such funding constraints.

Moreover, the elongated working capital cycle in the core construction businesses of many entities has also strained their liquidity position and further increased their dependence on borrowed funds. The operating margin of several road contractors also witnessed pressure because of rising commodity prices (in case of fixed-price contracts) and idling of capacities since execution could not begin on many new projects.

Reluctance to pay toll

The Indian population has not yet completely accepted the importance of toll for road construction and improvement of service delivery. Also, appeasement of people through provision of subsidies has been a major tool for reaping political gains in the country. There have been several instances of people, backed by various political groups, opposing toll plazas. Such instances have not only affected the sentiment of road developers, but have service delivery within the sector.

2.6 Overview of PPP framework and models in operations

PPP is an arrangement between a government/ statutory entity/ government-owned entity and a private sector entity for the provision of public assets and/or public services, through investments being made and/or management being undertaken by the private sector entity, for a specified period of time. There is a well-defined allocation of risk between the private sector and the public entity in this arrangement. The private entity receives performance-linked payments that conform with (or are benchmarked to) specified and pre-determined performance standards, measurable by the public entity or its representative.

For broad-based and sustainable growth, the government recognises the need to engage with the private sector through a PPP framework to achieve the following objectives:

- Harness private sector efficiencies in asset creation, maintenance and service delivery
- Focus on a life-cycle approach for project development, involving asset creation and maintenance over its life-cycle
- Create opportunities to bring in innovation and technological improvements
- Enable affordable and improved services to users in a responsible and sustainable manner.

While the preferred form of the PPP model is one in which ownership of the underlying asset remains with the private entity during the contract period, and the project is subsequently transferred back to the public entity upon contract termination, the final decision on the form of PPP is taken using the value-for-money analysis.

The types of construction contracts, based on price risk are:

Fixed price contracts: These contracts state the fixed fee or payment (per unit output or whole project) the contractor receives on completion of a contract. The contractor bears the risk of a rise in cost during the construction period. Certain pass-through of higher cost may be allowed in some projects.

Cost plus contracts: These are contracts in which the contractor is entitled to receive a fixed surplus over the project cost borne. The surplus given to the contractor can be in the form of a fixed percentage over cost or a pre-decided fee over cost. Therefore, any increase in cost of the project, during the construction phase, is passed onto the client.

Types of contracts, based on scope of execution are:

Item rate contract

These are fixed-price contracts, where the concerned authority provides the detailed design and the estimated quantity of materials. A project is divided into several sub-activities, for which the item-wise quantity of input material to be used is specified in a document called 'bill of quantities'. Bids are invited for the price of each construction activity, based on the items specified. As the aggregate of bid amounts form the total project cost, the lowest bidder wins the project. The bill of quantity document may state the quantity of items such as cement, girders, electric boards, wires, etc., to be used, against which the bids are invited.

Lump-sum turnkey contracts (LSTK)

LSTK contracts are fixed-price contracts in which the contractor fixes a lump-sum fee, based on the specific project requirements stated. The client states the project specifications with respect to designs, drawings, technical stipulations, quality of raw material, etc., based on which the contractor provides bids, stating a lump-sum fee for execution.

Design and build contracts

In these type of contract, the authority does a conceptual study of the project to be awarded and specifies the technical output details, based on which the specifications of the project will be decided. The developer has to undertake the detail designing and execution of these projects. Both EPC and BOT models were design and build models.

A few operational models:

I. BOT-toll/-annuity/-hybrid annuity model (HAM)
II. EPC
III. Toll collection
IV. Operate, maintain and transfer (OMT)
V. Toll, operate and transfer (TOT)

Electronic toll collection (ETC) is a strategic focus area for regulatory and administrative bodies involved in the process of toll collection. It presents several advantages such as limiting toll leakages, reducing waiting time for vehicles, and improving overall traffic flow at toll plazas. In the future, this may result in significant changes in toll collection operating procedures, followed in each of the PPP models.

Types of PPP models

Type of project	Description	Development risk	Financing risk	Traffic risk and accrual of toll fee collection	Net cash outflow for the government	Revenue for private party	Concession period	Award criteria
BOT-toll	Private party builds road, undertakes O&M and collects toll	Concessionaire	Concessionaire	Concessionaire	Yes (In form of grant/equity support)	Toll	Around 20-30 years for the NHAI** and other authorities	Highest revenue sharing bid / highest premium/ lowest equity support
BOT-annuity	Private party builds road, undertakes O&M* and collects annuity from the granting authority	Concessionaire	Concessionaire	Authority	Yes, net payment to be made is the difference between the toll collection and the annuity payable	Annuity payment	Around 15-20 years for NHAI and other authorities	Lowest annuity

Type of project	Description	Development risk	Financing risk	Traffic risk and accrual of toll fee collection	Net cash outflow for the government	Revenue for private party	Concession period	Award criteria
BOT-HAM	Private party builds road, undertakes O&M. Gets 40% of payment during construction and 60% as annuity along with interest	Concessionaire	Concessionaire	Authority	40% during construction and 60% as semi-annual annuity along with interest, net of toll collected	Construction grant plus annuity payments, interest on annuities, inflation indexed O&M payments	Around 15 years of operations plus additional construction period	Lowest project cost plus O&M cost
EPC	Private party builds road, based on the cost incurred by the government	Concessionaire	Authority	Authority	Yes	Contract amount	Not required	Lowest contract price requested
OMT	Private party collects toll and undertakes O&M and major maintenance	No development risk except minimal risk in case of paved shoulders	Concessionaire	Concessionaire	No	Toll	Up to nine years for NHAI projects	Highest % of toll revenue share or highest premium per year
Tolling	Private party pays the estimated toll upfront to the authority and collects the toll during concession period	No development	Concessionaire	Concessionaire	No	Toll	Around one year for NHAI projects	Highest revenue-sharing bid
TOT	Private party pays an upfront Bid Concession Fee (summation of NPV of free cash flows basis concessionaire estimates) to the authority, undertakes O&M plus certain capex and collects the toll during concession period	Authority (in case upgradation of lanes is taken up during the concession period)	Concessionaire	Concessionaire	No	Toll	15,20,30 years#	Highest upfront payment

Note: Development risk refers to construction risk in developing a road project

**Operations and maintenance*

*** National Highways Authority of India*

#As per TOT bundles of NHAI in 2021-22

Source: CRISIL Research, NHAI

Build-operate-transfer (BOT)

These contracts are typically PPP agreements wherein a government agency provides a private player the rights to build, operate and maintain a facility on public land for a fixed period, after which assets are transferred back to the public authority.

Funding for the project is arranged by the concessionaire, through a mix of equity and debt from banks and other financial institutions. Under the basic BOT mode, the concessionaire charges a fee to the users of the project/ facility, and may either transfer the entire user fee collected to the authority or may retain the entire amount as revenue. BOT contracts are, therefore, classified into the following types:

- **Annuity-based contract:** Under this contract, the concessionaire is responsible for the construction and maintenance of the project during the concession period. Variability in the user fee gives rise to revenue risk, which is borne by the authority. However, the concessionaire generates revenue through fixed annuity payments received from the authority, over the concession period. Since this annuity payment is a cost to the authority, the contract is awarded to the lowest bidder. Toll charged under these contracts are generally regulated by a policy or a public agency.
- **Toll-based:** Under this model too, the concessionaire is responsible for the construction and maintenance of the project, post which the project's ownership is transferred to the public authority. However, the toll collected is retained by the concessionaire and not transferred to the authority. Therefore, the concessionaire bears the revenue risk during the concession period. As in BOT annuity-based projects, toll charged under these contracts is generally regulated by a policy or a public agency.
- **HAM:** This is a mix of EPC and BOT (annuity) model. In this model, the total project cost is shared between the authority and the concessionaire in a 40:60 ratio. This model aims to lower the financial burden on the concessionaire during project-implementation phase. Compared to EPC projects, the shift to HAM will also ease cash flow pressure on the NHAI. It will lower project risk for developers because the NHAI will bear the risk of traffic volumes and the developer earns through fixed annuity payments. It will also help developers participate in more projects given that equity contribution per project will now be lower. This model will also encourage banks to lend to road projects because of the NHAI's involvement. HAM was approved by the Cabinet Committee on Economic Affairs on January 27, 2016.

Viability gap funding (VGF):

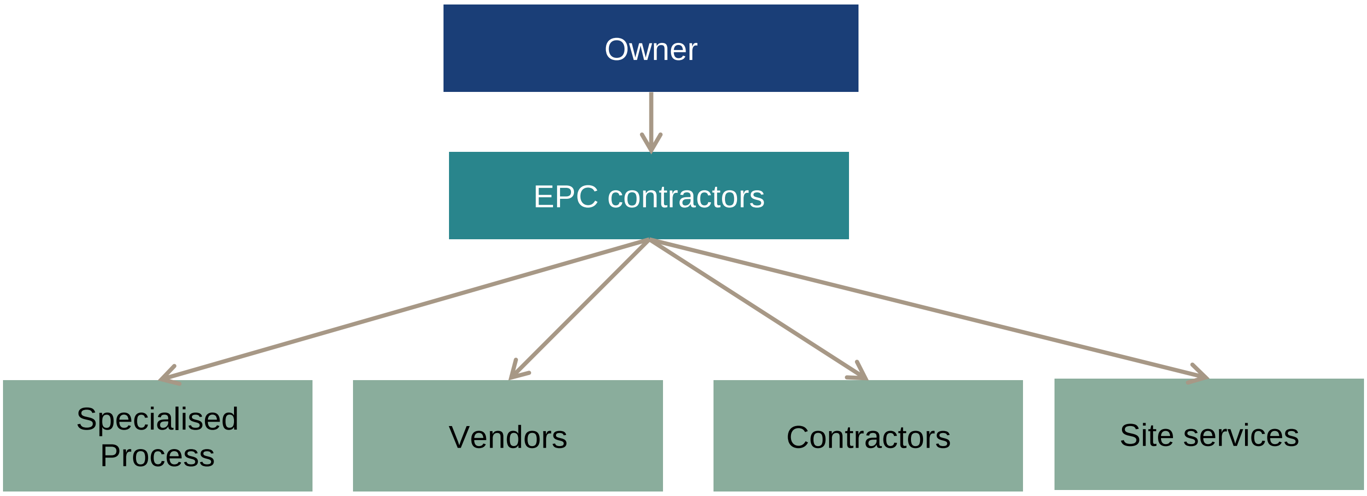
Viability Gap Funding (VGF) means a grant one-time or deferred, provided to support infrastructure projects that are economically justified but fall short of financial viability. The VGF scheme was launched in 2004 to support projects that comes under Public Private Partnerships. It was a method used by the government for awarding a few BOT projects. Projects generally expected to have traffic numbers insufficient to compensate the costs to the developer were provided an additional grant from the government for execution. The bidder who used to quote the lowest grant used to be awarded the project. The number of projects which got such a grant fell from a high of 23 projects in fiscal 2010 to only two projects in fiscal 2016 and no projects in fiscal 2017. Up to fiscal 2012, the rise in the bidding aggression led to a fall in the number of projects receiving VGF. From fiscal 2013-15 the awarding numbers of the NHAI fell drastically. Since fiscal 2016, a majority of the projects awarded by the central government have been on an EPC basis.

In the recently developed HAM model, which in a way is VGF, the government provides 40% of the total cost incurred by the developer during the construction period itself.

EPC

EPC contracts are fixed-price contracts, wherein the client provides conceptual information about the project. Technical parameters, based on the desired output, are specified in the contract. The contractor undertakes the responsibility of designing the project, either through an in-house design team or by appointing consultants. Unlike item rate and LSTK contracts, the contractor is allowed to innovate on the project design. Based on these designs, the contractor draws up cost estimates and accordingly bids for the project.

EPC contracts



Source: CRISIL Research

Toll collection

Toll collection, as a separate business model, evolved in 2009. Under this model, the authority invites bids from private players to collect toll on roads constructed under EPC and BOT-annuity. It is used for short-duration projects, typically those lasting 12 months. The private player with the highest bid is awarded the project. The user fee is pre-determined by the contracting authority. The right to collect user fees during the concession period lies with the private player. A contract of this category involves negligible to minimal road construction and maintenance.

Along with the NHAI, state authorities, municipal bodies and developers are also outsourcing toll collection to private players, to recognise revenue upfront. Toll management companies recover their investments and make profits from toll receipts. A typical bidding process adopted by the NHAI and state authorities has been outlined below.

Bidding process of NHAI

The NHAI introduced the operate-maintain-transfer (OMT) model for roads in India and, since then, has awarded the maximum number of OMT projects. The bidding process specified by the NHAI for awarding OMT projects is as follows:

NHAI awards OMT projects under a two-stage process - **qualification stage** and **bid stage**

1. Qualification stage:

- The NHAI solicits applicants' qualifications through the request for qualification (RFQ) document, for a prefixed number of OMT projects and road length, to ease the process at the bid stage
- The aim of the qualification stage is to evaluate the technical and financial capability of the applicants and decide their eligibility for various categories of OMT projects based on estimated project cost. The cost is specified by the NHAI for all OMT projects and includes all costs expected to be incurred during the project such as cost of major / minor maintenance works, construction of toll plazas, manpower cost, and incident management costs
- At the time of applying for qualification, the applicant is expected to indicate the estimated project cost for which he wishes to be qualified, which should be more than Rs.200 million
- At the end of the qualification stage, the NHAI gives out a list of qualified applicants along with specific estimated project costs which qualifies them for participation in the bidding stage. The qualification is typically valid for 12 months
- To be eligible for qualification and shortlisting, an applicant is expected to fulfil certain minimum technical and financial criteria:
  - **Technical capacity –** The applicant should have experience of five financial years, prior to the date of application, of paying or receiving payments for construction or paying for development or collection and appropriation of revenue of PPP projects in the highways* or core sectors* (with capital cost of more than Rs.50 million).
  - **Financial capacity –** In the financial year preceding immediately, the applicant is required to have minimum net worth of the following amounts:
    - For an estimated project cost of less than Rs.20 billion – 25% of the estimated project cost
    - For an estimated project cost between Rs.20 and Rs.30 billion – Rs.5 billion plus 50% of the amount by which the estimated project cost value exceeds Rs.20 billion
    - For an estimated project cost value of more than Rs.30 billion – Rs.10 billion plus 100% of the amount by which the estimated project cost value exceeds Rs.30 billion

In the case of a consortium, the combined technical and financial capacity of the members is evaluated.

- The concessionaire is required to engage an experienced O&M contractor or hire qualified and trained personnel to undertake operation and maintenance activities
- No separate applications are needed for qualification for OMT projects, which are part of the RFQ
- A pre-application conference is also convened by the NHAI, wherein applicants can seek clarifications as well as make suggestions for consideration by the authority

** As per the RFQ recently published by NHAI, the highways sector includes highways, expressways, bridges, tunnels and airfields; core sectors include power, telecom, ports, airports, railways, metro rail, industrial parks/estates, logistic parks, pipelines, irrigation, water supply, sewerage and real estate development.*

2. Bidding stage:

- Unlike the qualification stage, where qualification is evaluated for multiple OMT projects at one go through RFQ, bidding is carried out separately for each OMT project

- A request for proposal (RFP) is floated for every OMT project, post which the bidders (applicants qualified at the qualification stage) will be asked to submit financial bids for the projects after detailed analysis of the project's value
- Site detail report as well as concession agreements are also given out in this stage for perusal by qualified bidders

The project is awarded to the bidder who quotes the maximum first year concession fee to be paid to the NHAI or the lowest O&M support required (in case toll revenue from the project is lower than operational expenditures). Till date, all awarded projects have resulted in significant concession fees being paid by concessionaires to NHAI.

Technology used to help tolling industry:

1. Electronic toll collection (ETC)

It is a system that enables road users to pay highway tolls electronically without stopping at the plazas. The applicable toll amount is deducted from a prepaid account that is linked to the FASTag. The dedicated ETC lanes will be colour-coded for immediate recognition of the 'FASTag lanes'. This will help avoid fuel wastage, loss resulting from drivers who avoid payment and booth attendants taking their cut. It will also reduce time delays because of toll-payment, thus reducing the resistance for toll payments. In November 2019, MoRTH directed NHAI that 100% of toll lanes on national highways must have electronic toll collection (ETC). In December, the ministry relaxed the rule temporarily to have 75% of the lanes to have ETC. However, in February 2021, the ministry mandated compulsory use of FASTag and announced penalty of double payment in case the toll was paid in cash.

2. Weigh-in-motion (WIM)

It is a system integrated with toll operations to ensure users are liable for overloaded vehicles and to provide accurate data for charging users by their vehicle weight and type. WIM's main purpose is to prevent road damage as these get easily damaged when overload vehicles pass over it. The Indian Road Congress has limits – prescribed to each axle - to which each vehicle can be loaded. Hence, WIM is an axle-weight calculator installed on the road near toll plazas, which weighs the vehicles in motion and hastens the weighing process.

3. Static weigh bridge (SWB)

This, too, is a weighing system integrated with toll operations to ensure users are liable for overloaded vehicles and to provide accurate data for charging users by their vehicle weight and type. It differs from WIM as it is used to weigh static vehicles.

4. Automatic vehicle counter-cum-classifier system (AVCC)

It is a system which consists of sensor devices installed in a lane to record the physical characteristics of vehicles to determine the configuration of the vehicle for the purpose of charging the user appropriately.

Operate, maintain and transfer (OMT)

The OMT concept was introduced to assure road users of adequate quality and safety. An OMT project entails a contract for the right to collect toll and a contract for the operation and maintenance of the stretch.

Scope of work for OMT contracts under MCA includes the following:

- Operation and maintenance of the stretch/ section of highway

- Tolling of the section
- Construction of project facilities such as toll plazas, street lighting, medical aid posts, traffic aid posts and bus shelters
- Any major maintenance work (necessary in long-term contracts, not mandatory in short-term contracts)

This model provides consistent revenue (in terms of concession fee by private parties) to the NHAI as well as just-in-time (JIT) maintenance of the project. It includes performance-based maintenance, periodic maintenance, routine maintenance (minor repairs, cleaning of carriageways, shoulders, cross drainage structures, etc.), road property management, and incident management. In this type of arrangement, toll collection rights are given to the private operator which form the sole source of revenue.

Road development agencies are looking to generate revenue by awarding OMT contracts. Such revenue is planned to be used to upgrade other roads, and/or for maintenance of roads with low-volume traffic. OMT projects provide opportunity for firms from the private sector who are not willing to take up construction risk and cannot bring in large investments, but can take traffic risk.

From a developer's perspective, OMT projects offer an opportunity to synergise existing projects by taking up OMT contracts on the same corridor. From an investor's perspective, such projects are equivalent to design, build, finance, operate and transfer (DBFOT) toll-based concessions in terms of traffic risk, but without construction risk. Investments in such projects would carry benefits similar to investments in DBFOT (toll) projects during the operation period. However, OMT projects have financial liabilities, principally towards road development agencies, unlike capital-intensive DBFOT (toll) projects, where financial liabilities of the project are borne by the road development agencies as well as by lenders. On the other hand, the ticket size of OMT projects, which is about 1/10th the size of a DBFOT (toll) project, is smaller, so a pool of such projects is required to attract larger investors. The creation of such a pool of projects has other advantages such as the hedging of traffic risk. The medium concession period in OMT projects (5 to 10 years) is another factor that might attract private equity funds to such schemes.

The typical bidding process for an OMT project is as follows:

Bidding process of state authorities

Like the NHAI, many Indian states including the likes of Bihar, Madhya Pradesh, Andhra Pradesh and Telangana among others follow a two-stage bidding process (qualification stage followed by bidding stage). In the first stage, the authorities qualify applicants through an RFQ process, based on their technical and financial strength. However, unlike NHAI, which undertakes qualification of a number of OMT projects in one single process (through an RFQ stage), qualification for every single OMT project of the Madhya Pradesh Road Development Corporation (MPRDC) and the Bihar State Road Development Corporation (BSRDC) is typically carried out separately. In the second stage (the bidding stage), which mirrors the NHAI process, bids are invited from qualified applicants and the project is awarded to the bidder which quotes the maximum concession fee or minimum O&M support from the authority. The Karnataka Road Development Corporation, on the other hand, follows a single-stage bidding process wherein qualification and evaluation of financial bids are undertaken.

Toll, operate and transfer (TOT)

The TOT model is a new PPP model by the NHAI to spur private participation in the roads sector. In this model, globally, the concessionaire pays a one-time concession fee upfront (lump sum) in the operations and tolling phase. The TOT concessionaire will then be allowed to operate and toll the project stretch for the concession period. Any improvement in the road asset required may be taken up by the concessionaire as a part of the agreement in the TOT model. However, in the Indian context, these elements may be modified by the NHAI.

The key differences between the tolling and TOT models are:

- In the tolling model, the concession period is typically of a shorter duration (~one year for NHAI projects) whereas in the TOT model, the concession period is longer (15 to 30 years). The NHAI has reduced the concession period to 15 and 20 years in the recent tenders pertaining to TOT bundle 5 onwards.
- In the TOT model, the concessionaire has the responsibility to maintain the project stretch, which is not the case in the tolling model

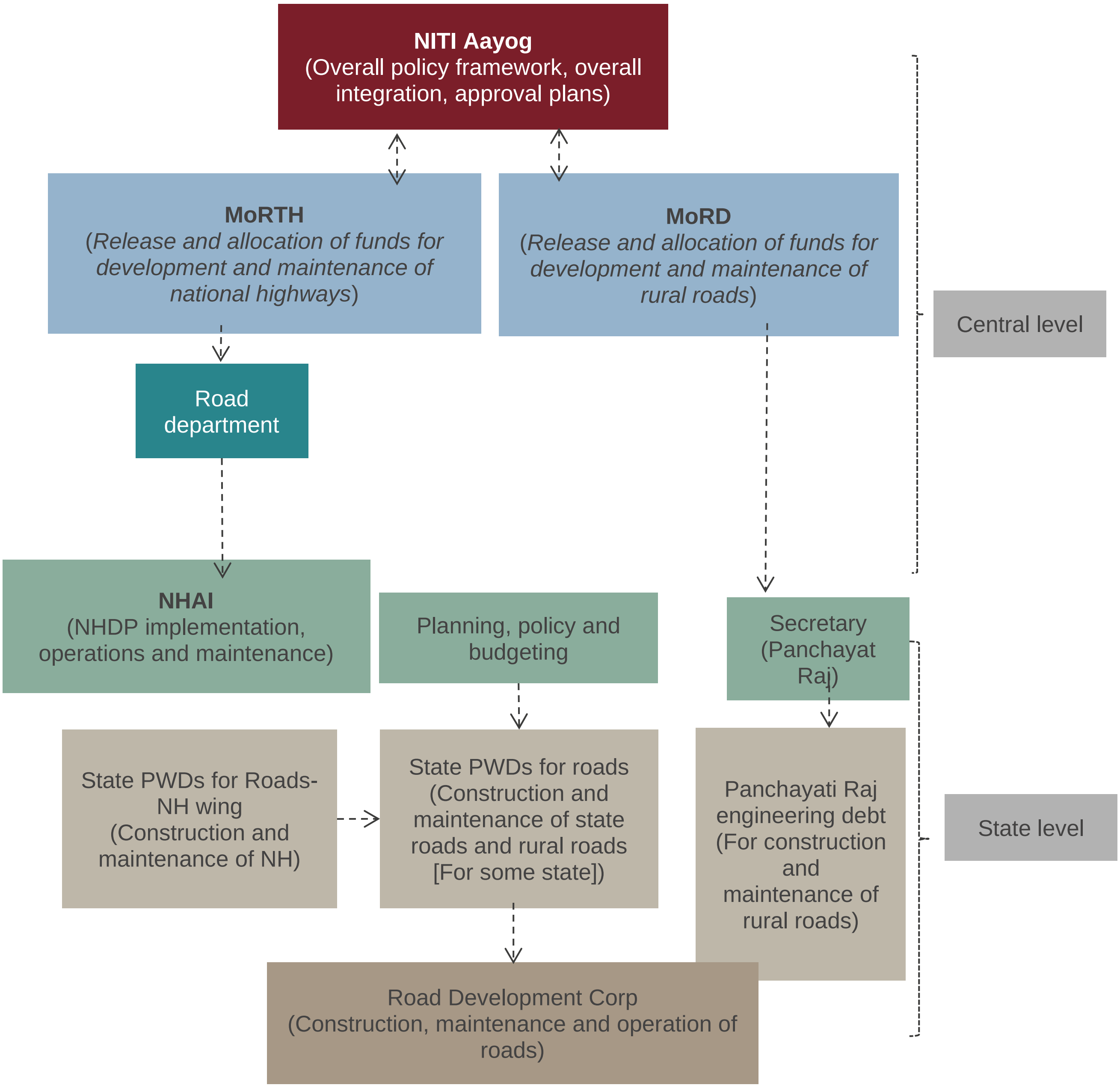
Over the past 4 years, NHAI has been able to successfully monetise ~14,000 kms and raise ~Rs.17,000 crore. However, with the implementation of Fastags, TOT becomes a more attractive as its able to eliminate cash handling and plug leakages in the system.

As of June 2022, the NHAI offered 10 bundles under the TOT framework. RFPs of TOT 6, 7 and 8 were released in August 2021 and bids were submitted in January 2022. However, TOT bundle 6 and 8 were cancelled in April 2022. RFPs for TOT 9 and 10 were released in March 2022 and the bid submission for the same has been completed and the bids are under evaluation. For FY23, NHAI plans to raise Rs.20,000 crore by monetisation of road assets of about 1,500 to 2,000 km.

2.7 Institutional framework for roads

In January 2015, the government replaced the Planning Commission with the National Institution for Transforming India (NITI) Aayog - a multi-tiered structure providing strategic and technical advice to the central and state governments. At the central government level, several line ministries handle transport planning, coordination and policy-setting, with NITI Aayog coordinating the entire effort.

Roads sector - Institutional arrangement at the central and state level



At the central level, NITI Aayog, in consultation with the Ministry of Road Transport and Highways (MoRTH) and the Ministry of Rural Development (MoRD) is responsible for overall policy, programme development and resource planning. MoRTH's duties relate to drawing up policies on road transport and development and maintenance of national highways.

National Highways Authority of India (NHAI) is the agency responsible for the implementation, operation and maintenance of national highways. NHAI was constituted and operationalised in February 1995; it was given the status of an autonomous corporate body under the control of the road transport ministry. However, the central government has powers to divest NHAI of its responsibilities.

At the state level, the overall policy, programme development and resource planning is done by the state planning cell in consultation with the Centre (NITI Aayog) and the state ministry of roads.

National Highways and Infrastructure Development Corporation (NHIDCL) was incorporated in July 2014. NHIDCL is a fully owned company of MoRTH. Its mandate is to design, build, operate and maintain national highways and roads in the north eastern region and other parts of the country that share international boundaries with neighbouring countries.

State public works departments (PWDs) and road development corporations are the agencies responsible at the state level for implementing, operating and maintaining the state highways, major district roads and rural roads in some states.

MoRD is responsible for policy development as well as monitoring and coordination of rural roads. Apart from state PWDs, the Panchayati Raj ministry also constructs and maintains rural roads. Allocation for Pradhan Mantri Gramsadak Yojana (PMGSY), which is focussed on rural roads, is provided by MoRD.

The ministries allocate and release funds for the development of roads to the respective implementing agencies.

2.8 Policy framework for the roads sector

Recent policy reforms provide a significant push to the sector

Key policy measures to boost private participation

In order to encourage and facilitate private sector investment and participation in the roads sector, the central government via its respective authorities has undertaken certain policy measures and provided certain fiscal incentives within the sector. The most significant policy reforms in recent times are discussed below.

Amendments to Engineering, Procurement and Construction (EPC) Model Concession Agreement (MCA)

The key changes are:

- Right of way: Deadline reduced from 240 days to 180 days for approval/ clearances for area under forest or sanctuary.
- If appointed date is not received within 90 days of signing the agreement, contract may be terminated. Authority will pay contractor damages = 1% of the contract price to contractor for each day of delay
- If project is not completed within 90 days of scheduled completion date, contractor would be ineligible to bid for future projects till it is completed
- Lower compensation and longer tenure for maintenance obligations of contractor. Defect liability period increased from 4 years to 10 years
- Higher interest on mobilisation advance paid to authority. Earlier recovery of mobilisation advance by the authority. Release of retention money against bank guarantees discontinued.

Impact

- Authority’s obligations increased to enable quicker land acquisition
- Developer’s working capital needs increased; also responsible for timely completion of project

Introduction of the hybrid annuity model (HAM) in 2016

The broad outline of the new model of operation is as follows:

- Of the total project cost, 40% is to be funded by the government and the remaining by the developer.
- The project cost will be linked to inflation
- Construction support is to be disbursed in five equal instalments of 8% each and the timing of each such payment shall be linked to percentage of project cost spent by the concessionaire
- Traffic risk will be borne by the government with developers receiving fixed annuities
- Annuities will be linked to bank rate plus 3%
- 80% of land to be provided prior to appointed date

Impact of the model

- With land being acquired and other clearances already in place before appointed date, construction risk is expected to be lower
- Lenders will be assured a steady stream of inflows as traffic risk will entirely be borne by the government
- Low risk and lower capital requirements are expected to entice private players as well as bankers towards these projects and gradually help increase private participation in the sector

Amendments to HAM - Model Concession Agreement (MCA), 2020

Key changes include:

- 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 notifications

Impact

The amendment to allow premium payment to begin only in the fourth year of completion will give developers and lenders a great level of comfort as interest payments are high in the first three years of operations. The deemed termination of projects will ensure that troubled projects are terminated without delay, thereby avoiding problems that previously existed with prolonged delay of projects. The amendments with regard to toll fees and maintenance of national highways will provide better protection to the users of highways.

Exit policy

On August 26 2015, the Cabinet Committee on Economic Affairs (CCEA) amended its earlier approval dated May 13, 2015, to allow 100% equity divestment after two years of completion for all BOT projects, irrespective of year of award. The previous policy allowed such divestments only for projects awarded prior to September 30, 2009. While the previous policy allowed the funds obtained through such divestments to be used only for completion of the concessionaire/promoter's other pending BOT road projects, the new policy allows the proceeds to be used to complete any highway projects, any power sector projects or also to retire their debt in any other infrastructure projects. The exit policy has been changed to 6 month for HAM projects and it remains 2 years for BOT as per the latest MCA changes in 2020.

Impact

This move will help closing of stake sale transactions announced in the last one year and help free up capital of developers, which can be used to repay debt or invest in new projects.

NHAI fund infusion

On May 13, 2015, the CCEA permitted NHAI to infuse funds in projects stuck in advanced stages of completion. Below are the broad contours of the policy announced:

- Government to look at one-time fund infusion installed projects, where 50% work has already been done
- NHAI to have the first charge on toll revenue

Impact

This policy will improve developers' cash flows through toll collections and also improve their debt servicing ability. However, as NHAI will have the first charge on receivables, lenders are hesitant to allow such a fund infusion. Hence, this policy may not have a significant impact in the near future.

Premium rescheduling

In March 2014, premium rescheduling was announced for projects with delays or lower-than-expected traffic. This helped players to manage cash flow mismatches, especially at a time when loan tenures were significantly lower than the project life, thus resulting in cash flow issues. It also helped specifically in the case of aggressively-bid projects where premium payments amounted to a very large portion of the total cost.

Substitution

In January 2014, the CCEA approved the proposal to facilitate substitution of concessioners in ongoing and completed national highway projects. As per the proposal, existing concessioners are permitted to divest their equity in totality in on-going or completed projects. However, subsequent to the substitution, the leading substituting entity will be required to maintain at least 51% equity holding in the project SPV. The decision to permit substitution will be taken by lenders in consent with NHAI.

De-linking of forest and environmental clearances

In March 2013, the Supreme Court approved the de-linking of forest and environmental clearances. This de-linking is valid only for road widening projects. In a notification in 2011, the Ministry of Environment and Forests had asked for forest clearances before seeking environmental approval. This led to a lot of road projects being stalled in the first stage itself. This judgment in 2013 allows companies to start road widening work with just environmental clearances without waiting for forest clearances. However, forest clearances will be necessary for stretches that fall in the forested areas.

Relaxation on green nod norms for road widening projects up to 100 km

In June 2013, the environment ministry cleared a proposal allowing expansion of highways up to 100 km without environmental clearances. Earlier, approval from the environment ministry was not required for road expansion up to 30 km. The relaxation shall also be applicable on existing highways, which require additional 40 metres of land for widening. This limit was earlier 20 metres.

Payment of 75% of arbitration claims

In August 2016, the ministry introduced a policy with regard to payment of 75% of arbitration claims to the concessionaires. According to it, if an arbitration claim has been awarded in favour of a private concessionaire in a lower court/tribunal and the government agency has appealed against it in a higher court/tribunal, then the private player can receive 75% of the claimed amount. It will have to provide to the authorities a bank guarantee of an equivalent amount to the government agency.

Impact

This policy will help private players facing financial problems and having substantial amount of claims pending with NHAI. This is expected to help kick-start stalled projects on account of fund infusion by developer and provide some relief to lenders because of loan repayment.

2.9 Key initiatives and overview on HAM

MoRTH released the standard concession agreement and request for proposal for the much-awaited HAM for private-public partnerships in road construction in June 2016. HAM is a mix of EPC and BOT-annuity models.

The broad contours of the model of operation are:

- 40% of total project cost to be funded by the government and the remaining by the developer
- The project cost will be linked to inflation
- Construction support is to be disbursed in five equal instalments of 8% each, and the timing of each such payment shall be linked to percentage of project cost spent by the concessionaire
- Traffic risk will be borne by the government with developers receiving fixed annuities
- Annuities will be linked to bank rate plus 3%
- 80% of land to be provided prior to appointed date

Key changes to HAM model concession agreement, 2020

	Old Clause	Revised Clause	Impact
Annuity Payments	Interest on annuity payment linked to **RBI determined Bank Rate + 3%**	Interest on annuity payment linked to **average of one year MCLR of top 5 Scheduled Commercial Banks + 1.25%**	Differential between cost of borrowing and interest on annuity reduced, thus preventing erosion of developers' returns due to RBI repo rate changes
Milestone Payments	**5** instalments, each equal to **8%** of the Bid Project Cost	**10** instalments, each equal to **4%** of the Bid Project Cost	Quicker payments helping developers' liquidity
Change in ownership	Original sponsor/ concessionaire shall hold at least 26% of equity during construction period and **2 years thereafter**	Original sponsor/ concessionaire shall hold at least 26% of equity during construction period and **6 months thereafter**	Quicker stake sell-off would ease up developers' balance sheets to bid for new projects
Financial Closure	No clarity on amount on FC	FC to be undertaken for an amount no lower than either: 1. **Total Project Cost (60% of BPC); or** 2. **10% less than (Estimated Project Cost minus 40% of Bid Project Cost)**	Would likely prevent termination of projects due to inadequate financing
Dispute resolution board	In case of a dispute, either party may call upon the Independent Engineer to mediate.	Failing mediation by the IE, either party may require such dispute to be referred to the **Dispute Resolution Board (DRB).**	Quicker dispute resolution mechanism to prevent stuck projects.
Others	Interest mobilization advance linked to bank rate. Termination payments based on previous milestone payments.	Interest on mobilization advance linked to MCLR. Termination payments based on new milestone payments.	NA

Impact

HAM will improve private participation, project awards

Elimination of traffic risk will provide stable cash flows to developers and ensure timely debt servicing for bankers.

HAM shifts the traffic risk to NHAI from the concessionaires, with developers being provided fixed annuities based on a predetermined schedule. Debt servicing, which is generally challenging during the initial years of the concession period for BOT-toll projects, is set to become easier with the receipt of fixed annuity payments.

Elimination of traffic risk is also a positive, given the bitter experience of road developers, where actual base traffic and traffic growth were significantly lower than estimated. Typically, a two-percentage point decline in traffic growth leads to ~150 bps decline in project IRRs.

Linking construction and maintenance costs to inflation and ensuring timely availability of land will mitigate cost overrun risks.

In the past, cost overruns severely impacted project returns. An analysis of projects completed between fiscals 2009 and 2014 shows a dramatic 45% cost overrun for a sample of 51 projects, aggregating to about 3,350 km. The aggregate cost overrun works out to ~Rs.100 billion for these projects.

Typically, a one-year reduction in the concession period owing to project completion delays can reduce project returns by 120-150 basis points (bps). And a 10% increase in cost can lower project returns by ~100 bps.

Hence, in order to address the issue of cost overruns, the government has linked construction and operation and maintenance costs to inflation. The issues related to delays in land acquisition, which have been the industry's Achilles' heel, have also been addressed with projects being awarded only after 80% of the land required is in possession of the awarding agency.

In the past, there used to be significant discrepancies between project costs quoted by NHAI and project loans taken by developers, due to the factoring in of cost overruns by developers into their own cost estimates. This posed a challenge to bankers in case of project termination as compensation was provided by NHAI only on its approved cost. With project cost being dynamically linked to inflation, the banker's risk has been reduced significantly.

- **Lower equity contribution requirement to increase private players' ability to bid for projects**

  With the government incurring 40% of the project cost, HAM calls for lower equity contribution from the developer's side (~15% compared with ~25% for BOT-toll projects). This is extremely beneficial, given the current weak financial position of road developers. Further, with NHAI's equity stake in the project, banker comfort in lending to the project increases significantly.

- **Developers' interest rate risk to reduce significantly**

  HAM provides for bi-annual interest rate payments to concessionaires on the reducing balance of project completion cost, at an interest rate payments linked to average one year MCLR of top 5 scheduled commercial banks +1.25%. This significantly lowers the risk for the developer, in terms of interest rate volatility. -

- **Low risk model to provide moderate returns**

  We expect low risk and lower capital requirements to attract private players. Hence, we believe developers would target returns of 11-13%, given the lower risk and assuming moderate competition. Lower competition is mainly on account of the stretched financials of many developers.

- **Boost private investments in national highways over next five years**

  Because of delays in land acquisition, and caution shown by lenders in the initial phases for lending to HAM projects, total awarding saw a decline in fiscal 2019 which stood at 2,222 km compared with 7,397 km in fiscal 2018. Of the total awarding in fiscal 2018 and 2019, ~2,884 and ~977 km respectively were awarded through HAM. The share of private investment has declined between fiscals 2018 and 2019 from 31% to 24% respectively. This is mainly on account of EPC projects. FY21 saw increased participation in awarding on account of changes to HAM bid eligibility and MCA changes. A total of 6,306 km was awarded in FY22 out of which ~3,468 km were under HAM, compared to total 4,818 km in FY21 (~2,602 km under HAM).

2.10 Innovative modes of financing

Development financial institution

Under the Union Budget 2021-22 a sum of Rs. 200 billion has been provisioned to capitalise Development Financial Institution (DFI) called “National Bank for Financing Infrastructure and Development (NaBFID)”. As of Mar’21, the Indian cabinet has approved a detailed proposal for setting up of DFI, which will act as a provider, enabler and catalyst for infrastructure financing. Along with Rs.200 billion, an initial grant of Rs.50 billion as tax-saving funds will be provided by the government, for setting up of the institution. The main aim behind setting up of DFI is to have a lending portfolio of at least Rs.3 trillion in next few years.

It is further stated that in order to attract long-term players such as pension funds and insurance funds, government to provide 10-year tax exemption to funds invested in DFI. This is done through carrying out some amendment in Indian Stamp Act. Adding to this, it is stated that DFI would be started with 100% government ownership which would we further reduced to 26% in coming years.

Asset Monetisation

The Union Finance Minister announced “National Monetization Pipeline” of potential brownfield infrastructure assets under the union budget 2021-22, stating that monetizing operating public infrastructure assets is a very important financing option for new infrastructure construction. Further it is informed that, an asset monetization dashboard will also be created for tracking the progress and to provide visibility to investors.

The National Highways Authority of India (NHAI) had plans to raise at least ₹100.0 Bn in 2021 calendar year by monetizing its assets. For the NHAI, successful sales of tolling rights on highway assets will be key towards funding its ambitious Bharatmala Pariyojana programme that has pushed the state-run agency deep into debt. The NHAI had plans to monetize about 1,200km of roads in 2021 calendar year.

The first asset monetisation model for calendar year 2021 is the InvIT (infrastructure investment trust), which NHAI launched in November 2021. NHAI had filed for application for InvIT with SEBI in June 2020. A total of 5 roads have been included whose total enterprise value is nearly Rs.80.11 Bn and a total length of 390 km. The money raised will be further invested again in to road sector with some part being used for operation and maintenance of roads. The roads are located in Gujarat, Karnataka, Rajasthan and Telangana

The first tranche was expected to be about 400-600 km and depending on how much interest it generates among investors, more assets could be added later. NHAI announced plans to raise Rs. 350 Bn from 19-20 projects under InvIT model over the next few years. Government expects the InvIT would attract investments having long-term perspective which includes pension funds and sovereign funds as these projects come with zero construction risk attached to them when compared to that of greenfield highway stretches.

The second tranche in 2021 is expected to be 3-4 bundles under the toll-operate-transfer (TOT) route of about 150km each. NHAI plans to focus on smaller bundles with lower concession period than in previous rounds to suit investors. Unlike the InvIT, responsibility of operations and maintenance in TOT model is in the hands of the contractor.

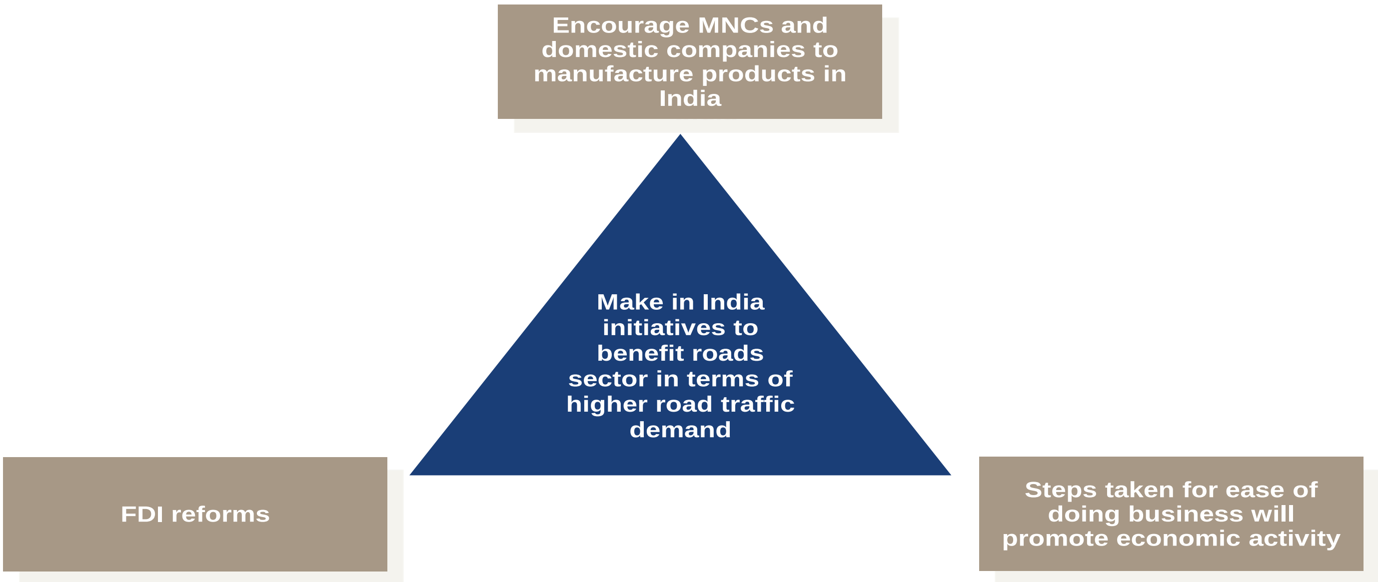
In the first round of TOT model, during 2018, joint venture of Macquarie and Ashoka Buildcon picked up the projects for nine national highway stretches with an upfront fee of Rs.96.8 billion. However, the second TOT bundle has been scrapped because of muted investor response. In the third bundle, Cube Highways has emerged as the winner by quoting price just above the base price prescribed the NHAI with a total bid of Rs.50.1 billion. Later on, similar to second bundle fourth TOT bundle was also cancelled due to muted investor response.

With respect TOT bundle 5, the government has split the complete bundle into two parts, 5A-1 and 5A-2. As of April 2021, Adani Enterprises and DP Jain & Co Infrastructure have emerged as highest bidders for bundles 5A-1 & 5A-2 and with respective bids of Rs.10.1 billion and Rs.12.5 billion. The highest bids for both bundle 5A-1 and 5A-2 were above NHAI's reserve price of Rs.8 billion and Rs.8.2 billion respectively.

2.11 Impact of 'Make in India' initiative on roads sector

Launched in September 2014, the 'Make in India' campaign covers 25 major sectors in the economy, including roads and highways. The initiatives under the campaign, such as encouraging multinational companies (MNCs) to manufacture products in India, and taking steps to improve the ease of doing business, as well as FDI reforms, are expected to benefit the roads sector in terms of increase in traffic movement.

Impact of 'Make in India' initiative on the roads sector



Source: CRISIL Research

Encourage MNCs and domestic companies to manufacture products in India

MNCs and domestic companies setting up manufacturing plants in India will facilitate increase in both passenger and freight traffic on roads. Following the announcement of the 'Make in India' campaign, the government received several proposals from multinational companies interested in manufacturing electronics in India. For instance, Xiaomi, a Chinese mobile phone maker, partnered with Foxconn in August 2015 to manufacture smartphones in a factory in Andhra Pradesh. A few weeks later, Lenovo, a Chinese computer and mobile phone maker, announced that it would commence manufacturing smartphones in India at its Chennai plant.

Steps taken to improve ease of doing business will promote economic activity

The measures undertaken for 'ease of doing business' will promote economic activity and thereby boost road traffic demand. Some of these key measures are:

- Applications for environment and forest clearances to be submitted online, through the Ministry of Environment and Forests and Climate Change portals
- Application forms for industrial licence (IL) and industrial entrepreneur memorandum (IEM) have been simplified
- Applications for IL and IEM to be submitted online
- Twenty services are integrated with the eBiz portal, which will function as a single window portal to obtain clearances from various governments and government agencies
- A unified portal for registration of units for Labour Identification Number (LIN), reporting of inspection, submission of returns and grievance redressal has been launched by the Ministry of Labour and Employment.

Overview of government initiatives

New tolling policy (2011)

Toll Act

The central government is authorised to levy a fee (toll) under Section 7 of the National Highways Act, 1956, for public-funded projects and under Section 8-A of the said Act, for private investment projects. The government can levy fees on all sections of national highways (irrespective of four or two lanes), tunnels, bypasses and bridges with specific cost criteria.

Fee structure

Toll charges are based on rates notified by the government. The fee for use of a section of the national highways of four or more lanes for the base year fiscal 2008 shall be the product of the length of such a section multiplied by the rates specified hereunder.

Toll rates for four-lane national highways

Vehicle category	Rs/ km
Car, jeep, van, light motor vehicle	0.65
Light commercial vehicle	1.05
Bus or truck	2.2
3-axle commercial vehicle	2.4
Heavy construction machinery, multi-axle vehicles (MAV) 4-6 axles	3.45
Oversized vehicles 7 or more	4.2

Source: PIB, CRISIL Research

The rates will be revised every year. Effective April 1, 2016, they will be an aggregate of following rules:

- Increase of 3% without compounding (on base rates of fiscal 2008)
- 40% of the increase in wholesale price index (WPI) over the previous year.

In the prior years, the toll rates were fully linked to WPI which led to numerous issues in events when WPI became negative. The current method of toll rates growth has been favourable to the private players.

Other features of the new tolling policy include the following:

- Uniform rates for public and private-funded projects
- Fee for a permanent bridge, bypass or tunnel costing Rs.0.10 billion or more will be determined separately, and that of NH length will be calculated separately.

In 2013, 2014, 2015 and 2019, some amendments were made to the National Highway Fee (determination of rates and collection) Rules 2008. These are:

- In the case of a section of a four-lane highway which has been taken up for upgradation to six-laning, increase in the rate of fee shall be limited to 75% of the fee specified, as revised as per applicable rules calculated on and from the date of commencement of the work relating to upgradation, till the date of completion of the project, according to the agreement entered into with the concessionaire without any annual revision.
- In certain cases, fee collection is started with the project at 75% completion but the fee is applicable only to the 75% operational length.
- No user fee shall be levied for the delayed period between the date of completion as per the agreement entered with the concessionaire and the date of actual completion of the project. For the purposes of this rule, any provisional completion of the project shall not be treated as completion of the project
- The tolls rates are calculated on the basis on road length excluding bypass (costing more than 100 million) and structures (more than 60m). The road length fee is payable at 100% of applicable rate for 4 lane and at 60% for 2 lane with paved shoulders
- Bypass (costing more than 100 million) length fee is also calculated and is payable at 150% of applicable rate for 4 lane and at 90% for 2 lane with paved shoulders
- Structure (costing more than 100 million) length fee is also calculated and is payable at 100% of applicable rate for 4 lane and at 60% for 2 lane with paved shoulders
- Commercial vehicles registered within the district are tolled at 50% discount and the local non-commercial vehicles are issued a monthly pass for a certain amount
- The rate of fee for use of an expressway shall be 1.25 times the rate specified in the applicable rule
- In the case of private investment projects, the rate of fee shall be as specified under the applicable rule or such lower rates as the concessionaire may determine by giving public notice to the users, specifying in all or any category of vehicles
- Following method is used for calculating the rate of fee for highway/expressway having standalone structure and structure forming part of linear highway/expressway,

Length of the structure* (L) X Factor "10" = Length in metres

- * structure of 60 metres of length or less
- On a linear highway/expressway, structures will be considered as a part of normal length of highway/expressway for calculation of fee
- In the amendments of December 2013, NHAI empowered the concessionaire to collect 10 times the applicable fee from overloaded vehicles. The December 2015 amendments further allowed the concessionaire to stop the vehicles plying on the section of national highway without payment of fee due. Any vehicle loaded in excess of its maximum permissible gross vehicle weight (GVW) is not permitted to use the National Highway or cross the toll plaza till the excess load is removed or a fee of 10 times the applicable amount is paid. Moreover, the concessionaire can detain the vehicle till all dues are cleared.

- The May 2018 amendment stated that if a vehicle user with a valid, functional FASTag or any such device with sufficient balance in the linked account crossing a fee plaza installed with Electronic Toll Collection infrastructure, is not able to pay user fee through FASTag or any such device owing to malfunctioning of Electronic Toll Collection infrastructure, the vehicle user shall be permitted to pass the fee plaza without payment of any user fee.

Financial incentives for road developers

- Under section 80 IA of the Income Tax Act, profits and gains derived by an undertaking are subject to 100% deduction for 10 consecutive assessment years out of 20 years, beginning from the year in which the undertaking begins to operate the business provided such profits and gains are derived from the business of: 1) developing, 2) operating and maintaining or 3) developing, operating and maintaining a road including, toll road, a bridge; a highway project including housing or other activities being an integral part of the highway project. The above mentioned condition shall not apply to any enterprise which starts the development or operation and maintenance of the infrastructure facility on or after 01.04.2017 as such enterprise shall be eligible for 100% deduction of capital expenditure under section 35AD.
- Deduction of up to 40% of the income from financing of the infrastructure projects is available, provided the amount is kept in a special reserve
- On certain identified high-quality construction plants and equipment, import duty has been completely exempted for public-funded needs
- Import of bitumen is now permitted under the Open General Licence
- External commercial borrowings are permitted up to 35% of the project cost

2.12 Overview of National Highways Development Project (NHDP)

NHDP encompasses building, upgradation, rehabilitation and broadening of existing national highways. The project is executed by NHAI, in coordination with the public works departments of various states. NHAI also collaborates with the Border Roads Organisation for the development of certain stretches. NHDP is being implemented in seven phases.

The projects are awarded to private players either on EPC (cash) or on build-operate-transfer (BOT) basis and now on the newly introduced hybrid annuity model (HAM). NHDP cash contracts are mainly financed through budgetary allocations from the Central Road Fund (CRF), negative grants/premium received, and toll revenue. Loans and grants are also received from the World Bank and Asian Development Bank.

Bharatmala Pariyojana

Bharatmala Pariyojana is an umbrella project of the central government since 2015 that aims to improve efficiency in the roads sector. It is expected to supersede the National Highways Development Project (NHDP) and envisages the construction of 65,000 km of highways under the following categories: national corridor (north-south, east-west, and golden quadrilateral), economic corridor, inter-corridor roads, and feeder roads. As per the ministry’s announcements in 2017, Bharatmala, along with the schemes currently being undertaken, were estimated to require a total outlay of Rs.6.9 trillion till FY22.

Phase-I of the scheme envisages development of about 24,800 km length of national highways/roads, plus residual 10,000 km of NHDP between fiscals 2018 and 2022. Awarding under Bharatmala has begun from fiscal 2018 and we believe it will stretch till fiscal 2025 for Phase 1 involving development of about 9,000 km of economic corridors;

about 6,000 km of inter-corridor and feeder roads; about 5,000 km of National Corridors Efficiency improvements, about 2,000 km length of Border and International connectivity roads; about 2,000 km of Coastal and port connectivity roads; and about 800 km of Expressways. As of August 2021, out of the total 34,800 km, around 20,800 km have been awarded.

Components of BMP Phase -I

Category	Description	Total length (Km)	Upgrade proposed in Phase I (Km)
National Corridor efficiency improvement	Lane expansion, de-congestion of existing National corridor	13,100	5,000
Economic Corridors development	Connecting economically important production & consumption centres	26,200	9,000
Inter-corridor and feeder routes development	Inter-connection between economic corridors, first mile and last mile connectivity	15,500	6,000
Border and international roads	Connectivity to border areas and boosting trades with neighbouring countries	5,300	2,000
Coastal and port connectivity roads	Connectivity to coastal areas to enable port-led economic development	4,100	2,000
Expressways	Greenfield expressways	1,900	800
Total		66,100	24,800

Source: NHAI, CRISIL Research

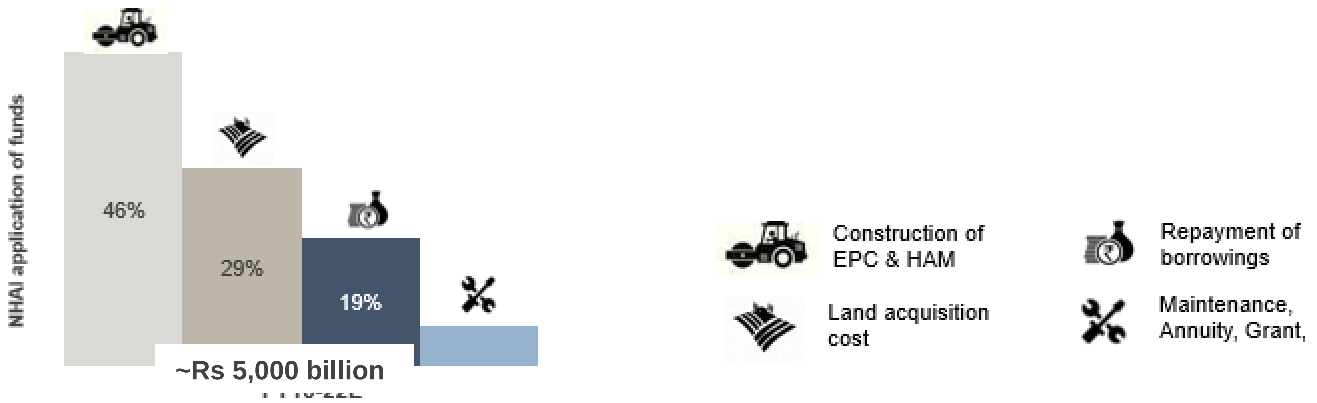
2.13 Review and outlook of NHAI funding

Asset monetisation critical to meet ambitious Bharatmala targets

CRISIL Research estimates Rs.17-19 trillion will be invested in national highways between fiscals 2023 and 2027, with public funds dominating the overall spending. With the National Highways Authority of India (NHAI) awarding more projects under the hybrid annuity model (HAM) and on cash-contract basis, it is now relying more on external borrowings and asset monetisation. While asset monetisation via TOT and now the InVIT route is challenging in itself, raising external funds is increasing the debt to equity of the authority and repayments now form a large outflow for NHAI. Timely asset monetisation is critical for NHAI to meet its ambitious Bharatmala targets. Due to higher awarding under EPC & HAM, NHAI's outflow toward milestone payments formed ~46% of total met through market borrowings

Out of the ~Rs.5,000 to 6,000 billion spent over the 5 years (FY18-FY22E), 46% were toward milestone payments for EPC and HAM (40% of HAM) projects. ~29% were toward land acquisition expenditures and 19% toward interest and repayment of borrowing.

NHAI application of funds: 46% of NHAI outflows towards construction

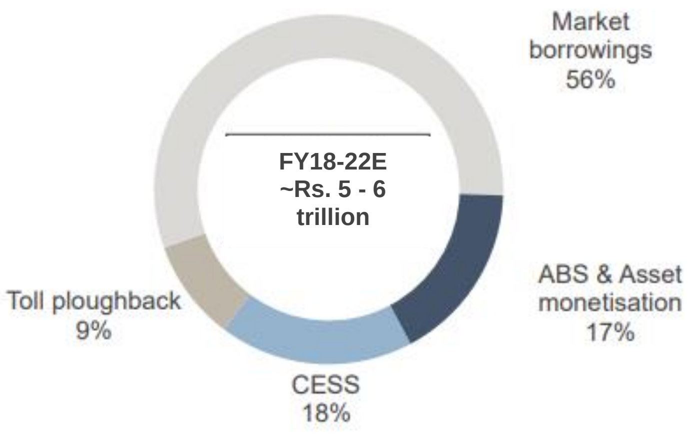


E: Estimated

Source: NHAI, CRISIL Research

Looking at the sources, while toll plough back and CESS (budgetary allocation) contributed 18% and 9% respectively to the sources, market borrowings is where the maximum amount (56%) of NHAI's funding came from. Additional Budgetary Support and Asset Monetisation were 17% of total. With NHAI's requirement expected to increase with ambitious construction targets, additional support via monetisation are critical for its future requirements.

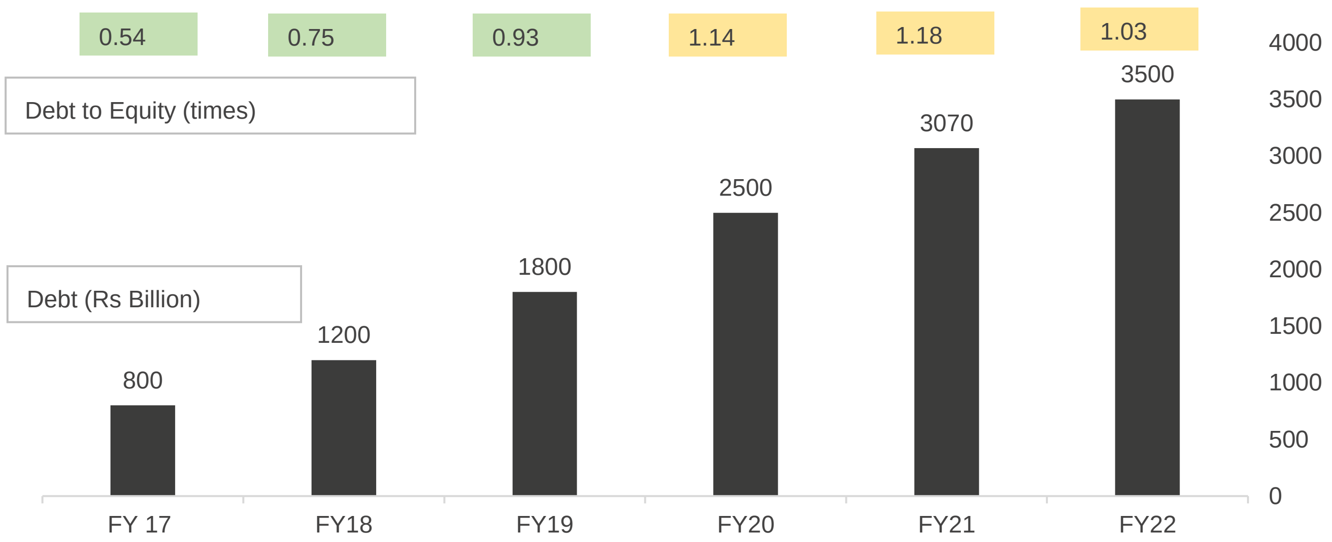
NHAI sources of funds: Market borrowings accounted 56%



Source: NHAI, CRISIL Research

With the high dependence on market borrowings to fund asset creation through EPC and HAM projects, NHAI's debt to equity has risen to ~1.2 times in FY22. This can be attributed to NHAI’s strategic importance to the Government of India (GoI) and road sector being a key area of reforms for removing infrastructure bottlenecks and a source of momentum to the economic growth. Hence, the sector is witnessing implementation of significant initiatives such as the Bharatmala project.

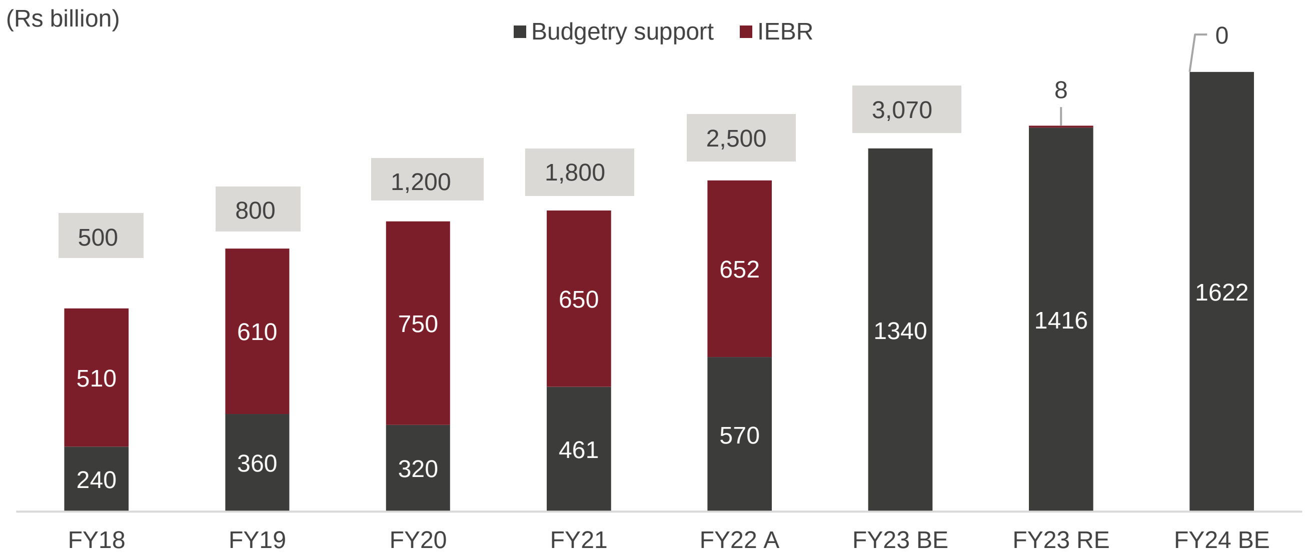
NHAI borrowings on the rise



Source: NHAI, CRISIL Research

To limits the rise in borrowings, NHAI's budgetary4 support in the form of CESS & toll plough back has been increased by 106% for fiscal 2023 (budgeted) and its IEBR has been kept at nil. IEBR proportion has reduced to less than 1% post FY22.

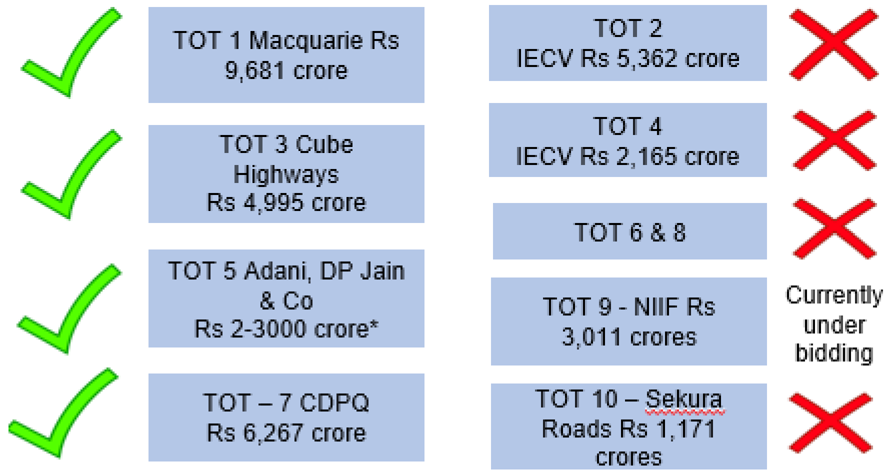
IEBR done away with in FY23 budget



Source: Union budget (Old and Budget February 2023), CRISIL Research

Other modes of funding such as TOT have seen only limited success. Over the past 4 years, NHAI has been able to successfully monetise ~14,000 kms and raise ~Rs 17,000 crore and another Rs 8,000 crore via InVITs. With the implementation of Fastags, TOT becomes more attractive as its able to eliminate cash handling and plug leakage in the system. .

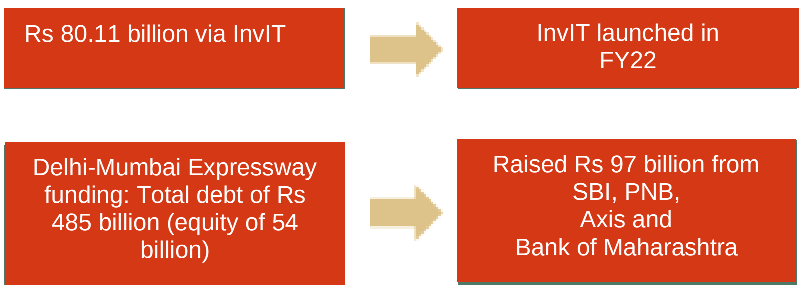
Success of TOT critical to meet ambitious Bharatmala targets



Source: NHAI, CRISIL Research

Due to delay, the awarding of TOT bundles have encountered impediments with certain TOT bundles like TOT-6 and TOT-8 getting cancelled due to low bids. Therefore, the convergence of the expectations of the government authorities and the private bidders remain a key monitorable as well as a major requirement for this mode of funding to become truly successful.

InvITs & SPV level financing



Source: NHAI, CRISIL Research

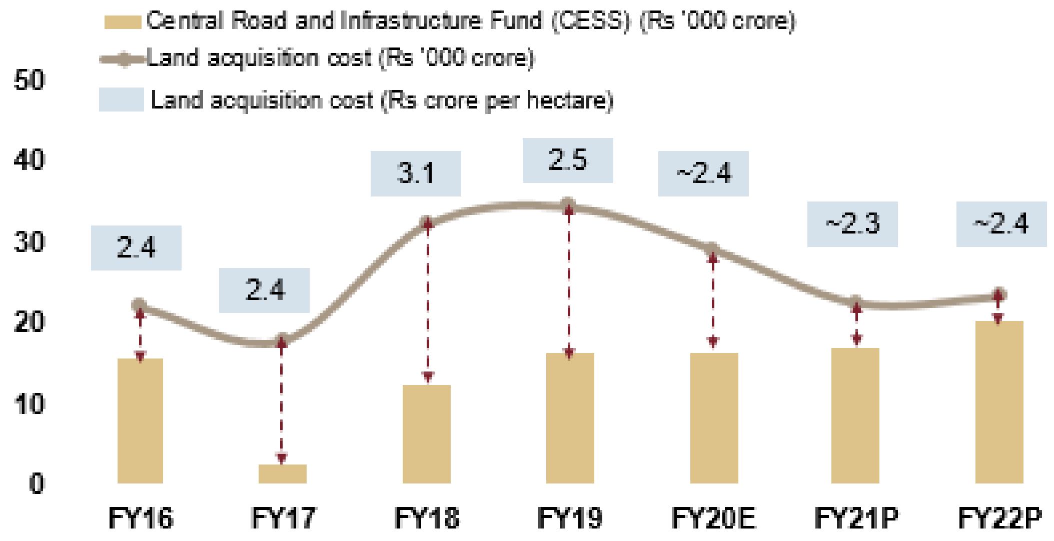
NHAI focuses on clearing land acquisition issues:

Historically, cess was allocated towards land acquisition expenditure incurred by the NHAI. This gap had widened with after the implementation the new act related to rehabilitation and resettlement. However, with the authority's focus on clearing these issues coupled with focus on new greenfield alignments, have reduced the burden on land acquisition.

In the Union Budget for fiscal 2019, road cess was replaced by road and infrastructure cess (CRIF). Previously, road cess used to be split for national highway construction, maintenance, railways, Pradhan Mantri Gram Sadak Yojana, etc., based on a fixed formula. So far, there has been no change in the split. However, going forward, the share of cess to the roads sector could reduce given the increase in the overall scope from roads to roads and infrastructure, increasing dependence on borrowings.

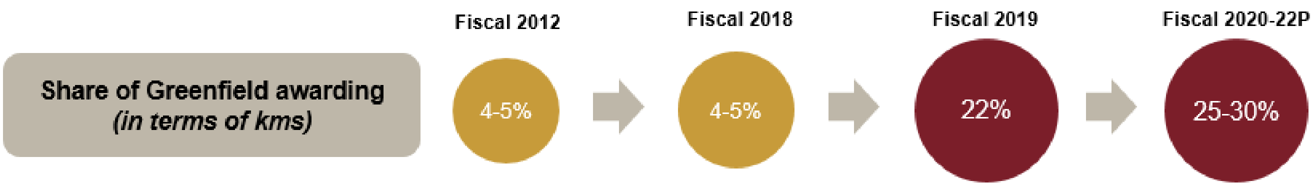
The compensation policy under the current land acquisition bill requires the NHAI to pay four times the market value of rural land and two times that of urban land. This, coupled with new laws related to rehabilitation and resettlement, has almost tripled land acquisition costs. In fiscal 2014, the average cost for acquiring land was Rs.9 million/hectare. It increased to about Rs.30-32 million/hectare in fiscal 2019 and has tapered to Rs.24-25 million/hectare in fiscal 2020.

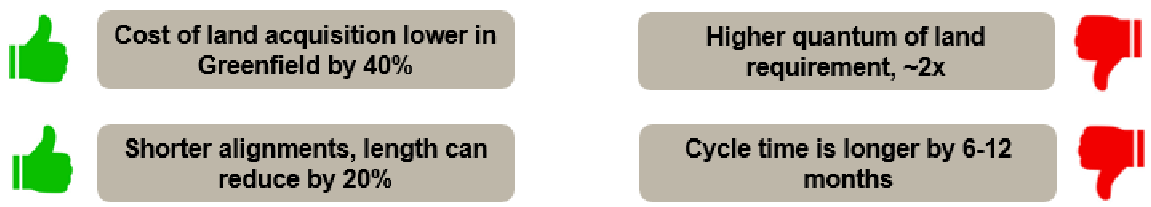
Cost for Land acquisition for the authority has come down in FY20



Source: NHAI, CRISIL Research

Greenfield projects offer support:





Source: NHAI, CRISIL Research

The share of greenfield road projects in awarding was 4-5% between fiscals 2012 and 2018. In fiscal 2019, with Bharatmala kicking off, the share rose to 22%. Between fiscals 2020 and 2022, CRISIL believes the share will be 25-30%. The increase in the share of greenfield projects lowers the cost of land acquisition by 40%, compared with brownfield projects. Also, these greenfield projects come with shorter alignments and 20% shorter length. That said, a key drawback of greenfield projects is the cycle time, which is longer by 6-12 months, compared with brownfield projects, because of higher design time.

Investments by private sector to grow 2x times over the next 5 years

CRISIL Research expects private construction investments in national highways to increase 2x to Rs.2.7 trillion over fiscals 2023 to 2027 compared with the previous five years. This is expected to be mainly through the hybrid annuity model (HAM) mode, as the build-operate-transfer (BOT) toll mode may have only a few takers.

A policy push in the form of changes in Model Concession Agreements (MCA) for HAM and BOT projects and reduction in bid eligibility criteria across all national highway projects would bode well for private participation. However, the share of HAM in total awarding is constrained by the cautious approach employed by banks in lending to HAM projects.

Amidst the COVID-19 pandemic, NHAI and the ministry have taken various steps under the "Atmanirbhar" package to ease issues faced by developers. Releasing monthly payments, instead of milestone-based payments; extension of timelines for completion of projects, etc. have sustained private participation in the sector.

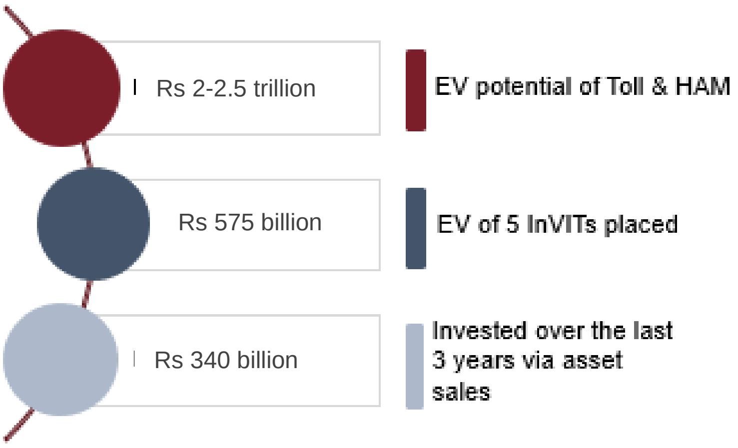
Asset monetisation, equity infusion key to support private investment in the long run

Currently, there are two broad drivers of asset sales in the roads sector - rationalisation of financial position to improve balance sheet strength and asset churning to be able to participate in the upcoming projects. The erstwhile major BOT players are selling off assets to reduce their debt burden and free up equity, which can be infused in under-execution projects.

The players present in HAM are currently selling off HAM assets to participate further in upcoming HAM projects. Some players intend to sell off under-construction projects to financial investors with projects being executed by the same player. Thus, they are able to convert HAM projects to EPC without facing the cut-throat competition they deal with currently in the EPC mode. This will help them retain margins.

About Rs.700-800 billion has already been invested through these models. CRISIL's analysis of BOT and HAM projects indicates a potential of ~Rs.2-2.5 trillion in terms of Enterprise Value.

Asset monetisation has a lot of potential to free up developers' balance sheets



Source: CRISIL Research

InvITs to deleverage balance sheets and enable capital recycling

Infrastructure investment trusts (InvITs) will help free up capital of players by divesting stake in operational assets and help recycle this capital to deleverage balance sheets for creating new assets.

The ratio for SPVs, in terms of infused shareholder debt to equity and the share of debt across various InvITs is as shown in the table below:

InvIT/SPV	Shareholder infused debt to shareholder equity ratio	Share (%) of debt in the capital infused by shareholders
IRB InvIT Fund		
• IRB Jaipur Deoli Tollway Limited	3.0	75%
• IRB Pathankot Amritsar Toll Road Limited	3.0	75%
• IRB Talegaon Amravati Tollway Limited	3.0	75%
• IRB Tumkur Chitradurga Tollway Limited	1.0	50%
Oriental InfraTrust*		
• Oriental Nagpur Betul Highway Limited	0.3	24%
• Etawah-Chakeri (Kanpur) Highway Pvt Ltd	18.5	95%
• Oriental Pathways (Indore) Pvt Ltd	1.0	49%
• Oriental Nagpur Bypass Construction Pvt Ltd	0.4	26%
• GMR OSE Hungund Hospet Highways Pvt Ltd	10.6	91%
India Infrastructure Trust		
• Pipeline Infrastructure Limited	148.5	99%
India Grid Trust	3.0	75%
Tower Infrastructure Trust		
• Summit Digitel Infrastructure Private Limited	116.3	99%

*Note: *The values are based on FY20 annual report while for the rest of the InvITs, values are based on FY21 annual report*
Source: Annual Reports, CRISIL Research

Developments in InvITs:

Name	Sponsor	Structure	AUM (Rs crore)*	Ratings	Month-Year of launch	Assets
IRB InvIT Fund	IRB	Public listed InvIT	6,500	IND AAA/ Stable	May-17	6 operating toll road assets
Indinfravit Trust	L&T IDPL	Private listed InvIT	10,500	CRISIL AAA/ Stable	Mar-18	11 BOT-toll from L&T IDPL and Sadbhav, 2 operational BOT annuity (1 pending)
Oriental Infratrust	Oriental group	Private listed InvIT	11,000	CRISIL AA+/Provisional CRISIL AAA/Stable	Jun-19	5 operational assets
IRB Infrastructure Trust (IRB InVIT II)	IRB	Private unlisted InvIT	22,500	ACUITE AAA	Feb-20	9 BOT-toll projects
Total			**50,500**			

Source: CRISIL Research

InvIT	Year	Progress
IRB InvIT Fund	Feb-20	In August 2019, the company had announced signing of definitive agreements with GIC affiliates, for an investment up to Rs.44 billion, amounting to 49% stake in a portfolio of nine of its assets through Private InvIT structure (IRB Infrastructure Trust), while IRB to retain controlling stake of 51% in the Trust. The portfolio spans across 5,900 lane kms in Haryana, Uttar Pradesh, Rajasthan and Gujarat, Maharashtra and Karnataka. In October 2020, IRB Infrastructure Trust - Private InvIT successfully closed 2nd Tranche of fund raising by way of Rights Issue of Units amounting to Rs.5.1 billion. The company being the sponsor and 51% stakeholder, contributed Rs.2.6 billion and the GIG Affiliates holding 49% have contributed balance Rs.2.5 billion This is part of the total commitment of Rs.44 billion by GIC affiliates towards 49% stake in Pvt InvIT housing 9 BOT assets, out of which IRB Infrastructure Trust received Rs.37.53 billion from GIC affiliates in February, 2020.
	May-17	A fresh issue of units of about Rs.43 billion and an offer for sale of about Rs.30 billion. The proceeds from the offer from sale went to the sponsor that is IRB whereas the proceeds of the fresh issue (about Rs.42 billion) were invested in the six road assets under the InvIT in the form of debt. The repayment of existing debt on the SPV to the lenders was completed.
IndInfravit Trust (L&T IDPL)	Jun-19	Sadbhav Engineering transferred nine operational BOT assets (7 toll + 2 annity) to this InvIT. The Enterprise Vale of these assets is Rs.66 billion which will help deconsolidate Rs.40 billion of Sadbhav's debt. This, in turn, will help unlock funds to bid for newer HAM projects.
	Apr-18	L&T privately placed the InvIT units. It has transferred 5 operational assets under this InvIT.
Oriental InfraTrust	Jun-19	5 operational road assets of approximately 621 kms placed under the InvIT.

Source: CRISIL Research

InvITs, as envisaged in Union Budget 2014-15, will own and manage income-generating infrastructure projects. As per regulations, these trusts will be allowed to make only 20% of their investments in under-construction projects. The rest will have to be invested in completed, revenue-generating infrastructure projects. Such trusts are expected to help unlock tied-up capital of developers and attract foreign capital.

In Union Budget 2015-16, the finance minister exempted the capital gains tax on sponsors at the time of listing of units of InvITs. In Union Budget 2016-17, distributions made from special purpose vehicles to InvITs were exempt from the dividend distribution tax.

Additionally, the Union budget (FY21) announcement of scraping dividend distribution tax (DDT) and shifting the taxation of such pay-outs to investors would prove to be a negative for InvITs. Our interactions with market participants, however, indicate that given this could hurt asset monetisation plans esp. in the roads sector, the government may create a carve-out for InvITs to allow them to continue with the earlier regime.

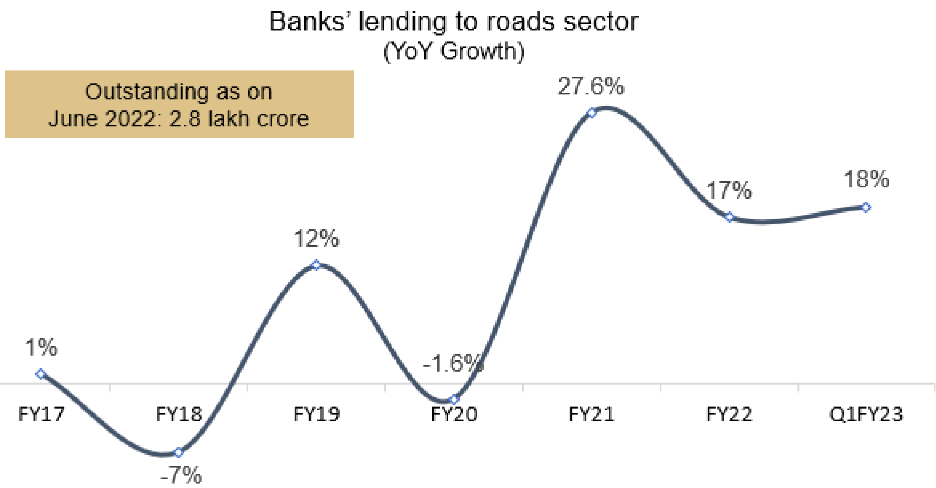
Improvement in bank credit growth led by higher HAM execution

After increasing 12% in fiscal 2019, bank credit to the roads sector is witnessed some pressure in fiscal 2020. However, with higher awards and construction in fiscal 2021, bank lending to the roads sector witnessed a 27% jump. The traction has continued this fiscal as well, where FY22 has seen 17% growth yoy.

For projects that were awarded in fiscal 2012, banks approved costs that were much higher than those approved by the National Highways Authority of India (NHAI). As a result of the problems faced in these projects, bankers are now very cautious while evaluating projects, and are estimating project costs much closer to the NHAI estimates. They demand that at least 80% land acquisition should be completed and all clearances must be obtained at the beginning.

While this has increased the time taken by players to achieve financial closure, it will ensure participation only by serious players. However, viable projects and those that have not gone through aggressive bidding should achieve financial closure quite smoothly.

Banks' credit to the roads sector has been highest in 5 years



Source: RBI, CRISIL Research

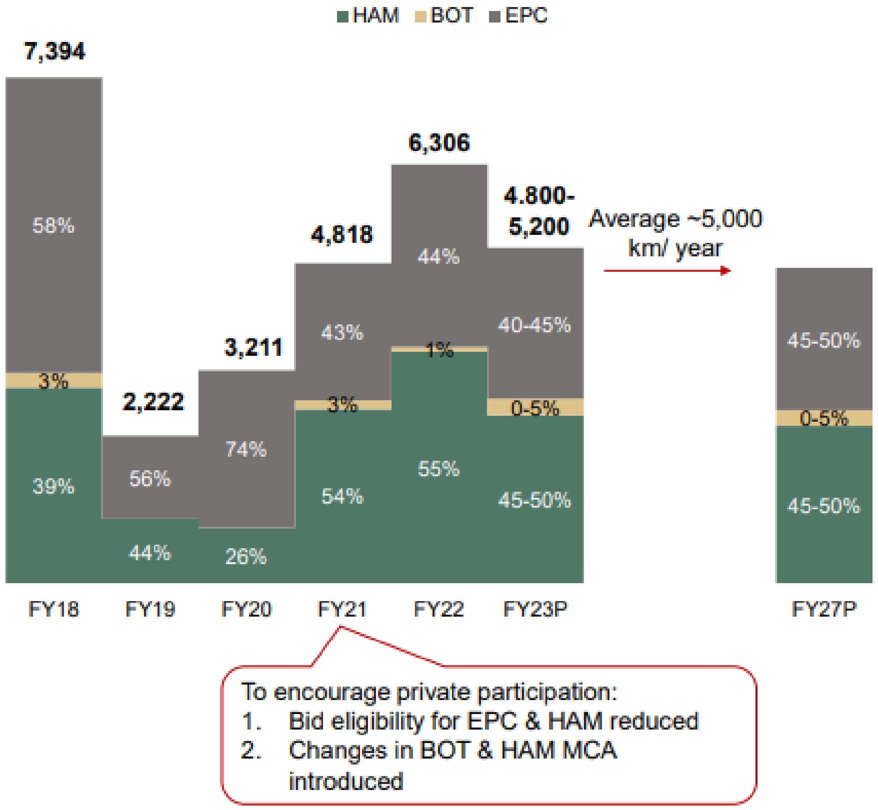
2.14 Review and outlook of investments in national highways

NHAI awarding to moderate, Bharatmala Phase 1 stretches on

National Highways Authority of India (NHAI) awarding has witnessed a sequential rise from merely 2,222 km in fiscal 2019 to 6,306 km in fiscal 2022. Fiscal 2021 was a pivotal year since despite the COVID-induced disruptions, there was a healthy growth in awarding. The NHAI awarded 4,818 kms in the fiscal 2021 which was a three fiscal high back then. Of these, 54% were awarded under the Hybrid Annuity Model (HAM), 3% under the Build-Operate-Toll (BOT) mode and rest under the Engineering, Procurement and Construction (EPC) mode. Additionally, favorable changes in the BOT and HAM agreements, and relaxation of bidder eligibility criteria not only indicated a clear policy shift to improve private-sector participation but also aided the spurt in the HAM awards. In fiscal 2022, the awarding momentum continued unabated as the NHAI awarded 6,306 kms in the fiscal year. The share of HAM and EPC in the awarding increased marginally to 55% and 44% respectively while projects under the BOT model accounted for only a paltry 1%.

In fiscal 2023, as per CRISIL Research estimates, NHAI awarding is expected to slow down to ~5,000 kms while the respective shares of HAM, EPC and BOT in the total awarding are expected to remain at similar levels vis-à-vis fiscal 2022. A limited rise in budgetary support coupled with the higher capex for 70% of high-value expressways currently under construction, could defer NHAI awards under Bharatmala Phase 1 beyond fiscal 2024 — the year construction was originally scheduled to be completed. Over the medium term, it is expected that the NHAI would continue to award ~5,000 kms per year on an average between fiscals 2024 and 2027. Furthermore, the shares of HAM, EPC and BOT in the awarding are expected to remain largely stable without any significant deviations.

55% of projects awarded under HAM in FY22, share to remain similar:



P: Projected

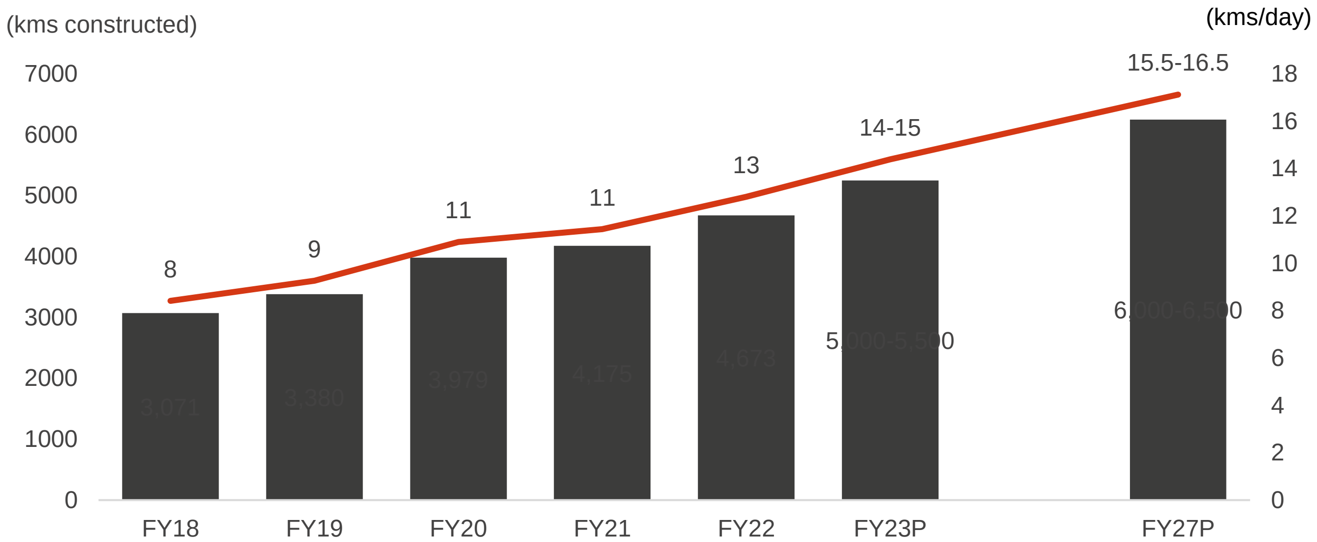
Source: NHAI, CRISIL Research

National Highway construction is also rising steadily with focus on swifter execution

Despite the lockdowns and labour-related issues, developers made up for lost time and construction at NHAI projects rose 5% on-year to 4,175 kms in fiscal 2021. Acceleration in project awards, sharper focus on resolving land acquisition issues, and the 'Atmanirbhar Bharat' initiatives to ease liquidity (monthly milestone payments, release of rentention money, reduction in performance secuirty & extension of 3-6 months in milestones & SCODs) for EPC road players augured well for the pace of construction. In fiscal 2022, NHAI's focus on swifter execution of projects paid dividends as 4,673 kms were constructed in the fiscal which translated into a 12% growth compared to the last fiscal.

CRISIL Research expects fiscal 2023 NHAI construction to be in the range of 5,000-5,500 kms on the back of higher awarding witnessed in the previous fiscal. Construction activities have faced significant roadblocks so far in the current fiscal as the rising prices of key input materials like cement, steel, bitumen etc have led to the developers delaying the procurement of the said materials. This has had a direct impact on construction activities as the pace of construction has slowed down. However, given the prices of these key commodities have already shown signs of cooling off, it is expected that the pace of construction activities would pick up post monsoons. Over the medium term, the pace of construction is expected to rise steadily to reach ~16 km per day by fiscal 2027.

NHAI's pace of construction rising steadily with continued focus on swifter execution



Source: NHAI, CRISIL Research

Policy push for HAM enabled higher share in awarding

NHAI awards roads and highway projects under:

- EPC
- BOT
- HAM

The Ministry and NHAI, post multiple suggestions from various stakeholders have amended the HAM Model Concession Agreement across the below mentioned parameters in Oct 2020. These are largely aimed to protect developers' returns and ease their liquidity.

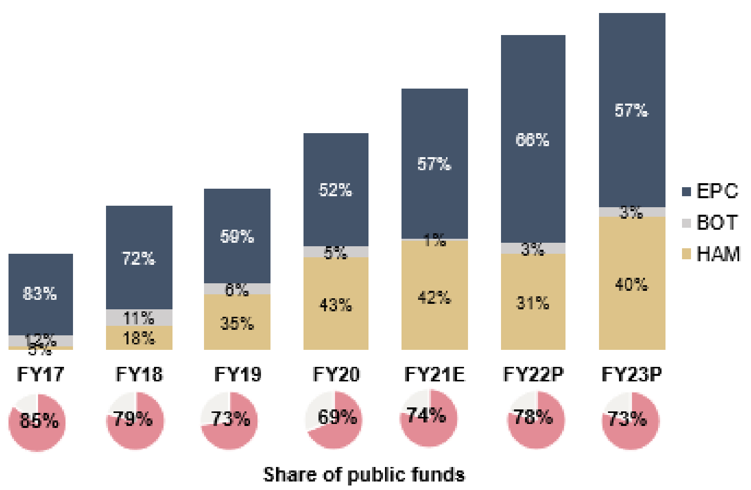
Recent changes in HAM MCA incorporate developers' concerns

	Old Clause	Revised Clause	Impact
Annuity Payments	Interest on annuity payment linked to RBI determined Bank Rate + 3%	Interest on annuity payment linked to average of one year MCLR of top 5 Scheduled Commercial Banks + 1.25%	Differential between cost of borrowing and interest on annuity reduced thus preventing erosion of developers' returns due to RBI repo rate changes
Milestone Payments	5 instalments, each equal to 8% of the Bid Project Cost	10 instalments, each equal to 4% of the Bid Project Cost	Quicker payments helping developers' liquidity
Change in ownership	Original sponsor/ concessionaire shall hold at least 26% of equity during construction period and 2 years thereafter	Original sponsor/ concessionaire shall hold at least 26% of equity during construction period and 6 months thereafter	Quicker stake sell-off would ease up developers' balance sheets to bid for new projects
Financial Closure	No clarity on amount on FC	FC to be undertaken for an amount no lower than either: 1. Total Project Cost (60% of BPC); or 2. 10% less than (Estimated Project Cost minus 40% of Bid Project Cost)	Would likely prevent termination of projects due to inadequate financing
Dispute resolution board	In case of a dispute, either party may call upon the Independent Engineer to mediate.	Failing mediation by the IE, either party may require such dispute to be referred to the Dispute Resolution Board (DRB).	Quicker dispute resolution mechanism to prevent stuck projects.
Others	Interest mobilization advance linked to bank rate. Termination payments based on previous milestone payments.	Interest on mobilization advance linked to MCLR. Termination payments based on new milestone payments.	NA

Despite the higher HAM awarding, CRISIL Research's estimates of split for the NHAI capex mix indicates that as share of EPC remains high, the share of public funds would remain over 70% over the next two fiscals. Thus, NHAI funding would remain critical to sustain the sector forward.

As capex under EPC and HAM remains high, burden falls on public funds

(NHAI Capex Mix)



P: Projected

Source: NHAI, CRISIL Research

Number of lanes in highways upgraded over the past five fiscal years

The NHAI has also focused on the number of lanes in national highways. Single lane roads decreased from 32% in 2014-15 to 21% in 2015-16. Two lane roads increased from 47% to 56%, while four lane roads increased from 12% to 25% during the same period.

Lane-wise break up of national highways

Width of carriage way	FY12		FY13		FY14		FY15		FY16		FY19	
	Km	%	Km	%	Km	%	Km	%	Km	%	Km	%
Four/ Six / Eight-lane	17,700	25%	19,128	24%	18,372	20%	21,201	22%	24,705	25%	31,067	23%
Two lane	38,536	54%	40,658	51%	45,399	50%	45,701	47%	55,603	56%	65,123	49%
One-Lane	15,536	22%	19,330	24%	27,516	30%	31,089	32%	20,703	21%	36,310	27%
Total	71,772	100%	79,116	100%	91,287	100%	97,991	100%	1,01,011	100%	1,32,500	

Note: Data for FY19 is available as of March 31, 2019

Source: PIB, MoRTH

Few HAM projects terminated due to land acquisition issues

Even though execution of HAM has picked up, the risk to HAM projects on account of delays in the appointed date persists. A few of these projects have been terminated:

Terminated HAM projects:

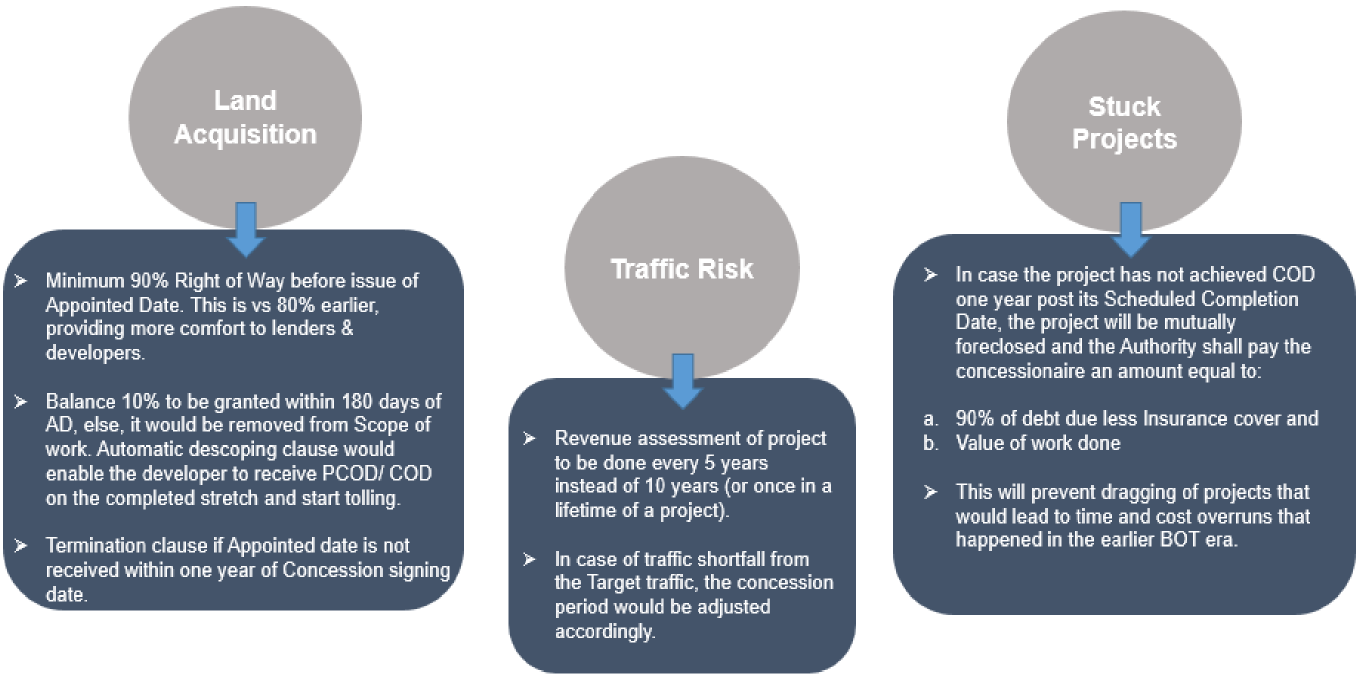
Name of asset	Concessionaire	Termination effective
Vizag Port road	Sadbhav Infrastructure	Jul-19
Meensurutti to Chidambaram	KNR Construction	Apr-19
Puducherry-Poondiyankuppam Highway	IRB Infrastructure	Nov-19
Poondiyankuppam-Sattanathapuram	IRB Infrastructure	Nov-19

Source: Company report, CRISIL Research

Changes in BOT MCA were also introduced

In order to improve private participation via the BOT-toll mode, NHAI & the ministry also introduced changes to the BOT MCA aimed at key issues such as land acquisition, revenue assessment in case of traffic shortfall and stuck projects. Despite these changes, we don't expect any BOT awarding this fiscal due to the uncertainty in traffic growth on account of COVID-19 restrictions and muted economic activity this fiscal.

BOT MCA revamped to reinstate interest in the model



Source: MoRTH, NHAI, CRISIL Research

Amendments to EPC contracts effective November 2018

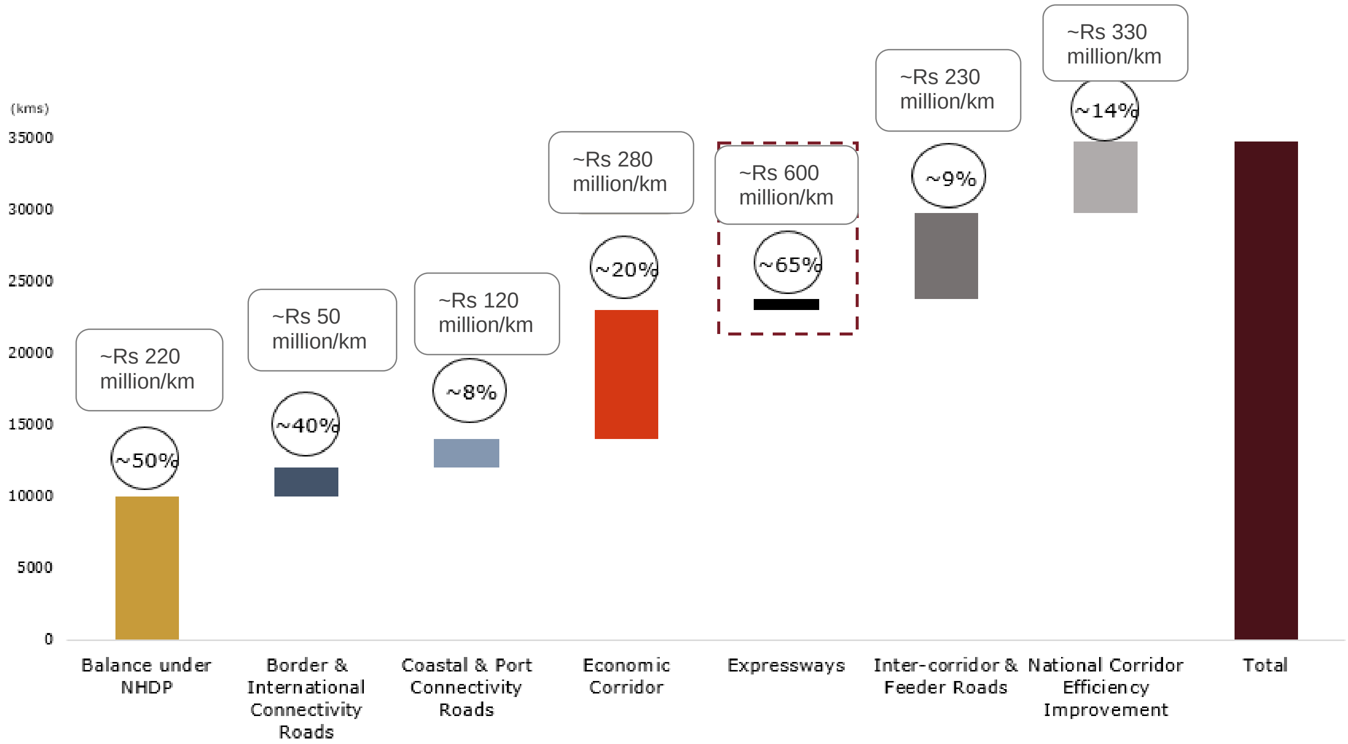
Key implications	Progress
To enable quicker execution by increasing obligations of the authority	Right of Way: Deadline reduced from 240 days to 180 days for approvals/ clearances for area under forest or sanctuary
	If Appointed date is not received within 90 days of signing the agreement, contract may be terminated. Authority will pay contractor damages = 1% of the contract price to contractor
Ensure effective competition, focus on timely project completion	If the project is not completed within 90 days of SCD, contractors would be ineligible to bid for projects till such is complete.
Increased working capital requirement for contractors	Increased interest on mobilization advance paid to authority. Earlier recovery of mobilization advance. Release of retention money against bank guarantees discontinued
Increased maintenance obligations of the contractor	Lower compensation and higher tenure for maintenance obligations of contractor. Defect liability period increased from 4 years to 10 years.

Bharatmala phase-1 awarding focused on expressways; likely to stretch till fiscal 2025

Bharatmala Pariyojana is an umbrella project of the central government since 2015 that aims to improve efficiency in the roads sector. It is expected to supersede the National Highways Development Project (NHDP) and envisages the construction of 65,000 km of highways under the following categories: national corridor (north-south, east-west, and golden quadrilateral), economic corridor, inter-corridor roads, and feeder roads. As per the ministry, Bharatmala, along with the schemes currently undertaken, could require a total outlay of Rs.6.9 trillion.

Phase-I of the scheme envisages development of about 24,800 km length of national highways/roads, plus residual 10,000 km of NHDP between fiscals 2018 and 2022. Awarding under Bharatmala has begun from fiscal 2018 and we believe it will stretch till fiscal 2025 for Phase 1.

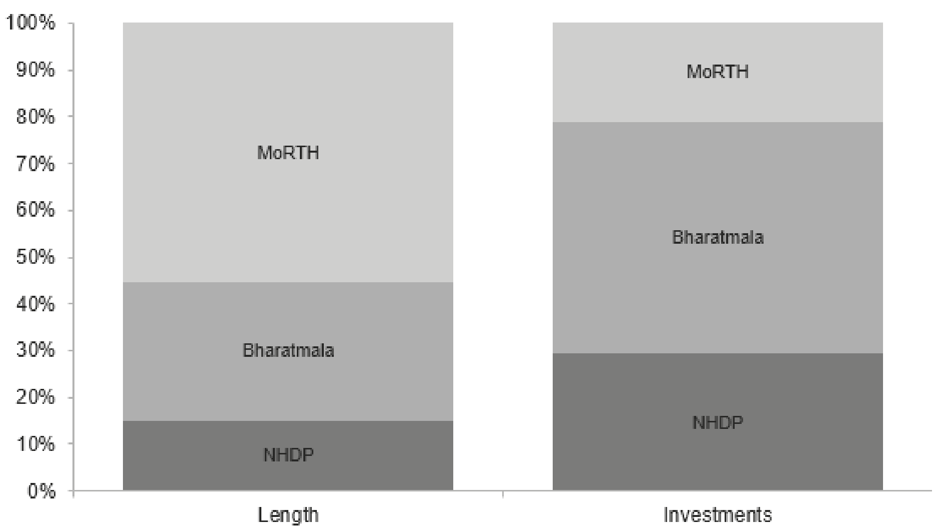
Cost per km for expressways are highest



As of fiscal 2020

Source: NHAI, CRISIL Research

Share of different schemes under national highways (FY23-FY27P):



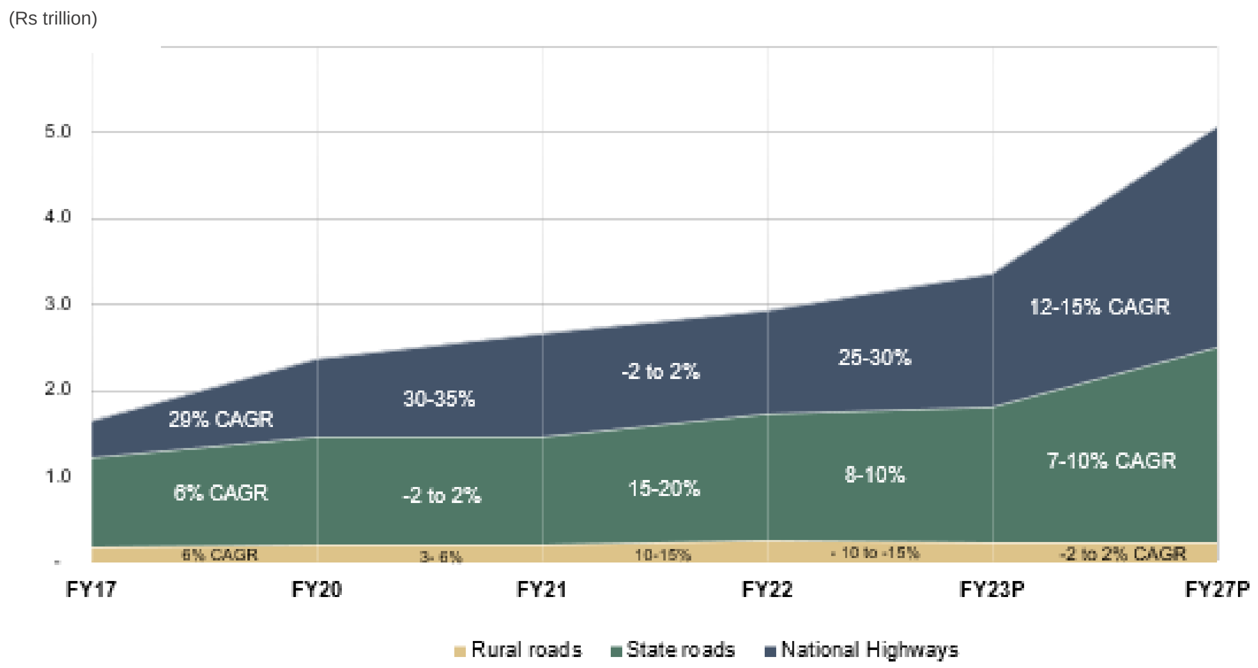
Note: NH investments do not include land acquisition costs

Source: CRISIL Research

Despite the pandemic, National highway capex grew by 30-35% in fiscal 2021, boosted by the COVID relief measures taken under Atmanirbhar Bharat.

Despite brief hiccups that were witnessed first in fiscal 21 where state spends were constrained due to COVID and in fiscal 22 where elongated monsoon period hampered National Highway construction, the sector's medium term growth story remains intact. We derive comfort from the Bharatmala and NIP pipeline of DPR ready projects, higher awards in fiscal 2022 and revival in state capex.

Investments towards National Highways have portrayed resilience during the pandemic



E: Estimated, P: Projected

Note: Investment excludes land acquisition costs

Source: NHAI, MoRTH, State budget documents, PMGSY, CRISIL Research

Further in fiscal 2022, even though physical construction declined by 22%, construction capex was flattish, cushioned by higher share of Greenfield 6 & 8 lane expressways that cost 3x than that of a 4 lane highway. We expect a 25-30% growth on this lower base in fiscal 2023 and subsequently a 7-10% over the medium term on the high base.

2.15 Key transactions in road sector

Recent private equity transactions

Date	Target	Investor	Transaction	Target company details
April-22	KKR & Co's road platform in India	Ontario Teachers	Committed Rs.13.33 billion (USD 175 million)	Ontario Teachers' Pension Plan Board has committed investment to boost alternative investment company KKR & Co's road platform in India.
Feb-21	Sadbhav Infrastructure Projects Ltd	Allianz Global Investors and joined by AMP Capital	To raise Rs.7 billion (USD 96 million) through NCD.	Developer and operator of highways, road and related projects. Capital raising part of a larger funding exercise to help the company repay debt and fund ongoing hybrid-annuity road assets.
Jan-21	Debt-ridden Chennai Elevated Tollway Ltd	JC Flowers Asset Reconstruction Company (JCFARC)	Acquire more than half of the debt of a stressed road developer at a discount of over 80%.	The debt has been picked up from State Bank of India (SBI), Central Bank of India, Bank of Baroda and Bank of Maharashtra.
Dec-20	Chenani Nashri Tunnelway Ltd Asset - road tunnel from Infrastructure Leasing & Financial Services Ltd	Cube Highways	Rs.39.0 billion (USD 528 million).	
Oct-20	Road assets	NIIF		In October 2020, the National Investment and Infrastructure Fund (NIIF) made progress towards integrating its road and highway portfolio. The NIIF acquired Essel Devanahalli Tollway and Essel Dichpally Tollway through the NIIF Master Fund. These road infra-projects will be supported by Athaang Infrastructure, NIIF's proprietary road network, assisted by a team of established professionals with diverse domain expertise in the transport field.
Sept-20	Road assets - Farakka-Raiganj Highways Ltd (operating toll road in West Bengal	Cube Highways and Infrastructure Pte	Rs.15.08 billion (USD 205 million).	Cube Highways and Infrastructure II Pte. Ltd has completed a transaction to acquire a road project from a unit of Hindustan Construction Company Ltd

Source: CRISIL Research

Recent key asset sales

Date	Target	Buyer	Seller	Deal value (Rs.million)	% Sought
Aug-2022	SP Jammu-Udhampur Highway Ltd	National Investment and Infrastructure Fund Ltd (NIIF)	Shapoorji Pallonji Group	22,800	100%
July-2022	Navayuga Quazigund Expressway Pvt. Ltd	National Investment and Infrastructure Fund Ltd (NIIF)	Navayuga Quazigund Expressway Pvt. Ltd	30,350	NA
June-2022	Six operating highway toll road projects	Actis' Long Life Infrastructure Fund (ALLIF)	Welspun Enterprises Limited (WEL)	60,000	100%
June-2022	Five operational road projects	IndInfravit Trust, (InvIT) led by Canada Pension Plan Investment Board	Brookfield	93,750	100%
July-2021	Highway Concessions one	KKR Asian Fund III LP	Global Infrastructure Partners	-	39%
Jan-2021	Shree Jagannath Expressways Pvt. Ltd	Indian Highway Concessions Trust	Bharat Road Network	7300	74%
Dec-2020	Jorabat Shillong Expressway Ltd	Sekura Roads Ltd	IL and FS Transportation Networks Ltd.	9300	100%
Dec-2020	Chenani Nashri Tunnelway Ltd.	Cube Highways and Infrastructure III Pte. Ltd.	IL and FS Transportation Networks Ltd.	39000	100%
June-2021	Navayuga Road Projects Pvt. Ltd. – Two road projects	Sekura Roads Ltd	Navayuga Road Projects Pvt. Ltd.	-	100%
Jan-2020	KNR Walayar Tollways Pvt. Ltd.	Cube Highways and Infrastructure III Pte. Ltd.	KNR Construction Ltd.	6200	100%
Aug-2019	Five under construction HAM projects - Dilip Buildcon Ltd.	Cube Highways and Infrastructure III Pte. Ltd.	Dilip Buildcon Ltd.	7300	100%
Aug-2019	KNR Shankarampet Projects Pvt. Ltd.	Cube Highways and Infrastructure III Pte. Ltd.	KNR Construction Ltd.	1000	100%
Feb-2019	Two road projects - KNR Construction Ltd.	Cube Highways Group	KNR Construction Ltd.	2000	100%

Source: Industry, CRISIL Research

3 Review and outlook of State Roads & Bridges

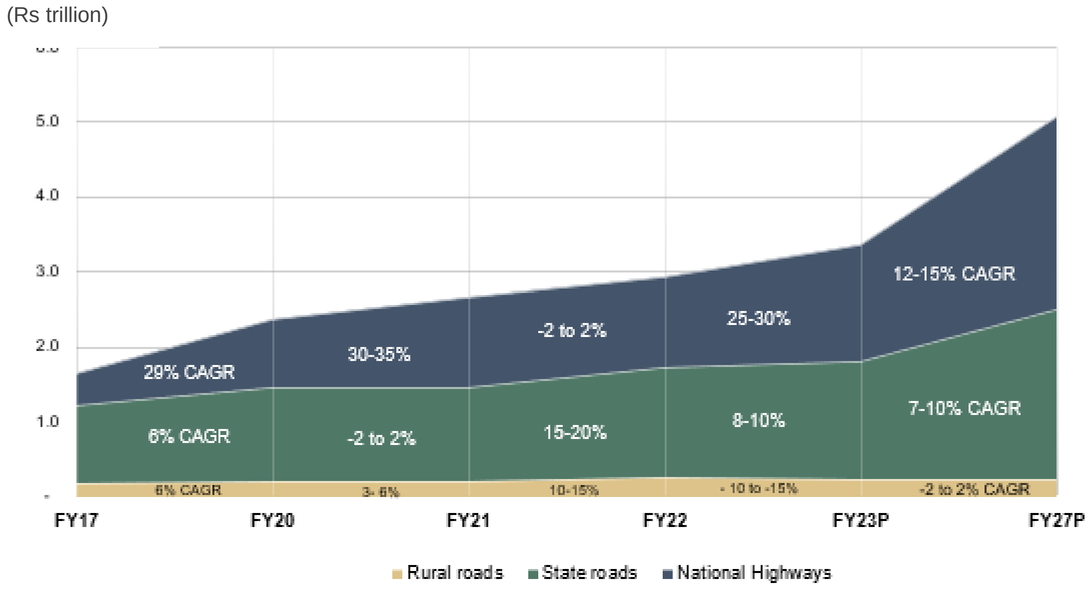
3.1 Investment in state roads & bridges

After constrained spending due to COVID, state road capex on the revival track

CRISIL Research's analysis of state road budgets indicates that state road capex forms 45-50% of the sector. After growing at a CAGR of 14%, it remained flattish in fiscal 2021 due to constrained state funds. On this low base, it is estimated to have grown by 20-25% in fiscal 2022, subsequently is expected to moderate at 8-12% over the next 2 years.

Our interactions with market participants indicate that state road projects funded by external agencies such as World Bank or ADB or have private/bank funding such as Expressways under UPEIDA have not had much impact due to COVID-19, as compared to state-funded projects.

State road capex to witness moderate growth on the high base of last fiscal



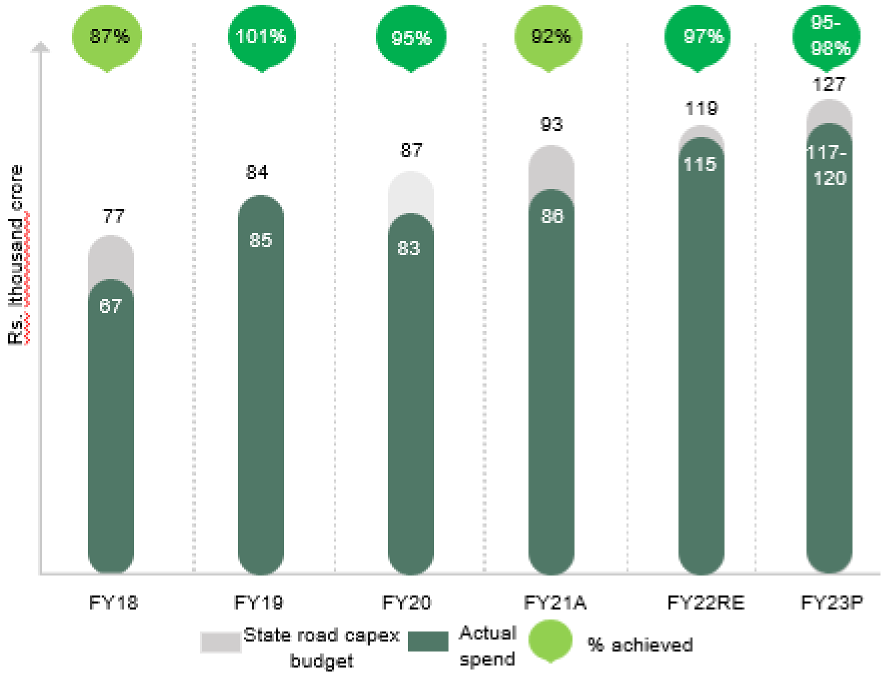
E: Estimated, P: Projected

Source: State budget documents, CRISIL Research

State roads, which include highways, major district roads and rural roads that do not come under the purview of the Pradhan Mantri Gram Sadak Yojana, constitute over 20% of the country's road network and handle ~40% of road traffic. These play an important role in the economic development of mid-sized towns and rural areas, and aid industrial development by enabling the movement of raw materials and products to and from the hinterland.

Fiscal 2022 budgets for these top states, were 38% higher, and revised estimates show a 97% achievement ratio. But historically actuals have been only 94% of RE, hence there is downside risk to these numbers given high state fiscal deficits. Further in fiscal 2023, they have budgeted for a 7% growth and we expect a 95-98% achievement ratio.

FY23 budgets for top 15 states at 7% on-year, even on the high base of last year

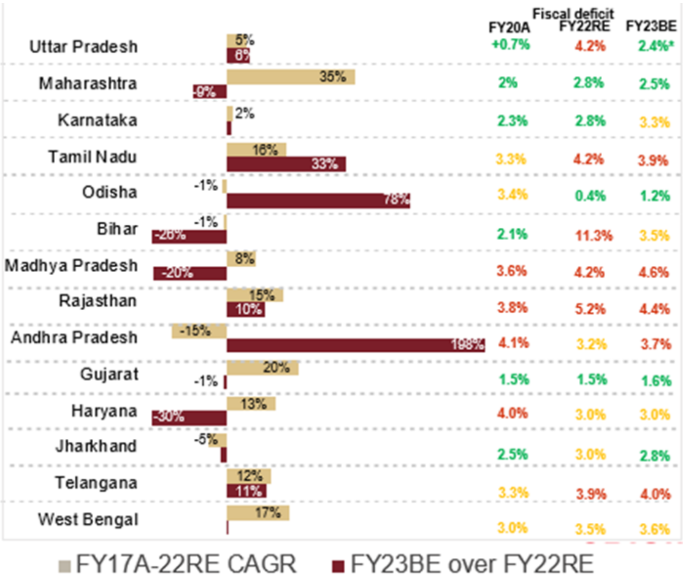


Source: State budget documents, CRISIL Research

Plotting the top 14 states accounting for 85% of the state road capex in descending order of their spend on roads. We looked at 2 data points – 5 year CAGR's of state spends and state fiscal deficits. While there is a stark variation across states - we observed that high spenders that are looking to lower their fiscal deficits such as Uttar Pradesh & Maharashtra and those who are in very high fiscal deficit zones such Bihar and Madhya Pradesh have lowered their budgets on roads.

On the other hand, states that have been lagging in road spending over the last 5 years such as Odisha & Andhra Pradesh have budgeted for much higher road capex outlay in fiscal23. All in all, after the double digit growth in FY22, state spending on roads is expected to moderate at an overall level.

Stark variation across states- laggard states have typically budgeted for higher road spends this fiscal

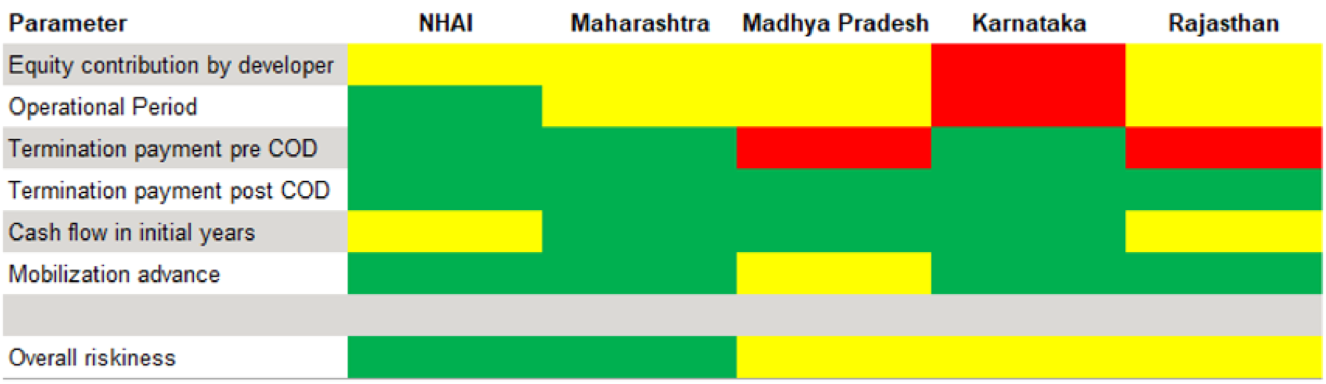


Source: State budget documents, CRISIL Research

NHAI vs State HAM

Few states such a Maharashtra, Madhya Pradesh, Karnataka and Rajasthan have implemented the HAM model in awarding of state highway projects. Maharashtra's model is similar to that of NHAI, while those of Madhya Pradesh, Karnataka & Rajasthan have a few variations.

Maharashtra’s HAM model similar to NHAI's



Source: State budget documents, CRISIL Research

State roads financed by state governments, private participation via HAM in states is monitorable

State roads are largely financed through budgetary allocations by respective state governments. These are supplemented by funds from the National Bank for Agriculture and Rural Development (Nabard), Housing and Urban Development Corporation Ltd, Rural Infrastructure Development Fund, and the state's portion of CRF.

State governments will finance most state road projects (via budgetary allocation, external assistance, and CRF). Some states have a favourable policy framework to attract private participation. Going forward, the share of private participation in state roads is expected to be at 12-15% as the success of the HAM projects introduced across various states are monitorable.

Budgetary support and lender comfort - key success factors for the state:

	NHAI	Maharashtra	Madhya Pradesh	Karnataka	Rajasthan
Number of bidders	5-6 bidders	6-7 bidders	4-5 bidders	2-3 bidders	2-3 bidders
Bid Project Cost vs Authority Cost	10-15% above	Almost at par	Almost at par	15-20% above	8-10% above
Awarded projects (kms) till date	>7000	~10000	280	420	750
Average size of Project	~Rs 1,100 crore	~Rs 200 crore	~Rs 150 crore	~Rs 1,000 crore	~Rs 500 crore
Cost per km	Rs 20 crore per km	Rs 2.5-3 crore per km	Rs 3-3.5 crore per km	Rs 7 crore per km	Rs 2-2.5 crore per km
Key players	Dilip Buildcon, Ashoka Buildcon, PNC Infratech, Sadbhav, IRB	Rajpath Infra, SB Deshmukh, Harsh Construction, Welspun,	Ravi Infra, Shreeji, Path, RCL	Sadbhav, KNR	Dineshchandra R Agarwal, GR Infra, Gawar Construction
	Awarding began in FY16	Awarding began in FY18, future pipeline in line with Govt. budget allocation	Awarding began in FY20, future pipeline of ~1300 kms	Awarded in FY19, no future pipeline	Awarded in FY18, future awarding potential of 750 kms in FY21
Funding	Budgetary allocation + IEBR	Budgetary allocation of Rs 30-35 billion per year	$ 490 mn from ADB	$ 346 mn from ADB approved for KSHIP	$ 190 mn from ADB
Key findings		GoM deposits 50% of its grant in escrow account maintained by bank to ensure no delayed payments	Awarded in Jan 2020 after approval for ADB loan	Land acquisition & funding issues due to change in Govt. Projects awarded in June 2018 have only now achieved FC. Appointed date given with 65% land to KNR	750 kms awarded in FY18 under RSHIP-1 with ADB funding. RSHIP Tranche-2 now approved

Source: State budget documents, CRISIL Research

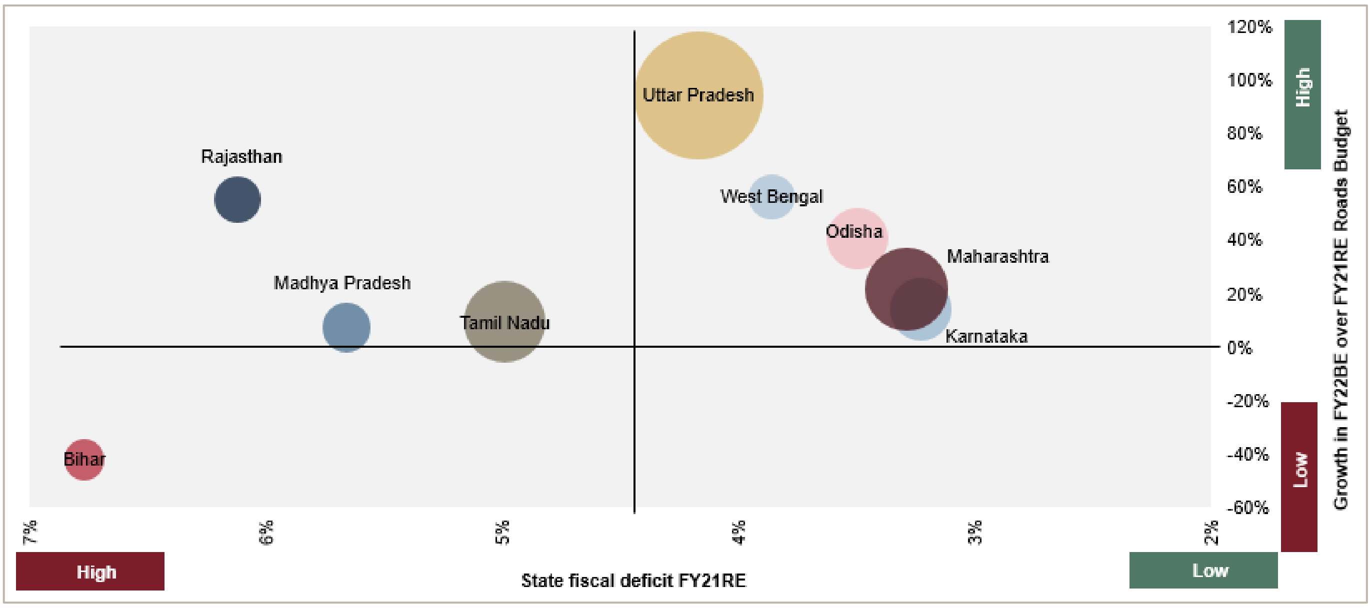
COVID-19 impact on Maharashtra HAM projects:

Among states, Maharashtra's Public Works Department (PWD) has awarded the maximum number of state highways under HAM since FY18, ~10,000 kms with average projects size of ~ Rs.2 billion. Under construction projects are likely to face delays due to labour migration and scarcity of raw material.

However, as the Government of Maharashtra (GOM) deposits 50% of its grant amount in escrow accounts maintained by the bank (thus ensuring immediate payment post mile achievement). These projects are at low risk in terms of timely payment from government. GOM typically allocates Rs.30-35 billion for HAM projects. However, with fund diversion towards health & social sectors due to the high number of cases in the state, fiscal 2021 would see muted execution and awarding in the state.

Further, the upfront debt service reserve account requirement for meeting six months' debt servicing requirement, surplus cash sweep of 25% for prepayment of debt if DSCR exceeds 1.1 times, ensure timely loan repayment and hence adequate liquidity.

But most states have announced higher spending on Roads in FY22 budget



Note: Top 9 states account for >70% of state road capex; Size of the bubble indicates each states' spend on road capex in FY22BE

Source: State budget documents, Ministry of Health and Family Welfare, CRISIL Research

3.2 Central assistance to state roads

State roads come under the jurisdiction of the respective state governments. However, the central government may provide financial assistance to state governments through various schemes for the development of the road network. The responsibility of awarding contracts for road development is entrusted with two state government divisions, namely the public works department (PWD) and road development corporation (RDC). Generally, cash contracts are awarded by the state PWD, while BOT-annuity and BOT-toll contracts are typically awarded by state RDCs.

The central government has set up the Central Road Fund (CRF) to provide financial assistance to state governments for road development and railway safety works within the states.

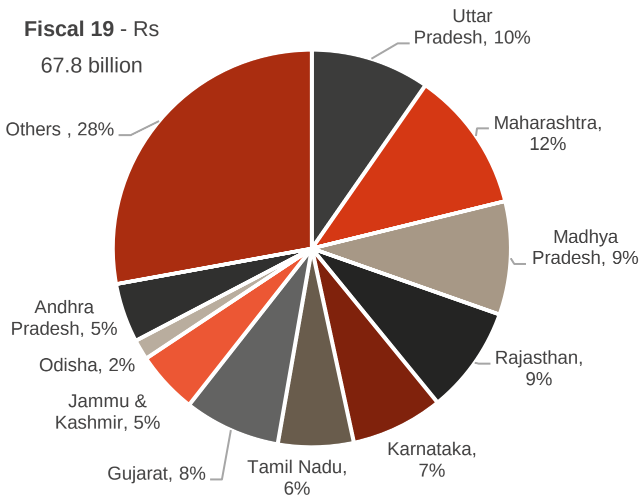
Central Road Fund

The CRF is funded from the cess collected on the sale of petrol and high-speed diesel (HSD). On every litre of petrol and HSD that is sold, a cess of Rs.6 is collected (since fiscal 2016; previously cess of Rs.2 was collected). The fund provides assistance to states for the development and maintenance of state roads, rural roads, national highways, under- and over-bridges and safety works at unmanned railway crossings. About 11% of the cess collected on HSD and 30% on petrol is allocated towards maintenance of state roads.

Funds allocated for fiscals 2015, 2016 and 2017 (revised estimates) were Rs.26.5 billion, Rs.28.8 billion and Rs.71.8 billion, respectively. About 476 projects, amounting to Rs.98.6 billion, were sanctioned under the scheme in fiscal 2018, compared with 1,093 projects costing Rs.123 billion in fiscal 2017.

In Union Budget 2018-19, road cess was replaced by the road and infrastructure cess. Previously, road cess was split for NH construction, maintenance, railways, Pradhan Mantri Gram Sadak Yojana, etc., based on a fixed formula. So far, there has been no change in the split. However, going forward, the share of cess in the roads sector could reduce given the increase in the overall scope from roads to roads and infrastructure, thereby increasing dependence on borrowings.

State-wise release of funds for development and maintenance of State roads under CRIF



Source: Rajya Sabha questions, PIB, CRISIL Research

Out of the amount collected under CRF for state roads, 10% is reserved for the development of roads under the following schemes:

Interstate connectivity (ISC)

Under this scheme, 100% funding (not a loan) is provided by the central government. ISC typically encompasses the development of:

- Interstate roads
- Roads connecting national highways

Economic importance (EI)

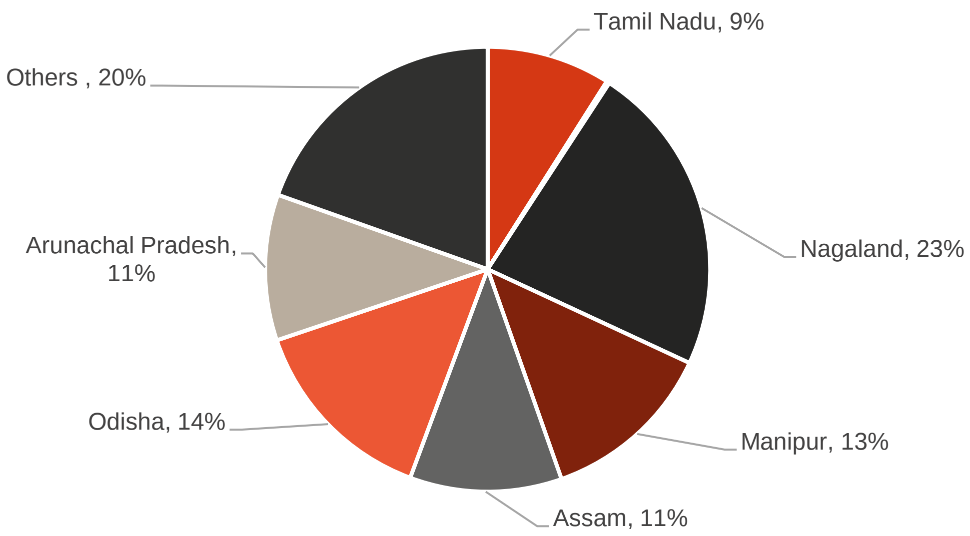
Under this scheme, projects are funded to the extent of 50% by the central government. The state government contributes the rest of the project cost. This scheme is mainly focused on the development of:

- Roads facilitating connectivity to remote industrial and economic areas
- Roads facilitating the development of remote residential areas, such as roads connecting hilly regions to plains

Funds allocated together under ISC and EI in fiscals 2015, 2016 and 2017 stood at Rs.2.39 billion, Rs.3.55 billion and Rs.4.15 billion, respectively. In fiscal 2018, ~19 projects amounting to Rs.6.6 billion were approved under ISC and EI. In fiscal 2019, ~18 projects, amounting to Rs.4.74 billion, were approved under ISC and EI.

During fiscal 2019, a sum of Rs.5 billion had been earmarked for state roads under Inter State Connectivity and Economic Importance (ISC&EI) and 34 proposals involving a cost of Rs.4.47 billion were sanctioned for improvements.

State-wise expenditure under ISC&EI schemes in FY21



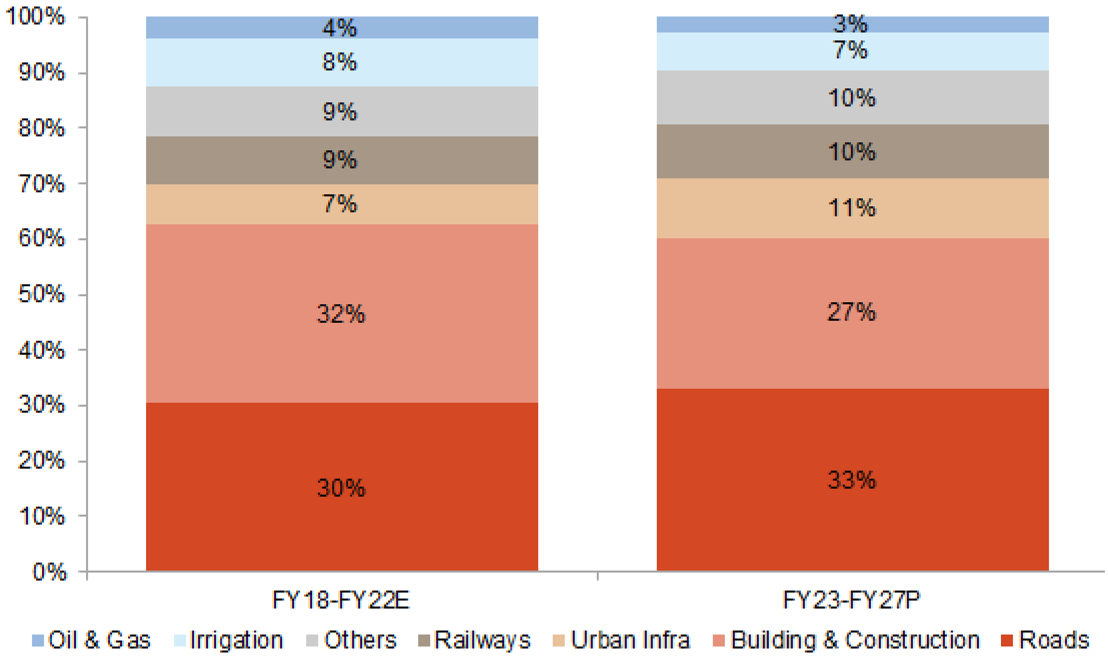
Source: Rajya Sabha questions, PIB, CRISIL Research

4 Overview of key infrastructure sectors

4.1 Share of various infrastructure segments in total construction spends

Within the infrastructure space, road projects will be a critical investment driver from fiscals 2023-27. CRISIL Research also expects metro rail, water supply and sanitation, and railway projects to garner larger shares.

Share of major segments in overall construction spending



Note: E: Estimated; P: Projected

Source: CRISIL Research

The following table provides a snapshot of expected construction opportunities across key sectors. For a detailed analysis, please refer to the sector-wise sections.

Sector-wise construction spends [Rs. lakh crore]

		FY18-FY22E	FY23P-FY27P	Increase/ decrease	Outlook on investments
Infrastructure	Roads	11.9	21.1	1.8	The govt's focus on infrastructure - investments through the NIP (National Infrastructure Pipeline) and the Bharatmala Pariyojana would continue to drive growth in the Roads sector over the medium term.
	Irrigation	3.3	4.4	1.3	High number of incomplete projects stuck at their initial stages across major spending states such as Karnataka, Madhya Pradesh and Maharashtra coupled with new large scale projects in the pipeline in states such as Andhra Pradesh, Telangana and will provide an impetus for growth
	Railways	3.4	6.1	1.8	The high speed rail, completion of the EDFC, WDFC, additional freight corridors, station redevlopment and network decongestion to drive investments over the medium term.
	Urban Infra	2.8	6.8	2.4	Focus on water supply, metro projects, smart cities under flagship schemes such as AMRUT and Smart city mission to drive investments
	Power	1.6	3.6	2.3	Investments are likely to be driven by increased spending by central and state governments for enhancement of T&D infrastructure. Investment in the long-run to be driven by renewables with positive regulatory support under clean energy agenda, rising share of central allocations under relatively stronger off takers like SECI and NPTC, as well as falling capital costs, especially in solar
	Other Infra	0.001	0.001	1.4	Investments likely to be moderate in sectors like ports and telecom while investments in airports would boom
	Total Infra	**23.9**	**43.3**	**1.8**	
Industrial	Oil & Gas	1.6	1.7	1.1	Investments growth in oil and gas is expected to remain stable over the medium term owing to low base effect. However, fiscal 2021 onwards, refinery expansion plans by RIL, Nayara Energy, IOCL as well as investments by upstream oil and gas and downstream natural gas players will drive capex.
	Automobiles	0.4	0.4	0.9	Growth to remain flat in the medium term owing to the challenges such as cost inflation of raw materials.
	Metals	0.3	0.5	1.4	Capex will rise led by brownfield capacity expansion to meet increasing demand
	Others	0.000	0.001	1.5	
	Total Industrial	**2.7**	**3.1**	**1.1**	**Investments in Industrials to grow led by the rising economy and demand from consumption coupled with new growth drivers such as automation, shift towards sustainability and boost from PLI Investments**
Building Construction	Residential	10.8	15.2	1.4	Cautious new launches by developers and majority of PMAY houses to be added by FY22-23 shall restrict any major growth in housing construction.
	Others	0.002	0.002	1.1	Investments in healthcare and education to increase overall investments moderately
	Total building construction	**12.6**	**17.3**	**1.4**	**Investments to grow in the medium term led by the affordable housing scheme**

Source: CRISIL Research

4.2 Key growth drivers for the infrastructure industry

The growth in capex for fiscal 2023 is in continuing momentum from FY2022 where despite challenges due to coronavirus variant, the sector showed an estimated rise of 35-40% on a low base in FY21. In FY22 the sector returned to normalcy and challenges faced during the lockdown. Growth in FY23 is attributable to rise in state and central government expenditures in various sectors such as roads, railways, urban infra, water supply and sanitation etc.

Construction capex is projected to rise 13-16% on year in fiscal 2023 led by infrastructure segment To Rs. 10.6 to 10.8 lakh crore. The rise is in keeping with the Govt's focus on infrastructure as visible in rising central and state budget allocations to capex in order to meet the infra build out outlined in the NIP. Although FY2022 had seen challenges due to second wave of coronavirus and other minor challenges like irregular monsoon in certain states, it showed sharp estimated rise of 35-40% to Rs 9.3-9.5 lakh crore over a low base of FY21. The low base of FY21 is attributable to the 6–9-month delay granted by the RERA due to the breakout of the pandemic which led to a decline in the building and construction sector as builders deferred completions while investments in the industrial sector too were deferred beating down investments for fiscal 2021 to Rs. 6.9-7.1 lakh crore from a high of Rs 8.1 lakh crore in fiscal 2020. .

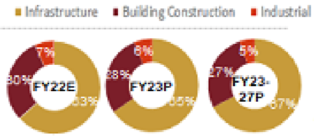
Road projects to dominate long-term construction activity

Roads: The pandemic was a minor speed bump in terms of the fast-growing investments in the roads sector. Construction spend of Rs.21-22 lakh crore over fiscal 2023-2027 will be driven by the steady execution of national highway and high-value expressway projects. The share of HAM in awarding is expected to be similar to fiscal 2020 levels or rise marginally going forward, as the initial outlay required by the NHAI is 40% of the project cost. Also, the NHAI gets an additional 6 months to acquire the required land as players typically take the same time to achieve financial closure. However, delays in appointed dates of already-awarded projects is delaying the execution of these projects.

Irrigation: After a logjam in the past few years and post a blip in fiscal 2021 due to the pandemic, investment is expected to improve over the long term due to the low penetration of Irrigation in the country. Investment spends of ~Rs. 4.3-4.5 lakh crore over the next 5 years are anticipated, as compared with the Rs. 3.2 lakh crore investment over the past 5 fiscals. Apart from the top-6 states that accounted for the majority of irrigation investment, Odisha has emerged as a top state with considerable increase in irrigation investments over the past few years.

Railways: Construction spend in railways rose in fiscal 2022 despite the pandemic. Spends are seen rising 8-12% in fiscal 2023 and then moderate going ahead. Investments in railways would be led by a dedicated freight corridor, network decongestion and the bullet train projects. Central budgetary allocations to railways grew by 14% in fiscal 2023 over fiscal 2022 RE. About 50% of the planned outlay is expected to be financed through budgetary support, and the remaining through internal sources and market borrowings/institutional finance.

Infrastructure to drive construction sector growth in the medium to long term

	FY16-FY20 CAGR	FY21E Rs lakh crore	FY22E Rs lakh crore	FY23P	FY23P Rs lakh crore	FY23P-27P/FY18-22E	
Construction capex	9%	6.9-7.1	9.3-9.5	13-16%	10.7-10.9	1.6	
Infrastructure	12%	4.9-5.1	5.9-6.1	16-18%	6.9-7.1	1.8	• Roads and railways sectors to lead growth in infrastructure • Medium-term capex to continue to be dominated by public funds
Building construction*	4%	1.4-1.5	2.7-2.9	6-10%	2.9-3.1	1.4	• Extension granted by RERA to developers led to deferral of fiscal 2021 investments to fiscal 2022 which created high base for FY23 • New launches by developers, completion of under-construction houses and of PMAY scheme to drive investments
Industrial (8 key sectors)	11%	0.4-0.5	0.5-0.6	7-11%**	0.6-0.7	1.2	• Announced cuts for fiscal 2021 to lead to spillover of capex to fiscal 2022; larger players also investing in capex with faster-than-expected recovery post pandemic first wave • PLI scheme announced by GoI to provide a boost to industrial investments

*Note: * CRISIL Research has revised Building construction numbers based on revised numbers released by the Govt of India*

*** Including PLI investments for 3 sectors viz. Auto and auto comps, speciality steel and Textiles*

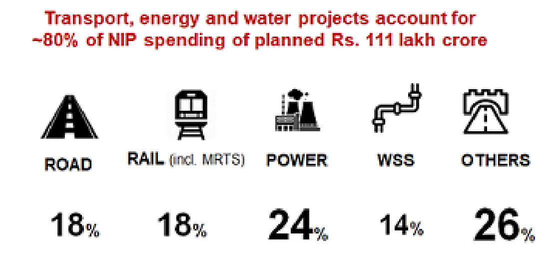
Source: CRISIL Research

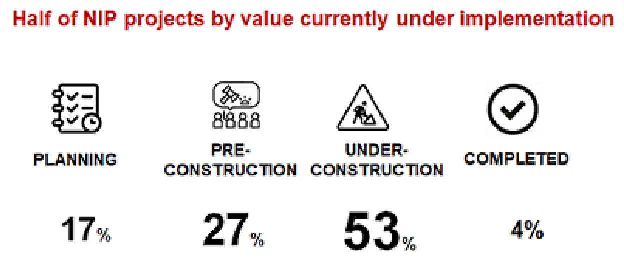
Within infra segments, roads continue to have the highest share

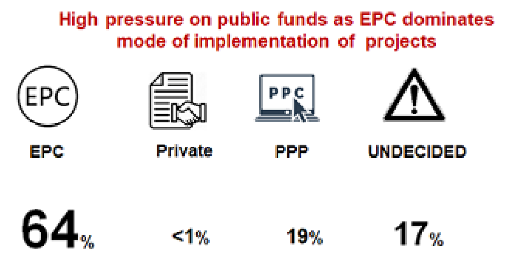
Within the infrastructure space, road projects will be a critical investment driver from fiscals 2023-27. CRISIL Research also expects metro rail, water supply and sanitation, and railway to garner larger shares

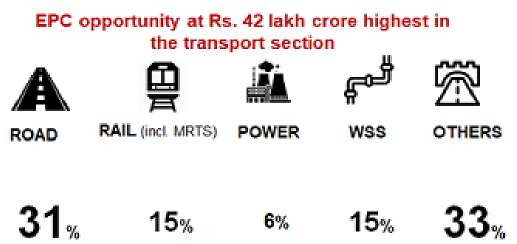
NIP to drive Infrastructure investments as nearly Rs.75 lakh crore of projects currently under construction

The National Infrastructure plan outlined by the Government entails an investment of Rs.111 lakh crore over fiscals 2020-25.









Note: 1. All charts for the period FY20-25

2. Others include irrigation, rural infra, ports, airports, education etc.

Source: CRISIL Research, India Investment Grid

The NIP outlines a spend of 111 lakh crore over fiscals 2020-2025 which is a lofty target with focus on public funds to do the heavy lifting. With public funds being constrained due to the impact of the pandemic across fiscals 2021 and 2022, with vaccination, social and healthcare spends to be met. The investments outlined in the NIP are almost double over the previous 5 year plan and the achievement ratio of the 5 year plans have been dropping with rising outlay of capex. CRISIL Research projects a 65-75% achievement of the NIP. The balance investments are unlikely to be met till fiscal 2025 and will likely spill over into further years.

4.3 Review of past and future investments in key infrastructure segments

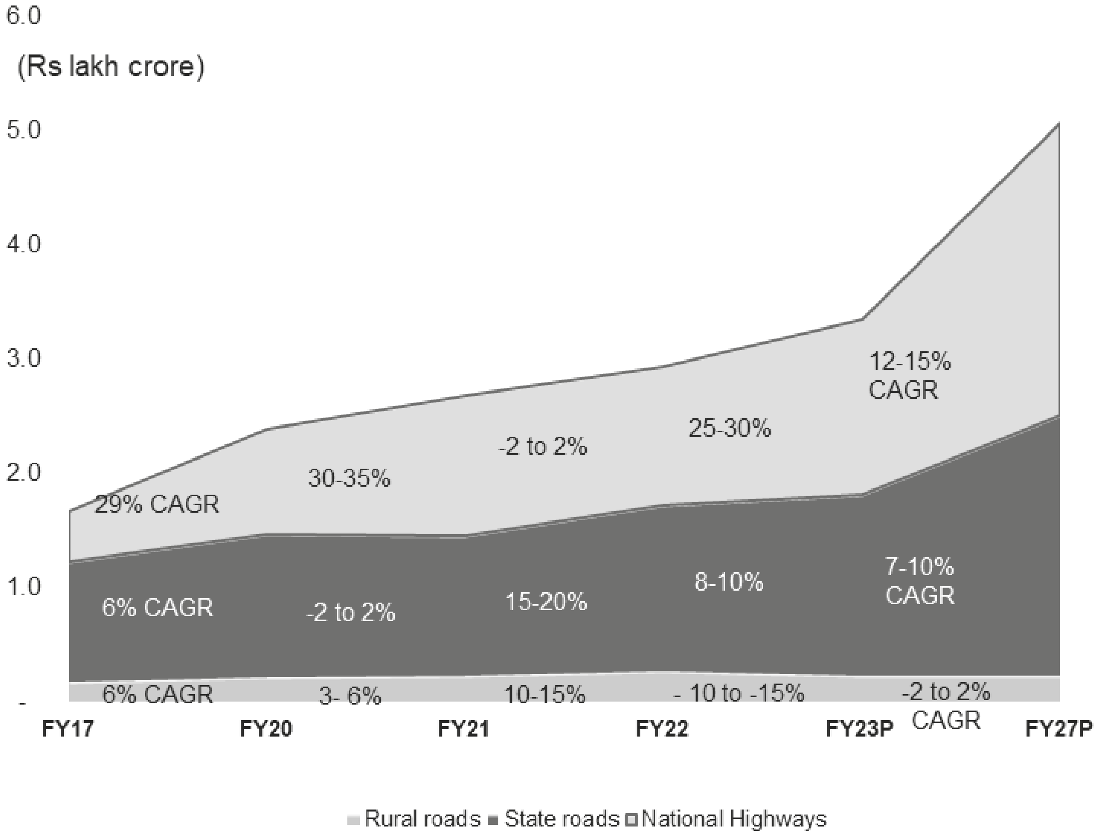
Construction growth in Roads and Highway sector to be driven by execution of high value expressways

CRISIL Research expects investments in roads to rise 12-16% in fiscal 2023 led by a strong pipeline of awarded and under execution national highway projects, execution of higher value expressways and recovery in state road investments. Investments in National highways led by expressway execution are projected to rise 20-25% while state road investments are projected growing 8-10% in FY23.

Investments in roads in fiscal 2022 are expected to have recorded a 10-12% rise despite the second wave and challenges due to irregular monsoon in certain states in FY22. State investments showed a healthy growth of 15-20% in FY2022 due to low base in FY2021 which was impacted by pandemic leading to capex diversion in meeting social and healthcare spends. With achievement of targets under PMGSY, rural roads expected to decline in FY23 by 10-15% on a high base of FY22

Road projects augur well for construction players, as nearly all funds (save those used for land acquisition) are channelised into construction. Investments in road and highways, is forecasted to nearly double over fiscals 2023-27 compared to fiscals 2018-22, due to the government's focus on roads, and state and national highways driven by public funds. Around 50% of the projects awarded by the National Highways Authority of India (NHAI) in fiscal 2021 are through the hybrid annuity model (HAM), in which 40% of the total construction cost is paid by the government during the construction period. Thus, more than 75-80% of the total investment expected in national highways will be expensed by public funds (state and centre).

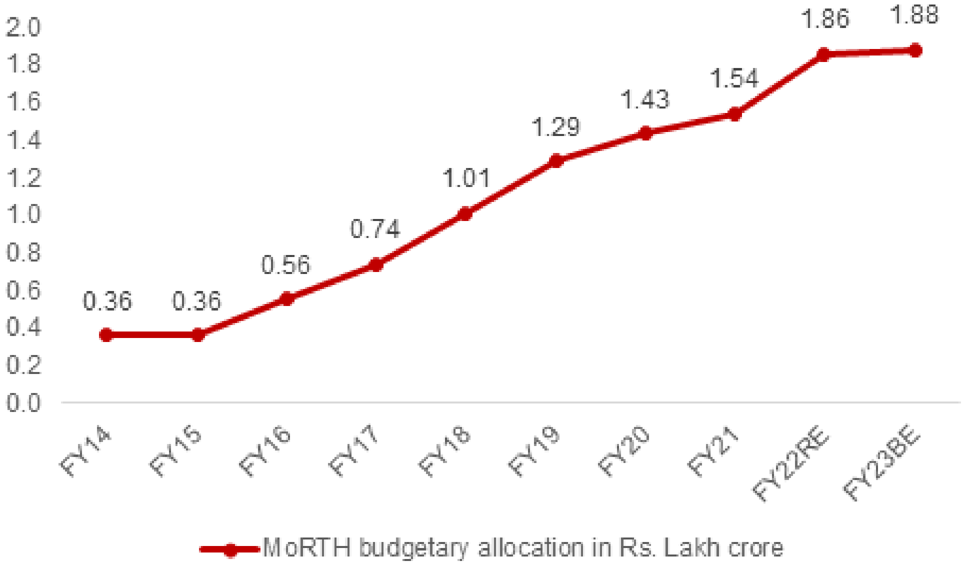
Expected spend on road construction



E: Estimated; P: Projected

Source: CRISIL Research

Budgetary allocation for capital expenditure in national highways



Note: FY13 to FY20 are actual spending numbers. FY21 is revised estimate and FY22 is budget estimate.

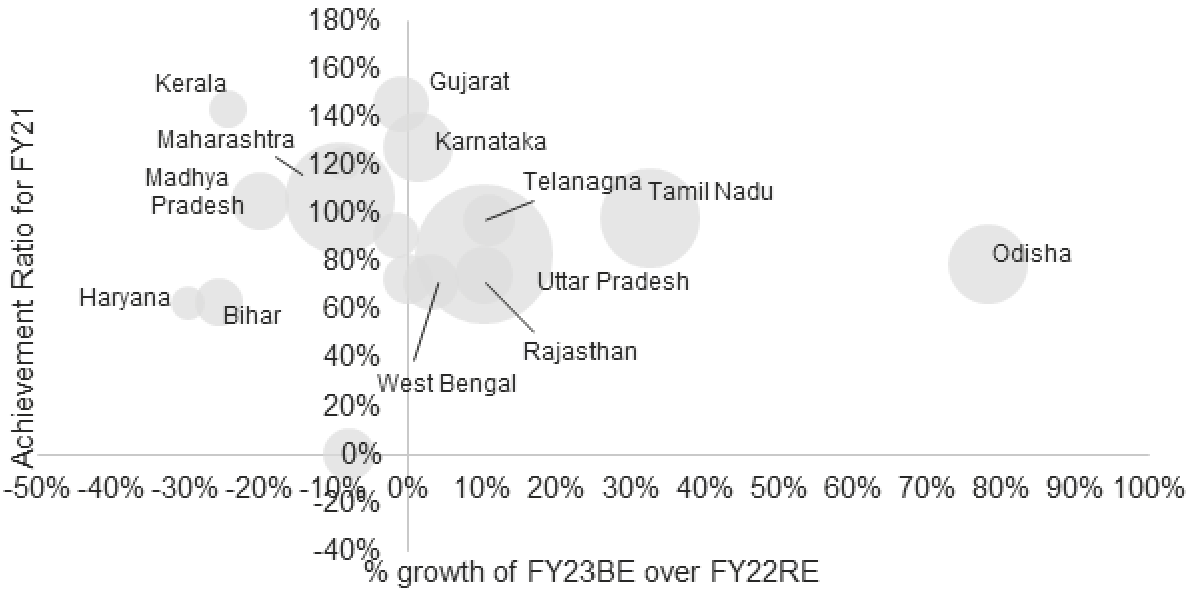
Source: Ministry of Road, Transport & Highways, CRISIL Research

Investments in state roads to rise 8-10% in fiscal 2023 post recovery from covid lows of fiscal 2021 in fiscal 2022

Road construction for states expected to rise 8-10% in FY23 driven by increase in execution which is followed by 9-12% rise in FY24 owing to higher construction of expressways and rise in awarding in FY23 .The Covid-19 pandemic impacted investments in state roads in fiscal 2021 with investments seen declining -2 to 2%. Although state budgets for 14 states, accounting for 81% of road investments for FY19, have shown a 0-2% drop in FY21 RE over budgeted numbers for FY21, CRISIL expects actual investments to be in the range of -5 to 5%. Budgeted estimates for fiscal 2022 of these states have shown a 24% rise in investments but going by historical trends, CRISIL expects 15-20% on-year rise in state road investments in FY22.

Currently, 12-15% of the investment in state road projects is through the public-private partnership mode. We expect steady private participation in state road projects, led by large progressive states such as Gujarat, Karnataka, Madhya Pradesh and Maharashtra. A few states have been seriously pursuing the HAM model. Karnataka and Maharashtra have awarded projects under HAM. Other states such as Madhya Pradesh and Rajasthan have also indicated substantial interest in the model.

Achievement of healthy allocations for FY23 a monitorable



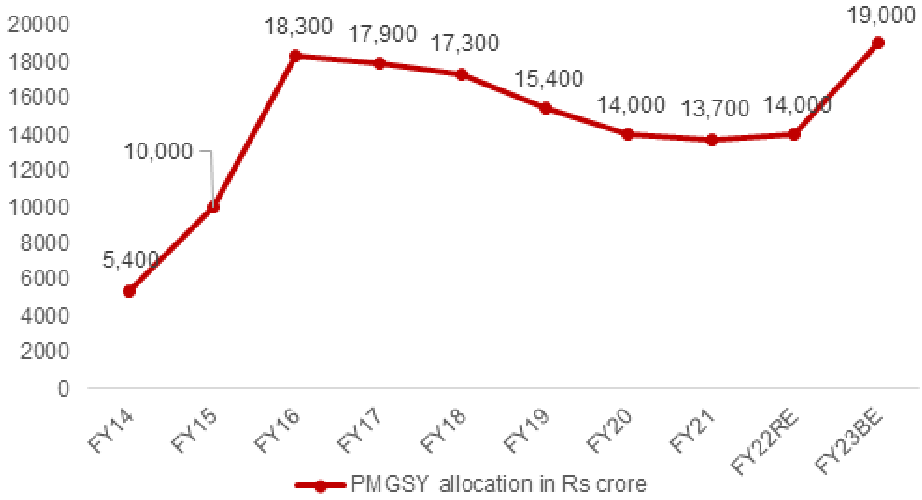
Note: Size of bubble in road capex allocation for FY23BE

Source: CRISIL Research, State budget documents

Rural road construction witnessed an uptrend in FY21 and FY22 creating high base for FY23

Execution under the PMGSY reached an all-time high of 49,037 km in fiscal 2019, with the construction in fiscal 2020 and 2021 below those levels. The budgetary allocation to the PMGSY has been maintained at Rs.14,000-15,000 crore in the past three budgets, including fiscal 2020 with revised allocation seen at Rs.14,000 crore for fiscal 2022.

Budgetary allocation to the PMGSY (Rs.crore)



Note: FY13 to FY20 are actual spending numbers. FY22 is revised estimate and FY23 is budget estimate.

Source: Ministry of Rural Development, CRISIL Research

Construction spends in railways to rise 8-12% in fiscal 2023

Investments in Railways would be led by doubling, track renewals, network expansion, dedicated freight corridor, station development and high-speed rails. While half of the proposed investments will come from budgetary support, the remaining will depend on increased private sector participation and institutional financing.

Construction capex in railways projected to rise 8-12% in FY23

CRISIL Research expects an 8-12% rise in investments in railways in fiscal 2023 led by rise in budget allocation for railways, implementation of high value projects such as the Mumbai-Ahmedabad Bullet train, gaining traction in station redevelopment and completion of the freight corridor. The rise is post a 30-36% rise in investments in Railways in fiscal 2022 owing to high base as first half of FY21 was impacted by lockdown due to coronavirus and the second wave did not cause any major impact on construction as seen in the previous year due to the first wave. A construction capex of Rs.5.8-6.2 lakh crore is seen over the next 5 years compared to 3.8 lakh crore over the past 5 years led by investments in network decongestion, dedicated freight corridors and high-speed trains

The central government announced a capital outlay of Rs.2.5 lakh crore for the Indian Railways in the Union Budget 2023 which is 14% higher than the preceding year's revised estimate of Rs.2.1 lakh crore. The rise is due to planned investments in manufacture of 400 new generation Vande Bharat trains, deployment of KAVACH and nearing completion of the DFC's. The 14% rise is lower than the 20% CAGR in investments over the preceding 5 years(FY18-22E) and based on historical achievement ratio, CRISIL Research is expecting a 8-12% rise in FY23 with an upward positive revision possible. More than half of the planned outlay is expected to be financed through budgetary support, and the remaining through internal sources and market borrowings/institutional finance.

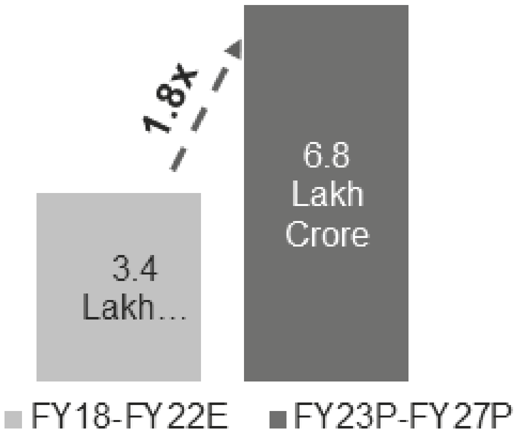
Spend over next five years hinges on the possibility to attract private participation however efforts remain futile

With construction investments over FY23-27P expected almost doubling over the preceding five years, raising funds through external agencies, IEBR and via PPP would be a key monitorable. The railways had initiated the station redevelopment program and the new cargo policy from 15th December 2021 which should aid the ministry in garnering funds for deployment in its core functions of network decongestion/doubling and electrification

Construction spends on railways to increase at 7-9% CAGR over next five years

CRISIL Research expects construction expenditure in railway projects to double between fiscals 2023 and 2027 compared with the preceding five years, fiscals 2018 to 2022.

Construction spend in railways



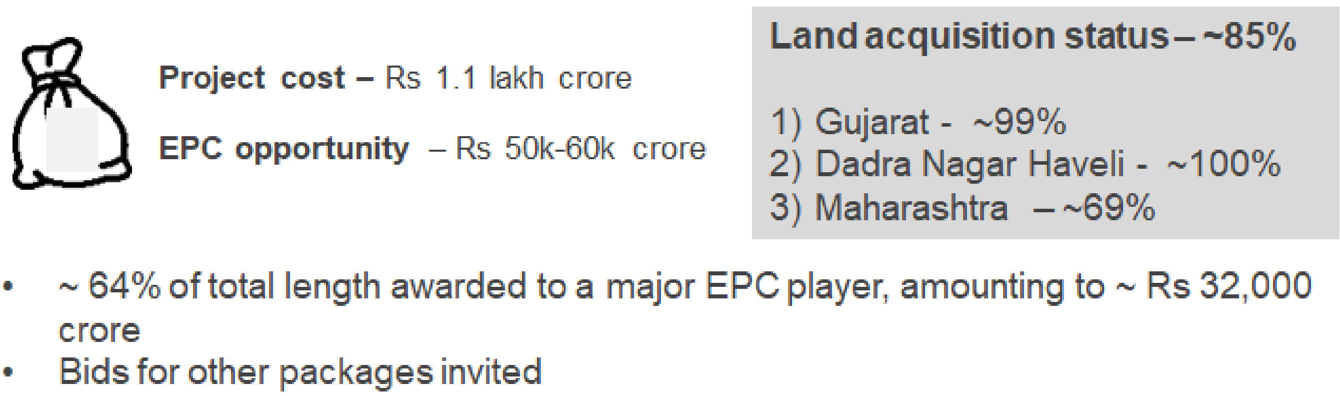
E: Estimated; P: Projected

Source: CRISIL Research, Union budget document

DFC execution to be a major opportunity for construction players

The DFC project is estimated to cost Rs.124,159 for the eastern (1,337 km) and western (1,504 km) sectors, which includes the cost of land acquisition (Rs.21,846 crore) and construction (Rs.1,02,159 crore). The project cost is higher, as it excludes the 538 km stretch of the Eastern DFC (EDFC), which the government proposes to implement through PPP. The length of the project is 3,360 km.

Construction works for MAHSR have been bid out with works commenced



Source: National high speed rail corporation, CRISIL Research

Railways envisages a station redevelopment opportunity of ~Rs.1 lakh crore

Stations identified – 400

Commercial development – Rs 68,000 crore

Station development – Rs 28,000 crore

Projects in bidding stage – Expected redevelopment cost

1) Gwalior – Rs 300 crore
2) Nagpur – Rs 465 crore
3) Amritsar – Rs 375 crore
4) Sabarmati – Rs 156 crore
5) New Delhi – Rs 5,000 crore
6) Mumbai CSMT – Rs 1,642 crore

Source: Indian Railways, CRISIL Research

The Indian railways has envisaged a station redevelopment opportunity of ~ Rs.1 lakh crore with commercial development accounting for ~70% of the development. 400 stations have been identified by the railways and the first station, Habibganj, has completed construction.

The station redevelopment scheme was expected to be implemented under the PPP program, however, with disbandment of the Indian railway station development corporation (IRSDC) with the stations reverting under the zonal railways, station redevelopment is being explored under the HAM(Hybrid annuity model) where the Railways contribute 40% with the private entity bringing in the balance.

Running of private trains to see investments in locomotives and coaches; no construction investments seen

The ministry of railways has held pre-bid meetings and invited RFQ's from interested parties for operating private train on pre-decided routes. An investment of Rs.30,000 crore is envisaged with all of it going to locomotives and coaches and none of it flowing into construction spends. The proposal for running private trains on Government railway tracks despite calling for bids from interested parties saw muted demand, which led to the Railways scrapping the process and calling for a revised model to be drawn up

Urban infra investments to continue rising in the medium term led by rising urbanisation

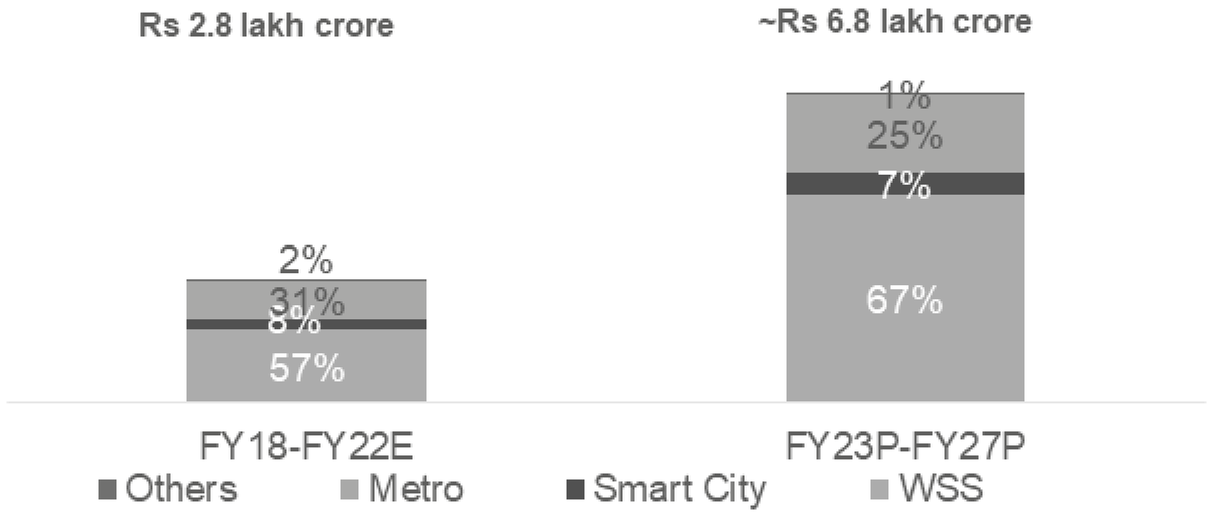
CRISIL Research expects investment in India's urban infrastructure to be driven by government schemes such as AMRUT, Swachh Bharat, Clean Ganga and Jal Jeevan mission. Water supply and sanitation (WSS) projects and metro construction in major Indian cities are expected to boost urban infrastructure investment in the next five years. Commencement of work on 105 smart cities announced so far will also be a key monitorable.

WSS expected to contribute more than half of investments under urban infra

Investments in urban infrastructure are expected to record a 20-25% rise in fiscal 2023 led by investments in Water supply and sanitation under schemes such as Swach Bharat Mission, Jal jeevan mission, AMRUT and deferred investments in Metro projects a bulk of which were under implementation and have achieved financial closure. This follows a 90-95 % on-year rise in urban infrastructure investments in fiscal 2022 , surpassing pre covid levels attributable to low base in FY21 due to the loss of man days due to labour migration and diversion of state funds allocated to infra capex for meeting social and healthcare needs. CRISIL Research expects ~Rs 6.8 lakh crore spends on urban infrastructure between fiscals 2023 and 2027, which is nearly 2.4x of the amount invested in the previous five years.

Urban infrastructure includes construction-intensive mass rapid transit system (MRTS), bus rapid transit system (BRTS), water supply and sanitation (WSS) projects, smart cities, and related infrastructure development.

Construction spends in urban infrastructure

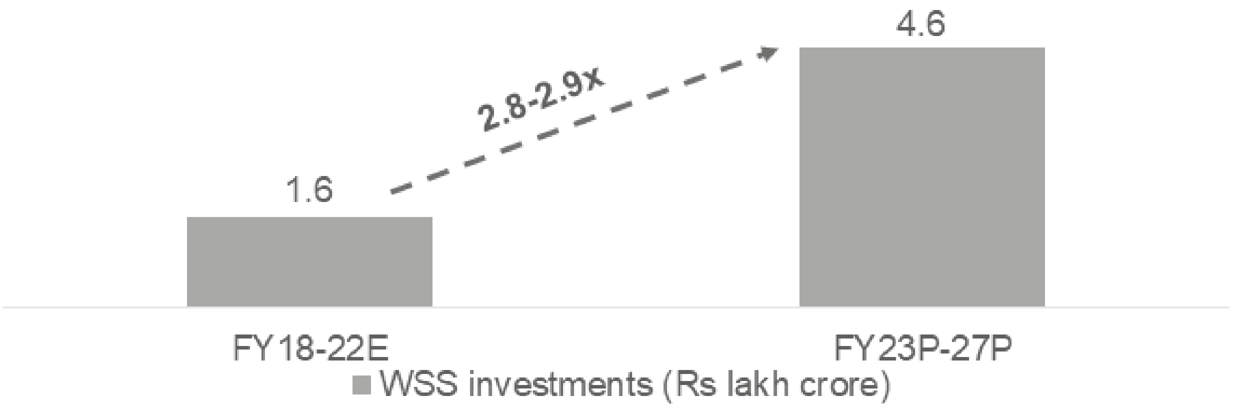


E: Estimated; P: Projected

Source: CRISIL Research

The central govt's push on WSS announced in the budget with allocations rising 33% on year in fiscal 2023 viz revised estimates of fiscal 2022. while state budgets for WSS for FY23BE are up 12% over FY22RE and bode well for the WSS sector in the short and medium term.WSS projects are expected to account for half of the total urban infrastructure investments over the next five years, driven primarily by state governments and through centrally-sponsored programmes such as Jal jeevan mission, AMRUT and Swach Bharat mission.

Govt's increased focus on water supply to drive investments



Source: Ministry of Rural Development, Ministry of Housing & Urban Affairs, CRISIL Research

Announced missions to power WSS projects

Government schemes such as the Swachh Bharat Mission (SBM), Jal jeevan mission and the National Mission for Clean Ganga (NMCG) are likely to boost WSS investments. On October 2, 2014, Prime Minister Narendra Modi launched SBM in order to focus on sanitation and accelerate efforts to achieve universal sanitation coverage. It comprises two sub-missions - Gramin (for the rural areas) and Urban - aimed at achieving a clean India by 2019.

The measures undertaken by the mission include construction of household, community and public toilets, and conversion of insanitary latrines into pour-flush latrines; solid waste management; and public awareness.

The overall capex for SBM (Rural and urban) for FY21 was 5,950 crores with revised estimates for FY22 at 8,000 crores and budgeted numbers for FY23 at 9,492 crores.

AMRUT - Another driver of WSS spend

In May 2015, the government replaced the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), to focus on basic infrastructure services such as water supply, sewerage, storm water drains, transport, and development of green spaces and parks.

Under AMRUT, the Centre is assisting states based on project cost and population of the cities and towns. The financial aid is released in three installments in the 20:40:40 ratio, based on achievement of milestones indicated in the State Annual Action Plan.

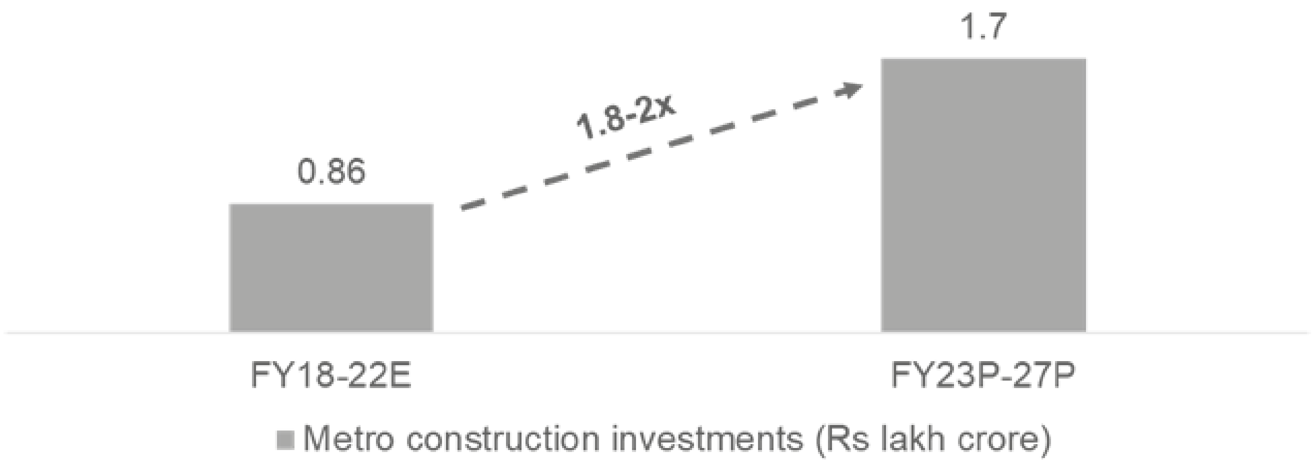
The scheme also covers JNNURM projects sanctioned between 2005 and 2012 and those that have achieved 50% physical progress (102 projects) or have availed of 50% central government funding up to the initiation of project (296 projects). The budgetary outlay for AMRUT in fiscal 2023 is Rs.7,300 crore while revised estimates for fiscal 2022 is Rs. 7,300 crores and spends in FY21 were 6,449 crores.

Metro construction: Second-largest urban infra investment contributor

CRISIL Research estimates that construction spends on metro projects in India will increase 1.8-2 times to ~Rs.1.7 lakh crore over the Fiscals 2023-2027, making it the second-largest contributor to urban infrastructure investments. Bulk of the metro projects are under construction and have achieved financial closure with the lockdown and migration of labour the only impediments in FY21 driving investments lower and a deferral of investments led to revival in fiscal 2022, while the momentum continued in 2023. Medium term growth in the sector would be led by the development of number of projects announced and under implementation by various state governments. A new metro rail policy was announced in the 2018 Union Budget, which targeted developing private interest in the segment.

To increase the viability of metro projects and make them available across cities with lesser populations, the Govt. has announced Metro-Neo and Metro-Lite which are cheaper to construct and operate and are suited for cities with lower population densities.

Metros offer an opportunity worth abour Rs.one and a half lakh crore



E - Estimated, P - Projected

Source: CRISIL Research

CRISIL Research believes majority of the total investment for the MRTS between fiscals 2022 and 2026 will be in these key projects: Delhi Metro Rail Project phases III and -IV; Mumbai Metro projects lines 2A, 2B, 3; Chennai Metro phase-II; Nagpur Metro; and Pune Metro projects.

Progress in key metro projects

Metro projects	Status
Mumbai	Work for 3 lines in advanced stages, 5 more lines under imlpementation, total 14 lines approved
Pune	First 2 phases on track, 3rd phase to be awarded on PPP
Delhi	Phase 3 almost complete, phase 4 – 3 out of 6 corridors approval received
Chennai	Phase 1 ext. line to begin soon, phase 2 yet under planning
Hyderabad	Phase 1 completed. Phase 2 in proposal state
Bangalore	Phase 1 completed, phase 2 under construction

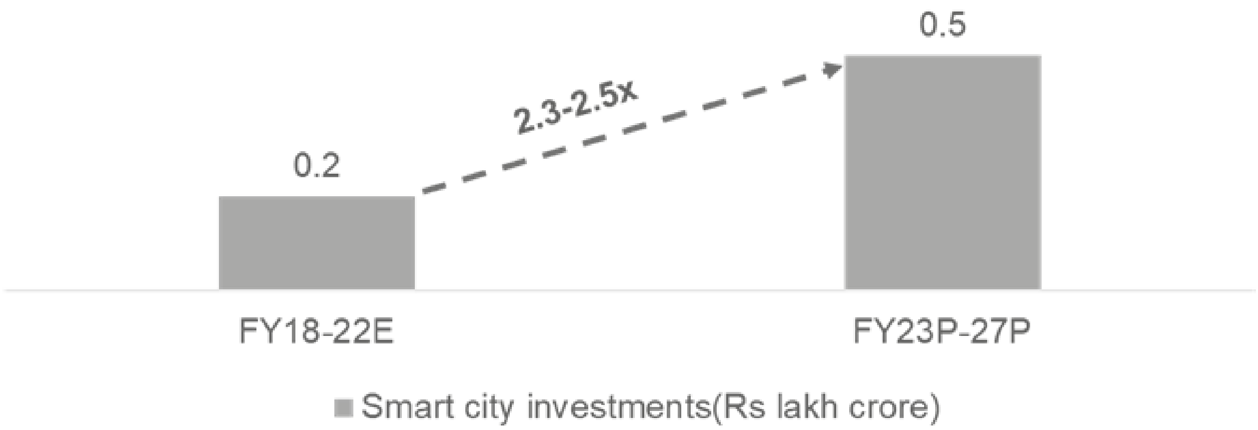
Source: CRISIL Research

Apart from the above-mentioned cities, metro lines are current under construction in Agra, Nagpur, Ahmedabad, Kanpur, Navi Mumbai, Patna, Kanpur, Surat.

Investments in smart cities to be construction-intensive

Based on the overall plans for the first 90 cities, investments are expected to be construction-intensive, as segments such as housing, roads, non-residential development, sewage systems, etc, will constitute a considerable portion of the total investments.

Smart city investments to almost quadruple on a low base over the next 5 years



Source: CRISIL Research

Irrigation investments to get back to pre-Covid levels in FY23

Construction spend on irrigation will rise over the next five years despite a blip in FY21. State funds will continue to play an outsized role in Irrigation investments with the eight major states accounting for 65-70% of the investments in the medium term

State funded irrigation construction capex to record a muted 4-6% increase in FY23 with major states recording muted spends in the first half of the fiscal

CRISIL Research expects construction capex in Irrigation to rise by 4-6% on year in fiscal 2023. State budget allocation for FY23 for 20 states, which accounted for more than 95% of irrigation spends in FY20, have witnessed a 20% rise over FY22RE numbers. However, in keeping with historical achievement ratios of 75-80% and modest spends of states in H1 of current fiscal (recorded only 2% rise) we expect a 4-6% rise in fiscal 2023 over fiscal 2022 numbers. Irrigation spends to rise 6-8% in FY24 on a low base of FY23 with increase in focus on completion of major irrigation projects

Construction capex in FY22 is expected to have risen by 3-5% on a low pandemic impacted base as states refocused on infrastructure spends post diversion of state funds for meeting social and healthcare spends in fiscal 2021. The share of top 7 states is expected to decline marginally to 65-70% in irrigation spends over fiscals 2022 and 2023.

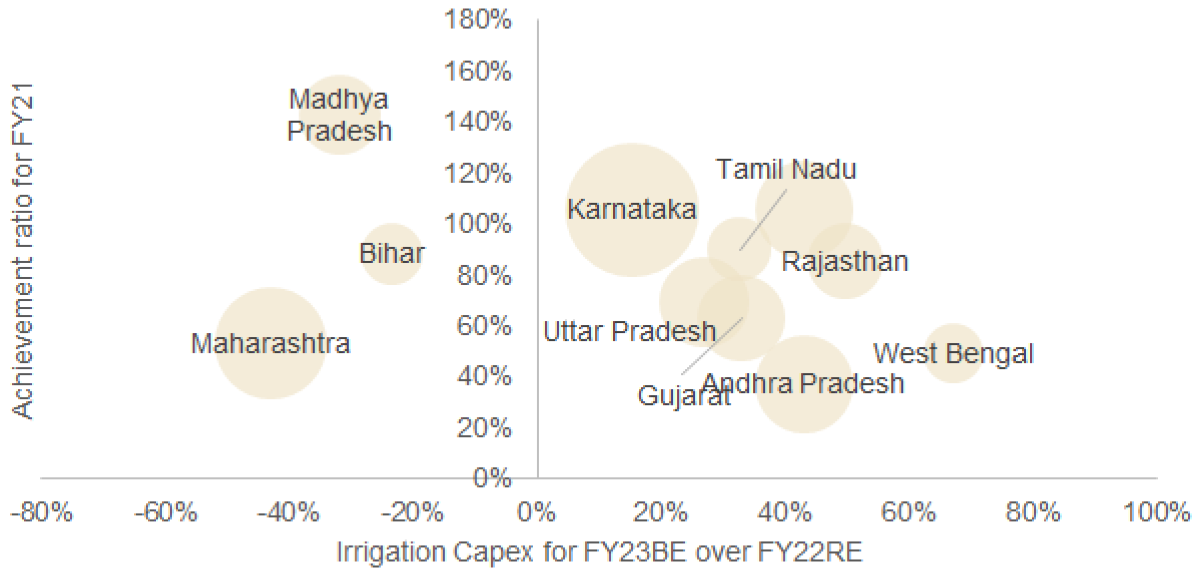
Construction spends in irrigation projected to rise to Rs 4.3-4.5 lakh crore over fiscals 2023 to fiscal 2027 from Rs 3.2 lakh crore over the past five years (fiscal 2018 to 2022) owing to the push from state governments to increase irrigation penetration in states.

In fiscal 2016, the central government converged irrigation schemes under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to expand the area under cultivation. The key schemes converged are Accelerated Irrigation Benefits Programme (AIBP), Integrated Watershed Management Programme, On Farm Water Management, and Per Drop More Crop. .

Spending in irrigation by states to increase, Centre to focus on monitoring

The government has increased the spending requirement by state governments from 32% to 42%, in line with greater transfer of taxes to states. The central government will play an active role in monitoring the progress of PMKSY projects, and has taken several steps to crystallise investments for irrigation.

Achievement ratio across states



Note: Size of the bubble indicates irrigation investments for FY23BE in Rs.Crore

Source: CRISIL Research, State budget documents

Power construction capex to grow 12-16% in FY24 led by push from renewables and T&D

Construction spending on power is expected to increase over the next five years as a result of a pickup in capacity addition across the renewable segment and investment in the transmission and distribution (T&D) segment. Investments in airports, warehousing and ports are expected to pick up over the medium term, while those in telecom towers will go down amid limited capacity upgradations.

Power investments driven by conventional capacity additions coupled with renewables to rise 25-28% in FY23

CRISIL Research expects construction spending on power to rise 12-16% on year in fiscal 2024 attributable a sharp pick up in renewable investments to meet the 300GW target till 2030 set out by the Prime Minister, followed by estimated rise of 55-60% rise in FY23 because of increase in focus by central government capex in investments in renewable sources of energy coupled with deferred investments from FY22. Investments are expected to have recorded a 12-16% rise in fiscal 2022 on a very low base of FY2021 where the sector was impacted due to non-availability of labor owing to the Covid-19 pandemic and an extension in renewable projects completion dates allowed by the Government. Construction Investments over the next five years are projected at ~ Rs. 3.6 lakh crore from Rs. 1.6 lakh crore over the past 5 years, led a rise in the addition of renewables, non-renewable generation capacity and investment in the transmission and distribution (T&D) sector along with revival of stalled hydel projects and traction in pump storage investments

We forecast construction investments of around Rs 23-27,000 crores in the ports sector over the next five years. Spending on telecom towers will be limited because of adequate existing infrastructure, focus on improving tenancy, stretched financials of several companies and near monopolistic telecom operator market while investments in airports would be almost 1.7 times led by brownfield capacity expansion at Delhi, Bangalore and Hyderabad and greenfield investments at Jewar, Mopa, Bhogapuram and Navi Mumbai. .

Construction spending trends in infrastructure (Rs.crore)

Sectors	Construction spends over the last 5 years	Construction spends over the next 5 years
Power	156,068	340-360,000
Airports	30,374	50-55,000
Ports	17,255	23-27,000
Telecom towers	24,076	12-15,000
Warehousing & Cold storage	23,445	40-42,000

Source: CRISIL Research

Investments in renewables to lead to 25-28% rise in power construction investments in fiscal 2023

CRISIL Research expects construction spending on power to rise 55-60% on year in fiscal 2023 attributable to rise in investments in renewables to meet the 175GW target for Dec 2022 set by the Govt. Investments are expected to have recorded a flat 0-5% rise in fiscal 2021, due to non-availability of labour owing to the Covid-19 pandemic and an extension in renewable projects completion dates allowed by the Government in the year FY22, leading to an increase of 10-15% rise which fueled the growth of sector in FY2023 as well. Construction Investments over the next five years are projected at ~ Rs. 3.6 lakh crore from Rs. 1.6 lakh crore over the past 5 years, led a rise in the addition of renewables, non-renewable generation capacity and investment in the transmission and distribution (T&D) sector along with revival of stalled hydel projects.

CRISIL Research projects a sharp rise in the addition of renewable generation capacity in FY24 and FY23 by 1200 MW attributable to return of normalcy post covid induced pandemic in FY2021 where the investments in renewable suffered due to manpower migration, extensions sought by developers due to the pandemic and flooding and fires in key solar panel manufacturing plants leading to delays in panels procurements. Fresh project announcements have been limited, as players opt for inorganic expansion, given the availability of assets at reasonable valuations. Further, delays in land acquisition and obtaining environment and forest clearances are expected to delay the commissioning of projects. Adani Power, Reliance Power, JSW Energy and NTPC have either acquired capacities or are evaluating existing projects for acquisition. The deferred investments from FY21 led to spill over in FY22 leading to healthy growth coupled with the rise in investments in FY2023 for meeting the planned renewable energy target set out by the Govt. However, investments will have to pick up in order to meet the ambitious 300GW renewable target set out by the Government.

Investments in the transmission segment are expected to grow strongly over the next five years, led by investments in inter-regional transmission, especially for renewable energy grid integration by Power Grid Corporation of India Ltd, coupled with steady investments from various states to augment their intra-state networks. This is because of sub-par investments in T&D, compared with investments in generation over the past five years. Rising private sector participation will also support the transmission segment's investments. Investments in the distribution segment are expected to be driven by higher outlay from the Central government for various distribution-related schemes and state investments to reduce aggregate technical and commercial (AT&C) losses. However, T&D projects have a lower construction intensity of about 10%.

Renewable-energy capacity addition will grow faster than that in non-renewable segments over the medium term

The government is making a strong push for capacity addition in the renewable energy space through:

- Accelerated depreciation and generation-based incentive investments in the wind energy segment;
- Commissioning of projects allotted under state policies, such as the Jawaharlal Nehru National Solar Mission Phase II; and
- Aggressive expansion plans by the Central public sector units in solar power

However, the renewable energy segment's contribution in construction investments will only be around 20% of the total construction spending in Power due to the low construction intensity for renewable projects.

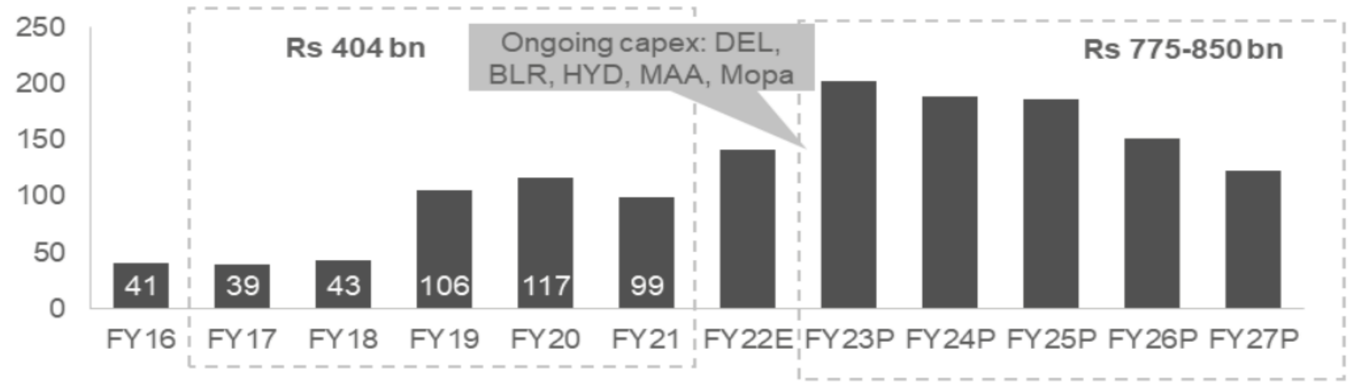
Long term investment in airports to double, driven by expansion of brownfield airports

Airport investments are a positive for construction players, as around 60% of the funds are channelled into the construction activity.

CRISIL Research expects that capex investments in airports grow by 40-45% driven by expansion Bangalore, Delhi, Hyderabad and Chennai airports as well as with progress of greenfield projects at Jewar, Navi Mumbai, Mopa and Bhogapuram airports. CRISIL Research expects that capex investments in airports grew by a whooping 40-45% in FY22 on a account of low base in FY21 impacted due to the migration of labour due to lockdown. This led to deferred investments in FY2022 and the momentum continued in fiscal 2023 where investments are expected to record a 40-45% rise led primarily by spilling over of investments of FY21 in the year FY2022 and FY2023, commencement of construction of Jewar airport and a pick up in NMIA construction activities. Covid-19 pandemic is unlikely to defer long term capex plans as bulk of the funds have been tied up and airport operator revenues are protected by 16% return on equity guaranteed by AERA for aeronautical revenues. Construction spending on airports will be an estimated Rs 50-55,000 crore over fiscals 2023 to 2027, compared with Rs 30300 crore over the previous five years.. The monetisation of existing assets by AAI, stake sales in the privatized metro airports would lead to recycling of funds leading to investment in UDAN airports.

Implementation is more challenging in case of greenfield projects, due to land-acquisition and clearance issues .

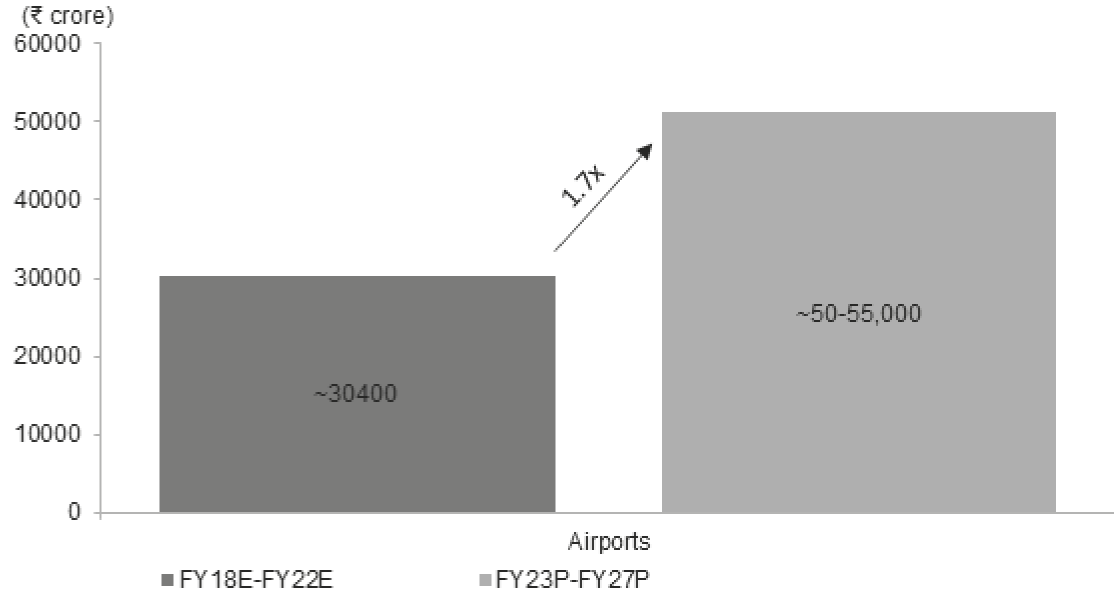
Total investment of Rs.775-850 billion expected over the next five fiscals



Note: E: Estimated, P: Projected

Source: CRISIL Research

Construction investments in airport infrastructure



Note: E: Estimated, P: Projected

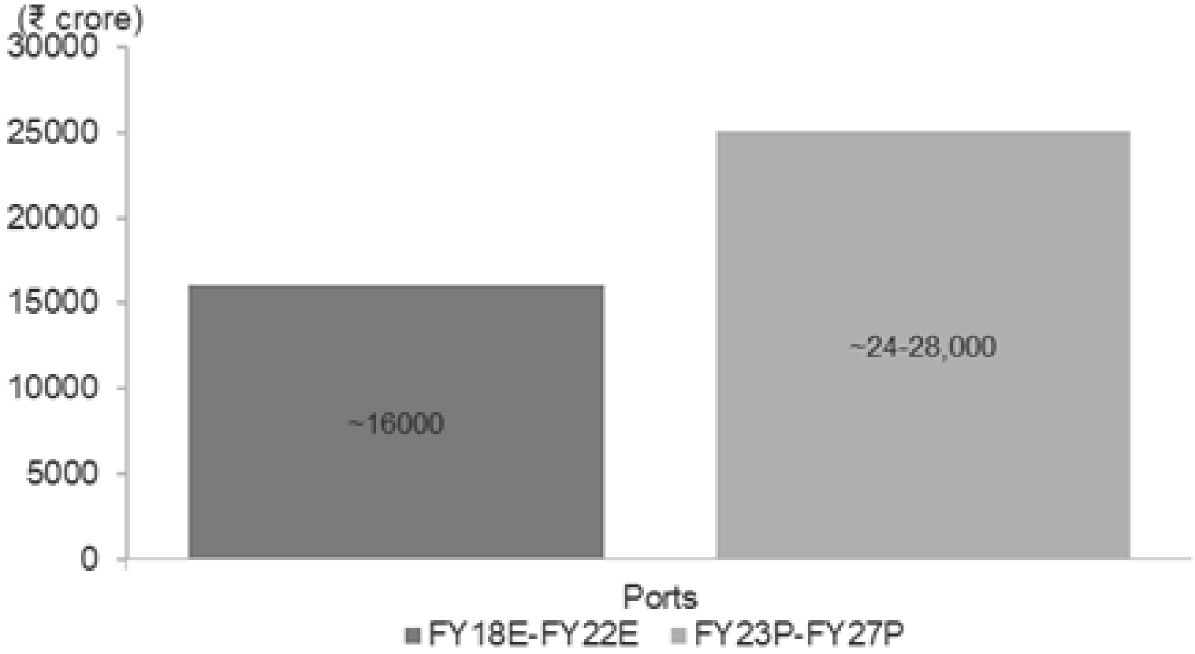
Source: CRISIL Research

Investments in ports to increase in long term

The private sector has accounted for most of the investments in the ports sector in the past few years, concentrating on non-major ports. Public sector contribution has remained limited to the maintenance of draft and building of allied infrastructure, such as roads at major ports. Construction investments worth Rs 23-27,000 crore is expected until fiscal 2027 in the sector. The incremental investment is expected to be majorly in POL and container segments as iron ore segment is currently facing oversupply, and fresh investments in the coal segment are tepid.

Of the total investment, more than 60% is expected to come from major ports, which will account for 60-65% of capacity addition. Maharashtra, Tamil Nadu, Odisha, Gujarat and Andhra Pradesh will account for 75-80% of total investments. About 70-75% of the total capacity addition in the sector is expected to come from the coal and container segments. While JNPT, Vizhinjam, Ennore and Dhamra will spearhead capacity addition in the container segment, Paradip, Ennore and Hazira will lead in coal. .

Construction spending on ports



Note: E: Estimated; P: Projected

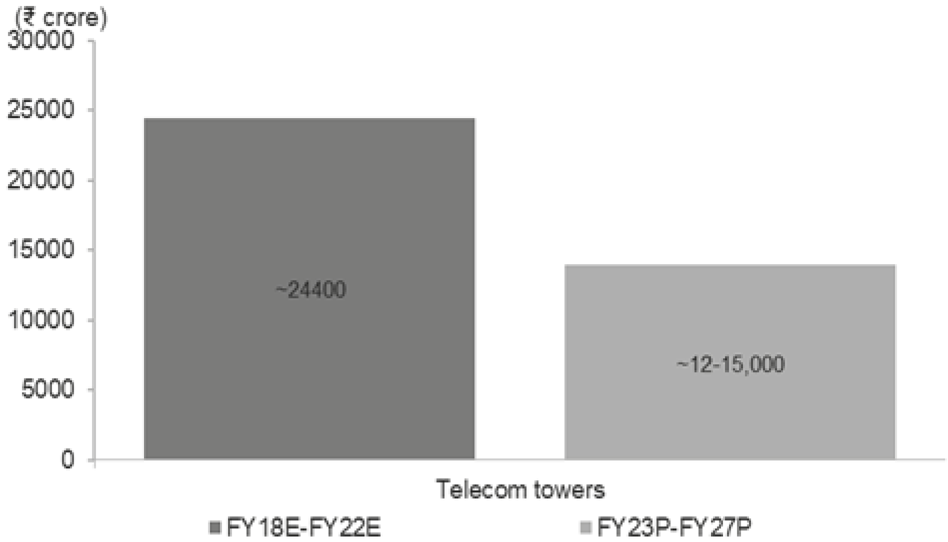
Source: CRISIL Research

Investments in new telecom towers to decline

CRISIL Research believes the telecom towers and allied services industry will attract construction investment of ~ Rs.12-15,000 crore between fiscals 2023 and 2027, which is lower than the capex incurred during the past five years.

The telecom towers industry witnessed exponential growth in construction and upgradation capital expenditure (capex) over fiscals 2016-2019 owing to massive network expansion and the 4G rollout. During this period, over ~853,000 base transceiver stations (BTS) were cumulatively added to roll out 3G and 4G services. By contrast, only ~160,000 BTSs are expected to be added till fiscal 2022. This is because telecom companies (telcos) are currently focusing on replacing 2G and 3G tenancies with 4G tenancies to bring their subscriber base under the umbrella of 4G services, thus limiting construction capex growth in fiscal 2022 while the telecom market has consolidated to 3 players plus the public player leading to drop in tenancies across tower sites which reduces the demand for telecom tower infrastructure.

Construction spending on telecom towers



Note: E: Estimated; P: Projected

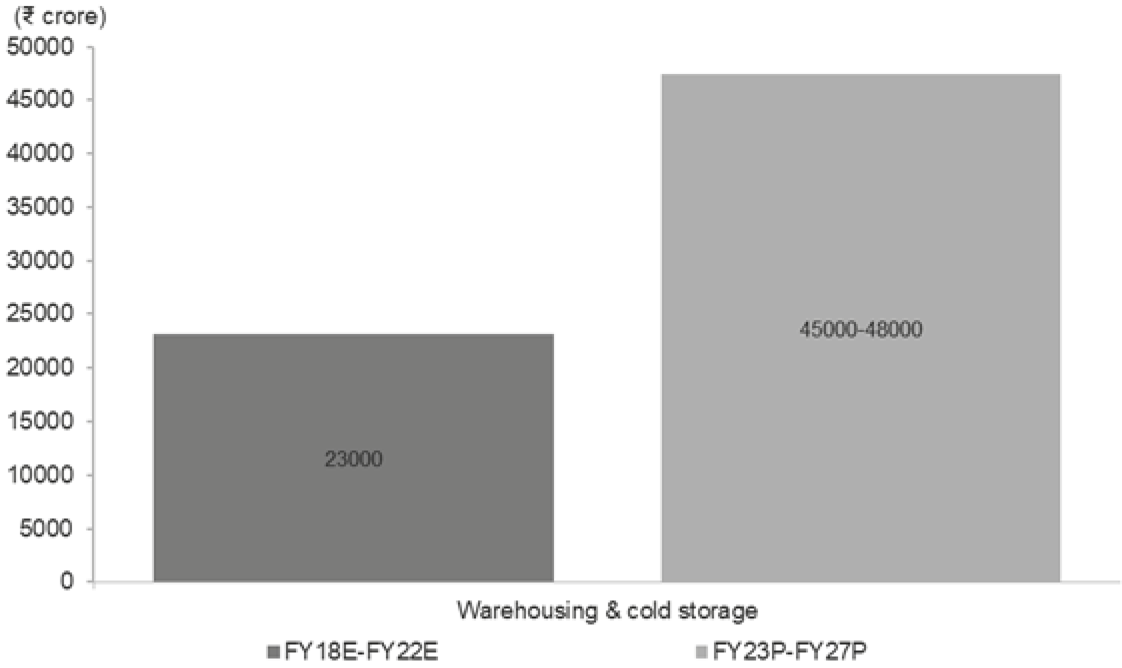
Source: CRISIL Research

New warehousing hubs to emerge, organised players to benefit the most

CRISIL Research projects construction investments in the warehousing (agricultural and industrial) and cold-storage (single- and multi-commodity) sectors to touch Rs 40-42,000 crore over the next five years on expectations of increased demand. Industrial warehousing is likely to comprise over 85-90% share of total investments in warehousing. Early payback in multipurpose cold storages as against single-commodity storages is expected to boost investments in the segment.

In the new scheme of things, Haryana is increasingly finding favour as a consumer durable and FMCG hub, compared with New Delhi or Ghaziabad. This is because of its dual advantage of being one of the highest consumption markets in the National Capital Region, and located within 300 km from major markets, such as Punjab and Delhi, and 350-450 km from Rajasthan, Himachal Pradesh, and Uttarakhand. Another new hub is expected to emerge in Assam for the north-eastern region.

Construction spending on warehousing and cold storage



Note: E: Estimated, P: Projected

Source: CRISIL Research

4.4 Overview of key infrastructure schemes

National Investment Pipeline (NIP)

National Infrastructure Pipeline (“NIP”) has been launched by the government for fiscal 2020 to 2025, to boost infrastructure. As per the Final Report of NIP Task Force, National Infrastructure Pipeline (“NIP”) is expected to have an investment of ₹111 trillion during the period fiscal 2020 to 2025. Investments in energy (24%), roads (18%), urban (17%), and railways (12%) will amount to over 70% of the projected capital expenditure during the said period. As per the economic survey, NIP will be funded from Central Government (39%), State Government (40%), and the private sector (21 per cent). As per the official India investment grid website accessed on 20th June 2022, 2,420 projects are currently under development covering over 34 sub sectors.

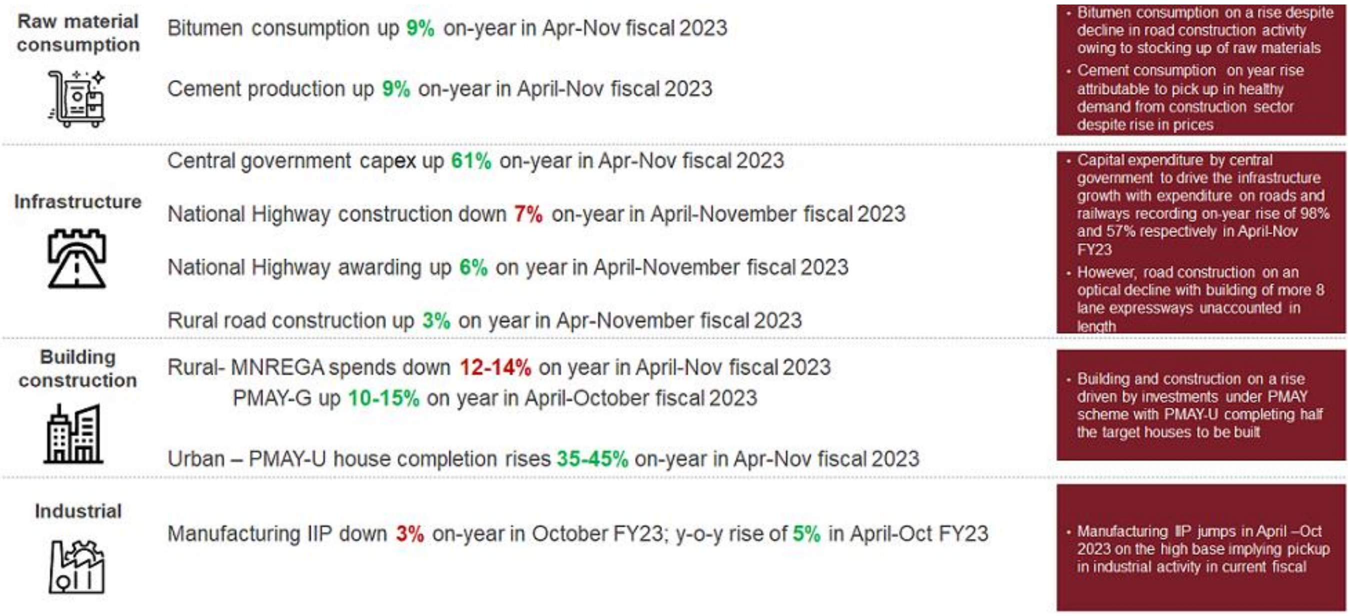
National Monetisation Pipeline (NMP)

Success of the National Monetisation Pipeline (NMP) unveiled by the Centre recently hinges critically on road assets, a CRISIL Research analysis underlines. As per the report of the Task Force for the National Infrastructure Pipeline (NIP), 15-17% of the Rs.111-lakh crore investment outlay envisaged under it is to be met through innovative and alternative initiatives such as asset monetisation and funding through a development finance institution (DFI). NMP has two stated objectives. One, to recycle public capital by generating upfront fees on the existing brownfield infrastructure assets and utilising the proceeds for new asset creation. Two, to bring in private sector efficiencies in operation and management of these assets sans the construction risk. Monetisation of road assets holds the key here, as it accounts for ~27% of the NMP in value terms. The government aims to generate Rs.1.6 lakh crore by monetising 26,700 km of four-lane-and-above national highways via the toll-operate-transfer (TOT) and the infrastructure investment trust (InvIT) routes at Rs.6 crore per km.

GATI SHAKTI

Projects worth Rs. 100-lakh cr across diverse sectorsto get a boost To speed up implementation of infrastructure projects worth Rs. 100-lakh crore and bring down logistics cost, Prime Minister Narendra Modi on Wednesday launched the 'PM GatiShakti - National Master Plan' for multi-modal connectivity spanning road, railways, aviation, clean energy and digital connectivity to economic zones. "We are laying a foundation for the next 25 years. This national master plan will give 'gatishakti' to development plans of the 21st century and will help in the timely completion of these plans," Modi said, unveiling the Gati Shakti National Master Plan on Wednesday. The project will incorporate infrastructure schemes of various Ministries and State Governments designed and executed with a common vision, per a tweet by the Prime Minister's Office. The plan will incorporate projects under existing flagship schemes under different Ministries including Bharatmala, Sagarmala, Bharat Net, Udaan and expansion of road and railway networks and inland waterways.

Construction sector record healthy growth driven by central government capex

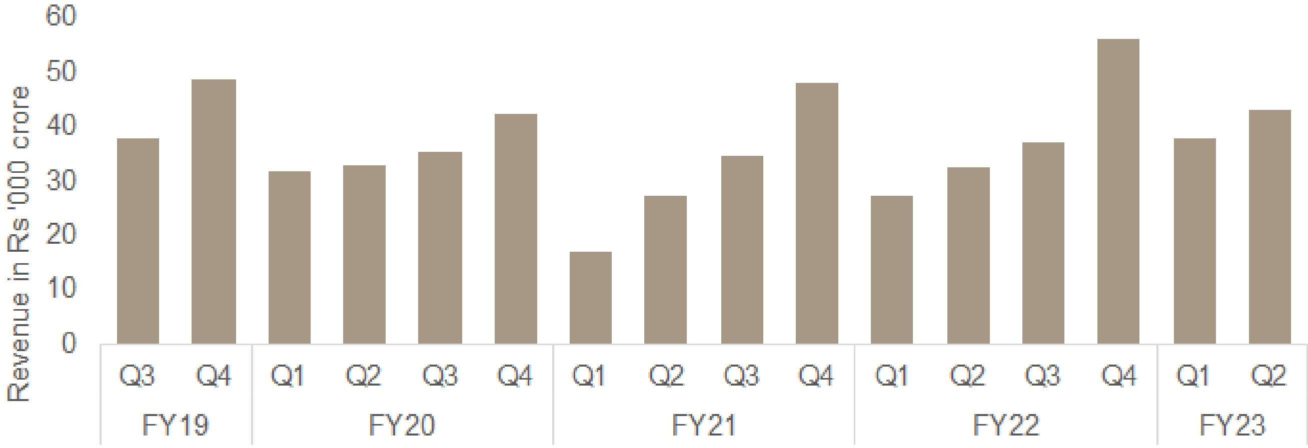


Source: CGA, NHAI, PMGSY, MNREGA, Ministry of housing and urban affairs, MOSPI, CRISIL Research

4.5 Current state of the infrastructure industry players

Revenues and margins to rise in FY23 with rising execution

CRISIL tracks the revenues for a sample set of listed EPC companies as an indicator for the strength of the sector. Revenues for the sample set tracked reached an all-time high in fiscal 2022 pointing towards the strength of the sector.



Note: Data on revenue is based on a sample of 21 listed EPC companies considered by CRISIL

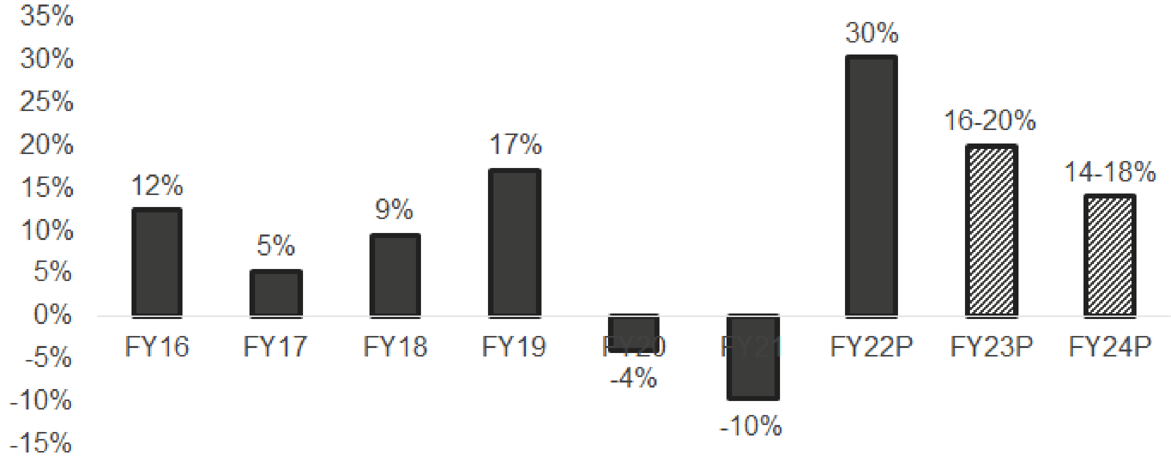
Source: Company reports, CRISIL Research

Operating margins to improve with softening commodity prices in FY23

Operating margins of construction players have remained range-bound over fiscals 2015 to 2019, as better absorption of fixed costs on account of improvement in execution was offset by a change in the revenue mix. In the past two years, revenue has been driven by segments with inherently low margins such as roads, power transmission and distribution (T&D), and water supply and sanitation. Going forward, the segments driving execution are higher margin segments such as roads, railways, and urban infrastructure.

Revenue of players is seen rising 16-20% on year in fiscal 2023, led by a 12-16% hike in construction spends in fiscal 2023 coupled with commodity cost inflation. This is post a 30% rise on year in fiscal 2022, led by pick up in execution, healthy order books padded by deferred investments from FY21, execution of high value projects such as expressways and the bullet train project. Wheras for fiscal 2021, revenue of players in our sample set declined 10% on year attributable to the lockdown impacting construction activities, with Q1FY21 an almost washout for many sectors and the lockdown induced migration of labour leading to loss of mandays in H1FY21.

Revenue outlook for construction firms



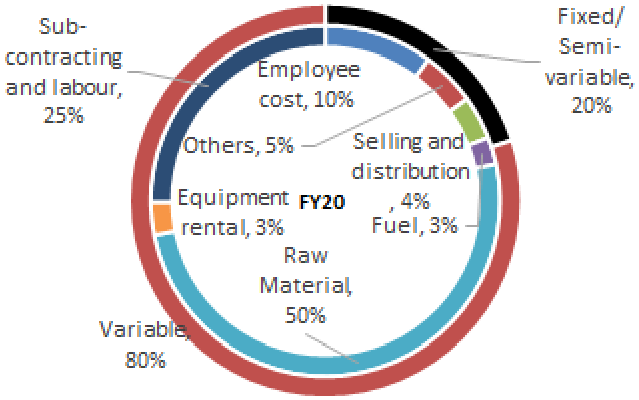
Note: Sample consists of 29 companies on a standalone basis

P - projected

Source: CRISIL Research

Construction sector firms have low proportion of fixed costs with variable costs linked to power, fuel, raw materials and contractual labour forming the bulk of the cost heads for firms.

Lower proportion of fixed costs for Construction firms

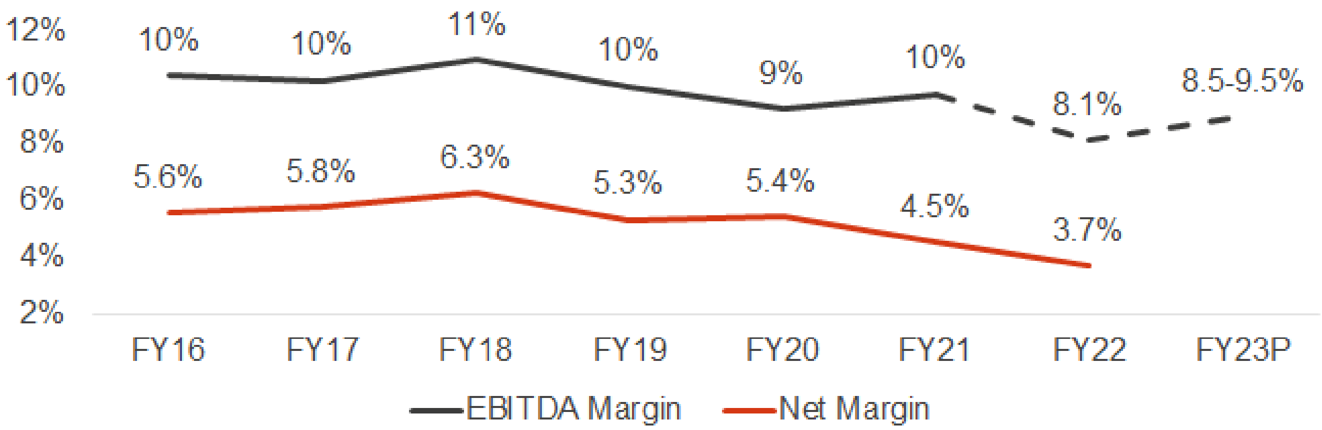


Source: CRISIL Research

Margins for FY23 are projected crawling back up to 8.5-9.5% led by improved execution, softening of commodity prices, operating efficiencies brought about during the pandemic and delayed pass on of commodity inflation price hikes. Margins for fiscal 2022 were recorded at 8.1% owing to inflationary pressures on raw materials. With more than 75-80% of projects having cost escalation clauses built in, the rising costs of raw materials would be passed on to the project owners with some delays based on contract clauses. The lag in passing on input cost escalation is led to margins being capped in fiscal 2022.

In FY21, the companies considered in the sample set recorded EBITDA margins at 10%, higher than FY20 levels, back to pre-Covid levels attributable to companies utilising the Covid-19 outbreak to focus on improving operating efficiencies and adopting stringent cost control measures to safeguard operating margins while also being cushioned by the lower proportion of fixed costs,20-25%, for construction firms.

Margins to tend back to pre-Covid levels in the current fiscal



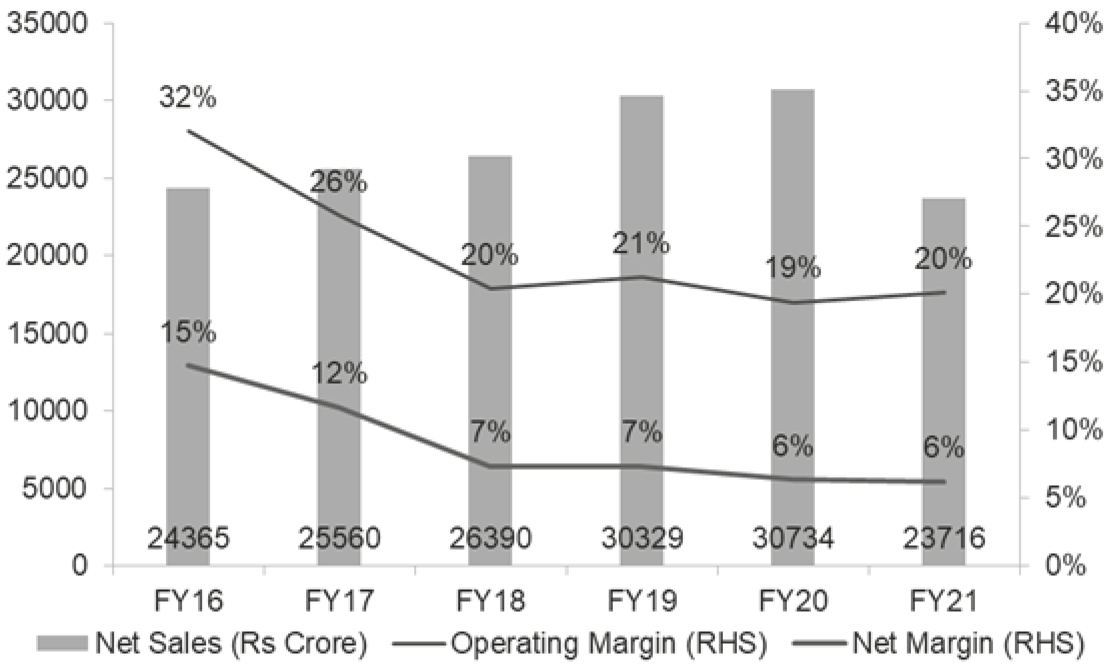
Note: Standalone data for 29 companies; P: Projected

Source: CRISIL Research

Financials of developers expected to strengthen in FY22 with pick up in sales and reduction in inventories

Demand for residential real estate across all major metros was sluggish over the past couple of years owing to high prices. The demonetisation and RERA implementation only added to the worries. While the government's moves will undoubtedly see the industry take it on the chin in the short term, CRISIL Research believes the steps are a long-term positive. They will bring about sweeping changes to the way the sector functions. We believe investors will now reassess their existing holdings and fresh investments into the sector will be limited as the market may not be seen as a lucrative asset class. At the same time, the drop-in interest rates to multi-year lows, drop in inventory prices due to the pandemic coupled with stamp duty cuts announced by various state Governments led to traction in real estate demand aiding developers. The traction is expected to continue in fiscal 2022, contingent on interest rates staying at similar levels, leading to improvement in financials of players.

Net margins of players have fallen in last few years

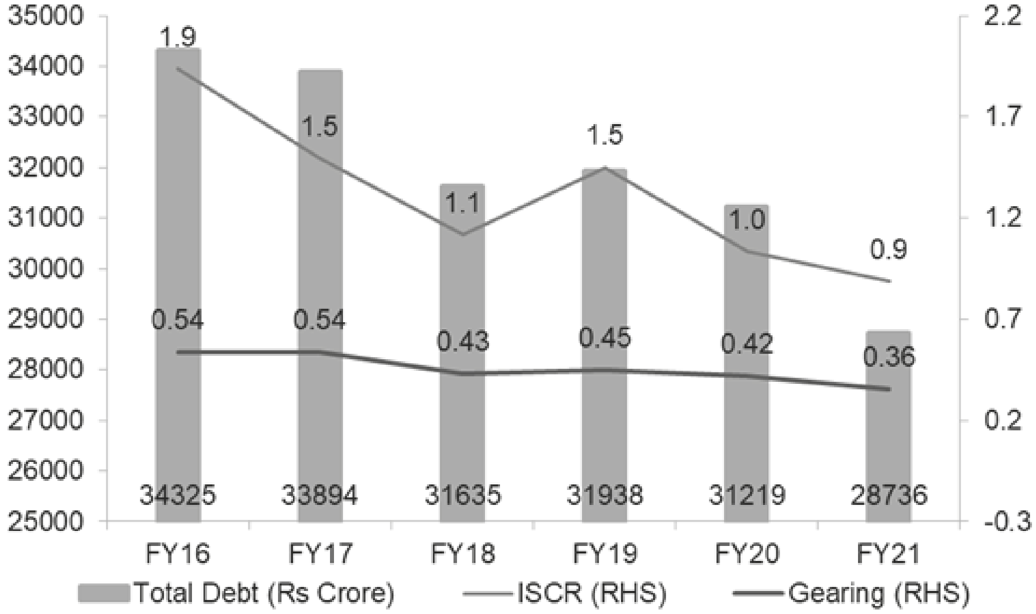


Note: Sample consists of 32 companies

This is the latest available data. Data for FY22 for some companies in the sample is yet awaited

Source: CRISIL Research

Financial flexibility of developers appears poorer in fiscal 2021 but deleveraging of balance sheets to hold them in good stead.



Note: Sample consists of 30 companies.

Source: CRISIL Research

DFC execution to be a major opportunity for construction players

The DFC project is estimated to cost Rs.124,159 for the eastern (1,337 km) and western (1,504 km) sectors, which includes the cost of land acquisition (Rs.21,846 crore) and construction (Rs.1,02,159 crore). The project cost is higher, as it excludes the 538 km stretch of the Eastern DFC (EDFC), which the government proposes to implement through PPP. The length of the project is 3,360 km.

Policy push aimed at improving private participation in national highways

The following are the recent policy changes that MoRTH and NHAI have undertaken to in order to improve private participation in the sector and increase competition (more details in National Highway and Competition chapters):

- Technical and Financial bidder eligibility criteria reduced for HAM and EPC projects which would promote entry of smaller players.
- Changes in the Hybrid Annuity Model (HAM) concession agreement aimed at protecting developers' returns and easing their cashflows during construction period
- Changes in the Build-Operate-Toll (BOT) concession agreement in order to reinstate developer interest in the model.

4.6 Key budgetary announcements for the infrastructure industry

- Aggregate budgetary support for capital expenditure (cape) next fiscal has been increased 28% over fiscal 2023RE to Rs 18.6 lakh crore. For infrastructure sectors*, it has been increased 17% to Rs 12.5 lakh crore
- Railways capex has been budgeted at Rs 2.9 lakh crore, which is ~ 15% higher than fiscal 2023RE driven by gross budgetary support of Rs 2.4 lakh crore

- The central government has extended the 50-year interest-free loan to states, with an outlay of Rs 1.3 lakh crore, to boost infrastructure
- Focus on urban infrastructure is imperative for the formation of Urban Infrastructure Development Fund (UIDF), which will aid urban infrastructure in Tier 2 and 3 cities
- 100 critical transport infrastructure projects for last-mile and first-mile connectivity for ports, coal, steel, fertiliser and food grains have been identified. Investment of Rs 75,000 crore has been allocated for these projects, out of which Rs 15,000 crore will come from the private sector. This would improve last-mile and first-mile connectivity. Coupled with Gati Shakti and National Logistics Policy, this initiative can provide a fillip to the Indian logistics sector and lower logistics cost.

Impact

- Aggregate capex - including capital outlay, grants for capital creation, and internal and extra budgetary resources (IEBR) - of Rs 18.6 lakh crore next fiscal is up 28% over fiscal 2023RE. The share of gross budgetary support and grants allocated for capital creation has been increased to 74% from 69% of overall capital outlay - this indicates the government' reliance on direct budgetary support, thereby improving fiscal transparency
- The 11 core infra ministries account for ~65% of overall capex. In the infrastructure basket, railways (25% growth), water (73%), renewables (38%), and petroleum and natural gas (69%) have received a stronger impetus. Roads and railways account for ~44% of the overall infra capex

Note: *The 11 core infra ministries are Road Transport and Highways, Housing and Urban Affairs, Civil Aviation, Power, Railways, Shipping, Rural Development, Water Resources, New and Renewable Energy, Defence, and Petroleum and Natural Gas

Roads and highways

- Capex for roads and highways next fiscal has been increased a sharp 25% over fiscal 2023RE. Similar to the previous fiscal, the entire Rs 2.59 lakh crore is via gross budgetary support as the IEBR limit has been completely eliminated in order to reduce dependence on the National Highways Authority of India's (NHAI's) borrowings. On the other hand, the asset monetisation target has been slashed by half to Rs 10,000 crore (RE) from Rs 20,000 crore (BE), in line with the limited success in awarding toll-operate-transfer (TOT) bundles. This assumes greater significance because roads account for close to 30% of the National Monetisation Pipeline (MP) targets, and the slower-than-expected progress of monetisation in the sector indicates a delay in achievement of MP targets and continued dependency on budgetary support for the sector
- Budgetary allocation of Rs 1.62 lakh crore to the NHAI next fiscal is up 15% over fiscal 2023RE. However, the contribution of cess towards NHAI funding for fiscal 2024BE is around 1% of fiscal 2023RE as the reduction in value-added tax (VAT) on crude oil and diesel adversely impacted receipts in the Central Road and Infrastructure Fund (CRIF). Fiscal 2024BE CRIF receipts are as much as 31% lower than fiscal 2023RE. Coupled with the elimination of IEBR, this implies that a significantly large portion of NHAI funding would be met through gross budgetary support. Nonetheless, the sources of NHAI funding remain a key monitorable
- The budget introduced provisions for making unit redemption of infrastructure investment trusts (InviTs) taxable at the hands of the unitholders - it was non-taxable earlier. The move is aimed at widening the tax base. While this would increase the tax outgo for investors, attractive risk-reward dynamics are expected to keep investor interest buoyant in InviTs in the roads sector .

Railways

- Railways cape for next fiscal has been increased 15% over fiscal 2023RE. The share of gross budgetary support in railways cape has been increased from 62% to 82%, while that of IEBR has been reduced to 18%

from 38% - this implies a shift in the government's reliance towards gross budgetary support, thereby reducing its reliance on external budgetary sources.

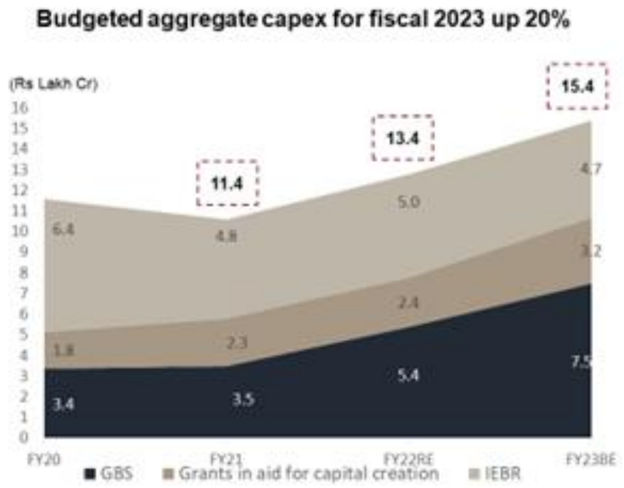
- The rise in allocation to railways will drive completion of dedicated freight corridors and national high-speed corridors, as well as infrastructure modernisation. Allocation of -Rs 0.37 lakh crore, up nearly 2.5 times over fiscal 2023RE, in rolling stock accounts for - 13% of overall budgetary expenditure for railways

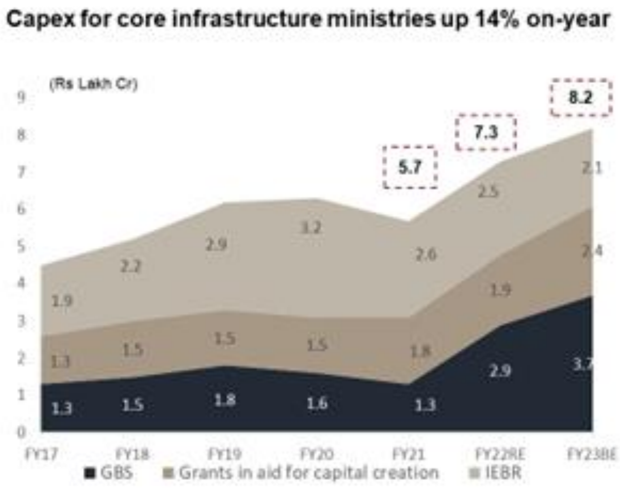
Housing

- Outlay for Pradhan Mantri Awas Yojana (PMAY), both urban and rural, to rise a modest 3% to Rs 0.79 lakh crore against fiscal 2023RE
- Deduction from capital gains on investment in residential property under Sections 54 and 54F to be capped at Rs 10 crore for better targeting of tax concessions and exemptions
- Income distributed through redemption of units by business trusts such as REITs and InvITs to be taxed in the hands of unit holders

4.7 Review of past budgetary allocations vs actual expenditure by central government on infrastructure

Centre budget allocation for FY23BE a bright spot for infrastructure sector





Notes: GBS: Gross budgetary support; IEBR – Internal and extra budgetary resources % in the circle indicates achievement ratio for the year.

Sectors included in nine core infrastructure sectors: Road transport and highways, housing and urban affairs, railways, civil aviation, shipping, power, rural development including Pradhan Mantri Gram Sadak Yojana (PMGSY), water resources, and new and renewable energy

Source: Budget documents, CRISIL Research

Overall capex for FY22BE is up 5% over FY21RE with share of Gross budgetary support (GBS) rising to 49% of the outlay from 40% in FY21RE. However, the capex for FY21RE includes a one-time loan of Rs. 79,398 crore for Ministry of railways to tide over the covid situation which when excluded, leads to a 13% rise in overall capex.

For the 9 core infrastructure ministries, capex is up 14% in FY23 BE on year over FY22RE. Implying that non-infra capex has seen a higher rise than infra capex. However, the 14% rise is a healthy rise which bodes well for the infrastructure build out envisaged by the government under the ambitious NIP.

Capex for Railways and Roads show healthy rise for FY23BE

	FY21A		FY22RE		FY23BE	
	Total Outlay (Rs Lakh Cr)	% GBS	Total Outlay (Rs Lakh Cr)	% GBS	Total Outlay (Rs Lakh Cr)	% GBS
Railways	1.5	20%	2.1	55%	2.4	56%
Rural development	1.4	100%	1.3	100%	1.1	100%
Urban Infra	0.32	69%	0.63	81%	0.82	78%
Power	0.53	12%	0.6	17%	0.62	18%
Civil Aviation	0.02	100%	0.1	65%	0.05	14%
Roads	1.6	60%	1.9	66%	2.0	100%
NHAI	1.1	41%	1.3	50%	1.3	100%
Water Resources	0.07	40%	0.1	100%	0.7	100%
New & Renewable energy	0.11	15%	0.25	25%	0.34	16%
Shipping	0.03	21%	0.05	20%	0.05	18%

States poised to be at the vanguard of infrastructure recovery in fiscal 2023 with capex up 20% for 20 states over FY22RE

State	FY23 capital outlay (Rs. Cr)	Growth in capex outlay for FY23	FY23 BE Fiscal Deficit	FY22 capital outlay AR
Uttar Pradesh	1,23,919	9%	4.0	85%
Maharashtra	67,624	11%	2.5	103%
Madhya Pradesh	45,686	23%	4.6	91%
Karnataka	43,572	10%	3.3	95%
Tamil Nadu	43,043	13%	3.6	90%
Odisha	40,011	72%	3	90%
Gujarat	35,898	24%	1.6	94%
Rajasthan	34,809	24%	4.4	116%
West Bengal	33,144	73%	3.6	59%
Andhra Pradesh	30,679	66%	3.6	59%

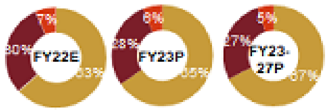
Note:1. The 10 states accounted for 60% of capital outlay by all states for FY20; 2. Growth in capex for FY23 is considered over FY22RE. 3. Fiscal deficit implies fiscal deficit as % of state GDP. Fiscal deficit above 3.5% is taken as Red, Below 2 as Green and between 2 and 3.5 as Amber based on recommendations of the 15th finance commission for 2021-26. 4. Achievement ratio = FY22 Revised estimates/ Budget estimates 5. N.A – Not available

Source: CRISIL Research, State budget documents

The increase in budgetary allocations for the PMAY scheme and announcements by state government of stamp duty cuts has helped the further sector limp back to pre-covid levels. The sector registered a growth of 1% CAGR from FY2018 to FY2022 and is expected to rise 6-10% in FY23 surpassing pre-Covid levels led by rising demand from end-user segments attributable to low interest rates, return of normalcy across the sector, increasing demand for owned properties and bigger and larger properties post the covid-19 pandemic and improvement in financial profile of the buyers.

The total budgetary allocation on capital expenditure in infrastructure for FY2022-23 saw a 10% rise over the revised estimates for FY 2021-22 to Rs 5.87 lakh crore with roads and railways being the biggest beneficiaries. Of this, Rs 3.72 lakh crore will be through budgetary support, with the remainder from internal and extra budgetary resources. .

Infrastructure to drive construction sector growth in the medium to long termNote:

	FY16-FY20 CAGR	FY21E Rs lakh crore	FY22E Rs lakh crore	FY23P	FY23P Rs lakh crore	FY23P-27P/FY18-22E	■ Infrastructure ■ Building Construction ■ Industrial
Construction capex	9%	6.9-7.1	9.3-9.5	13-16%	10.7-10.9	1.6	
Infrastructure	12%	4.9-5.1	5.9-6.1	16-18%	6.9-7.1	1.8	• Roads and railways sectors to lead growth in infrastructure • Medium-term capex to continue to be dominated by public funds
Building construction*	4%	1.4-1.5	2.7-2.9	6-10%	2.9-3.1	1.4	• Extension granted by RERA to developers led to deferral of fiscal 2021 investments to fiscal 2022 which created high base for FY23 • New launches by developers, completion of under-construction houses and of PMAY scheme to drive investments
Industrial (8 key sectors)	11%	0.4-0.5	0.5-0.6	7-11%**	0.6-0.7	1.2	• Announced cuts for fiscal 2021 to lead to spillover of capex to fiscal 2022; larger players also investing in capex with faster-than-expected recovery post pandemic first wave • PLI scheme announced by GoI to provide a boost to industrial investments

** CRISIL Research has revised Building construction numbers based on revised numbers released by the Govt of India*

*** Including PLI investments for 3 sectors viz. Auto and auto comps, speciality steel and Textiles*

Source: CRISIL Research

4.8 Review of key infrastructure projects in India like DFC, DMRC, Smart Cities

DFC execution to be a major opportunity for construction players

The DFC project is estimated to cost Rs.124,159 for the eastern (1,337 km) and western (1,504 km) sectors, which includes the cost of land acquisition (Rs.21,846 crore) and construction (Rs.1,02,159 crore). The project cost is higher, as it excludes the 538 km stretch of the Eastern DFC (EDFC), which the government proposes to implement through PPP. The length of the project is 3,360 km.

Status of DFC

Target completion for both corridors has slipped to June 2023 due to the work stoppages and delays caused by the Coronavirus second wave.

Total cost / construction Rs 124,159 crore/ Rs 102,159 crore		
Land acquisition EDFC: 100% ^ WDFC: 100% ^ PPP: 99%^	**Completed length** EDFC: - ~84% WDFC: - ~74%	**Financial Progress** 76%
Progress of works: **Track linking** - ~99% **OHE wiring** - ~ 83%	**Commissioned length:** **EDFC:** - ~47% **WDFC** - ~ 44%	**Target completion date (in phases)** June 2023

Note: As of May 2022

Source: CRISIL Research, DFCCIL

Status of the PPP stretch

EDFC's Sonnagar-Dankuni stretch, taken up for development under PPP, is divided into two phases – phase I from Dankuni to Gomoh and phase II from Gomoh to Sonnagar. About 97% of land acquisition has been completed by November 2021.

HSR projects picking up pace

Source: CRISIL Research

The Government has identified 8 corridors for constructing HSR projects of which the Mumbai Ahmedabad corridor is under construction while DPR preperation of the remaining projects is under preperation.

Construction works for MAHSR have been bid out with works commenced

Project cost – Rs 1.1 lakh crore

EPC opportunity – Rs 50k-60k crore

Land acquisition status – ~85%

1) Gujarat - ~99%
2) Dadra Nagar Haveli - ~100%
3) Maharashtra – ~69%

- ~ 64% of total length awarded to a major EPC player, amounting to ~ Rs 32,000 crore
- Bids for other packages invited

Source: National high speed rail corporation, CRISIL Research

Railways envisages a station redevelopment opportunity of ~Rs.1 lakh crore

Stations identified – 400

Commercial development – Rs 68,000 crore

Station development – Rs 28,000 crore

Projects in bidding stage – Expected redevelopment cost

1) Gwalior – Rs 300 crore
2) Nagpur – Rs 465 crore
3) Amritsar – Rs 375 crore
4) Sabarmati – Rs 156 crore
5) New Delhi – Rs 5,000 crore
6) Mumbai CSMT – Rs 1,642 crore

Source: Indian Railways, CRISIL Research

The Indian railways has envisaged a station redevelopment opportunity of ~ Rs.1 lakh crore with commercial development accounting for ~70% of the development. 400 stations have been identified by the railways and the first station, Habibganj, has completed construction.

The station redevelopment scheme was expected to be implemented under the PPP program, however, with disbandment of the Indian railway station development corporation (IRSDC) with the stations reverting under the zonal railways, station redevelopment is being explored under the HAM (Hybrid annuity model) where the Railways contribute 40% with the private entity bringing in the balance.

CRISIL Research expects investment in India's urban infrastructure to be driven by government schemes such as AMRUT, Swachh Bharat, Clean Ganga and Jal Jeevan mission. Water supply and sanitation (WSS) projects and metro construction in major Indian cities are expected to boost urban infrastructure investment in the next five years. Commencement of work on 105 smart cities announced so far will also be a key monitorable.

Government schemes such as the Swachh Bharat Mission (SBM), Jal jeevan mission and the National Mission for Clean Ganga (NMCG) are likely to boost WSS investments. On October 2, 2014, Prime Minister Narendra Modi launched SBM in order to focus on sanitation and accelerate efforts to achieve universal sanitation coverage. It comprises two sub-missions - Gramin (for the rural areas) and Urban - aimed at achieving a clean India by 2019.

AMRUT - Another driver of WSS spend

In May 2015, the government replaced the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), to focus on basic infrastructure services such as water supply, sewerage, storm water drains, transport, and development of green spaces and parks.

Under AMRUT, the Centre is assisting states based on project cost and population of the cities and towns. The financial aid is released in three instalments in the 20:40:40 ratio, based on achievement of milestones indicated in the State Annual Action Plan.

The scheme also covers JNNURM projects sanctioned between 2005 and 2012 and those that have achieved 50% physical progress (102 projects) or have availed of 50% central government funding up to the initiation of project (296 projects).

The budgetary outlay for AMRUT in fiscal 2023 is Rs 7,300 crore while revised estimates for fiscal 2022 is Rs. 7,300 crores and spends in FY21 were 6,449 crore.

Metro construction: Second-largest urban infra investment contributor

CRISIL Research estimates that construction spends on metro projects in India will increase 1.8-2 times to ~Rs.1.7 lakh crore over the Fiscals 2023-2027, making it the second-largest contributor to urban infrastructure investments. Bulk of the metro projects are under construction and have achieved financial closure with the lockdown and migration of labour the only impediments in FY21 driving investments lower and a deferral of investments led to revival in fiscal 2022, while the momentum continued in 2023.

CRISIL Research believes majority of the total investment for the MRTS between fiscals 2022 and 2026 will be in these key projects: Delhi Metro Rail Project phases III and -IV; Mumbai Metro projects lines 2A, 2B, 3; Chennai Metro phase-II; Nagpur Metro; and Pune Metro projects.

Progress in key metro projects

Metro projects	Status
Mumbai	Work for 3 lines in advanced stages, 5 more lines under imlpementation, total 14 lines approved
Pune	First 2 phases on track, 3rd phase to be awarded on PPP
Delhi	Phase 3 almost complete, phase 4 – 3 out of 6 corridors approval received
Chennai	Phase 1 ext. line to begin soon, phase 2 yet under planning
Hyderabad	Phase 1 completed. Phase 2 in proposal state
Bangalore	Phase 1 completed, phase 2 under construction

Source: CRISIL Research

Apart from the above-mentioned cities, metro lines are current under construction in Agra, Nagpur, Ahmedabad, Kanpur, Navi Mumbai, Patna, Kanpur, Surat.

Smart cities progress slow

To further push infrastructure spending, the government approved a budget of Rs.480 billion for the development of 100 smart cities over five years, beginning fiscal 2017. The focus is on adequate and clean water supply, sanitation, solid waste management, efficient transportation, affordable housing for the poor, power supply, robust IT connectivity, e-governance, safety and security of citizens, health, and education.

The selected cities will receive central assistance of Rs.2 billion in the first year, Rs.1 billion in each of the next four years, and a matching contribution from the respective state.

The state and central government funds will only meet part of the cost. The rest will be raised through user fees, municipal bonds, existing central/state schemes such as AMRUT, and PPPs.

Project plan

Each smart city will have two plans:

Area-based development (ABD): Under this plan, one chosen area of the city will be developed, through retrofitting, redevelopment, or greenfield, or a combination of these. The delineated area should be contiguous within the city

Pan-city solution: Under this plan, the entire city area is considered, and information and communications technology (ICT) is used for diverse purposes, such as traffic management, water and electricity supply (smart metering), and solid waste management.

Hence, construction opportunity at the pan-city level is limited. The opportunity in smart cities will primarily come from ABD projects such as affordable housing, sanitation, solid waste management, water supply, and storm water reuse.

Status

	Number of projects	Projects by value (Rs crore)	Percentage
Completed	4436	75827	41%
Tendering stage	101	2184	1%
Under Implementation	3220	106716	58%
Total	7757	184727	-

Note: Data as of 28th December 2022

Source: CRISIL Research

All 105 cities announced; Tendering activity on the uptick

Out of the 60 smart cities declared in rounds one and two and the fasttrack round, only ~29 cities are seeing reasonable amount of activity. Of the first 20 cities announced, only 10 have progressed in terms of execution. About eight cities have no progress or only marginal progress in execution as against what was planned initially. Except Raipur, cities from the fast-track round that were to start execution from fiscal 2017 have seen almost no activity.

For the balance 40 cities selected in rounds three and four, tendering is at a very nascent stage for the newly formed special purpose vehicles (SPVs).

4.9 Review of key announcements under Aatmanirbhar Bharat package

The construction industry's debt has risen manifold. While increase in long-term debt can be attributed to loans taken for public-private partnership (PPP) projects, short-term debt has also risen considerably, increasing working capital requirement. This is owing to payment delays by government agencies and prolonged arbitration proceedings for dispute resolution. Debtor days have risen considerably over the past five years, especially in sectors such as irrigation and roads, affecting project execution, and adding to the debt pile. Increase in interest costs as a result of higher working capital requirement will continue to impact profitability.

Working capital for the players were on an improving trend over the past years with rising execution, improving EBITDA margins, reduction in debtor days due to faster payments by Governments while reduction in inventory days too helped. However, the Covid-19 pandemic hit fiscal 2021 saw things going out of whack as debtor days, inventory days shot up while cash reserves came down due to tghe suspension of construction activities brought about by the pandemic in Q1FY21 coupled with delayed payments from Governments which was rectified in H2FY21 under the Atmanirbhar Bharat Abhiyan announcements.

Government has taken various steps under the Atmanirbhar package to aid in working capital management by contractors:

- Extension of Time (EOT) up to 3-6 months for all projects and relaxation of milestone achievement
- Monthly payment mechanism instead of milestone-based payments
- Reduction in performance security from 5% to 3%, release of retention money to the extent of work done.
- Plus, COVID-19 emergency loan facilities and moratorium on loan repayment up to Aug 2020
- Extension of concession period for BOT-toll operators due to toll suspension and restriction in movement during lockdowns.

5 Water supply, sanitation, and irrigation

5.1 Review of investments in WSS & irrigation in India

WSS expected to contribute more than half of investments under urban infra

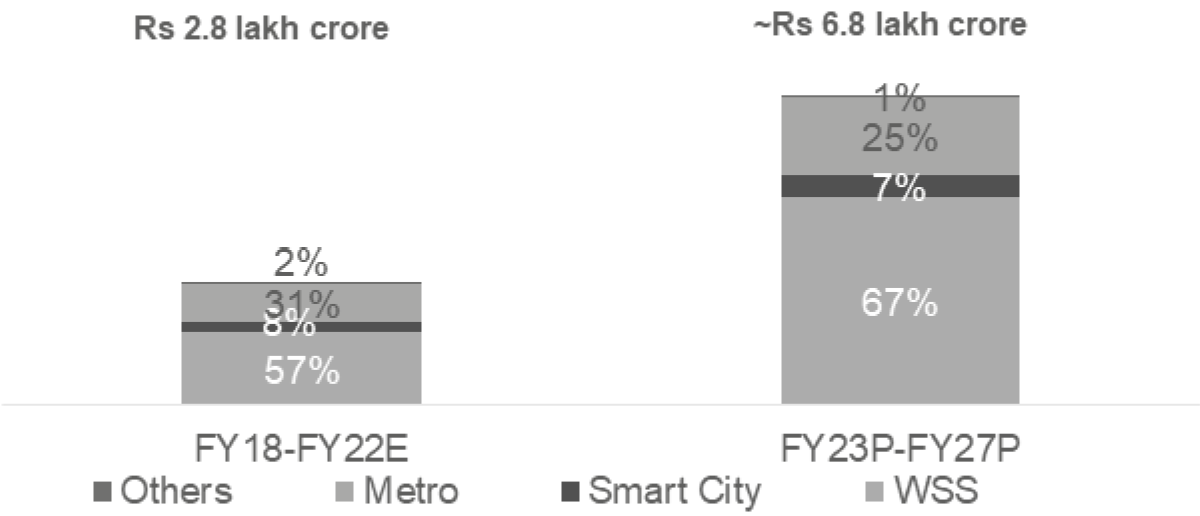
Investments in urban infrastructure are expected to record a 20-25% rise in fiscal 2023 led by investments in Water supply and sanitation under schemes such as Swach Bharat Mission, Jal jeevan mission, AMRUT and deferred investments in Metro projects a bulk of which were under implementation and have achieved financial closure. This follows a 90-95 % on-year rise in urban infrastructure investments in fiscal 2022, surpassing pre covid levels attributable to low base in FY21 due to the loss of man days due to labour migration and diversion of state funds allocated to infra capex for meeting social and healthcare needs.

5.2 Key government policies and schemes

CRISIL Research expects ~Rs.6.8 lakh crore spends on urban infrastructure between fiscals 2023 and 2027, which is nearly 2.4x of the amount invested in the previous five years.

Urban infrastructure includes construction-intensive mass rapid transit system (MRTS), bus rapid transit system (BRTS), water supply and sanitation (WSS) projects, smart cities, and related infrastructure development.

Construction spends in urban infrastructure



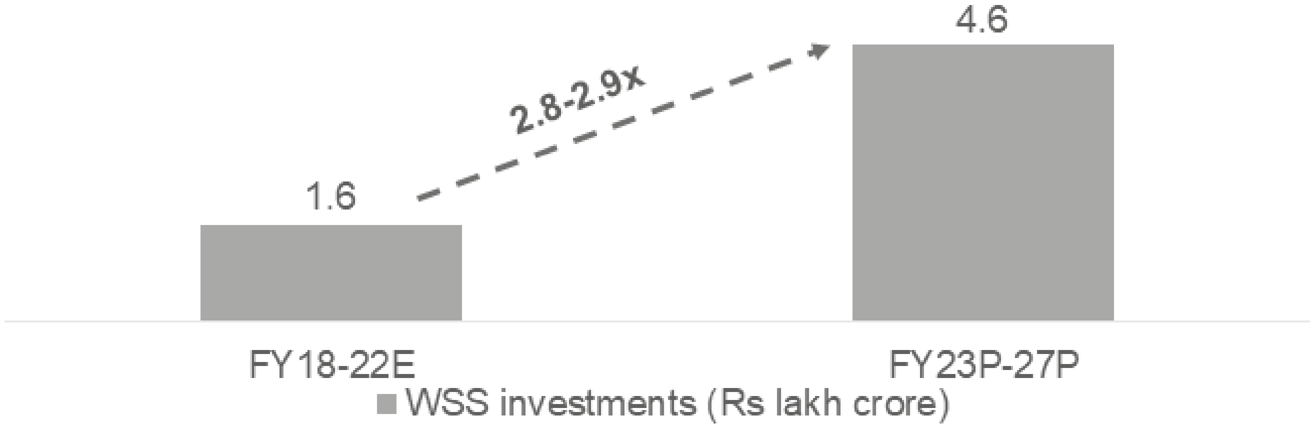
E: Estimated; P: Projected

Source: CRISIL Research

The central govt's push on WSS announced in the budget with allocations rising 33% on year in fiscal 2023 viz revised estimates of fiscal 2022, while state budgets for WSS for FY23BE are up 12% over FY22RE and bode well for the WSS sector in the short and medium term.

WSS projects are expected to account for half of the total urban infrastructure investments over the next five years, driven primarily by state governments and through centrally-sponsored programmes such as Jal Jeevan mission, AMRUT and Swach Bharat mission.

Govt's increased focus on water supply to drive investments



Source: Ministry of Rural Development, Ministry of Housing & Urban Affairs, CRISIL Research

National Water Policy and Action Plan for India 2020

Water is a scarce natural resource fundamental to life, livelihood, food security, and sustainable development. India has more than 18% of the world's population but has only 4% of the world's renewable water resources and 2.4% of the world's land area. There are further limits on utilisable quantities of water owing to uneven distribution over time and space. In addition, there are challenges of frequent floods and droughts in one or the other part of the country. Availability of utilisable water will be under further strain in future with the possibility of deepening water conflicts among different user groups. Low consciousness about the scarcity of water and its life sustaining and economic value results in its mismanagement, wastage, and inefficient use, as also pollution and reduction of flows below minimum ecological needs. In addition, there are inequities in distribution and lack of a unified perspective in planning, management and use of water resources.

The objective of the National Water Policy is to take cognizance of the existing situation, propose a framework for creation of a system of laws and institutions, and a plan of action with a unified national perspective.

The National Water Policy (2012) emphasises the need to evolve a National Water Framework law as an umbrella statement of general principles governing the exercise of legislative/executive powers by the Centre, states, and the local governing bodies. The MoWR constituted a Committee on July 3, 2012 under the Chairmanship of Y K Alagh to draft a National Water Framework Act. The Committee submitted its report in May 2013.

Another committee under the Chairmanship of retired Justice T S Doabia was set up to study the activities required for optimum development of river basin and changes required in the existing River Board Act, 1956 for achievement of the same. The Committee submitted its report in November 2012 proposing a draft River Basin Management Bill.

The Y K Alagh and retired Justice T S Doabia Committee reports were circulated to states/UTs for comments and also placed before the National Forum of Water Resources and irrigation ministers of states for wider consultations.

Another Committee under the chairmanship of Mihir Shah was constituted in December 2015 to further examine the provisions of the draft National Water Framework and draft River Basin Management Bill and suggest changes/ modifications. The Committee's recommendations on the former been finalised.

The MoWR, RD & GR released the draft National Water Framework Bill, 2016 in June 2016. The Bill seeks to provide a national legal framework for protection, conservation, regulation, and management of water.

Key features of the Bill include

Right to water for life: The Bill states that every person has a right to sufficient quantity of safe water for life within easy reach of a household, regardless of one's community, economic status, land ownership, etc. The responsibility to ensure every person has access to safe water remains with the concerned state government even if water is being provided through a private agency.

Standards for water quality: National water quality standards shall be binding on all types of water use. In addition, efforts should be made for treatment of wastewater to make it appropriate for use.

Integrated River Basin Development and Management: A river basin, with its associated aquifers (underground layer that contains water) should be considered as the basic hydrological unit for planning, development and management of water. For every inter-state river basin, a river basin authority should be established, which will be responsible to prepare master plans for river basins under its jurisdiction.

Water security: The appropriate state government will prepare and oversee the implementation of a water security plan to ensure sufficient quantity of safe water for every person, even in times of emergency such as droughts and floods. These plans will include: (i) incentives for switching from water-intensive crops, (ii) incentives for the adoption of water-conserving methods, such as drip irrigation and sprinklers, and (iii) setting up groundwater recharge structures, etc.

Water pricing: Pricing of water shall be based on a differential pricing system in accordance with the fact that water is put to multiple uses. Water use for commercial agriculture and industry may be priced on the basis of full economic pricing. For domestic water supply, different categories of users may be subsidised.

National Mission for Clean Ganga (NMCG): Under the National Mission for Clean Ganga (NMCG) the aims and objective is to ensure effective abatement of pollution and rejuvenation of the river Ganga by adopting a river basin approach to promote inter-sectoral coordination for comprehensive planning and management. It also aims to maintain minimum ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development. The government has released Rs.36.3bn between 2014-15 and 2016-17 for cleaning the Ganga and beautifying ghats along it

Announced missions to power WSS projects

Government schemes such as the Swachh Bharat Mission (SBM), Jal jeevan mission and the National Mission for Clean Ganga (NMCG) are likely to boost WSS investments. On October 2, 2014, Prime Minister Narendra Modi launched SBM in order to focus on sanitation and accelerate efforts to achieve universal sanitation coverage. It comprises two sub-missions - Gramin (for the rural areas) and Urban - aimed at achieving a clean India by 2019.

The measures undertaken by the mission include construction of household, community and public toilets, and conversion of insanitary latrines into pour-flush latrines; solid waste management; and public awareness.

The overall capex for SBM (Rural and urban) for FY21 was 5,950 crores with revised estimates for FY22 at 8,000 crores and budgeted numbers for FY23 at 9,492 crores.

AMRUT - Another driver of WSS spend

In May 2015, the government replaced the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), to focus on basic infrastructure services such as water supply, sewerage, storm water drains, transport, and development of green spaces and parks.

Under AMRUT, the Centre is assisting states based on project cost and population of the cities and towns. The financial aid is released in three installments in the 20:40:40 ratio, based on achievement of milestones indicated in the State Annual Action Plan.

The scheme also covers JNNURM projects sanctioned between 2005 and 2012 and those that have achieved 50% physical progress (102 projects) or have availed of 50% central government funding up to the initiation of project (296 projects).

The budgetary outlay for AMRUT in fiscal 2023 is Rs 7,300 crore while revised estimates for fiscal 2022 is Rs. 7,300 crores and spends in FY21 were 6,449 crore.

Irrigation investments to get back to pre-Covid levels in FY23

Construction spend on irrigation will rise over the next five years despite a blip in FY21. State funds will continue to play an outsized role in Irrigation investments with the eight major states accounting for 65-70% of the investments in the medium term

State funded irrigation construction capex to rise 4-6% in FY23

CRISIL Research expects construction capex in Irrigation to rise by 4-6% on year in fiscal 2023. State budget allocation for FY23 for 20 states, which accounted for more than 95% of irrigation spends in FY20, have witnessed a 20% rise over FY22RE numbers. However, in keeping with historical achievement ratios of 75-80% and modest spends of states in H1 of current fiscal (recorded only 2% rise) we expect a 4-6% rise in fiscal 2023 over fiscal 2022 numbers. Irrigation spends to rise 6-8% in FY24 on a low base of FY23 with increase in focus on completion of major irrigation projects

Construction capex in FY22 is expected to have risen by 3-5% on a low pandemic impacted base as states refocused on infrastructure spends post diversion of state funds for meeting social and healthcare spends in fiscal 2021. The share of top 7 states is expected to decline marginally to 65-70% in irrigation spends over fiscals 2022 and 2023.

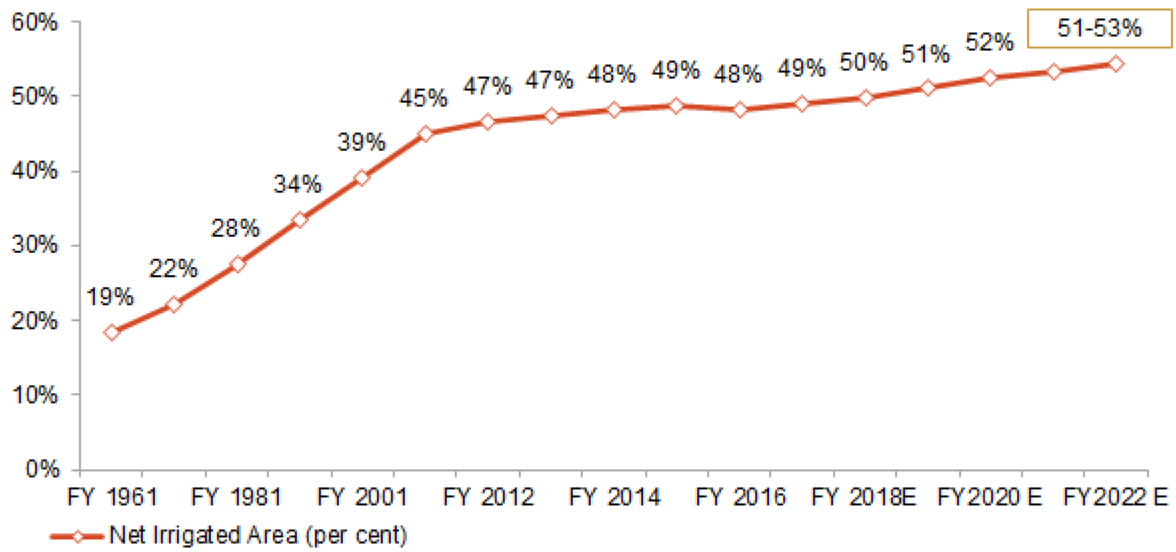
Construction spends in irrigation projected to rise to Rs 4.3-4.5 lakh crore over fiscals 2023 to fiscal 2027 from Rs 3.2 lakh crore over the past five years (fiscal 2018 to 2022) owing to the push from state governments to increase irrigation penetration in states. In fiscal 2016, the central government converged irrigation schemes under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to expand the area under cultivation. The key schemes converged are Accelerated Irrigation Benefits Programme (AIBP), Integrated Watershed Management Programme, On Farm Water Management, and Per Drop More Crop.

Convergence of various schemes under one umbrella

Source: CRISIL Research

To achieve the target, PMKSY focuses on end-to-end solutions in the irrigation supply chain, and monitors implementation at the district, state and national levels. The acutely low irrigation levels in India can be gauged from the fact that of the ~140 million hectares of cultivated land, irrigated land stands at a mere ~50%.

Improvement in India's irrigation penetration levels over the years

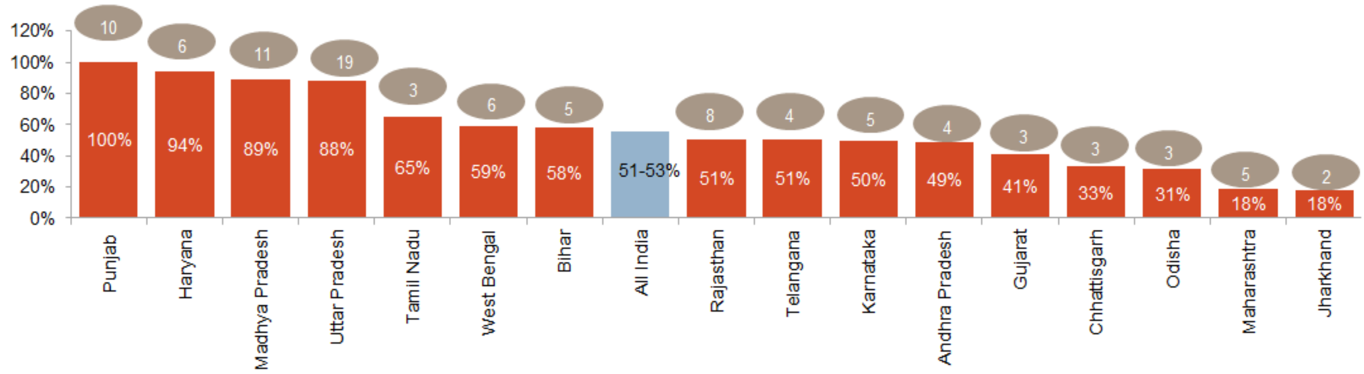


Note: 1. Irrigation penetration is net irrigated area over net sown area

2. Irrigation penetration is estimated by taking Rs.0.8 million as capital expenditure for irrigating 1 hectare of land

Source: Ministry of agriculture, CRISIL Research

Proportion of irrigated land (as percentage of total cultivated land)



Note: 1. Figures in the bubble indicate state's share in agricultural production

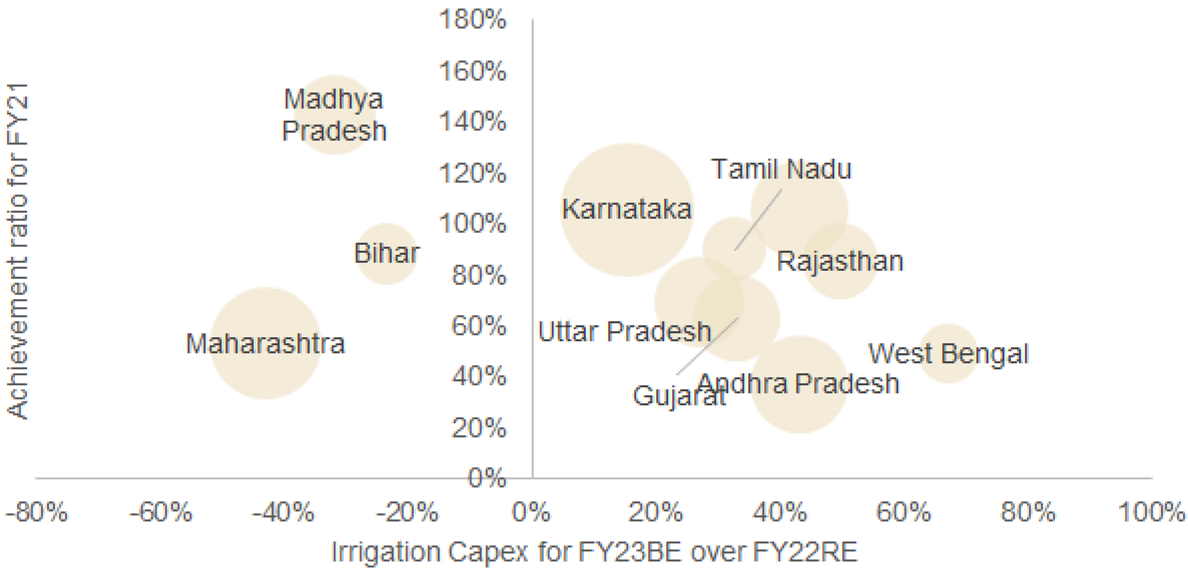
2. Figures in the bar graph indicate the irrigation penetration for the respective states

Source: CRISIL Research

Spending in irrigation by states to increase, Centre to focus on monitoring

The government has increased the spending requirement by state governments from 32% to 42%, in line with greater transfer of taxes to states. The central government will play an active role in monitoring the progress of PMKSY projects and has taken several steps to crystallise investments for irrigation.

Achievement ratio across states



Note: Size of the bubble indicates irrigation investments for FY23BE in Rs.Crore

Source: CRISIL Research, State budget documents

6 Smart cities in India

6.1 Overview of announced smart city projects in India

Smart cities progress slow

To further push infrastructure spending, the government approved a budget of Rs.480 billion for the development of 100 smart cities over five years, beginning fiscal 2017. The focus is on adequate and clean water supply, sanitation, solid waste management, efficient transportation, affordable housing for the poor, power supply, robust IT connectivity, e-governance, safety and security of citizens, health, and education.

The selected cities will receive central assistance of Rs.2 billion in the first year, Rs.1 billion in each of the next four years, and a matching contribution from the respective state.

The state and central government funds will only meet part of the cost. The rest will be raised through user fees, municipal bonds, existing central/state schemes such as AMRUT, and PPPs.

Project plan

Each smart city will have two plans:

Area-based development (ABD): Under this plan, one chosen area of the city will be developed, through retrofitting, redevelopment, or greenfield, or a combination of these. The delineated area should be contiguous within the city

Pan-city solution: Under this plan, the entire city area is considered, and information and communications technology (ICT) is used for diverse purposes, such as traffic management, water and electricity supply (smart metering), and solid waste management.

Hence, construction opportunity at the pan-city level is limited. The opportunity in smart cities will primarily come from ABD projects such as affordable housing, sanitation, solid waste management, water supply, and storm water reuse.

6.2 Latest available status, as per secondary information

Status

	Number of projects	Projects by value (Rs crore)	Percentage
Completed	4436	75827	41%
Tendering stage	101	2184	1%
Under Implementation	3220	106716	58%
Total	7757	184727	-

Note: Data as of 28th December 2022

Source: CRISIL Research

All 105 cities announced: Tendering activity on the uptick

Out of the 60 smart cities declared in rounds one and two and the fast track round, only ~29 cities are seeing reasonable amount of activity. Of the first 20 cities announced, only 10 have progressed in terms of execution.

About eight cities have no progress or only marginal progress in execution as against what was planned initially. Except Raipur, cities from the fast-track round that were to start execution from fiscal 2017 have seen almost no activity.

For the balance 40 cities selected in rounds three and four, tendering is at a very nascent stage for the newly formed special purpose vehicles (SPVs).

Key reasons for the slow activity include inability of some states to provide their share of funds, lack of manpower with suitable skills, experience at the SPV level, and failure of urban local bodies to decentralise responsibilities to the SPV.

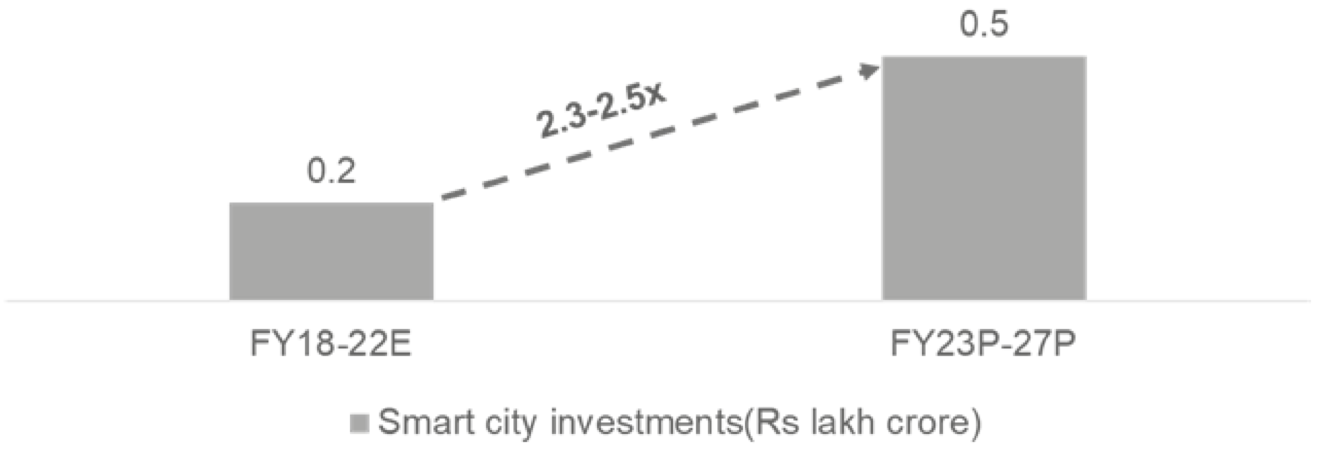
Formation of SPV

Each smart city is required to form an SPV that will plan, appraise, approve, and release funds as well as implement, manage, operate, monitor, and evaluate development of the project. Once formed, the SPV will receive the first tranche of funding from the Centre. All the 100 selected smart cities have formed their SPVs and appointed project management consultants.

Investments in smart cities to be construction-intensive

Based on the overall plans for the first 90 cities, investments are expected to be construction-intensive, as segments such as housing, roads, non-residential development, sewage systems, etc, will constitute a considerable portion of the total investments.

Smart city investments to almost quadruple on a low base over the next 5 years



Source: CRISIL Research

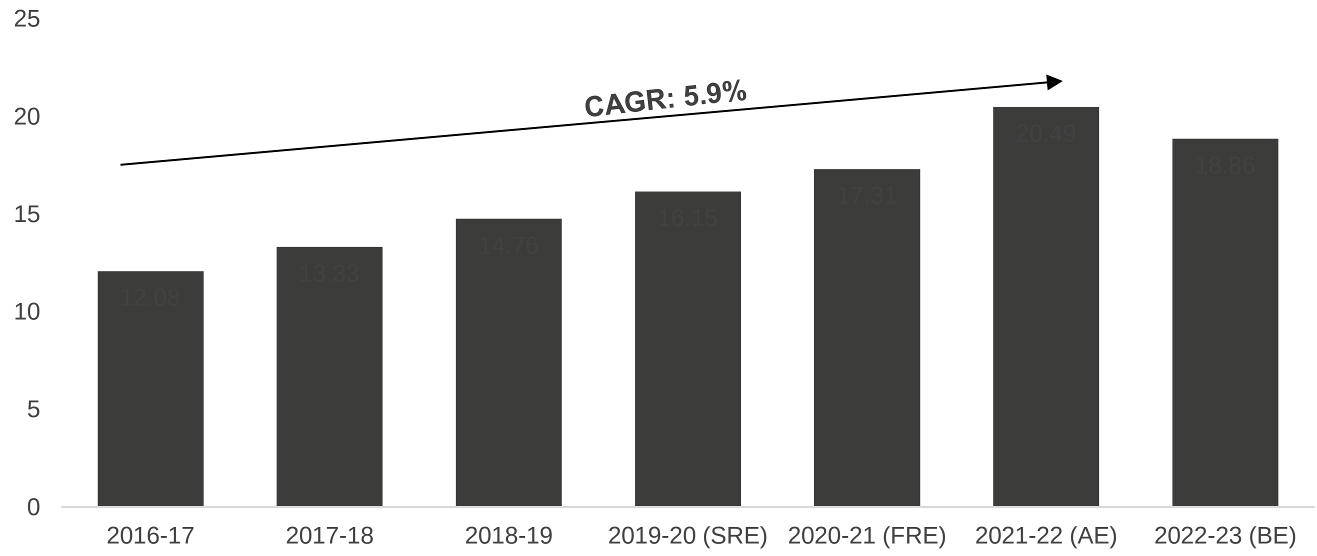
7 Macro-economic overview of Karnataka

7.1 Key macroeconomic parameters

Gross State Domestic Product (GSDP)

Karnataka has demonstrated strong growth over the years. Per-capita Gross State Domestic Product (GSDP) of INR 305,000 (estimated for FY 22) has seen a 5 yr CAGR of 16.6% between FY17 to FY22 compared to 3.7% CAGR for pan India GDP in the same period. GSDP of Karnataka for 2022-23 (at current prices) is projected to be Rs 18.86 Tn. This is a growth of 9.6% over the revised estimate of GSDP for 2021-22 (Rs 17,21,336 crore). In 2021-22, GSDP is estimated to contract 4.6% over the previous year (at current prices)

Karnataka GDSP (Rs Tn.)

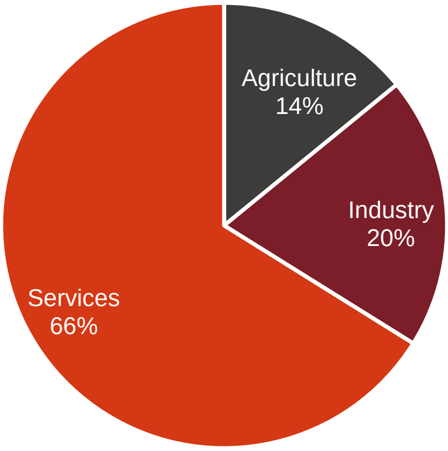


Notes: SRE: Second Revised estimates; FRE: First Revised estimates; AE: Advanced estimate;

Source: Directorate of Economics and Statistics, Govt. of Karnataka

Economy of Karnataka has the highest share of services in the Gross State Value Added (GSVA) of 66% in FY 22(E) due to a large share of IT industry in the state which is major economic value adding sector in services and is also a major employment generator in the state. Industry is the second largest sector accounting for 20% of the GSDP of the state while agriculture accounts for the rest 14%. As in the case of pan-India sectoral growth rates, the growth rate of the agri sector has lagged other sectors due to which the share of agriculture sector in the economy has declined compared to industry and services sectors which have seen higher growth.

Sectoral share of Gross Value Addition



Source: Directorate of Economics and Statistics, Govt. of Karnataka

Per capita income

Per capita income is estimated by dividing NSDP at current prices with mid-financial year projected population (as on 1st October). Per Capita State Income (i.e. per capita NSDP) of Karnataka at current prices is estimated to be Rs.1,49,825 showing a fall of 3% during 2020-21, as against Rs.1,54,861 in 2019-20. Karnataka's per capita income is higher than All India per capita income. Figure below provides comparison of per capita income of Karnataka and All India from 2011-12 to 2020-21.

Trend of per-capita income growth

Gross State Domestic Product at current prices (Rs. Tn)								
Product Sector	**2016-17**	**2017-18**	**2018-19**	**2019-20 (SRE)**	**2020-21 (FRE)**	**2021-22 (AE)**	**2022-23 (BE)**	**5-year CAGR FY17-22**
Agriculture	1.19	1.5	1.53	1.81	2.24	2.57	-	16.60%
Industry	2.69	2.9	3.19	3.14	3.04	3.61	-	6.10%
Services	6.96	7.59	8.64	9.76	10.4	12.06	-	11.60%
GSVA	10.83	11.99	13.36	14.71	15.68	18.24	-	11.00%
Net Taxes	1.24	1.34	1.4	1.44	1.63	2.25	-	-
GSDP	12.08	13.33	14.76	16.15	17.31	20.49	18.86	11.20%
YoY growth rate	15.50%	10.40%	10.70%	9.40%	7.20%	18.40%	8.94%	-
Per-capita GSDP (Rs. thousand)	186	205	225	244	260	305	-	10.40%
YoY growth rate	14.30%	10.40%	9.50%	8.40%	6.50%	17.40%	-	-

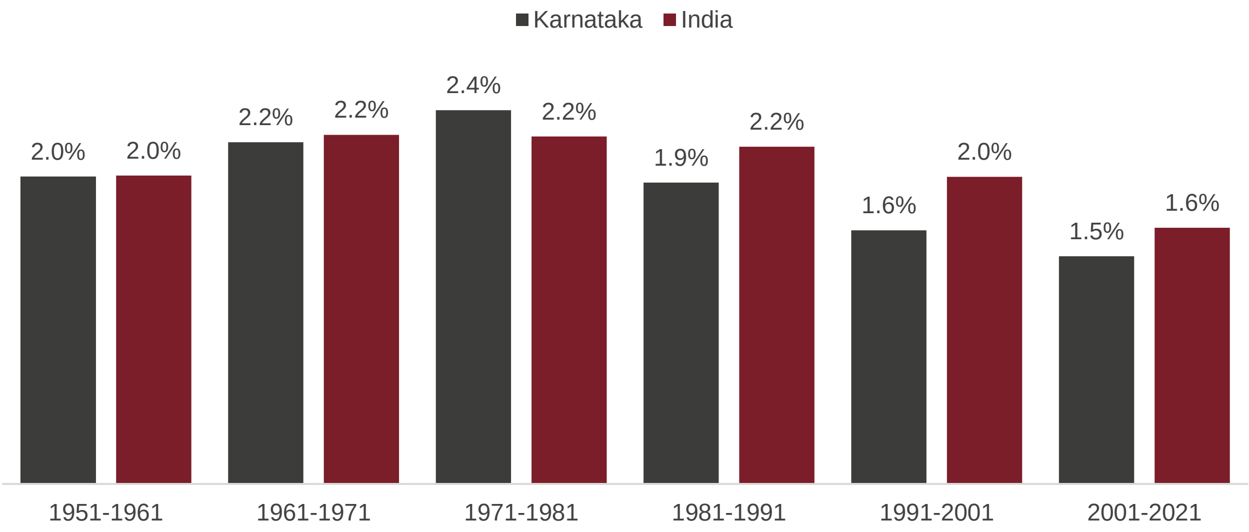
Notes: SRE: Second Revised estimates; FRE: First Revised estimates; AE: Advanced estimate; BE: Budget Estimate

Source: Directorate of Economics and Statistics, Govt. of Karnataka

Population as per census 2011

As per population census 2011, Karnataka population is registered to be 6,10,95,000 which has clocked CAGR of 1.5% since between 2001 and 2011. Karnataka State has widespread area of 1,91,791 Sq. Kms. Typically 75% of Karnataka is registered under category of literate citizens. The chart below compares the decadal population growth rate of Karnataka with India over last 6 decades. Over the last four decades, the population growth of Karnataka has lagged the pan-India growth rate marginally.

Decadal population growth for Karnataka



Source: India Census, CRISIL Research

7.2 Road network of key states

Length of road network in the state

As per Economic Survey of Karnataka, 331,099 kms of road infrastructure exists in year 2020-2021. This 331 thousand kms of road network comprise of all category of roads like, National Highways, State Highways, Major District Roads, Municipal Roads & Other Roads, Rural Roads.

Road network split in terms of national vs state vs rural road

As per Economic Survey of Karnataka, out of 3,31,099 kms of road infrastructure during year 2020-2021, National Highways contributes 2% share, State highway contributes 9% share, Major District Roads has 17% share, Municipal Roads & Other Roads have 12% share and Rural Roads have biggest share with 60% contribution to the split. Table below shows category wise km share for roads in Karnataka.

Road Lengths bifurcation

Road lengths in Karnataka. (In Km)		
Category of Road	2020-21	2021-22(Upton Nov 2021)
National Highways	7652	7589*
State Highways	28985	27811*
Major District Roads	55474	56131*
Municipal Roads & Other Roads	40487.59	43956.54**
Rural Roads	198500.8	194438.02***
All Roads	331099.4	329925.6

Source: EIC, PRAMC, CRISIL Research

** Information Provided from EIC, PRAMC office.*

*** Director, Directorate of Municipal Administration (as on Nov-2021)*

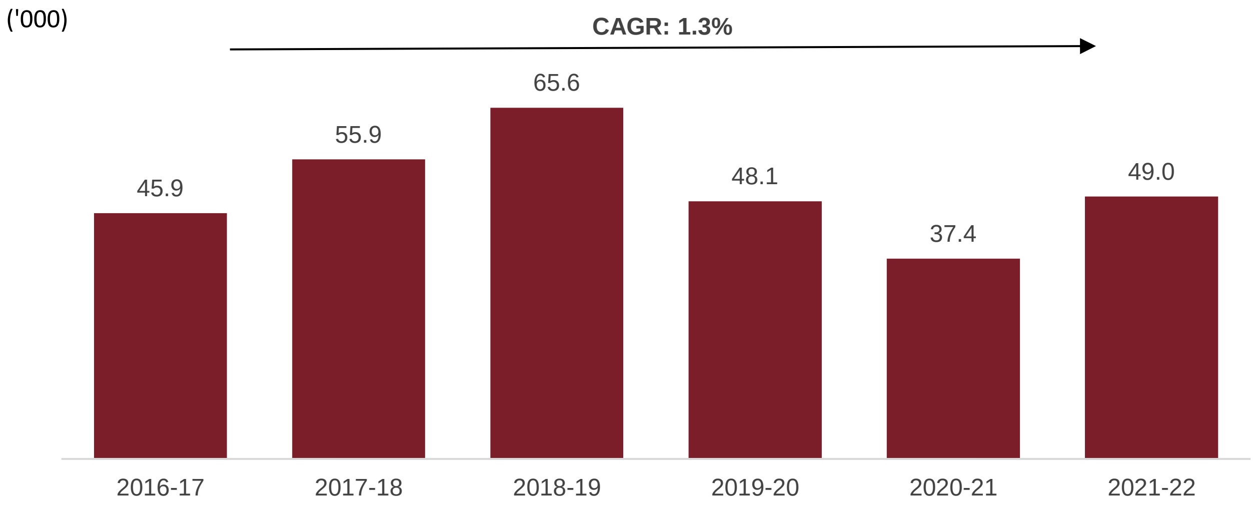
**** Rural Development and Panchayat Raj Department (as on Nov-2021)*

7.3 Vehicle sales trend

Sales of commercial vehicles (including goods and buses) in Karnataka has seen a CAGR of 1.3% between FY2017 and FY2022. The sales of commercial vehicles saw a sharp decline in FY2020 and FY2021 due to impact of BSVI transition and then due to COVID-19 as lockdowns and travel restrictions saw fleet operators postpone vehicle purchases.

However, in FY2022 there has been a 31% growth in commercial vehicle sales after a 43% decline in sales from the peak in FY2019 to FY2021 as COVID-19 restrictions have been lifted and demand for transportation services returned.

Sales of commercial vehicles in Karnataka ('000)

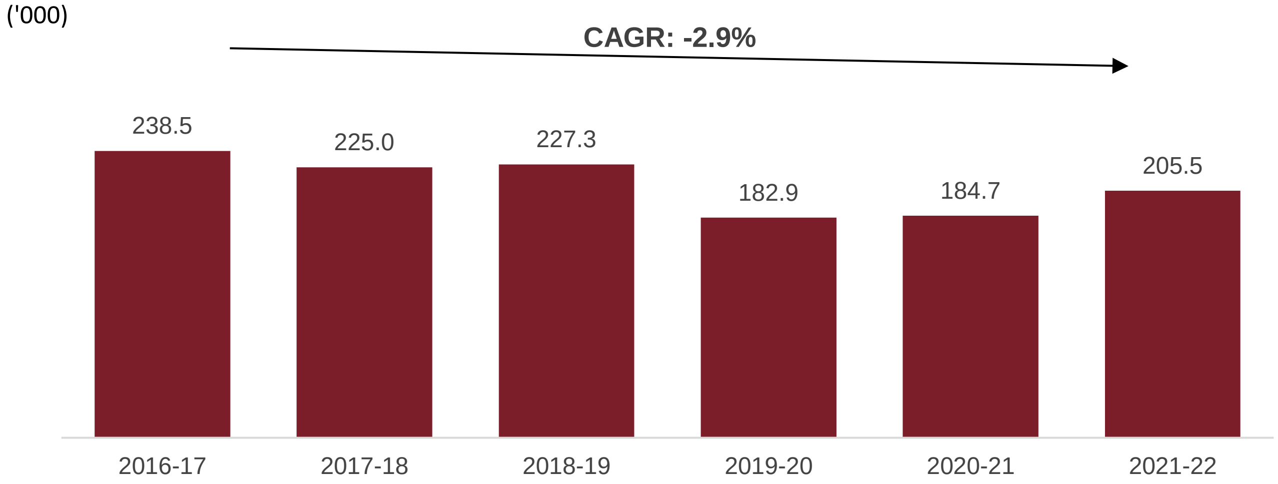


Source: SIAM, CRISIL Research

Similarly, with passenger vehicles for car's and utility vehicles, sales saw a decline at a CAGR of 2.9% between FY2017 and FY2022. The sales of passenger vehicles saw a decline of 19% between FY2019 and FY2021 due to

BSVI transition and COVID-19 related travel restrictions, however, has since recovered with a growth of 11% in FY2022 which easing of COVID-19 related curbs.

Sales of passenger vehicles in Karnataka (‘000)



Source: SIAM, CRISIL Research

7.4 Status of smart cities in Karnataka

Smart City Mission

The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart. Bengaluru, Mangaluru, Belagavi, Shivamogga, Hubbali-Dharwad, Tumakuru, and Davanagere are the 7 cities of Karnataka that are nominated by state government to be developed as Smart City under Smart City Mission and got approval in three phases.

Smart cities of Karnataka are on track of development as planned

Government of India has released a total of 1325 Crores of funds in three phases for 7 smart cities in Karnataka so far. Government of Karnataka released its share of Rs. 978 Crores. Karnataka is one of the higher Urbanised States in India. Jawaharlal Nehru National Urban Renewal Mission (JnNURM), a city modernization scheme in 2005 was launched by Government of India under Ministry of Housing and Urban Affairs following property mapping in 2002. Smart City Mission and Atal Mission for Rejuvenation and Urban Transformation (AMRUT) came in 2015 followed by Swachh Bharat Mission. Apart from all kinds of Urban Development, Karnataka has invested in Transit Oriented Development (TOD) projects for improvisation in Mobility by maximising amount of residential, commercial and leisure space within walking distance of public transport. SPVs like Belagavi Smart City Ltd, Bengaluru Smart City Ltd, Davanagere Smart City Ltd, Hubbali Dharwad Smart City Ltd, Mangaluru Smart City Ltd, Shivamogga Smart City Ltd. and Tumakuru Smart City Ltd. are working in competent manner to develop smart cities of Karnataka as per planned manner.

As per Principal Secretary, Transport Department at Government of Karnataka, Mr. Anjum Parwez, 423 projects have been planned at a cost of Rs.6,363 crore as of October 2019. Out of these, 67 projects were completed. 204 are ongoing. 77 were tendered. 63 are at detailed project report (DPR) stage while. 12 are at concept stage.

8 Player profiles

8.1 KNR Constructions Limited

About the Company

KNR Constructions Ltd (KNRCL), listed on the Bombay Stock Exchange and National Stock Exchange, was incorporated in 1995 and provides engineering, procurement, and construction (EPC) services, primarily for the roads and highways segment. KNRCL has diversified in the past few years, with orders executed in irrigation and flyover and bridge construction segments as well. Registered office location of KNRCL is in Hyderabad, Telangana. As on March 31, 2022, your Company has an outstanding order book position of ` 90,008 Mn. EPC road projects and HAM projects constitute 75% of the total order book while irrigation projects constitute the remainder 25%. KNRCL has procured 668 lanes kms of road project in Karnataka, Telangana and Bihar.

Key Financial Annual Results – Consolidated

Parameter (Rs . Crore)	Mar-2022	Mar-2021	Mar-2020	Mar-2019	Mar-2018
Operating Income	3,606	2,914	2,465	2,306	2,062
OPBDIT	799	712	636	553	454
PAT	366	383	256	265	229
OPBDIT Margin (%)	22.1	24.4	25.8	24.0	22.0
Net Profit Margin (%)	10.2	13.1	10.4	11.5	11.1

Source: Registrar of Companies, CRISIL Research

8.2 G R Infraprojects Limited

About the Company

Incorporated in 1995, G R Infraprojects Limited (GRIL) is engaged in road construction and is promoted by Mr Vinod Kumar Agarwal and family. The company primarily undertakes road construction projects from National Highways Authority of India and the Ministry of Road Transport and Highways on EPC (engineering, procurement, and construction), build-operate-transfer and hybrid annuity model basis. This apart, the company has also established emulsion manufacturing plants in Udaipur, Rajasthan (operational since fiscal 2010) and Guwahati, Assam with installed capacity of 30,000 metric tonne per annum each. The company also has own capacities for bitumen processing, thermoplastic road marking paint and road signage, fabrication, and galvanization unit for metal crash barriers. Registered office location of GRIL is in Ahmedabad, Gujarat.

Key Financial Annual Results – Consolidated

Parameter (Rs. Crore)	Mar-2022	Mar-2021
Operating Income	8,458	7,849
OPBDIT	1,735	1,854
PAT	832	955
OPBDIT Margin (%)	20.5	23.6
Net Profit Margin (%)	9.8	12.2

Source: Registrar of Companies, CRISIL Research

8.3 PNC Infratech Limited

About the Company

PNC Infratech Limited is one of the listed Public Limited Indian infrastructure investment, development, construction, operation, and management companies in the country, with expertise in execution of projects in core infrastructure sectors including expressways, highways, bridges, flyovers, airport runways, water supply, industrial area development and other infrastructure activities. PNC Infratech Limited provides infrastructure implementation solutions that include design, engineering, procurement, construction, O&M services on fixed-sum turnkey (EPC), Design-Build-Finance-Operate-Transfer (DBFOT) Toll, Annuity, Hybrid Annuity, Operate-Maintain-Transfer and other formats, under its umbrella. Registered office of PNC Infratech Limited is in South Delhi, Delhi. Company diversified into new functional areas of infrastructure viz. irrigation and drinking water supply projects and secured more than INR 8,000 Cr worth of new mandates during FY2020-21 and FY2021-22. As the above new business stream supplemented with regular business from roads and highways sector, the Company could secure new orders of total value INR 11,146 Cr during FY 2021-22. An order book worth INR 20,000 Cr - including the value of seven HAM projects recently awarded at the end of FY 2021-22.

Key Financial-Annual Results – Consolidated

Parameter (Rs . Crore)	Mar-2022	Mar-2021	Mar-2020	Mar-2019	Mar-2018
Operating Income	7,208	5,788	5,162	3,426	2,225
OPBDIT	1,534	1,418	1,115	834	641
PAT	580	497	550	351	243
OPBDIT Margin (%)	21.3	24.5	21.6	24.4	28.8
Net Profit Margin (%)	8.1	8.6	10.7	10.3	10.9

Source: Registrar of Companies, CRISIL Research

8.4 Amrutha Constructions Private Limited

About the Company

Set up in 2008, ACPL is engaged in civil construction works in Karnataka. It is promoted by Mr. P Venkateshwara Rao and his family. The company undertakes civil construction works related to construction of dams, drains, culverts and canals. The company as on August 10, 2012, had on outstanding order book of close to Rs.3.1 billion, to be executed over the next 12 to 15 months. Registered office of ACPL is in Bengaluru Urban, Karnataka.

Key Financial-Annual Results – Consolidated

Parameter (Rs . Crore)	Mar-2021	Mar-2019	Mar-2018	Mar-2017
Operating Income	1,120	998	957	912
OPBDIT	102	93	93	87
PAT	50	42	42	40
OPBDIT Margin (%)	9.1	9.3	9.7	9.5
Net Profit Margin (%)	4.5	4.2	4.4	4.4

Source: Registrar of Companies, CRISIL Research

8.5 RNS Infrastructure Limited

About the Company

Set up in 1961 as a partnership firm by Mr Rama Nagappa Shetty (chairman) and reconstituted as a private limited company in 2003, RNS Infrastructure Limited (RNS Infra) entered the real estate business in fiscal 2007 and undertakes construction of tunnels, irrigation works, bridges, power projects, buildings, dams, reservoirs, and highways. It has completed civil construction projects for the Government of Karnataka and has executed projects in Andhra Pradesh, Maharashtra, Tamil Nadu, and Goa. The company is constructing its second real estate project, RNS Shrinikethan, and has also set up a 10-megawatt solar power plant in Pavagadh, Karnataka. Operations are managed by Mr Rama Nagappa Shetty's son, Mr Naveen Shetty. RNS Infra is a part of the RNS group that has interests in construction, hotels, power, automobile, hospitals, and education. Registered office of RNS Infra is in Dharwad, Karnataka.

Key Financial-Annual Results – Standalone

Parameter (Rs. Crore)	Mar-2021	Mar-2020	Mar-2019	Mar-2018	Mar-2017
Operating Income	338	289	367	564	410
OPBDIT	54	51	41	94	94
PAT	4	11	16	37	39
OPBDIT Margin (%)	16.1	17.7	11.3	16.6	22.9
Net Profit Margin (%)	1.2	3.7	4.3	6.5	9.6

Source: Registrar of Companies, CRISIL Research

8.6 Star Infra Tech Private Limited

About the Company

Star Infra Tech Private Limited is a Private Company, and it was incorporated 12 Year(s) ago dated 08-Apr-2010. The Group has business segments primarily comprising of construction division, real estate division and Solar Power Division.

Key Financial Annual Results

Parameter (Rs. Crore)	Mar-2021	Mar-2020	Mar-2019	Mar-2018
Operating Income	12	5.61	3.604	4.89
OPBDIT	0.36	0.33	0.22	0.18
PAT	0.26	0.24	0.16	0.13

Parameter (Rs. Crore)	Mar-2021	Mar-2020	Mar-2019	Mar-2018
OPBDIT Margin (%)	3.0	5.8	6.2	3.6
Net Profit Margin (%)	2.2	4.2	4.5	2.6

Source: Registrar of Companies, CRISIL Research

8.7 Sri Srinivasa Constructions India Private Limited

About the Company

SSCIPL was registered as a partnership firm in 1999 and later reconstituted as a private limited company in fiscal 2010. UGCL was also set up as a partnership firm in 1999, and later reconstituted as a private limited company, under its current name. SSCIPL and UGCL undertake EPC projects, related to water supply, building construction, irrigation, roads, power transmission and other industrial projects, in Karnataka, Andhra Pradesh, Tamil Nadu and Telangana. UIMPL, a 60% subsidiary of UGCL, produces manufactured sand, plaster, aggregates which are used as ingredients in mortar and concrete. The group uses 30-35% of its produce for its construction business. Registered office of SSCIPL is in Ballari, Karnataka

Key Financial Annual Results – Standalone

Parameter (Rs . Crore)	Mar-2020	Mar-2019	Mar-2018	Mar-2017	Mar-2016
Operating Income	330	350	278	275	337
OPBDIT	27	27	23	21	22
PAT	15	13	10	7	12
OPBDIT Margin (%)	8.2	7.7	8.3	7.5	6.5
Net Profit Margin (%)	4.5	3.8	3.5	2.4	3.6

Source: Registrar of Companies, CRISIL Research

8.8 Udayshivakumar Infra Private Limited

About the Company

Udayshivakumar Infra Private Limited is a Private Limited organisation, established on 23 December 2019. It is classified as Non-govt company and is registered at Registrar of Companies (RoC), Bangalore. Its authorized share capital is Rs. 365,000,000 and its paid-up capital is Rs. 365,000,000. 2 Directors and 1 Signatories are associated with the organization. The company is reported to be in the business of construction of roads, railways and utility projects. The Key Managerial Personnel (KMP) at Udayshivakumar Infra Private Limited India are Bharti Ramchandani as Company Secretary. Udayshivakumar and Amrutha are presently associated as directors.

Key Financial Annual Results – Standalone

Parameter (Rs. Crore)	Mar-2021	Mar-2020
Operating Income	210	92
OPBDIT	23	8
PAT	10	3
OPBDIT Margin (%)	10.8	8.8
Net Profit Margin (%)	5.0	3.2

Source: Registrar of Companies, CRISIL Research

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