“Assessment of the Infrastructure consulting industry in India "

Aarvee Engineering Consultants Limited

24th September 2025

Contents

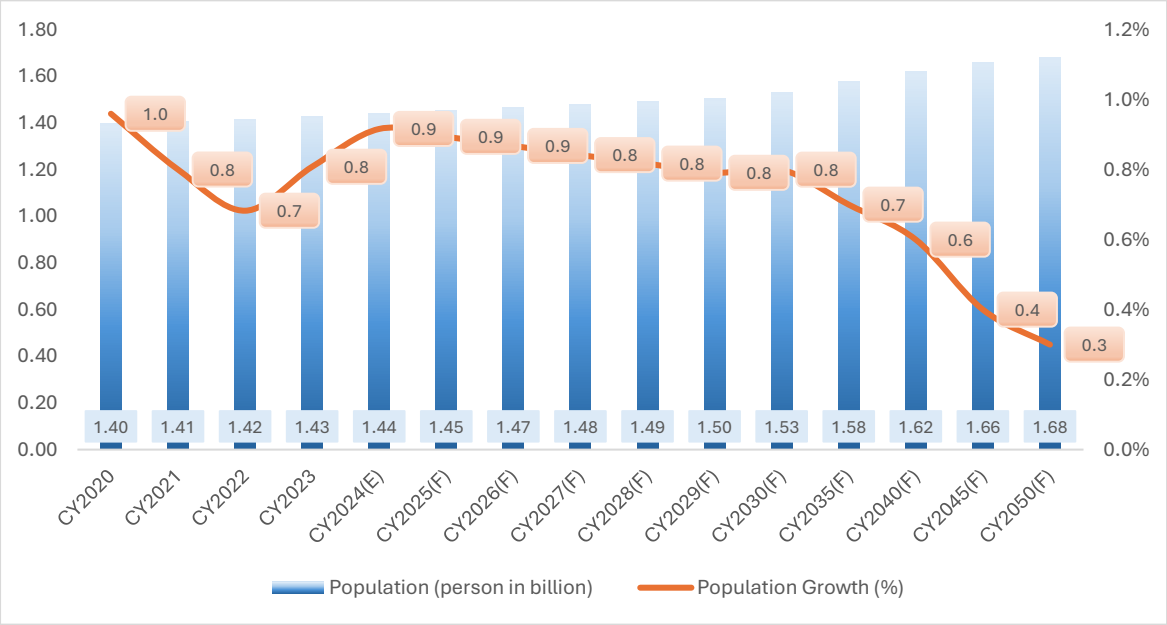
1. Overview of Indian economy & macro trends

1.1 Demographic overview of India

India, the world's seventh largest country by land area, is home to staggering 1.44 billion people (as of CY2024, IMF estimate), making it the most populous nation in the world, accounting for 17.8% of the world's population. As per the World Population Review report, India's population is younger with the median age as 28 years, as compared to China at 38 years, Japan at 48 years & US at 38 years. With a large growing population and increasing focus on development of skills, literacy and education, India has the potential to become a significant economic power.

1.1.1 Population growth trend and outlook

Chart 1: India's population trend and forecast (persons in millions) with y-o-y growth (in %)

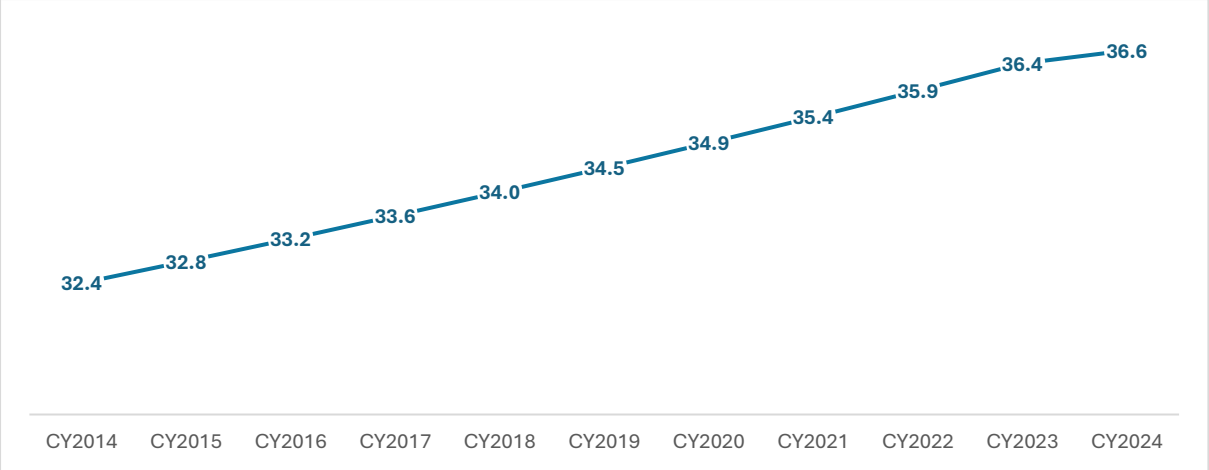


Source: IMF, World Population Prospects: The 2024 Revision, ICRA Analytics
Note: F: Forecasted
E: Estimated

In CY2024, India surpassed China and became the most populous country, with a total population of 1.44 billion. India's population growth rate has declined considerably over the past decade, mainly attributed to increasing urbanization, rising education levels and rising alleviation of poverty. The country's population is expected to continue to grow steadily at a slower rate of 0.9% in CY2025 and CY2026 and 0.8% in CY2027. The growth rate is expected to further slower down to 0.7% in CY2035 and 0.6% by CY2040.

1.1.2 Rise in urbanization

Chart 2: India's Urban population (% of total population), CY2014-CY2024



Source: World Bank, Worldometer, ICRA Analytics

In CY2024, India's urban population rate stood at 36.6%. India's urban population growth is fuelled due to by economic opportunities, better access to education and healthcare and infrastructure development. As per World Bank, by CY2036, the country's urban population is expected to grow to ~40%. The urban population is expected to contribute to ~70% of the country's GDP.

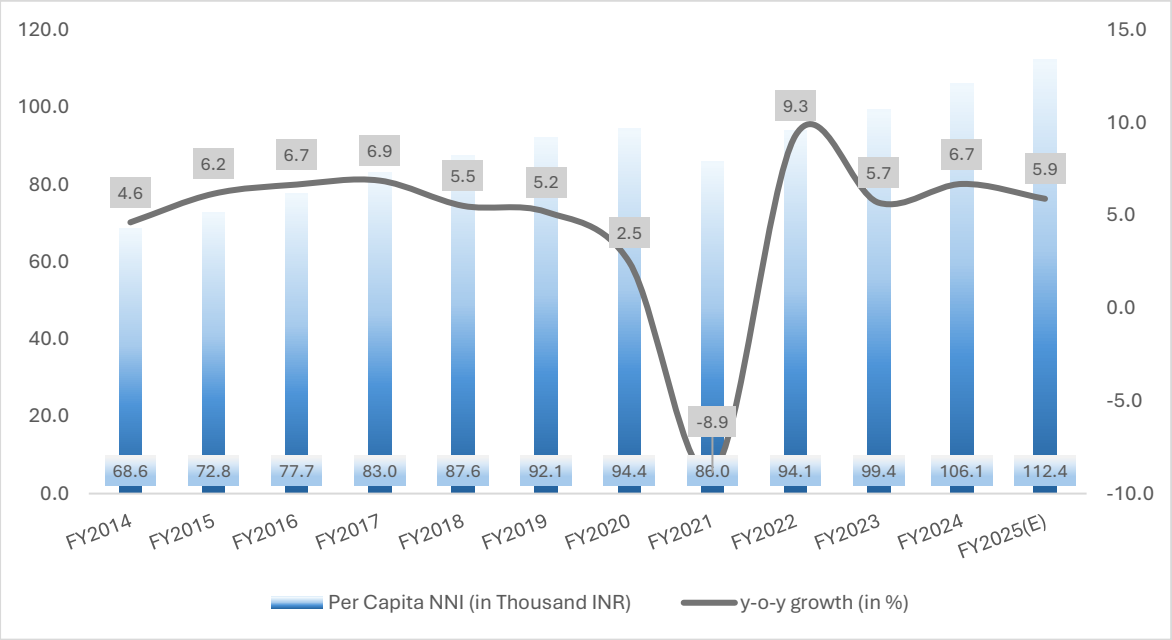
Rapid urbanization intensifies the strain on current infrastructure—such as housing, transportation, and essential public services—highlighting the urgent need for modern, well-developed systems to support sustainable growth. According to World Bank, ~70% of the infrastructure needs to be built by CY2047, for which an investment of USD 840 billion will be required by CY2036, averaging USD 55 billion or 1.2% of the GDP per annum. According to estimates, only 50% of the required quantum of investment has been fulfilled (an average investment of 0.6% of the GDP), thereby requiring further boost in investment both by private and public sectors. Government of India has undertaken various schemes for increasing the overall private investment such as Viability Gap Funding Scheme (VGF), modern concession agreements, policies and guidelines promoting Public Private Partnerships (PPPs) and so on.

To achieve sustainable urbanisation, India needs to prioritise the urban planning and investment in the metropolitan cities. Some of the steps taken by the government to deal with the rapid urbanization are as follows:

- **Smart Cities Mission:** It aims at promoting sustainable and inclusive urban development in 100 cities across the country.
- **Jawaharlal Nehru National Urban Renewal Mission (JNNURM):** It aims at providing financial assistance to the urban local bodies for infrastructure development.
- **Pradhan Mantri Awas Yojana (PMAY):** It aims at providing affordable housing to urban residents, particularly for the low-income groups.

1.2 Per capita Net National Income (NNI)

Chart 3: Per Capita NNI (in Thousand INR) trend and y-o-y growth (in %), FY2014 to FY2025

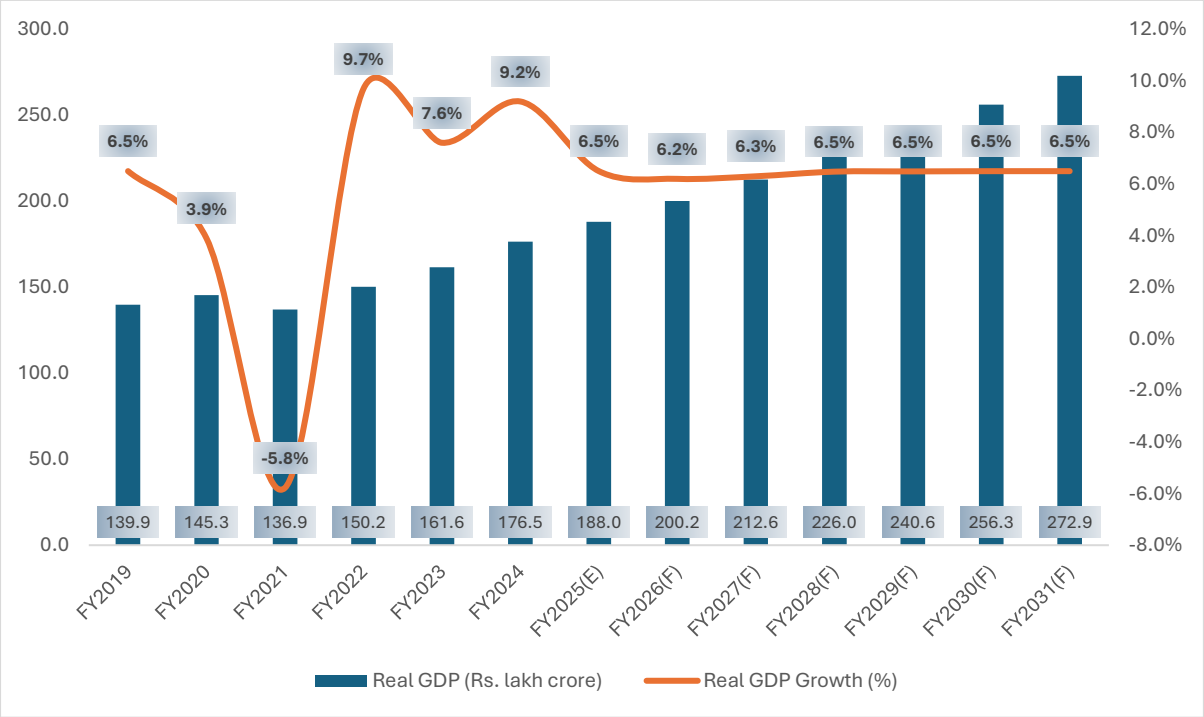


Source: MOSPI, ICRA Analytics
Note: E- Second Advanced Estimates
Note: F: Forecasted

As per the latest estimates from Ministry of Statistics and Program Implementation (MOSPI), India's per capita Net National Income (NNI) at constant (2011-12) prices increased to INR 112.4 thousand in FY2025(E) from INR 106.1 thousand in FY2024, thereby reflecting 5.9% y-o-y growth. The rising per capita income is expected to have a significant impact on the country's economy.. The country is likely to witness a substantial growth driven by the increase in external trade and household consumption and investment. Higher per capita income would expand India's middle class, creating new opportunities for businesses, improving the standard of living, increasing savings and investment, thereby driving economic growth

1.3 Review and trend of India's historical GDP growth and outlook for FY2025

Chart 4: India's Real GDP Trend and Forecast (in USD billion) and its growth trend (in %)



Source: IMF, ICRA Analytics
Note: F-Forecasted
E: Estimated

India's real Gross Domestic Product (GDP) for FY2025 is projected to grow by 6.5%, according to the Provisional Estimates (PE) released by the National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI) in May 2025. This represents a slight upward revision from the initial estimate of 6.4% published in January 2025. GDP to now reach a level of INR 188 trillion (lakh crore). India's real GDP registered 9.2% growth in FY2024 as against 7.6% in FY2023, making FY2024 the 3rd year of real GDP growth of 7.0% or above. Growth was majorly driven by robust domestic demand, vibrant demographic landscape, ongoing economic reforms, India is establishing its growing impact on global trade, investment, and innovation, coupled with Government's focus on infrastructural and economic development supported this upward trend in the country's growth rate. Furthermore, International Monetary Fund (IMF) expects India to continue being the fastest growing economy in the world, whereby it expects India's output to grow by 6.5% from FY2028 to FY2031.

The Reserve Bank of India has projected real GDP growth at 6.5% for FY2026 retaining the fastest-growing major economy in the world, maintaining the same rate as estimated for FY2025, following a strong expansion of 9.2% in the preceding year.

The quarterly projections stand at 6.5% in Q1, 6.7% in Q2, 6.6% in Q3, and 6.3% in Q4. This marks a downward revision of 20 basis points from the February estimate, reflecting increasing global volatility. Agriculture remains on a positive footing, supported by healthy reservoir levels and robust crop production, which is expected to sustain rural demand. Manufacturing is showing

early signs of revival amid improved business sentiment, and the services sector continues to demonstrate resilience.

On the investment side, activity is gaining pace on the back of higher capacity utilization, continued government focus on infrastructure, and strong balance sheets of banks and corporates. Easing financial conditions have also aided this recovery. While services exports are likely to remain steady, merchandise exports could face headwinds from global uncertainties and trade disruptions. Looking ahead, the RBI has projected real GDP growth at 6.7% for FY2027, suggesting continued recovery momentum.

Table 1: RBI estimates of Real GDP growth

Real GDP Growth (at constant 2011-12 prices)	FY2025				FY2025	FY2026 F				FY2026 F	FY2027 F
% change	Q1	Q2	Q3	Q4		Q1 (F)	Q2 (F)	Q3 (F)	Q4 (F)	(F)	(F)
GDP at market prices	6.7	5.6	6.2	7.4	6.5	6.5	6.7	6.6	6.3	6.5	6.7

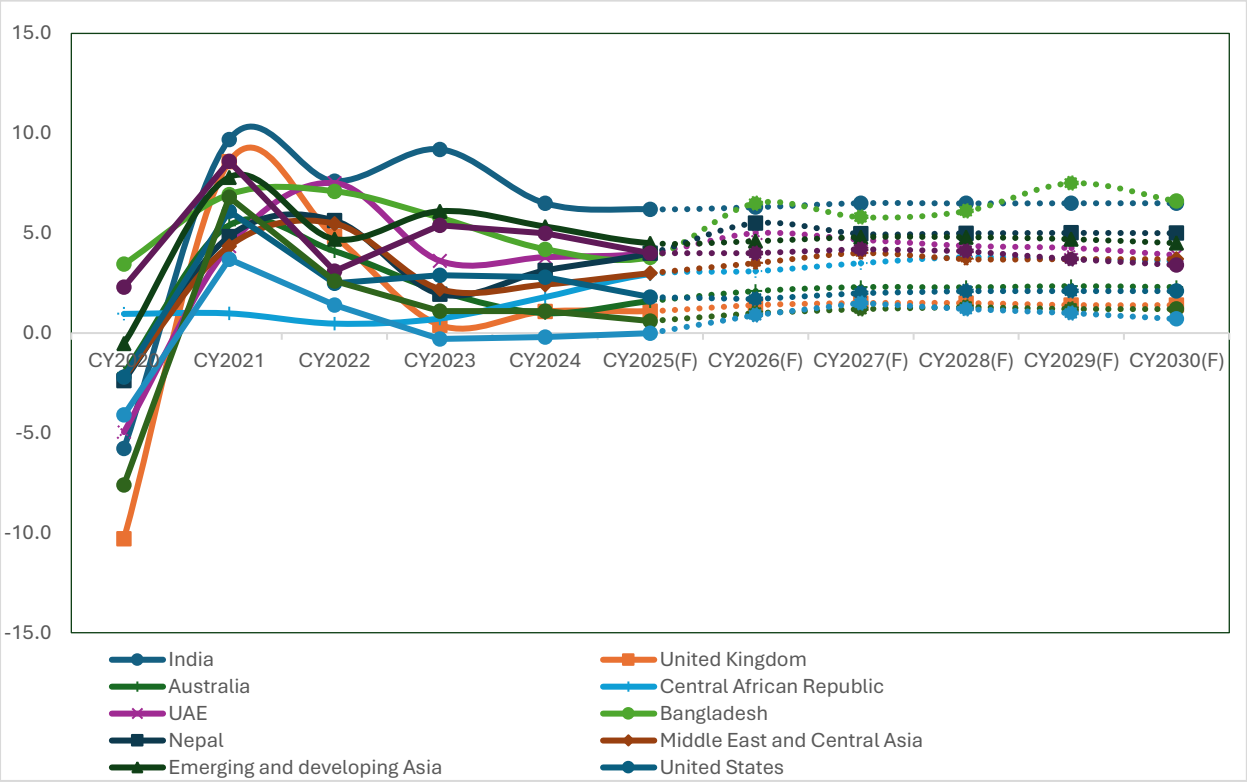
Source: RBI, ICRA Analytics Note: F-Forecasted

Note: F: Forecasted

E: Estimated

1.4 Comparison of India's GDP growth with global GDP and key geographies

Chart 5: India's GDP growth trend and forecast comparison with other economies



Source: IMF, ICRA Analytics

Note: F- Forecasted

As per IMF, the growth outlook of all the major economies is expected to remain stable. India's growth outlook as compared to the following economies have been discussed as follows:

- **United Kingdom (UK):** India's GDP growth outlook is stronger as compared to UK. India's GDP is expected to grow at 6.2% in CY 2025 and at 6.5% from CY2027 onwards, while UK's GDP growth rate forecast is lower at 1.1% in CY2025 and 1.4 % in CY2026 and might

further decline to 1.5% in CY2028. UK faces various challenges such as economic uncertainty due to Brexit's impact on trade and investment, inflationary pressures and global economic slowdown.

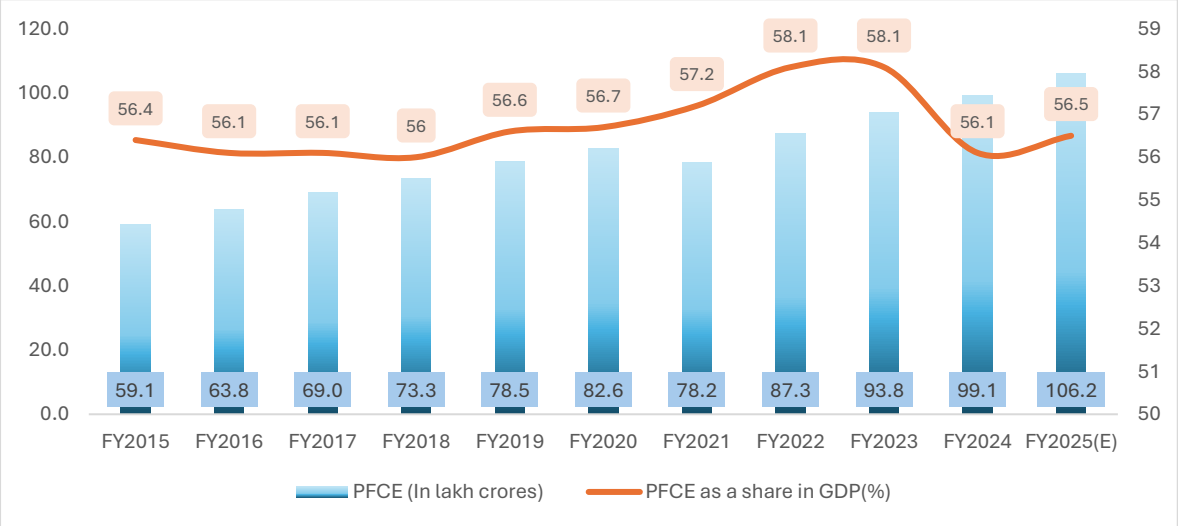
- **United Arab Emirates (UAE):** India's GDP growth rate is expected to be higher than UAE in CY2025. UAE's growth rate is expected to grow to 4.0% during CY2025 from 3.8% in CY2024 before slightly slowing down to 3.9% in CY2030. This acceleration is driven by increased investment and growth in non-oil sectors.
- **Middle East and Central Asia:** The Middle East and Central Asia's growth is expected to pick-up from 2.4% in CY2024 to 3.0% in CY2025 and further to 4.0% in CY2027. The growth rate has been comparatively lower than India's growth rate mainly as many central Asian economies depend on natural resources, thereby becoming vulnerable to fluctuations in the global commodity prices.
- **Emerging and Developing Asia (EDA):** Emerging and Developing Asia comprises of Bangladesh, Bhutan, Cambodia, China, Fiji India, Indonesia, Nepal, Malaysia, Myanmar, Vietnam, Thailand, Sri Lanka and other emerging countries. EDA's strong growth is expected to subside to 4.5% in CY2025 from 5.3% in CY2024. The growth rate is further expected to decline slightly to 4.6% in CY2026. EDA' s growth is mainly driven by a mix of domestic demand and exports. The main challenges faced by this region are the rising inflationary pressures, global economic slowdown and infrastructure constraints. India being a part of this region, contributes a substantial share of its GDP. As India's growth rate moderates, along with China's slowdown, the region's overall growth rate declines.
- **Australia:** India's GDP growth is more optimistic as compared to Australia. Australia's GDP is expected to increase to 1.6% in CY2025 and further to 2.1% in CY2026. As compared to India's strong investments and government support, Australia's growth is expected to be modest, due to declining fixed investments and influenced by domestic and global economic factors.
- **Nepal:** Nepal has a positive GDP growth trend and outlook since CY2020, but India's growth rate is expected to be higher, driven by its larger economy and diverse growth drivers. Nepal's GDP growth rate is projected to be 4.0% in CY2025 and further rise to 5.0% in CY2027. The growth is mainly supported by increasing tourism, agricultural activities and remittances.
- **Central African Republic:** The region's growth rate has reflected a rise from 1.8% in CY2024 to 2.9% in CY2025. The growth rate is expected to further rise to 3.1% in CY2026 and 3.5% in CY2027. The region's GDP is expected to grow at a fast rate but not as fast as India. The challenges faced by this region are mainly its dependency on natural resources and infrastructure constraints.
- **Bangladesh:** The country has a positive GDP growth rate, 4.2% in CY2024 and is expected to slow down slightly at 3.8% in CY2025 before rising to 6.5% in CY2026. The growth is supported by strong exports of ready-made clothing, resilient remittances inflow. However, the growth rate is impacted by the challenges such as inflationary pressures, ongoing political instability and increased financial volatility.
- **United States:** The country's GDP slowed down from 2.9% in CY2023 to 2.8% in CY2024. Personal consumption expenditure is expected to drive the growth, even though the prospects are expected to slow down to 1.7% in CY2026.

- **China:** China is one of the emerging economic giants in Asia. Its GDP has slowed down from 5.4% in CY2023 to 5.0% in CY2024. The slowdown is mainly due to demographic challenges including aging population and declining workforce.
- **France:** France GDP has a steady growth rate of 1.1% during CY2023 and CY2024. It is expected to slowdown to 0.6% in CY2025 and rise to 1.0% in CY2026. The growth for the country is mainly driven by household consumption, government expenditure and inventory changes.
- **Germany:** The country has a slowdown in growth rate from 1.4% in CY2022 to -0.3% in CY2023 and remained muted in CY2024. The growth is expected to stay flat at 0.0% in CY2025, with a modest recovery to 0.9% in CY2026. The growth is mainly driven by exports, particularly high added value products.

Therefore, India's GDP growth is expected to be stronger than major economies around the world, supported by the fundamental growth drivers such as manufacturing activity, infrastructure development and robust private consumption along with positive exports.

1.5 Review of private final consumption growth in India (from 2011-12 onwards)

Chart 6: Private Final Consumption Expenditure (PFCE) (in INR lakh crore) and its share of GDP (in %)



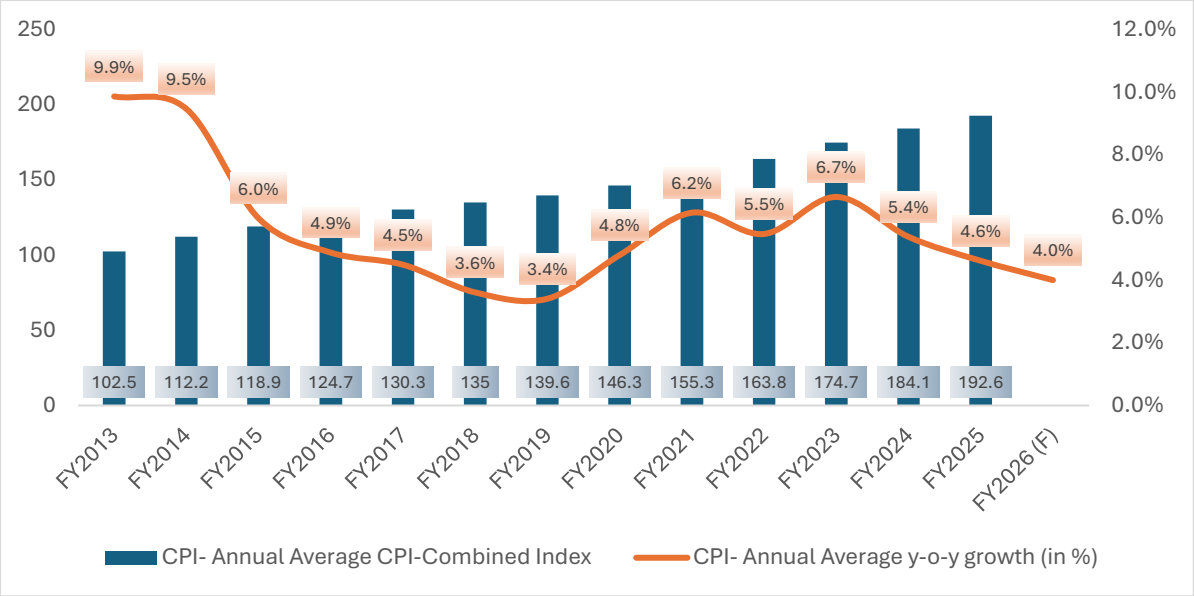
Source: RBI, ICRA Analytics
Note: E- Second Advanced Estimates

Private Final Consumption Expenditure (PFCE) at constant (2011-12) prices, was estimated at INR 93.8 lakh crore and INR 99.1 lakh crore, respectively for FY2023 and FY2024. The corresponding PFCE to GDP ratio for FY2022 and FY2023 are 58.1% and 56.1% respectively. In FY2025, it is estimated at INR 106.2 lakh crore with a 56.5% share of the GDP. The rising PFCE is contributing by various factors such as expanding middle class population, increasing disposable income which enables consumers to spend more, easy access to credit and financing options which enables consumers to make purchases and invest in assets, various governmental policies (schemes such as Pradhan Mantri Awas Yojana, Ayushman Bharat Yojana) that supports consumer spending, advancements in technology, digital payments and other innovative

developments. Private consumption accounts a significant share of the country's GDP and hence its rise has contributed to overall economic growth. The growth rate has increased from 5.6% in FY2024 to 7.2% in FY2025, reflecting signs of economic acceleration.

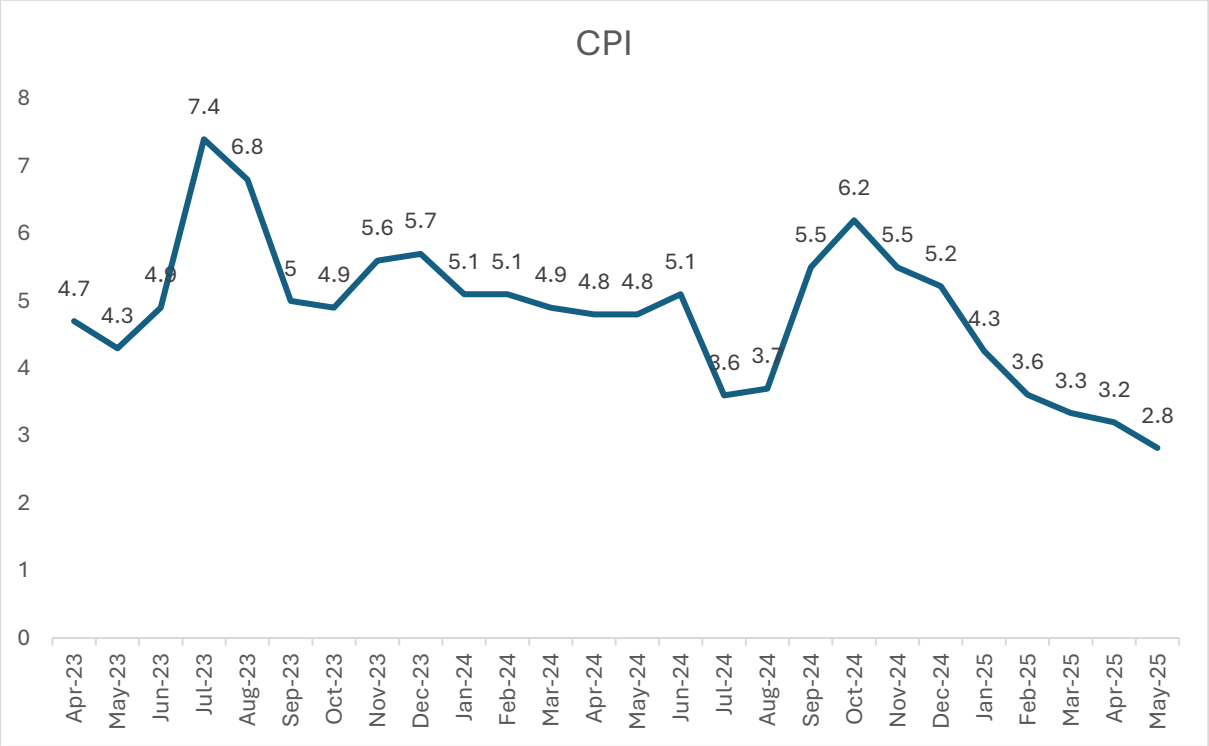
1.6 Review of inflation in India

Chart 7: CPI trend over the past ten years, FY2016-FY2025



Source: RBI, MOSPI, ICRA Analytics
Note: F: Forecasted
E: Estimated

Chart 8: Monthly CPI trend over the past two years (in %)



Source: RBI, MOSPI, ICRA Analytics

Retail inflation in India, as indicated by the Consumer Price Index (CPI), which represents the cost of daily goods and services, retail inflation in India has followed a steady downward path over the past three financial years, falling from 6.7% FY2023 to 5.4% during FY2024, and further to 4.6% during FY2025. This consistent moderation highlights the combined impact of the Reserve Bank of India's calibrated monetary policy and the Government of India's focused interventions to ease supply-side constraints and stabilise prices of essential commodities. The declining trend has helped ease cost-of-living pressures and fostered a more stable environment for economic growth.

During May 2025, the CPI inflation ease to 2.8%, lowest level witnessed since Feb 2019, signalling robust economic stability. Food inflation, a significant factor, decreased markedly to 0.99% in May 2025, marking the lowest level since October 2021, a reduction of 79 basis points from April's 1.78%. Rural regions experienced a food inflation rate of 0.95%, whereas urban regions recorded 0.96%. This decrease is ascribed to reduced prices for pulses, vegetables, fruits, cereals, household items, sugar, confectionery, and eggs, bolstered by a favourable base effect.
During April 2025, the CPI inflation ease to 3.2% predominantly led by ease in food and beverage subgroup followed by pan, tobacco, and intoxicants to a mild extent.
Significantly, the year-on-year inflation rate for March 2025 fell to 3.34%, a reduction of 27 basis points from February 2025, marking the lowest monthly inflation rate since August 2019. These statistics reflect a continuous commitment to controlling price increases while promoting economic development.

The strategic interventions implemented by the government have played a crucial role in achieving this result. Among the key measures are the enhancement of buffer stocks for essential food items and their periodic release into open markets, in addition to subsidized retail sales of staples such as rice, wheat flour, pulses, and onions.

Moreover, the simplification of import duties on vital food items, the enforcement of stricter stock limits to deter hoarding, and the reduction of GST rates on essentials have contributed to alleviating price pressures. Targeted subsidies, including LPG support through the Pradhan Mantri Ujjwala Yojana and the Pradhan Mantri Garib Kalyan Anna Yojana, have shielded vulnerable households from the escalating costs of food grains, ensuring that the advantages of reduced inflation are accessible to those who require it the most.

Table: CPI inflation forecasted by Reserve Bank of India

CPI Inflation	FY2026 F				
	Q1	Q2	Q3	Q4	FY2026 F
% change	2.9	3.4	3.9	4.4	3.7

Source: MPC, ICRA Analytics
Note: F: Forecasted
E: Estimated

As of July 2025, the Reserve Bank of India (RBI) has revised its Consumer Price Index (CPI) inflation forecast for the fiscal year 2025–26 (FY2026) downward to 3.7%, from an earlier projection of 4.0%. This adjustment reflects a sustained decline in food inflation, robust agricultural output, and favorable monsoon conditions.

Notably, it has pared the CPI inflation projection for Q1 FY2026 (+2.9% in June 2025 vs. +3.6% in April 2025) and Q2 FY2026 (+3.4% vs.+3.9%) by a sizeable 50-70 bps. While the projection for Q3 FY2026 (+3.9% vs. +3.8%) was revised upwards slightly, that for Q4 FY2026 was kept unchanged at 4.4%. This implies a linear upward trajectory in inflation through the fiscal.
ICRA projects Consumer Price Index (CPI) inflation to moderate to 3.5% in FY2026, down from 4.6% in FY2025, which is below the Monetary Policy Committee's (MPC) updated estimate of 3.7%. While the inflation readings for the first half of the fiscal are largely in line with their expectations, it is anticipated that those for the latter half may fall slightly below the MPC's projections. In their assessment, the return to a neutral policy stance sends a clear indication of a pause, particularly when viewed alongside the unanticipated Cash Reserve Ratio (CRR) reduction. At this point, there are no changes in the policy rate foreseen during the upcoming review in August 2025.

1.7 Fundamental Growth drivers in India

India's economic growth is on a sustainable path as the country is a resilient and diversified, driven by several fundamental growth drivers. To become an advanced economy, India is drawing strength from its unique blend of favourable factors. Some of them have been discussed as follows:

- **Demographic Dividend:** India has a large and young population, with over 65% of its population is below the age of 35. Along with that, the country's working-age population is expected to have increased by 10% by FY2025. This demographic advantage is a potential towards economic growth and development. Government of India's various initiatives such as Start Up India initiative to boost entrepreneurship, launch of the Skill India mission, establishment of a dedicated Ministry of Skill Development and Entrepreneurship and so on can help reach the Indian youth its potential.

- **Consumption-Driven Growth:** The increasing per capita income of the India's middle-class population is expanding which is driving up consumer spending. The increasing trend of urbanization is leading to changes in lifestyle and consumption patterns. As per IBEF, the Indian middle class is expected to have 2nd largest share in global consumption at 17% by FY2030. This in turn would contribute to the domestic consumption, thereby boosting economic growth.

- **Investment-Driven Growth:** The government has focused on infrastructure development, such as transportation networks, energy systems, and urban infrastructure. India's manufacturing sector is growing, driven by government initiatives like Make in India, Production Linked Incentive (PLI) Scheme. Make in India, launched in 2014, aims at promoting India as a manufacturing hub and attract foreign investors. PLI scheme offers incentives to companies investing in manufacturing sector like electronics, pharmaceuticals and textiles. These are some of the initiatives taken by the government to increase the funding in the manufacturing sector and boost the overall infrastructure growth in the economy.

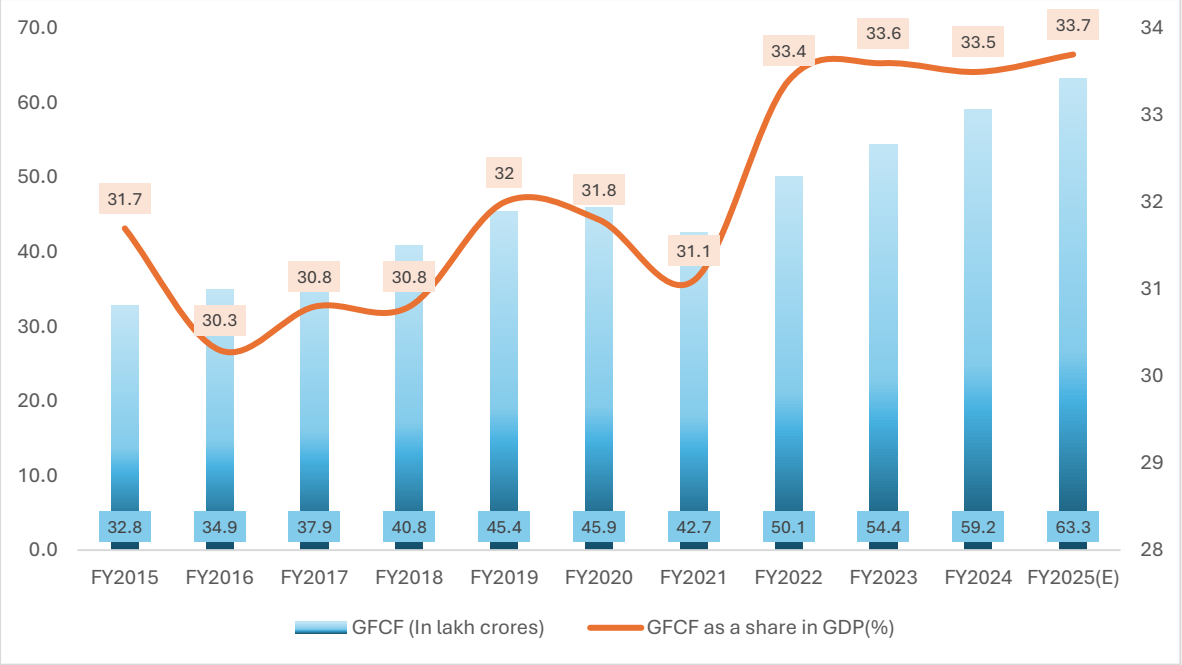
- **Innovation and Technology:** India's digital transformation, driven by the growth of e-commerce, digital payments, and the IT sector. The country's is also thriving start-up ecosystem, with many unicorns and innovative companies. For example, Telecom Technology Development Fund (TTDF) Scheme was introduced in October 2022 by the Universal Service Obligation Fund (USOF), a body under the Department of Telecommunications. Its objective is to fund R&D in rural-specific communication technology applications and form synergies among academia, start-ups, research institutes, and the industry to build and develop the telecom ecosystem.

- **Government Initiatives:** The government has made efforts to implement reforms and policies, such as the Goods and Services Tax (GST), the Insolvency and Bankruptcy Code (IBC), and the National Infrastructure Pipeline (NIP), Digital India, 100 smart cities. These initiatives have promoted better industrial infrastructure and innovation thereby attracting FDI. The government has also focused on investing in human capital, including education and healthcare.

- **External Factors:** India has reached a significant milestone in its economic development, with gross foreign direct investment (FDI) inflows totalling an impressive US$1 trillion since April 2000. This notable achievement was further supported by a nearly 26% increase in FDI, amounting to $42.1 billion during the first half of the current fiscal year. Such growth underscores India's rising status as a preferred global investment destination, fuelled by a proactive policy framework, a vibrant business environment, and enhanced international competitiveness. FDI has been instrumental in transforming India's economy by providing substantial non-debt financial resources, facilitating technology transfers, and generating employment opportunities. Initiatives such as "Make in India," along with liberalized sectoral policies and the implementation of the Goods and Services Tax (GST), have bolstered investor confidence, while competitive labor costs and strategic incentives continue to draw multinational corporations. India's relatively strong position in the external sector driven by trade agreements and exports, reflects the economy’s positive outlook for economic growth and increasing employment rates. The country's attractiveness to foreign investors, driven by its large market, skilled workforce, and favourable business environment.

1.8 Overview of gross fixed capital formation (GFCF) in India

Chart 9: India’s Gross Fixed Capital Formation (GFCF)(in INR Lakh crores) and share of GDP (in %) FY2015-FY2025

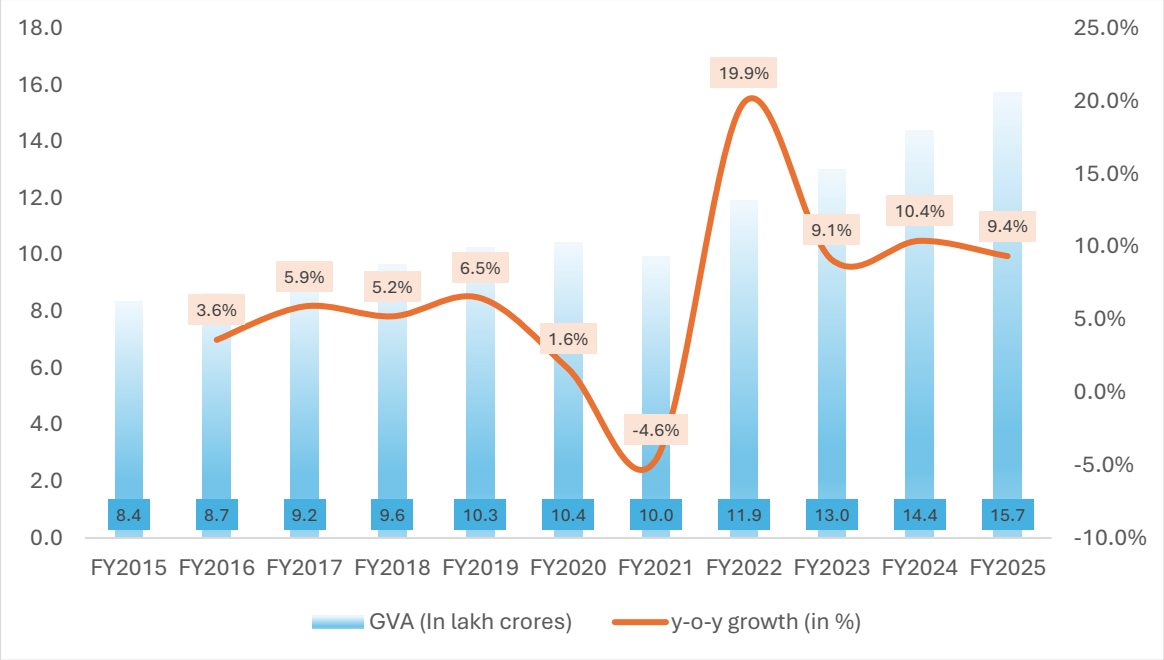


Source: RBI, ICRA Analytics
Note: E- Second Advanced Estimate

India's Gross Fixed Capital Formation (GFCF) has expanded from INR 32.8 lakh crore in FY2015 to INR 63.3 lakh crore in FY2024 at a CAGR of ~ 7.6%. The GFCF to GDP ratio increased to 33.7% in FY2025 from 33.5% in FY2024. The GFCF experienced a moderation in growth by ~7.1% in FY2025 from ~8.8% in FY2024. This indicates a rise in investments, mainly led by government spending on infrastructure and growth in domestic consumption. Among the components of GFCF, the construction sector showed a robust growth marked by the growth in its proximate coincident indicators - steel consumption and cement production. In Q2 FY2025, YoY growth in GFCF slowed down to 5.4% after accelerating to 7.5% in Q1 FY2025, representing 30.8% share of GDP in Q2, as compared to 31.3% in Q1 FY2025. The decline is mainly attributed to high fiscal deficits that have reduced the investment capacity of the government. Hence, private sector investment becomes critical for economic growth

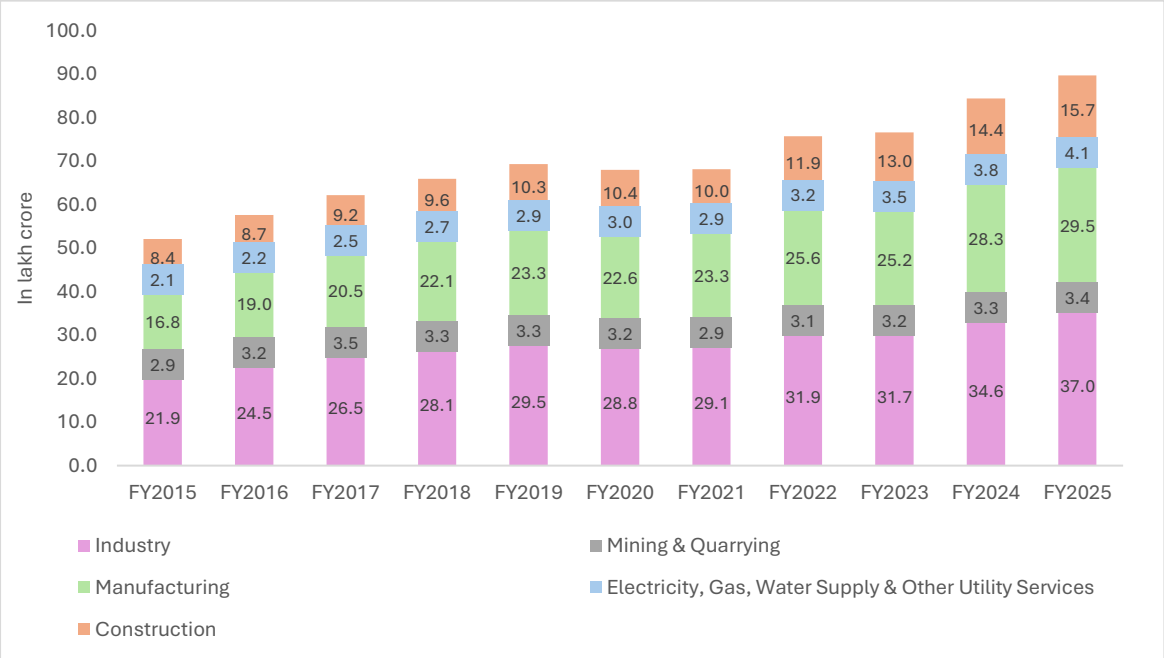
1.9 Overview of share of construction in GVA in India (from 2011-12 onwards)

Chart 10: GVA at Basic Prices (Base Year: 2011-12) Constant Prices (in INR lakh crore) and y-o-y growth (in %) FY2015-FY2025



Source: RBI, ICRA Analytics

Chart 11: GVA Sectoral growth of construction sector and other relevant sectors, FY2015-FY2025 (INR In lakh crore)



Source: RBI, ICRA Analytics

India's construction sector, currently ranking as the world's third largest market, posted strong growth in FY2025. The sector accounted for 9.1% of the total India's GVA in FY2025. The construction sector has grown at a CAGR of 7.3% during the period of FY2015 to FY2025 from 8.4 lakh crore to 15.7 lakh crore. This growth is attributed to government's emphasis on infrastructure development, a low base effect and robust order book. While roads and buildings have maintained its share, comprising a major part of the order book, the urban infrastructure, water and sanitation have also shown a substantial boost in the recent years. Its proximate coincident indicators - steel consumption and cement production expanded by 11.5% and 6.3%,

respectively, in FY2025. Increased infrastructure spending, private sector investment in various construction projects and technological advancements has improved efficiency, reduced costs and propelled its growth.

In FY2025, Gross Value Added (GVA) at constant prices for the industry sector reached at INR 37.0 lakh crore, which accounted for 21.5% of the total India's GVA of INR 171.9 lakh crore. The share of industry sector has grown by ~6.8% from FY2024 to FY2025. The growth is mainly driven by the manufacturing sector and electricity, gas, water supply & other utility services sector exhibiting a CAGR growth rate of ~6.4% and ~7.4% respectively.

The manufacturing sector contributed 17.2% to the total India's GVA. The growth in manufacturing sector has been 4.5% from FY2024 to FY2025. The growth is driven by robust capital expenditure, government initiatives such as Production Linked (PLI) Scheme. This growth has been prominent in the past few years as India develops into a globally competitive manufacturing hub and attracting more manufacturing investments. While construction sectors have a significant contribution of 9.1% to the total India's GVA, the growth is expected to be mainly driven by the manufacturing sector in the coming years.

The mining industry reached at INR 3.4 lakh crore, with a CAGR of 1.8% during the period of FY2015 to FY2025. The expansion of the industry has been relatively low due to the various challenges faced by industry such as environmental impacts, groundwater depletion, waste generation, health issues, and social and cultural issues. In terms of future growth prospects, construction sector is expected to continue to contribute a significant share in the country's total GVA, driven by government initiatives and private sector investments in various construction projects.

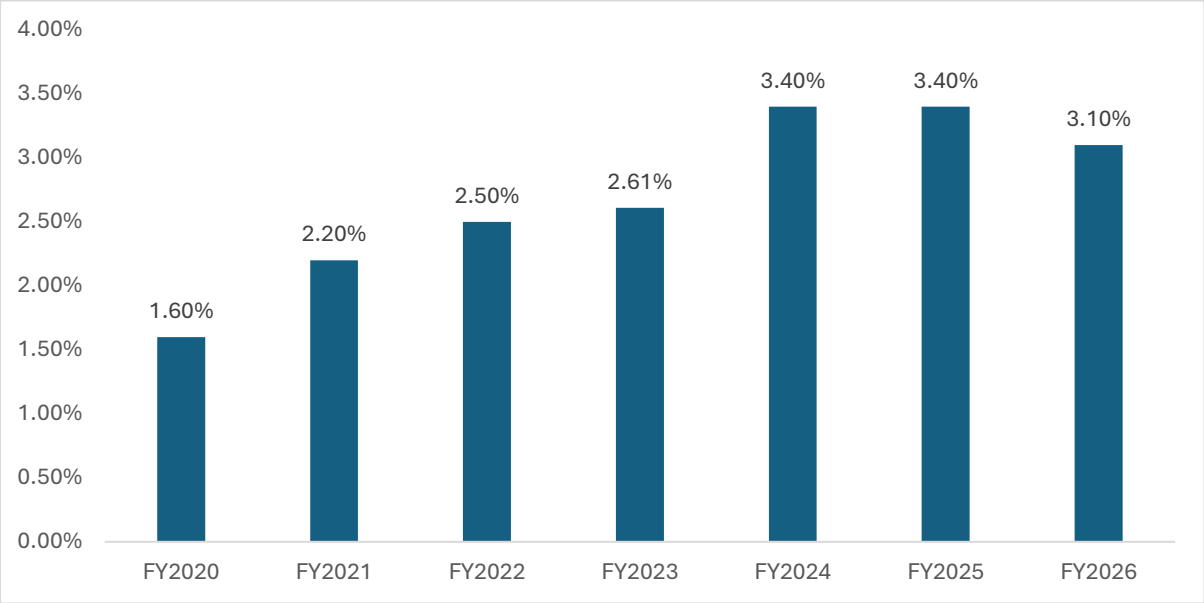
2. Comprehensive Analysis of Infrastructure and Construction Capital Expenditure in India

2.1 India's Infrastructure and Construction Landscape Overview

India's infrastructure and construction capital expenditure (CapEx) plays a significant role in forming the country's economic trajectory, while enhancing connectivity, driving growth and creating employment. The recent trend in the government spending highlights the sustained focus on infrastructure development for achieving long term economic growth. For FY2025-26, the government has designated INR 2,873.3 billion to the Ministry of Road Transport and Highways, marking a 2.4% increase from the previous year's allocation of INR 2,805.2 billion. Furthermore, the budget for the state-owned National Highways Authority of India (NHAI) has risen to INR 1,878 billion, up from INR 1,693.7 billion in the prior year. Also, the budget for the Railway has been increased to INR 2,652 billion in FY2026, increased by 41% as compared to FY2025.

In addition, approximately INR 250 billion has been allocated to the Maritime Development Fund for FY 2025-26, aimed at promoting private sector involvement and enhancing maritime infrastructure. These initiatives, along with the policy announcements and tax proposals detailed in this alert, underscore the government's comprehensive approach to improving India's infrastructure and establishing a solid foundation for sustainable economic growth.

Chart 12: India's CapEx % change of GDP, FY2020 to FY2026



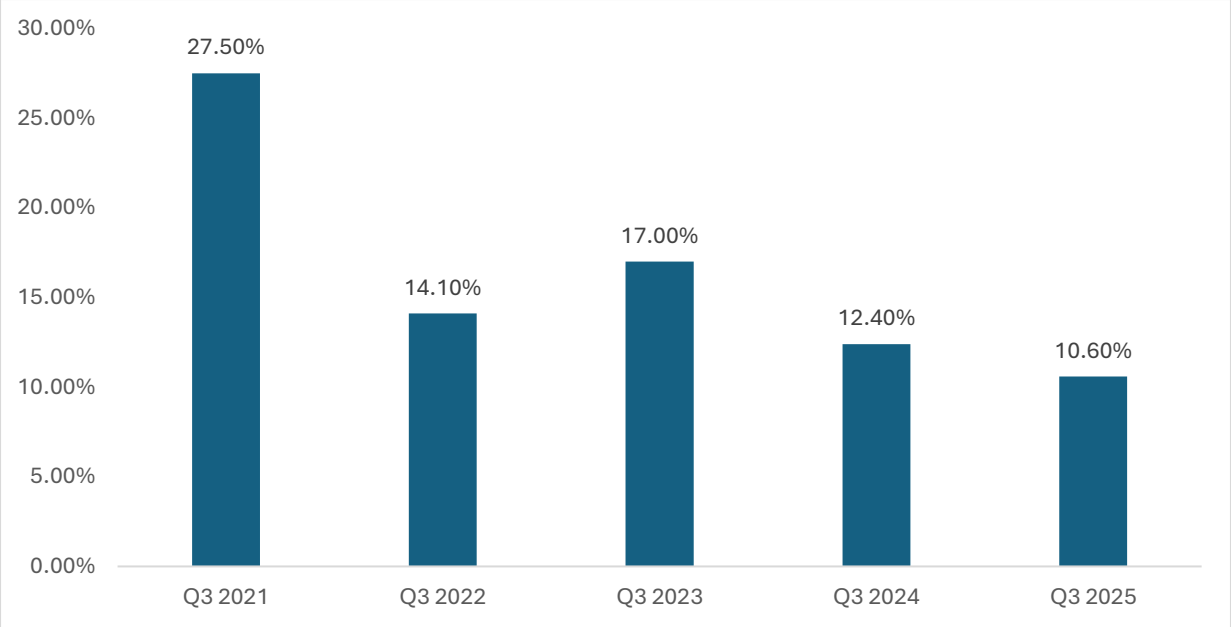
Source: Ministry of Finance, ICRA Analytics

This growth was mainly driven by government initiatives like PM Gati Shakti, National Infrastructure Pipeline (NIP), National Monetization Pipeline (NMP) and other programs boosting the connectivity and economic growth.

2.1.1 Economic Implications of Infrastructure Investment

India's infrastructure development has played a significant role in rejuvenating the economy. In February 2025, the government of India proposed a staggering INR 11,210 billion for capital expenditure. This allocation has increased five-fold as compared in the past decade. The most visible rise in CapEx occurred in the last five years, driving an annual growth rate of 27%. Going forward, the government has committed to maintain the momentum, ensuring a strong fiscal support for infrastructure sector. The commitment is further supported by the increasing share of Centre's capital expenditure directed towards infrastructure, jumping from 28% in FY2014 to an anticipated ~60% in FY2025. The government has taken various initiatives such as establishment of National Infrastructure Pipeline (NIP) with projects worth INR 11,100 billion (USD 1299 billion), National Monetisation Pipeline (NMP) valued at INR 6000 billion (USD 71.44 billion), and the PM Gati Shakti National Master Plan. Additionally, large-scale national programs like Bharatmala, Sagarmala, the Regional Connectivity Scheme-UDAN, Dedicated Freight Corridors, the High-Speed Rail network, Railway Station Redevelopment, BharatNet, Jal Jeevan Mission, AMRUT, and the Smart Cities Mission have played vital roles in boosting the overall infrastructure development. Phase IV of Pradhan Mantri Gram Sadak Yojana (PMGSY) is set to improve connectivity for 25,000 rural residents.

Chart 13: India's construction sector, % change on GDP, Q3 FY2021 To- Q3 FY2025



Source: Ministry of Finance, ICRA Analytics

In FY2024, for infrastructure, Indian states In FY2024, for infrastructure, Indian states have been allocated INR 8700 billion, with the support of special assistance schemes and central interest-free loans. Government has put emphasis on Viability Gap Funding (VGF), Public-Private Partnerships (PPPs), and other market-based frameworks that focus on propelling growth and attracting private investments.

State-Level Infrastructure Development

- Understanding the importance of infrastructure for economic development, the state governments have increased their capital outlays to INR 8700 billion (USD 101.73 billion) in FY2024, marking a 2.5-fold increase since FY2015. Furthermore, the centre supports the states initiatives by funding the infrastructure projects through interest free loans.
- Over the past two years, an allocation of INR 1000 billion (USD 12.98 billion) was made by the Centre, under the special assistance scheme and INR 1500 billion (USD 17.54 billion) assigned for the FY2024. A greater part of FY2024's allocation is dedicated to the accelerating next-generation reforms in the states.
- The centre has focused on the development of the economically lagging states such as Bihar, West Bengal, Odisha, Jharkhand, Andhra Pradesh. Various infrastructure initiatives have been proposed in these states such as airports, medical colleges, industrial nodes and sports facilities.
- Bihar, along with several eastern and southern states, is undergoing rapid infrastructure and economic development. In Bihar, ₹26,000 crore (USD 3.04 billion) has been allocated for roads and highways, including the Patna–Muzaffarpur Corridor and 3,800 km of rural roads under PMGSY. Plans for the Delhi–Patna Greenfield Expressway are also underway to enhance interstate connectivity. The state is investing ₹21,400 crore (USD 2.5 billion) in smart metering under the RDSS scheme, the 500 MW Darbhanga Solar Park, and grid modernization. A ₹5,000 crore allocation has been made for the Danapur–Koilkuntla Dedicated Freight Corridor to support cargo movement. Urban mobility will be improved

through the ₹13,365 crore Patna Metro Phase-1, while five AIIMS-like institutions under PM-ABHIM will strengthen the healthcare ecosystem.

- Other states are also seeing transformative growth. West Bengal is enhancing transport with ₹8,575 crore for the Joka–Esplanade Metro and ₹2,500 crore for the Durgapur Expressway, along with the ₹10,000 crore Sagar Port under Sagarmala. Odisha has secured ₹1.5 lakh crore for the Paradip Petrochemical Complex and ₹2,200 crore for the Green Energy Corridor, in addition to major highway and railway investments. Jharkhand is focusing on industrial and energy infrastructure with ₹1,200 crore for the Palamu Industrial Corridor, ₹5,000 crore for a Coal-to-Chemical Hub, and the 1,000 MW Deoghar Solar Park. Andhra Pradesh is driving logistics and urban growth with ₹3,800 crore for Ramayapatnam Port, ₹8,500 crore for the Vizag–Chennai Industrial Corridor, and expansion in Amaravati and Kurnool Solar Park..

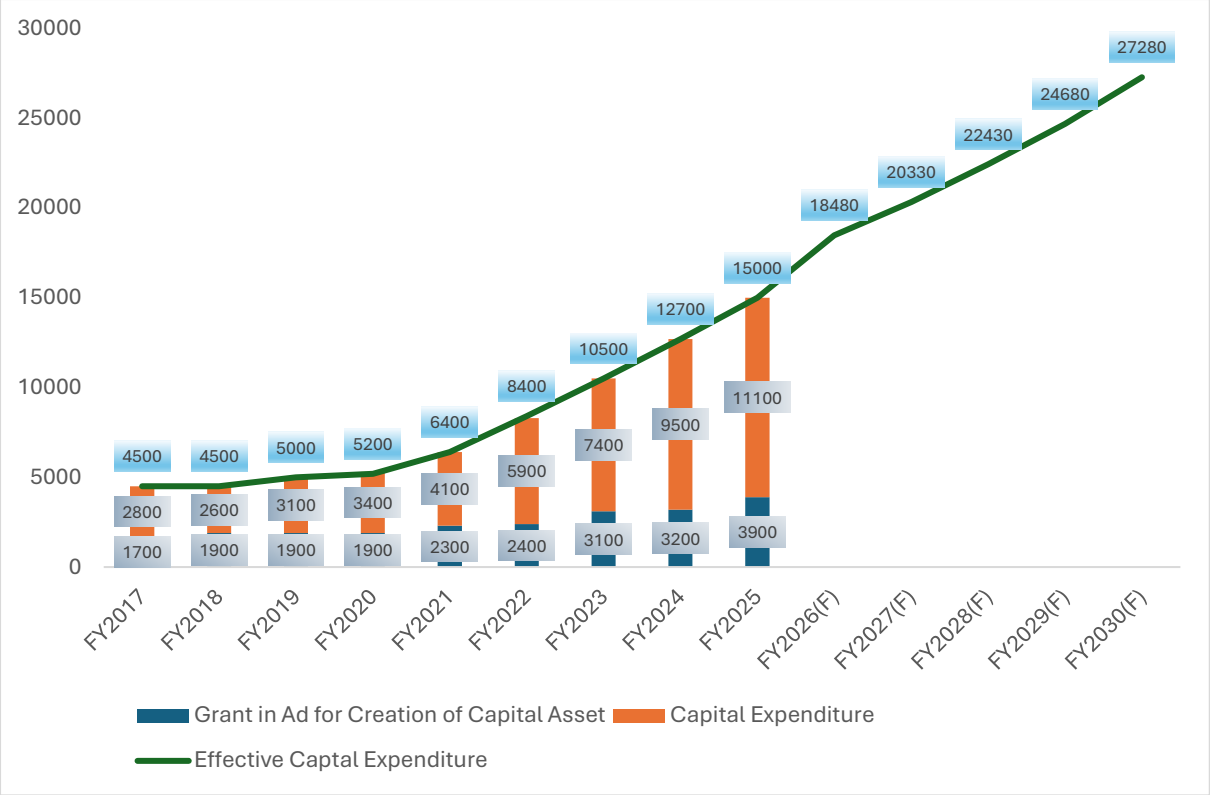
Innovative Financing Mechanisms

- In India, infrastructure development predominantly depends on the grants received from Central and State governments, supported by borrowings from domestic and international markets such as Multilateral Development Banks (MDBs).
- These entities have limited financing capabilities. Hence, the government is coming up with other innovative financing options such as Public-Private Partnerships (PPPs) and structured financial instruments, thereby sustaining the momentum.
- In the latest budget FY2025, the government has further incentivized the private sector by promoting VGF for infrastructure projects. The Project Sponsoring Authorities (PSAs) and states have encouraged in curating a pipeline of investment-ready, bankable projects and simplified the lending process, thereby harnessing the strength of the private sector.

Long-Term Economic Impact

Investments in infrastructure ensure long-term economic returns. As per the estimates of National Institute of Public Finance and Policy (NIPFP), with every rupee invested in infrastructure, generates a GDP return of INR 2.5 to INR 3.5. This reflects the impact of infrastructural development on the productivity of sectors like manufacturing, agriculture, services and tourism. Various initiatives by the government such as Digital Public Infrastructure (DPI) and e-commerce hubs boosts productivity, growth across sectors such as agriculture, logistics, MSMEs, health and education. It also helps in amplifying the economic multiplier effect and bolsters the trade and export services for MSMEs.

Chart 14: Trend in capital expenditure (FY2017 to FY2025), and forecast FY2026- FY2030, (in INR billion)



Source: Ministry of Finance, Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Table 2: Key Announcements for capital expenditure

Sl. no	Budget announcement	Year of Announcement	Capital expenditure (RS.)
1	Infrastructure sector	FY2025	11,110 billion
2	PM Awas Yojana Urban 2.0	Sep-24	12,300 billion
3	Road connectivity projects	Jul-24	260 billion
4	Power sector	Mar-24	214 billion

Source: Ministry of Finance, ICRA Analytics

2.1.2 Key areas of infrastructure and construction capital expenditure

- **Road and Highways**
  Improved road infrastructure streamlines trade and commerce and connects urban and rural areas. These help in fuelling regional economic development, fostering accessibility and regional integration. Also, investment in advanced road safety features improves travel reliability while reducing accidents.

- **Railways**
  Railway infrastructure modernization upgrades improve the efficiency and reliability of freight and passenger services. Reliance on fossil fuel reduces through electrification that involves switching to electric trains, thereby reducing cost and environmental impacts. Modern safety technologies that improve the safety of the passengers and reduces accidents.

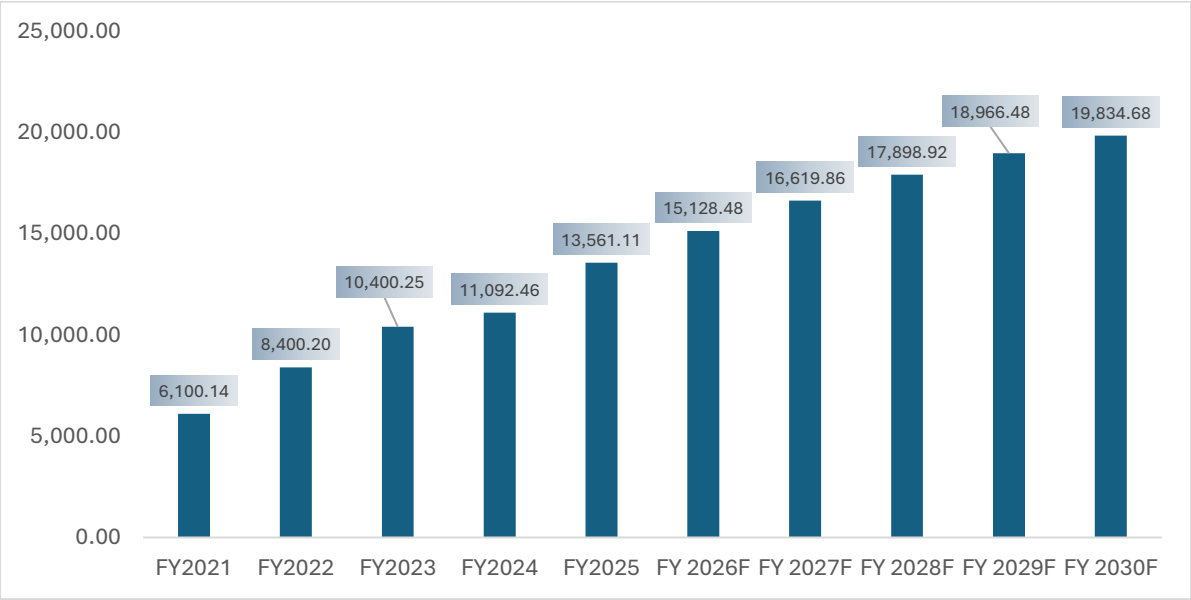
- **Energy and Power**
  Investments in solar and wind energy, expansion of the transmission grids and upgradation of power plants are the primary parts of India's energy transition strategy. Investments increased in solar, and wind has enabled India to align with the global sustainability goals and reduce carbon emissions. To meet the growing demand driven by urbanisation, expansion and upgradation of the transmission grids ensure reliable energy supply.

- **Urban Infrastructure**
  Urban expansion initiatives include investments in affordable housing, sanitation, water management, metro rail projects, and water supply initiatives. Housing storages and urban population increase is addressed by affordable housing investments. Metro rail expansions improve public transportation and reduce traffic congestion.

- **Port And Airport Development**
  Trade and tourism are mainly boosted through infrastructure investments in maritime and aviation sectors, including modernizing airports and expanding port capacities. Extended port capacities support economic growth and enhance trade efficiency through enhanced export and import activities. Improved airports and better port infrastructure enhances travel, attract tourists, optimize logistics, boost hospitality, and reduces shipping times.

2.1.3 Total Projected Infrastructure and Construction Capital Expenditure in India

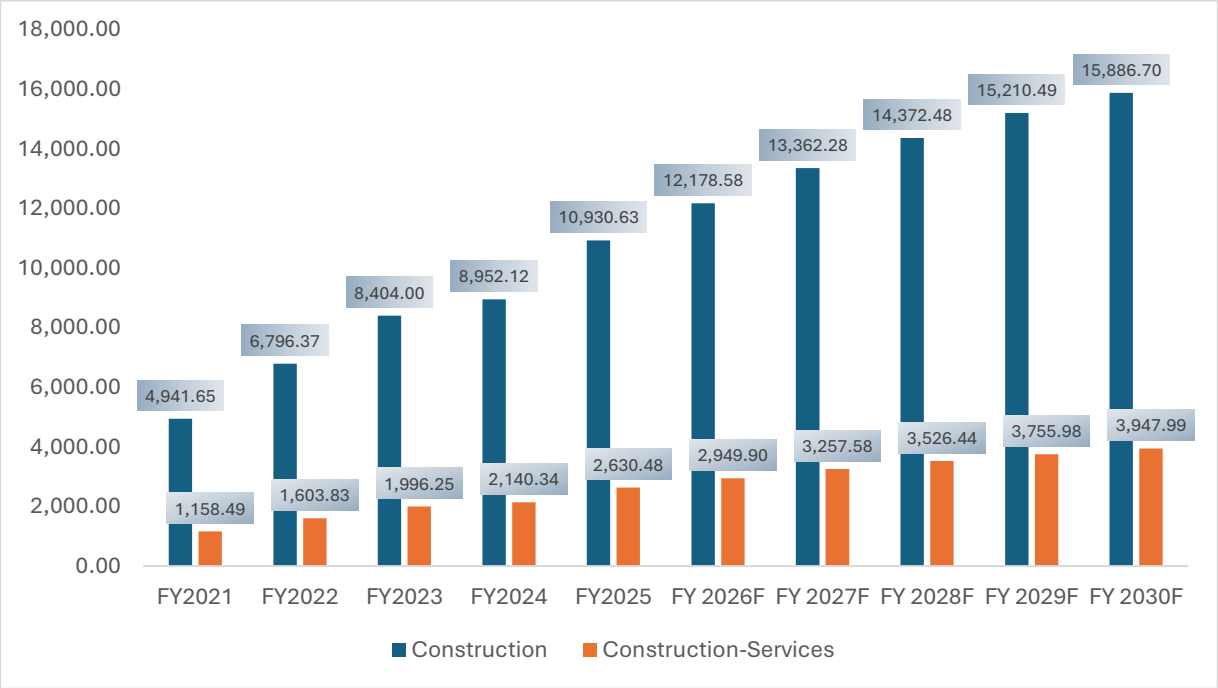
Chart 15: Infrastructure and Construction Capital Expenditure, in INR billion, FY2021-FY2030F, CAGR: 10.17%



Source: Actual Figures: Ministry of Finance, NITI Aayog, State Public Works Departments (PWDs) and Urban Development Authorities
Forecasted Figures: Mordor Intelligence, IMF
ICRA Analytics

During the period of FY 2023-24 TO FY 2029-30F, India's capital expenditure on infrastructure and infrastructure construction is expected to grow at a CAGR of 10.17%. The data reflects a consistent upward trend in expenditure, thereby reflecting rise in investments in infrastructure development. Infra and CAPEX expenditure is expected to grow at a steady pace fuelled by the government and private sector's focus on improving the infrastructure capacity and boost economic growth.

Chart 16: Construction And Construction-Services Capital Expenditure, in INR billion, In India (FY2021 - FY2030)



Source: Actual Figures: Ministry of Finance, NITI Aayog, State Public Works Departments (PWDs) and Urban Development Authorities, ICRA Analytics

F:Forecasted Figures: Mordor Intelligence, IMF, World Bank

Major Drivers contributing to the rise of India's Infrastructure and Construction Capital Expenditure

- **Government Initiatives**: Government of India has taken various initiatives like the National Infrastructure Pipeline (NIP), which aims at investing USD 1.4 trillion by FY2025. The government allocated INR 11,100 billion for infrastructure projects in the budget for FY2025 and is expected to be further rise in the future budget for FY2026.

- **Population Growth and Urbanization:** As per World Bank, India is urbanising rapidly. As per their projections, by FY2036, 40% of the India's total population would reside in the urban areas. These urban areas are expected to contribute to 70% of the nation's GDP. However, approximately 70% of the urban infrastructure is still unconstructed and needs to be constructed by FY2047. Therefore, India requires substantial investment. By FY2036, India must attract an investment of USD 840 billion into infrastructure, averaging out to USD 55 billion annually, which is approximately 1.2% of its GDP. Hence, the need for better urban infrastructure for the growing economy and population is immediate.

- **Economic Expansion:** Sustained GDP growth has reinforced public and private sector confidence, thereby resulting in rise in investments in infrastructure projects.

2.2 Insights into the estimated share of industrial, building, and infrastructure segments in India's total construction landscape

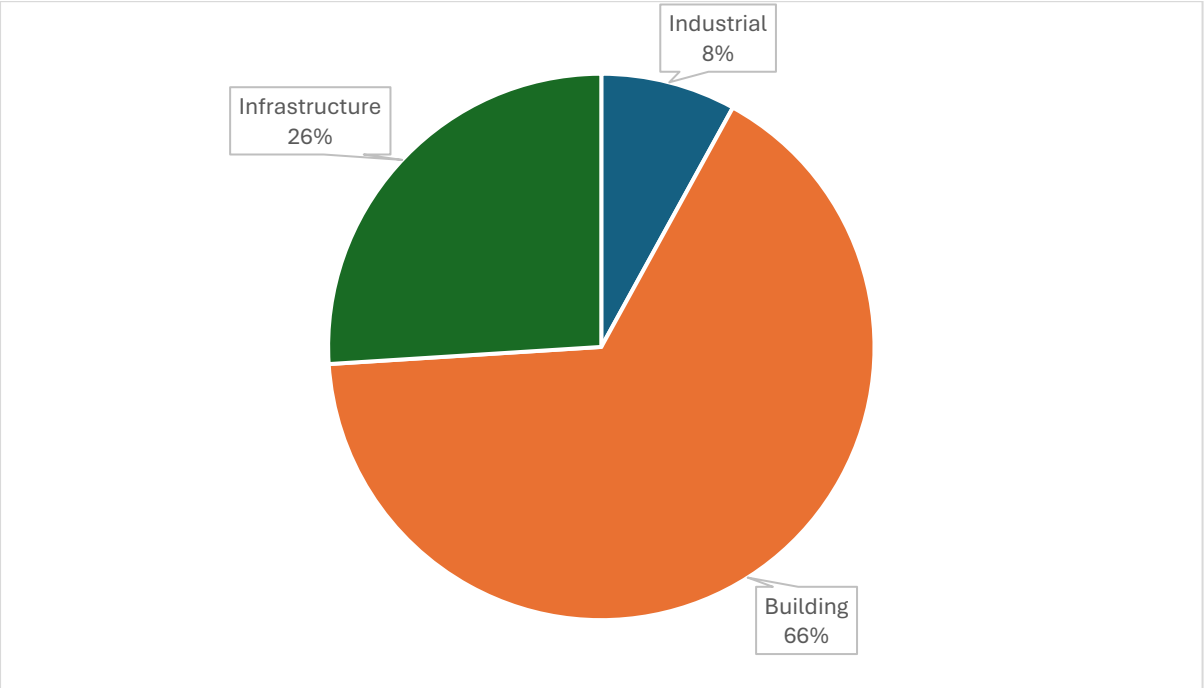
India Construction Market, Value In INR billion, By Segment, FY 2021-FY2030F											
Segment	FY2021	FY2022	FY2023	FY2024	FY2025 F	FY2026 F	FY2027 F	FY2028 F	FY2029 F	FY2030 F	CAGR (%) (2024-2029F)
Industrial	3,681.97	3,904.48	4,172.29	4,463.27	4,777.23	5,118.36	5,489.38	5,891.74	6,328.86	6,802.88	7.33%
Building	30,416.94	31,971.31	33,863.31	35,906.46	38,091.89	40,450.50	42,998.52	45,741.58	48,700.11	51,884.09	6.38%
Infrastructure	11,080.24	11,847.20	12,763.01	13,759.70	14,847.11	16,033.02	17,327.59	18,737.13	20,274.27	21,947.83	8.13%
Total	45,179.15	47,722.99	50,798.62	54,129.44	57,716.24	61,601.87	65,815.49	70,370.46	75,303.25	80,634.80	6.92%

Table 3: India Construction Market, Value in INR billion, by segment, FY2021-FY2030

Source: Actual Figures: Reserve Bank of India (RBI), Invest India, Construction Industry Development Council (CIDC), Ministry of Statistics and Programme Implementation (MoSPI), Confederation of Indian Industry (CII), NITI Aayog, Mordor Intelligence, Ministry of Housing and Urban Affairs (MoHUA), National Buildings Construction Corporation (NBCC), Ministry of Road Transport and Highways (MoRTH), Indian Railways, Central Public Works Department (CPWD), Ministry of Ports, Shipping and Waterways, Ministry of Power, ICRA Analytics

Forecasted Figures: Mordor Intelligence, IMF, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs (MoHUA), Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog (National Institution for Transforming India), Reserve Bank of India (RBI), Indian Brand Equity Foundation (IBEF), Hoovers, Factiva, Statista, World Bank
Note: F: Forecasted
E: Estimated

Chart 17: India Construction Market, Percentage Share (%), By Segment, FY2024



Source: Actual Figures: Reserve Bank of India (RBI), Invest India, Construction Industry Development Council (CIDC), Ministry of Statistics and Programme Implementation (MoSPI), Confederation of Indian Industry (CII), NITI Aayog, Mordor Intelligence, Ministry of Housing and Urban Affairs (MoHUA), National Buildings Construction Corporation (NBCC), Ministry of Road Transport and Highways (MoRTH), Indian Railways, Central Public Works Department (CPWD), Ministry of Ports, Shipping and Waterways, Ministry of Power, ICRA Analytics

Forecasted Figures: Mordor Intelligence, IMF, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs (MoHUA), Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog (National Institution for Transforming India), Reserve Bank of India (RBI), Indian Brand Equity Foundation (IBEF), Hoovers, Factiva, Statista, World Bank

Role of the Construction Sector in India's Economic Strategy

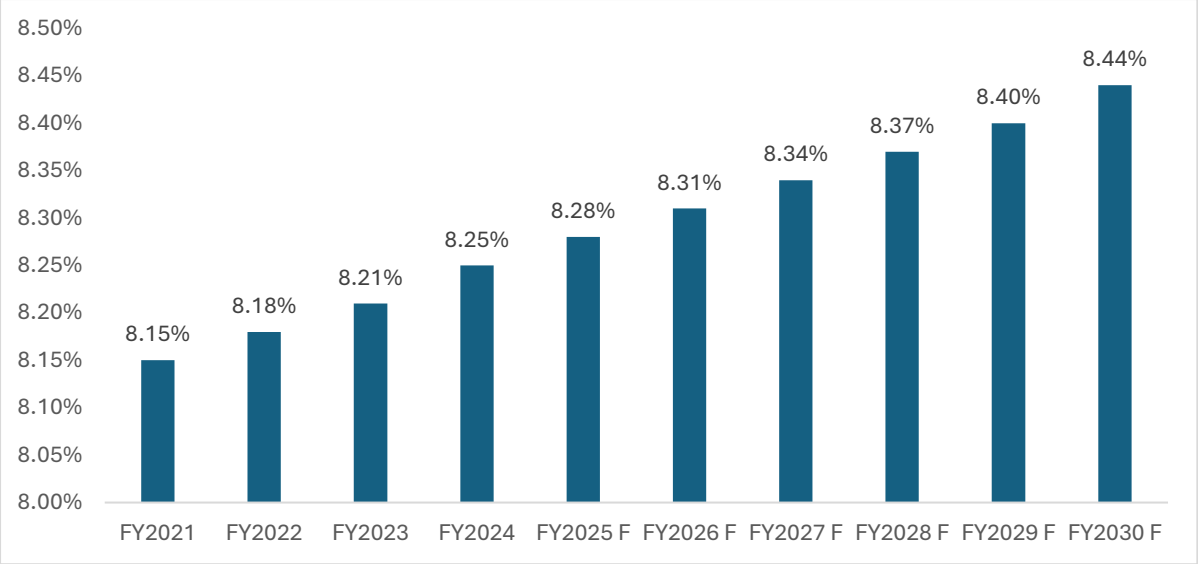
India’s construction sector plays an important role in the country's economic strategy, meets vital infrastructure demands and creates substantial employment opportunities. The government and private sector have focused on the key areas comprising industrial, building and infrastructure segments. The construction sector contributed ~9% to the Gross Value Added (GVA) in FY2024. This growth is mainly driven by swift urbanization, proactive government measures, and increased investments. Furthermore, the sector has the advantage of 100% Foreign Direct Investment (FDI) through automatic routes. FY2021 reached a peak in FDI inflows, with an INR 613.57 billion, mainly due to increasing investments in warehousing. By FY2024, FDI in the Indian construction sector stood at INR 590.89 billion (*Source: IBEF*). Therefore, India's construction sector remains a foundation of the country's economic growth, driven by robust policies, rising urbanization, and sizable domestic and foreign investments.

India's Construction Landscape: A Focus on Industrial, Building, and Infrastructure Investments

Infrastructure segment is expected to grow strongly as compared to industrial and building construction sectors that experience modest growth. The growth can be attributed to Government of India’s increased emphasis on initiatives like National Infrastructure Pipeline (NIP), National Monetisation Pipeline (NMP) and Gati Shakti initiative. As central government prioritizes roads, urban infrastructure, and railways, these investments are expected to be amplified. In the construction sector, the momentum is expected to be driven by factors like ongoing urbanization, stable income trajectories, anticipated growth in employment sectors, and a rising affluence. India’s construction sector is on growth trajectory, mainly as government initiatives and economic factors work in favour to sustain the momentum.

2.2.1. Industrial Segment in the Construction Landscape

Chart 18: Share Of Industrial Segment in India's Total Construction Landscape- trend and forecast, (in %), FY2021-FY2030



Source: Actual Figures: Reserve Bank of India, Invest India, Construction Industry Development Council (CIDC), Ministry of Statistics and Programme Implementation (MoSPI), Confederation of Indian Industry (CII), NITI Aayog, Mordor Intelligence, Hoovers, Factiva, ICRA Analytics

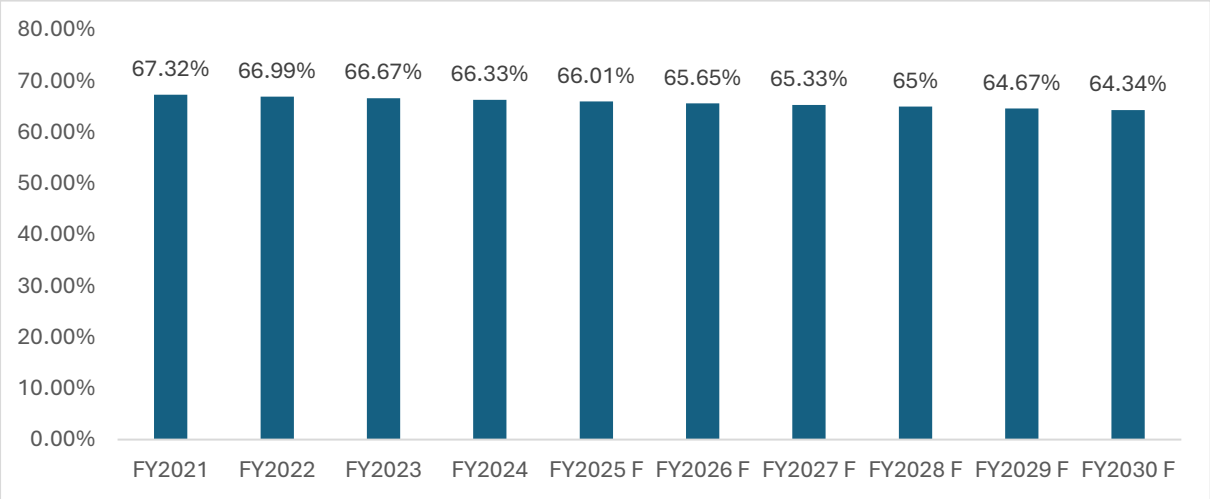
Forecast: Mordor Intelligence, Hoovers, Factiva, Statista, IMF, World Bank, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs (MoHUA), Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog (National Institution for Transforming India), Reserve Bank of India (RBI), Indian Brand Equity Foundation (IBEF)
Note: F: Forecasted
E: Estimated

Oil and gas, fertilizers, petrochemicals, textiles, cement, metals and automobile are integral to the industrial construction. Additionally, investment in industrial construction is boosted by Production-Linked Incentive (PLI) scheme. It aims at rewarding companies with incentives ranging from 5-15% of their annual revenues. These rewards depend on companies' ability to meet the predetermined targets for incremental manufacturing, exports, and capital expenditure over a identified base year. As reported by Equitymaster, from FY2019 to FY2023, the investments in Indian industrial construction witnessed the metal segment leading the market with 28.7% share. It was followed by oil and gas with 27.4%, highlighting the push in energy infrastructure. In the meantime, the automobile sector, sustained by a surge in manufacturing facility expansions, held a share of 21.8% in the market. Cement had a share of 9.7% and diverse other category which mainly included the smaller segments, had a share of 12.4%.

Going ahead, the industrial construction segment is expected to grow mainly supported by government initiatives such as PLI scheme and increasing private sector participation. Dominance is expected to be maintained by the metal and oil and gas sector, supported by ongoing infrastructure development and energy transition projects. The automotive sector is expected to grow further, mainly fuelled by the shift towards electric vehicles and related manufacturing facilities. Furthermore, the cement sector is expected to revive as the demand for sustainable construction material increases. Therefore, the industrial construction market in India is expected to take advantage of increasing investments, technological advancements and support from government policies during the forecast period of FY2026 to FY2030.

2.2.2. Building Segment in the Construction Landscape

Chart 19: Share Of Building Segment in India's Total Construction Landscape- trend and forecast, (in %), FY2021-FY2030



Source: Actual Figures: Ministry of Housing and Urban Affairs (MoHUA), Reserve Bank Of India, Invest India, National Buildings Construction Corporation (NBCC), Construction Industry Development Council (CIDC), Ministry of Statistics and Programme Implementation (MoSPI), Confederation of Indian Industry (CII) , NITI Aayog, Hoovers, Factiva, Statista, IMF, World Bank, Mordor Intelligence, ICRA Analytics
Forecast: Forecast: Mordor Intelligence, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs (MoHUA), Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog (National Institution for Transforming India), Reserve Bank of India (RBI), Indian Brand Equity Foundation (IBEF), Hoovers, Factiva, Statista, IMF, World Bank

Note: F: Forecasted
E: Estimated

Key Developments in the Indian Real Estate Industry include

Regulatory and Structural Changes: Demonetization during 2016 impacted liquidity in the real estate sector, highlighting the need for transparency and formalization. The Real Estate (Regulation and Development) Act (RERA, 2016) ensured greater transparency, accountability, and protection for homebuyers, reshaping the sector's dynamics.

During FY2022, the sector faced challenges stemming from the second wave of the pandemic. However, the relaxation of restrictions in various states, a nationwide vaccination initiative, and the deferral of project completions from the prior fiscal year contributed positively to the industry. By the end of FY 2022, the sector had recovered to pre-Covid levels, establishing a strong groundwork for FY 2023. Furthermore, increased budget allocations for the Pradhan Mantri Awas Yojana (PMAY) and state government announcements regarding reductions in stamp duty significantly aided the sector's resurgence.

Between FY2019 and FY2023, the building construction industry garnered investments totalling approximately INR 12,450 billion. This increase was driven by factors such as urbanization, job growth, stabilized incomes for organized labor, a rising demand for larger residences, and government incentives aimed at promoting affordable housing. Residential investments were particularly noteworthy, accounting for 87.55% of the total investments, while the remaining share was divided between commercial and social sectors.

Factors Driving Growth in the Residential Segment

Population Growth: According to UN data, India's population grew from 1.24 billion in 2010 to around 1.4 billion in 2020, with projections of 1.5 billion by 2030. This significant population growth drives demand for quality housing and infrastructure, strengthening the residential real estate market.

Rising Nuclear Families: This is shaped by evolving lifestyles, growing individualism, changing cultural attitudes, and labor mobility in search of better job opportunities. A persistent trend, leading to smaller family units. As families shrink, smaller family sizes initially reduce the Per Capita Floor Space Area (PCFSA) demand. However, rising incomes and a shift toward larger homes which amplify overall demand, particularly in urban areas.

In recent years, India has experienced significant growth in per capita income, and this trend is anticipated to persist. Such economic advancement supports increased domestic consumption. Generally, an increase in disposable income is positively associated with a rise in housing demand, thereby improving affordability.

Pradhan Mantri Awas Yojana – Urban: Initiated in the FY2016, this program is designed to provide housing solutions for the economically disadvantaged. Of the target set at 12.4 million houses, 11.86 million have been sanctioned, with a completion rate of 70.83% as of June 2024. The scheme has attracted an investment of INR 8,070 billion, significantly enhancing the affordable housing sector.

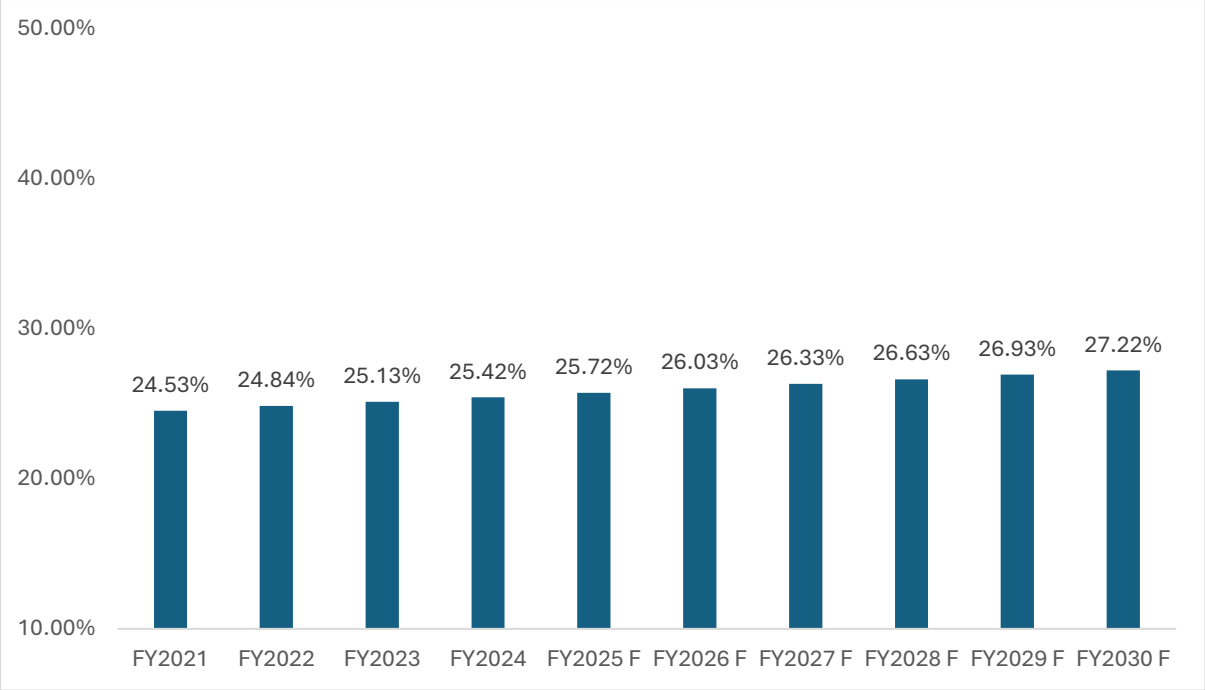
Residential Demand in Eight Major Cities Expected to Rise Between FY2023 and FY2025

In FY2019, the demand for residential real estate in eight prominent Indian cities—Delhi NCR, Mumbai Metropolitan Region, Pune, Ahmedabad, Hyderabad, Chennai, Kolkata, and Bengaluru—was recorded at 222 million square feet (msf). The following fiscal year, FY2020, experienced a slight decline of 6.81% in demand, primarily due to the onset of the pandemic. This was followed by a more significant drop of 28.69% in FY2021, reflecting the peak effects of the pandemic. However, demand rebounded to 180 msf in FY2022 and further increased to 240 msf in FY2023, recovering from the low of 129 msf observed in FY2021.

Looking forward, the demand in these eight cities is anticipated to grow from 269 million square feet (msf) in FY2023 to a range of 305 to 325 msf by FY2025. This anticipated growth is driven by factors such as ongoing urbanization, stable income levels, expansion in sectors like Information Technology and Banking, and an increase in affluence that encourages mid-income buyers to invest more in real estate, according to industry insights.

2.2.3. Infrastructure Segment in the Construction Landscape

Chart 20: Share Of Building Segment in India's Total Construction Landscape- trend and forecast, (in %), FY2021-FY2030



Source: Actual Figures: Ministry of Road Transport and Highways (MoRTH), Indian Railways, Central Public Works Department (CPWD), Ministry of Ports, Shipping and Waterways, Ministry of Power, Construction Industry Development Council (CIDC), Ministry of Statistics and Programme Implementation (MoSPI), Confederation of Indian Industry (CII), NITI Aayog, Mordor Intelligence

Forecast: Mordor Intelligence, Hoovers, Factiva, Statista, IMF, World Bank, Mordor Intelligence, IMF, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs (MoHUA), Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog (National Institution for Transforming India), Reserve Bank of India (RBI), Indian Brand Equity Foundation (IBEF), ICRA Analytics

Note: F: Forecasted
E: Estimated

India's substantial investments in infrastructure, bolstered by supportive policies and a rise in both foreign and domestic funding, are anticipated to catalyse considerable economic growth. With ambitious objectives and strategic initiatives in place, the nation is on the verge of revolutionizing its infrastructure framework, thereby enhancing efficiency, connectivity, and overall development in the years ahead.

Strong Demand: India is intensifying its infrastructure investments to reach its goal of a US$ 5 trillion economy by 2025. The primary areas of focus encompass roads, railways, aviation, shipping, and inland waterways. From 2020 to March 2024, Real Estate Investment Trusts (REITs) and Infrastructure Investment Trusts (InvITs) have collectively raised US$ 15.60 billion (RS. 1.3 lakh crore), according to the Reserve Bank of India.

Promising Opportunities: The advancement of infrastructure significantly improves transportation efficiency and stimulates commercial expansion. In March 2024, Prime Minister Modi inaugurated connectivity projects valued at USD 1.8 billion in Kolkata. Additionally, the Civil Aviation Ministry has announced 15 airport projects projected to cost US$ 12.1 billion by 2028. Morgan Stanley predicts that infrastructure investment will increase from 5.3% of GDP in FY2024 to 6.5% by FY2029.

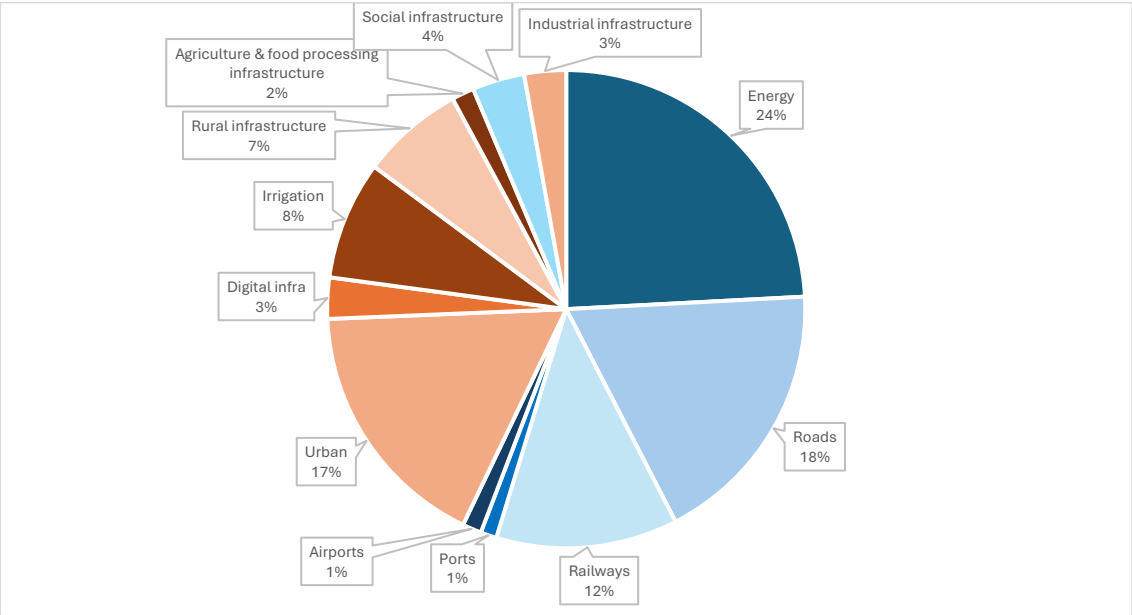
Supportive Policies: The budget for 2023-24 has extended a 50-year interest-free loan to states, with an enhanced allocation of INR 1300 billion (USD 16 billion). India aims to invest USD 1.4

trillion in infrastructure by 2025 under the National Infrastructure Pipeline (NIP). The PM GatiShakti initiative has earmarked INR 11,170 billion for FY 2025-26, focusing on critical projects in railways and highways to enhance efficiency in challenging terrains.

Growing Investments: A 2023 report estimates that infrastructure spending will reach INR 143000 (USD 1,727.05 billion) by 2030, more than double the INR 67000 billion (USD 912.81 billion) spent in the preceding seven years, establishing infrastructure as a pivotal element in India's construction market.

Sectoral breakdown

Chart 21: Sector breakdown of total capital expenditure for infrastructural projects (FY2020-25)



Source: NIP, DEA, ICRA Analytics

During FY2020 to FY2025, the projected infrastructure investment in India was divided among different sectors with the energy sector dominating with a share of 24%, closely followed by the transport sector- Roads, Urban, Railways, and Irrigation with shares of 18%, 17%, 12% and 8% respectively. These sectors together comprise ~79% of the total projected infrastructure investments.

Greater allocation of expenditure and implementation of projects is estimated in Energy, Roads, Railways, Urban development sectors. As per FY2025 budget, the government will further promote the private sector for investment in infrastructure through viability gap funding and supportive polices and regulations. While the investments by the Government appear front loaded for most of the sectors, NIP's target investment of INR 111 trillion has increased by 40-45% to reach INR 160 trillion in March 2024 with a substantial increase in the number of projects, hinting at large capital expenditure yet to be incurred towards the earmarked sectors. ~90% of the initial project count are either completed or under conceptualisation stage. Around 2,600 projects (added between FY2020-2025) at an investment of INR 49 trillion, are currently at their

conceptualisation stage. Overall, NIP investments are concentrated in five major sectors - roads, railways, renewable energy, affordable housing and irrigation across 15 major states.

2.3 Qualitative overview of growth drivers for industrial, public-sector buildings and infrastructure segments of the construction industry in India –

India Government's Infrastructure Push-

India's infrastructure landscape has seen significant change over the last ten years, primarily due to a coordinated effort by the central government. A number of institutional and procedural reforms that have streamlined project execution and accelerated issue resolutions have supported this spike in public investment. Increasing private sector participation through Public-Private Partnerships (PPPs) and programs like the National Infrastructure Pipeline (NIP) and Project Monitoring Group are noteworthy reforms.

Additionally, programs like PM Gati Shakti, which aims to enhance multimodal connectivity, logistics effectiveness, and fill critical infrastructure gaps for smooth mobility, also, innovative financial products like REITS and InvITs, have resolved the infrastructure sector's long-term funding problems. Important policy initiatives like the Sagarmala project which concentrates on modernizing ports and encouraging coastal shipping to increase trade and maritime activities, the Bharatmala Pariyojana project seeks to improve road connectivity, facilitating the movement of freight and passengers, alongside other project initiatives related to green energy, industrial, and freight corridors, have further amplified India's infrastructure development agenda.

Table 4: India's Key Infrastructure expands over the past decade, eyes FY2030 goals

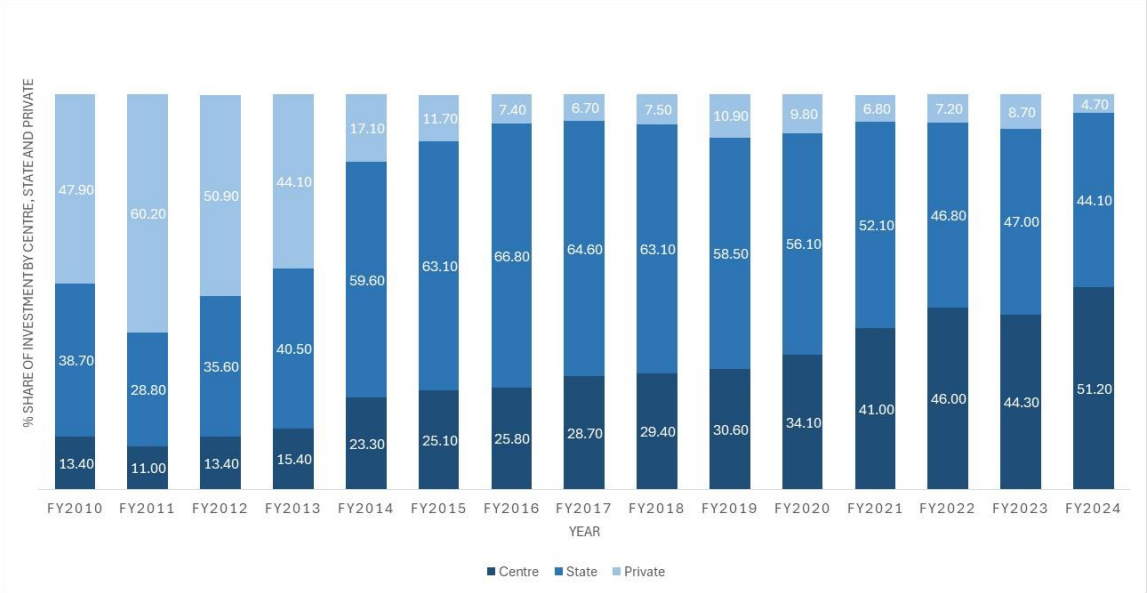
Indicator	FY2013	FY2023	FY2030 Target
Central government capex allocation (₹ Billion)	₹2,048	₹7,283	-
Length of national highways (kms)	97,991	1,46,145	~ 2,00,000
National highways, construction per day (kms/day)	12	34	-
Modernisation of railways: Operational Vande Bharat trains	-	100+	800
Length of operational metro (kms)	248	945	1595
% of cargo transhipment handled by Indian ports	-	25%	> 75%
Power Generation (Gigawatt)	243	442	1100
Renewable Power (Gigawatt)	30	175	500
Tele density (% of population)	75.23	85.69	NA
Electric Vehicle Charging Stations (Units)	-	12,146	3,900,000

Source: Government of India, ICRA Analytics

Infrastructure projects in India mainly depend on funding from both the central and state government budgets due to their capital-intensive nature and lengthy timelines. India invested USD 151 billion in infrastructure in FY 2024, a threefold increase from USD 50 billion in 2013. Although state government continue to lead in funding, the central government's share has increased recently due to its aggressive push for infrastructure development. In

particular, the amount spent on infrastructure by the central government increased from 15% in FY 2009–2013 to 45% in FY 2019–2023.

Chart 22: Growing share of central government investments, % share in total capex



Source: Government of India, ICRA Analytics

Rapid Urbanization and Increasing Consumption in India-

Over the next three decades, India's urban population is expected to double from 400 million in the previous decade to 800 million. India's urban landscape has a fantastic opportunity to be reshaped by this demographic shift.

According to a recent World Bank report, India's urban infrastructure needs will require an astounding INR 70 trillion by 2036. However, as of FY2019, the government spends about INR 1.3 trillion a year on urban infrastructure covering a mere 27% of the requirement of INR 4.6 trillion annually for urban infrastructure. About half of the estimated funds are set aside for urban transportation, and the other half are designated for basic urban services.

The Government of India has many initiatives for urban development, including programs for water supply, sanitation, and housing.

- **Water supply and sanitation-**
  - **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)**: A mission to provide water supply and sewerage to every household.
  - **Swachh Bharat Mission (Urban)**: A mission to improve sanitation and waste management.
  - **Water supply, sewage treatment, and solid waste management projects**: Projects to promote these services in large cities.

- **Housing-**

- **Pradhan Mantri Awas Yojana (Urban) Mission**: A mission to provide housing in urban areas.
- **PM SVANidhi scheme**: A micro-credit facility to provide affordable loans to street vendors.

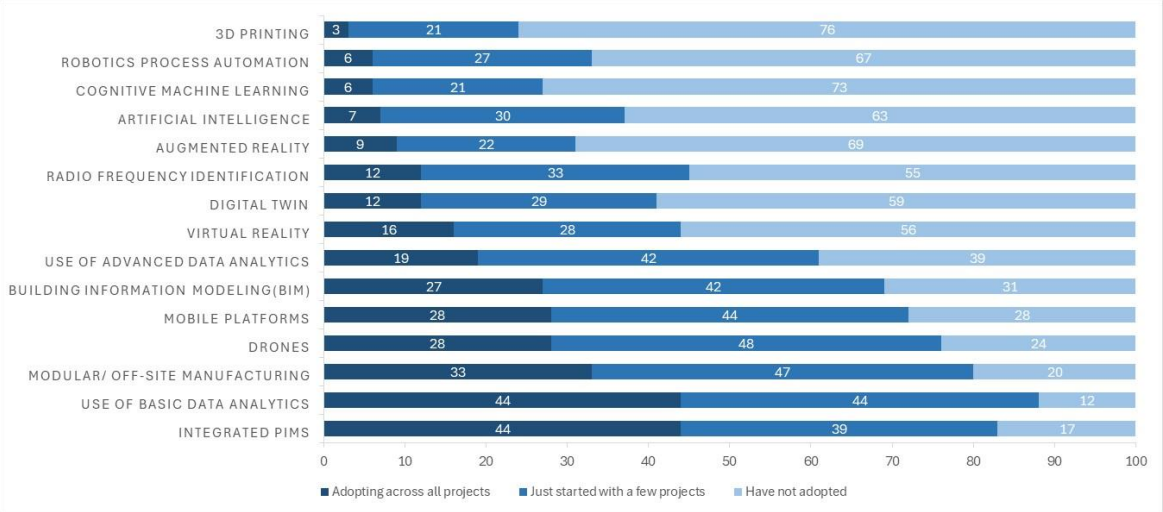
- **Other initiatives-**
  - **Smart Cities Mission**: A mission to promote cities that provide core infrastructure and a clean environment.
  - **National Urban Digital Mission (NUDM):** Aims to digitize municipal services and establish a unified digital framework for urban areas.
  - **National Urban Livelihood Mission (NULM)**: A mission to reduce poverty and vulnerability of the urban poor.
  - **Transit Oriented Development plans**: Plans to implement these plans in large cities.
  - **Street food hubs**: A scheme to support the development of weekly street food hubs in select cities.

India's Digital Revolution

India plans to modernize its physical landscape by 2047 with a transformative investment of around INR 880 trillion (USD 10.5 trillion). This ambitious project includes everything from sustainable energy advancements to port expansions and bullet train construction. The investment has the potential to improve India's economy, transform its cities, and raise the standard of living for its people.

India wants to build 4,500 kms of bullet train corridors, upgrade 20,000 kms of railways, and quadruple its port capacity by 2047. In order to effectively address urbanization challenges and scale projects, achieving these goals requires not only financial support but also technology-driven innovations and public-private partnerships (PPP). India aspires for universal e-governance adoption and envisions placing five of its cities among the world's top 100 liveable cities by 2047. Technology will be essential in accelerating project completion, reducing expenses, and guaranteeing long-term results.

Chart 23: Level of Adoption of Technologies in Construction Industry, in %, India, as of June 2023



Source: Government of India, Word Bank, ICRA Analytics

Rapid FDI Inflow in India Boosting Market Growth

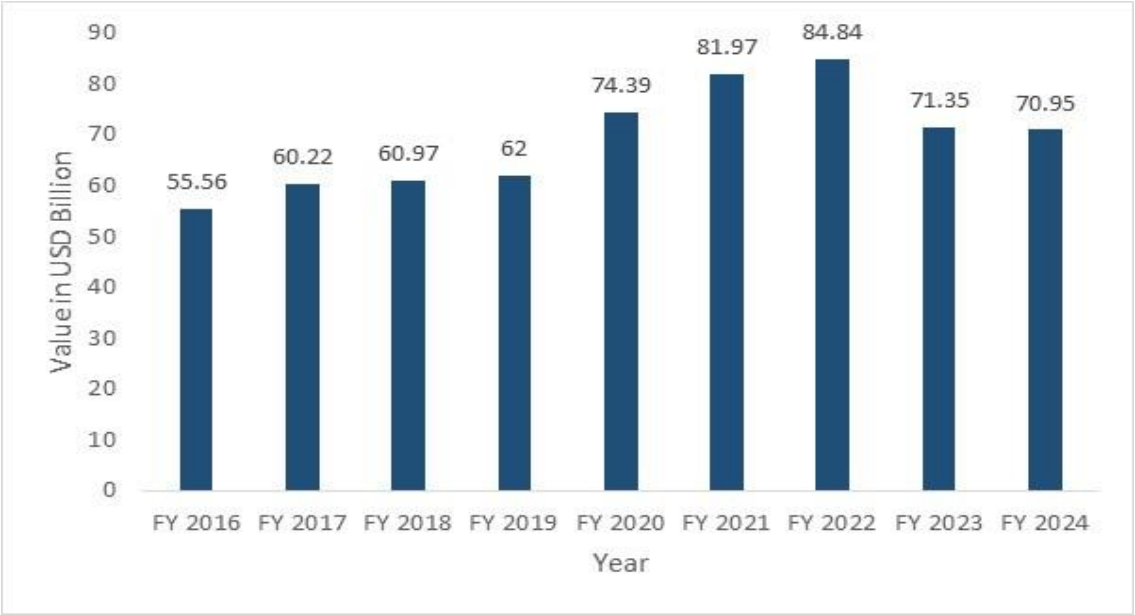
Increased foreign direct investment (FDI) into infrastructure projects helps finance major developments, which promotes industry expansion. One of the industries that receives the most foreign direct investment (FDI) is infrastructure. The same has benefited initiatives like "Housing for All" and "Smart Cities Mission.".

India received 811 industrial investment proposals in 2022 (up to August 2022), totalling USD 42.78 billion (approx. INR 3.52 trillion). Cumulatively the total amount of industrial investment proposals till 2022 rose to USD 298 billion (INR 23.6 trillion) in contrast to USD 169.5 billion (approx. INR 13.8 trillion) recorded the previous year ..

In the first half of fiscal year 2025 (H1 2025), foreign direct investment (FDI) inflows experienced a remarkable increase, reaching USD 42.1 billion. This represents an almost 26% rise from USD 33.5 billion recorded in H1 2024. This growth highlights India's growing status as a leading global investment destination, driven by its proactive policy measures, dynamic business environment, and enhanced international competitiveness.

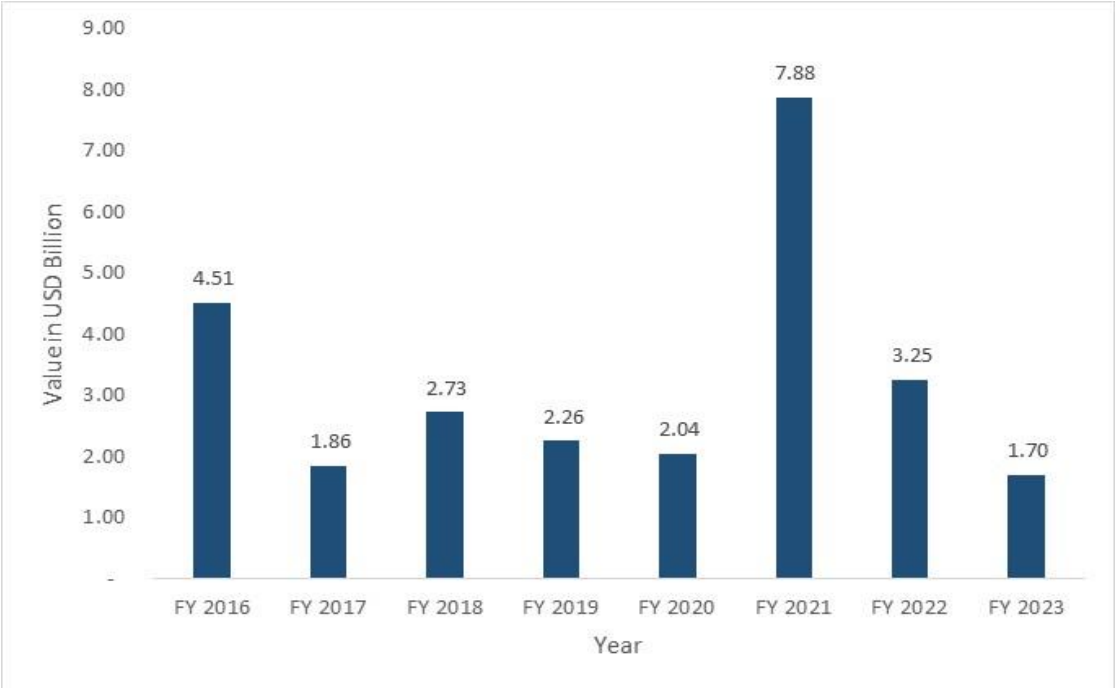
From April 2000 to September 2024, India attracted substantial FDI inflows, with Mauritius at the forefront, contributing USD 177.18 billion, which constitutes 25% of the total. Singapore closely followed with a 24% share (USD 167.47 billion), while the United States accounted for 10% (USD 66.77 billion), the Netherlands for 7% (USD 52.26 billion), and Japan for 6% (USD 43.11 billion). Between October 2019 and September 2024, Maharashtra emerged as the leading state for FDI equity inflows, securing USD 82.63 billion, or 31% of the total. Karnataka ranked second with USD 54.57 billion (21%), followed by Gujarat with USD 43.15 billion (16%), Delhi with USD 34.92 billion (13%), and Tamil Nadu with USD 12.56 billion (5%).

Chart 24: Value of foreign direct investment inflows into India for all sectors from financial year FY2016 to FY2024 (in USD billion)



Source: Department for Promotion of Industry and Internal Trade (India), Reserve Bank of India, ICRA Analytics

Chart 25: Amount of Foreign Direct Investment (FDI) equity inflows for the infrastructure sector in India from financial year FY2016 to FY2024 (in USD billion)



Source: Department for Promotion of Industry and Internal Trade (India), Reserve Bank of India, ICRA Analytics

Multilateral institution Asian Development Bank (ADB) announced USD 100 million in funding for the Indian infrastructure sector through the government-promoted NIIF (National Investment and Infrastructure Fund). Foreign investments are crucial for India who are undertaking major industrial and infrastructural projects worth USD 1.3 trillion.

Additionally, Saudi Arabia wants to invest up to USD 100 billion in India in the fields of mining, petrochemicals, energy, refining, infrastructure, agriculture, and minerals.

Smart City Infrastructure making strides

The Prime Minister launched the Smart Cities Mission (SCM) on June 25, 2015, with the goal of improving the standard of living in 100 Indian cities. The Smart City Mission is redefining urban living across the country by giving infrastructure, governance, and social development top priority. The mission has accomplished a remarkable milestone with 100 cities at the forefront where 7,380 of the 8,075 projects have been completed, supported by an investment of INR 1.47 trillion. These successes highlight SCM's commitment to creating more intelligent and liveable urban environments.

Demand in the infrastructure construction market is expected to increase as a result of India's emphasis on integrated infrastructure projects, such as Integrated Command and Control Centres (ICCCs), smart mobility solutions, and advanced waste management systems.

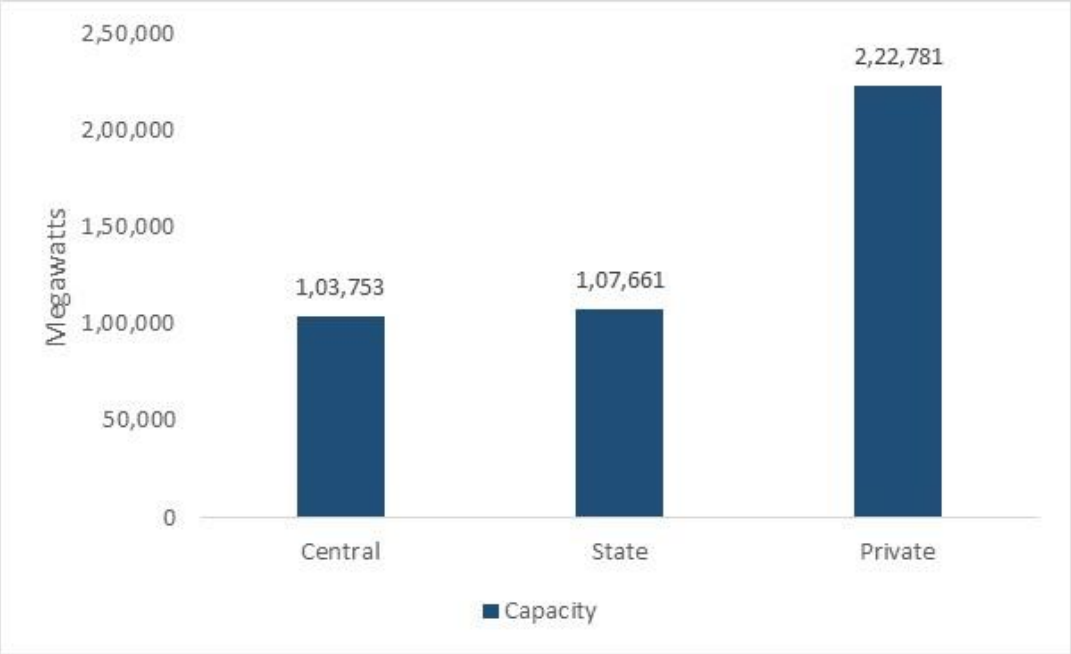
Renewable Energy Transition: Shift towards Sustainable Energy Infrastructure

In a global drive for sustainability, India is drastically shifting its energy landscape in favor of renewable energy sources. India's renewable energy sector is becoming a ray of hope as the globe adopts sustainable practices.

- Over the last decade, India has diversified its energy portfolio, curbing its reliance on traditional fossil fuels. At 26th Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change i.e COP26, India set an ambitious target of achieving 500 GW of non-fossil fuel energy by 2030. In January 2025, India boasted a non-fossil fuel power capacity of 217.62 GW, bolstered by significant solar and wind installations in 2024.
- Solar energy adoption has skyrocketed, with capacity jumping from a modest 2.5 GW in FY 2014-15 to approximately 94.16 GW as of FY 2024-25. India's dedication to a sustainable future is evident, especially with initiatives like the International Solar Alliance, underscoring its collaborative solar potential with over 120 nations.
- Moreover, India has greenlit 100% Foreign Direct Investment (FDI) under the automatic route for renewable energy projects, aligning with the Electricity Act of 2003. At COP26 in November 2021, India set its sights on achieving net-zero emissions by 2070, highlighting the vast potential of its renewable energy sector.
- Wind energy, too, has seen a significant uptick, with capacity more than doubling to 47.95 GW since 2014. Looking ahead, India aims to bolster this to 99.9 GW by FY 2029-30, focusing on states like Andhra Pradesh, Gujarat, and Maharashtra.
- The Indian government is actively promoting renewable initiatives, sanctioning 50 solar parks across 12 states, each with capacities of 500 MW or more. The 'Sustainable Alternative Towards Affordable Transportation' (SATAT) initiative aims to establish Compressed Bio-Gas (CBG) production plants, making CBG a viable automotive fuel.

- Additionally, the 100 Smart City project mandates rooftop solar for new constructions and a 10% renewable energy provision for consumers. This concerted shift towards renewables not only promises a cleaner future but also heralds a surge in job opportunities, steering the world towards inclusive growth.

Chart 26: Installed renewable energy capacity in India as of February 2024, by sector (in megawatts)



Source: Central Electricity Authority of India, Word Bank, ICRA Analytics

'Make In India' Driving Manufacturing Push, Bolstering Infrastructure Growth

The Indian prime minister announced the "Make in India" (MII) initiative on August 15, 2014, and it was formally introduced on September 25 of the same year. The initiative intends to establish India as a global centre for manufacturing, design, and innovation while luring investment, encouraging innovation, and building first-rate infrastructure.

Since the MII initiative was launched in September 2014, the government has focused its efforts on 24 specific sub-sectors. The competitiveness of Indian industries, the need for import substitution, export potential, and the prospect of improved employability were the factors that led to the selection of these industries.

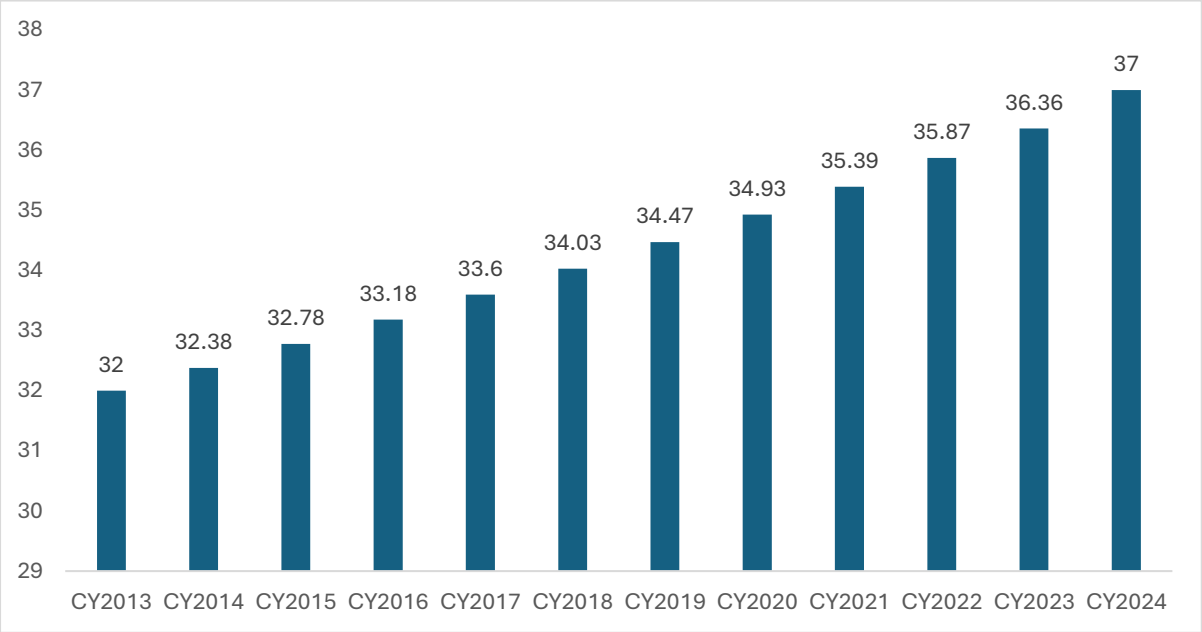
Numerous initiatives under MII, such as National Single Window System (NSWS), Project Development Cell (PDC), Prime Ministers Employment Generation Programme (PMEGP), India Industrial Land Bank (IILB), One District One Product (ODOP), and India Investment Grid (IIG), fall under the 'Scheme for Investment Promotion.

2.4 Rising urbanization - Impact of urban infra

2.4.1 Urbanization in India

India is undergoing rapid urbanization. 600 million people, or 40% of the population, are expected to live in its towns and cities by 2036, a considerable increase from 31% in 2011. Urban areas are expected to contribute nearly 70 percent to the nation's GDP. How adeptly India navigates this urban shift will be pivotal in achieving the goal of becoming a developed nation by 2047, marking the centenary of its independence

Chart 27: Degree of Urbanization in % in India, 2013 to 2024



Source: Word Bank, ICRA Analytics

India has seen a sharp increase in urbanization in recent decades, with cities and towns seeing faster population growth than rural areas. India's urbanization unfolds as a distinctive and evolving narrative, marked by the following key features.

Accelerated Urban Growth: With projections placing India as the world's most populous nation by 2023, its cities are witnessing an unparalleled surge in growth.

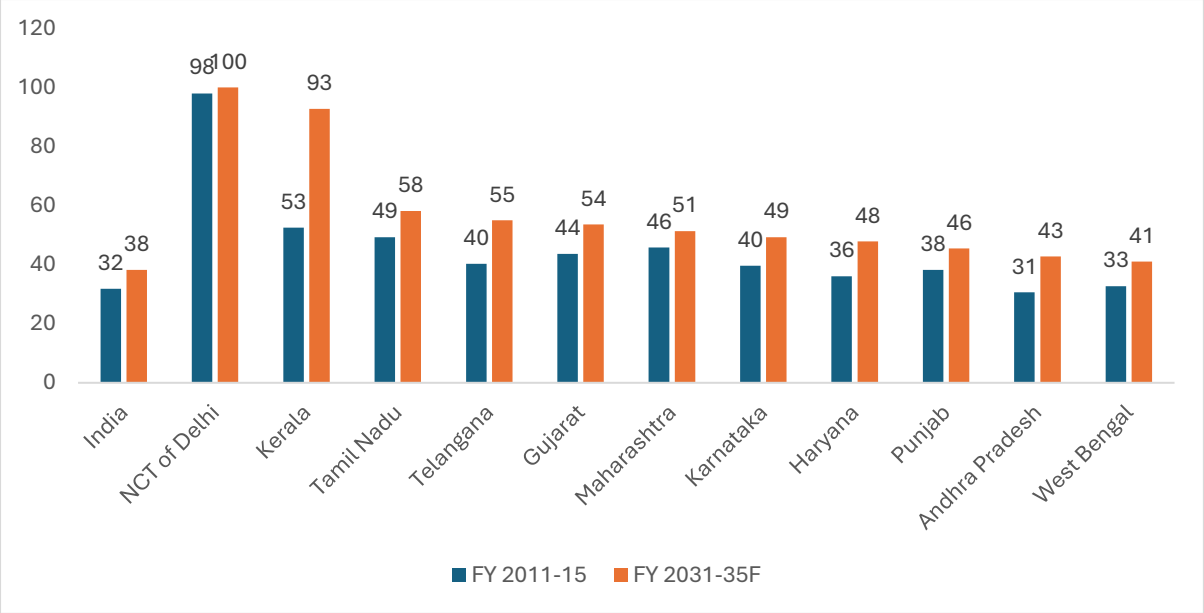
Prevalence of Informal Settlements: A notable segment of India's urban populace resides in informal settlements or slums, often deprived of essential infrastructure and services

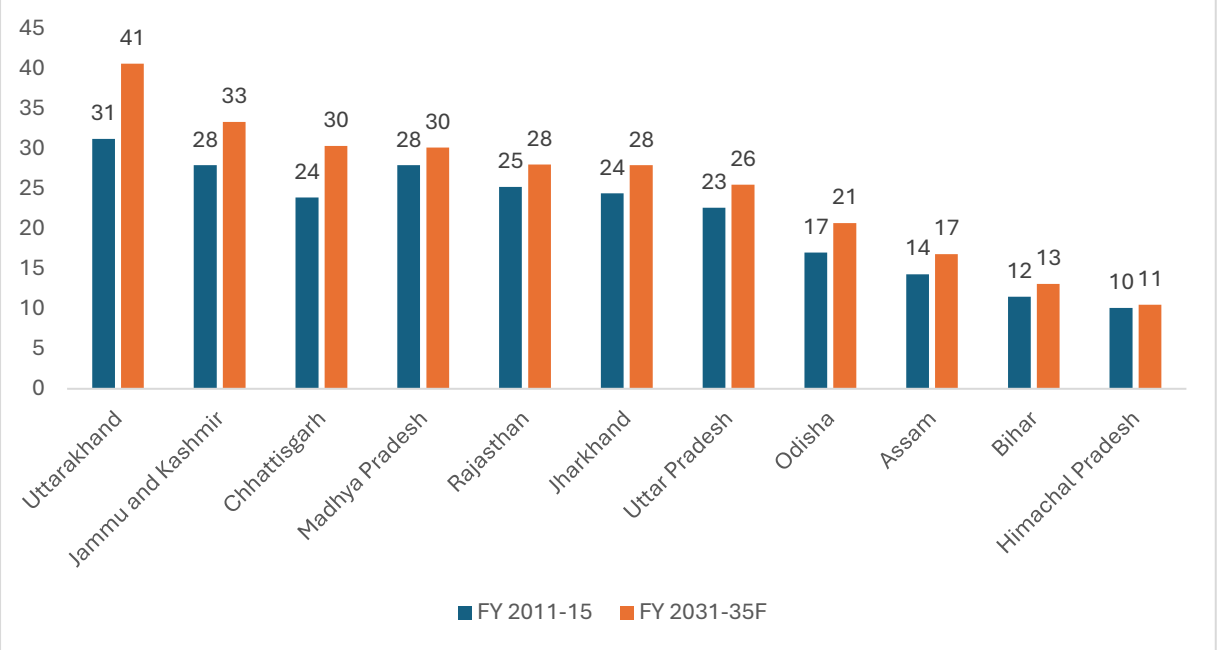
Juxtaposition of Tradition and Modernity: Cities steeped in cultural heritage, like Varanasi, Jaipur, and Haridwar, stand in contrast yet in harmony with the rapid advancements of modern metropolises such as Mumbai, Bangalore, and Gurgaon

Tertiary Sector-Driven Urbanization: Contrary to expectations, the evolution of Indian cities has been predominantly fuelled by the tertiary sector— encompassing communication, transport, services, and construction—rather than the secondary sector

Regional Disparities in Urbanization: Southern India boasts a higher urbanization rate than its Northern and Eastern counterparts, attributed to its rich tapestry of historical, socio-cultural, and educational assets.

Chart 28: Share of urban population in India from FY2011 to FY2015 with a forecast from FY2031 to FY2035, by state (in %)





Source: Ministry of Health and Family Welfare (India), ICRA Analytics

India's Seven Mission Program: Aiming for Urban Excellence:

As urbanization surges across India, various sectors witness significant advancements. In response, the government launched the Seven Mission Program, designed to financially empower cities in reaching their developmental goals.

The Seven Mission Program encompasses the following initiatives:

- 100 Smart Cities Mission
- AMRUT: Atal Mission for Rejuvenation and Urban Transformation
- HRIDAY: National Heritage City Development and Augmentation Yojana
- Sardar Patel National Urban Housing Mission
- National Mission on Sustainable Habitat

- Clean India Mission
- National Urban Information System

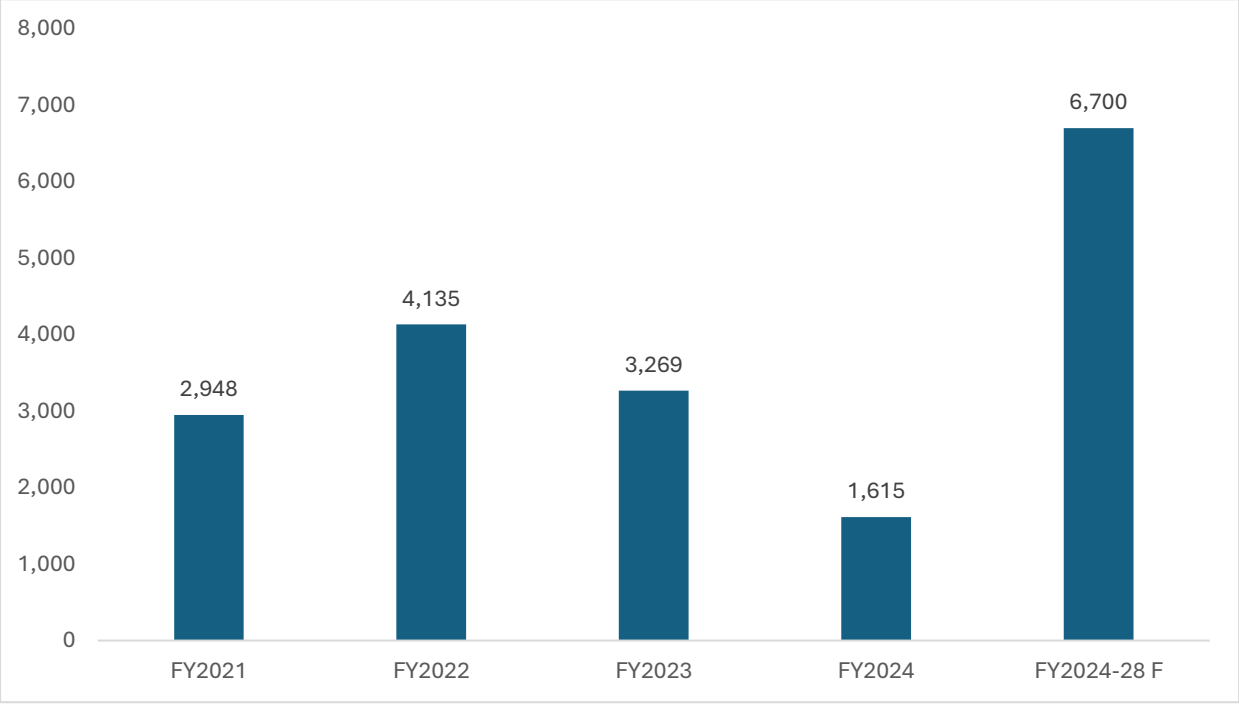
2.4.2 Urbanisation impact on infrastructure development

- **Rise of smart urban cities and centres:** Smart Cities Mission (SCM) has seen the selection of 100 smart cities through four competitive rounds held between January 2016 and June 2018. The SCM aims to foster urban centres that not only boast robust infrastructure but also ensure a high quality of life for residents and a commitment to a clean, sustainable environment, all through innovative smart solutions.

    - **Investment Trends in Metro and Smart City Projects:** From FY2020 to FY2023, investments saw a decline of 18.20%. This downturn is largely attributed to projects executed between FY2019 and FY2021. While 74.00% of SCM projects are completed and 90.00% of funds are utilized, metro projects are ambitiously set to expand to 1,700 Km across 27 cities by 2025, with plans to extend to 50 cities thereafter. Forecasts suggest investments will grow at a CAGR of 5-10%, reaching between INR 6,500 to INR 6,700 billion from FY2024 to FY2028. As of October 2023, 20 cities have operationalized about 874 Km of metro lines. The ambitious metro network aims for an expansion to 1,700 kms across 27 cities by 2025, with further plans for 50 cities.

Chart 29: Trend in Investments in Metro and Smart Cities Projects, In INR Billion, India, FY2020 To FY2023 With a Forecast of FY2024 to FY2028 F

Source: National Infrastructure Pipeline, Government of India, ICRA Analytics

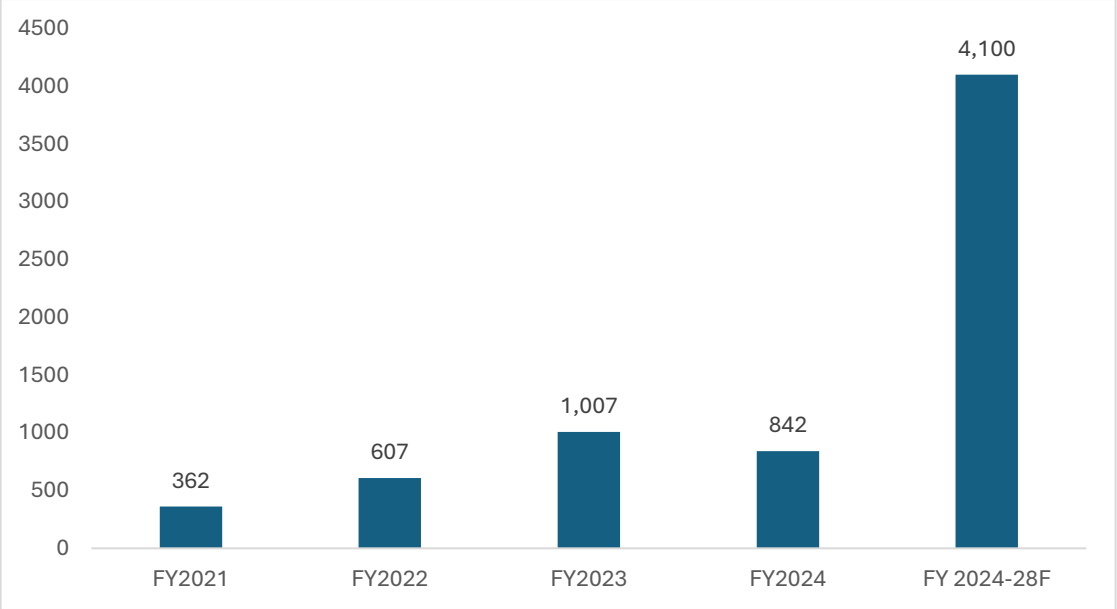


Source: National Infrastructure Pipeline, Government of India, ICRA Analytics

- **Water Supply and Sanitation (WSS):** India's surging population is amplifying the demand for water and its judicious management. Major contributors to the pollution of water bodies include: the release of industrial waste, discharge of untreated or partially treated municipal wastewater, improper solid waste management, illegal groundwater abstraction, encroachments on flood plains and riverbanks, deforestation, mismanagement of water shades, neglect of e-flows, and agricultural runoff. In response, the Government of India (GoI) has introduced various schemes emphasizing water conservation and restoration.

    - **Investment Trends in Water Supply and Sanitation:** The Water Supply and Sanitation (WSS) sector has witnessed a robust growth, with investments surging at a CAGR of 32.49%, from INR 362.00 billion in FY2020 to INR 841.75 billion in FY2024. This growth trajectory is bolstered by initiatives like the Jal Jeevan Mission and Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

Chart 30: Trend in Investments in Water Supply & Sanitation, in INR Billion, India, FY2020 To FY2023 With a Forecast of FY2024 to FY2028



Source: National Infrastructure Pipeline, Government of India, ICRA Analytics

Note: F: Forecasted
E: Estimated

2.5 Overview of WPI inflation of key construction materials

Post pandemic, India has witnessed gradual rise in raw material prices in the construction industry, thereby leading to market and price volatility. In FY2023, construction firms' margins were strained as the key construction material costs increased by 32%.

Steel and cement prices show the sharpest spikes in prices between January 2023 to June 2023. However, as the market returned to normalcy, the average cement prices reported a fall of 15% in 9-month FY2025. On the other hand, the prices of steel remained moreover stagnant with a

marginal decrease of 1% in 9-month FY2025. The residential sector has been hit hardest, with housing project costs increasing 39% over four years due to higher material and labor rates.

2.5.1 Key Construction material prices and % change in cost from FY2022 to FY2025(F)

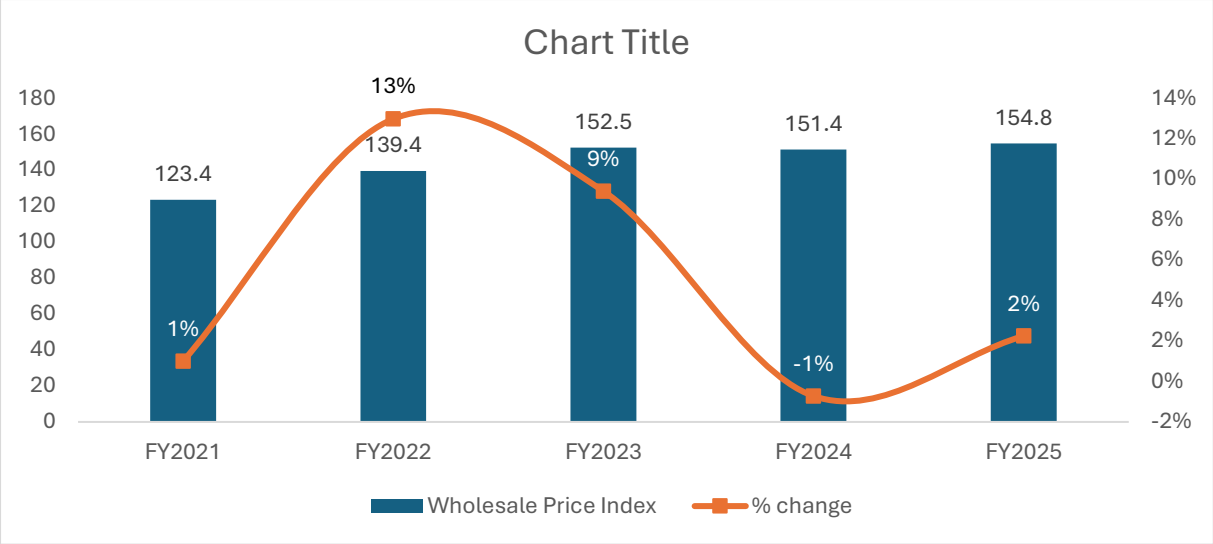
Material Type	FY2022	FY2023	FY2024	FY2025(F)
Steel (INR / MT)	54425	56525	52400	51700
% Change in cost	50%	4%	-7%	-1%
Cement (INR / 50 kg Bag)	273	336	297	253
% Change in cost	3%	23%	-12%	-15%
Aluminum (INR / kg)	220	179	182	192
% Change in cost	65%	-19%	2%	5%
Copper (INR / kg)	736	622	661	783
% Change in cost	49%	-15%	6%	18%
Emulsion paint (litre)	222	250	260	263
% Change in cost	12%	13%	4%	1%
Glass pane 10mm tempered (m2)	1693	2600	2460	2460
% Change in cost	15%	54%	-5%	0%
Standard brick per 1000	6432	7245	8500	8755
% Change in cost	9%	13%	17%	3%

Source: Directorate of Economics & Statistics Office of Chief Registrar, ICRA Analytics

With rising raw material prices which have inflated construction costs, builders are also adopting alternative construction technologies to mitigate raw material price impacts. Emerging technologies such as 5D Building Information Modeling (BIM), modular construction, virtual reality, and 3D printing are gaining prominence. In the near to medium term, these innovations, combined with advanced materials, offer a positive outlook for the Indian construction sector. In summary, while rising raw material costs and market volatility challenge the Indian construction industry, the shift to advanced materials and natural alternatives provides opportunities for resilience, cost optimization, and long-term growth.

From 2020 to 2024, highlighted by the Construction Cost Index, India's construction sector showcased its dynamic nature. This upward trend is largely influenced by inflationary pressures, economic recovery, and proactive infrastructure government initiatives. Though costs are projected to rise at a moderated pace, industry stakeholders are urged to prioritize strategic planning and innovation to adeptly overcome these challenges.

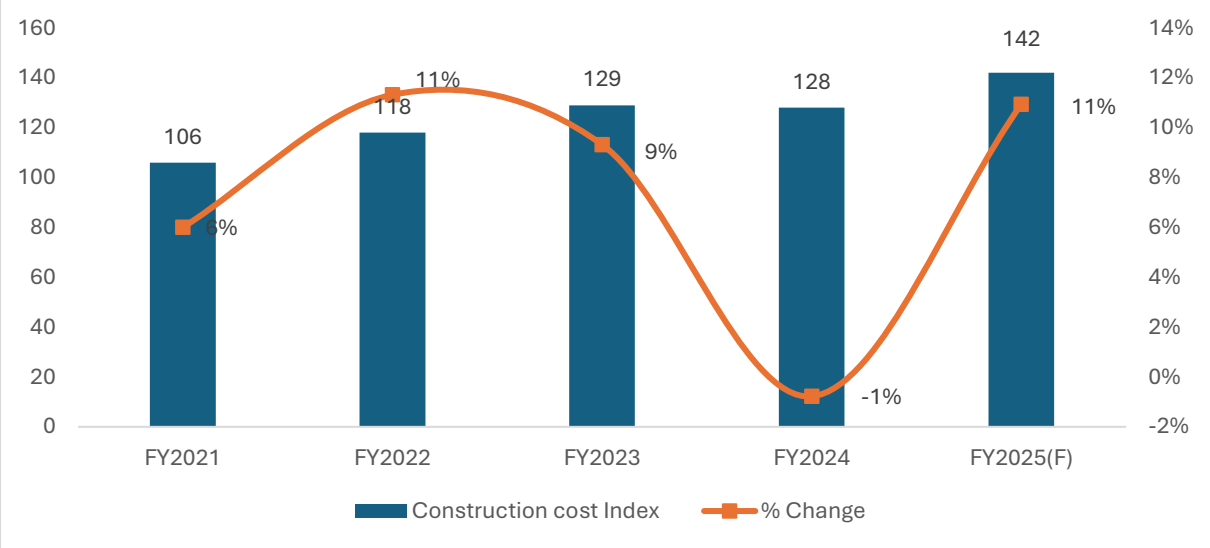
Chart 31: Wholesale Price Index for all commodities in India from FY2021 to FY2025(F)



Source: Office Of the Economic Adviser, ICRA Analytics

F: Forecasted

Chart 32: Construction Cost Index for all commodities in India from FY2021 to 2025(F)



Source: Statista, Office Of The Economic Adviser, Mordor Intelligence, ICRA Analytics

Note: CCI's analysis draws from the averages of India's top six cities: Bangalore, Pune, Chennai, Hyderabad, and NCR, alongside Mumbai.

Note: F: Forecasted

E: Estimated

Year 2020

- The CCI kicked off the year at a moderate value, representing the construction sector's challenges amid the COVID-19 pandemic. The costs experienced a tempered yet steady ascent with supply chain disruptions, deceleration in construction activities, and scarcity of labor.

Year 2021

- The CCI index surged, marking a notable recovery from the pandemic's economic disruption. The surge in index was mainly driven by rebound in private construction, heightened government infrastructure spending, and escalating material costs, notably for steel, cement, and aggregates.

Year 2022

- The CCI index maintained its upward momentum, registering a robust surge in construction costs. This was driven by inflationary pressures, sustained high demand for construction materials, and a renewed focus on infrastructure, bolstered by initiatives such as the National Infrastructure Pipeline and PM Gati Shakti Plan.

Year 2023

- In a surprising turn, the CCI index recorded decline. This downfall can be attributed to stabilizing material prices, enhanced supply chain efficiencies, and cooling demand. Yet, with ongoing infrastructure projects, the sector remained vibrant.

Year 2024

- The CCI index made a modest rebound, signalling a resurgence in construction costs. This upmove was driven specifically by significant government capital expenditure, an emphasis on finalizing major infrastructure projects, and inflationary pressures on core materials and labor.

.

2.6 Capital Outlay of Core Infrastructure Ministries in India: Comprehensive five-year review

India has set an ambitious goal of reaching a GDP of ₹364,080 billion by FY2025–26, which will require substantial investments in infrastructure. To support this vision, the Union Budget for FY2025–26 has earmarked a capital investment outlay of ₹11,210 billion to fast-track infrastructure expansion and bolster long-term economic growth.

Over the last decade (FY 2008-09 to FY 2017-18), India's infrastructure expenditure totalled approximately USD 1.1 trillion. According to the most recent data, capital expenditure in India's infrastructure sectors is expected to surpass INR 102,000 billion during the period FY 2020-21 to FY 2025-26F.

Between FY 2020-21 and FY 2025-26F, major sectors driving this investment include Energy (24%), Roads (19%), Urban Development (16%), and Railways (13%), together are comprising nearly ~70% of the anticipated capital outlay.

A comprehensive sector-wise analysis of the investment pipeline is provided below.

Table 5: Breakdown Of Infrastructure Investment (In INR crores), by some key sectors, India, FY2021-2026F

Ministry/Department	Infrastructure Investment for FY 2021-2026 (in INR trillion)
ENERGY	
Power	11.80
Renewable Energy	9.30
Atomic Energy	1.54
Petroleum and Natural Gas	1.94
Total Energy	**24.58**
TRANSPORTATION INFRASTRUCTURE	
Roads	19.63
Railways	13.68
Ports	1.01
Airports	1.43
URBAN	
AMRUT, SMART Cities, MRTS, Affordable Housing, Jal Jeevan Mission	16.29
TELECOMMUNICATION	
Telecommunication	3.21
IRRIGATION	
Irrigation	7.73
RURAL INFRASTRUCTURE	
Rural Infrastructure	4.11
Water and Sanitation	3.62
Total Rural Infrastructure	**7.73**

Source: PIB, ICRA Analytics

There are certain states that have not yet revealed their project pipelines, indicating that more projects may soon be incorporated into the overall pipeline. This highlights India's proactive

approach to enhancing its infrastructure, a strategy likely to stimulate growth within the nation's infrastructure construction sector.

2.6.1 Ministry of Road Transport and Highways (Morth)

The Ministry of Road Transport and Highways (MoRTH) has demonstrated remarkable growth in capital expenditure over the past decade. From INR 530 billion (USD 6,127.17 million) in FY2013–2014, the Ministry's capital expenditure, including private investments, surged 5.7 times to an unprecedented INR 3,010 billion in FY2023–2024. Out of the total budgetary capital outlay of INR 2,645.26 crore (USD 30,581.03 million), MoRTH achieved a remarkable 99.94% utilization rate, effectively spending INR 2,643 billion (USD 30,561.96 million), according to MoRTH FY2023–2024 annual report.

Key Infrastructure Initiatives

Bharatmala Pariyojana: The Indian government, through flagship programs like Bharatmala Pariyojana, is actively expanding the National Highways network. In 2024, the Ministry approved eight National High-Speed Corridor projects spanning 936 km with a capital outlay of INR 506 billion (USD 5,856.07 million). Originally budgeted at INR 5 trillion, the program's cost projections have now doubled to INR 10 trillion due to delays in land acquisition and other operational challenges.

Multimodal Logistics Parks: Under Bharatmala Pariyojana, MoRTH plans to establish 35 Multimodal Logistics Parks, ensuring seamless last-mile connectivity to all operational and upcoming ports across the country.

Port Connectivity Masterplan: In collaboration with the Promotion of Industry and Internal Trade, MoRTH developed a Port Connectivity Masterplan, identifying 59 critical infrastructure projects covering approximately 1,300 km to address connectivity requirements.

Sudarshan Setu Bridge: In 2024, the Sudarshan Setu Bridge was inaugurated, backed by a MoRTH investment of INR 9.80 billion (USD 113.29 million), further exemplifying the Ministry's commitment to enhancing infrastructure.

Encouraging Private Investments

While the government has historically been the primary investor in the transport sector, there is now a concerted push for private sector participation. This shift is transforming the Indian infrastructure landscape, fostering greater innovation and efficiency while reducing the dependency on public funds.

Impact on the Construction Sector

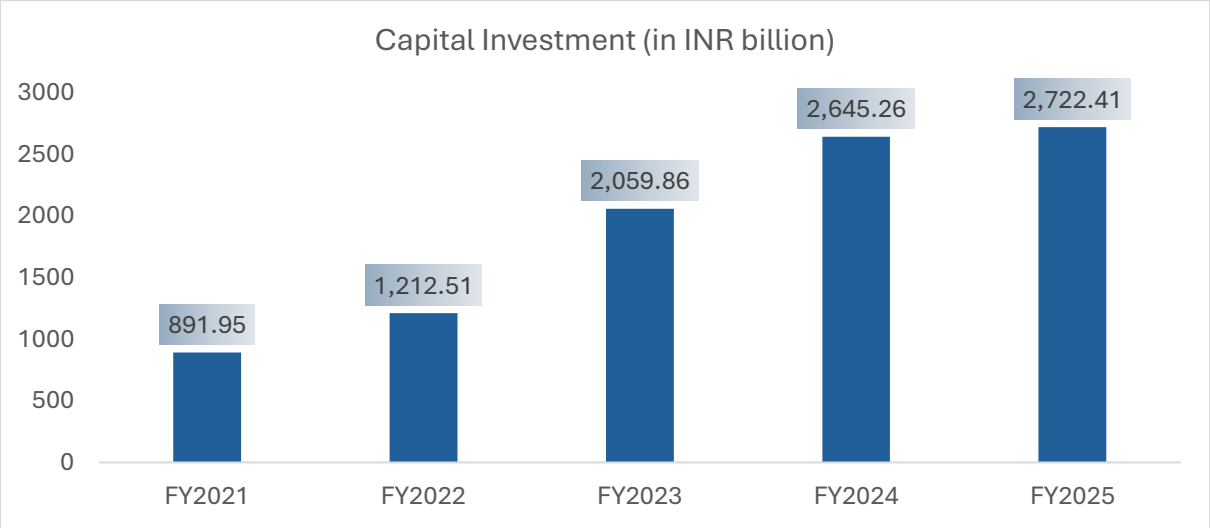
The robust Government capital investments, complemented by increased private sector participation, are driving significant growth in India's road infrastructure. Programs like Bharatmala Pariyojana and multimodal logistics initiatives are not only enhancing connectivity but also energizing the Indian construction sector. These developments position India for sustained economic growth and infrastructure modernization in the years to come.

Table 6: Capital investment on Bharat mala project, by National Highways Authority of India (NHAI), and private sector, in INR million, India, from FY2018-2019 to FY2023-2024

Year	NHAI Investment	Private Sector Investment
2018-19	165.67	206.18
2019-20	157.33	219.26
2020-21	272.49	124.76
2021-22	392.10	192.06
2022-23	1133.87	218.97
2023-24	1299.97	348.05

Source: Ministry of Road Transport and Highways (MoRTH) Annual Report 2023-2024, Mordor Intelligence, ICRA Analytics

Chart 33: Capital Investment Trend, Ministry of Road Transport and Highways, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

In FY 2023-24, the Ministry of Road Transport and Highways (MoRTH) allocated over 96% of its budget to capital investment, up from 95% the previous year and a notable rise from 90% in FY 2022. Looking ahead to FY25, capital expenditure now accounts for 98% of MoRTH's overall budget. Since FY 2013-14, capital investment on national highways has surged from approximately INR 510 Billion to over INR 2,000 Billion in FY 2022-23. The highway ministry is set to commence awarding new projects, alongside those pending from the initial phase of the Bharatmala Pariyojana. This flagship programme, originally estimated at INR 5,000 billion, now faces cost projections soaring to INR 10,000 billion, largely due to delays in land acquisition and other challenges.

This growth in capital investment in highways and roads construction in India indicates development of road and highway infrastructure in the country

2.6.2 Ministry Of Railways

The Indian Ministry of Railways has demonstrated a strong commitment to modernizing the country's rail network through substantial budgetary allocations for FY 2023–2024. A Gross Budget Support (GBS) of INR 2,400 billion (USD 27,745.66 million) has been earmarked for

enhancing rail infrastructure, reflecting a clear focus on capacity expansion, safety, and sustainability.

Key Allocations in the Railway Budget

Capital Expenditure: A significant portion of the budget, INR 1,850 billion (USD 21,387.28 million), has been allocated to capital expenses, aimed at expanding and upgrading rail infrastructure.

Railway Safety Fund: To prioritize safety measures, INR 450 billion (USD 5,202.31 million) has been allocated under the Railway Safety Fund, ensuring the adoption of robust safety protocols.

Rashtriya Rail Sanraksha Kosh: An additional INR 100 billion (USD 1,156.07 million) has been set aside for the Rashtriya Rail Sanraksha Kosh, further strengthening safety initiatives.

New Lines Initiative: A budget of INR 318.5 billion (USD 3,682.08 million) is allocated for expanding the rail network through the New Lines initiative, which focuses on constructing new routes and increasing connectivity.

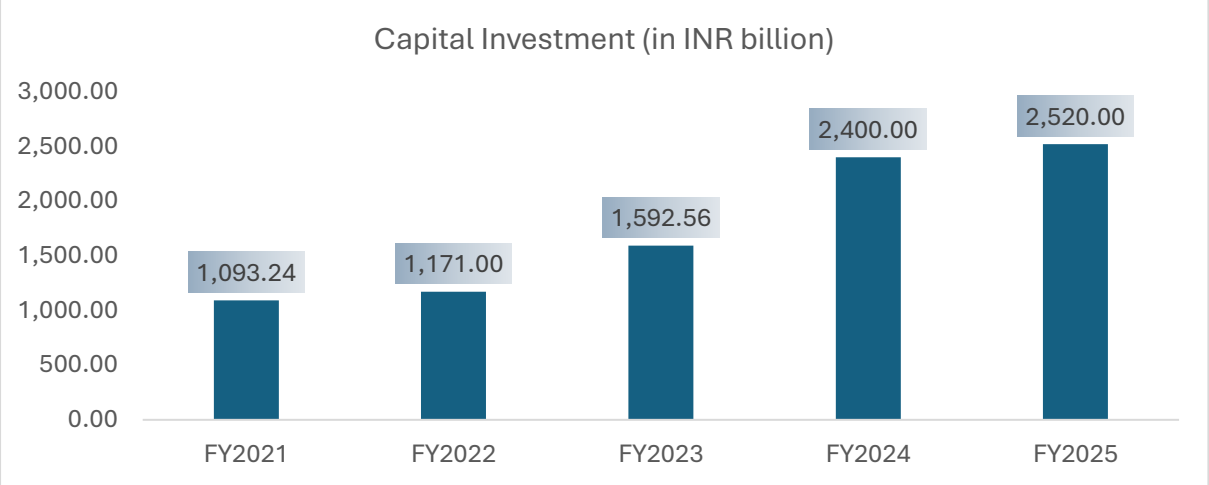
Enhancing passenger experience is a priority, with INR 131.50 billion (USD 1,520.33 million) designated for improving customer amenities, including station upgrades and onboard services.

The budget emphasizes environmental sustainability with innovative projects like Hydrogen Trains for which a sum of INR 28 billion (USD 327.70 million) has been allocated for the development of 35 hydrogen fuel cell-based trains, designed for heritage and hill routes. Another is Hydrogen Infrastructure where an additional INR 6 billion (USD 69.36 million) is designated for establishing the necessary hydrogen infrastructure for these routes.

Looking ahead, the Ministry of Railways has projected that India's infrastructure investments will surge to INR 143 trillion (USD 1.71 trillion) between FY2024 and FY2030. This massive investment will drive modernization and expansion across the rail sector, paving the way for significant economic growth and enhanced connectivity.

India's strategic investments in rail infrastructure underscore its commitment to modernizing the network while prioritizing safety, sustainability, and passenger satisfaction. These efforts are set to attract substantial private and international capital, positioning the country's railway sector as a critical driver of economic development and a global leader in sustainable rail technologies.

Chart 34: Capital Investment Trend, Ministry of Railways, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

The Indian railway sector is making substantial strides in modernizing its infrastructure, with a focus on transforming stations into world-class hubs and driving industrial development. The 2024 budget reflects this commitment, allocating significant capital investment to support these initiatives.

Key Focus Areas:

Industrial Cluster Development: To bolster industrial growth, Indian Railways is enhancing infrastructure at pivotal nodes within major industrial corridors. Notable examples include:

- Kopparthy: Located on the Visakhapatnam-Chennai Industrial Corridor, aiming to catalyse industrial development in the region.
- Orvakal: Positioned on the Hyderabad-Bengaluru Industrial Corridor, driving economic activity in Andhra Pradesh.
- Gaya: Situated on the Amritsar-Kolkata Industrial Corridor, fostering growth in Bihar and eastern India.

These strategic locations are poised to ignite industrial growth, particularly in underdeveloped regions, promoting balanced regional development.

Capacity Expansion: Indian Railways is undertaking extensive infrastructure projects to meet increasing demand and improve operational efficiency. These include multitracking to increase line capacity, major yard remodelling for smoother train operations and new maintenance facilities to support rolling stock and ensure uninterrupted services.

Electrification and High-Speed Rail Testing: A portion of the capital expenditure is allocated to railway electrification, reducing dependence on fossil fuels and aligning with sustainability goals. Additionally, funds are earmarked for the testing and development of high-speed railways, laying the groundwork for future-ready transportation networks.

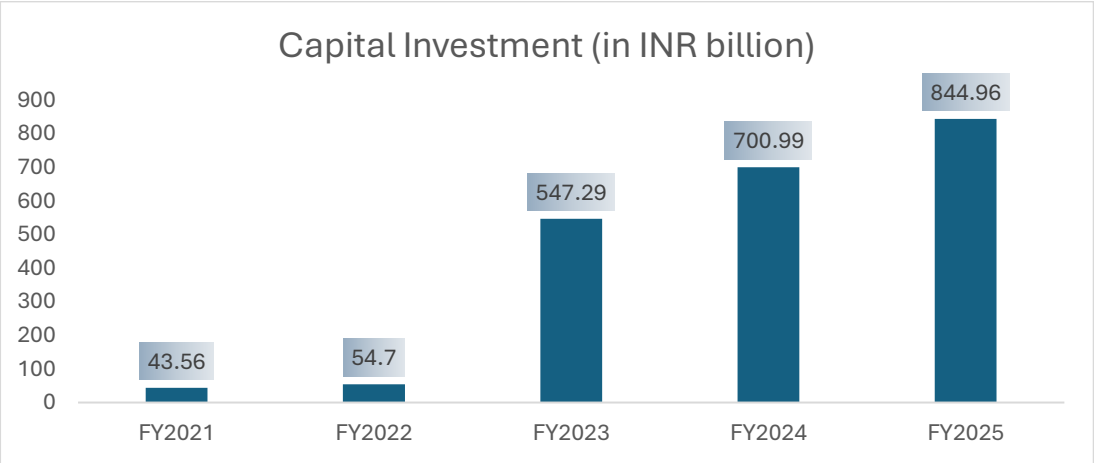
A critical factor for the success of these projects is the availability of encumbrance-free land, which is essential for large-scale infrastructure developments like station upgrades and

industrial corridor expansion. Addressing this challenge is key to ensuring timely execution and cost efficiency.

By channelling capital investment into station modernization, industrial corridor infrastructure, and capacity-building projects, the railway sector is playing a pivotal role in India's economic growth. These initiatives not only enhance connectivity and operational efficiency but also serve as catalysts for industrial and regional development, positioning the railway network as a cornerstone of India's infrastructure transformation.

2.6.3 Ministry Of Telecommunications

Chart 35: Capital Investment Trend, Ministry of Telecommunications, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

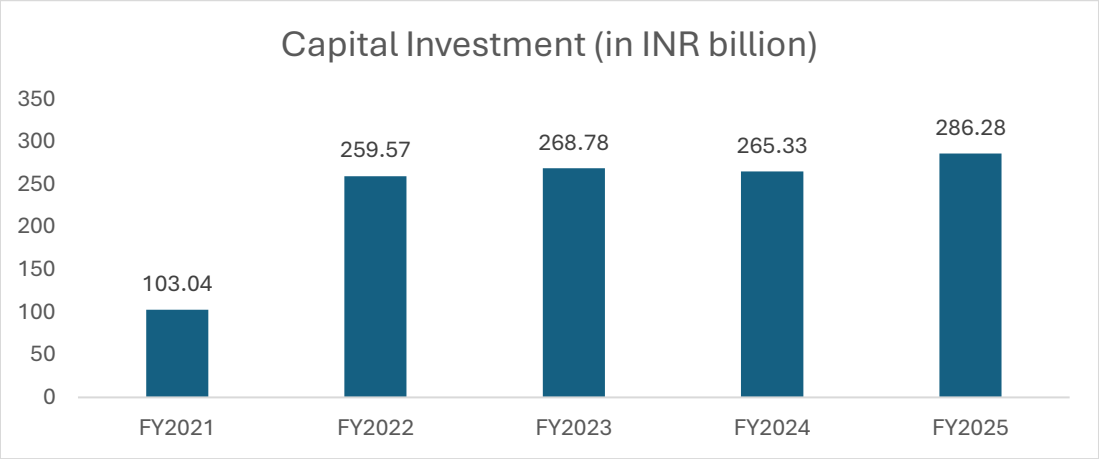
To enhance mobile data growth and foster a robust digital economy, the Indian government, in collaboration with the Department of Telecommunications, is making significant investments to upgrade the country's telecommunications infrastructure.

The government is particularly focused on improving internet connectivity in underserved and rural areas, providing incentives for investments in broadband infrastructure and mobile network enhancements. A key initiative, the BharatNet Project, also known as the National Optic Fiber Network, aims to connect every gram panchayat (rural locality) throughout India. This project has seen considerable capital investment to extend fiber-optic networks into rural regions. After its restructuring in 2017, it received substantial funding to achieve its ambitious objectives.

In addition to government initiatives, private companies such as Jio, Airtel, and Vodafone Idea have also invested heavily, contributing billions to the deployment of 4G networks.

2.6.4 Ministry of Housing and Urban Affairs

Chart 36: Capital Investment Trend, Ministry of Housing and Urban Affairs, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

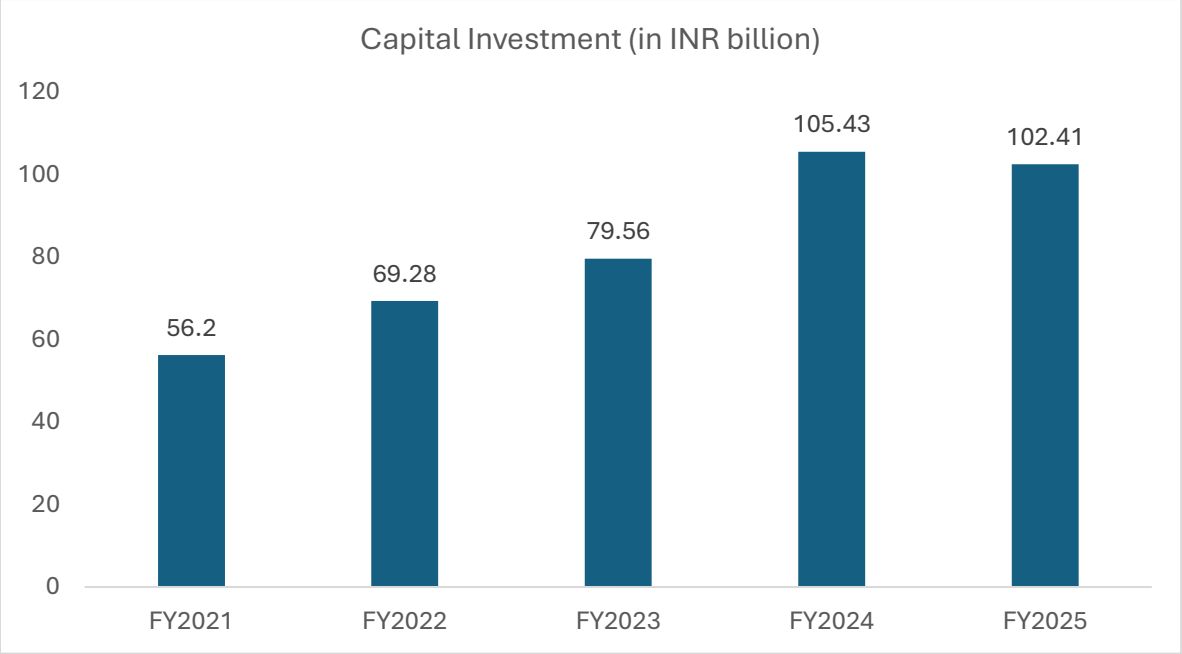
Programs such as the Pradhan Mantri Housing Schemes (PMAY), the Smart Cities Mission, and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) are the primary recipients of capital investments from the Ministry of Housing and Urban Affairs. These initiatives are designed to tackle significant urban issues, including the shortage of housing, deficiencies in urban infrastructure, and the necessity for sustainable urban development.

Moreover, substantial funding has been allocated to large-scale slum redevelopment projects, which emphasize infrastructure enhancement, the provision of affordable housing, and the improvement of amenities to elevate the living standards of urban inhabitants.

For FY2024-2025, a capital expenditure budget amounting to INR 286.28 billion has been earmarked, underscoring the government's dedication to urban transformation and development.

2.6.5 Ministry of Defense (Civil)

Chart 37: Capital Investment Trend, Ministry of Defense (Civil), in INR billion, FY2021-FY2025



Source: Ministry of Finance (India)

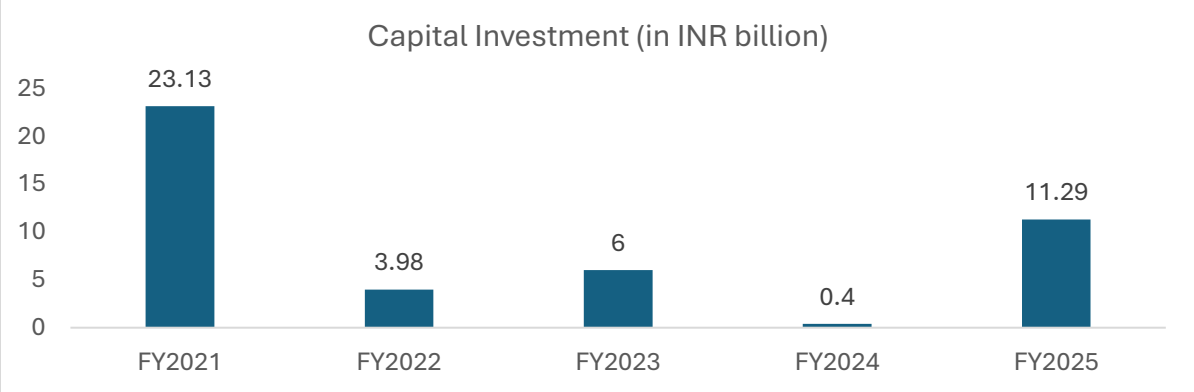
In recent years, the Indian Ministry of Defence (MoD) has significantly increased its capital investments in the civil sector, highlighting an urgent requirement to modernize and enhance the country's defense infrastructure. These investments are motivated by a combination of security imperatives and broader developmental goals.

With a focus on modernization, India's defense sector is progressively integrating advanced technologies. This initiative includes the enhancement of weapon systems, the acquisition of state-of-the-art equipment, and the overall strengthening of defense capabilities.

Moreover, there is a notable trend towards a dual-use infrastructure strategy, wherein military projects such as airstrips, ports, and highways are being designed to serve both defense and civilian functions, thereby stimulating capital investments in the segment.

2.6.6 Ministry of Petroleum and Natural Gas

Chart 38: Capital Investment Trend, Ministry of Petroleum and Natural Gas, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

In India, the Ministry of Petroleum and Natural Gas (MoPNG) is instrumental in facilitating capital investments within the petroleum and gas industry. These investments are crucial for enhancing energy security, improving infrastructure, and promoting economic development.

The sector has experienced a notable increase in investments, driven by factors such as increasing energy demand, advancements in technology, geopolitical considerations, and a commitment to environmental sustainability.

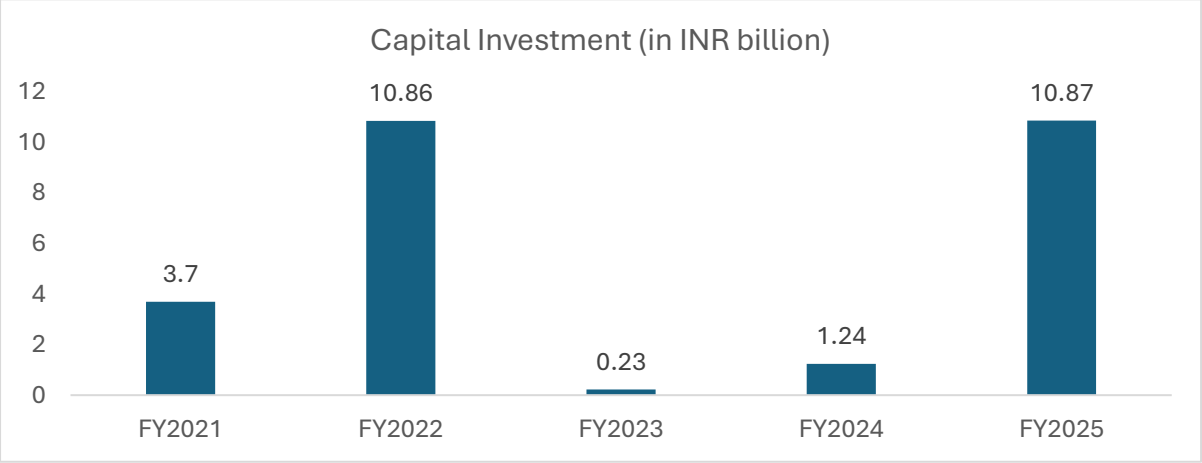
Moreover, the Indian government has taken proactive measures to establish strategic petroleum reserves (SPR) to mitigate the risks of potential supply disruptions. This initiative, which involves significant investments in infrastructure, including underground storage facilities, has attracted further capital investments.

Additionally, the country's hydrocarbon exploration policy, along with various incentive programs, seeks to attract investments in unconventional energy sources, including shale gas, deep-water fields, and offshore explorations. Industry reports indicate that India has expanded its operational natural gas pipeline network by nearly 7,500 km over the past four to five years. As of September 2024, India had approved a total of 33,475 km of natural gas pipelines, with 24,945 km already in operation and over 10,000 km still under construction.

In 2024, the government announced a plan to invest INR 5606 billion (US$ 67 billion) in the natural gas supply chain over the next five to six years. This capital investment is anticipated to significantly enhance India's petroleum and gas sector by reinforcing gas infrastructure, ensuring a reliable energy supply, and addressing the country's increasing energy needs.

2.6.7 Ministry of Power

Chart 39: Capital Investment Trend, Ministry of Power, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

The Indian government is emphasizing Universal Access to Electricity through initiatives such as Saubhagya, particularly focusing on remote rural regions, which is driving substantial investments in the energy sector. India has set ambitious renewable energy goals, aiming for 175 GW by 2025 and 500 GW by 2030. The realization of these targets depends on significant investments in solar, wind and other renewable energy sources.

Moreover, Government programs like the National Smart Grid Program, the FAME India Scheme, and the National Electric Mobility Mission Plan (NEMMP) are facilitating investments in the country's infrastructure.

The Government is actively promoting distribution reforms through the Revamped Distribution Sector Scheme (RDSS), which aims to enhance financial sustainability and operational efficiency within the distribution sector. This initiative is also encouraging investments in modernization and the adoption of new technologies.

During the review period, the Ministry of Power (MOP) has been instrumental in driving substantial capital investments to fortify India's power sector, resulting in significant achievements. Over the last nine years, the sector has garnered investments totalling approximately INR 17000 billion (USD 0.20 trillion), with an additional 17500 billion (USD 0.20 trillion) earmarked for capacity currently under construction.

These investments have enabled the establishment of around 99 GW of renewable energy capacity that is presently under construction, alongside 32 GW in the bidding phase, with intentions to bid for an annual capacity of 40 to 50 GW in renewable energy.

In the thermal sector, investments have led to 27 GW under construction, 12 GW that have been bid out, 21 GW in the survey and investigation phase, and 22 GW in preliminary stages. Likewise, investments in hydro capacity have resulted in 47 GW of installed capacity, with 18 GW under construction and 13 GW at various stages of survey and investigation.

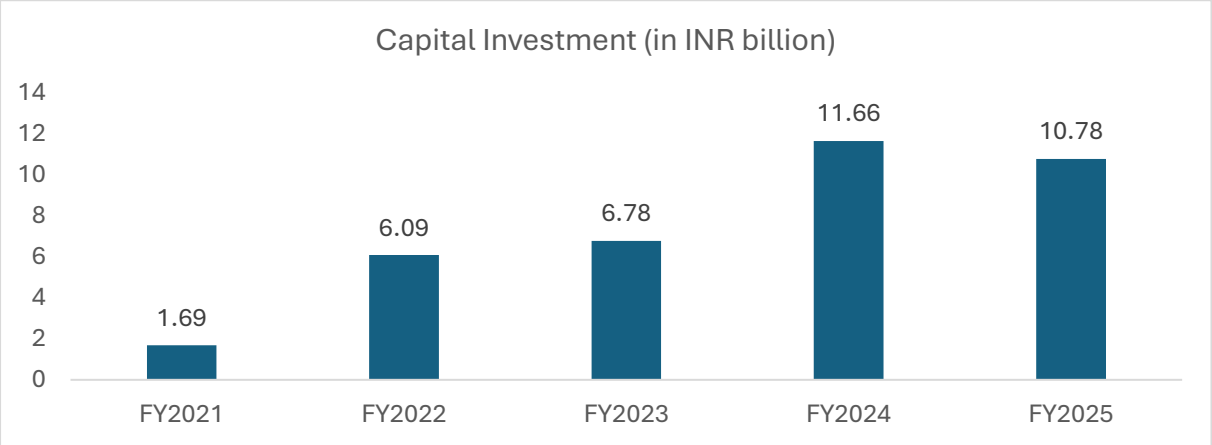
Under the National Infrastructure Pipeline for FY 2019-25, the Government of India has allocated INR 1,11,000 billion (USD 1.4 trillion), with the energy sector projected to represent 24% of the total capital expenditure.

In 2024, India initiated a plan worth INR 9150 billion (USD 0.11 trillion) to revamp its power infrastructure, aiming to meet a projected peak demand of 458 GW by 2032.

The National Electricity Plan 2023-2032, unveiled by the MOP, outlines a strategic framework to enhance the transmission network, thereby further advancing the results of these capital investments in India's power infrastructure.

2.6.8 Ministry of Ports, Shipping and Waterways

Chart 40: Capital Investment Trend, Ministry of Ports, Shipping and Waterways, in INR billion, FY2021-2025



Source: Ministry of Finance (India), ICRA Analytics

As India's international trade continues to grow, with critical sectors such as manufacturing, agriculture, and services increasingly reliant on maritime transport, a substantial amount of capital investment is being directed towards enhancing the country's port infrastructure and shipping capabilities.

The modernization of ports is crucial for effectively handling the increasing volume of cargo traffic. Acknowledging the significance of specific inland waterways for cargo transportation, particularly in riverine regions, the government has designated these waterways as essential under the National Waterways Act.

As a result, there has been a notable increase in capital investments aimed at the development of these inland waterways, which includes activities such as dredging, terminal construction, and the improvement of river transport infrastructure.

Additionally, government initiatives, such as the Monetization of Ports and the privatization of port operations, have successfully attracted substantial private and foreign investments into India's port infrastructure.

2.7 Qualitative overview of government schemes impacting the construction sector in India

Various government initiatives are transforming India's economy and urban landscape by driving record FDI inflows and modern infrastructure development, positioning India as a global manufacturing hub and leader in sustainable urbanization

Policy Initiative 1: Make in India

A major initiative was started by the Government of India to improve the country's manufacturing capabilities. The following are important components of this project.

- The "Make in India" campaign is essential to establishing India as a major player in global manufacturing. The initiative aims to strengthen India's position in the international economy by promoting innovation, building world-class infrastructure, and enhancing industrial capabilities.
- Record FDI inflows, which are a direct result of simplified FDI regulations and improved business facilitation, have greatly accelerated the initiative's momentum.

Impact assessment of Make in India Initiative:

- Record-breaking Foreign Direct Investment (FDI) inflows, spurred by streamlined FDI regulations and enhanced business conditions, have significantly bolstered the success of the Make in India initiative.
- FDI inflows have been steadily increasing, reaching an all-time high of USD 84.83 billion in 2021–2022 from USD 45.14 billion in FY 2014–2015. In April 2014 to March 2024, India received USD 667.41 billion in foreign direct investment (FDI), a 119 percent increase over the previous decade (2004–14). India has become a more attractive global investment destination, as evidenced by the USD 70.95 billion in total FDI inflows and USD 44.42 billion in equity inflows in FY 2023-24. Continuing this positive momentum, total FDI inflows rose to USD 81.04 billion in FY 2024–25, with equity inflows reaching USD 54.3 billion.

Policy Initiative 2: Smart cities mission

The Smart Cities Mission was introduced on June 25, 2015, with the goal of using "smart solutions" to improve the quality of life for citizens, advance sustainability, and improve core infrastructure.

The goal of this ambitious mission is to transform urban development methods throughout India. As of right now, 100 designated smart cities have started a variety of projects in the areas of public spaces, governance, waste management, mobility, energy, and sanitation.

Impact assessment of Smart cities mission-

- The construction of new roads, bridges, housing complexes, and utilities has changed urban landscapes. To meet tech-driven demands, advanced construction techniques like modular construction and Building Information Modelling (BIM) have become more popular.
- Construction activities have intensified, focusing on solar energy projects, eco-friendly housing, and recycling plants. Construction of reservoirs, sewage systems, and water

treatment facilities has significantly increased. The need to build substations, power plants, and energy-efficient systems has increased dramatically.

Policy Initiative 3: Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

In an effort to support the country's manufacturing, the Indian government launched the AMRUT on June 25, 2015. The program covers 500 chosen cities and towns across the country. AMRUT focuses on critical infrastructure, including stormwater drainage, sewage management, water supply, green spaces, and urban transportation. Measures to increase capacity and implement urban reforms are essential to the mission.

With a five-year mandate, AMRUT was rebranded as AMRUT 2.0 and launched on October 01, 2021. The redesigned mission seeks improved sewage management in the first 500 cities and universal water supply coverage in all statutory towns.

Impact assessment of AMRUT-

- India has promoted sustainable practices and made significant strides in urban infrastructure, particularly in water supply and sanitation, through the AMRUT initiative. But to achieve its long-term objectives, it must address current issues with increased funding and capacity building.
- In urban areas, AMRUT has enabled approximately 587 million tap connections and 375 million sewer connections as of May 2024, significantly improving access to these essential services. City tap connections have expanded their coverage from 40% in 2011 to 70% today, and sewer coverage has similarly grown from 32% to 62%.

Policy Initiative 4: PM GATISHAKTI

PM GatiShakti, which was unveiled on October 13, 2021, is a calculated attempt to realize the goal of Aatmanirbhar Bharat and reach a USD 5 trillion economy by 2025. Building multimodal and last-mile connectivity infrastructure is a key component of the initiative.

India is enhancing the speed and efficiency of goods transport through the development of Dedicated Freight Corridors (DFCs) under the PM Gati Shakti initiative. The Western and Eastern DFCs aim to decongest the current rail networks, ensuring quicker and more reliable freight movement, especially benefiting heavy industries.

Impact assessment of PM Gatishakti-

- Targeting critical last-mile connectivity gaps, this initiative has evaluated more than 208 significant infrastructure projects, with a total estimated value of INR 15.39 trillion.
- India's infrastructure development is being revolutionized by the Freight Corridor and PM Gati Shakti initiatives. By integrating various industries and promoting efficient logistics systems, these programs aim to support regional development and economic expansion. However, it's crucial to address the upcoming obstacles if they are to fully realize their potential and improve India's infrastructure.

2.8 Qualitative overview of risk, challenges and threats in of the industry

Delays in land acquisition-

Infrastructure development in India is being slowed by delays in land acquisition, environmental clearances, and infrastructure support, which hinder the timely completion of projects. One of the main causes of these delays has been opposition from farmers and nearby communities. Biased or unclear procedures discourage investors from raising funds to bid on large road and energy projects, which frequently take months to award.

As of March 2024, 779 of the 1,872 ongoing Union Government projects worth more than INR 150 crore (USD 18 million) were behind schedule, according to a report by the Ministry of Statistics and Program Implementation (MoSPI). A closer examination of the MoSPI data reveals several contributing factors to these delays where the common reasons include Land acquisition difficulties, delays in environmental and forest clearances, inadequate infrastructure support, and contractual disputes.

Land acquisition and environmental clearance issues have notably delayed road and railway projects. For Instance, the Mumbai-Ahmedabad High-Speed Rail Project (MAHSRP); launched in 2017 with an original completion date of December 2023, the 508 km corridor project now aims for a December 2026 finish. The Indian Railways attributed the delay to land acquisition holdups.

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (LARR) Act was enacted in India on September 26, 2013. The act aims to ensure that the process of land acquisition is fair, transparent, and humane. It also aims to provide compensation and rehabilitation for those affected by land acquisition.

Environmental Clearances and Compliance with Sustainability Standards-

In India, getting environmental approvals and following sustainability guidelines are two problems that the construction sector faces. In addition to reducing the environmental impact of construction activities, these regulations promote sustainable practices.

However, the rigorous demands for these clearances can stifle the industry's momentum. Often, delays in securing these approvals translate to heightened project costs and extended timelines. Although progress has been made, a number of obstacles still stand in the way of integrating sustainability into building methods.

Key challenges include:

- Regulatory Complexity: A complex regulatory landscape can hinder timely project rollouts. For instance, India aims for carbon neutrality by 2070, spotlighting its construction sector, as a major emitter.
- Initiatives like the Leadership in Energy and Environmental Design (LEED) standard, collaborating closely with industry professionals, have propelled this movement. However, the journey to LEED certification can be daunting, demanding meticulous documentation, rigorous audits, and strict adherence to standards.

- Cost Implications: The upfront costs of sustainable materials and technologies can be a deterrent for some developers. Sources indicate that constructing a green building in India may cost 3-5% more than its conventional counterpart.

Limited Private Sector Participation in Tier-2, Tier-3 Cities –
In India's Tier-2 and Tier-3 cities, the private sector's limited presence presents a serious obstacle to the infrastructure construction industry.

The goal of Government programs like the Urban Infrastructure Development Fund (UIDF) and the National Infrastructure Pipeline (NIP) is to strengthen urban logistics and infrastructure networks. However, there hasn't been much private investment in smaller cities as a result of these efforts. The Government shoulders three-fourths of India's infrastructure expenditure. In contrast, private sector contributions under the NIP stand at a mere 21%. This imbalance is starkly evident in Tier-2 and Tier-3 cities. Here, challenges like diminished profitability, unclear demand forecasts, and perceived risks dissuade private investors.

With an eye on achieving the "Viksit Bharat" vision by 2047, India must urgently address the trend of meager private investments. By studying advanced economies, where private entities dominate infrastructure and R&D expenditures, India can glean insights. Private investors often view Tier-2 and Tier-3 cities as high-risk due to their smaller markets and diminished demand for large-scale infrastructure projects, especially when compared to metropolitan areas. Numerous Tier-2 and Tier-3 cities fall short on essential infrastructure, lacking reliable transportation, utilities, and digital connectivity. Without these foundational elements, private companies find it hard to rationalize their investments.

Cost overrun–
Today, one of the largest problems facing the construction industry is cost overruns. This is the case when unforeseen costs, delays, and other unanticipated events cause a construction project to go over its original budget. Project managers, construction firms, and the sector at large may all be significantly impacted by cost overruns.

Construction cost overruns are largely caused by the rising cost of building materials, including raw materials. Low productivity is another factor that leads to cost overruns. Construction industry productivity has lagged technological advancements, resulting in delays and higher expenses. Investments in productivity-boosting technologies like automation, drones, and artificial intelligence are necessary for construction companies to meet this challenge.

Slow adaptation to emerging technologies–
The construction industry's resistance to implementing new technology is arguably one of its most challenging issues. Construction workers' jobs may be made easier by digital tools like 3D printing and building information modelling. Additionally, the use of these new technologies can make construction sites safer for both contractors and workers. Obtaining funding is often a challenge, even when a construction company admits that there are technological solutions that could help them from conception to implementation.

Labour shortage –
The largest issue facing the construction sector today is most likely a lack of workers. It describes a situation in which the industry lacks skilled workers, making it difficult for contractors to hire and retain staff. The fact that the construction industry needs a wide range of professionals, from engineers and architects to construction workers and equipment operators, makes this challenge even more difficult.

The widening skills gap in the sector is one of the causes of the labour shortage. In order to meet demand, the construction industry is predicted to need to hire over two million workers by 2025 due to a severe lack of skilled workers. Labour statistics indicate that the aging workforce and a lack of educational and training opportunities are to blame for this shortage.

The growing competition for skilled workers is another factor contributing to the labour shortage. It is difficult for construction companies to recruit and retain skilled workers as the economy continues to recover because many other industries are also seeking to hire them. Wages may rise because of this competition for human resources, making it harder for contractors to stay competitive.

The use of equipment may also be impacted by the labour shortage. Contractors may be compelled to use less effective equipment or put in longer hours due to a lack of skilled labour, which can raise expenses and lower productivity.

Poor planning, forecasting, and budgeting–
One of the biggest problems facing the construction industry is inadequate planning, forecasting, and budgeting. These difficulties are especially pertinent to residential construction, where meticulous planning and budgeting are necessary to guarantee that the project is finished on schedule and within the allocated budget.

The main factor causing poor cash flow forecasting and planning is a lack of accurate data. Construction firms need to make sure they have access to the most recent data regarding labour costs, material costs, and project schedules. Project managers might find it difficult to develop precise budgets and schedules without this information, which could result in expensive delays and project overruns.

Construction firms can purchase software that offers real-time information on project expenses and progress to get around this problem. With the use of this software, project managers can make well-informed choices regarding the distribution of resources and spot possible problems before they become serious ones.

3. Overview of Infrastructure consulting industry in India

3.1 India Infrastructure Consulting Market share by services

Table 7: India Infrastructure Consulting Market share by services, FY2021 to FY2030F

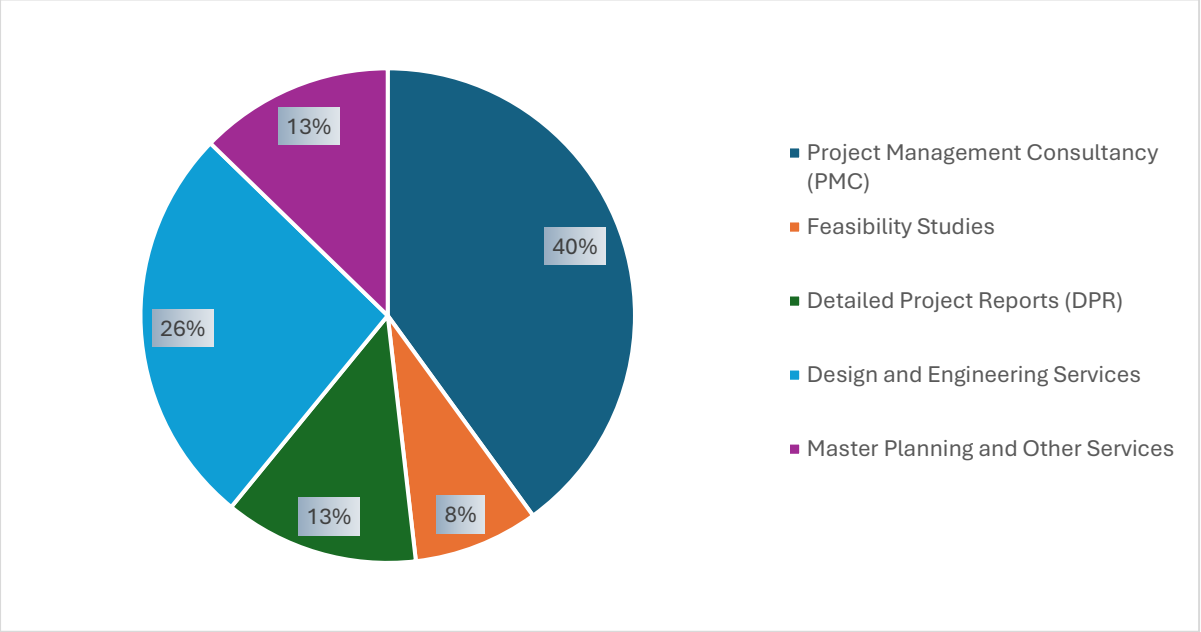
(In INR Billion)

By Services	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026 F	FY2027 F	FY2028 F	FY2029 F	FY2030 F
Project Management Consultancy (PMC)	292.80	362.90	423.70	503.10	588.18	688.09	798.01	922.11	1062.57	1223.02
Feasibility Studies	61.90	75.90	87.60	102.90	117.70	134.61	151.96	171.10	192.02	214.85
Detailed Project Reports (DPR)	94.60	116.70	135.50	160.10	185.19	213.67	245.34	280.93	319.94	362.29
Design and Engineering Services	195.10	240.90	280.30	331.60	389.27	454.07	525.18	603.38	691.00	787.87
Master Planning and Other Services	95.70	117.60	136.10	160.10	184.30	211.38	240.64	272.30	307.96	347.06
Total	**740.10**	**914.00**	**1063.20**	**1257.60**	**1464.64**	**1701.82**	**1961.13**	**2249.82**	**2573.49**	**2935.09**

Source: Mordor Intelligence, ICRA Analytics

Note: F: Forecasted
E: Estimated

Chart 41: India Infrastructure Consulting Market, percentage Share (%), by Services, FY2025

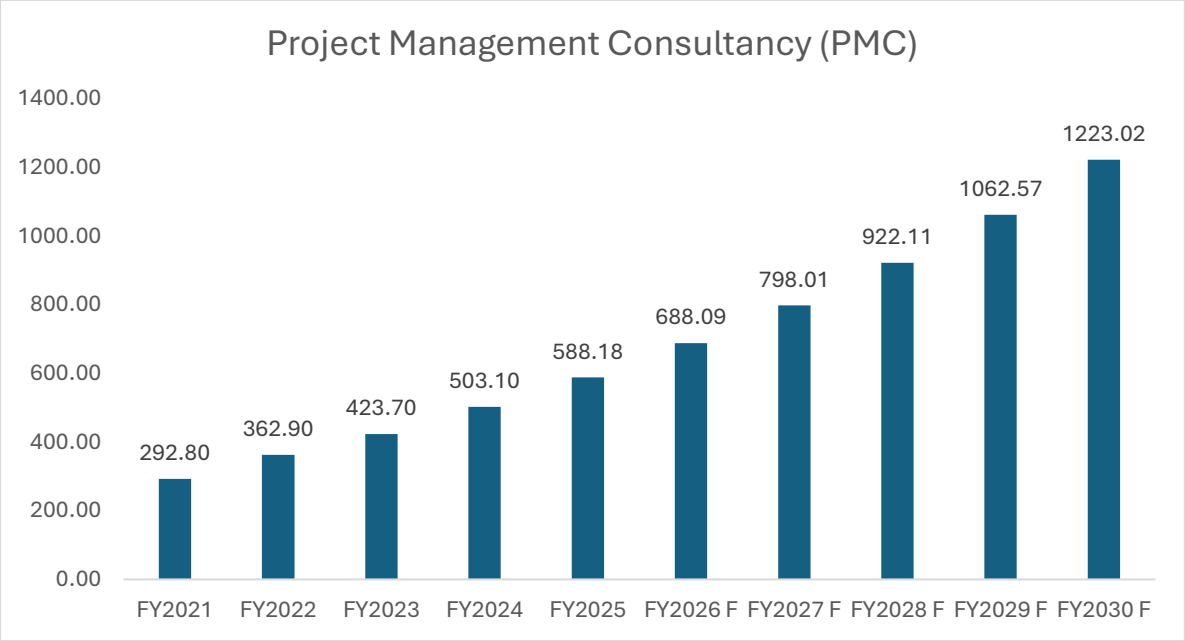


Source: Mordor Intelligence, ICRA Analytics

3.1.1 Project Management Consultancy (PMC)

The PMC segment of the market was valued at INR 588.18 billion in FY2025, and it is projected to reach INR 1,223.02 billion in FY2030, recording a CAGR of 15.77% during the forecast period.

Chart 42: Project Management Consultancy segment market value (in INR Billion), FY2021 TO FY2030F



Source: Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Infrastructure consultancy firms play a vital role in PMC services, encompassing project scheduling, cost estimation, resource allocation, and risk management. Government Investments, increased demand for large-scale infrastructure projects, and the smart city missions are the key growth drivers boosting the infrastructure consultancy market in India. There's a surging demand for infrastructure consultancy services, particularly Project Management Consultancy (PMC), with the Indian Government poised to invest a staggering USD 2,200 billion in infrastructure by FY 2030.

Further, connectivity and logistics are expected to enhance with Governments initiatives such as PM Gati Shakti, backed by a substantial budget allocation of INR 11,110 billion for FY2025. In this evolving landscape, infrastructure consultants play a pivotal role, in overseeing the planning, monitoring, and optimization of vast projects. Additionally, in India, there is heavy reliance on consultants for smart city projects to guarantee timely and efficient execution.

The transformation of PMC operations is increasingly influenced by the adoption of advanced tools such as AI-driven project tracking, Building Information Modeling (BIM), digital twins, and cloud-based monitoring systems. There is a significant increase in the utilization of predictive analytics and automation, which enhance real-time project oversight and cost efficiency. To support data-informed decision-making and effective infrastructure management, PMC firms are making substantial investments in digital technologies.

The ambitious goal of reaching 500 GW by 2030 is driving a significant increase in renewable energy initiatives, including solar, wind, and hybrid projects, which in turn is elevating the demand for PMC services. Effective oversight in project execution is vital to accommodate the rising investments in data centers, logistics centers, and manufacturing parks, spurred by programs such as the Production-Linked Incentive (PLI) scheme and the Make in India initiative. As adherence to environmental and safety regulations becomes more critical, the role of PMC services is becoming increasingly important.

India Infrastructure Consulting Market, Market segmentation by industry within service type in INR billion, FY 2021 to FY 2030 (Forecast):

Project Management Consultancy (PMC)	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026 F	FY2027 F	FY2028 F	FY2029 F	FY2030 F
Roads & Highways	52.80	58.20	72.00	89.80	105.47	125.91	150.05	178.48	212.04	251.74
Water Supply & Sanitation (WSS)	10.20	13.60	15.60	18.30	21.46	24.45	27.31	30.27	33.38	36.67
Irrigation & Water Resources	14.70	19.10	21.00	25.90	30.05	34.20	38.29	42.40	46.66	50.96
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	31.20	41.70	46.60	54.10	64.33	75.73	88.48	103.25	120.27	139.62
Metro	9.60	12.80	14.10	16.10	19.19	22.75	26.90	31.73	37.22	43.40
Others*	174.40	217.40	254.30	298.80	347.69	405.05	467.00	535.98	613.00	700.63
Total PMC	**292.80**	**362.90**	**423.70**	**503.10**	**588.18**	**688.09**	**798.01**	**922.11**	**1062.57**	**1223.02**

Source: ICRA Analytics, Mordor Intelligence

*Others include Building, Power & renewables, , Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

India Infrastructure Consulting Market, Market segmentation by industry within service type in % terms, FY 2021 to FY 2030 (Forecast):

Project Management Consultancy (PMC)	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026 F	FY2027 F	FY2028 F	FY2029 F	FY2030 F
Roads & Highways	18%	16%	17%	18%	18%	18%	19%	19%	20%	21%
Water Supply & Sanitation (WSS)	3%	4%	4%	4%	4%	4%	3%	3%	3%	3%
Irrigation & Water Resources	5%	5%	5%	5%	5%	5%	5%	5%	4%	4%
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Metro	3%	4%	3%	3%	3%	3%	3%	3%	4%	4%
Others *	60%	60%	60%	59%	59%	59%	59%	58%	58%	57%
Total PMC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

Key trends for PMC in India

- In India, the infrastructure development is being reshaped by synergy between PMCs and modular construction methods. PMC's play a pivotal role in project ideation, design, and execution, ensuring meticulous budgeting and cost oversight throughout the project's lifespan. Further, as modular and prefabricated construction gains momentum, PMCs are spearheading the shift towards infrastructure that's both economically viable and sustainable, with projections indicating its industry dominance by 2035.

- PMC services are becoming more crucial with growing investments in transportation. For instance, the Brihanmumbai Municipal Corporation (BMC) hired a PMC for the second phase of the Mumbai Coastal Road Project, allocating INR 5.59 billion for consultancy services. This shows increasing trust in expert consulting and PMC services in India's infrastructure sector.
- Sustainability is being prioritized by infrastructure projects in India. PMCs play a pivotal role in embedding sustainable practices and upholding environmental standards. For instance, IVL India Environmental R&D Private Limited is managing wastewater treatment initiatives in Mumbai, wherein it is processing 360 and 500 million liters daily in two facilities, which is in line with Sustainable Development Goal 6 (Clean Water and Sanitation).

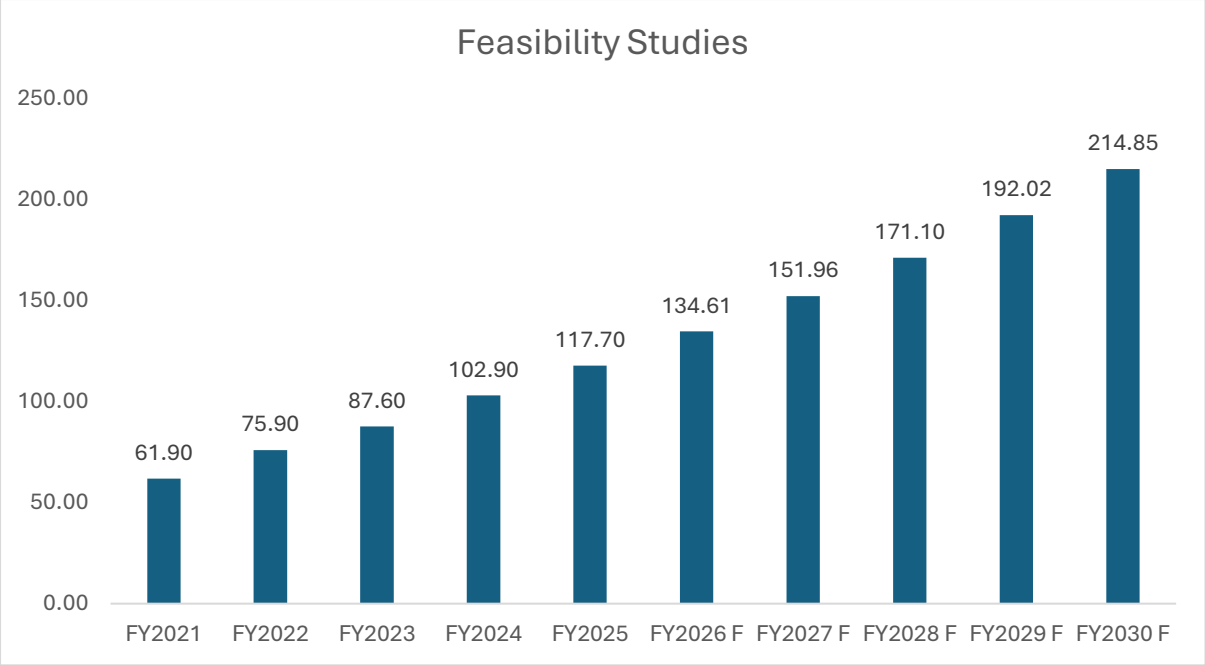
Key trends for PMC globally

- Infrastructure consulting is on the rise with organizations prioritize cost reduction and process optimization. There's a growing demand for consultancy services, specifically in Agile methodologies, Artificial Intelligence, and analytics. Infrastructure projects that seek to boost efficiency and enhance user experience are driving this surge. Moreover, the push for digital transformation consulting in the global infrastructure sector has been intensified with rising investments in digital tools and a focus on customer-centric analytics.
- Further, a spur in heightened demand for project management and regulatory consulting services in the infrastructure sector has been recognized due to regulatory changes such as US Tax Reform, BREXIT, and the EU's GDPR and new environmental compliance norms. In infrastructure project management consultancy, the global market is marked by high entry barriers largely driven by scale, reputation, and long-standing client relationships. Large infrastructure clients—whether governments, multilateral agencies, or private developers—tend to favor established PMC firms with proven track records in handling complex, capital-intensive projects, creating a trust-based moat for incumbents. Entry for new players is further constrained by the need for sector-specific expertise, regulatory compliance capabilities, and access to multidisciplinary teams that can integrate engineering, financial, and environmental perspectives. Moreover, established firms increasingly leverage digital project management platforms, data analytics, and AI-enabled risk monitoring, further widening the gap with smaller or new entrants.

3.1.2 Feasibility Studies

The Feasibility Studies segment of the market was valued at INR 117.7 billion in FY2025, and it is projected to reach INR 214.85 billion in FY2030, recording a CAGR of 12.79% during the forecast period.

Chart 43: Feasibility Studies segment market value (in INR Billion), FY2021 TO FY2030F



Source: Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Feasibility studies pinpoint optimal locations, analyze traffic trends, assess electrical capacity, and ensure accessibility, especially on highways where the government mandates EV charging stations every 25-30 km. In India, feasibility studies are essential for major infrastructure undertakings, including transportation systems, energy plants, and public facilities, wherein the evaluations gauge technical viability, environmental repercussions, financial soundness, and stakeholder interests. The growth in high-speed rail infrastructure and development of electric vehicle charging is driving growth in feasibility studies in the India's consulting domain.

Infrastructure consulting services will have huge opportunities with the government planning the rollout of EV charging stations nationwide. Partnerships, such as the one between Keppel and JBM Group, underscore the necessity of comprehensive feasibility studies to validate the viability of EV charging networks, Battery Energy Storage Systems (BESS), and e-waste management strategies. In a nutshell, India's infrastructure consulting domain is witnessing rapid growth, spurred by an increasing demand for feasibility studies that assess and facilitate large-scale projects. These evaluations not only align with India's infrastructural aspirations but also guarantee technical, financial, and environmental soundness.

Comprehensive feasibility studies are essential for securing funding approvals from international organizations such as the World Bank, ADB, AIIB, and JICA. The growth of industrial corridors, logistics hubs, and energy infrastructure is driving the need for economic feasibility evaluations. With a compound annual growth rate (CAGR) of 12.8% in feasibility studies, it is clear that India's infrastructure sector is experiencing increased complexity, scale, and investment levels. This growth not only strengthens India's infrastructure consulting market but also creates opportunities for firms specializing in project advisory, due diligence, environmental assessments, and financial modelling. As the demand for sophisticated technological feasibility solutions escalates, consulting firms are well-positioned for further innovation and growth.

India Infrastructure Consulting Market, Market segmentation by industry within service type in INR billion, FY 2021 to FY 2030 (Forecast):

Feasibility Studies	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	10.59	11.50	14.04	17.25	19.97	23.50	27.61	32.38	37.92	44.38
Water Supply & Sanitation (WSS)	3.06	4.03	4.54	5.23	6.02	6.75	7.41	8.07	8.75	9.45
Irrigation & Water Resources	4.50	5.73	6.14	7.39	8.36	9.28	10.13	10.94	11.74	12.50
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	9.22	12.14	13.33	15.18	17.77	20.57	23.62	27.11	31.05	35.44
Metro	2.79	3.65	3.95	4.43	5.17	6.02	7.00	8.11	9.34	10.70
Others*	31.75	38.85	45.64	53.42	60.41	68.49	76.20	84.50	93.22	102.38
Total Feasibility Studies	**61.91**	**75.89**	**87.63**	**102.90**	**117.70**	**134.61**	**151.96**	**171.10**	**192.02**	**214.85**

Source: ICRA Analytics, Mordor Intelligence

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

India Infrastructure Consulting Market, Market segmentation by industry within service type in % terms, FY 2021 to FY 2030 (Forecast):

Feasibility Studies	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	17%	15%	16%	17%	17%	17%	18%	19%	20%	21%
Water Supply & Sanitation (WSS)	5%	5%	5%	5%	5%	5%	5%	5%	5%	4%
Irrigation & Water Resources	7%	8%	7%	7%	7%	7%	7%	6%	6%	6%
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	15%	16%	15%	15%	15%	15%	16%	16%	16%	16%
Metro	5%	5%	5%	4%	4%	4%	5%	5%	5%	5%
Others*	51%	51%	52%	52%	51%	51%	50%	49%	49%	48%
Total Feasibility Studies	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

Key trends for Feasibility Studies in India

- India is set to introduce 200 ropeway projects by 2030, as part of the Parvatmala Pariyojana, enhancing connectivity in both urban and mountainous regions. Infrastructure consulting firms play a pivotal role in conducting feasibility studies, and evaluating engineering hurdles, terrain challenges, environmental implications, and financial frameworks, thereby ensuring these projects effectively tackle bolster regional and urban congestion access.
- India and Indonesia have studied Sabang Port in Aceh province, about 700 km from the Andaman and Nicobar Islands. The port could improve trade access to a key global route, the Malacca Straits. The project requires the technical, environmental, financial, and geopolitical assessments. India's trade routes enhanced its strategic standing in the Indian Ocean, reinforcing its position relative to China . Indian consulting firms will study the port's potential, trade impact, and alignment with strategic goals. Furthermore, the feasibility study will guide future planning to address challenges.

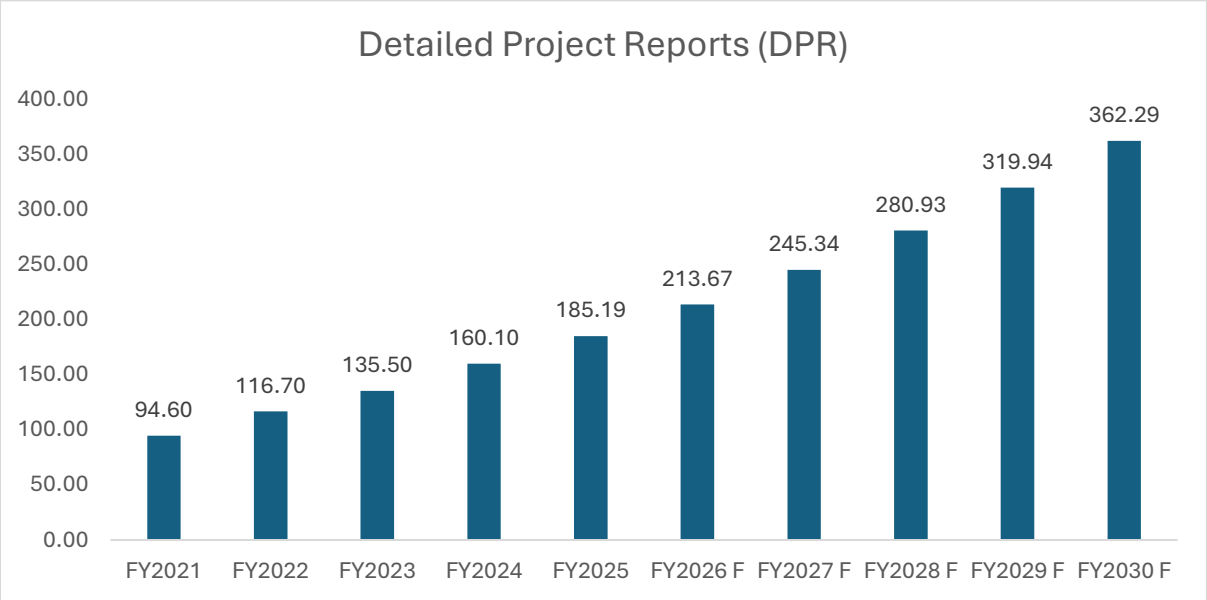
Key trends for Feasibility Studies globally

- Land feasibility studies assess land suitability, mitigate risks, secure financing, and guide development plans. Land value capture funded 88% of New York's 7 Line Extension, 80% of the Grand Paris Express project, and 32% of London's Crossrail. Further, Hong Kong's MTR Corporation (MTRC) is diversifying income streams and cutting costs to support its HKD 165 billion investment over the next decade. As per its 2024 interim report, MTRC plans to spend HKD 65 billion on railway asset renewal and repairs from CY2023 to CY2027.
- Demand of alternative financing and PPPs is driven by rising infrastructure demand and funding constraints. Companies collaborate with governments and investors, leveraging infrastructure funds, green bonds, and performance-based contracting, wherein, these models unlock capital, share risks, and promote sustainability. By 2035, this will reshape infrastructure development and resource allocation.

3.1.3 Detailed Project Report (DPR)

The Detailed Project Reports (DPR) segment of the market was valued at INR 185.19 billion in FY2025, and it is projected to reach INR 362.29 billion in FY2030, reflecting a CAGR of 14.36% during the forecast period.

Chart 44: Detailed Project Report segment market value (in INR Billion), FY2021 TO FY2030F



Source: Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Detailed Project Report (DPR) services play a vital role in defining the essential resources and tasks for a project's success, often acting as the final blueprint before execution. In India, across diverse sectors, infrastructure consulting is instrumental in crafting these reports, guaranteeing project viability and success.

High-speed rail systems, metro corridors, smart city initiatives, renewable energy parks, and port modernization projects require comprehensive technical, financial, and environmental planning. As the emphasis on ESG compliance, sustainability, and climate-resilient infrastructure increases, there is a growing demand for Detailed Project Reports (DPRs) that encompass these essential components.

With India bolstering its power transmission network, encompassing hydroelectric projects (HEPs) and pumped storage projects (PSPs), DPRs are indispensable. Crafted by infrastructure consulting firms, these reports validate project feasibility, fostering investor trust and securing regulatory nods. Notably, the Central Electricity Authority (CEA) has greenlit DPRs for 28 HEPs (totaling 19,460 MW) and four PSPs (amounting to 4,100 MW).

India aims to extend its national highways to 200,000 km by 2025, under the Bharatmala Pariyojana, amplifies the demand for top-tier DPRs. To ensure swift reviews and uphold quality, the National Highways Authority of India (NHAI) has established a DPR evaluation cell. Infrastructure consulting firms play an instrumental role in crafting these reports, ensuring seamless project execution and viability. Infrastructure consulting stands as a cornerstone of India's infrastructural advancements, ensuring DPRs are meticulously crafted to attract investments, regulatory standards, and guarantee the triumphant rollout of major projects.

The expansion of infrastructure in India, highlighted by a 14.4% CAGR in the DPR sector, emphasizes the urgent necessity for well-structured project documentation. This increasing demand not only strengthens the infrastructure consulting market but also heightens the requirement for specialized firms proficient in DPR services, engineering design, cost estimation, and risk assessment. Furthermore, the integration of technology-driven project planning tools enhances the capabilities of these consulting firms, solidifying their significance in the narrative of India's infrastructure development.

India Infrastructure Consulting Market, Market segmentation by industry within service type in INR billion, FY 2021 to FY 2030 (Forecast):

Detailed Project Reports (DPR)	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	16.91	18.36	22.38	27.48	31.78	37.36	43.85	51.37	60.09	70.26
Water Supply & Sanitation (WSS)	4.31	5.68	6.41	7.38	8.51	9.54	10.49	11.44	12.41	13.42
Irrigation & Water Resources	6.24	7.96	8.56	10.36	11.76	13.11	14.37	15.59	16.80	17.97
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	13.63	17.96	19.74	22.49	26.34	30.50	35.06	40.25	46.13	52.69
Metro	4.26	5.58	6.04	6.79	7.95	9.27	10.79	12.52	14.45	16.59
Others*	49.25	61.12	72.37	85.56	98.86	113.89	130.79	149.76	170.04	191.37
Total Detailed Project Reports (DPR)	**94.60**	**116.66**	**135.51**	**160.06**	**185.19**	**213.67**	**245.34**	**280.93**	**319.94**	**362.29**

Source: ICRA Analytics, Mordor Intelligence

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

India Infrastructure Consulting Market, Market segmentation by industry within service type in % terms, FY 2021 to FY 2030 (Forecast):

Detailed Project Reports (DPR)	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	18%	16%	17%	17%	17%	17%	18%	18%	19%	19%
Water Supply & Sanitation (WSS)	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%
Irrigation & Water Resources	7%	7%	6%	6%	6%	6%	6%	6%	5%	5%
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	14%	15%	15%	14%	14%	14%	14%	14%	14%	15%
Metro	5%	5%	4%	4%	4%	4%	4%	4%	5%	5%
Others*	52%	52%	53%	53%	53%	53%	53%	53%	53%	53%
Total Detailed Project Reports (DPR)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

Key trends for Detailed Project Report in India

- To develop Lakshadweep as a tourist hub, the Indian government plans eight projects hotels, resorts, transport connectivity, and related facilities to position the islands as a tourist hub similar to the Maldives, which squarely places it within hospitality and allied infrastructure development. The first project, worth INR 3.03 billion, will build jetties and facilities at Kadmath Island, wherein, the funding comes from the Sagarmala Programme and Lakshadweep's resources. The Cochin Port Authority is the Project Management Consultant, and Assystem India Limited, Chennai, is preparing the Detailed Project

Report. These initiatives emphasize India's focus on leveraging specialized consulting to drive infrastructure excellence.

- In Goa, the improvement of inland transport connectivity at ports—particularly at the cruise and ferry terminals of Mormugao Port—relies heavily on well-structured Detailed Project Reports (DPRs). Infrastructure consulting firms play a pivotal role in preparing these reports and driving investments, including a significant allocation of INR 1.02 billion (USD 12.21 million). In line with this approach, the Ministry of Ports, Shipping, and Waterways is also developing DPRs for coastal jetties to enhance port efficiency and reduce congestion. This highlights the crucial contribution of consultants providing the DPR services, in advancing India's infrastructure transformation.

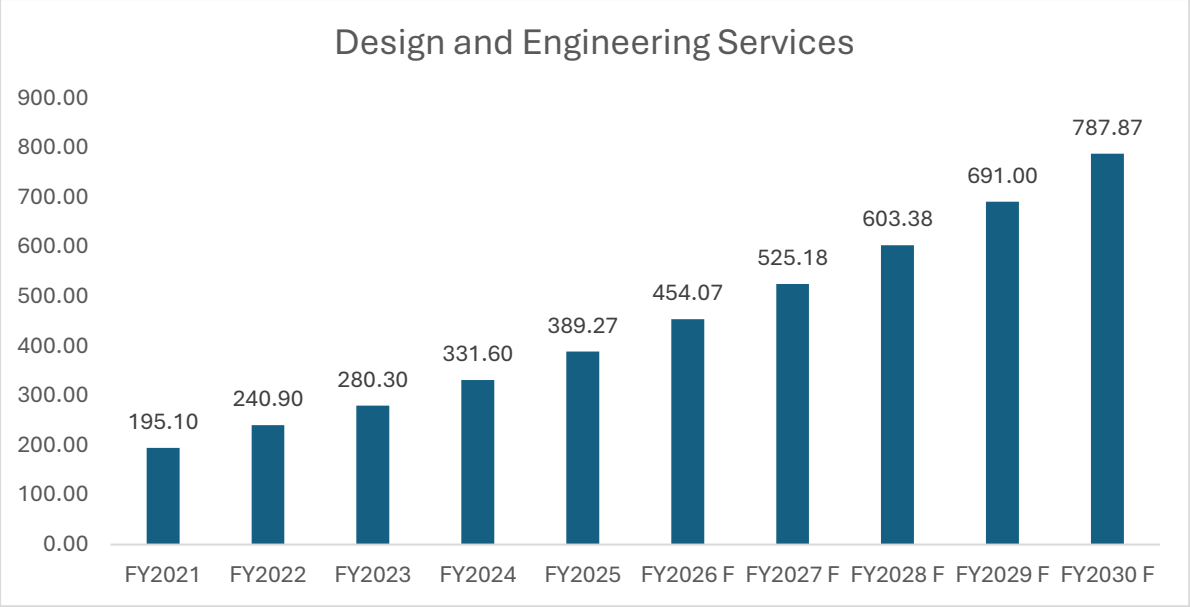
Key trends for Detailed Project Report globally

- For developing Detailed Project Reports (DPRs), the stakeholders increasingly rely on real-time collaboration tools and cloud platforms. For instance, Jacobs Engineering Group harnesses Autodesk Construction Cloud to provide instant updates and engage stakeholders throughout the DPR preparation. This approach not only allows for swift feedback integration but also bolsters transparency and minimizes delays, ultimately streamlining project delivery timelines.
- DPR services are shifting towards in-depth analyses, covering technical, financial, and environmental facets of the projects. This holistic approach guarantees that projects are viable and fine-tuned for efficiency and sustainability. The demand for thorough feasibility studies and risk assessments has surged with the increasing complexity of infrastructure projects.
- A DPR evaluates a project's environmental and social impact, ensuring sustainability and responsible practices. It guides stakeholders through all project phases and improving success rates, thereby serving as a blueprint. For instance, AECOM, a global consultancy firm, used DPR services in the Nairobi Hospital Expansion Project in Kenya. AECOM conducted an ESIA(nvironmental and Social Impact Assessment) to assess impacts such as traffic congestion, construction noise, and effects on local water resources.

3.1.4 Design and Engineering Services

The Design and Engineering Services segment of the market was valued at INR 389.27 billion in FY2025, and it is projected to reach INR 787.87 billion in FY2030, recording a CAGR of 15.14% during the forecast period.

Chart 45: Design and Engineering Services segment market value (in INR Billion), FY2021 to FY2030F



Source: Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Design and engineering services, encompassing planning, conceptualization, detailed design, and technical oversight, are pivotal to infrastructure development, as these are vital for ensuring that infrastructure projects are functional, safe, and sustainable, especially in India. Expansion of digital infrastructure, growing demand for design and engineering services in the development of smart cities, and expansion in railway infrastructure has driven growth in India's infrastructure consultancy market.

In India the surge in data centers has opened avenues for infrastructure consulting. Leighton Asia, a subsidiary of ACS, aiming for the prestigious LEED Gold certification, clinched contracts in Hyderabad, underscoring its dedication to sustainable design. Further, ACS, with emphasizing the pivotal role of consulting in the realm of digital infrastructure, is broadening its horizons through strategic acquisitions and collaborations with tech companies. Moreover, for the Smart Cities Mission, the Union Budget 2024-25 earmarked INR 24 billion. Paving the way for sophisticated infrastructure solutions, the consulting services are instrumental in weaving IoT and ICT technologies into urban planning.

In Odisha, Jharkhand, West Bengal, and Chhattisgarh, the design and engineering services are making a way in railway infrastructure in recent approvals totalling INR 64.56 billion for railway projects, highlighting the growing demand for infrastructure consulting. Consulting firms are poised to play a pivotal role with the Indian Railways network expanding by an additional 300 km, offering their expertise in multi-tracking, new line design, and project oversight. In summary, India's infrastructure consulting sector is leading the charge in these evolving domains, armed with cutting-edge tools and a commitment to sustainability.

In recent report by Bloomberg, it has been stated that India is planning to invest USD 3.4 billion (around ₹30,000 crore) to build about 500 km of new railway lines, along with associated bridges and tunnels. The project aims to improve strategic connectivity in remote border areas with China, as well as to enhance logistics and access for both civilian and military purposes. The timeline for completion is projected to be about four years from the start. In summary, India's infrastructure consulting sector is leading the charge in these evolving domains, armed with cutting-edge tools and a commitment to sustainability.

India Infrastructure Consulting Market, Market segmentation by industry within service type in INR billion, FY 2021 to FY 2030 (Forecast):

Design and Engineering Services	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	32.76	35.60	43.46	53.42	61.84	72.80	85.54	100.33	117.53	137.58
Water Supply & Sanitation (WSS)	7.56	9.99	11.29	13.02	15.05	16.91	18.61	20.34	22.12	23.95
Irrigation & Water Resources	12.23	15.69	16.96	20.61	23.53	26.37	29.07	31.69	34.34	36.92
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	21.20	28.19	31.26	35.95	42.48	49.66	57.60	66.75	77.20	88.99
Metro	6.83	8.95	9.71	10.92	12.81	14.96	17.43	20.26	23.42	26.91
Others*	114.51	142.52	167.60	197.64	233.56	273.38	316.92	364.00	416.39	473.50
Total Design and Engineering Services	**195.09**	**240.94**	**280.28**	**331.56**	**389.27**	**454.07**	**525.18**	**603.38**	**691.00**	**787.87**

Source: ICRA Analytics, Mordor Intelligence

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

India Infrastructure Consulting Market, Market segmentation by industry within service type in % terms, FY 2021 to FY 2030 (Forecast):

Design and Engineering Services	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	17%	15%	16%	16%	16%	16%	16%	17%	17%	17%
Water Supply & Sanitation (WSS)	4%	4%	4%	4%	4%	4%	4%	3%	3%	3%
Irrigation & Water Resources	6%	7%	6%	6%	6%	6%	6%	5%	5%	5%
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	11%	12%	11%	11%	11%	11%	11%	11%	11%	11%
Metro	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%
Others*	59%	59%	60%	60%	60%	60%	60%	60%	60%	60%
Total Design and Engineering Services	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

Key trends for Design and Engineering Services in India

- First high-speed rail line with Japanese Shinkansen technology, the Mumbai-Ahmedabad High-Speed Rail Corridor, benefits from Japan International Consultants for Transportation (JIC) offering consultancy, design, and construction oversight.
- In India's infrastructure landscape, with Tata Consulting Engineers (TCE) leading the charge, green retrofitting has taken center stage. One of their standout projects involved upgrading the lighting systems at Rashtrapati Bhavan, resulting in a marked reduction in energy use. TCE's efforts align seamlessly with India's bold aspirations for green buildings by harnessing cutting-edge technologies such as intelligent building management systems (IBMS) and integrating renewable energy sources.
-
- T
- To craft cohesive urban mobility systems, the consulting firms are harnessing advanced modeling tools. These systems encompass high-speed rail, BRT, pedestrian pathways, and cycling infrastructure, such as in the Mumbai-Ahmedabad High-Speed Rail (MAHSR) project. The project integrates design services, environmental assessments, and traffic modeling with renowned consultancy firms, all aimed at boosting connectivity and championing sustainable urban mobility.

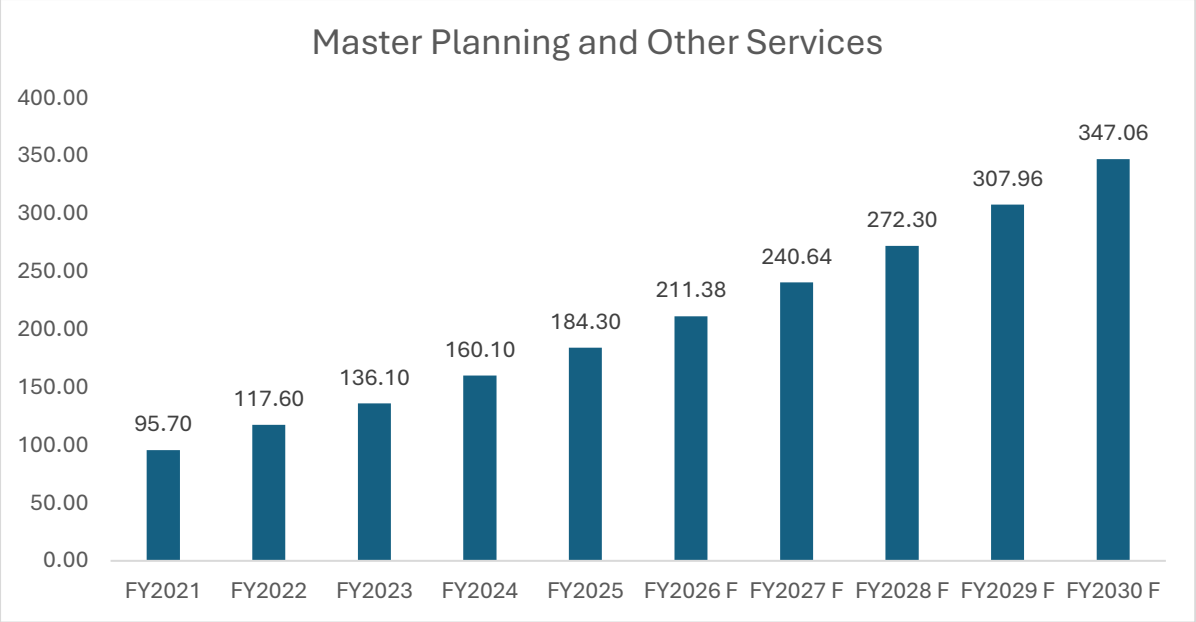
Key trends for Design and Engineering Services globally

- Design and engineering services play a vital role in urban redevelopment, addressing the needs of growing urban populations while confronting environmental and social challenges. For instance, the Mumbai Trans-Harbour Link (MTHL), which was Spearheaded by L&T and Tata Projects, with consulting expertise from ARUP and AECOM, the project marries state-of-the-art engineering with sustainable practices. Features such as seismic-resistant structures and sophisticated tolling systems not only elevate the user experience but also bolster operational efficiency.

3.1.5 Master Planning and other services

The Master Planning and Other Services segment of the market is valued at INR 184.30 billion in FY2025, and it is projected to reach INR 347.06 billion in FY2030F, recording a CAGR of 13.49% during the forecast period.

Chart 46: Master Planning and other services segment market value (in INR Billion), FY2021 to FY2030F



Source: Mordor Intelligence, ICRA Analytics
Note: F: Forecasted
E: Estimated

Master planning and related services set a clear vision for sites, neighborhoods, or city districts, thereby addressing the land use, infrastructure, and zoning, guiding future development and creating design guidelines. In India, infrastructure consulting firms play a pivotal role in driving these services. Population growth and urban planning, upgradation of transport infrastructure and planning to tackle the housing crisis in India are driving India's master planning and other services.

In cities such as Delhi, Mumbai, and Kolkata, infrastructure has been strained by rapid population growth, leading to housing shortages, sanitation challenges, and reduced green spaces. Consulting firms, craft adaptive policies and master plans for cities such as Noida and Gurgaon, by collaborating on large-scale urban planning projects, emphasizing sustainability, a long-term vision, and regional connectivity.

Moreover, for implementation of government initiatives such as the PM Gati Shakti National Master Plan, which seeks to double transportation routes and alleviate congestion, infrastructure consultants play a vital role. Their expertise is pivotal for projects such as the Ministry of Railways' proposed INR 5,250 billion investments (FY2024–FY2031), ensuring efficient implementation to enhance freight movement and boost its modal share.

Governments partner with consulting firms on master plans for Tier-1 cities such as Delhi, Mumbai, and Bangalore, wherein the consulting firms contribute to strategies for plans such as the Mumbai Master Plan 2034 and Master Plan Delhi 2041. These initiatives open no-development zones for residential use, champion affordable housing under the "Housing for All" initiative, and promote mixed-use developments, optimizing land use and proximity to workplaces and amenities. India's infrastructure consulting firms are

central to urban transformation, through strategic guidance and technical expertise, championing sustainable growth and enhancing the quality of life.

India Infrastructure Consulting Market, Market segmentation by industry within service type in INR billion, FY 2021 to FY 2030 (Forecast):

Master Planning and Other Services	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	16.49	17.77	21.50	26.17	30.06	35.09	40.85	47.45	55.00	63.68
Water Supply & Sanitation (WSS)	5.04	6.59	7.37	8.4	9.60	10.68	11.62	12.55	13.47	14.40
Irrigation & Water Resources	8.00	10.38	11.35	13.93	16.10	18.25	20.35	22.43	24.56	26.67
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	14.02	18.13	19.55	21.83	25.08	28.47	32.04	35.98	40.28	44.88
Metro	3.16	4.14	4.50	5.07	5.95	6.97	8.14	9.47	10.95	12.59
Others*	48.99	60.55	71.78	84.67	97.50	111.93	127.65	144.43	163.70	184.85
Total Master Planning and Other Services	**95.7**	**117.57**	**136.05**	**160.06**	**184.30**	**211.38**	**240.64**	**272.30**	**307.96**	**347.06**

Source: ICRA Analytics, Mordor Intelligence

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

India Infrastructure Consulting Market, Market segmentation by industry within service type in % terms, FY 2021 to FY 2030 (Forecast):

Master Planning and Other Services	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026F	FY2027F	FY2028F	FY2029F	FY2030F
Roads & Highways	17%	15%	16%	16%	16%	17%	17%	17%	18%	18%
Water Supply & Sanitation (WSS)	5%	6%	5%	5%	5%	5%	5%	5%	4%	4%
Irrigation & Water Resources	8%	9%	8%	9%	9%	9%	8%	8%	8%	8%
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	15%	15%	14%	14%	14%	13%	13%	13%	13%	13%
Metro	3%	4%	3%	3%	3%	3%	3%	3%	4%	4%
Others*	51%	52%	53%	53%	53%	53%	53%	53%	53%	53%
Total Master Planning and Other Services	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Others include Building, Power & renewables, Urban Infrastructure, Metals & Mining, Airports, Ports & Ropeways, Logistic Hubs & Inland Container Depots (ICDs), Geospatial, Digital Engineering (software development for infra projects)

Note: F: Forecasted

E: Estimated

Key trends for Master Planning and other services in India

- In India, the push for sustainable urban solutions is fueled by effective governance and policy-making, leading to a surge in demand for infrastructure consulting services. Collaboration between consulting firms and local governments has been exemplified as noticed in cities such as Pune, Hyderabad, and Jaipur. Together, they craft inclusive master plans that prioritize public transportation, sustainable housing, and efficient waste management. These collaborations guarantee that governance driven initiatives are in harmony with strategic urban planning, ultimately aiming to uplift the quality of life while minimizing ecological footprints.

- To streamline urban freight and logistics, the Centre has introduced a 'City Logistics Master Plan' for metros such as Delhi and Bengaluru. Global infrastructure consulting firms are key contributors, optimizing freight systems to decongest cities, lower logistics costs, reduce pollution, and improve urban life. Further, this aligns with the government's goals of enhancing Ease of Doing Business (EoDB) and achieving carbon NetZero by 2070. With integrating advanced strategies and sustainable solutions to meet global standards while promoting cost-effective and eco-friendly systems aligned with India's long-term goals, consulting firms leverage global best practices to address unique challenges in Indian cities.
- To improve connectivity and mobility through multimodal networks, transit-oriented developments, and smart city projects, consulting firms have been designing master plans. Examples include national initiatives such as the PM Gati Shakti National Master Plan to optimize transport infrastructure aligned with Mumbai's Master Plan 2034 and metro expansions such as Metro 3.
-

Key trends for Master Planning and other services globally

- Sustainability is being prioritized by consulting firms in India, integrating green spaces, efficient transport, and eco-friendly infrastructure. The consulting firms balance urban density with environmental goals, adapting global practices such as New York's and Chicago's green roofs and San Francisco's zero-waste initiatives to India's context, under the "Housing for All" initiative.

3.2 Estimated market size of infrastructure consulting industry in India

(In value terms over last five years FY2021-FY2024 and expected growth projection FY2025F-FY2030F)

Infrastructure consulting in India involves providing expert advisory services across various sectors, including transportation, utilities, social infrastructure, and urban development. These services encompass strategic planning, project management, regulatory compliance, and the integration of sustainable and smart solutions. The Indian government has launched several initiatives including National Industrial Corridor Development Programme (NICDP), Smart Cities Mission, National Infrastructure Pipeline (NIP) etc. These initiatives have created significant opportunities for infrastructure consulting firms in India, as they require expertise in planning, execution, and management to achieve their objectives. The total infrastructure consulting industry stood at INR 1275.6 billion during FY2024 and is expected to grow at a CAGR of ~15% during FY2024 to FY2030 to reach a market value of INR 2935.09 billion.

3.2.1 Key aspects of Infrastructure consulting in India:

a. **Strategic Planning and Feasibility Analysis**:

   - Consultants assess the technical, financial, and environmental feasibility of a project.

- They help clients develop detailed business cases and identify risks and opportunities.

b. **Project Management and Execution**:
   - Managing the entire lifecycle of infrastructure projects, from initiation to completion.
   - Ensuring projects adhere to timelines, budgets, and quality standards.

c. **Regulatory and Policy Advisory**:
   - Providing insights into government policies, legal frameworks, and compliance requirements.
   - Supporting clients in obtaining necessary permits and approvals.

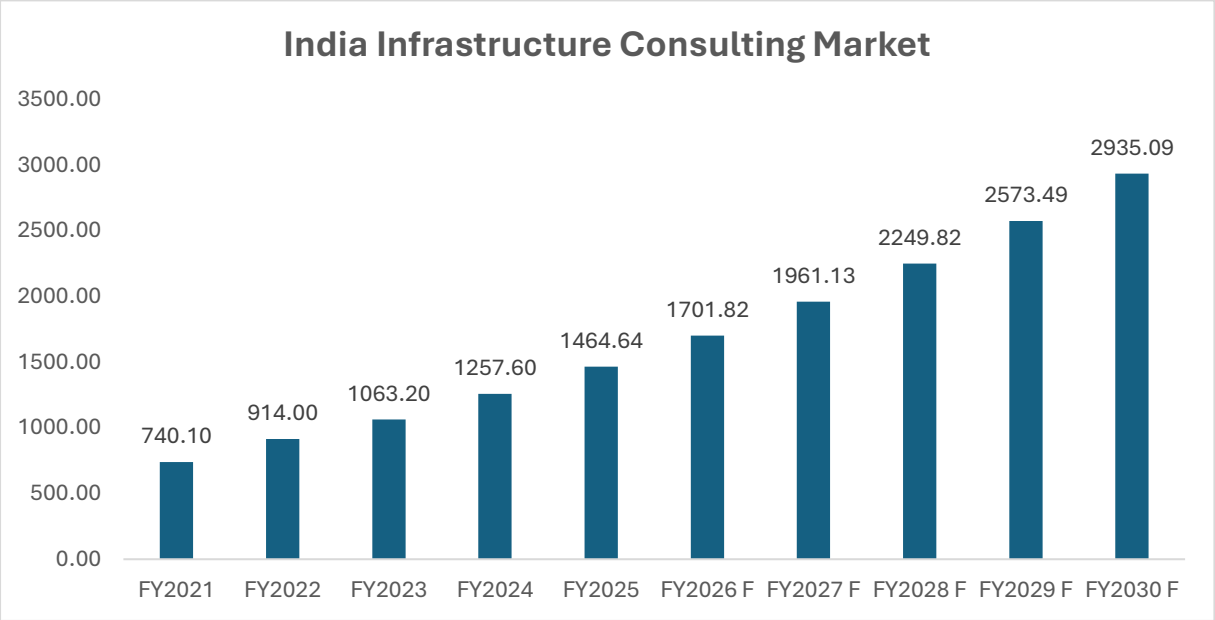
d. **Public-Private Partnerships (PPP)**:
   - Structuring PPP models to encourage collaboration between government and private players.
   - Helping with financing, revenue modelling, and risk-sharing mechanisms.

e. **Design and Engineering Services**:
   - Offering expertise in architectural design, structural engineering, and technology integration.
   - Optimizing resources to create sustainable and cost-effective solutions.

f. **Sustainability and Smart Solutions**:
   - Incorporating eco-friendly and smart technologies into projects.
   - Aligning with India's push for sustainable development, such as renewable energy and smart cities.

g. **Investment and Financial Advisory**:
   - Helping clients secure funding through banks, private equity, or government grants.
   - Advising on financial structuring, cost optimization, and return on investment.

Chart 47: India Infrastructure Consulting Market, value In INR billion, from FY2021 to FY2030 (F)



Source: Actual Figure: Indian Budget, Ministry of Housing and Urban Affairs (MoHUA), Ministry of Road Transport and Highways (MoRTH) / National Highways Authority of India (NHAI), Ministry of Power / Power Grid Corporation of India, Ministry of Railways / Indian Railways, ICRA Analytics.
Forecast: Mordor Intelligence, IBEF, The Green Governance Initiative (GGI), International Water Management Institute (IWMI
Note: F: Forecasted
E: Estimated

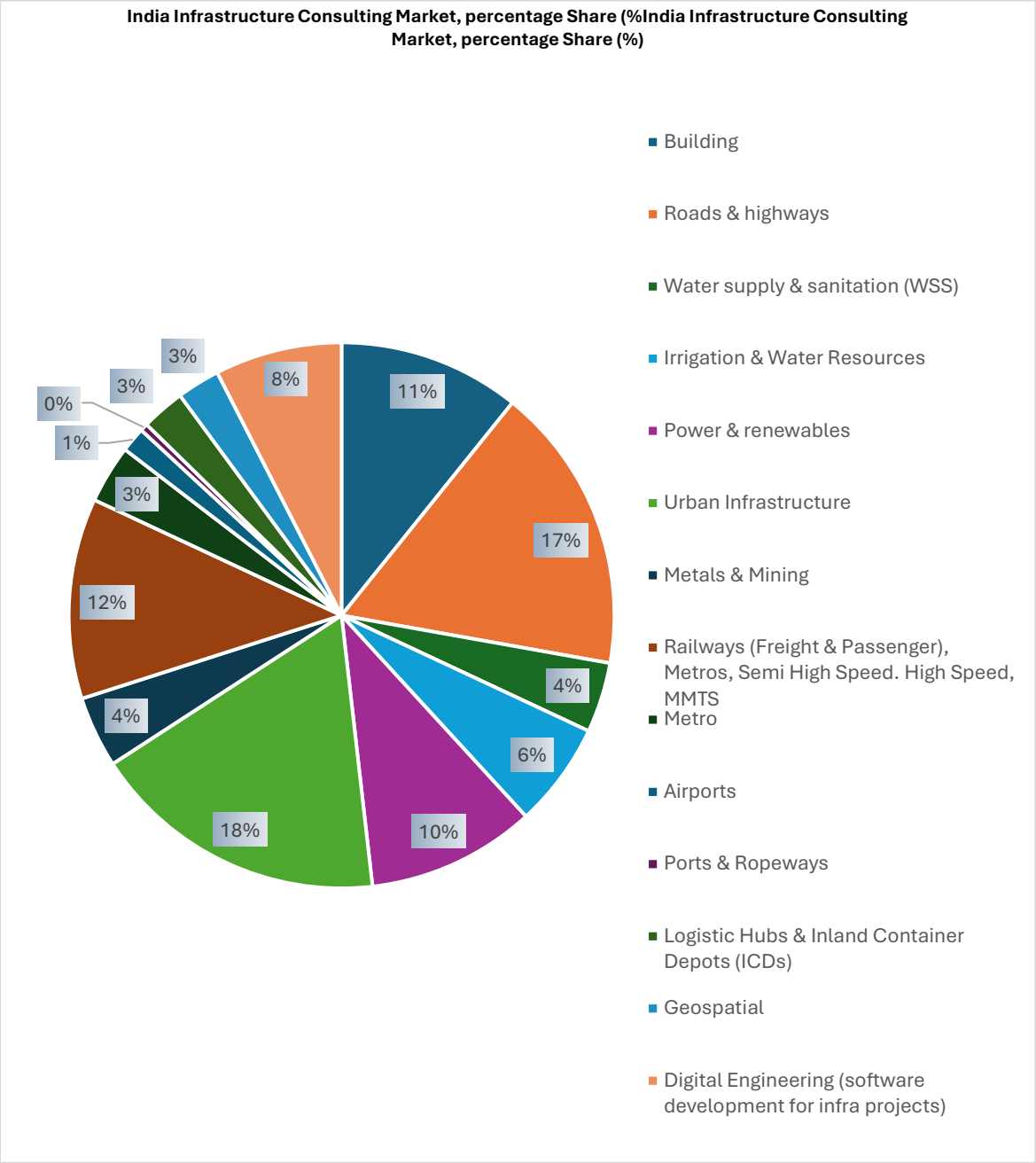
3.3 Infra consulting market in India

Table: Estimated share of following segments in total infra consulting market in India (FY2021 to FY2025 and forecast from FY2026F--FY2030F for block of five years), in INR billion

By Industry	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026F	FY 2027F	FY 2028F	FY 2029F	FY 2030F
Building	77.40	87.20	114.30	135.50	154.08	176.72	201.21	226.95	253.83	280.89
Roads & highways	129.50	141.40	173.40	214.20	249.12	294.66	347.89	410.01	482.58	567.64
Water supply & sanitation (WSS)	30.10	39.90	45.30	52.30	60.63	68.32	75.43	82.68	90.14	97.90
Irrigation & Water Resources	45.60	58.90	64.00	78.20	89.81	101.20	112.21	123.04	134.09	145.02
Power & renewables	70.80	93.00	101.40	125.80	148.30	173.32	199.41	227.38	257.79	290.39
Urban Infrastructure	127.70	168.60	189.50	222.00	258.06	298.80	340.84	385.87	434.32	487.11
Metals & Mining	31.70	42.20	44.20	53.10	60.78	68.71	76.65	84.83	93.43	102.66
Railways (Freight & Passenger), Semi High Speed, High Speed, MMTS	89.20	118.20	130.50	149.50	175.99	204.93	236.80	273.33	314.93	361.61
Metro	26.70	35.10	38.30	43.30	51.07	59.98	70.26	82.09	95.39	110.19
Airports	11.50	13.50	17.30	18.60	21.29	23.74	26.09	28.31	30.62	33.13
Ports & Ropeways	3.30	3.50	4.50	5.70	6.52	7.31	8.09	8.86	9.63	10.38
Logistic Hubs & Inland Container Depots (ICDs)	21.40	24.50	28.40	32.50	37.79	44.19	52.41	62.77	75.83	91.92
Geospatial	19.50	23.50	26.90	32.10	38.32	45.71	54.78	65.87	79.37	95.80
Digital Engineering (software development for infra projects)	55.70	64.30	85.30	94.70	112.87	134.21	159.05	187.84	221.55	260.44
Total	**740.10**	**914.00**	**1063.20**	**1257.60**	**1464.64**	**1701.82**	**1961.13**	**2249.82**	**2573.49**	**2935.09**

Source: Actual Figure: Indian Budget, Ministry of Housing and Urban Affairs (MoHUA), Ministry of Road Transport and Highways (MoRTH) / National Highways Authority of India (NHAI), Ministry of Power / Power Grid Corporation of India, Ministry of Railways / Indian Railways, ICRA Analytics.
Forecast: Mordor Intelligence, IBEF, The Green Governance Initiative (GGI), International Water Management Institute (IWMI)
Note: F: Forecasted
E: Estimated

Chart: India Infrastructure Consulting Market, percentage Share (%), by Industry, FY2025

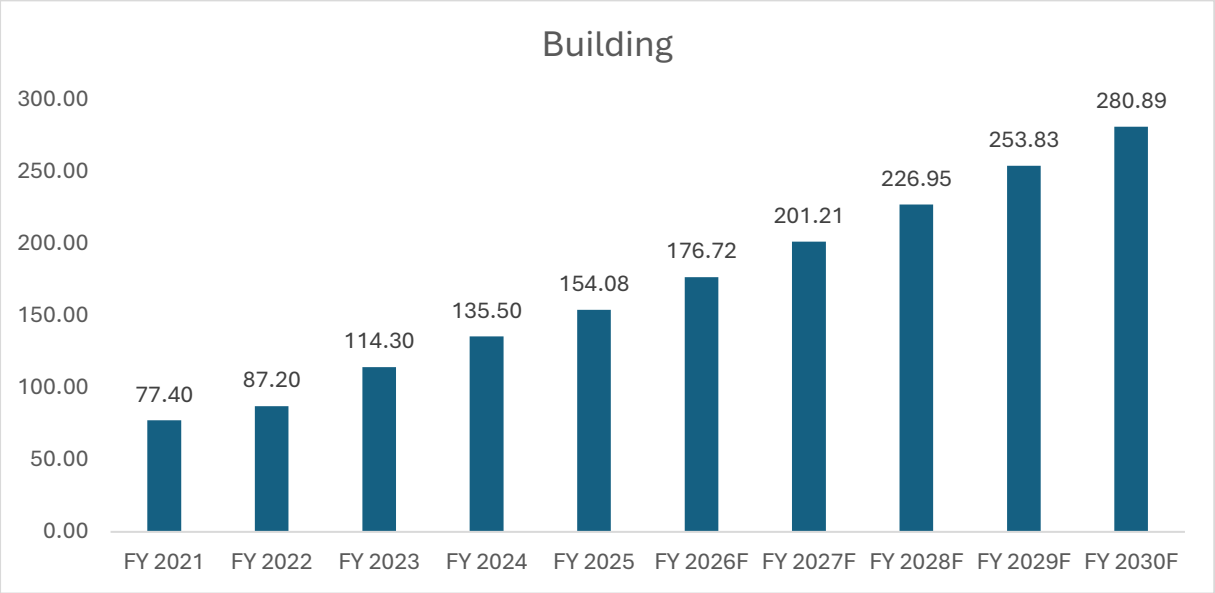


Source: Actual Figure: Indian Budget, Ministry of Housing and Urban Affairs (MoHUA), Ministry of Road Transport and Highways (MoRTH) / National Highways Authority of India (NHAI), Ministry of Power / Power Grid Corporation of India, Ministry of Railways / Indian Railways. ICRA Analytics
Forecast: Mordor Intelligence, IBEF, The Green Governance Initiative (GGI), International Water Management Institute (IWMI)

3.3.1 Building

The building sector of the market was assessed at INR 154.08 billion for FY2025, with expectations to grow to INR 280.89 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 12.76% throughout the forecast period.

Chart 48: India Infrastructure Consulting Market, Value in INR billion, by Industry, Building, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Housing and Urban Affairs (MoHUA), Central Public Works Department (CPWD), ICRA Analytics.
Forecast: NIP, Statista, World Bank, Mordor Intelligence
Note: F: Forecasted
E: Estimated

India's infrastructure consulting market in the building segment is witnessing significant growth, driven by government initiatives, rapid urbanization, and technological advancements. Policies such as the Pradhan Mantri Awas Yojana-Urban (PMAY-U) have played a crucial role in shaping this sector by promoting urban infrastructure and affordable housing. For Building sector, Ministry of Housing and Urban Affairs in Union Budget 2025-26 has allocated a total of INR 967.77 billion.

Government Initiatives & Housing Development: As of July 29, 2025, INR 1.23 crore (12.3 million) houses have been sanctioned under the scheme, and about 78 lakh (7.8 million) have been completed. These large-scale projects highlight the increasing demand for infrastructure consulting services to manage planning, execution, and compliance effectively.

Sustainable Urban Development: With India aligning with global climate goals, sustainability has become a core focus in urban development. Green building practices and energy-efficient technologies are now integral to modern infrastructure projects. Consultants play a vital role in incorporating these eco-friendly solutions, ensuring adherence to environmental regulations, and optimizing project sustainability.

Modern Methods of Construction (MMC): The adoption of innovative construction techniques, such as prefabrication and modular technologies, is transforming the industry. Infrastructure consultants provide critical guidance on feasibility studies, material selection, and project management, helping clients meet ambitious infrastructure objectives while enhancing efficiency.

Enhancing Efficiency & Sustainability: By leveraging advanced construction methodologies, consultants are instrumental in reducing waste, accelerating project timelines, and improving overall efficiency. Their expertise is crucial in enabling sustainable urbanization and addressing India's evolving infrastructure challenges.

FDI & Private Sector Engagement Boosting Infrastructure Consulting: The 100% allowance of foreign direct investment in real estate is increasing the demand for consulting services in investment planning and risk evaluation. Companies are assisting international investors with strategies for market entry and conducting due diligence for significant construction initiatives.

Green & Sustainable Construction Consulting on the Rise: Consulting firms are leading the initiative for projects that achieve LEED and IGBC certification, with a strong focus on energy-efficient technologies. These consultants are advising developers on the implementation of AI-driven energy management systems and the creation of climate-resilient designs.

As India continues to invest in its urban infrastructure, the role of infrastructure consultants will become even more pivotal, ensuring that projects are strategic, sustainable, and future-ready.

Trends in India:

- **The Rapid Integration of Prefabricated and Modular Construction in India's Building Sector:** Innovative construction techniques such as prefabrication and modular construction are transforming India's infrastructure landscape, allowing for quicker, more economical, and environmentally friendly project completion. The remarkable achievement of EPACK Prefab, which constructed a 151,000 sq. ft. facility in Andhra Pradesh in just 150 hours, exemplifies this significant transition.
- **The Transformation of Infrastructure Consulting in India through BIM:** Building Information Modelling (BIM) significantly improves the efficiency of planning, design, and cost management, aligning with the infrastructure objectives of India, bolstered by governmental initiatives. The Smart Cities Mission, which aims to develop 100 cities by 2030, underscores the importance of BIM in facilitating accurate planning and the sustainable execution of projects, thereby propelling infrastructure development.
- **Urban Population Growth Drives Demand for Infrastructure Consulting:** The increasing urban population necessitates the development of affordable and sustainable housing, thereby creating significant opportunities for infrastructure consulting firms. These firms are instrumental in various initiatives, including the MHADA, DDA Housing Scheme, and TNHB Scheme, providing essential expertise in planning, design, and execution to effectively address housing needs.

Trends in Global:

- **Infrastructure Consulting to Grow in 2025:** Recovering construction spending, supported by easing inflation and anticipated interest rate cuts, is set to boost demand

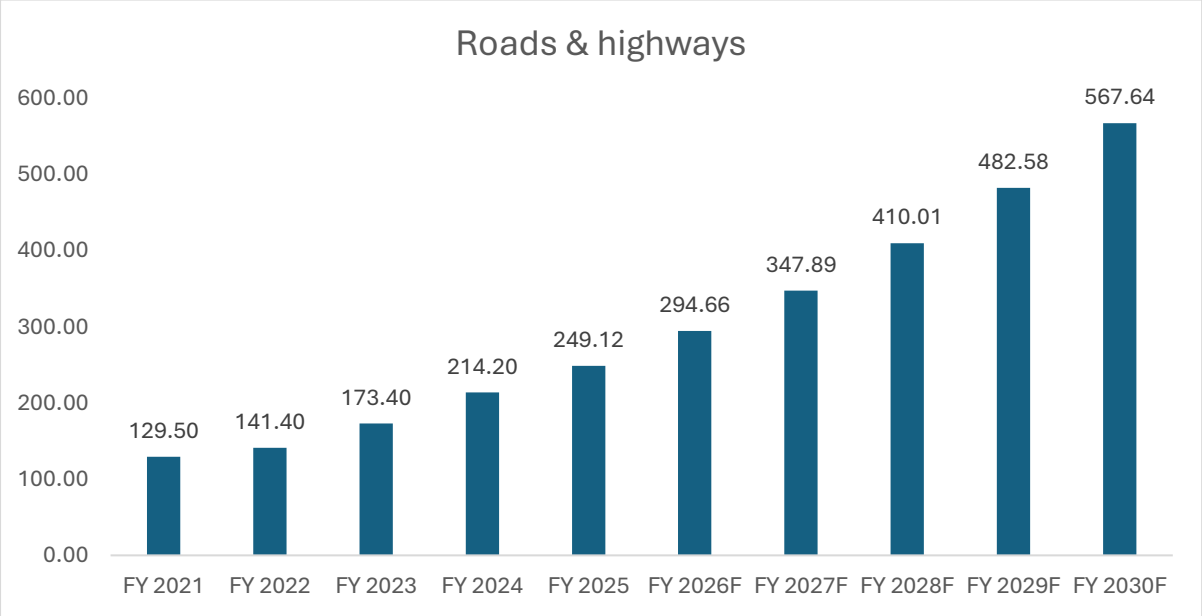
for infrastructure consulting. Government initiatives and investments in green energy will further drive growth, with consulting firms playing a central role in delivering sustainable projects. In North America, despite mixed trends in residential construction, consultants are expected to find opportunities in healthcare and multifamily housing, fueled by urbanization and demographic changes.

- **Infrastructure Consulting Shapes Workforce Development in Response to Labor Shortages:** Construction companies are increasingly relying on infrastructure consulting firms to design workforce development programs. These initiatives emphasize training in advanced technologies and sustainable practices, enhancing efficiency and fostering innovation in global infrastructure projects.
- **Regional Dynamics:** While North America and Europe remain key markets for construction, the rapid urbanization of the Asia-Pacific region is creating fresh opportunities for consulting firms. To meet the region's rising demand for innovative and sustainable infrastructure, firms are expanding and diversifying their service offerings

3.3.2 Roads and Highways

The Roads & Highways sector of the market was assessed at INR 249.12 billion for FY2025, with expectations to grow to INR 567.64 billion by FY2030, reflecting a CAGR of 17.91% throughout the forecast period.

Chart 49: India Infrastructure Consulting Market, Value in INR billion, by Roads and Highways, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Road Transport and Highways (MoRTH), National Highways Authority of India (NHAI), Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, NIP, IBEF, Ministry of Road and Highways, NHAI
Note: F: Forecasted
E: Estimated

India's infrastructure consulting market places a strong focus on roads and highways, recognizing their critical role in driving economic growth and urbanization. Consulting firms are pivotal in supporting government initiatives, attracting investments, and integrating sustainability and

technology into infrastructure projects. For roads and highways sector, Ministry of Road Transport and Highways in Union Budget 2025-26 has allocated a total of INR 2873.33 billion.

Strengthening Road Infrastructure: Over the past decade, infrastructure consultants have played a crucial role in enhancing India's road network. Working closely with the National Highways Authority of India (NHAI), they have contributed to highway expansion, rural connectivity improvements, and road safety enhancements.

India's infrastructure development continues to be driven by major investments in the National Highways network, with a strong focus on enhancing connectivity for goods and passenger movement. Key undertakings include the construction of new highways, upgrading economic corridors, developing feeder routes, and building roads along international borders, coastal regions, and Greenfield expressways. As of June 2025, the National Highways network is set to expand from 91,287 km in 2014 to 1,46,342 km, with 7.8 lakh km of rural roads completed to strengthen the overall network. Access-controlled National High-Speed Corridors/Expressways have surged from just 93 km in 2014 to 2,636 km by June 2025. Notably, daily National Highway construction has increased by 142% since 2014, while annual construction length rose from 4,410 km in 2014–15 to 10,660 km. Technological advancements have also been noteworthy, with the Eastern Peripheral Expressway becoming India's first solar-powered expressway, completed in a record 500 days.

The ministry is expected to adopt a corridor-based approach to highway infrastructure development, which will emphasize the establishment of consistent standards, user convenience, and logistics efficiency, in contrast to the previous project-based approach that primarily addressed localized congestion issues. This corridor strategy has already facilitated the identification of a network comprising 50,000 kilometers of high-speed highway corridors, derived from a scientific transport study utilizing GSTN and toll data, aimed at supporting India's ambition to evolve into a USD 30 trillion economy by 2047.

By the conclusion of the current fiscal year, the ministry aims to expand the operational length of high-speed corridors (HSC) to 4,827 kilometres. As of December 2024, the ministry has successfully operationalized 4,693 kilometers of HSC across the nation. Additionally, the ministry is likely to issue bids transparently for a multi-party interoperable system designed for a barrier-free toll collection system, leveraging satellite navigation technology.

Significant projects such as the 1,350 km Delhi-Mumbai Expressway (costing INR 1,000 billion) and the Mumbai Coastal Road Project (valued at INR 139.8 billion) are designed to improve connectivity, decrease travel times, and enhance fuel efficiency. These projects require consulting services for effective planning, design, environmental evaluations, and the integration of advanced technologies. Additionally, the Brihanmumbai Municipal Corporation (BMC) has engaged consultants for its multi-modal tunnel connectivity project in Mumbai.

The Bharatmala Pariyojana remains a cornerstone of this infrastructure push, with recent updates (August 2025) highlighting the development of Multi-Modal Logistics Parks (MMLPs) at 35 strategic locations across India, including Chennai, Bengaluru, Nagpur, and Indore. These parks, driven by both public and private initiatives, are designed to centralize warehousing and logistics operations, reducing costs and improving efficiency, with five MMLPs expected to

commence operations by 2027. Phase 1 of Bharatmala, originally planned for 2017–2022 but now extended to 2027–28, targets 34,800 km of highways at an estimated cost of ₹5.35 lakh crore, comprising 24,800 km of new roads and 10,000 km of incomplete works under NHDP. By mid-2025, 26,425 km had been awarded, of which 20,770 km were completed, including major progress in states such as Madhya Pradesh (1,570 km of 1,913 km awarded) and Maharashtra (1,913 km of 2,174 km awarded).

Looking ahead, Bharatmala Phase 2, launched in 2024, emphasizes logistics parks, multi-modal connectivity, and integration with waterways, while Bharatmala 2.0, aligned with India's Vision 2047, seeks to further enhance highway quality, minimize contract disputes, adopt the Build-Operate-Transfer (BOT) model, and strengthen legal frameworks for timely project delivery. Transformative goals under this vision include expanding the number of corridors from six to fifty, increasing the share of freight carried on highways from 40% to 70–80%, and connecting 550 districts compared to 300 earlier, underscoring the government's ambition to create a more robust, efficient, and future-ready road network.

Employment and Socio-Economic Benefits: In the last five years, consultants have supported the construction of 24,050 km of highways, generating significant socio-economic benefits, including 45 crore direct man-days of employment.

Expressway & Access-Controlled Highway Projects: Consulting firms have also been actively involved in NHAI's expressway and access-controlled highway projects, spanning 9,860 km with an estimated budget of INR 4,191.3 billion. Their role includes feasibility assessments, planning, and execution oversight, ensuring that these projects meet the highest efficiency and safety standards.

Additionally, infrastructure consulting services are progressively integrating advanced technologies, including Geographic Information Systems (GIS), Building Information Modeling (BIM), and digital twin technologies. These advancements not only improve project planning, execution, and maintenance but also boost efficiency and reduce project timelines, thereby fostering growth within the industry.

With India's continued focus on road infrastructure development, infrastructure consultants remain key enablers of growth, sustainability, and technological advancement in the sector. Their expertise ensures that projects are executed efficiently, boosting connectivity, economic development, and employment generation across the country.

Trends in India:

- Government Initiatives Propel Ambitious Road Development Plans: In FY2025, the Ministry of Road Transport and Highways intends to award contracts for a total of 12,900 kms, supported by a significant increase in capital expenditure. Infrastructure consultants are essential to this initiative, leading the planning, design, and implementation of high-speed corridors to enhance logistics efficiency.
- Road Infrastructure Experiences Significant Budget Increases: Since FY2019, budget allocations for roads and highways have surged by 272%, escalating from INR 773 billion

to INR 2,873 billion for FY2026. Infrastructure consulting firms are instrumental in optimizing this budget, which constitutes 25% of the overall infrastructure allocation dedicated to roads and highways.

- Urbanization Drives Demand for Enhanced Mobility Solutions: The transport study identifies 4,827 km of high-speed corridors slated to become operational by FY2025. Infrastructure consultants play a pivotal role in both planning and execution, with landmark projects such as the Delhi-Mumbai Expressway boosting regional connectivity. The government's focus is on easing congestion and reducing travel times in rapidly urbanizing regions through consultant-led highway development.

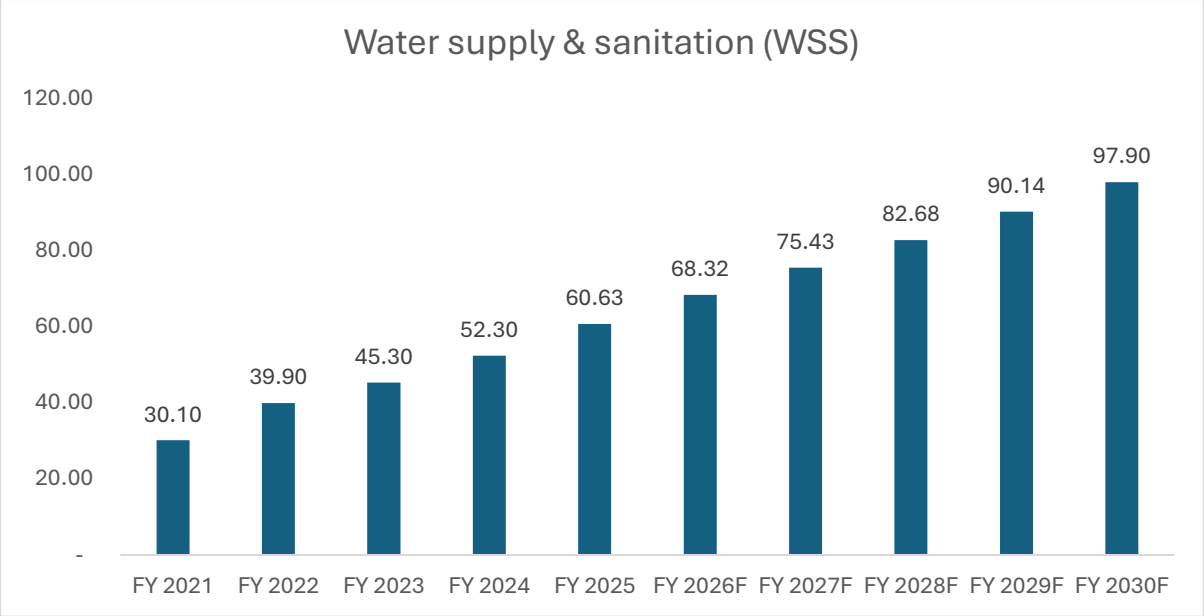
Trends in global:

- The Rapid Urbanization in the Asia-Pacific Region increases the need for Road Consulting Services: The swift pace of urbanization in the Asia-Pacific region is leading to a increasing demand for road and highway consulting services. Significant investments in urban development by China and India are propelling the necessity for sophisticated infrastructure. As road construction shifts towards privatization, consulting firms are capitalizing on new opportunities arising from greater private sector participation in planning, design, and implementation.
- Infrastructure Development in the Middle East Supports Economic Diversification: The substantial investments in infrastructure by Middle Eastern nations aimed at fostering economic diversification are creating a rising demand for infrastructure consulting services. Critical focus areas encompass road construction, smart traffic management technologies, and resilient infrastructure to address urban and environmental challenges, where consulting firms play an essential role in planning, design, and execution.
- Emerging Trends in European Road Infrastructure: European countries are placing a strong emphasis on sustainable infrastructure, with consulting firms adopting environmentally friendly practices. The demand for highway investments is driven by trade, while public-private partnership (PPP) models facilitate effective financing, with consulting services being integral to planning, design, and execution.

3.3.3 Water Supply & Sanitation (WSS)

The Water Supply and Sanitation (WSS) sector was assessed at a value of INR 60.63 billion for FY2025. It is anticipated to grow to INR 97.9 billion by FY2030, at a CAGR of 10.05% throughout the forecast period.

Chart 50: India Infrastructure Consulting Market, Value in INR billion, by Industry, Water Supply and Sanitation (WSS), FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Jal Shakti, Department of Drinking Water and Sanitation, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, World Bank, The Green Governance Initiative (GGI)
Note: F: Forecasted
E: Estimated

India's infrastructure consulting market is increasingly focusing on water supply and sanitation, addressing critical challenges in water management, urban sanitation, and rural hygiene. With rapid urbanization, population growth, and government-driven initiatives, the sector is witnessing accelerated growth, reinforcing the goal of universal access to clean water and sanitation. For WSS sector, Department of Drinking Water and Sanitation in Union Budget 2025-26 has allocated a total of INR 741.92 billion.

On December 17, 2024, Prime Minister Narendra Modi inaugurated a significant initiative designed to tackle the urgent water crisis in India, with a particular emphasis on the state of Rajasthan. This extensive project, estimated at INR 46,300 crore, aims to establish a holistic approach to sustainable water management throughout the region. The initiative will encompass the development of new canals, reservoirs, and water treatment facilities, all of which are crucial for efficient water management. This project will utilize advanced technology to oversee and regulate water resources, thereby fostering sustainable practices.

Massive investments in water infrastructure: In March 2023, India's Minister of Jal Shakti announced at the UN a historic investment of over USD 240 billion in the water sector. This initiative is driving the world's largest dam rehabilitation program, groundwater rejuvenation projects and expanded access to clean drinking water and sanitation facilities

The Role of Consulting Firms: Infrastructure consultants are at the forefront of planning, designing, and executing water and sanitation projects, ensuring sustainability and long-term efficiency. They contribute expertise in optimizing water supply systems, enhancing sanitation infrastructure and implementing eco-friendly and climate-resilient solutions

Technological Advancements: Geographic Information Systems (GIS) and remote sensing are revolutionizing water supply management by improving project oversight and infrastructure maintenance. Smart water technologies enhance efficiency and service delivery, reducing water wastage and promoting sustainability.

Infrastructure Development in Rural Areas: National programs promoting rural water supply and sanitation are fuelling a surge in demand for consulting services, particularly in areas like groundwater management and decentralized sanitation solutions.

As India continues its urbanization drive, the demand for consulting expertise in water supply and sanitation is set to rise. With a strong focus on climate resilience and national water security, infrastructure consultants will play a pivotal role in shaping and executing transformative projects that align with India's long-term water and sanitation goals.

Trends in India:

- Water Access Initiative: Initiated in August 2019 with a financial allocation of INR 3,600 billion, the Jal Jeevan Mission (JJM) is dedicated to providing all rural households with access to safe drinking water by the year 2024. As of November 2024, 79% of rural households had achieved this goal compared to only ~17% in 2019, leading to significant advancements in infrastructure and consulting opportunities within the realms of water distribution and management.
- Swachh Bharat Mission (SBM) Phase II: Initiated in 2020, the second phase of this initiative focuses on sustaining the Open Defecation Free (ODF) status and improving waste management in rural regions. SBM Phase II has generated a significant demand for infrastructure consulting, especially in fields such as waste management, sanitation planning, and rural infrastructure development. This phase has created opportunities for consultants in areas including sewage system design, wastewater treatment, and sustainable waste disposal.
- Sanitation Innovation Framework: The SWACH Accelerator, a collaborative initiative by the India Sanitation Coalition, Innovation Mission Punjab, and IIT Ropar, underscores the expanding role of infrastructure consulting in promoting innovative and scalable sanitation solutions through partnerships with startups and entrepreneurs. The program's focus on fostering public-private dialogue highlights the growing opportunities for consulting firms to facilitate collaborations and enhance private sector involvement in tackling India's water and sanitation issues.

Trends in Global:

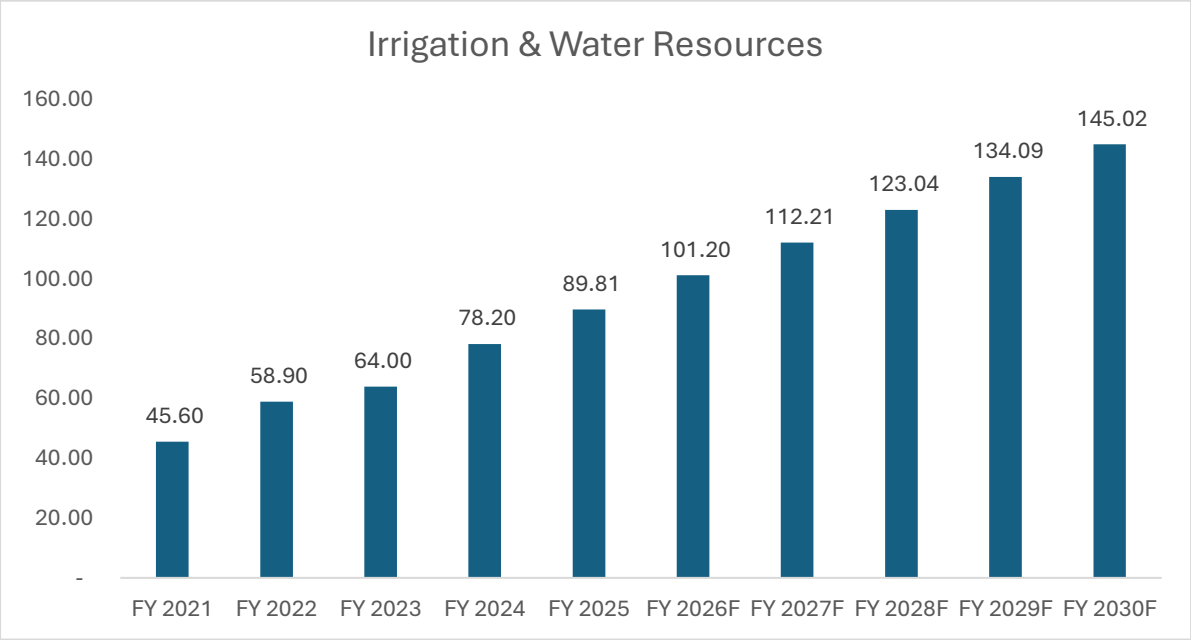
- Enhancing Water Supply and Sanitation (WSS) Services Through Public-Private Partnerships: Nations are increasingly utilizing Public-Private Partnerships (PPPs) to tackle challenges related to WSS, capitalizing on the expertise of the private sector. Consulting firms play a crucial role in structuring contracts, optimizing investments, and ensuring the sustainability of projects. In Armenia, the implementation of PPP contracts with international operators has significantly enhanced WSS services and operational efficiency over the past twenty years, demonstrating the effectiveness of expert-driven PPP models in infrastructure development.

- Innovative Water Management Solutions: The integration of IoT, AI, and data analytics is transforming water management by facilitating real-time monitoring of water quality and distribution systems. Infrastructure consultants are instrumental in ensuring the smooth incorporation of these technologies into existing infrastructures. For example, WINT Water Intelligence's AI platform is capable of detecting leaks in real time, thereby minimizing water waste and associated costs, supported by expert consulting services.
- Strategies For Climate Resilience: In response to increasing climate-related challenges, infrastructure consultants are focusing on the resilient redesign of water supply and sanitation (WSS) systems. In sub-Saharan Africa, these professionals are strengthening urban water systems by integrating sustainable and climate-resilient solutions.

3.3.4 Irrigation & Water Resources

The Irrigation & Water Resources sector of the market was assessed at INR 89.81 billion for FY2025, with expectations to grow to INR 145.02 billion by FY2030, reflecting a CAGR of 10.06% throughout the forecast period.

Chart 51: India Infrastructure Consulting Market, Value in INR billion, by Industry, Irrigation & Water resources, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Central Water Commission (CWC), Ministry of Jal Shakti, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, NIP, International Water Management Institute (IWMI)
Note: F: Forecasted
E: Estimated

The Indian government is advancing irrigation and water resource management through initiatives like the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) and the National Water Policy. These programs focus on enhancing irrigation efficiency, promoting sustainable water use, and increasing stakeholder participation in water management. For Irrigation and water resources sector, Department of Water Resources, River Development and Ganga Rejuvenation in Union Budget 2025-26 has allocated a total of INR 176.43 billion.

Enhancing Irrigation Efficiency: PMKSY encourages modern irrigation techniques, including drip and sprinkler systems, to optimize water use and expand irrigation coverage. With a target of 100% irrigation coverage by 2025, India is working to improve crop water availability and reduce dependence on monsoons.

Major Financial Investments in FY2023: To strengthen irrigation infrastructure, the government approved 14 projects across eight states—Andhra Pradesh, Gujarat, Haryana, Karnataka, Punjab, Rajasthan, Tamil Nadu, and Uttarakhand—under Micro Irrigation Fund (MIF):

Ken-Betwa Link Project (KBLP): Set for completion in 2025, the Ken-Betwa Link Project (KBLP) will irrigate drought-prone areas in Madhya Pradesh and Uttar Pradesh. This ambitious river interlinking project requires advanced engineering, hydrological analysis, environmental impact assessments, and sustainable design.

A key component, the Daudhan Dam, has a contract worth INR 33.89 billion (USD 392 million) awarded to NCC Ltd.

With rising climate concerns, the demand for climate-resilient infrastructure and effective water management solutions is increasing. Consulting firms are playing a crucial role in:

- Designing and implementing sustainable irrigation systems
- Conducting environmental impact assessments
- Providing hydrological and engineering expertise

As India pushes forward with its irrigation modernization efforts, infrastructure consultants will be instrumental in supporting government initiatives, enhancing agricultural productivity, and ensuring long-term water sustainability.

Trends in India:

- Sustainable Water Management: Industries are increasingly implementing Integrated Water Resource Management (IWRM) alongside advanced digital technologies such as big data and machine learning to enhance water governance. The role of infrastructure consulting is vital in improving agricultural irrigation and urban water systems. In 2023, the National Mission for Clean Ganga in India successfully completed 38 projects, contributing to a total of 270 initiatives aimed at river rejuvenation and effective water management, thereby underscoring the importance of consulting in large-scale infrastructure endeavours.
- Digital Transformation in Agriculture: The agricultural sector in India is embracing digital innovations such as remote sensing and Geographic Information Systems (GIS) to optimize irrigation practices and enhance water governance, in line with global trends in precision agriculture. During FY2023, WAPCOS Limited played a significant role in developing irrigation potential across more than 17 million hectares through its engineering consultancy services.
- India's Irrigation and Water Resources Consulting Market: It is experiencing significant growth, propelled by the demand for enhanced agricultural productivity and sustainable water management practices. Currently, there are 683 active projects valued at USD

159.76 billion within this sector, encompassing irrigation systems, water supply networks, and flood management initiatives.

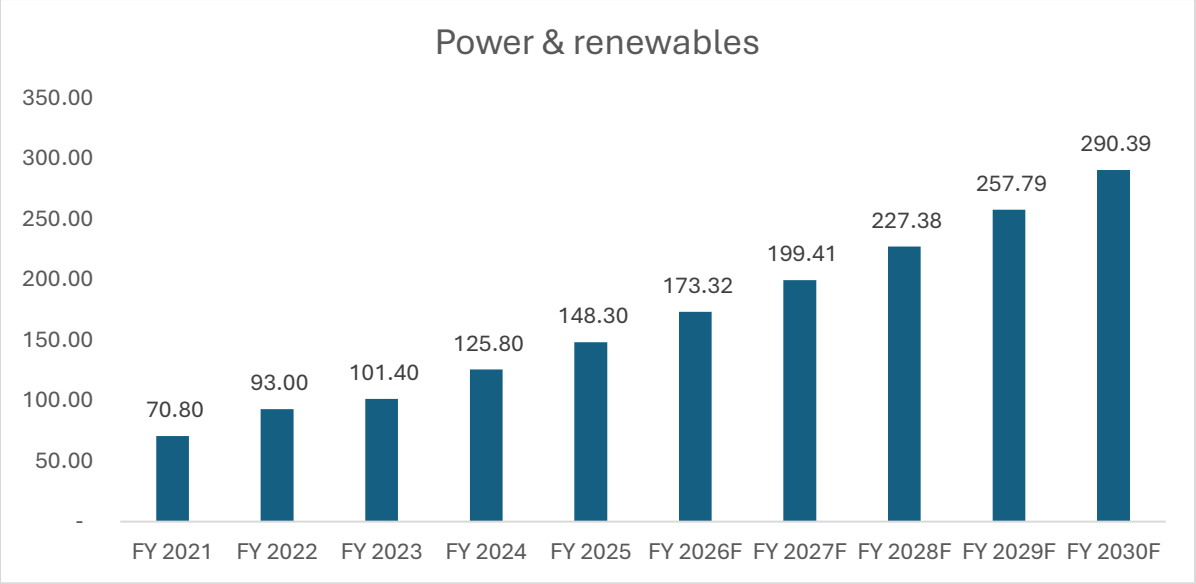
Trends in Global:

- Increasing Demand for Water Reuse and Recycling: The global challenge of water scarcity, exacerbated by population growth and industrial requirements, is propelling the need for water reuse and recycling initiatives. Infrastructure consulting is concentrating on sophisticated wastewater treatment methods to preserve freshwater resources. The U.S. Infrastructure Investment and Jobs Act (IIJA) has allocated USD 55 billion for the enhancement of water and wastewater infrastructure, underscoring the critical role of consultants in directing investments, implementing sustainable practices, and optimizing water management systems.
- Remote Sensing and Data Management: The advent of technologies such as remote sensing, GIS, and IoT is revolutionizing water governance by facilitating monitoring, leak detection, and demand forecasting. Infrastructure consulting firms are incorporating these innovations to improve irrigation efficiency and resilience. The California Water Plan Update 2023, published in April 2024, emphasizes the importance of consulting expertise in utilizing remote sensing and data analytics to tackle climate-related challenges and bolster watershed resilience.
- Global Collaboration and Capacity Building: Indian companies, including WAPCOS, are spearheading international projects, such as irrigation initiatives in Ghana, by providing specialized infrastructure consulting services that showcase their expertise and facilitate knowledge transfer. In 2024, the Islamic Development Bank sought professionals for the design and supervision of water reservoirs and control structures, highlighting the essential role of consultancy in water resource management and fostering global collaboration.

3.3.5 Power & Renewables

The Power & Renewables sector of the market was assessed at INR 148.30 billion for FY2025, with expectations to grow to INR 290.39 billion by FY2030, growing at a CAGR of 14.38% throughout the forecast period.

Chart 52: India Infrastructure Consulting Market, Value in INR billion, by Industry, Power & Renewables, FY2021 To FY2030 (Forecast)



Source: Actual: Press Information Bureau (PIB), NIP, Ministry of Power, Ministry of New and Renewable Energy (MNRE), Power Grid Corporation of India, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, PIB, Ministry of New and Renewable Energy (MNRE)
Note: F: Forecasted
E: Estimated

The Indian government is making significant strides in power and renewable energy through the National Electricity Policy and National Renewable Energy Policy. These initiatives prioritize solar, wind, and other renewable sources, aiming to combat climate change and enhance energy security. Programs like the Solar Park Scheme and Wind Energy Policy simplify project approvals and offer incentives for large-scale renewable energy development. Additionally, the Perform, Achieve, and Trade (PAT) scheme drives energy efficiency improvements across industries. For power and renewables sector, Ministry of Power in Union Budget 2025-26 has allocated a total of INR 183.27 billion while the Ministry of New and Renewable Energy in Union Budget 2025-26 has allocated a total of INR 265.49 billion.

Scaling Up Renewable Energy Infrastructure: India invested heavily in power infrastructure to support renewable energy expansion. A notable investment includes an 8.9 GW solar transmission system in Rajasthan, bolstering India's solar capacity. A total of INR 26.1 billion (USD 315 million) was approved for SJVN's 382 MW Sunni Dam Hydro Project, reinforcing India's hydropower potential.

Projects such as NTPC's hydrogen fuelling station and solar facility in Ladakh contribute to the diversification of India's energy portfolio, thereby generating opportunities for consulting firms specializing in hydrogen energy and green technology.

Projected Growth & Consulting Opportunities: The National Electricity Plan 2022-32 forecasts INR 3,300 billion (USD 400 billion) in investments and an increased workforce demand of 3.78 million power professionals by 2032. This expansion presents significant opportunities for consulting firms in:

- Feasibility studies and project planning
- Technical development and grid integration

- Environmental compliance and sustainability strategies

India Sets Ambitious Renewable Energy Goals: India is striving to reach a target of 500 GW of non-fossil fuel capacity by the year 2030, in alignment with its commitment to achieving Net Zero by 2070. Initiatives such as the Renewable Energy Act, the Production-Linked Incentive (PLI) scheme for solar manufacturing, and the Green Hydrogen Mission are facilitating increased investments in this sector. This will create demand for infra consulting services.

As India accelerates its transition to renewable energy, the role of infrastructure consulting firms will be pivotal in designing, optimizing, and implementing energy projects. Their expertise in sustainability, advanced energy technologies, and regulatory compliance will drive the country's clean energy ambitions, shaping a resilient and sustainable power sector.

Trends in India:

- Increase in Renewable Energy Capacity: India is making significant strides towards its 2030 goal of achieving 500 GW of renewable energy capacity, primarily driven by solar and wind sources. By the end of 2024, the country reached 213.70 GW in non-fossil fuel power generation, which includes 94.17 GW from solar energy and 47.96 GW from wind energy. The role of infrastructure consulting is essential for optimizing these projects, overcoming challenges, and ensuring their scalability. On a global scale, countries are investing heavily in renewable energy, with consulting services playing a critical role in enhancing returns on investment.
- Distributed Energy Systems: Distributed energy systems, such as microgrids that utilize local renewable resources, significantly enhance energy access in rural areas. The implementation of blockchain technology facilitates peer-to-peer energy trading, further promoting the decentralization of energy distribution. Infrastructure consulting is instrumental in the design of microgrids, the integration of blockchain technology, and the assessment of infrastructure needs. In 2024, the Indian government allocated INR 74.53 billion (USD 900 million) in Viability Gap Funding (VGF) for offshore wind energy projects, underscoring the demand for consulting services in initiatives within Gujarat and Tamil Nadu.
- Government Policies and Initiatives: The Indian government actively supports the growth of renewable energy through various measures, including tax incentives, subsidies, and investments aimed at modernizing the grid and enhancing energy storage capabilities. Infrastructure consulting is vital for effective grid integration, energy storage solutions, and alignment with policy objectives. The National Green Hydrogen Mission, which was launched in January 2023 with a funding allocation of INR 197.44 billion (USD 2.4 billion), seeks to decarbonize heavy industries and establish India as a leader in the global green hydrogen sector, ensuring both technical feasibility and compliance with international standards.

Trends in global:

- Emphasis on sustainability and carbon neutrality: Nations are channelling investments into sustainable energy solutions to achieve net-zero carbon objectives, thereby increasing the demand for infrastructure consulting services. For example, Canada's initiatives in green hydrogen necessitate expert consulting for low-carbon transitions. Major corporations such as Exxon Mobil and Chevron are investigating gas-fired power

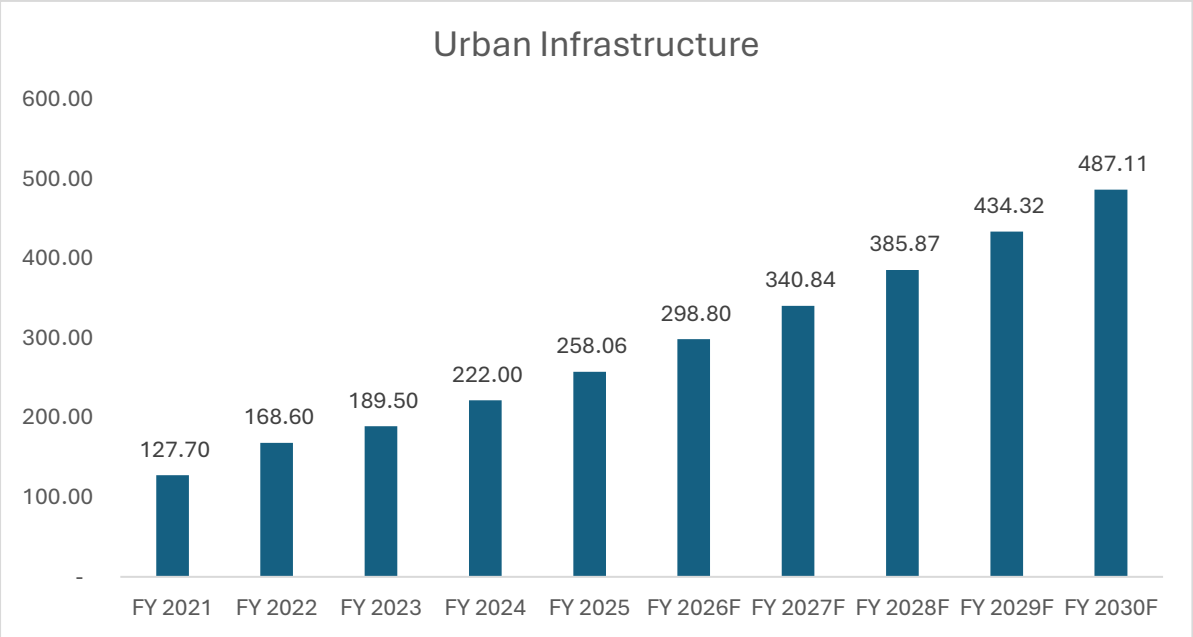
plants and carbon capture technologies, which require consulting expertise for feasibility studies, implementation strategies, and adherence to regulatory standards.

- Digital transformation and intelligent grid systems: The advent of smart grid technologies is revolutionizing electricity distribution, making infrastructure consulting essential for effective integration. These advanced systems enhance energy efficiency, improve reliability, and facilitate real-time monitoring capabilities. In 2024, China's ambitious USD 800 billion grid modernization project underscores the necessity for consultants to ensure that systems are aligned with sustainability objectives, including the target of carbon neutrality by 2060.
- Carbon capture and storage: Government strategies and initiatives: The rise of carbon capture technologies is driving an increased demand for infrastructure consulting, with a total of 628 CCS projects currently underway worldwide. The United States and Canada are at the forefront, with initiatives such as the Alberta Carbon Trunk Line. A report from the Global CCS Institute in 2024 anticipates that CO_2 capture capacity will double, highlighting the critical role of consultants in the development and optimization of CCS facilities.

3.3.6 Urban Infrastructure

The Urban Infrastructure sector of the market was assessed at INR 258.06 billion for FY2025 with expectations to grow to INR 487.11 billion by FY2030, reflecting a CAGR of 13.55% throughout the forecast period.

Chart 53: India Infrastructure Consulting Market, Value in INR billion, by Industry, Urban Infrastructure, FY2021 To FY2030 (Forecast)



Source: Actual Figure: Press Information Bureau (PIB), NIP, Smart Cities Mission (Ministry of Housing and Urban Affairs), State Urban Development Departments, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, World Bank, Construction World, NICMAR, Statista
Note: F: Forecasted
E: Estimated

India’s urban infrastructure sector is rapidly evolving to accommodate urbanization and population growth. For urban infrastructure sector, Ministry of Housing and Urban Affairs in Union Budget 2025-26 has allocated a total of INR 967.77 billion.

Government initiatives like the Smart Cities Mission, AMRUT, and PMAY-U focus on technology integration, essential services, and affordable housing, ensuring sustainable urban development.

AMRUT 2.0, with a budget of INR 1,825.83 billion (approximately USD 22 billion), focuses on enhancing water supply, improving sewerage management, and rejuvenating water bodies, thereby fostering economic development. The initiative encompasses 8,200 projects that necessitate expertise in financing, feasibility assessments, and adherence to regulatory standards.

The Smart Cities Mission fosters urban innovation through the implementation of IoT systems, smart grids, and urban analytics, aiming to create sustainable urban environments. As cities increasingly focus on sustainability and resilience, there is a growing demand for consulting firms that specialize in urban planning and technological solutions.

India's urban infrastructure initiatives, which emphasize innovative technologies, environmentally friendly practices, and climate-resilient strategies, present consulting firms with opportunities to contribute to a sustainable urban future while tackling pressing challenges.

Trends in India:

- Accelerated Urbanization and Economic Growth: By the year 2030, it is projected that 40% of India's population will inhabit urban regions, leading to an increased demand for housing, transportation, and public services. In the calendar year 2024, institutional investments in Indian real estate surged by 51% compared to 2023, reaching USD 8.878 billion, with 45% of this investment directed towards the residential sector. Consulting firms play a crucial role in optimizing land utilization, evaluating project feasibility, and formulating infrastructure strategies. On a global scale, infrastructure consultants are instrumental in devising sustainable solutions for expanding urban areas.
- Affordable Housing and Urban Revitalization: The Pradhan Mantri Awas Yojana – Urban (PMAY-U) remains one of the largest affordable housing programs in India. As of July 29, 2025, 1.23 crore (12.3 million) houses have been sanctioned under the scheme, and about 78 lakh (7.8 million) have been completed. The government committed central assistance of INR2.20 lakh crore, of which INR 1.46 lakh crore has already been released. For FY 2024–25, the Union Budget allocated INR80,671 crore for PMAY-U, which is higher than the INR79,000 crore provided in FY 2023–24. The Ministry of Housing and Urban Affairs is also focusing on Transit-Oriented Development (TOD) and mixed-use projects. These are being planned along metro and transport corridors to reduce commute times and ensure affordable housing close to workplaces. Other urban development schemes include PM-SVANidhi, which has supported over 88 lakh street vendors with loans by August 2025, and AMRUT 2.0, which has approved projects worth INR1,92,000 crore to provide universal water supply and modern sewage systems in cities.
- Smart City Initiatives: The Smart Cities Mission has made steady progress. By July 30, 2025, 7,947 projects had been tendered, out of which 7,188 projects (about 90%) were

completed. The mission has attracted investments of INR2,17,237 crore (around USD 261 billion) from both public and private sources. The National Industrial Corridor Development Programme (NICDP) is being closely linked to smart city development. As of August 2025, 32 industrial nodes across 12 industrial corridors are under development. Of these, 11 nodes have received final approval, while 21 have in-principle approval.

- Significant urban centers are anticipated to witness the initiation of more than 100 new metro rail and Bus Rapid Transit System (BRTS) projects. High-speed rail corridors are being incorporated into urban rail networks and metro systems, facilitating seamless intra-city transportation. Additionally, there is a marked increase in the implementation of intelligent traffic management systems, automated fare collection, and AI-enhanced transport planning. Technology is becoming central to these programs. All 100 smart cities now have Integrated Command and Control Centers (ICCCs), which are used for disaster management and policy decision-making based on real-time data. The new focus areas include generative AI for traffic and utility management, building green hydrogen hubs in industrial cities, and integrating electric vehicle (EV) infrastructure into new urban and logistics systems. These steps show how India's urban development is moving from basic infrastructure to technology-driven and sustainable smart cities.

Trends in Global:

- Resilience and Climate Adaptation: Urban areas are increasingly prioritizing climate-resilient infrastructure to address the challenges posed by extreme weather and to foster sustainability. Initiatives such as Karachi's green infrastructure and the Pan Pacific Orchard hotel in Singapore highlight the use of local materials, the creation of green spaces, and the integration of ecosystems. Consulting firms specializing in infrastructure are instrumental in conducting vulnerability assessments, formulating adaptation strategies, and implementing green solutions to bolster urban resilience.

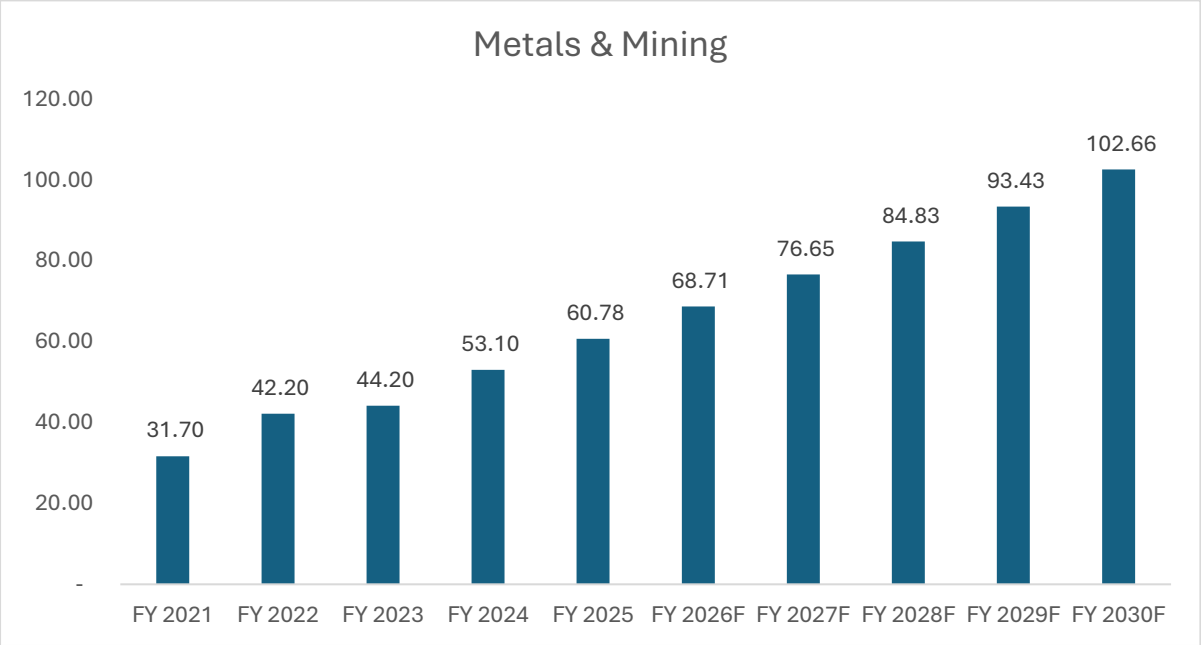
- Smart City Initiatives: The integration of smart technologies, including the Internet of Things (IoT) and artificial intelligence (AI), is revolutionizing urban management by facilitating real-time monitoring and optimizing resource use. The digital advancements in Barcelona and the IMD Smart City Index 2024 underscore the increasing involvement of consulting firms in the adoption of smart technologies, the development of digital infrastructure, and the alignment of urban projects with community requirements to promote sustainable growth.

- Sustainable Urban Mobility: Cities across the globe are embracing sustainable transportation solutions to reach carbon neutrality by the year 2030. Both Barcelona and Berlin are planning to introduce zero-emission buses by 2025. Additionally, California is set to deploy over 1,000 fuel cell electric buses across 13 transit agencies by July 2024, aiming to reduce greenhouse gas emissions. In 2023, the adoption of zero-emission buses in the United States increased by 12%, with hydrogen fuel cell buses experiencing a remarkable rise of 76%.

3.3.7 Metals & Mining

The metals and mining segment of the market was assessed at INR 60.78 billion for FY2025, with expectations to grow to INR 102.66 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 11.05% throughout the forecast period.

Chart 54: India Infrastructure Consulting Market, Value in INR billion, by Industry, Metals & Mining, FY2021 To FY2030 (Forecast)



Source: Actual Figure: Press Information Bureau (PIB), NIP, Ministry of Mines, Indian Bureau of Mines (IBM), Ministry of Steel, Mordor Intelligence, ICRA Analytics.
Forecast: Statista, Mordor Intelligence, NIP
Note: F: Forecasted
E: Estimated

India's mining and metals industry is essential to the country's infrastructure development, which is fuelled by government programs and industrialization. Regulations, technology integration, and market dynamics are all facilitated by infrastructure consulting. For metals and mining sector, Ministry of Mines in Union Budget 2025-26 has allocated a total of INR 30.38 billion while the Ministry of Coal in Union Budget 2025-26 has allocated a total of INR 5.01 billion.

Government Initiatives: The Mines and Minerals Development and Regulation Act 2021 and the National Mineral Policy 2019 both emphasize private investments, sustainability, and transparency. Consultants are the ones to expedite production and exploration while ensuring compliance.

Infrastructure Development: The need for steel has grown because of expanding infrastructure projects. India consumed 135.9 MT of steel in FY2024, while producing 143.6 MT of crude steel and 138.5 MT of finished steel. By FY2031, the National Steel Policy (NSP) 2017 aims for a capacity of 300 MT and a per capita consumption of 160 kg. Consulting firms guarantee policy alignment, optimize supply chains, and support capacity expansion.

Iron Ore Sector: As per the Indian Bureau of Mines (IBM) Monthly Statistics of Mineral Production (June 2025), India produced 24.5 MT of iron ore during the month (June 2025), reflecting a year-on-year growth of nearly 7% compared to June 2024.

Cumulatively, in Q1 of FY 2025-26 (April–June 2025), iron ore production reached 72.8 MT, up 6.5% year-on-year. For the full FY 2024-25, India's iron ore production totaled 277 MT, surpassing FY 2023-24 levels and reinforcing the sector's upward trajectory.

Key reforms have also reshaped the sector. By July 2025, more than 250 mineral blocks had been successfully auctioned, improving raw material security for the steel industry. Consultants are playing a pivotal role in supporting mine planning and digitization through geospatial and AI tools, assisting miners with beneficiation and value addition for higher-quality ore, and guiding bidders through transparent auction strategies.

Coal Sector: The Ministry of Coal's Monthly Summary for July 2025 highlights that India produced 64.83 MT of coal in July 2025, compared to 74.01 MT during the same period (July 2024) last year. The decrease in production is on account of the early arrival of the monsoon and excessive rains. For the full FY 2024-25, India's total coal production reached approximately 1.2 billion tonnes (BT), crossing the historic 1 BT milestone. Given this early achievement, production targets have been revised. While the national target for 2030 remains 1.5 BT, the pace of expansion has been accelerated.

Consultants are increasingly supporting the sector through strategic and technical interventions. Their focus includes structuring Mine Developer and Operator (MDO) models to facilitate faster private participation, providing advisory for large-scale coal gasification projects backed by government viability gap funding, and deploying AI-driven mine planning with drone-based land reclamation to enhance sustainability and ESG compliance.

Trends in India:

- Embracing Sustainability and Eco-Friendly Practices: The mining industry in India is changing to be more sustainable, with a focus on producing green steel and incorporating renewable energy. To guide these environmentally friendly changes, infrastructure consulting is essential. The efforts to develop a transparent and sustainable mining ecosystem are highlighted at the 3rd National Mines Ministers' Conference in January 2025, highlighting the value of consulting expertise.
- Impact of Policy Changes on Captive Coal Mining in India: India's move to allow captive coalmines to sell up to 50% of their production encourages the private sector to get more involved. Infrastructure consulting companies are essential for managing regulations and maximizing output. Longer mining leases (20–30 years) draw in investments and boost mineral production, and their efficiency and sustainability are guaranteed by consulting experience.
- Rising Metal Demand Driven by Infrastructure Investments: Infrastructure spending is increasing demand for coal and steel. Steel production is predicted to double by FY2030, so companies like Tata Steel and NMDC rely on consulting expertise to ramp up production, optimize resources, manage supply chains, and match growth with infrastructure objectives.
- Expansion of Commercial Coal Mining: In an effort to reduce coal imports, the government has approved more than 100 coal blocks for commercial mining. This initiative is attracting investments due to the government's transition towards environmentally sustainable coal mining methods, including coal gasification and

underground mining. Furthermore, the expanding power and renewable energy sectors are increasing the demand for both coal and critical minerals necessary for power grid infrastructure creating a spillover demand space for consultants.

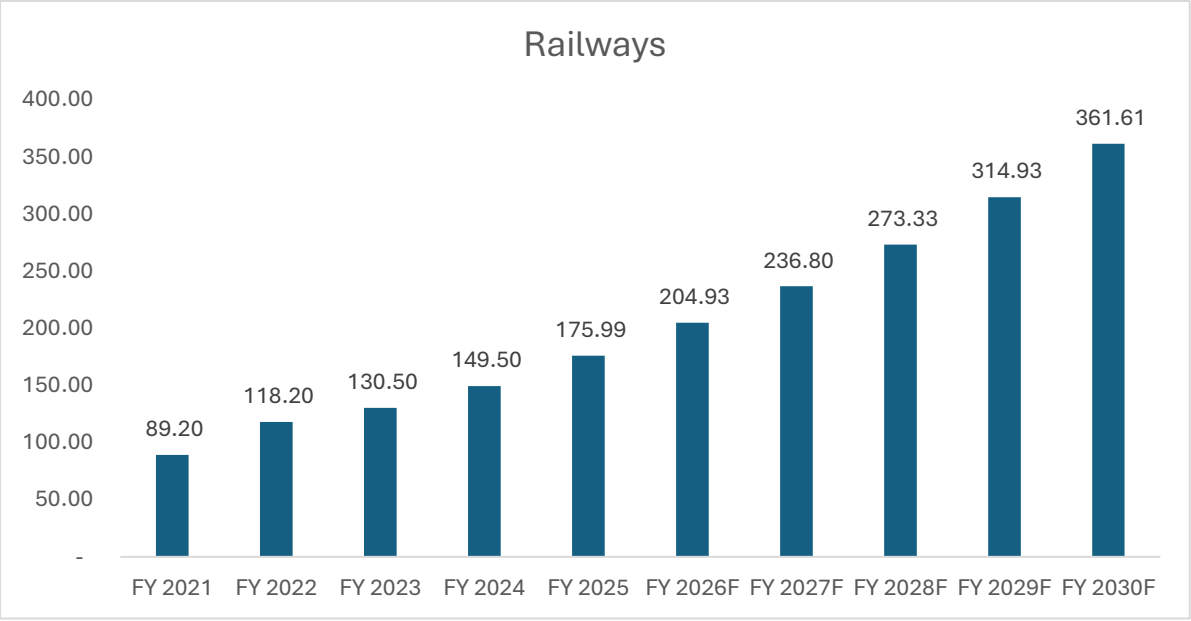
Trends in Global:

- Technological Innovation: Infrastructure consulting firms are pushing mining and metal processing companies to adopt new technologies in order to increase productivity and reduce expenses. As the industry shifts to sustainability, expert consultation is essential. Advanced solutions are integrated, operations are streamlined, and research and development are guided to increase efficiency while putting environmental sustainability first.
- Strategic Sourcing and Supply Chain Management: The transition to strategic sourcing in the construction sector influences the metals and sand mining sector, as infrastructure consulting helps suppliers and businesses lower risks and stabilize costs. Urbanization increases the need for infrastructure, which opens doors for flexible suppliers. Consulting helps supply chains be optimized to satisfy market demands.

3.3.8 Railways (Freight & Passenger), Semi High Speed. High Speed, MMTS

The Railways (Freight & Passenger), Semi High Speed. High Speed, MMTS segment of the market was assessed at INR 175.99 billion for FY2025, with expectations to grow to INR 361.61 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 15.49% throughout the forecast period.

Chart 55: India Infrastructure Consulting Market, Value in INR billion, by Industry, Railways (Freight & Passenger), Semi High Speed. High Speed, MMTS, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Railways, Indian Railways, Dedicated Freight Corridor Corporation of India (DFCCIL), Mordor Intelligence, ICRA Analytics.
Forecast: Indian Railway, NIP, Mordor Intelligence, IBEF, Statista, National High-Speed Rail Corporation Limited, Mordor Intelligence.
Note: F: Forecasted
E: Estimated

Growth of Infrastructure Consulting in India's Railway Segment:

In India, Infrastructure Consulting plays a crucial role in reshaping Transportation sectors, Steering Investments, Enhancing Project Execution, Prioritizing Safety and Technology Across Rail, and Multi-Modal Systems. For Railway sector, Ministry of Railways in Union Budget 2025-26 has allocated a total of INR 2,554.45 billion.

In India, changes are occurring in a number of sectors, such as the Multi-Modal Transport System (MMTS), Semi-High-Speed, High-Speed, and Railways (both freight and passenger). The INR 1.08 trillion Mumbai-Ahmedabad Bullet Train Project, India's inaugural high-speed rail initiative, is poised to catalyze sector growth. These changes are being driven by technological advancements, policy changes, and an increasing need for efficient transportation. In these advancements, infrastructure consulting is essential.

During FY2026, Indian Railways plans to increase its capital expenditures by 15–25%, allocating the money to safety measures, track expansion, and infrastructure modernization. To maximize these investments, infrastructure consultants are available to make sure that rail upgrades are carried out effectively and are long-term viable.

In cities like Delhi and Mumbai, light rail systems are on the rise, with consultants playing a crucial role in planning, procurement, and ensuring these systems mesh well with the current urban mobility infrastructure. Additionally, as cities explore Regional Rapid Transit Systems (RRTS) to bolster connectivity, consulting firms are defining strategies for their efficient implementation.

Examples of direction of consultants in project design and execution: Under the direction of consultants in project design and execution, the Mumbai-Ahmedabad High-Speed Rail Corridor, supported by Japan, is set to drastically reduce travel times. In the meantime, consulting skills in project management and route optimization are helping semi-high-speed services like NaMo Bharat, which can travel up to 160 km/h.

Safety measures through Infrastructure consulting: Infrastructure Consulting firms are supporting investments in safety measures like the Kavach system. These consulting firms are skilled at scaling and deploying contemporary technologies while making sure they work in unison with current systems.

Trends in India:

- Freight Rail Modernization: Infrastructure consulting is at the forefront of freight rail modernization in India, leading the construction of private freight terminals and dedicated freight corridors (DFC). Additionally, it uses Artificial Intelligence (AI) and Internet of Things (IoT) for tech-driven optimization, guaranteeing increased productivity and real-time tracking.
- Passenger Rail Upgrades: Through accelerated railway electrification, India's electrification drive, led by infrastructure consulting, aims to achieve carbon neutrality by FY2030. To improve the traveller experience, consultants update digital ticketing systems, onboard amenities, and stations. The Vande Bharat Express had gained comfort and speed through consulting expertise in semi-high-speed train design.

- Expansion in Rail Networks to Meet Urban Transit Needs: Infrastructure consulting is essential to the advancement of rail projects in Tier-2 and Tier-3 cities like Indore, Patna, and Surat. With a focus on last-mile connectivity and seamless integration with essential transportation modes, these consultants lead initiatives to support urban transit.

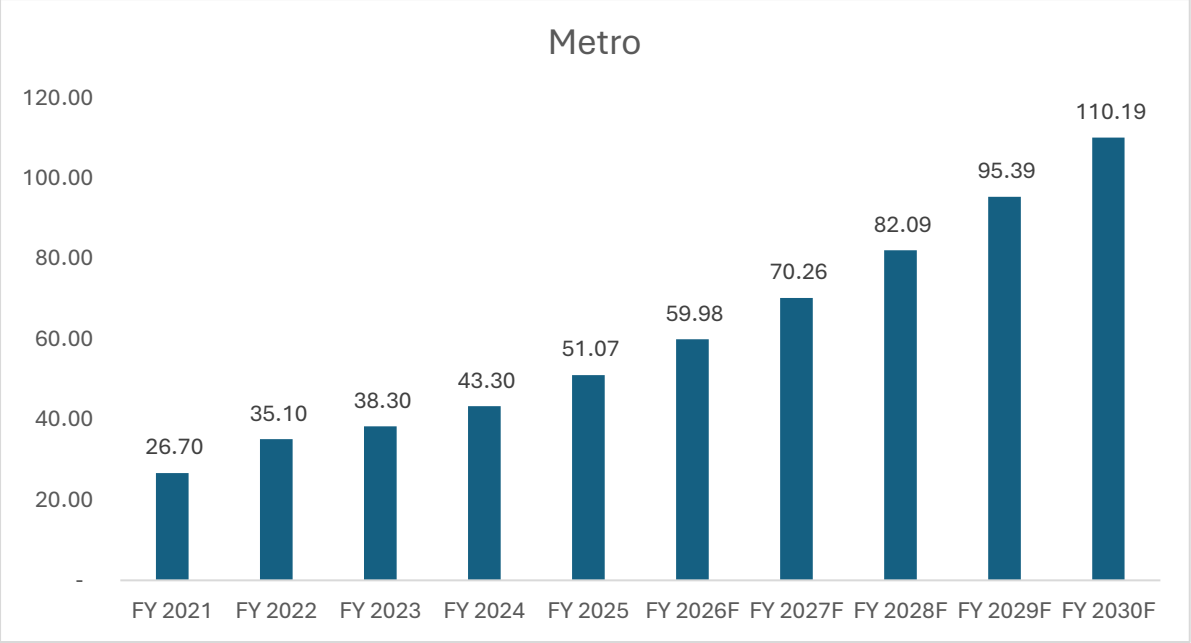
Trends in Global:

- Sustainability and Decarbonization: Leading the charge to electrify rail networks, reduce carbon emissions, and lessen reliance on diesel are global infrastructure consultants. They help operators achieve net-zero emissions through sustainable designs and strategies by integrating green energy sources like wind and solar.
- High-Speed Rail Expansion: For high-speed rail projects like China's HSR network, the UK's HS2, and California's High-Speed Rail, international infrastructure consultants are essential. They improve connectivity and mobility by driving global corridors, maglev advancements, and next-generation train technologies.
- Increased Passenger Demand: Global infrastructure consulting was the primary driver of the 10% growth in the international rail passenger market in the first half of CY2024. To meet growing demand, consultants concentrate on growing services, boosting network capacity, and enhancing operational efficiency.

3.3.9 Metro

The metro segment of the market was assessed at INR 51.07 billion for FY2025, with expectations to grow to INR 110.19 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 16.62% throughout the forecast period.

Chart 56: India Infrastructure Consulting Market, Value in INR billion, by Industry, Metro, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Housing and Urban Affairs (MoHUA), Metro Rail Corporations (e.g., DMRC, MMRC, BMRCL), Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, Statista, PIB

Note: F: Forecasted
E: Estimated

Growth of Infrastructure Consulting in India's Metro Segment:

India's infrastructure consulting market in the metro segment is undergoing transformation due to rapid evolution of metro projects as of FY2025. For Metro sector, Ministry of Housing and Urban Affairs covering Metro Projects in Union Budget 2025-26 has allocated a total of INR 312.39 billion.

Expanding metro networks: India is expected to launch the second-largest metro network in the world by 2025. At the forefront of this initiative are infrastructure consultants who are refining the planning, construction, and operational integration across 51 cities, encompassing nearly 2,000 kilometres.

Job creation and Economic growth: Cities such as Delhi, Mumbai, and Bangalore are witnessing major metro projects either in execution or in the planning stages. Metro network expansion serves as a catalyst for economic growth in addition to being a means of transportation. Strategies to improve connectivity, create jobs, and increase the value of urban real estate are being developed by consulting firms. These consultants are concentrated on improving operational efficiencies in addition to strategy to improve the commuter experience.

Government initiatives and policies: In order to ensure a smooth integration of cutting-edge transportation systems, consultants play a crucial role in coordinating metro projects with the Smart Cities Mission and the 2017 Metro Rail Policy. They also support the 'Make in India' campaign, which promotes homegrown manufacturing. In addition to lowering expenses, this promotes long-term expansion in the metro infrastructure sector.

Trends in India:

- Urbanization Driving the Metro Expansion Across Indian Cities: The need for effective public transportation is being driven by urbanization, and infrastructure consulting is a major factor in this. While Delhi, Bengaluru, and Mumbai are expanding their systems, cities like Surat, Patna, and Kanpur are starting new metro projects. In order to satisfy the demands of urban mobility, consulting firms guarantee efficient planning, design, and integration.
- Indigenous Manufacturing Gains Momentum: With the help of programs like "Make in India," infrastructure consultants are essential for the standardization of metro coaches, tracks, and signalling equipment. These consulting companies support the growth of India's urban transport infrastructure by promoting component standardization, which not only lowers costs but also ensures compatibility across metro projects.
- Global Partnerships and Knowledge Transfer: To raise their standards to a world-class level, Indian metros are collaborating with international infrastructure consulting specialists. By focusing on best practices in operations and construction, these consultants are assisting cities in implementing successful models, like the Delhi Metro. Their objective is to guarantee the scalability, sustainability, and efficiency of metro systems throughout India.

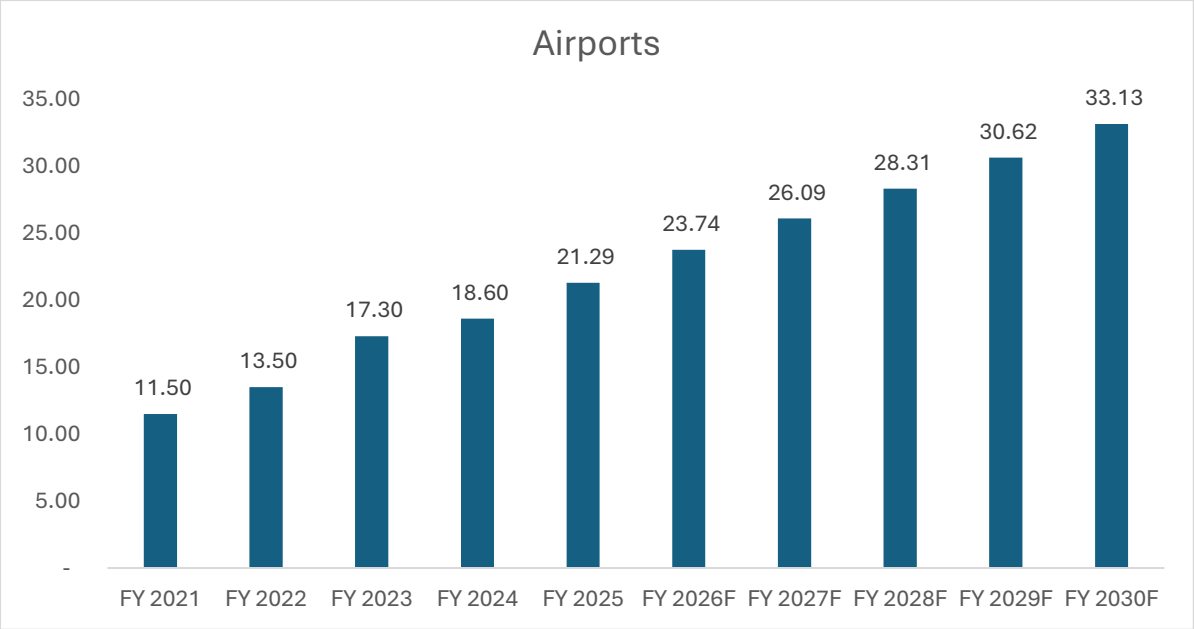
Trends in Global:

- Technological Integration: The adoption of cutting-edge technologies, such as artificial intelligence (AI), the Internet of Things (IoT), automation, and metro services, is being led by global infrastructure consultants. Their knowledge is essential for putting into practice driverless trains, smart ticketing systems, predictive maintenance, and real-time monitoring—all of which are meant to increase operational effectiveness, safety, and passenger convenience.
- Metro Projects Embrace Eco-Friendly Practices: Global infrastructure consultants are essential in guiding metro development initiatives in the direction of sustainability. By integrating low-emission technologies, energy-efficient systems, and renewable energy, they guarantee that metro initiatives not only meet national climate goals but also drastically reduce carbon footprints.
- E Metro Systems on the Rise Amid Global Urbanization: Global infrastructure consultants are essential to the fast expansion of metro networks throughout Asia, Africa, and Latin America. These professionals create, optimize, and integrate metro systems, allowing cities to more effectively address issues like connectivity, pollution, and traffic.

3.3.10 Airports

The Airport segment of the market was assessed at INR 21.29 billion for FY2025, with expectations to grow to INR 33.13 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 9.25% throughout the forecast period.

Chart 57: India Infrastructure Consulting Market, Value in INR billion, by Industry, Airport, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Airports Authority of India (AAI), Ministry of Civil Aviation, Mordor Intelligence, ICRA Analytics.
Forecast: IBEF, the Ministry of Civil Aviation (MoCA), Ministry, Mordor Intelligence
Note: F: Forecasted
E: Estimated

Growth of Infrastructure Consulting in India's Airport Segment:

The third-largest aviation market in the world, India, is seeing an increase in demand for both consulting and infrastructure development services. Opportunities for consulting services to support effective planning and execution are being created by the growing need for existing airports to be modernized and expanded. For Airport sector, Ministry of Civil Aviation in Union Budget 2025-26 has allocated a total of INR 24.00 billion.

India's Aviation Sector: One of the fastest-growing industries in the world, aviation in India, is largely dependent on consulting services. India is the world's third-largest civil aviation market, and the country's growing passenger and freight volume presents several opportunities for consulting firms to assist in the development of infrastructure.

India's airports have grown from 74 in FY 2014 to 148 in FY 2023, with plans to reach 300 by 2047. This expansion highlights the need for consulting expertise in airport design, construction, operations, and sustainability. These services are critical for effectively managing projects to meet the aviation market's growing demands.

Surge in Passenger traffic: As of August 2025, India has 158 operational airports (Lok Sabha Unstarred Question No. 1287, July 29, 2025). Passenger air traffic continues to record strong growth. According to DGCA's Annual Air Traffic Report for FY 2024-25, domestic passenger volumes reached 178.4 million, registering a 10.6% year-on-year increase over FY 2023-24.

On a monthly basis, the latest available data for June 2025 shows 13.87 million domestic passengers, reflecting a 5.1% increase compared to June 2024.

Three key drivers support this momentum:

- New airports and routes: Facilities such as the Noida International Airport (Jewar) and the government's UDAN regional connectivity scheme have enhanced linkages to smaller cities, unlocking new travel demand.
- Fleet expansion: Indian carriers hold one of the world's largest new aircraft order books, with ongoing deliveries steadily boosting capacity.
- Economic strength: Robust business activity and sustained consumer demand continue to stimulate both leisure and corporate travel.

Proactive Government Policies & Investment Initiatives: The Airport Infrastructure Investment Programs and the National Civil Aviation Policy (NCAP) are supporting both greenfield and brownfield airport projects. Private companies like Adani Group, GMR, and Zurich Airport International are increasingly taking part in the 100% FDI under the automatic route for airport infrastructure. Airport development and modernization are seeing an increase in investment flows because of Public-Private Partnership (PPP) initiatives. Airports like Cochin, Delhi, and Bengaluru are leading the way with solar-powered operations and carbon-neutral initiatives, aligning with India's Net Zero 2070 ambitions.

Expansion in Freight sector: India's freight sector has also scaled up significantly. In Q1 FY 2025-26, domestic air cargo volumes reached 435,000 tonnes (+5.8% YoY, well above the historical 3%). International cargo stood at 855,000 tonnes (+5.1% YoY, nearly double the 2.7% historical average). In total, 1.29 million tonnes of cargo were handled in the quarter.

Major cargo infrastructure projects underway:

- Delhi (IGI Airport): Integrated cargo terminal, Phase I by late 2026.
- Bangalore (KIAB): Second cargo terminal under construction for e-commerce and electronics exports.
- Jewar (Noida International Airport): Greenfield airport with multimodal cargo hub, Phase I operational by late 2024.

Multimodal Logistics Parks (MMLPs):

- Chennai: Groundwork initiated, focusing on electronics and automotive supply chains.
- Nagpur: Land acquisition complete, primary construction tender awarded in June 2025.

Integration with Trade and Freight Corridors

With the Eastern and Western Dedicated Freight Corridors (DFCs) now fully operational, India's logistics backbone has been transformed. These corridors enable faster, more cost-efficient freight movement and serve as anchors for emerging logistics hubs.

Trends in India:

- Growing Demand: India's tourism and aviation industries, which are expected to boost the country's GDP by USD 512 billion by FY2028 and will present lucrative opportunities for consulting services. These services cover strategic planning, operational effectiveness, and infrastructure. While foreign visitor arrivals have increased by 43%, outbound travel has increased by 122%. Given this quick growth, consulting firms are essential to promoting and maximizing the sector's expansion.
- Government Policies: The airport industry in India is expanding for consulting services in infrastructure development and strategic planning, helped along by initiatives like NCAP 2016 and a drive for regional connectivity. Consulting firms play a crucial role in navigating and enhancing these expansions as liberalization opens the door for increased private sector involvement and the AAI looks to lease 25 airports by 2025.
- Increasing Investments: With 21 new airports receiving approval and a USD 1 trillion commitment for aviation by 2026, consulting firms are well-positioned to influence the development of airport infrastructure and traveller experiences. The "Digi Yatra" system and ongoing airport modernization initiatives highlight the critical role that consulting services play in guiding these developments and drawing in foreign capital.

Trends in Global:

- Embracing sustainability: In guiding the aviation sector toward its ambitious net-zero carbon emissions target, consulting services are poised to play a crucial role. Adopting sustainable aviation fuels (SAF), increasing infrastructure and operational efficiency, and

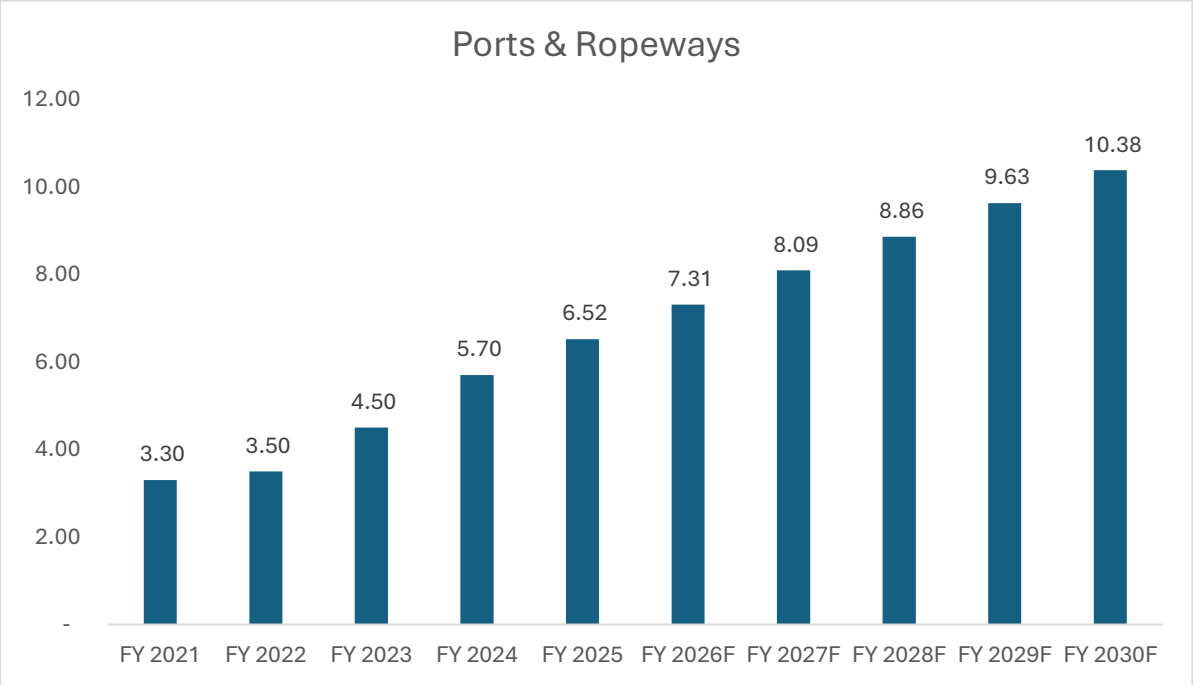
directing investments toward cutting-edge technologies are important tactics. Additionally, consulting firms play a key role in integrating alternative power sources, like hydrogen and electricity, for both aircraft and ground support equipment. This pushes aviation companies to the forefront of innovation while also helping them meet their sustainability benchmarks.

- Upgrading experience with technology: Consulting services see a growing market as airports upgrade their infrastructure like gates, runways, and terminals to handle growing traffic and improve passenger comfort. As an illustration, the recent 60,000 square foot expansion of Appleton International Airport, which includes four new gates, highlights the growing demand for specialized planning and infrastructure development.
- Increasing capital expenditure and budgeting: It is anticipated that the development, expansion, and modernization of global airport infrastructure will require an astounding USD 2,400 billion between CY2021 and CY2040. Consulting companies are stepping in to help airports navigate these budgetary challenges and make sure they balance their short-term requirements with their long-term goals. Their knowledge also goes into suggesting the most effective funding combinations, opening the door to long-term expansion and sound financial standing.

3.3.11 Ports and Ropeways

The port and ropeways segment of the market was assessed at INR 6.52 billion for FY2025, with expectations to grow to INR 10.38 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 9.74% throughout the forecast period.

Chart 58: India Infrastructure Consulting Market, Value in INR billion, by Industry, Ports and Ropeways, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Ports, Shipping and Waterways, Sagarmala Development Company Limited, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, Statista, Sagarmala, PIB
Note: F: Forecasted

E: Estimated

Growth of Infrastructure Consulting in India's port and ropeways Segment:

The port and railways sector in India is experiencing steady growth thanks to government initiatives, particularly the Marine India Vision 2030. The expansion of infrastructure consulting services is fuelled by the continued emphasis on bolstering infrastructure and enhancing global competitiveness, even as major and non-major ports see increased growth. These efforts aim to enhance Indian ports' global competitiveness by developing mega ports and trans-shipment hubs. For port and ropeways sector, Ministry of Ports, Shipping and Waterways in Union Budget 2025-26 has allocated a total of INR 34.71 billion.

India's major and non-major port growth: According to the Indian Ports Association's Monthly Traffic Report for June 2025, India's 12 major ports collectively handled 72.8 million tonnes (MT) of cargo during the month (June 2025), reflecting a year-on-year growth of 4.5% over June 2024. For the first quarter of FY 2025–26 (April–June 2025), these ports recorded a cumulative throughput of 215.4 MT. Non-major ports also demonstrated healthy momentum, with approximately 175 MT of cargo handled during the same quarter, marking a 6.8% increase compared to the corresponding period of the previous year. Complementing this operational growth, the Sagarmala Programme continued to advance port-led development, with 12 projects valued at INR4,850 crore inaugurated in July 2025. These included the commissioning of a new liquid berth at VOC Port, Tuticorin, a rail connectivity project at Deendayal Port, Kandla, and capital dredging works at Syama Prasad Mookerjee Port, Kolkata.

Increased cargo traffic: The increase in freight traffic emphasizes the necessity of modernizing and expanding infrastructure. It is essential to implement cutting-edge solutions like port expansion, logistics optimization, and new terminal development. Government agencies and port authorities are receiving effective assistance from infrastructure consulting firms in addressing these issues.

Large-scale port project planning, design, and execution require consulting services to ensure scalability and efficiency. Consulting firms' aggressive modernization goals are helping Indian ports manage increasing cargo volumes, ease bottlenecks, and boost productivity. Indian ports can become globally competitive hubs that promote trade and economic growth thanks to their expertise.

In conclusion, there will be a greater need for specialized infrastructure consulting services as India's port industry expands. These companies are crucial allies in resolving traffic issues and accomplishing development objectives, establishing Indian ports as world maritime leaders.

Trends in India:

- Increasing Investment: With the government significantly increasing its FY2026 budget allocation for the ports and shipping sector to INR 34.71 billion, consultancy services are expected to benefit substantially. These firms are well-positioned to provide strategic guidance, channelling these investments towards effective infrastructure enhancement and fostering sustainable long-term progress.

- Supporting Government Policy: Government programs like the Sagarmala program and tariff guidelines open the door for consulting services. These consulting firms seek to increase port productivity, attract capital, and boost competitiveness. Through directing the implementation of these programs, consulting firms contribute significantly to the development of the industry, improving cargo handling, and ensuring its long-term viability.
- More Focus on Port Operations Expansion: Consultancy firms are well-positioned to handle these complex transactions and integrations as major players in India's ports and shipping industry ramp up acquisitions. Using consulting services, stakeholders can coordinate operations in ports, terminals, and special economic zones, opening the door to increased productivity and long-term expansion.

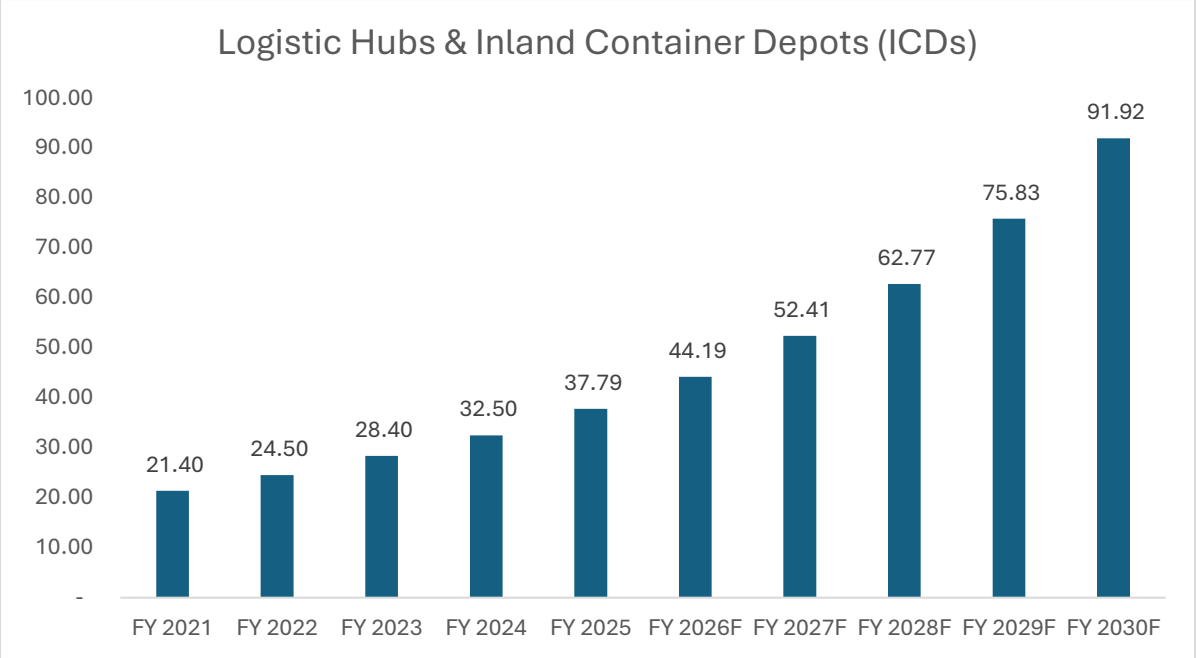
Trends in Global:

- Integration of smart technologies: Digital technologies are being adopted by ports all over the world to improve efficiency and transparency, which is opening opportunities for consulting services to help steer these changes. While Jebel Ali Port uses virtual reality to remotely control cranes, increasing safety and productivity, the Port of Rotterdam is creating a digital twin to streamline operations. In order to help ports integrate advanced technologies for increased operational efficiency and long-term growth, consulting firms can support these innovations.
- Rising trend of port electrification: To achieve net-zero emissions, ports are increasingly electrifying their operations. Consulting services are essential during this transition because they support the construction of infrastructure and maximize the use of electrified machinery, like quay cranes. Projects like ZEPA, which are led by DP World and APM Terminals, highlight how crucial stakeholder cooperation is to advance long-term port changes.
- Renewable transition and greener fuels: Consulting services are now essential for ports because of the shipping industry's transition to cleaner fuels like biodiesel, methanol, and ammonia. Ports need to improve their fuelling, logistics, and storage systems as traditional bunker fuels become less common. In addition to improving sustainability and operational efficiency, consulting firms make sure ports effectively adjust to new fuel types.

3.3.12 Logistic hubs & Inland container depots (ICDS)

The Logistic hubs & Inland container depots segment of the market was assessed at INR 37.79 billion for FY2025, with expectations to grow to INR 91.92 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 19.46% throughout the forecast period.

Chart 59: India Infrastructure Consulting Market, Value in INR billion, by Industry, Logistic hubs & ICDS, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Press Information Bureau (PIB), NIP, Ministry of Commerce and Industry, Container Corporation of India (CONCOR), Department of Logistics, Mordor Intelligence, ICRA Analytics.
Forecast: Mordor Intelligence, Ministry of Ports, Shipping and Waterways
Note: F: Forecasted
E: Estimated

Growth of Infrastructure Consulting in India's Logistic hubs & ICD's Segment:

Government initiatives, private investments, and the expansion of e-commerce in India are all contributing to the demand for consulting services in the logistics infrastructure sector. Dedicated Freight Corridors (DFCs) (Eastern & Western) are set to enhance rail-linked ICDs and cut down transit times. Efficient logistics parks, ICDS, and the integration of cutting-edge technologies with multimodal transport systems all require the need of consultants. The growth is primarily driven by the rapid expansion of the logistics sector, fuelled by e-commerce, government initiatives, and the need for efficient supply chain systems. For Logistic Hubs & Inland Container Depots (ICDs) sector, Ministry of Ports, Shipping and Waterways - Inland Water Transport Authority of India in Union Budget 2025-26 has allocated a total of INR 17.52 billion.

The demand for consulting services in logistics parks and ICD construction has increased due to the crucial role consultants play in creating, specifically designing systems that support multimodal transport, integrating rail, road, and sea transportation for more economical and efficient goods movement.

Encouragement of private investment: Private companies are actively involved in the construction and operation of ICDs because of the government's encouragement of private investment in logistics infrastructure. The demand for consulting services in this field is further fuelled by the fact that these businesses rely on knowledgeable consultants to plan, implement, and optimize ICD facilities.

Technological advancements: The need for consulting services increases as ICDs' technological capabilities improve. These services concentrate on improving inventory

management, tracking, and cargo flow optimization systems by incorporating automation, artificial intelligence, and data analytics into the infrastructure.

Trends in India:

- National Logistics Policy: The Indian government has implemented a policy aimed at lowering logistics costs and increasing sector efficiency while keeping an eye on international standards. Logistics hubs are at the centre of this initiative, highlighting the critical role that infrastructure consulting plays in propelling the growth of this industry.
- Rapid Development of Multi-Modal Logistics Parks (MMLPs): The government of Uttar Pradesh set aside 17,000 acres in 2024 to create Multi-Modal Logistics Parks (MMLPs) as part of its USD 1,000 billion economic objective. The demand for infrastructure consulting services in India is being driven by these MMLPs, which are led by the National Industrial Corridor Development Corporation (NICDC) and private organizations. To meet the increasing demands of freight movement, their development necessitates planning, design, and execution expertise in addition to support for Inland Container Depots (ICDs), warehouse infrastructure, and logistics facilities.
- Investment Surge: India's logistics and warehousing industry saw a notable USD 2.5 billion investment spike in the first quarter of FY2025. Establishing Grade A warehouses and cutting-edge logistics facilities is the main goal of this influx. As a result, there is a growing demand for consulting services to help build logistics hubs and inland container depots (ICDs), with an emphasis on managing project management, guaranteeing regulatory compliance, and navigating complex procurement procedures.
- Surge in Public-Private Partnerships (PPP) boosts Investment in Logistics Infrastructure: The need for consulting services to guarantee efficient design and management has grown as a result of the private sector's involvement in logistics infrastructure, such as building and running hubs. Large-scale logistics projects require funding through public-private partnerships (PPP), in which consultants play a critical role. The need for consultants to handle regulatory issues, organize investments, and oversee projects is being driven by both domestic and foreign investors looking for opportunities in logistics.
-

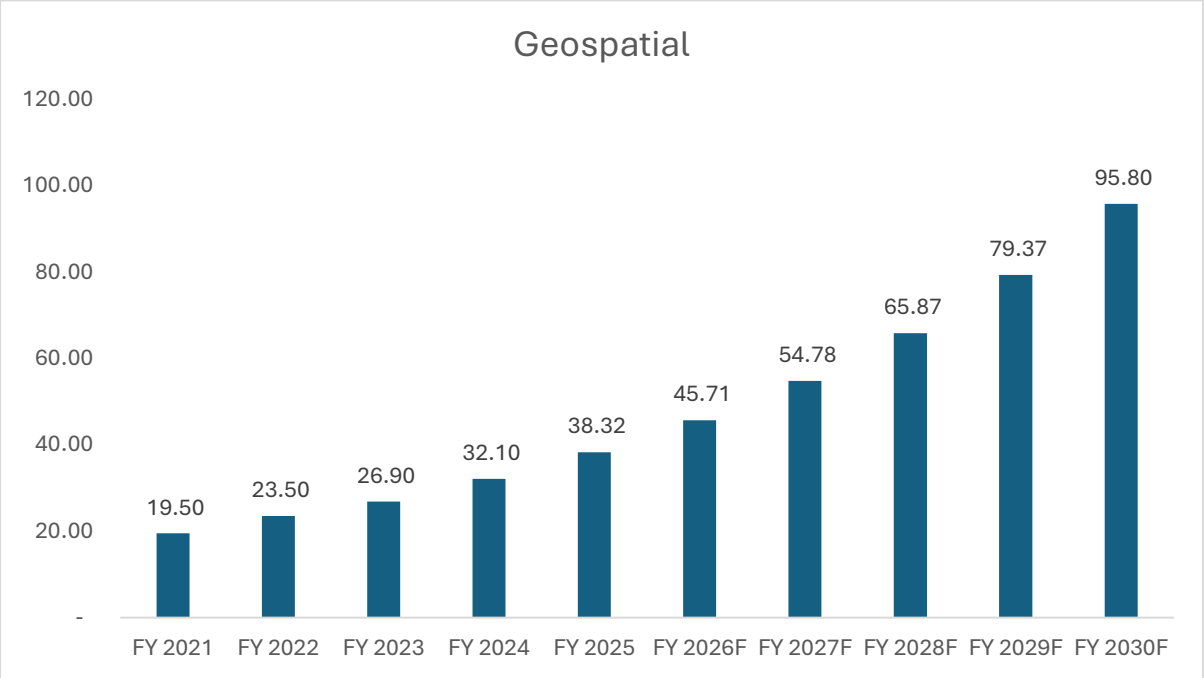
Trends in Global:

- Digitization and Automation in Logistics Infrastructure: Predictive analytics and automated warehouse operations in logistics infrastructure are made possible by digital technologies like blockchain, IoT, AI, and automation, which are revolutionizing global logistics. To integrate these technologies into the logistics infrastructure, consulting services are crucial as logistics hubs and ICDs adopt them. Consultants lead the integration of digital tools in logistics infrastructure to improve process automation and inventory management.
- Booming E-commerce sector: Due to the e-commerce boom, which increased by 8 percent in CY2024, global logistics networks are changing. This is because there is a greater need for advanced logistics hubs and consulting services to optimize supply chains and boost delivery efficiency.

3.3.13 Geospatial

The Geospatial segment of the market was assessed at INR 38.32 billion for FY2025, with expectations to grow to INR 95.8 billion by FY2030, reflecting a compound annual growth rate (CAGR) of 20.12% throughout the forecast period.

Chart 60: India Infrastructure Consulting Market, Value in INR billion, by Industry, Geospatial, FY2021 To FY2030 (Forecast)



Source: Actual Figures: Expert Interviews, Mordor Intelligence, ICRA Analytics.

Note: F: Forecasted

E: Estimated

Growth of Infrastructure Consulting in India's Geospatial Segment:

India's smart city initiatives and infrastructure projects are greatly aided by infrastructure consulting firms that use geographic information systems (GIS) and geomatics for geospatial analysis. For sustainable urban planning and development, these cutting-edge data-driven insights are essential. For Geospatial, Geotechnical, and Material Testing sector, Ministry of Defence (Civil) in Union Budget 2025-26 has allocated a total of INR 286.82 billion.

Geospatial analysis processes spatial data, generates maps, and analyzes geographic datasets using statistical techniques and GIS tools. These systems are easily integrated by organizations into their enterprise information systems. To track population migration and develop smart city strategies, geospatial analytics is essential. Prominent companies are depending more and more on these analytics for expansion, investments, and strategic planning.

For projects like environmental remediation and the construction of buildings, bridges, highways, and dams, infrastructure consulting services in India are essential. These companies use cutting-edge tools and methodologies to guarantee effective and long-lasting project execution.

Geospatial Data Guidelines 2021 have opened doors for private players by liberalizing data collection. Initiatives by Survey of India, NRSC (ISRO), and MoHUA are pushing for widespread GIS adoption in urban planning, smart cities, and infrastructure Initiatives like PM Gati Shakti and the Smart Cities Mission have raised demand for consulting services that use geospatial and real-time data visualization. Consultants assist city officials in tackling problems and creating workable answers, improving infrastructure resilience and urban governance.

Initiatives like AMRUT and AMRUT 2.0, which support the use of geospatial technologies in urban planning, emphasize the value of infrastructure consultants. These companies create local area plans, urban geodatabases, and master plans based on GIS, facilitating sustainable urban growth and effective resource management throughout India.

NAKSHA's open-data strategy and the burgeoning influence of AI/ML in geospatial analytics is expected contribute to India infrastructure consulting sector growth. Prominent opportunities include:

- Integrating BIM and GIS for construction projects.
- Utilizing drones for expedited land records digitization.
- Planning for climate resilience through real-time satellite monitoring.

The NAKSHA initiative showcases the potential of public-private partnerships in geospatial infrastructure, highlighting their ability to enhance efficiency, cut costs, and speed up project delivery. NAKSHA Leverages GIS for Urban Land Parcel Database, Pioneering Urban Planning in India:

1. Cutting-Edge Techniques:

- Aerial Surveys: NAKSHA likely employs drones or LiDAR for high-resolution mapping, echoing India's SVAMITVA Scheme, which digitized rural land records using drones.
- GIS Integration: NAKSHA's GIS integration mirrors the Smart Cities Mission, utilizing spatial analytics for urban planning and infrastructure management.
- AI/ML Potential: AI has a pivotal role to play in automating land classification from aerial imagery, spotlighting its significance in NAKSHA's operations.

2. Strategic Partnerships

- Survey of India: NAKSHA collaborates with the Survey of India, leveraging their expertise in geospatial standards, crucial for data interoperability and aligning with India's Geospatial Policy 2021.
- NICSI & MPSeDC: Partnerships with NICSI and MPSeDC hint at NAKSHA's emphasis on scalable digital infrastructure, resonating with NDAP's federated data platform approach.
- Centres of Excellence: Collaborations with centres of excellence, like IIITs for AI and NIC for governance, likely fuel NAKSHA's domain-specific innovations.

3. Urban Governance Impact

- Transparency: NAKSHA's initiatives could echo the success of Karnataka's Bhoomi Project, which digitized land records, curtailed corruption, and minimized disputes.
- Planning Efficiency: Drawing inspiration from Singapore's Urban Redevelopment Authority, NAKSHA's GIS databases facilitate dynamic zoning.

Private Sector Use Cases: Companies like PropTiger in real estate and logistics leverage NAKSHA's data for strategic site selection.

Trends in India:

- Underground Projects Embrace Sustainability Amid Urban Growth: As cities grow, sustainability is being prioritized in underground projects. Reduced carbon emissions, ecosystem protection, and environmentally friendly building are the goals of these programs. What motivates these efforts is the increasing demand for infrastructure, such as utility networks, water tunnels, and subway systems. The development of geospatial solutions that strike a balance between urban demands and environmental preservation is aided by consulting services. Building resilient, progressive cities requires a strong focus on innovation, efficiency, and environmental commitment.
- 3D Geospatial Data Gains Traction Across Multiple Sectors: 3D geospatial data is becoming increasingly important as urban planning, construction, and navigation change. It is expected to be used more often now because of falling data collection and processing costs. Infrastructure consultants have the chance to streamline projects, make better decisions, and stimulate innovation in urban and infrastructure planning thanks to this technology, which also makes virtual city models, improved navigation tools, and optimized construction workflows possible.
- Open Geospatial Data: The expanding open-geospatial data movement in India is spurring innovation by increasing access to geographic data and facilitating the creation of innovative goods and services, such as web-based applications with improved flexibility, scalability, and accessibility and open-source GIS software. In a data-driven world, this accessibility is opening up new possibilities, like sophisticated mapping solutions and analytical tools that, with the assistance of consulting firms, provide deeper spatial insights, promoting more intelligent decision-making and speeding up growth.

Trends in Global:

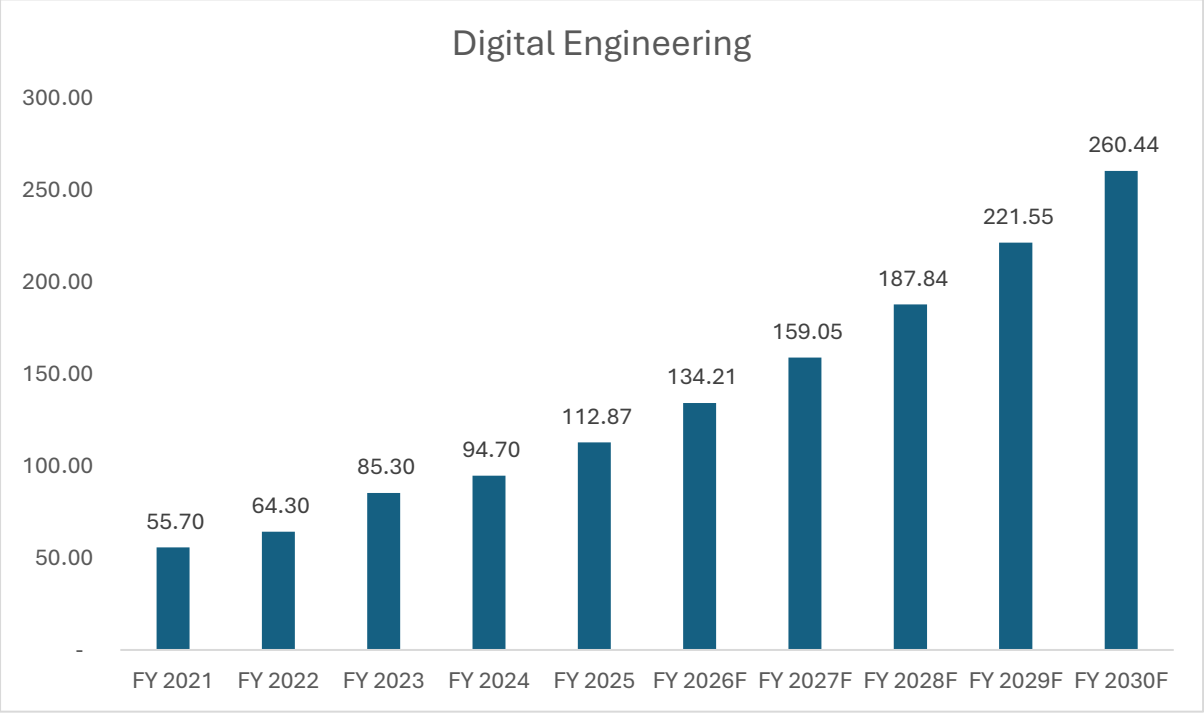
- AI and ML Transforming Geospatial Analysis Landscape: Due to the incorporation of AI and ML into geospatial analysis, infrastructure consulting firms are observing a paradigm shift in project design, planning, and management. By improving spatial predictions, automating tedious tasks, and spotting intricate patterns, these technologies give businesses solid information with which to make decisions. Furthermore, developments in AI and ML make it possible to forecast important events, which promotes risk management plans and sustainable growth.
- Surge in Sustainable Infrastructure Initiatives: Infrastructure projects like roads, bridges, dams, and airports are becoming more and more necessary due to population growth and urbanization; governments and private investors are financing these endeavors to meet contemporary demands. Because they guarantee structural safety, encourage sustainability, and direct the creation of long-lasting, environmentally friendly infrastructure that provides communities and investors with long-term value, geospatial studies are essential in this situation.
- Drones and UAVs Revolutionizing Geospatial Data Collection: The incorporation of unmanned aerial vehicles (UAVs) and drones into geospatial data collection has

revolutionized infrastructure project planning and management by making high-quality, cost-effective data collection possible. With the potential to greatly advance infrastructure planning, design, and maintenance, these technologies increase productivity, expedite inspections, and improve decision-making.

3.3.14 Digital Engineering

he Digital Engineering Services segment of the market was valued at INR 112.87 billion in FY2025, and it is projected to reach INR 260.44 billion in FY2030, registering a CAGR of 18.2% during the forecast period.

Chart 61: India Infrastructure Consulting Market, Value in INR billion, by Industry, Digital Engineering, FY2021 To FY2030 (Forecast)



Source: Mordor Intelligence, ICRA Analytics

Note: F: Forecasted
E: Estimated

Growth of Infrastructure Consulting in India's Digital Engineering Segment:

In the post-pandemic era, businesses have recognized the importance of agility and customer-centric strategies. To thrive in a rapidly evolving landscape, organizations must embrace resilient workforces and advanced technologies to ensure long-term success. For Digital Engineering sector, Ministry of Electronics and Information Technology in Union Budget 2025-26 has allocated a total of INR 260.26 billion and Department of Telecommunications has allocated a total of INR 801.05 billion.

A Pivotal Growth Strategy: Digital transformation has become a key enabler of growth and competitiveness, with India making significant strides in Digital Engineering (DE) as part of the

Fourth Industrial Revolution. With promising DE revenue projections, India is actively shaping its digital infrastructure to support industrial and economic growth.

The Role of Infrastructure Consulting in Digital Advancements

Technology Adoption in Infrastructure Projects: Indian infrastructure consulting firms are leveraging cutting-edge technologies such as:

- **Geotechnical testing** for structural integrity assessments.
- **Drone surveys** for high-precision mapping and real-time monitoring.
- **Digital engineering** to enhance project design, execution, and efficiency.

Consulting Expertise in Major Infrastructure Initiatives: Consultants play a key role in transformative projects like Bharatmala and Sagarmala, focusing on:

- Road expansions and enhanced connectivity.
- Port modernization and improved logistics efficiency.
- Land asset management and strategic urban planning.

Their expertise ensures project execution aligns with global best practices, optimizing efficiency and sustainability.

With a tech-enabled workforce, progressive policies, and large-scale infrastructure projects, India is well-positioned to harness the power of emerging technologies. Consulting firms remain instrumental in bridging the gap between digital innovation and infrastructure excellence, ensuring that India's infrastructure landscape evolves efficiently, sustainably, and competitively in the digital age.

Trends in India:

- Transformation of Indian Land Administration through Technology: In alignment with the Digital India Land Records Programme (DILRMP), efforts are concentrated on the modernization of land record management via digitization, integration of Geographic Information Systems (GIS), and legal reforms. These initiatives are pivotal in enhancing the nation's infrastructure framework. Consultancy firms are utilizing cutting-edge digital technologies to revolutionize infrastructure planning and development, with advanced topographic surveys significantly improving efficiency and data accuracy.
- The Impact of IoT, 5G, and Edge Computing: The investment in IoT, 5G, and edge computing is fundamentally altering the connectivity infrastructure by facilitating real-time data processing and improving network performance through decreased latency. This transformation is fostering innovation within Indian semiconductor manufacturing and transportation networks, as the increasing demand for 5G chipsets and connected devices accelerates the evolution of silicon engineering, thereby creating new opportunities within the infrastructure sector.
- Generative AI as a Catalyst for Product Development in India: The realm of Artificial Intelligence is undergoing a significant transformation across various industries, with progress in natural language processing, computer vision, and deep learning catering to

business requirements. According to Gartner, it is anticipated that over 80% of enterprises will embrace generative AI on a global scale within a few years, compelling infrastructure providers to invest in AI technologies for streamlined design and testing processes to maintain their competitive edge.

Trends in global:

- Organizations Adopting MACH Principles in Response to Operational Hurdles**:** Organizations are encountering difficulties in scaling their operations and adhering to stringent go-to-market schedules, which necessitates a focus on modernizing legacy systems. To address these challenges, companies are increasingly implementing modular solutions that promote integration, flexibility, and development independence. The demand for platform engineering services is being driven by cloud-native architectures and microservices platforms. Infrastructure consultants play a crucial role in facilitating seamless transitions, enhancing agility, and expediting value delivery. This highlights the essential strategic importance of infrastructure modernization and platform engineering in fostering agility and innovation.
- Advancements in Simulation Technologies **-** The Emergence of Digital Twins and Virtual Prototyping: The field of simulation technologies, particularly through the use of digital twins and virtual prototyping, is transforming product development by facilitating faster market entry, closer integration with engineering processes, and risk mitigation via virtual testing. Solutions provided by consultancy firms further amplify these innovations by creating immersive environments that enable businesses to visualize intricate processes, engage with data in novel ways, and promote sustainable growth while retaining a competitive advantage.
- Digital Enterprises Utilizing Private AI Infrastructures to Improve Data Privacy and Consultancy Services: Digital enterprises are increasingly implementing private AI infrastructures to bolster data privacy and operational efficiency. The 'Model to the Data' strategy positions AI models in proximity to data, enhancing privacy, speed, and cost-effectiveness. Consulting firms are refining these systems to ensure robust data protection, streamlined operations, and alignment of AI initiatives with organizational objectives.

3.4 Qualitative overview of key trends and drivers for the above segments of the infra consulting industry in India and global

Driven by government initiatives, digital transformation, and a strong focus on sustainability, India is quickly becoming a global leader in infrastructure consulting and engineering.

India's consulting sector is expanding quickly due to both domestic and international demand. Infrastructure consulting's potential is largely dependent on regional strengths.

States contribution to Infrastructure consulting: Mumbai is the leader in financial and real estate advising, Chennai is the epicentre of IT-driven and engineering solutions, Delhi is the centre of urban planning and transportation, and Kolkata is the centre of sustainable projects and social impact. These advantages demonstrate the contribution of infrastructure consulting to India's development.

Key Trend 1: The infrastructure engineering consultancy services sector is expected to be propped up by government initiatives.

The Indian infrastructure consulting market has grown as a result of the government's increased infrastructure development, which is intended to spur economic expansion and job creation. Increased demand for consulting services is a result of growing investments and the drive for "aatmanirbharata," or self-reliance. Initiatives like the Jal Jeevan Mission, which aims to supply tap water to rural households, emphasize the importance of considering factors like water, power, healthcare, smart cities, and mobility.

India's infrastructure consulting sector covers project evaluation, feasibility studies, design, and operations. With growing government investments, consultancy firms are key to planning, implementation, and sustainability, aligning with India's infrastructure goals.

Key Trend 2: The infrastructure consulting is being reshaped by digital transformation.

India's infrastructure consulting market is changing significantly as a result of the increase in demand for digital transformation. These days, consulting firms are incorporating cutting-edge technologies into their infrastructure projects, such as robotics, the Internet of Things, and artificial intelligence (AI).

The consulting industry is strengthened by this strategic change, which also improves resource allocation, expedites project management, and reduces delays. These consulting firms use digital tools to help industries like urban development and construction achieve more efficient operations, sustainable growth, and smoother operations. The importance of consulting expertise in forming India's dynamic infrastructure landscape is highlighted by such advancements.

Key Trend 3: Growth of sustainable practices in infrastructure consulting.

In India, infrastructure consulting is becoming more and more concerned with sustainability, integrating renewable energy sources, and directing eco-friendly practices.

Consultants are positioning green hydrogen as a vital energy source for decarbonizing sectors by taking advantage of India's sunshine. The National Green Hydrogen Mission is a key initiative to increase production and draw in investments, with an investment of INR 19.8 billion until FY2029-30F. Additionally, consulting supports renewable energy policies and strategies at the state level. Consultants are also using government viability gap funding to advance battery storage and offshore wind technologies. These will steer projects toward financial sustainability as they develop, promoting involvement from the private sector and propelling the expansion of India's green infrastructure.

3.5 Qualitative overview of key process involved in key types of infrastructure projects and the requirement of consulting services in the same

3.5.1 Process involved in key types of infrastructure projects and the requirement of consulting services in the same are as below-

A. Planning:

Details of the process:

This preliminary phase establishes the foundation for the entire project. It emphasizes the importance of defining objectives and clarifying the project's fundamental purpose and anticipated results, such as improving connectivity or enhancing capacity.

- In this phase, critical decisions are made regarding the necessary investments to fulfil the project's requirements, leading to the identification of specific initiatives aimed at addressing those needs.
- For example, strategic planning may involve evaluating a nation's electricity service coverage and formulating a comprehensive plan that outlines the investments needed to extend services to underserved regions.
- This stage also includes conducting feasibility studies for potential expansions, developing risk management strategies, and obtaining necessary permits from local authorities.
- Furthermore, it involves identifying and engaging key stakeholders to ensure that the project's objectives align with community and regulatory expectations.
- During the planning phase, it is crucial to secure certifications such as ISO standards, LEED, and other sustainability credentials.
- Ensuring compliance with legal, regulatory, and environmental requirements from the outset is vital to mitigate risks. Addressing these considerations early on guarantees that projects achieve sustainability objectives and comply with regulations.

Role of Infrastructure Consulting Services

An Infrastructure Consultant possesses significant expertise in assessing site conditions, analysing infrastructure and traffic dynamics, and developing effective designs. By considering elements such as environmental impact, safety standards, and cost efficiency, these consultants lay the groundwork for successful project execution from the outset.

- They enhance resource management—whether it involves materials, labour, or equipment—ensuring compliance with established budgets. Through consistent inspections and prompt corrective actions, consultants maintain project integrity, reduce risks of non-compliance, and ensure quality control.
- Construction projects inherently carry risks, including unforeseen obstacles, budget excesses, and delays. The expertise of an Infrastructure Consultant is crucial in these scenarios.
- By conducting thorough risk evaluations and formulating proactive mitigation plans, consultants address potential issues before they escalate into major problems. Additionally, consulting firms assist in obtaining necessary permits from local authorities.
- Serving as a vital link between infrastructure companies and stakeholders, consulting firms facilitate effective communication and collaboration, thereby enhancing stakeholder involvement throughout the infrastructure project.

- Infrastructure consulting firms navigate projects through various certifications, sustainability efforts, and regulatory compliance. They aid in obtaining certifications, offer advisory support, assess Life Cycle Assessments (LCA), perform Environmental Impact Assessments (EIA), and help secure essential approvals.

B. Designing

Details of the process:

The design phase transforms objectives into implementable strategies.

- This stage involves the creation of preliminary models, the preparation of comprehensive technical drawings, and the enhancement of designs in response to feedback to ensure compliance with all project specifications.
- It includes architectural, structural, and engineering designs.
- This phase is crucial, as it signifies the commencement of sustainability standards, including the emphasis on utilizing local or recycled materials and choosing equipment that promotes water and energy conservation throughout both the construction process and operational phase.

Role of Infrastructure Consulting Services

- Consultants focus on developing systems that are both efficient and cost-effective while ensuring compliance with regulations.
- They support project design by utilizing sophisticated project management tools and methodologies to optimize timelines and budgets.
- Consultants also provide guidance in manoeuvring through complex legal and regulatory frameworks, guaranteeing that project designs conform to all relevant standards.

C. Procurement

Details of the process:

- During this phase, stakeholders engage in resource acquisition, contract management, and the administration of tendering processes.
- They issue requests for proposals (RFPs) to select appropriate contractors and suppliers, negotiating contracts to align with project specifications.
- The bidding process within the procurement stage identifies suppliers offering the most advantageous proposals, evaluated on criteria such as cost, feasibility, sustainability, and quality. This process may also lead to a redefinition of requirements to integrate innovative technologies and sustainable practices, thereby influencing sustainable development.
- The financing component of the procurement stage assesses potential funding sources and methods, frequently involving international financial institutions, public authorities, or private investors through public-private partnerships. This phase encompasses comprehensive risk analyses that address financial, social, and environmental considerations.

Role of Infrastructure Consulting Services

- Consultants are essential in the procurement process, identifying appropriate contractors and suppliers, promoting equitable competition, and negotiating favorable contract conditions.
- They also guarantee that procurement procedures comply with established best practices and legal requirements.
- The infrastructure consulting firm advises on appropriate procurement models, including traditional or design-build approaches, customized to the specifics of the project and its associated risks.
- Furthermore, they assess the bids received based on predetermined criteria, ensuring the selection of the most competent contractor regarding quality, cost, and delivery schedules.

D. Construction and Implementation

Details of the process:

- At this phase, experts oversee construction operations, track advancement to maintain the project timeline, and implement quality control measures to adhere to specifications.
- Furthermore, they establish schedules for tasks and milestones while performing inspections and audits to ensure compliance with quality standards.

Role of Infrastructure Consulting Services

- Consultants are responsible for supervising construction activities, ensuring adherence to design specifications, quality benchmarks, and safety regulations.
- They provide project management services, promoting effective collaboration among contractors and stakeholders.
- Consultants tackle unforeseen issues, including delays or budget overruns, and develop strategies to minimize risks.

E. Closure

Details of the process:

- This phase encompasses the testing and commissioning of infrastructure components to verify their proper operation.
- Upon completion of construction, the finished infrastructure is transferred to the client or operator.
- This phase also concludes all documentation and confirms adherence to the project's initial design and specifications.
- If required, a maintenance strategy may be established to enhance the infrastructure's durability and reduce downtime.

- Furthermore, this phase assesses the project's success by evaluating its performance and determining if it achieved its original goals.

Role of Infrastructure Consulting Services

- Consultants are integral to the commissioning process, guaranteeing that the infrastructure functions effectively and adheres to all performance standards.
- They oversee the transition, ensuring that the client obtains all essential documentation, such as warranties, manuals, and compliance certificates.
- Consulting services are capable of developing maintenance schedules and operational strategies to ensure optimal performance over the long term.
- Consultants assess project results, evaluate efficiency, and provide recommendations for subsequent projects.
- They perform cost-benefit analyses and performance evaluations, assisting clients in understanding the project's overall impact.

3.5.2 Key Roles of Infrastructure Consulting services firms in Infrastructure Projects

Throughout the lifecycle of infrastructure projects, consulting firms play a pivotal role, boosting efficiency, effectiveness, and overall success. Key contributions of these firms encompass.

Project Management Consultancy (PMC): Consulting firms play a crucial role in delivering project management services that facilitate the effective execution of infrastructure projects. They support construction companies by creating comprehensive schedules and tracking progress to guarantee that projects are completed on time. By proactively identifying potential risks, consulting firms provide organized mitigation strategies aimed at minimizing disruptions. Furthermore, they perform routine audits and inspections to verify that construction activities adhere to established quality standards, thereby reducing errors and ensuring compliance.

Technical expertise: Consulting firms contribute their specialized expertise to improve project results. They assist in creating designs that conform to both functional and regulatory standards, guaranteeing that projects fulfill operational requirements and comply with legal obligations. Throughout the implementation phase, consulting firms tackle technical issues by offering innovative solutions that preserve system integrity and enhance performance, thereby ensuring smooth project execution.

Financial advisory: Consulting firms provide essential financial analysis to guarantee the feasibility of projects. They assist clients in developing practical budgets by conducting thorough cost assessments, thereby avoiding financial excesses. Additionally, these firms offer guidance on funding strategies, such as public-private partnerships (PPP) and alternative financing methods, which empower clients to obtain the required resources for significant infrastructure initiatives.

Stakeholder Engagement: Consulting firms play a crucial role in promoting effective communication and collaboration among stakeholders. They achieve this by organizing regular updates, meetings, and collaborative discussions to ensure that all parties stay aligned with the project's objectives. By proactively addressing stakeholder concerns and managing

expectations, consulting firms cultivate trust and sustain support throughout the project lifecycle, which is essential for achieving overall success.

Feasibility Studies / Conceptual Studies: Infrastructure consulting firms conduct comprehensive feasibility studies to evaluate the technical, financial, and environmental viability of proposed projects. These studies involve detailed site assessments, demand forecasting, cost-benefit analysis, and risk evaluations to determine whether a project should proceed. They also examine regulatory compliance, environmental impact, and socio-economic benefits, providing decision-makers with data-driven recommendations. By analyzing alternative solutions—such as different routes, technologies, or scales—consultants help clients select the most optimal and sustainable approach before committing significant investments.

Detailed Project Reports (DPR): A Detailed Project Report (DPR) serves as the foundational document for infrastructure development, outlining the project's scope, design specifications, cost estimates, and implementation schedule. Consulting firms prepare DPRs by integrating engineering, financial, and environmental considerations to ensure alignment with client requirements and regulatory standards. The DPR also includes risk mitigation strategies, procurement plans, and resource allocation frameworks, making it essential for securing approvals, tendering, and financing. A well-structured DPR minimizes uncertainties and provides a clear roadmap for execution.

Master Planning: Master planning involves creating long-term, integrated development strategies for urban or regional infrastructure, ensuring cohesive growth across sectors such as transportation, utilities, and public amenities. Consulting firms assess demographic trends, economic projections, and environmental factors to design scalable and sustainable infrastructure frameworks. They engage with multiple stakeholders—governments, private developers, and communities—to align priorities and optimize land use. Master plans often incorporate smart city technologies, climate resilience measures, and phased implementation strategies to accommodate future expansion.

Pre-bid Services: Pre-bid services assist project owners in structuring and launching competitive tenders to attract qualified contractors. Consulting firms help define the procurement strategy, draft bid documents (RFPs, contracts), and establish evaluation criteria. They conduct market assessments to gauge contractor interest and capacity, reducing the risk of bid failures or disputes. By ensuring transparency and competitiveness, pre-bid services enhance the likelihood of selecting the right partners while minimizing delays and cost overruns during procurement.

Detailed Engineering Services: Detailed engineering services involve finalizing construction-ready designs, specifications, and material requirements to ensure project constructability. Consulting firms optimize designs through value engineering, balancing cost efficiency with safety and durability. They coordinate across disciplines—civil, structural, electrical, and mechanical—to resolve technical conflicts and ensure seamless integration. These services also include preparing Bills of Quantities (BOQs) and construction methodologies, which are critical for accurate cost estimation and contractor bidding.

Construction Supervision: During construction, consulting firms act as the owner's representative, monitoring quality, progress, and compliance with contractual obligations. They

conduct regular site inspections to verify workmanship, material quality, and adherence to safety protocols. Construction supervisors track project timelines, identify deviations, and recommend corrective actions to mitigate delays. They also mediate disputes between contractors and clients, ensuring smooth project execution while minimizing legal and financial risks.

Authority's Engineer: As an independent third party, the Authority's Engineer ensures that projects comply with contractual agreements, technical standards, and regulatory requirements. They certify construction milestones, verify payment claims, and validate the quality of completed work. Their role is critical in dispute resolution, providing impartial assessments to avoid litigation. At project completion, they oversee defect rectification and handover documentation, ensuring a seamless transition to operations.

Proof Checking: Proof checking involves an independent review of engineering designs to identify errors, safety gaps, or non-compliance with codes and standards. Consulting firms scrutinize third-party designs to prevent costly rework during construction. They assess structural integrity, material suitability, and cost efficiency, ensuring that designs meet project requirements. Proof checking reduces liability risks for all stakeholders and enhances the overall reliability of the infrastructure.

Bid Management: Bid management encompasses the end-to-end procurement process, from drafting tender documents to evaluating contractor submissions. Consulting firms develop clear, competitive bid packages to attract qualified bidders while ensuring transparency and fairness. They organize pre-bid meetings, address clarifications, and establish objective evaluation frameworks to select the best proposals. Effective bid management minimizes delays, reduces fraud risks, and ensures the selection of capable contractors.

Transaction Advisory: Transaction advisory services support infrastructure financing, particularly for PPPs and private investments. Consulting firms structure financial models, assess project bankability, and identify funding mechanisms such as viability gap funding (VGF) or tariff frameworks. They assist in investor outreach, preparing pitch decks, and negotiating concession agreements. By allocating risks appropriately—such as construction risk versus demand risk—they facilitate financial closure and long-term project sustainability.

Lender's Engineering Services: Lender's engineering services provide technical due diligence to financial institutions funding infrastructure projects. Consulting firms evaluate project feasibility, construction risks, and revenue projections to safeguard lender interests. During construction, they monitor progress and verify fund utilization. Post-completion, they assess operational performance and repayment capacity, advising lenders on refinancing or restructuring options if needed.

O&M Supervision: Operations and Maintenance (O&M) supervision ensures infrastructure assets perform efficiently throughout their lifecycle. Consulting firms develop maintenance strategies, optimize energy use, and monitor compliance with service-level agreements (SLAs). They train operators, implement predictive maintenance technologies, and recommend upgrades to extend asset lifespan. By focusing on lifecycle costs and performance benchmarks, O&M supervision maximizes return on investment for infrastructure owners.

In conclusion, consulting firms are essential to infrastructure projects, offering specialized knowledge in areas such as project management, technical assistance, financial strategy, and

stakeholder involvement. Their involvement guarantees a systematic methodology throughout all phases, from initial planning to final completion, thereby facilitating the effective realization of these projects.

3.6 Qualitative overview of government schemes impacting the sector in India

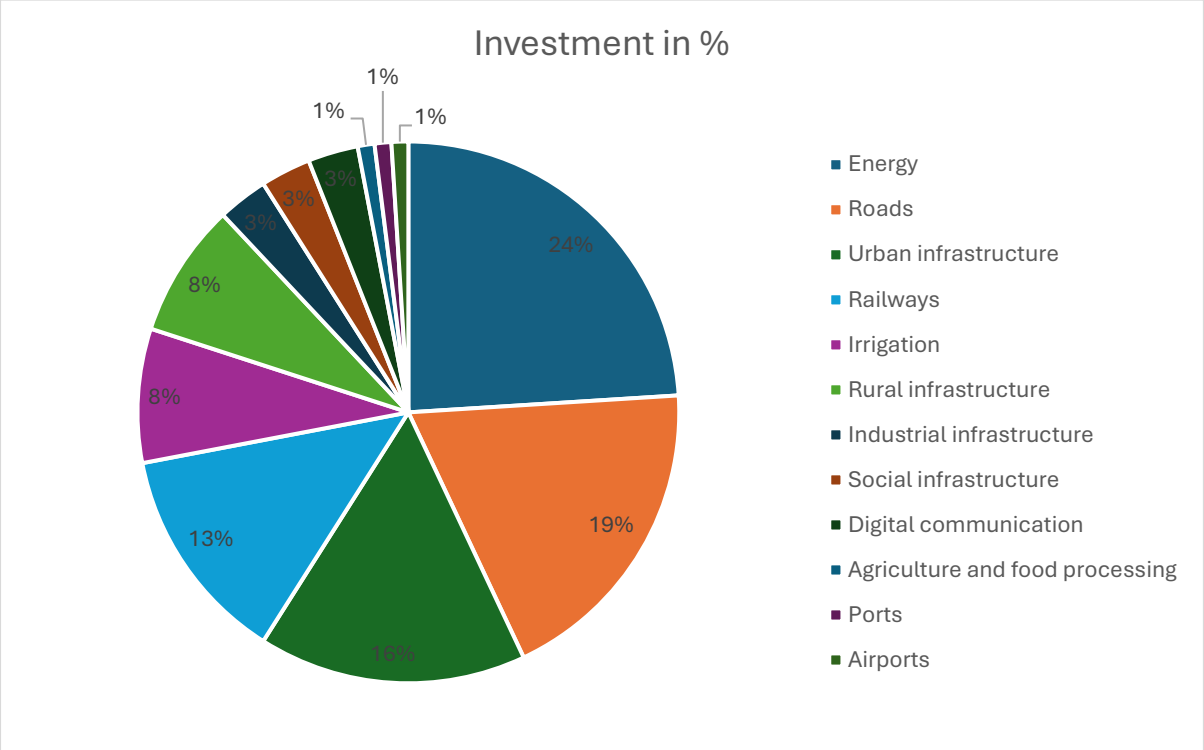
The government has implemented reforms in an effort to improve the ease of doing business. These include actively encouraging foreign direct investment (FDI), reducing regulatory red tape, and simplifying land acquisition. Infrastructure consulting firms are therefore looking for more promising growth opportunities, delving deeper into public-private partnership (PPP) projects, and attracting clients from around the world.

The National Investment and Infrastructure Fund (NIIF) and improved credit facilitation have made it easier to obtain finances for infrastructure projects. This newfound ease has made it possible for consulting firms to take on large-scale projects, concentrating on risk assessment, financial structuring, and management consulting to help clients secure these funds.

3.6.1: National Infrastructure Pipeline (NIP)

According to the Ministry of Finance, the NIP allocates a substantial 71 percent of its investments to critical sectors like energy, roads, urban development, and railways, with a daring goal of USD 11.4 trillion set for the FY 2019–2025. The goal of this project is to establish a strong basis for the expansion of infrastructure across the country.

Chart 62: Estimated investments under the National Infrastructure Pipeline (NIP), by sector, In Percentage, in India, from FY2021 to FY 2026F



The data reveals that energy, roads, and urban infrastructure dominate the investment distribution, collectively accounting for 59% of the total allocation. Railways follow with 13%,

while irrigation and rural infrastructure each receive 8%. Sectors such as industrial infrastructure, social infrastructure, and digital communication share a modest 3% each.

Agriculture and food processing, ports, and airports receive the least attention, with only 1% allocated to each. This distribution highlights a strong focus on core infrastructure sectors, with comparatively lower emphasis on sectors like agriculture and transportation hubs.

Impact of this scheme on the Infrastructure Consulting Landscape in India:

Infrastructure consulting firms are in greater demand as a result of this initiative to offer planning, design, project management, and advisory services, especially in sectors like energy, transportation, urban development, and social infrastructure.

3.6.2: PM Gatishakti National Master Plan

This master plan strengthens multimodal connectivity by combining various infrastructure schemes onto a single digital platform. It aims to improve project planning and execution, reducing costs and increasing efficiency by tying together 16 ministries.

Impact of this scheme on the infrastructure consulting Landscape in India:

Consultants are involved in planning and optimizing transportation networks, logistics, and digital infrastructure as part of the overall strategic framework.

3.6.3: Smart Cities Mission

In order to revitalize urban areas and establish smart cities across the country, the Indian government started the National Smart Cities Mission. As of August 28, 2025, the Smart Cities Mission has proposed a total of 8,075 projects, out of which 7,458 have been completed and 412 remain under implementation. As of August 28, 2025, the Smart Cities Mission has proposed a total of 8,075 projects, out of which 7,458 have been completed and 412 remain under implementation. The revised financial outlay for the mission stands at INR1,746.02 billion, with INR1,632.18 billion already released, resulting in 92.4% overall project completion. Initially scheduled to conclude in June 2024, the mission was granted an extension until March 31, 2025, to allow for the completion of ongoing projects. By August 2025, the mission had closed for new proposals, with the extension focused solely on finalizing the remaining works within the given deadline.

Impact of this scheme on the infrastructure consulting Landscape in India:

Infrastructure consultants are essential to the planning and execution of smart city initiatives, providing guidance on sustainable practices and technology integration, and developing urban mobility solutions.
Additionally, it is anticipated that this extension will have a major effect on India's infrastructure consulting market since businesses will probably see a rise in demand for their services to support timely delivery and project execution.

3.6.4: Bharatmala Pariyojana

The Ministry of Road Transport and Highways initiated the Bharatmala Pariyojana, which is an umbrella initiative. Although the first phase of Bharatmala was announced in 2017 with a 2022 completion date in mind, implementation delays and financial difficulties prevented it from being completed on schedule. The Sagarmala initiative, which aims to modernize ports and promote coastal shipping to increase trade and maritime activities, is complemented by the Bharatmala project, which aims to improve road connectivity for both freight and passenger movement.

The Lok Sabha was informed that as of June 30, 2025, Madhya Pradesh has completed 1,570 km of the 1,913 km awarded under Bharatmala Phase-I, while Maharashtra has finished 1,913 km of 2,174 km. Advanced technologies like AI-MC, LIDAR, and drone-based analytics are being used in highway construction. The Bharatmala Pariyojana aims to improve logistics efficiency and connectivity, especially in tribal and Left-Wing Extremism (LWE) affected areas. The scheme, with an estimated cost of INR 8.54 lakh crore, includes economic corridors (8,737 km), expressways (2,422 km), border and international connectivity roads (1,619 km), and coastal and port connectivity roads.

Infrastructure consulting firms will play a pivotal role in network optimization, PPP structuring, and execution strategies to enhance project efficiency and cost-effectiveness, with increased funding for railway modernization, freight corridors, and highway expansion. Opportunities for feasibility studies, regulatory compliance, investment planning, and operational efficiency consulting, has been presented by the government's strategic focus on maritime development and inland waterways under Sagarmala and the Maritime Development Fund presents.

With a significant boost in funding for regional aviation, consultants will drive PPP facilitation, risk assessments, and execution oversight, ensuring seamless project delivery for 120 new destinations and 40 million passengers over the next decade. The budget's focus on electric highways, clean ports, and urban transit creates a strong demand for strategic advisory, risk management, and cost optimization. Infrastructure consultants will play a pivotal role in technology integration, sustainable design, and performance benchmarking. With 25% of infrastructure funding sourced from private investments, consultants are essential in financial advisory, investor engagement, contract structuring, and risk mitigation, ensuring smooth collaboration between public and private stakeholders

Impact of this scheme on the infrastructure consulting Landscape in India:

The Bharatmala Pariyojana has significantly influenced the infrastructure consulting landscape in India by driving demand for expertise in project planning, execution, and monitoring. It has also created opportunities for consulting firms to engage in largescale infrastructure development, fostering innovation and efficiency in the sector.

3.6.5 Budget allocation

3.6.5.1 Impact of FY2025-26 Budget on overall Infrastructure consulting.

Table 8: Expenditure of various infrastructure sectors (in billion INR) for FY2025 and FY2026.

Sectors	Allocated Funds in Budget FY2025-26	Allocated Funds in Budget FY2024-25	Increase/Decrease
Roads Infrastructure	2870.0	2780.0	3.2% increase
Railways Infrastructure	2,652.0	2,520.0	5.2% increase
Airports Infrastructure	24.0	23.6	1.7% increase
Ports and Shipping	34.7	28.6	21.3% increase
Urban Rail Infrastructure	312.4	246.9	26.5% increase
Water Infrastructure	967.8	636.7	52.0% increase
Oil and Gas	193.2	173.7	11.2% increase
Power and Renewable Energy	218.5	205.0	6.6% increase
Telecom	342.6	725.3	52.8% decrease

- **Road Infrastructure:** With governments focus on emphasizing steady infrastructure development with a focus on fiscal prudence, the Union Budget FY2025-26 reflected a moderate increase in allocations for the Ministry of Road Transport and Highways (MoRTH) and the National Highways Authority of India (NHAI). This creates opportunities for private sector involvement through PPP models, engineering consultancy services and asset monetization. To enhance cost efficiency and project execution in India's highway sector, consulting firms can play a vital role in project structuring, debt optimization, and digital transformation.

- **Railway Infrastructure:** With the governments focus to ensure long-term sustainability and operational efficiency, the Union Budget FY2025-26 reinforces the government's commitment to modernizing and expanding Indian Railways. the strategic allocation of funds toward new line construction, doubling, electrification, and signaling reflects a push for network optimization, capacity enhancement, and safety improvements, with the budgetary outlay remains largely unchanged. This budget presents a significant opportunity for strategic advisory, digital transformation, and financial structuring, considering from an infrastructure consulting perspective.

- **Ports and Shipping Infrastructure:** A strategic push for maritime expansion, inland waterway enhancement, and shipbuilding growth has been highlighted with the higher budget allocation for ports, shipping, and waterways highlights. The sector is set for major advancements, with investments in port-led development and multimodal logistics. For infrastructure consulting, this brings opportunities in project planning, financial structuring, and digital integration, with a focus on port connectivity, sustainable transport, and private sector participation to drive long-term efficiency and resilience.

- **Aviation Infrastructure:** By balancing regional connectivity expansion, regulatory strengthening, and air cargo modernization, the Union Budget FY2025-26 for the Ministry of Civil Aviation (MoCA) reflects a calibrated approach toward aviation infrastructure development. While this marks a modest 1.7% increase over the previous year's budget of INR 23.6 billion, it is notably 9.7% lower than the revised estimate (RE) of FY2025, indicating a focus on resource optimization and efficiency-driven growth rather than aggressive expansion. The evolving landscape possesses significant opportunities for infrastructure consultants in PPP structuring, feasibility studies, logistics transformation, and regulatory compliance.

- **Urban Rail Infrastructure:** The 46% budget increase for metro and MRTS projects and the 26% rise from last year's revised estimate reflect a strong commitment to urban mobility and mass transit. Additional funding for RRTS in NCR emphasizes intercity connectivity and congestion relief. With a focus on PPP models, digital transformation, and sustainable urban planning, many opportunities in project structuring, financing, and smart mobility solutions has been unlocked for infrastructure consulting.

- **Oil and Gas:** The government's focus on energy security, strategic oil reserves, and LPG accessibility is reflected by the 21% increase in budget allocation for the Ministry of Petroleum and Natural Gas reflects. A push for affordable and sustainable energy solutions has been indicated by the significant funding for LPG subsidies and gas infrastructure. This presents opportunities in strategic energy planning, financial structuring, and project execution. Enhancing refinery capacity, optimizing gas distribution networks, and integrating cleaner energy technologies will be key in strengthening India's energy resilience and long-term sustainability.

- **Water Infrastructure:** A strong push for better cities and clean water access has been noticed with sharp rise in urban and water resource funding signals. The focus is on long-term quality and sustainability, with key programs such as Swachh Bharat, AMRUT, and Jal Jeevan Mission receiving major support. In consideration of infrastructure consulting, this opens opportunities in urban planning, water management, and smart execution, ensuring efficient and sustainable growth.

- **Power and Renewable Energy:** The moderate increase in budget allocations for the Ministry of Power Renewable Energy (up by 6.6%) reflects a steady commitment to energy transition and infrastructure enhancement. The overall growth in funding suggests a gradual rather than aggressive shift towards these priorities, with the focus remains on grid modernization, nuclear power expansion, and domestic manufacturing of renewables. This presents opportunities in policy advisory, investment planning, and operational optimization. The emphasis on nuclear energy, transmission efficiency, and localized manufacturing will require strategic guidance to balance financial viability, regulatory compliance, and technological innovation for long-term sectoral resilience.

- **Telecom:** With a focus on digital infrastructure, self-reliance, and emerging technologies, the budget allocation for the IT and telecom sectors remains consistent. The overall funding suggests a measured approach rather than a significant expansion, with investments in BharatNet, AI, and domestic manufacturing incentives indicating continued support. The opportunities lie in advising on digital transformation, policy implementation, and ecosystem development. To ensure long-term digital resilience and sustainable growth in India's technology landscape, Strategic guidance will be essential for scaling AI adoption, optimizing broadband expansion, and strengthening local manufacturing capabilities.

3.6.5.2 Budget FY2025-26 signals a boom for infrastructure consulting.

Indian Railways, which transports 8.5 billion passengers each year, has seen its budget allocation in FY2026 is INR 2652 billion up from INR 2520 billion in FY2025. This uptick underscores a growing need for consulting services, particularly in areas such as freight corridor expansion, station upgrades, and network optimization.

Further, roads too enjoyed a financial boost, receiving INR 2870 billion, a 3.2% increase. Investments were notably driven by initiatives such as Bharatmala Pariyojana and rural road enhancements. This uptick further cements the demand for advisory services, especially in project planning, execution, and structuring public-private partnerships (PPP).

In the maritime realm, waterway expansion under Sagarmala garnered INR 337.1 billion. Consultants are increasingly vital for feasibility studies, ensuring regulatory compliance, and shaping investment strategies, with Sagarmala allocating INR 337.1 billion and modernizing ports. Such moves underscore the sector's crucial contribution to India's infrastructure growth.

3.6.5.3 Udan 4.0 initiative boosts demand for Infrastructure consulting in India

India's infrastructure consultancy sector is at the forefront of propelling the UDAN 4.0 initiative. They facilitate PPP models, conduct feasibility studies, and oversee the smooth execution of regional airport projects.

To invigorate regional flights UDAN 4.0 has earmarked a substantial INR 240 billion, with ambitions set on 120 destinations and catering to 40 million passengers over the next decade. Spotlighting multi-modal transport and sustainable infrastructure, the FY2026 budget, sees consultants lending their expertise in planning, cost optimization, and risk management. Their focus spans electric highways, clean ports, and urban transit. Consultants play a crucial role, offering financial advisory services, engaging with investors, and structuring contracts for transportation projects, with private investments accounting for 25% of infrastructure funding.

Furthermore, the sector champions workforce development in construction, steel, and cement, ensuring resource optimization to address the growing employment needs. By marrying technology with regulatory insights, consultants not only drive economic growth through infrastructure but also guarantee projects are executed sustainably and efficiently.

I

Impact on Infrastructure Consulting:

The growing role of infrastructure consulting firms can be seen in India’s rapid infrastructure expansion across railways, highways, ports, waterways, aviation, and urban transit underscores. Consultants are shaping project feasibility, financial structuring, and policy alignment with major initiatives such as Bharatmala, Sagarmala, UDAN 4.0, and metro expansions.

Specialized expertise in financial modeling, risk mitigation, and investor engagement to optimize project execution is required with the increasing reliance on public-private partnerships (PPP) demands. Additionally, strategic consulting is required for the push for digital transformation in infrastructure—through AI-driven urban planning, smart mobility solutions, and cybersecurity frameworks—to integrate cutting-edge technology and enhance operational efficiency.

With infrastructure consultants advising on green energy integration, environmental impact assessments, and ESG compliance, sustainability is another key focus area. The focus on resilient infrastructure also highlights the need for predictive maintenance, long-term asset management, and optimized resource allocation.

3.7 Qualitative overview of key risk, challenges and threats in the industry in India and global

3.7.1 Analysis of Key Challenges in the Global Infrastructure Consulting Sector

A. Economic pressures challenging infrastructure consulting firms-

Amid severe talent shortage, consultants in the infrastructure sector are struggling with growing wage costs. Consulting firms are suffering from tighter profit margins and an urgent need for competitive pricing strategies as clients demand greater value for their investments.

Global consulting firms must navigate the rough seas of fluctuating exchange rates, which can affect their profitability, particularly when fees are paid in different currencies. Rate fluctuations can also influence infrastructure investment decisions and increase the cost of financing large-scale projects.

Globally, inflation, shifting fiscal policies, and disparate regional economic conditions are putting increasing economic pressure on infrastructure consulting firms. These elements lead to higher labour and material costs, thrown-off project schedules, and difficulties sustaining profitability while satisfying value delivery requirements from clients.

- **Escalating Construction Costs Impacting Project Feasibility:**

  Escalating construction costs affect project viability and client budgets, rising construction costs have emerged as a significant challenge for infrastructure consulting firms. Reduced project activity, budget overruns, delays, cancellations, and disputes result from these cost increases, which also make project planning and execution more difficult.

- **Economic Uncertainty Delaying New Projects:**
  Global economic uncertainty is causing new infrastructure projects to be delayed, which presents more challenges for consulting firms. Global inflation is predicted by the IMF World Economic Outlook 2023 to drop to 4.3% CY 2024, although it will still be higher than the pre-pandemic average of 3.5% (2017–19). Project pipelines are made more vulnerable by ongoing inflation, financial market volatility, and geopolitical fragmentation. There are some opportunities, though, due to pent-up demand and faster disinflation. The ability to be flexible and agile is essential for infrastructure consulting firms to assist clients in navigating these uncertainties and maintaining project momentum.

B. Digital Transformation and Artificial Intelligence

Automation and artificial intelligence are speeding up digitalization, which presents major challenges for infrastructure consulting firms. As businesses increasingly use in-house solutions, these technologies increase efficiency while lowering dependency on outside consultants.

- Rapid technological development could make conventional consulting methods and resources outdated. For infrastructure consulting businesses to stay competitive, they must constantly improve their technological prowess. For instance, using Building Information Modelling (BIM) software has become crucial for contemporary project management and planning.

- AI and project management software are two examples of emerging technologies that are changing engineering projects, and businesses must quickly adjust to stay relevant. By streamlining processes and offering real-time data insights, these technologies facilitate quicker problem solving and improved decision-making. However, many infrastructure consulting firms still face a significant challenge when it comes to integrating new tools with existing systems.

- Workforce resistance makes efforts at digital transformation even more difficult. Forecasts that AI will handle 80% of project management duties by 2030 raise questions about job security and changing roles, so employee buy-in is crucial. In order to overcome these obstacles, infrastructure consulting companies need to emphasize team participation, offer sufficient training, and implement cutting-edge tools with AI features to boost output and efficiency.

- Advanced technology adoption is essential. Project visibility, control, and accuracy are increased by purchasing project management software. 74% of consulting, engineering, and architecture firms run the risk of losing market share in the next three years if they don't undergo digital transformation, according to research.

3.7.2 Analysis of Key Challenges in the Indian Infrastructure Consulting Sector

A. Project Complexity and Client Expectations

- Indian infrastructure consulting firms face significant difficulties in upholding high project quality while adhering to budget limitations. The primary challenges encompass insufficient oversight, corruption, elevated labor costs, a lack of skilled workforce, inadequate testing and certification processes, and delays in maintenance operations.

- To achieve effective quality control, it is essential to establish comprehensive procedures, standards, and verification processes that ensure compliance with design, safety, and performance criteria. Nevertheless, inconsistent monitoring and failure to comply with these standards further intensify quality-related challenges.

- The table mentioned below outlines the factors that contribute to quality issues within India's infrastructure consulting industry, along with examples that demonstrate their effects on project execution and delivery.

Table 9: Factors Leading to Quality Challenges, In India

Issue	Description	Example
Poor Material Quality	Substandard materials compromise durability and structural integrity.	Due to the use of low-quality cement and concrete, several flyovers in Kolkata required repairs.
Inadequate Supervision	Improper monitoring during construction leads to deviations from established quality standards.	Insufficient supervision during construction led to reports of structural defects in the Mumbai Metro.

Corruption and Bribery	Kickbacks lead to the choice of cheaper, lower-quality contractors, compromising the quality of the entire project.	Corruption in contract awards led to quality issues in the Commonwealth Games infrastructure.
Lack of Skilled Labor	A lack of skilled workers results in subpar construction quality.	Unskilled laborers, employed for construction work, caused cracks in several road projects across rural India.
Inadequate Testing and Certification	Improper testing of materials and construction methods before use results in undetected defects.	Due to inadequate preliminary checks on construction materials, a segment of the Chennai Metro collapsed during testing.
Delayed Maintenance	Neglecting timely maintenance after construction can lead to a decline in infrastructure quality.	Regular maintenance issues have led to wear and tear on Mumbai's Bandra-Worli Sea Link.

Source: Mordor Intelligence, ICRA Analytics

B. Sustainability and Regulatory Challenges

- In India, infrastructure consulting firms face significant challenges due to regulatory complexities, financing difficulties, and socio-political issues. The presence of overlapping regulations and protracted bureaucratic procedures results in delays in project approvals, which impedes progress.
- Securing financing for large-scale projects proves to be a formidable task, particularly in light of economic volatility. Additionally, socio-political elements, including land disputes and opposition from local communities, further prolong project execution and escalate costs.
- These obstacles collectively hinder the timely delivery of projects and adversely affect the growth of infrastructure consulting firms. The table below presents key factors and examples that illustrate their impact on project execution.

Table 10: Factors contributing to infrastructure construction implementation challenges

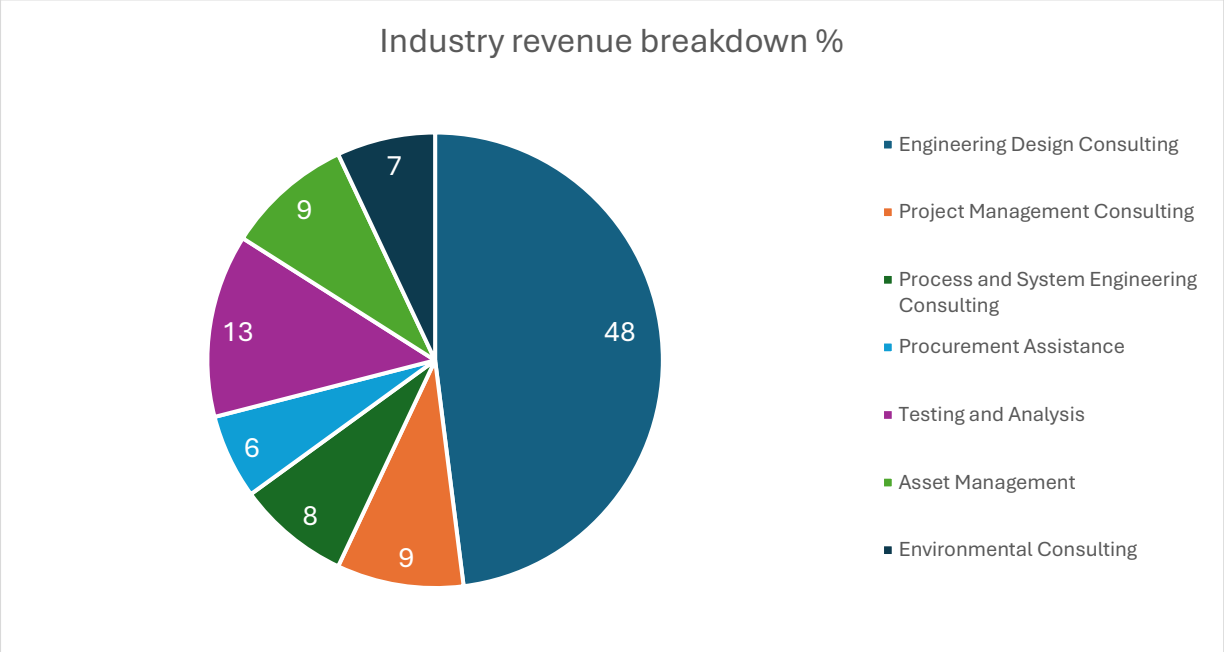
Issue	Description	Example
Land Acquisition Delays	Legal disputes, insufficient compensation, and local resistance complicate land acquisition efforts.	Land acquisition issues have long delayed the Bengaluru Peripheral Ring Road project.
Environmental Clearances	Project timelines face disruptions due to prolonged procedures and delays in securing environmental approvals.	Environmental clearance challenges significantly delayed the Navi Mumbai International Airport project.
Corruption and Misallocation	Contract awards marred by corruption often result in delays, inflated costs, and compromised work quality.	corruption scandals surrounding the Commonwealth Games Village led to project delays and rising costs.
Contractor Failures	Project disruptions arise when contractors miss deadlines or deliver subpar work.	Contractor failures and missed deadlines repeatedly delayed the Dwarka Expressway.
Community Resistance	Infrastructure projects frequently face pushback from local communities, who cite concerns over environmental impact, cultural preservation, and livelihood disruptions.	Local communities opposed the Narmada Dam project, causing construction delays.
Political Interference	Project delays or cancellations often stem from shifting governments or political agendas.	Political leadership changes and clashing priorities delayed the Mumbai Metro Line 2 project.

Source: Mordor Intelligence, ICRA Analytics

4. Qualitative overview of global infrastructure consulting environment

4.1 Australia

Chart 63: Products And Service (Industry Revenue Breakdown in CY 2023)



Source: IBIS World Engineering Consulting in Australia Report

Engineering consulting services focus on designing, developing, and optimizing infrastructure projects, along with inspecting and evaluating construction activities. Key segments include engineering design consulting, testing and analysis, and project management consulting. These firms support infrastructure developers, requiring expertise across structural, mechanical, chemical, and electrical engineering due to project complexities.

While mining and energy companies are prioritizing efficiency over launching new projects leading to a moderation in demand for design consulting, public sector investment in large-scale infrastructure initiatives has helped sustain momentum. Federal and state governments continue to outsource major infrastructure projects, driving steady demand. Although the slowdown in construction activity has posed challenges, these government-led investments are providing stability and supporting opportunities for the industry.

Intensifying competition among major firms has pressured profit margins. Companies are enhancing value-added services and expertise to improve profitability. Firms differentiate by offering end-to-end services, including engineering, procurement, construction, and management (EPCM).

Rising capital expenditure on non-residential construction, driven by industrial complexes and transport buildings like airport terminals and train stations, is expected to benefit the industry. While higher interest rates may slow public sector spending growth, revenue of the infrastructure industry is forecasted to grow at an annualized 1.0%, reaching AUD 53.2 billion (USD 35.09 billion)

by FY 2027-28. Australia's infrastructure market is on a strong growth trajectory, with over AUD 120 billion committed through the 2024–2034 Federal Budget, nearly 30% of which targets transport sectors. Treasury forecasts 2.3% annual growth in non-residential construction. Backing this momentum, Infrastructure Australia outlines an AUD 230 billion pipeline of projects, including major developments like the Western Sydney Airport* (AUD 5.3B) and Suburban Rail Loop** (AUD 34.5B)..

Table 11: Major infrastructure Projects in Australia

PROJECT	TOTAL VALUE (AUD BILLION)	REGION
Sydney Metro	25	New South Wales
The Suburban Rail Loop	125	Victoria
Melbourne Metro Tunnel	12.58	Victoria
Melbourne to Brisbane Inland Rail	31	National
West Gate Tunnel	10.2	Victoria
Cross River Rail	17	Queensland
Western Sydney Airport	5.3	New South Wales
Sydney Metro—Western Sydney Airport	11	New South Wales
Melbourne Airport Rail Link	13	Victoria
Western Sydney Infrastructure Plan	4.4	New South Wales

Source: IBIS World Engineering Consulting in Australia Report

* For the Western Sydney Airport, the AUD 5.3 billion noted in the content refers to the total airport construction cost, while the AUD 11 billion in the table reflects the cost of the Sydney Metro—Western Sydney Airport project.

**For the Suburban Rail Loop, the AUD 34.5 billion mentioned in the content refers to the additional funding allocated by the government for constructing more stations, whereas the AUD 125 billion in the table represents the total project cost of the Suburban Rail Loop.

Public Sector Capital Expenditure is rising, boosting demand:

Governments are funding major road and rail transport projects over the next five years, benefiting integrated engineering firms offering comprehensive services. Key projects include removing level crossings in Melbourne, constructing the Melbourne Metro Tunnel, and the West Gate Tunnel.

Private Capital Expenditure on Non-Residential Construction and Equipment is driving Demand:

Growing private non-residential construction is driving up demand for consulting services such as construction evaluation, project design, procurement, and feasibility studies. The recovery in Australia's tourism sector is boosting hotel and resort developments.

Competition is Tightening Profit Margins:

To increase productivity, economies of scale, and value-added services, large engineering firms are pursuing mergers, acquisitions, and new technologies, which will allow for higher pricing. Smaller businesses and sole proprietors are anticipated to predominate among new entrants, concentrating on smaller projects such as nearby industrial complexes, thereby escalating price competition. Staff shortages and intense competition force businesses to make an effort to recruit and retain qualified workers while also increasing average wages.

* Exchange Rate: 1 USD = 1.516 AUD

4.1.1 Emerging markets for Infrastructure investment

- Australia’s Infrastructure consulting companies are driving sustainable solutions in defence, water, and energy sectors, while advancing green energy initiatives.

- Australia's infrastructure services industry is making a historic commitment to invest AUD 349 billion (USD 230 billion) in in public infrastructure over the over the five year period from CY22 to CY27, marking a step towards a greener future. Australia is not just focusing on development but also emphasizing the integration of sustainability into project management, for instance, in defence sector.

- The Australian Defence Force plans to incorporate sustainable development while supervising the design, project management, and delivery of advanced land, air, and sea defence infrastructure across the country. Furthermore, by including experts in appropriate planning, engineering, design, permitting, and management of water and wastewater facilities, Australia Consulting Services is actively tackling urgent issues.

4.1.2 Major drivers and opportunities for Australia:

4.1.2.1 Infrastructure Consulting: A Key Player in Budget Allocations

Amid Tightening Budgets and Shifting Infrastructure Priorities, Infrastructure Consulting Plays a Crucial Role in Enhancing Project Execution, Managing Risks, and Allocating Resources Efficiently. In the 2024-25 Budget Season, Australia's state and territory governments unveiled their infrastructure plans, grappling with tightening fiscal constraints and persistent cost-of-living challenges. As the 2024-25 budgets emphasize the fulfillment of existing commitments, infrastructure consulting emerges as a pivotal link. By refining past investments, they're not only unlocking capital but also strategically steering the future of infrastructure through in-depth feasibility studies, innovative delivery models, and data-centric reprioritization. A testament to this influence is NSW's decision to expedite an AUD 2.5 billion battery storage project, which was initially slashed from the budget, a move that followed McKinsey's cost-benefit analysis.

Infrastructure consulting is at the forefront, steering the allocation and execution of a substantial AUD 270.4 billion (USD 178.36 billion) government expenditure on infrastructure, slated for the four years leading to FY 2027-28. This figure marks a notable AUD 13.8 billion (USD 9.10 billion) uptick from the previous FY2023-24 Budget Season. Consulting services are not just ancillary; they're pivotal, encompassing feasibility studies, asset management, geotechnical consulting, logistics, and design development. Victoria stands out, channelling 18.7 percent of its total government expenditure into infrastructure. Even with an AUD 1.1 billion (USD 725 million) dip from the last budget, this unwavering commitment underscores the vital role of engineering and infrastructure consultants in enhancing project efficiency. New South Wales, not far behind, has earmarked AUD 86.4 billion (USD 57 billion) over four years, signalling a robust demand for consulting expertise across transport, utilities, and public infrastructure projects.

.

* Exchange Rate: 1 USD = 1.516 AUD

4.1.2.2 Major drivers of Australia market:

- The government of Australia has made a bold commitment: a 10-year infrastructure investment pipeline worth AUD 120 billion (USD 79.23 billion), with a focus on sustainable land transportation projects. Targeting economic and social objectives like increased productivity, resilience, sustainability, and general liveability, the government hopes to establish a credible pipeline of projects in partnership with states and territories.
- In the FY 2024-25 Budget, the government has already allocated AUD 96.5 billion (USD 63.7 billion) to its Infrastructure Investment Program, marking a significant step in its decade-long commitment.

4.1.2.3 Major opportunities of Australia market:

- In Australia, about 70% of the country's carbon emissions come from the infrastructure sector. To counter this, the Australian government has made it mandatory for construction projects costing more than USD 7.5 million to disclose their sustainability results. Established in July 2024, the Sustainability Skills Capability Framework outlines the fundamental competencies required of sustainability practitioners and offers a road map for professionals, recruiters, and employers.
- In 2024, 25 ISC-certified "As Built" projects were crucial in preventing emissions: they prevented 1,447,000 tonnes of lifecycle operating emissions from a total of 23,546,000 tonnes since 2018 and 144,000 tonnes of lifecycle materials emissions out of 1,353,000 tonnes. Notably, IS Essentials upholding the commitment to deliver results "better than BAU" while providing a workable and affordable solution for projects starting at USD 5 million.
- Australia is experiencing a significant wave of investment in non-residential infrastructure, led by its push toward clean energy, digital transformation, and sustainable growth. The goal to achieve 82% renewable electricity by 2030 has triggered over AUD 100 billion in grid upgrades, including 10,000 km of transmission lines like Energy Connect. Major projects such as the 20GW Sun Cable solar farm and a targeted 14GW of battery storage (AUD 14 billion) are underway. Government support, including the AUD 10 billion Capacity Investment Scheme and AUD 2 billion for hydrogen hubs, is accelerating private sector participation. Additionally, data centres are expanding, backed by AUD 15B in tech investments.
- Beyond energy and digital infrastructure, sectors like housing, minerals, and healthcare are witnessing strong momentum. With a shortage of 400,000 homes, the Build-to-Rent market is projected to reach AUD 520 billion by 2032, supported by an AUD 10 billion housing fund and tax incentives. Australia’s critical minerals pipeline stands at AUD 42 billion, driven by global demand and strategic partnerships. Healthcare infrastructure is expected to require AUD 130 billion by 2030, with growing investment in aged care and telehealth. Transport and climate resilience are also key priorities, with AUD 3 billion for electric buses, AUD 10 billion for hydro storage, and AUD 5 billion for water infrastructure

4.1.3 Key challenges faced to infrastructure consultancy in Australia market:

- **Low Productivity:**
  The focus of news coverage in recent years has been Australia's stagnant productivity. As the country and the international community deal with geopolitical tensions, extreme

weather, skyrocketing inflation, and economic challenges while aiming for resource efficiency, this worry has grown. The infrastructure and construction sectors have been dealing with low productivity for ten years, but this problem affects many other sectors as well.

- **Struggling to Commercialize:**
  Australia finds it difficult to commercialize and adopt engineering innovations, despite having a wealthy and well-educated population. While introducing new systems, products, and services is vital, their seamless integration poses a formidable challenge

- **Systemic hurdles:**
  Studies revealed long-standing problems that are impeding construction progress. These difficulties include everything from a lack of skilled workers to structural barriers that prevent the adoption of novel techniques and new technologies.
  Coordination between states is essential, particularly in areas with a skills shortage, as demonstrated by the Federal Government's recent review of Australia's infrastructure pipeline. Procurement reforms also have a great deal of potential to increase innovation, create jobs, and increase productivity.

4.1.4 Looking Ahead: The Future of Infrastructure Consulting in Australia

Infrastructure consulting services are in high demand due to the increase in public sector capital expenditures and the strong focus on sustainability and digital transformation.

Australia's infrastructure future is being shaped by the expertise of specialized consultants as the industry shifts towards smart infrastructure and environmentally friendly urban planning. As governments rely on infrastructure as a driver of economic expansion, consulting firms are in a prime position to take advantage of opportunities in urban development, utilities, and transportation.

Consultant’s proficiency in navigating regulations, utilizing technology, and optimizing projects will be essential as the landscape changes.

4.2 Africa

The demand for consulting services in Africa is increasing because of the boom in investments in the continent's infrastructure sector. The African Development Bank completed a USD 20 million equity investment with the African Infrastructure Investment Fund 4 (AIIF4) in August 2024 to strengthen the continent's infrastructure landscape.

Countries such as Kenya, Tanzania, and Mozambique are emerging as key infrastructure markets in East and Southern Africa. In Kenya, ongoing projects under Vision 2030; including roads, energy corridors, and railway modernization, are driving significant demand for infrastructure planning and consulting services. The LAPSSET Corridor, a major transnational project, is also creating opportunities for multi-sectoral advisory and project management expertise.

In Tanzania, the government continues to prioritize infrastructure through its Five-Year Development Plan, with flagship investments in transportation (e.g., Standard Gauge Railway), ports (e.g., Dar es Salaam expansion), and urban development. This growth is spurring a strong pipeline of opportunities in engineering consultancy, especially in transport and water infrastructure.

Mozambique, recovering from past economic shocks and natural disasters, is witnessing renewed momentum in infrastructure reconstruction and expansion, particularly in energy, roads, and coastal resilience. Backed by multilateral funding and public-private partnerships, the country presents a growing market for firms specializing in sustainable and resilient infrastructure solutions.

Kenya

Demand Drivers:

Vision 2030 Projects: Feasibility studies, design, and supervision are needed for:

- Transport: Extensions of the SGR, Phase 2 of the Nairobi Expressway, and the LAPSSET Corridor, which includes ports and pipelines.
- Energy: Upgrades for geothermal projects in Olkaria, wind energy at Lake Turkana, and enhancements to transmission lines.
- Urbanization: Addressing a 500,000-unit deficit in affordable housing and advancing smart city initiatives like Konza Technopolis.
- PPP Advisory: Increased private sector engagement in roads, ports, and energy, facilitated by Kenya's PPP Act.

Growth Factors:

- Funding: Backing from the World Bank, AfDB, and investments from China.
- Policy: Streamlined EIA processes and infrastructure devolution at the county level.
- Challenges: Bureaucratic delays in LAPSSET and financing gaps in SGR.

Tanzania

Demand Drivers:

Five-Year Development Plan (FYDP III): Consulting requirements for:

- Railways: Upgrades to the SGR connecting Dar es Salaam to Mwanza and enhancements to the Central Corridor.
- Ports: A USD 1.96 billion expansion of the Dar es Salaam port and discussions on reviving the Bagamoyo SEZ.
- Water: Initiatives like the 2,100 MW Rufiji Dam and programs to improve rural water access.
- Industrialization: Planning for Special Economic Zones (SEZ) and logistics hubs, including Kigoma Port.

Growth Factors:

- Funding: Loans from China for the SGR, World Bank support for water projects, and investments from the UAE in ports.

- Stability: A consistent governmental focus on infrastructure development.
- Challenges: Delays in the SGR project extending beyond Dodoma and issues with land acquisition.

Mozambique

Demand Drivers:

- Post-Disaster Reconstruction: Building cyclone-resistant roads like the EN1 Highway and flood mitigation for the Beira Corridor.
- Energy Boom: Reviving LNG projects, notably TotalEnergies' USD 20 billion initiative in Cabo Delgado, alongside grid expansions.
- Coastal Resilience: Consulting on climate adaptation for major ports, including Maputo and Nacala.

Growth Factors:

- Funding: Grants from IMF/WB and PPPs focusing on LNG infrastructure.
- Opportunity: The mining sector, especially graphite and gas, presents a demand for transport and logistics consulting.
- Challenges: Security concerns in Cabo Delgado and sluggish repairs on the EN1 Highway.

.

Infrastructure development is greatly aided by Africa's economic expansion. According to the International Monetary Fund (IMF), rising commodity prices, more foreign direct investment, and strong domestic consumption will propel Sub-Saharan Africa's GDP growth to 4.0 percent in 2025. It is anticipated that inflation will level off between 6 and 5 percent, creating an atmosphere that is favorable for long-term infrastructure investments.

Mainly due to large demand-supply gaps and limited capital availability, Africa's infrastructure sector offers a profitable investment opportunity. The continent needs to invest between USD 130 billion and USD 170 billion a year in infrastructure due to its rapid urbanization and rising purchasing power.

It does, however, have a significant funding shortfall of between USD 68 billion and USD 108 billion. Therefore, as stakeholders place a higher priority on closing the investment gap and attaining the best possible project outcomes, the rising demand for infrastructure consulting services is anticipated to grow even more.

In order to improve regional connectivity, Zambia and Tanzania are negotiating a $1 billion concession with China's state-owned China Civil Engineering Construction Corporation to revitalize the Tazara railway.

EU Investment in South Africa: In an effort to improve trade relations and promote sustainable development, the European Union announced a $51 billion investment in South Africa to support the production of vaccines and green energy.

Rwanda and Burundi are working together on the Akanyaru Multipurpose Dam project, which includes a 333 million cubic meter storage reservoir. In addition to providing irrigation for 12,474

hectares of agricultural land and producing 14.5 MW of hydroelectric power, the project intends to supply drinking water to more than 614,000 people.

The government is also broadening the Welisizwe programme, aimed at constructing rural bridges and enhancing connectivity. Currently, 24 bridges are under construction in KwaZulu-Natal, with plans for an additional 24, as consulting firms work to overcome challenges in rural areas and promote equitable development. These investments highlight the essential function of infrastructure consulting firms in facilitating efficient, sustainable, and economically beneficial development. Their expertise guarantees that projects are completed punctually, within financial constraints, and in alignment with international standards, thereby supporting South Africa's infrastructure objectives.

In Mozambique, the infrastructure consulting sector is propelled by post-conflict reconstruction efforts and the development of natural resources, particularly in the energy and transport domains. The focus is on rejuvenating road networks, broadening port capacities, and advancing northern gas projects. Yet, the success of these initiatives hinges on political stability and enhanced governance.

Due to substantial government investments in roads, ports, and energy projects, including the Julius Nyerere Hydropower Plant, Tanzania's infrastructure consulting sector is on the rise. Consultants play a pivotal role in strategizing large-scale transport corridors and renewable energy projects. However, they face hurdles like navigating regulatory reforms and obtaining sustainable financing.

In Uganda, the infrastructure consulting market is witnessing growth, driven by a heightened emphasis on hydroelectric power, road expansions, and urban development, all aimed at catering to its rapidly expanding population. Consultants play a crucial role in tackling challenges related to feasibility, environmental impact, and financing. Moreover, regional integration endeavors, like the Northern Corridor, amplify the demand for cross-border infrastructure.

* Exchange Rate: 1 USD = 18.326 ZAR

Table 12: Construction sector’s contribution to GDP (in terms of %) by countries, Africa, for CY2024

Country	% of GDP
South Africa	2.70%
Tanzania	12.76%
Mozambique	NA
Uganda	4.98%
Kenya	6.10%
Nigeria	7.49%
Ethiopia	21.00%

Source: World Bank, Statistics of South Africa, Kenya National Bureau of Statistics, ICRA Analytics

Nigeria: The construction sector's contribution to the GDP stands at 7.49%, indicating a strong demand for consulting services to facilitate large-scale infrastructure initiatives, urban development, and industrial growth.

Ethiopia: With a contribution of 21.00%, there is a notable emphasis on infrastructure investments, particularly in transportation and energy sectors, where consulting services play a crucial role in ensuring effective implementation.

Kenya: The construction industry's growth, at 6.10%, is creating a demand for consultants to aid in urban planning, real estate development, and public infrastructure projects.

South Africa: Despite a contribution of only 2.70%, the nation's advanced economy and intricate projects necessitate specialized consulting services, particularly for the integration of new technologies and the upkeep of existing infrastructure.

4.2.1 Emerging markets for infrastructure investment:

- **Digital Transformation and Innovation Advisory:** Consulting firms assist organizations in integrating digital technologies to enhance operational efficiency and market competitiveness. Novatia Consulting has successfully converted Lagos into a smart city by leveraging IoT and digital twin technologies, with an emphasis on data-driven strategies and active stakeholder participation.
- **Localized and Niche Consulting Services:** Consulting companies that focus on specific regions are emerging, delivering customized solutions that cater to the distinct challenges faced by African markets.
- **Project Development and Funding Facilitation:** These firms offer comprehensive project development services, including securing financing and preparing projects for investment. For example, InfraCo Africa has allocated over USD 300 million towards infrastructure initiatives, transforming them into attractive investment prospects.
- **Transportation Networks:** Investing in transportation infrastructure, such as roads, highways, and railroads, is essential for promoting connectivity and trade among African countries. Significant consulting engagement is anticipated for the modernization of rail networks and the development of transnational highway projects. As part of the African Continental Free Trade Area (AfCFTA), the development of roads, railways, and ports is essential for facilitating trade. Consultants are pivotal in both planning and executing these expansive projects.
- **Energy Infrastructure:** The International Energy Association estimates that Africa will receive 110 billion USD in energy investments in 2024, of which approximately 70 billion USD will go toward power and fossil fuels, with the remaining funds going toward clean energy technologies. For project design, feasibility studies, and implementation plans to address the infrastructure shortage in the energy sector, consulting services are essential.
- **Water Supply and Irrigation:** Tanzania is one of the East African countries investing in irrigation and water projects; under its Water Investment Program, Tanzania is concentrating on water resource management projects. The need for specialized consulting expertise in water resource management and civil engineering is highlighted by the International Financial Institutions' (IFIs) prioritization of improving irrigation systems and increasing access to clean water.

4.2.2 Major drivers of Africa market:

- Rapid economic growth and urbanization
- Government initiatives like PIDA

- Increased private sector involvement in infrastructure
- Adoption of cloud computing and digital solutions

4.2.3 Major opportunities of Africa market:

- Focus on sustainable energy (solar, wind, hydroelectric)
- Development of transportation networks
- Rising demand for smart city solutions

4.2.4 Regional Insights

4.2.4.1 West Africa

In West Africa Nigeria and Ghana are accelerating infrastructure projects in transport and water, with AFC's (Africa Finance Corporation). investments boosting consulting opportunities.

Major Transportation and Refinery Projects: Western Africa is advancing transportation projects like the West African Rail Network, connecting Benin, Burkina Faso, Niger, Ivory Coast, Ghana, Nigeria, and Togo. The Abidjan Lagos Highway spans 1,028 km, linking Ghana with other nations. The Dangote Oil Refinery in Lagos, costing USD 12-14 billion, will process 650,000 barrels of crude daily, making it one of the largest globally

Federal Government's Infrastructure Investments: The Federal Government reaffirmed its commitment to enhancing Nigeria's road network in 2025 by authorizing N733 billion (USD 477.19 million) for four significant infrastructure projects.

Major Projects:

- Nigeria’s 700 MW Zungeru Hydropower Plant (USD 1.3 billion): The Zungeru Hydropower Plant is one of Nigeria’s largest hydropower projects, designed to enhance electricity generation, reduce power shortages, and support economic growth.
- Ghana Western Railway Line Upgrade (USD 1 billion): The Western Railway Line Upgrade is a key infrastructure project aimed at revitalizing Ghana’s railway network to enhance transportation efficiency, trade, and economic development.

Conclusion: The infrastructure surge in Nigeria, Ghana, and Western Africa reflects the region's focus on economic growth and connectivity, creating significant consulting opportunities.

4.2.4.2 East Africa

Kenya's infrastructure is changing dramatically, which is promoting connectivity and economic growth. The Mombasa Gate Bridge, Jomo Kenyatta International Airport improvements, Lamu Port, Nairobi Mombasa Expressway, and Nairobi Malaba Railway are important projects.

The 262-kilometer Nairobi Malaba Railway, which connects Naivasha and the New Kisumu Port, is estimated to be worth USD 31.7 billion. Another significant project is the 482-kilometer Nairobi

Mombasa Expressway, which was created by Everstrong Capital and the Kenya National Highways Authority in a public-private partnership.

Tanzania's Infrastructure Investment Focus: The Tanzanian government's FY 24–25 budget included more than TSH 14.9 trillion (USD 4.5 billion) for transportation and energy infrastructure. In the third Five-Year National Development Plan (FYDP III), improving air travel, roads, railroads, and energy access is the main goal.

Major Projects:

- Tanzania Standard Gauge Railway (SGR) (USD 7.6 billion): The Tanzania Standard Gauge Railway (SGR) is a transformative infrastructure project designed to modernize Tanzania's railway network and boost regional trade and connectivity.
- Ethiopia's Koysha Hydropower Project (USD 2.8 billion): The Koysha Hydropower Project is a 2,160 MW hydroelectric dam under construction in Ethiopia, aimed at boosting the country's renewable energy capacity and supporting its growing demand for electricity.

Conclusion: Significant government investments combined with Kenya's and Tanzania's quick infrastructure development point to enormous prospects for the infrastructure building industry. East Africa will be a crucial area for infrastructure development in the years to come as a result of these projects, which not only promise economic growth but also open the door for a rise in demand for consulting and related services.

4.2.4.3 Southern Africa

Highway and water supply system expansion projects are underway in South Africa, a leader in transportation and water infrastructure, especially in major cities like Johannesburg and Cape Town.

Government and Private Sector Investments: In order to stimulate economic growth, South Africa announced in March 2025 a three-year plan to invest more than ZAR 1 trillion (USD 541.5 billion) in public infrastructure. Transportation and logistics will receive ZAR 402 billion (USD 21.87 billion), energy infrastructure will receive ZAR 219.2 billion (USD 11.3 billion), and water and sanitation will receive ZAR 156.3 billion (USD 8.5 billion). From 2025 to 2027, GDP growth is expected to average 1.8 percent.

The private sector announced plans to spend ZAR 95 billion (USD 5.17 billion) on infrastructure in 2024. These plans included a new private university in the Western Cape, a mixed-use development in Gauteng worth ZAR 18 billion (USD 979 million), and Volkswagen's upgrade to its Kariega facility worth ZAR 4 billion (USD 217 million).

Major Projects:

- South Africa's N2 Wild Coast Road Project: The N2 Wild Coast Road Project is a major infrastructure initiative in South Africa, aimed at improving connectivity, boosting

economic development, and enhancing transportation efficiency along the country's eastern coastline.

- Botswana North-South Carrier Water Project Phase II: The North-South Carrier Water Project Phase II is a critical infrastructure project aimed at enhancing water security in Botswana. It is an extension of the original North-South Carrier (NSC) pipeline, which transports water from the northern reservoirs to the water-scarce southern regions, including the capital city, Gaborone.

Ongoing Projects and Emerging Opportunities: The government highlighted current initiatives in the areas of human settlements, renewable energy, water and sanitation, and maritime infrastructure. Other projects include improving health facilities, renovating state-owned structures to draw in investors, and repairing roads. The region's need for consulting services is rising as a result of expanding infrastructure.

4.2.5 Top infrastructure projects in Africa

- Trans-Saharan Highway Project (USD 1.8 billion): The Trans-Saharan Highway (TSH) is a major infrastructure initiative aimed at enhancing regional connectivity between North and West Africa. Spanning 4,500 km, the highway links Algeria, Niger, and Nigeria, with additional connections to Tunisia, Chad, and Mali.Lagos-Calabar Coastal Railway (USD 11 billion): A 1,400 km rail line to improve connectivity and freight movement along Nigeria's coast.
- Lagos-Calabar Coastal Railway (USD 11 billion): The Lagos-Calabar Coastal Railway is a major infrastructure project designed to enhance transport connectivity and economic growth along Nigeria’s coastline.
- Grand Ethiopian Renaissance Dam (GERD) Completion ($5 billion): The Grand Ethiopian Renaissance Dam (GERD) is Africa’s largest hydropower project, constructed on the Blue Nile River in Ethiopia. With a planned capacity of 6,450 MW, GERD aims to transform Ethiopia into a regional energy powerhouse while addressing domestic electricity shortages.
- Mombasa-Nairobi Expressway (USD 3 billion): The Mombasa-Nairobi Expressway is a USD 3 billion infrastructure project aimed at enhancing connectivity between Kenya’s busiest port city, Mombasa, and its capital, Nairobi.
- Maputo-Katembe Bridge Expansion (USD 725 million): The Maputo-Katembe Bridge is the longest suspension bridge in Africa, linking Maputo, Mozambique’s capital, to Katembe, a rapidly developing district south of the city. The USD 725 million project was financed primarily by China’s Exim Bank and built by the China Road and Bridge Corporation (CRBC) as part of Mozambique’s broader infrastructure expansion strategy.
- Lesotho Highlands Water Project Phase II (USD 2 billion): The Lesotho Highlands Water Project (LHWP) Phase II is a binational water infrastructure project between Lesotho and South Africa, designed to supply water to South Africa’s Gauteng region while generating hydropower for Lesotho.
- Ethiopia Irrigation Development Program (USD 500 million): The Ethiopia Irrigation Development Program is a nationwide initiative aimed at enhancing agricultural

productivity, water resource management, and food security through large-scale irrigation infrastructure.

4.2.6 Key challenges faced to infrastructure consultancy in Africa market:

- **Financial Limitations:** Infrastructure initiatives frequently encounter significant funding obstacles. Despite numerous efforts, the scarcity of viable projects and difficulties in attracting private sector investment hinder the growth of infrastructure development.

- **Regulatory and Administrative Challenges:** The process of securing licenses, approvals, and permits is often delayed due to the limited capacity of government agencies, insufficient motivation, and inadequate coordination, resulting in project delays and increased expenses.

- **Corruption and Fund Mismanagement:** Infrastructure funding is often plagued by issues such as misappropriated resources, inflated expenses, and a lack of transparency. These factors diminish the effectiveness of investments, undermine public confidence, discourage potential investors, and obstruct project implementation.

- **Technical and Capacity Constraints:** Infrastructure projects are often hindered by a lack of skilled labor and technical knowledge. This deficiency poses a risk of substandard project design and execution, ultimately affecting the quality and longevity of the infrastructure.

4.3 Bangladesh

The Dhaka Chamber of Commerce and Industry estimates that during 2030, Bangladesh will need to invest USD 25 billion annually to address its severe infrastructure problems. The government's commitment to resolving these issues presents substantial business opportunities for global firms including Indian firms specializing in engineering, construction management, and critical projects such as roads, bridges, seaports, and oil refineries.

The demand for infrastructure consulting services is primarily driven by transportation, port development, and dredging activities. U.S. firms, such as AECOM, are favored for their specialized knowledge, while Asian companies like EQMS Consulting Ltd. provide more economical construction solutions, reflecting the financial landscape.

As of September 2024, Bangladesh has initiated extensive projects valued at BDT 2.30 trillion (USD 19.46 billion), which include the Padma Multipurpose Bridge, the Dhaka Mass Rapid Transit, and the Matarbari Power Project. However, there has been a 70% increase in costs compared to initial projections, raising concerns regarding financial viability and project oversight. Consulting services play a crucial role in the successful execution of projects and the development of sustainable, efficient infrastructure. The increasing investments in Bangladesh underscore the rising demand for expert consulting to tackle developmental challenges.

Numerous infrastructure initiatives are currently in progress in Bangladesh, with consulting firms playing a vital role in their successful implementation. Notable projects include the 50 MWp (DC)

Solar Photovoltaic Grid-Connected Power Plant in Rangunia and advancements in natural gas infrastructure. Consultants offer their expertise in planning, design, supervision, and management, effectively addressing issues related to delays, budget overruns, and quality control.

* Exchange Rate: 1 USD = 118.3 BDT

Table 13: Progress And Cost Overrun Of Mega Projects In Bangladesh

PROJECT	TOTAL REVISED COST (USD)	COMPLETION (%)	KEY ISSUES/CONCERNS
Padma Bridge	0.15 billion	100%	Escalated cost; funded entirely by tax revenue.
Dhaka Metro Rail	2.82 billion	90%	Expansion planned; loan from JICA (197.18 billion).
Rampal Power Plant	1.35 billion	99%	Environmental concerns regarding impact on the Sundarbans.
Padma Rail Link	392.46 billion	95%	Fewer trains operating than initially planned.
Rooppur Nuclear Power Plant	3.31 trillion	69%	Loan repayment starting in 2027; concerns about uranium.
Matarbari Thermal Power Plant	3.03 billion	88%	Completion target set for December 2026.
Payra Port	0.37 billion	93%	Requires regular dredging for smooth operation.
Dhoajari-Cox's Bazar Railway	5.62 billion	99%	Only a fraction of intended trains operating.

Source: Based on relevant Project Documents, IMED and ERD, Mordor Intelligence, ICRA Analytics

4.3.1 Emerging Markets for Infrastructure Investment

- **Urban Infrastructure and Stormwater Management Consulting:** The growing trend of urbanization is leading to an increased need for consulting services focused on urban infrastructure and stormwater management solutions.
- **Sustainable Construction and Retrofitting Services:** Incidents such as the Rana Plaza and FR Tower disasters have heightened the necessity for retrofitting services aimed at improving safety and complying with contemporary standards.
- **Transportation Infrastructure Development:** The expansion of transportation networks in Bangladesh necessitates consulting services for effective planning, design, and construction oversight to promote efficiency and sustainability.
- **Renewable Energy and Power Sector Consulting:** The escalating adoption of various energy sources is driving the demand for consulting services in renewable energy, encompassing development, feasibility studies, and implementation strategies.

4.3.2 Major drivers of Bangladesh market:

- In the first five months of FY 2024- 25 (July–Nov), only 12.29% of the ADP allocation (USD 23.5 billion or Tk 2,782.88 billion) was spent, making full execution unlikely.
- In 2024, the country has 541.7 MW solar capacity, 911.8 MW in development, 149 MW wind capacity, 6+ million solar home systems, aiming for renewable energy transition by 2050.

- Government institutions such as BPATC, ADB, BKKB have been supporting infrastructure growth via Public-Private Partnerships (PPP).
- Key projects like Rooppur Nuclear Power Plant boost connectivity and energy security.

4.3.3 Major opportunities of Bangladesh market:

- Need for training and capacity building among local stakeholders
- Diversification of construction into healthcare and education.
- Ongoing and planned projects in transportation and energy sectors.

4.3.4 Key challenges faced to infrastructure consultancy in Bangladesh market:

- **Political and Economic Volatility:** In Bangladesh, the presence of political uncertainties and economic variability can significantly impede infrastructure initiatives. This volatility may lead to alterations in project priorities, changes in funding allocations, or even the complete cancellation of projects.
- **Reliance on International Expertise:** The intricate nature of large-scale infrastructure projects frequently requires the involvement of foreign consultants and contractors, which can create management challenges, escalate costs, and result in a disconnect with local requirements.
- **Navigating Challenges:** Due to Bangladesh's low-lying geography and vulnerability to flooding, the implementation of specialized construction methods is crucial, which consequently increases project expenses. This financial burden poses a substantial obstacle to the advancement of essential infrastructure.
- **Political Considerations in Contract Allocation:** The process of awarding infrastructure contracts in Bangladesh is often influenced by political considerations, potentially undermining the integrity of both project selection and implementation. Such influences can lead to inefficiencies and misallocation of resources.

4.4 Central Asia

A key transport and logistics hub between China and Europe, Kazakhstan, is experiencing rapid infrastructure development. About USD 9 billion has been allocated to modernize roads, railways, ports, airports, and IT systems, under the Nurly Zhol initiative, strengthening Kazakhstan’s role as a Central Asian freight transit hub. Additionally, the G7 has pledged up to USD 200 billion for regional infrastructure, wherein Kazakhstan is a major beneficiary. This investment targets transport, logistics, clean energy, and agriculture, driving economic growth and infrastructure enhancement, thereby driving demand for infrastructure consulting services.

Trade between China and Central Asia is expected to boost, with the initiation of China-Kyrgyzstan-Uzbekistan (CKU) railway project construction in July 2025. Opportunities in consulting services in transport planning, logistics, economic development, will be created. Further, this will also lead to regulatory advice to integrate the railway with existing infrastructure and maximize trade corridor benefits. In a nutshell, expertise in feasibility, design, and regulatory consulting will be essential as the region modernizes its infrastructure and strengthens global economic ties.

Table 14: Infrastructure Projects in Central Asia

Infrastructure Projects in Central Asia
In 2024, the IFC committed over USD 1 billion to Central Asia's infrastructure, climate finance, and agriculture.
The EBRD has provided financing for projects like a wastewater treatment plant in Aktobe and a manufacturing facility for vacuum salt in Kyzylorda.
The World Bank has proposed the CASA-1000 project, which is part of the Central Asia South Asia Regional Electricity Market (CASAREM).

Source: Various Central Asian Govt and Open Data, Mordor Intelligence, ICRA Analytics

4.4.1 Emerging markets for Infrastructure consulting projects in Central Asia:

- **Sustainable Design and Engineering Solutions:** Demand for Infrastructure consulting services is being boosted by rising demand for sustainable infrastructure offering eco-friendly design and engineering solutions, focusing on creating resilient infrastructure for current and future needs.

- **Energy Transition and Integration Consulting:** Central Asia's energy diversification is driving demand for consulting services as it not only integrates new energy technologies with existing systems but also ensures smooth energy transitions for reliable and sustainable power delivery.

- **Comprehensive Project Management and Technical Assistance:** The demand for consulting services will be driven with large-scale infrastructure projects requiring comprehensive project management and technical support as consulting firms provide end-to-end services.

4.4.2 Major drivers of Central Asia market:

- **Increasing Investments:** The European Bank for Reconstruction and Development (EBRD) made history in Central Asia in 2024 by allocating EUR 2.26 billion (USD 2.45 billion) to 121 projects in six different economies. This investment amount almost doubled the Bank's regional investment in 2023. The two countries that benefited the most from EBRD's funding were Uzbekistan and Kazakhstan, which rose to the fifth and sixth largest global investment destinations, respectively. The infrastructure consulting industry is anticipated to benefit greatly from these investments since the projects they fund will probably call for planning, development, and execution experience.
- **Expansion of Transport Infrastructure:** With major prospects for the infrastructure consulting industry in project planning, design, and implementation, transport and logistics infrastructure is propelling cross-border trade and regional connectivity. Major investments are being made by International Financial Institutions (IFIs) in the modernization of urban transportation systems, railroads, and highways. The Uzbekistan-Afghanistan-Pakistan Railway Project, valued at USD 5 billion, the Almaty Ring Road (BAKAD) in Kazakhstan, valued at USD 1.7 billion, and the Road Network Modernization Project in Tajikistan, valued at USD 950 million, are important projects. Further improving regional connectivity and increasing opportunities for infrastructure consulting services is the 400-kilometer China-Kyrgyzstan-Uzbekistan (CKU) railway, which will be built between Kashgar in China's Xinjiang region and Andijan in Uzbekistan starting in 2025.

- **Energy Infrastructure Development:** In order to improve energy security and capacity, Central Asia is launching a number of large-scale projects that center on hydropower and renewable energy projects. For example, in January 2025, the Asian Infrastructure Investment Bank (AIIB) authorized a multiphase program to assist Tajikistan in finishing the Rogun Hydropower Plant Project (Rogun HPP), lending USD 270 million up front and committing USD 500 million in total. With a 3,780 MW estimated capacity, the Rogun HPP will eventually supply electricity to approximately 10 million Tajik citizens. In 2024, the European Bank for Reconstruction and Development (EBRD) also signed agreements with Tajikistan, Turkmenistan, Uzbekistan, Kazakhstan, and the Kyrgyz Re public, directing investments into a range of energy projects in these nations. As the need for knowledge in project planning, design, and execution keeps increasing, these developments are opening up a lot of opportunities for the infrastructure consulting industry.
- Commodity revenues and infrastructure investments boost as well as countries launching programs to enhance connectivity and growth are expected to drive Central Asian economies and consulting services. For instance, EBRD funds projects such as the Middle Corridor is expected to improve Europe-Asia transport links.

4.4.3 Major opportunities of Central Asia market:

- Kazakhstan, Uzbekistan, and Turkmenistan focus on sustainability by cutting emissions and investing in renewable energy.
- The rise of Free Economic Zones and Special Economic Zones in Uzbekistan and Kazakhstan offers consulting firms opportunities to support infrastructure for foreign investments.

4.4.4 Key challenges faced to Infrastructure consulting projects in Central Asia

- **Environmental Concerns:** A significant environmental challenge is the region's arid climate and shared water resources, such as the Aral Sea Basin. To ensure effective water resource management and sustainable infrastructure development, consultants must navigate complex regulations.
- **Regional Coordination and Integration:** Developing infrastructure for regional connectivity requires effective coordination among Central Asian countries. Thus, addressing political and logistical complexities to harmonize standards and integrate cross-border projects seamlessly, acts as a challenge to consultants.
- **Capacity Building and Knowledge Transfer:** Strengthening local expertise and institutional capacities is crucial for managing and maintaining infrastructure projects. Consultancies must face the challenge of focusing on delivering projects while equipping local stakeholders with essential skills for sustainable management.

4.5 UK

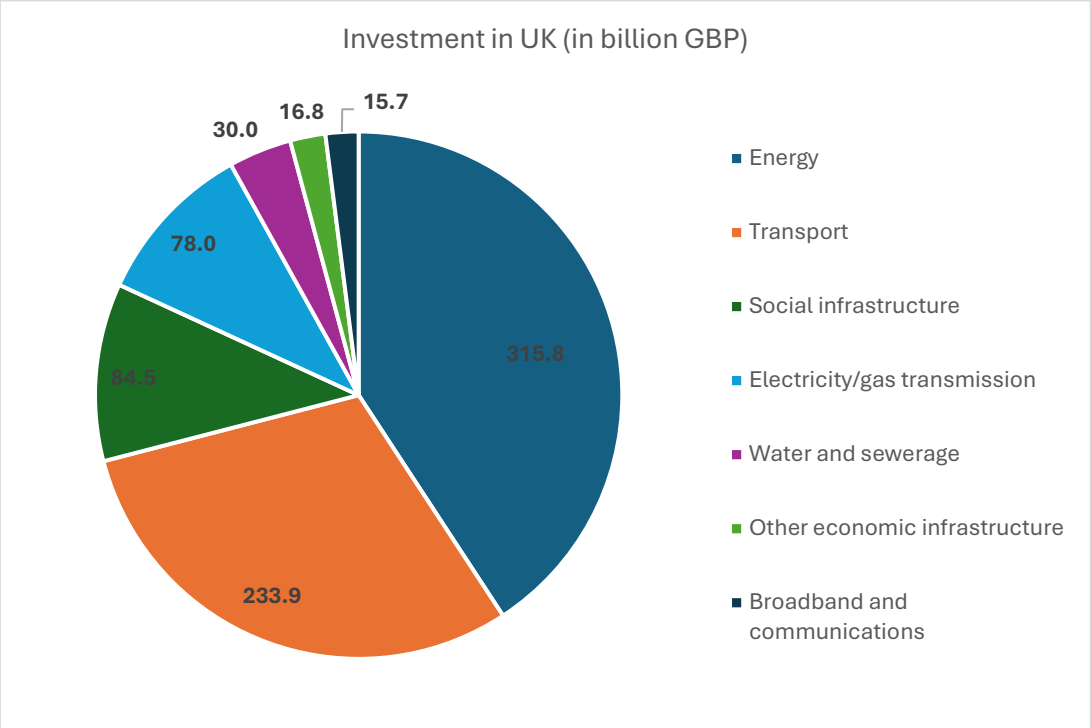
The UK is entering a pivotal phase of infrastructure transformation, with significant investments planned to modernize housing, transport, and energy networks. While challenges such as Brexit, climate change, and the COVID-19 pandemic have highlighted areas of strain, they have also

accelerated the urgency for stronger, more resilient systems. With heatwaves becoming more frequent, the government has committed substantial funding and turned to expert consultancy to deliver sustainable, future-ready solutions.

To support this vision, the UK Government is set to inject billions into upgrading the nation's infrastructure. The complexity of these programs calls for specialized expertise, making infrastructure consultancy firms vital for designing projects, implementing strategic initiatives, and managing transitions effectively. Building on this momentum, the government introduced its 10-Year Infrastructure Strategy in June 2025 as part of the broader "Plan for Change" initiative. This strategy includes a minimum investment of GBP 725 billion (USD 974.54 billion) over the next decade, reinforcing the UK's long-term commitment to infrastructure resilience and growth.

.

Chart 64: Value of planned and projected investment in national infrastructure and construction projects from the public and private sectors in the United Kingdom (UK) from the UK FY 2023-24 to UK FY 2032-33F, by sector (in billion GBP)



Source: Government of UK

4.5.1 Emerging markets for Infrastructure Investment

- The UK government started a review in 2021 to expedite the planning consent procedure for its most important infrastructure projects. This project expands on the 2021 Planning White Paper, which sought to develop a more effective framework for assessing environmental effects and attaining better environmental results.
- The largest electric vehicle battery manufacturing facility in the UK is undergoing a significant National Grid engineering project to meet its power requirements.

- Environmental impact assessments (EIAs) are essential for proposals involving transformative infrastructure, whether it be in the areas of energy, maritime transportation, water, real estate, or aviation. They pinpoint possible impacts that developments may have on the environment and provide plans to prevent, lessen, or mitigate those effects.
- Additionally, looking for ways to improve the environment has evolved from a goal to a requirement. In the UK, digital EIA is revolutionizing environmental assessments and improving accessibility for communities, local planning authorities, and stakeholders in conversations regarding development consents and infrastructure.

4.5.2 Major drivers and opportunities for UK

- **National Infrastructure Commission (NIC) Shaping the Nation's Infrastructure:** The National Infrastructure Commission (NIC) was established by the UK government to evaluate and suggest long-term infrastructure requirements for the nation. The Infrastructure and Projects Authority (IPA) was also established to help with the funding, completion, and success of large-scale projects. According to the IPA's latest annual report, there are currently 235 active projects with a total projected cost of GBP 678 billion (USD 852.83 billion). Notably, half of this expenditure is allocated to the infrastructure and construction sectors, and the FY 2021-22 witnessed a significant surge in new project initiations and next fiscal years continued the same momentum

- UK government is working to decarbonize the electricity grid, investing in a net-zero generating capacity. This includes a focus on renewables such as wind, solar, and nuclear, alongside necessary upgrades to the energy distribution infrastructure.

- To tackle the UK's housing shortage, the government is rolling out New Town Developments. These towns will emphasize sustainability and modern infrastructure, incorporating vital amenities like healthcare facilities and public transport links.

- Major rail and road infrastructure projects are being undertaken to enhance connectivity throughout the UK.

4.5.3 Key challenges faced to Infrastructure consulting projects in UK:

- **Underinvested In Infrastructure:**
  The UK's infrastructure is at a turning point, and the upcoming decades will present difficulties. Larger and frequently more complex infrastructure is required to meet the demands of both climate change and the energy transition.
  Due to significantly lower infrastructure investment than its peers, the UK is at a disadvantage. The UK had the lowest average investment of any G7 country between CY 1979 and CY 2024, averaging between 20 and 22 percent of GDP.

- **Diminished Productivity:**

A healthy infrastructure is essential; without it, there is a risk of slower economic growth, lower productivity, and a drop in living standards. The UK economy can be stimulated by the timely and economical completion of infrastructure projects, particularly when seen as a component of a steady, long-term pipeline. Given these stakes, discussions have intensified around the infrastructure the UK should prioritize, be it for the energy transition or to spur regional economic growth.

- **Least Government Focus:**
  In order to influence the infrastructure sector, the government's infrastructure consulting services have received the least attention. On the other hand, larger projects are put up for bid by firms like BCG, WSP, etc. state contracts are the only significant market-related investments that have been made thus far.

4.6 Others (USA)

To revamp America's infrastructure and boost global competitiveness, President Biden signed the Bipartisan Infrastructure Law, in November 2021. The Administration has allocated nearly USD 454 billion, impacting over 56,000 projects till date. These projects span 4,500+ communities across all 50 states, D.C., U.S. territories, and Tribal lands. In October 2024, the Federal Highway Administration (FHWA) announced an additional USD 62 billion for Fiscal Year 2025, targeting 12 key national infrastructure programs.

To meet rising demand and investments, infrastructure consultancy firms are expanding operations. For instance, in April 2024, Infrastructure Consulting & Engineering (ICE), focused on the Southeastern U.S., secured a strategic investment from Godspeed Capital Management LP.

Table 15: Projected infrastructure investment needs in the United States between CY 2020 and CY 2030, by sector (in USD billion)

Infrastructure segments	Total requirement	Funded	Funding gap
Transportation	2,834	1,619	1,215
Drinking water, wastewater, stormwater	1,045	611	434
Electricity	637	440	197
Airports	237	126	111
Inland waterways and marine ports	42	17	25
Dams	94	13	81
Hazardous and solid waste	21	14	7
Levees	80	10	70
Public parks and recreation	78	10	68
Schools	870	490	380
Total	**5,937**	**3,350**	**2,588**

Source: ASCE, United States, ICRA Analytics

4.6.1 Emerging markets for Infrastructure consulting projects in USA

- The latest inclusion of the bold executive order focused on reshaping the landscape for artificial intelligence in the US, would boost demand of infrastructure consulting services. The order emphasizes the swift and large-scale establishment of essential AI infrastructures, such as expansive data centres and innovative clean power facilities, across the nation.

- Doors will open for the private sector to establish AI data centres, with both Defence and Energy departments will pinpoint a minimum of three sites each, thereby driving growth of infrastructure consulting services.

- To focus on data centres and clean power facilities, President Biden's executive order accelerates AI infrastructure developments in the US, thereby aiding the demand of infrastructure consulting.

4.6.2 Major drivers and opportunities for USA:

- U.S. Transportation Secretary Pete Buttigieg, as part of a broader announcement totalling nearly USD 5 billion, unveiled USD 1.32 billion in Round 1 awards from the FY 2025-26 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) discretionary grant program. RAISE discretionary grants are channelling funds into vital freight and passenger transportation projects due to President Biden's Bipartisan Infrastructure Law, that might otherwise struggle to secure necessary financing.
- In May 2021, the Environmental Protection Agency (EPA) introduced the Green Infrastructure Federal Collaborative, a cooperative effort designed to enhance the implementation of green infrastructure throughout the country. Participants in this collaborative combine their knowledge and resources to strengthen the advocacy for green infrastructure. Their collective efforts not only emphasize the numerous advantages of green infrastructure but also promote strategies that enhance climate resilience. A primary objective is to guarantee that all communities, irrespective of their circumstances, can fairly access and benefit from these green initiatives.

4.6.3 Key challenges faced to Infrastructure consulting projects in USA

- **Overoptimism and overcomplexity:** It act as a key bottleneck in Infrastructure megaprojects in the US. When project goals are set too high and expectations drift into the realm of the unrealistic, the groundwork for failure is laid. Such excessive optimism can cloud judgment, leading to insufficient risk assessments and a lack of contingency plans, thereby making projects susceptible to unforeseen hurdles.
- **Real-time access to accurate data:** A commitment to effective project management techniques is vital to navigate the intricacies of megaprojects. To make informed decisions at every stage of the project, it's equally crucial for project managers to have real-time access to accurate data. However, at times, the US contractors continue to lead an overly complex project without any specialized consultation service, generating major time and cost overruns.
- **Mitigation of political risks:** Further, identifying and mitigating potential risks is another challenge faced by the consulting industry in USA. Effective project management

practices play a vital role in streamlining this complexity. By segmenting vast projects into smaller, manageable phases, teams can exert better control. This division not only sharpens the focus on identifying potential risks and crafting suitable mitigation strategies but also aids in easier management.

5. Competitive Landscape

1. Aarvee Engineering Consultants Limited

A. Aarvee Engineering Consultants Limited

Aarvee is an Indian owned infrastructure consultancy company which offers wide spectrum of infrastructure consulting services across multiple sectors with innovation and deep domain knowledge. It is a technology-driven, multi-sectoral, multidisciplinary, infrastructure consultancy company with a global presence. It provides design and supervision related services with a service portfolio that spans the entire project lifecycle from feasibility & conceptual studies, detailed project reports (DPR), pre-bid services, detailed design services, project management consultancy (PMC), supervision of operations and maintenance of projects, third party inspection and lenders engineering services. As on March 31, 2025, the Company has undertaken projects in approximately 20 countries across Asia, Africa, Australia, UK and Middle East, either directly through its branches or its subsidiaries based in United Kingdom and Australia. Company's market share for Railways & Metro rail consulting is around ~8%, Highways & Bridges consulting is around ~3%, Water & Environment consulting is around ~14%, Water resources & Irrigation consulting is around ~3%.

Key achievements/ projects across sectors:

Railways & Metros

In the Railway sector, Aarvee has been awarded the DPR for Dedicated Freight Corridor Corporation of India Limited (DFCCIL), which is the largest and most ambitious project in the Indian railway infrastructure sector. Aarvee has also been appointed by National High-Speed Rail Corporation Limited (NHSRCL) to provide project management consultancy services for the civil construction of the India's first Bullet Train Project from Mumbai to Ahmedabad spanning a total length of 508 kilometres. Aarvee also has an extensive experience in large-scale, multidisciplinary metro projects and have executed 23 projects in metro sector including the Chennai Metro, Ahmedabad Metro & Kochi Metro. As per company's website it has undertaken multiple railways and metro rail projects and its extensive portfolio spans planning, designing, Project Management Consultancy (PMC and overseeing the development of over 30,000 km of railway and metro tracks globally. As India undergoes a transformational upgrade of its rail-based transport infrastructure spanning dedicated freight corridors, high-speed rail, urban metro systems, and station redevelopment, Aarvee has emerged as a key multidisciplinary consultancy supporting the planning, design, and implementation of complex railway and mass rapid transit projects.

Roads & Bridges

Aarvee has been involved with government bodies such as the National Highways Authority of India (NHAI) (NHAI projects are won on technical score rather than least cost

basis as per Policy Circular No. 11.60/2024 dated 5th September 2024) and the Ministry of Road Transport and Highways (MoRTH) for [consultancy] services for critical infrastructure projects, including expressways, national highways, and state highways across the country. Aarvee has consistently showcased its execution capabilities by successfully delivering Project Management Consultancy (PMC) and Detailed Project Reports (DPR) for over 25,000 kms of road projects across India and international markets (Source: Company's website). Aarvee has been involved in design & preparation of feasibility for construction of key infrastructure projects such as four lane bridge over river Ganga near Sahibganj. Additonally, the Consultancy Services for Authority's Engineer of the new 4-lane Signature bridge the Sudarshan Setu India's, longest cable-stayed bridge was awarded to the Company.

Water & Environment:

Company was involved in the Smart Integrated Infrastructure Master Plan (SIIMP) and Detailed Project Reports (DPR) for Amaravati, the planned capital city of Andhra Pradesh and the country's second largest greenfield capital city. Notably, Aarvee served as a PMC for key projects like the Allahabad Smart City and Karimnagar Smart City.

As a part of the Government of India's flagship Jal Jeevan Mission, Aarvee is involved in providing comprehensive consultancy services including Project Management Consultancy (PMC), Third Party Inspection (TPI) & Project Monitoring Unit (PMU) .

Through numerous design & project management consultancy projects, company have executed over 100 WTPs & STPs with a cumulative capacity exceeding 1500 MLD (as per company website).

Energy & Renewables:

Aarvee was awarded DPR for for India's largest pumped hydro project of 1,680 MW Greenko Pinnapuram Integrated Renewable Energy Project in Andhra Pradesh. In addition, Aarvee provided Feasibility Report (FR) and DPR consultancy for the 1,200 MW Pinnapuram Pumped Storage Project, reinforcing its expertise in long-duration energy storage and hydropower engineering. Expanding its footprint in the renewables energy sector, Aarvee has been appointed as the Third-Party Inspection Agency for conducting Quality Assessments of Rooftop Solar Installations under the PM Surya Ghar: Muft Bijli Yojana in the states of Uttar Pradesh, Uttarakhand, Gujarat, and Madhya Pradesh, supporting the national goal of solarizing one crore households by 2027. The growing national emphasis on energy transition, decarbonization, and climate adaptation which presents a significant addressable market, and we believe our multidisciplinary capabilities position us well to contribute meaningfully to this shift.

Irrigation:

Aarvee was involved in 13 lift irrigation projects across Andhra Pradesh and Telangana, which are either under execution or have been successfully completed. These projects are vital for enabling irrigation in water-scarce upland areas, supporting year-round agriculture, and improving livelihoods in drought-prone zones. With knowledge in

hydraulic engineering, pump house design, and canal distribution systems, Company has been involved in schemes such as:

- Palamuru–Rangareddy Lift Irrigation Scheme
- Kalwakurthy, Nettempadu, Bhima, and Koilsagar Projects
- Kaleshwaram Lift Irrigation Project, the world's largest multi-stage lift irrigation system

Geospatial & Urban Design:
Aarvee has been selected as one of the consultants by the Survey of India to execute the aerial surveys of large scale mapping under the pilot National geospatial Knowledge-based land Survey of urban Habitations (NAKSHA) project under Digital India Land Records Modernization Programme (DILRMP), which aims to revolutionize urban land records through high-resolution geospatial data, drone-based surveys, and advanced GIS integration. Aarvee offers LiDAR-based services.

The company's knowledge has enabled them to garner projects such as the Amaravati Capital city project, high speed rail network, dedicated freight rail corridor (DFC) and BYET-Dwarka cable stayed bridge. Each of these projects is unique and the first of its kind in India.

Company's has coordination with government stakeholders like Chennai Metro Rail Limited, RVNL, East Central Railway, North Eastern Railway, coupled with extensive project execution experience.

B. Rites Limited

RITES Limited is a Navratna and Schedule 'A' Central Public Sector Enterprise under the Ministry of Railways, incorporated on April 26, 1974, is a multidisciplinary engineering and consultancy organization, providing a comprehensive range of services from concept to commissioning in all facets of transport infrastructure and related technologies. RITES is a leading player in the transport consultancy and engineering sector in India, providing diverse range of services under one roof. RITES is uniquely placed in terms of diversification of services and geographical reach in various sectors such as railways, highways, metros, tunnels, bridge, urban engineering, sustainability & green mobility, airports, ports, ropeways, institutional buildings, inland waterways, etc.
Geographical presence: RITES has clients in more than 55 countries across Asia, Africa, Latin America, and Middle East regions.

C. Engineers India Limited

About the company – Engineers India Ltd (EIL) is a global engineering consultancy and Project Management company. Established in 1965, EIL provides engineering consultancy and EPC services principally focused on the oil & gas and petrochemical industries and also diversified into sectors like infrastructure, water and waste

management, solar & nuclear power and fertilizers to leverage its strong technical competencies and track record.

Geographical presence: The company's overseas presence is marked by an engineering office in AbuDhabi, it caters to the business needs in UAE/Middle East region. Additionally, there are offices in London, Milan and Shanghai to coordinate the activities of international procurement and marketing.

2. Financial benchmarking of Aarvee Engineering Consultants Limited and its peers

Particulars	Unit	Aarvee Engineering Consultants Limited				RITES Limited				Engineers India Limited		
		FY2025	FY2024	FY2023		FY2025	FY2024	FY2023		FY2025	FY2024	FY2023
GAAP Measures												
Revenue from Operations [1]	₹ million	5,671.32	5,170.01	4,381.42		22,178.10	24,528.50	26,282.70		30,875.85	32,808.59	33,301.40
Domestic [1]	₹ million	4,962.22	4,784.27	4,119.55		21,249.70	22,545.20	21,553.70		27,093.77	29,997.50	30,933.97
Rest of the world [1]	₹ million	709.10	385.74	261.87		928.40	1,983.30	4,729.00		3,782.08	2,811.09	2,367.43
Other Income [2]	₹ million	71.75	42.94	30.04		1,057.10	861.20	1,017.50		1,602.59	2,191.65	1,644.18
Total Income [3]	₹ million	5,743.08	5,212.95	4,411.46		23,235.20	25,389.70	27,300.20		32,478.44	35,000.23	34,945.58
PAT [4]	₹ million	515.95	408.55	180.81		4,236.60	4,952.00	5,709.70		5,798.00	4,453.00	3,463.00
EPS (Basic & Diluted) [5]	₹	12.28	9.73	4.30		8.01	9.48	11.28		10.32	7.92	6.16
Total Equity [6]	₹ million	2,383.76	1,901.74	1,479.58		27,492.60	27,209.30	27,191.20		26,692.81	22,463.00	19,615.00
Non GAAP Measures												
EBITDA [7]	₹ million	944.35	727.55	487.46		6,206.90	7,502.60	8,476.40		6,725.01	5,162.21	4,727.08
EBITDA Margin [8]	%	16.65	14.07	11.13		27.99	30.59	32.25		21.78	15.73	14.19
PAT Margin [9]	%	8.98	7.84	4.10		18.23	19.50	20.91		17.85	12.72	9.91
ROE [10]	%	24.08	24.17	13.05		15.49	18.21	21.49		23.59	21.17	18.56
ROCE [11]	%	34.54	30.21	22.09		20.87	24.82	29.39		25.75	30.08	33.92
Debt Equity Ratio [12]	Times	0.24	0.19	0.36		Nil	Nil	Nil		Nil	Nil	Nil
Debtor Days [13]	days	100	97	104		164	147	118		53	37	40
Net working capital days [14]	days	84	67	41		279	264	261		56	28	11
Operational Measures												
Order Book Size [15]	₹ million	17,629.88	16,014.10	14,308.70		88,770.00	56,900.00	58,700.00		1,17,173.00	78,235.00	76,946.00
Book-to-Bill Ratio [16]	times	3.11	3.10	3.27		4.00	2.32	2.23		2.56	1.72	1.71
% of domestic order book [17] (%)	%	85.25	86.61	89.33		98.47	97.61	97.68		0.84	0.81	0.83
Order Inflow:												
Value [18] (₹ million)	₹ million	6,770.91	6,270.71	5,779.01		55,000.00	23,270.00	30,800.00		82,141.00	34,062.00	47,078.00
No. of Ongoing projects [19] (count)	Number	485	424	373		NA*	700+	670		NA	NA	NA
No of Employees [20] (count)	Number	3,225	2,619	2,570		NA	2,611	2,671		2,636	2,661	2,642
Employee attrition ratio [21] (%)	%	12.26	14.15	15.59		NA	NA	NA		NA	NA	NA

Source: Company annual reports, ICRA Analytics

*NA: Not Available

SR. No.	Formula
1	Revenue from Operations (₹ million) – Domestic / International / Total Revenue -Total turnover of the company as recognized in the financial statements, segmented into domestic and international revenue, with "Total Revenue" being their aggregate.
2	Other Income- Non-operating income, including items such as investment income, interest or miscellaneous receipts not derived from core operational activities.
3	Total Income- Sum of "Revenue from Operations" and "Other Income," representing overall income captured in the financial statements.
4	PAT- Profit after tax.
5	Earnings per share (basic/diluted) is defined PAT /Number of outstanding equity shares.
6	Total Equity - Equity share capital and other equity instrument entirely equity in nature.
7	Earnings before interest, taxes, depreciation, and amortization (EBITDA) - profit for the year (excluding other income) plus tax expense, finance costs, depreciation, and amortization.
8	EBITDA Margin- EBITDA as a percentage of revenue from operations.
9	PAT Margin- Profit After Tax as a percentage of Total income.
10	Return on Equity (ROE) -Profit After Tax divided by Average Total Equity.
11	Return on Capital Employed (ROCE) - EBIT as a percentage of capital employed.
12	Debt-Equity Ratio- Ratio of total debt to Total equity.
13	Debtor Days - Average trade receivables divided by revenue from operations into number of days during the period.
14	Net Working Capital Days-Average working capital divided by revenue from operations into number of days during the period.
15	Order Book Size- Total value of orders at hand at a point in time.
16	Book-to-Bill Ratio- Ratio of Order Book Size to Revenue from operations.
17	% of Domestic Order Book- Proportion of the order book represented by domestic orders.
18	Order Inflow- Value - Total value of new orders received during the period.
19	Order Inflow- No. of Ongoing Projects- Count of active projects under execution during the period.
20	No. of Employees- Total permanent staff employed by the company during the reporting period.
21	Employee Attrition Ratio (%)- Percentage of employees who have left during the year divided by sum of employees at the beginning of the year and number of employees joined during the year.

Source: Company Financial Statements, ICRA Analytics

Disclaimer:

All information contained in the Report has been obtained by ICRA Analytics Limited from sources believed by ICRA Analytics Limited to be true, accurate and reliable and after exercise of due care and diligence by us. Although reasonable care has been taken to ensure that the information therein is true, such information is provided 'as is' without any warranty of any kind, and in particular, makes no representation or warranty, express or implied, as to the accuracy, timeliness or completeness of any such information. All information contained therein must be construed solely as statements of opinion and not any recommendation for investment. ICRA Analytics Limited shall not be liable for any losses incurred by users from any use of the Report or its contents.