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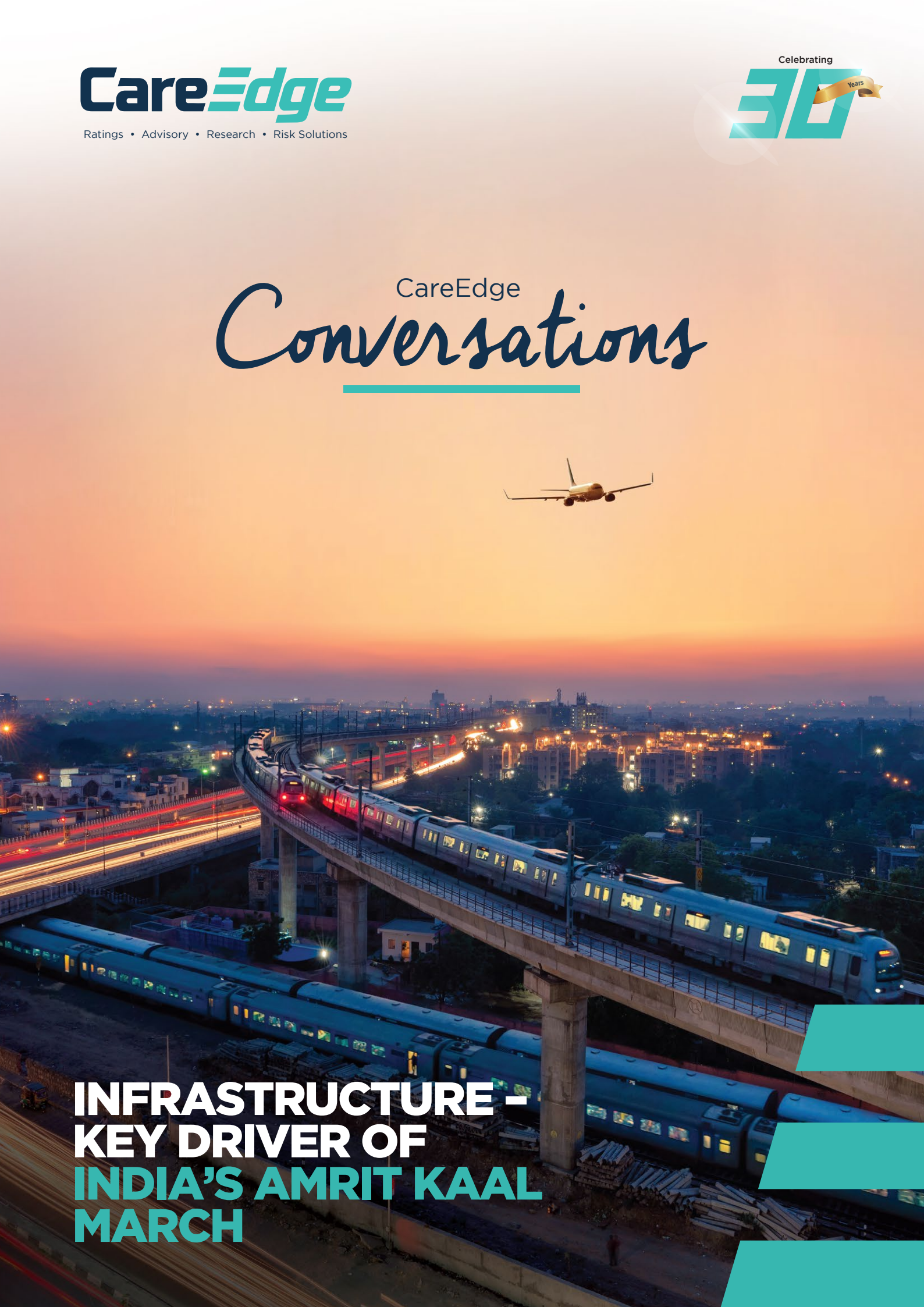

INFRASTRUCTURE – KEY DRIVER OF INDIA'S AMRIT KAAL MARCH

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Shri

Nitin Gadkari

Honourable Minister of Road Transport and Highways, Govt of India

Infrastructure will play a very crucial role as India moves towards its goal of sustainable and equitable growth in Amrit Kaal. Infrastructure spending has a strong multiplier effect through various channels including employment generation, increasing the competitiveness of our manufacturing and services sector, attracting FDI and improving the standard of living of people of our country. In the last decade the Government has announced various initiatives like National Infrastructure Pipeline (NIP), National Monetisation Pipeline (NMP), PM Gati Shakti plan and National logistics policy to augment infrastructure development in the country.

Post-pandemic, the evolving geopolitical situation presents an opportunity for India to diversify the global supply chain and occupy a pivotal position in the global arena. This makes it even more imperative for the nation to expedite infrastructure development to fully tap into this opportunity. And for this, India needs to up its game against its global counterparts, enhance its competitive edge, be agile and responsive to the economic condition which is possible only if it delivers well on the infrastructure development. It also becomes crucial at a time when India assumes presidency in G20 and drives a larger agenda in shaping and strengthening global architecture and governance on all major international economic issues.

It gives me immense pleasure to note that CareEdge has planned this thematic event revolving around infrastructure as a part of its 30th anniversary celebrations and has authored a knowledge report covering the dynamics of various infrastructure sub sectors. I am extremely happy to be associated with this event and the publishing of report. Given CareEdge Ratings' thought leadership and prominent market position in infrastructure ratings, I am sure the readers/stakeholders will find the report useful in drawing insightful inferences.

My best wishes and compliments to the entire CareEdge family on this momentous occasion.

Shri

Rajiv Bansal, IAS,

Secretary, Ministry of Civil Aviation,
Govt of India

Aviation within the infrastructure segment, has emerged as a crucial sector in recent years displaying immense potential. Pursuant to the pandemic woes impacting the sector, globally a sharp recovery trend has been witnessed and India is no exception. Traffic volumes have shown encouraging trends which are likely to continue. In fact, India has emerged as the third-largest domestic aviation market in the world and is estimated to surpass the UK by 2024. With a contribution of 5% of country's GDP the Indian aviation industry is geared towards growing manifold through a sustainable approach on net-zero carbon emissions. Airport privatization, construction of greenfield airports, and induction of new aircraft are expected to usher in improved efficiencies, boost regional connectivity and thus increase revenues.

The Government has undertaken various laudable initiatives in the last decade like National Infrastructure Pipeline (NIP), National Monetisation Pipeline (NMP), RCS-UDAN scheme, National logistics policy to augment infrastructure development in the country. By 2026, the government estimates USD 1.83 billion expenditure to expand airport infrastructure, aviation navigation sources, augment air traffic controllers flying schools etc. This augurs well for increased opportunities for private investments and participation. Amid global geo-political uncertainty as the nation embarks on the Amrit kaal era, increased impetus on infrastructure-led economic growth holds the key for positioning India as a strong leader in global markets.

It gives me immense pleasure to be associated with this event that revolves around infrastructure development and I heartily congratulate CareEdge Ratings for organizing this thematic event as a part of its 30th anniversary celebrations. Through its knowledge report, CareEdge Ratings has covered the dynamics of various infrastructure sub-sectors and topical issues pertaining to the infrastructure sector. Given CareEdge Ratings' thought leadership and leading market position in the infrastructure ratings arena, I am sure the readers will find the report useful in drawing valuable inferences.

My best wishes and compliments to the entire CareEdge family on this momentous occasion.

Mr
Najib Shah
Chairman, CareEdge Ratings

Geared Up for the Future

Infrastructure serves as the backbone of any thriving economy, enabling the efficient movement of goods and people, fostering business activities, and improving the overall quality of life. And it gives me great pleasure and pride as an Indian to see our government putting infrastructure growth first to drive the country's upliftment during the Amrit Kaal. This period of transformation holds immense potential for our nation, and I firmly believe that robust infrastructure development will be the cornerstone of India's journey towards achieving the ambitious goal of a five trillion-dollar economy.

The government's policies and initiatives demonstrate its recognition of the critical role that infrastructure plays in driving economic growth and development. However, the magnitude of India's infrastructure needs necessitates collaborative efforts between the public and private sectors. Private participation in infrastructure projects brings in innovation, efficiency, and the much-needed capital to expedite project implementation. It also allows for the sharing of risks and rewards, creating a win-win situation for all stakeholders involved. The government's focus on promoting public-private partnerships (PPP) and creating an enabling environment for private investment underscores the significance of this partnership in achieving our collective goals.

India has witnessed substantial investments in core sectors such as energy, transportation, telecommunications, and urban infrastructure. The development of dedicated freight corridors, expansion of national highways, electrification projects, metro rail networks, and the deployment of advanced telecommunications infrastructure showcase the country's commitment to modernizing and expanding its infrastructure networks.

The significant progress made in digital infrastructure development, including the expansion of broadband connectivity, the growth of mobile networks, and the rise of digital payment systems is also a big plus. Initiatives like Digital India and BharatNet aim to bridge the digital divide and create a robust digital ecosystem that supports various sectors of the economy.

At CareEdge too, we are dedicated to being an active part of India's Amrit Kaal journey. Having completed three decades of successful operations, we have evolved into one of the leading knowledge hubs in the country. We remain committed to leveraging our expertise to provide comprehensive and reliable assessments, enabling informed decision-making and contributing to the success of infrastructure projects across various sectors.

Our team of experts at CareEdge understands the complexities and challenges associated with infrastructure development. We strive to provide cutting-edge research, analysis, and ratings that facilitate risk mitigation, attract investments, and foster sustainable growth. By equipping stakeholders with actionable insights and data-driven solutions, we aim to contribute to the realization of India's infrastructure vision.

As we embark on this transformative journey during the Amrit Kaal, it is essential for all stakeholders to join hands and collectively work towards the development of world-class infrastructure. This will not only drive economic growth but also create employment opportunities, improve connectivity, and enhance the overall well-being of our citizens.

I am confident that with the government's visionary leadership, the active participation of the private sector, and the invaluable contributions of the people of this nation, India's infrastructure landscape will witness remarkable progress, paving the way for a successful Amrit Kaal.

Mr
Mehul Pandya
Managing Director & CEO,
CareEdge Ratings

Infrastructure Growth Will Lead the Way

It is my distinct honour to pen this as CareEdge celebrates its 30th anniversary and the country sets out on the growth path in the Amrit Kaal. To draw a parallel, both CareEdge and the country are in their transformational phase, having come a long way since we began. It is now time to capitalise on the labour of the past and reap the rewards of the modern-day execution of transformative and path-breaking ideas with strategic infrastructure development.

There is no doubt that infrastructure will fuel growth in the coming two decades. As the backbone of any thriving economy, it plays a crucial role in fostering innovation and improving the quality of life for all. Recognising this, the government of India has embarked on a visionary path, implementing policies and initiatives that are set to revolutionise the infrastructure landscape of our nation.

I am particularly impressed by the government's unwavering commitment, exemplified by multiple ambitious projects such as Smart Cities Mission, Bharatmala Pariyojana, Sagarmala, Gati Shakti, UDAN and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT). These initiatives aim to enhance connectivity, upgrade urban infrastructure, develop transportation networks, promote sustainable practices, and bridge the rural-urban divide. Such endeavours lay a solid foundation for inclusive growth and contribute significantly to the nation's overall progress.

The Bharatmala Pariyojana, a road development programme that aims to construct and upgrade highways, expressways, and coastal roads, will improve transportation networks, facilitate trade and commerce, and boost economic growth. In fact, by connecting rural areas with urban centres and improving accessibility, the programme is going to play a major role in bridging regional and economic disparities.

In the realm of energy infrastructure, India is driving significant advancements through initiatives such as the Green Energy Corridors and the Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya). These programs focus on expanding renewable energy capacity, enhancing transmission and distribution infrastructure, and ensuring electricity access to all households. By promoting clean energy sources and strengthening power infrastructure, India aims to achieve energy security, reduce carbon emissions, and foster sustainable development.

This special publication brought on the occasion CareEdge Conversations event reflects on how multiple sectors, including renewable energy, airports, thermal power, and roads, among others are placed both in terms of prospects and challenges. India's size – both in terms of region and population – can be tricky to navigate. But with strong leadership and a clear focus on growth, all challenges can be overcome.

I would like to take a moment to extend my heartfelt congratulations to everyone associated with CareEdge for their stellar contributions to our 30-year-long journey. Today, CareEdge has not only established itself as a premier rating agency but has also emerged as a trusted knowledge hub in our country. With its in-depth research, insightful analysis, and comprehensive understanding of various sectors, CareEdge has played a pivotal role in guiding investors, businesses, and policymakers. It is commendable to witness how CareEdge has adapted and evolved to cater to the ever-changing needs of the industry, providing invaluable expertise and contributing to informed decision-making.

As we venture into the Amrit Kaal, I am confident that the combination of visionary government initiatives and the expertise of institutions like CareEdge will lead to a transformative period of progress and prosperity for our great nation.

Mr
Sachin Gupta
Executive Director & Chief Rating Officer, CareEdge Ratings

Decoding the Driving Forces of India's Infra Story

Over the past two and a half decades of public-private partnerships (PPP) in the infrastructure sector, we have witnessed both successes and failures. Overall, the successes have outweighed the failures. Key sectors that have experienced significant growth include roads, renewable energy, power transmission, telecom services, and airports. However, there have been limited achievements in other sectors such as power distribution, water supply, sewage treatment, solid waste management, and urban infrastructure. So, what are the factors driving the success of PPP in infrastructure, and what pitfalls should be avoided? Let's look at some common themes in most of the successful infrastructure segments.

Standard Rules of the Game - Model Concession Agreement: A recurring theme in successful infrastructure segments is a central government authority establishing a standard set of rules applicable to projects across the country. Notable examples include the National Highway Authority of India (NHAI), the Telecom Regulatory Authority of India (TRAI), the Airport Authority of India (AAI), and the Central Electricity Authority (CEA). These authorities typically develop a "model concession agreement" that defines the standardized rules for project bidding. NHAI's MCA, for instance, served as the basis for successfully bidding on multiple road projects using various models such as annuity, tolls, and hybrid annuity. While the MCA may undergo changes over time, the clauses remain consistent across projects, enabling stakeholders to evaluate risks consistently and bid accordingly.

Conversely, segments governed by state governments (such as power distribution) or municipal bodies (including water supply and sewerage) often lack such standardised MCAs. Different state governments or municipal bodies may issue disparate models of privatization, resulting in limited interest from developers and financial institutions. If pilot PPP projects in these segments fail (which is often the case), developers and banks become more risk-averse, hindering sector-wide progress.

Balanced Risk-Reward Sharing: This is arguably the most crucial aspect of any PPP project in infrastructure. Considering that these projects span multiple decades, ensuring equitable and fair risk and reward sharing among the three key stakeholders: the private sector, the government, and the users is essential. If risks are disproportionately allocated, they need to be balanced to attract adequate interest. A notable example is the transformation of wireless telecom services in the late 1990s. Initially, the industry required a substantial upfront license fee, deterring many corporations. However, under the New Telecom Policy of 1999, the structure shifted to a revenue-sharing model. This change revived interest and ultimately led to the development of world-class telecom infrastructure at the lowest cost for users.

Speedy Dispute Resolution Mechanism: Infrastructure projects are inherently capital-intensive and exposed to high construction risks, with revenues earned over extended periods. Consequently, developers assume significant risk, and when disputes arise with sponsors or authorities, there must be a well-defined process for resolution. We have observed that the likelihood of arbitration and litigation decreases when government authorities swiftly address disputes. For instance, NHAI road projects, particularly those using the Hybrid Annuity Model, have experienced a sharp reduction in litigation in recent years following NHAI's introduction of descoping options in cases involving land acquisition issues.

Moving forward, it is imperative for stakeholders, including the government, private sector, and users, to collaborate and prioritize the development of robust infrastructure projects. India can create an environment conducive to sustainable and inclusive infrastructure growth by ensuring standardisation, equitable risk-sharing, and efficient dispute-resolution mechanisms.

Ultimately, with the right strategies and concerted efforts, India can harness the power of infrastructure to drive economic growth, improve quality of life, and propel the nation towards a prosperous future.

Infrastructure: Catalyst to High-economic Growth

Infrastructure forms the bedrock of any economy and serves as a vital catalyst for fostering economic development. As India embarks on its journey towards sustainable and inclusive growth in the era of Amrit Kaal (referred to as the next 25 years from India's 75th year of Independence in 2021), the importance of infrastructure development becomes even more pronounced. Investment in infrastructure yields substantial multiplier effects through diverse channels, such as job creation, enhanced global competitiveness, the attraction of foreign direct investment (FDI), seamless integration of the economy, and upliftment of living standards for the populace.

Post-pandemic, the evolving geopolitical situation and diversification in global value chain presents a valuable opportunity for India, to emerge as a major force in the global arena. To fully capitalise on this opportunity, India needs to enhance domestic preparedness, improve competitiveness, and minimize the logistic costs. India merchandise exports have a low share of 1.8% in global exports (2022). As India embraces globalization, there is a renewed focus on signing new trade agreements to increase India's share in global exports. However, to fully benefit from the access to global markets, it is critical that India improves its competitiveness in the global landscape. India ranked 68th in the World Economic Forum's Global Competitiveness Index[1] (2019). If we look specifically at infrastructure parameter within this index, India ranked relatively better in transport infrastructure (rank 28), however, it lagged in utility infrastructure (rank 103).

A critical aspect of boosting a country's overall competitiveness is its logistic infrastructure. India's logistic costs as a percentage of GDP are estimated to be in the range of 14-18%, much higher in comparison to the global benchmark of 8%. In the last few years, there is a renewed focus on developments in roads, railways, ports, airports, last-mile connectivity and warehousing. In the World Bank's Logistic Performance Index (2023)[2], India's ranking improved to the 38th spot from its rank of 44th in 2018. Despite the improvement, India ranks much lower compared to other economies such as Germany (3rd), Japan (13th), the United States (17th) and China (19th).

The recently launched National logistics policy (NLP), aimed at developing a comprehensive tech-enabled logistics infrastructure, should provide a strong boost to the logistics sector. The PM Gati Shakti plan, targeted at integrated development in multi-modal connectivity, will further complement the NLP. In the last few years, the Government has announced various other initiatives like National Infrastructure Pipeline (NIP) and National Monetisation Pipeline (NMP) to enable a wholesome development of the infrastructure sector.

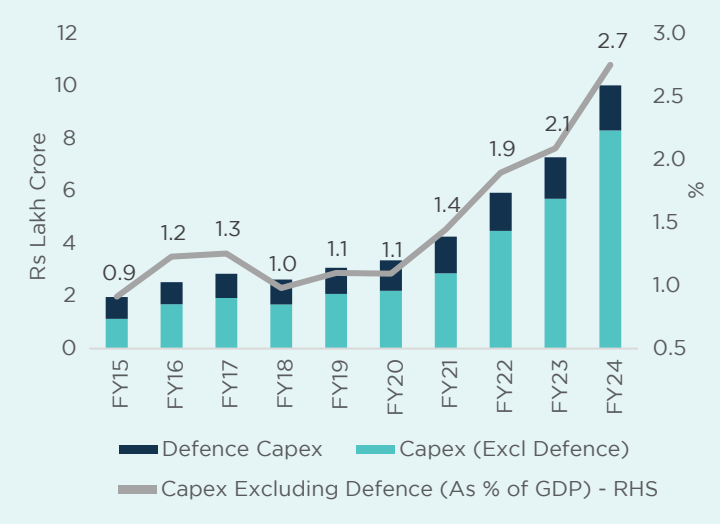
Improved infrastructure will also facilitate the success of the Government's other initiatives such as Make in India and the production-linked incentives (PLI) scheme, targeted at supporting the nation's manufacturing sector and boosting our export competitiveness. This in turn will provide strong support to India's MSME segment which has a huge reliance on exports.

[1]The Global Competitiveness Index is built on twelve pillars namely institutions, infrastructure, ICT adoption, macroeconomic stability, health, skills, product market, labour market, financial system, market size, business dynamism and innovation capability.

[2]World Bank's Logistic Performance Index (LPI) measures dimensions such as the efficiency of customs and border management clearance, quality of trade & transport-related infrastructure, the competence of logistic services, ability to track and trace consignments, competitiveness in the pricing of international shipments, timeliness of shipments reaching consignees.

The government has aptly identified capital expenditure as a catalyst to support the economic recovery, post the pandemic. The Centre has budgeted for a strong capex of Rs 10 lakh crore in FY24, 37% higher than the revised estimate for FY23. The Centre's capex (adjusted for defence capex) to GDP ratio is budgeted to rise to 2.7% in FY24 from 2.1% in FY23 and 1.1% in the pre-pandemic period of FY19. The central government capex, with a strong multiplier effect of around 2.5 (RBI 2020), is expected to further pull in private investment over a longer period.

Exhibit 1: Trend in Centre's Capital Expenditure



Source: CMIE & CareEdge Ratings; Note: Data for FY23 are Revised Estimates (RE) and FY24 are Budget Estimates (BE)

Roads, railways, ports, power, and urban infrastructure are some of the key infrastructure sectors that will steer growth in the years to come. In the last two years, roads and railways accounted for more than 50% of the Centre's total capex. The government's capex in road transport and highways has grown by a strong CAGR of around 40% in the last decade. Railways have seen the Government's capex rising at a CAGR of 37% in the last four years (FY20-24) from 15% during FY15-FY19. There is also a significant increase in the Centre's capex on energy, ports, civil aviation, and telecommunication.

Table 1: Centre's Capex Growth in Key Infrastructure Sectors

	% Share in Total Capex (Excluding Defence)	CAGR (FY15-19) %	CAGR (FY20-24) %
Road Transport & Highways	36.17	42.14	39.46
Railways	27.90	15.08	37.14
Telecommunications	6.53	22.50	88.09
Housing & Urban Affairs	4.15	20.86	7.72
Energy*	2.32	-0.32	49.43
Ports, Shipping & Waterways	0.12	-11.49	42.53
Civil Aviation	0.02	-9.07	41.92

Source: CMIE & CareEdge Ratings; * Energy includes power, petroleum & natural gas, atomic energy, new & renewable energy; Note: % share pertains to FY23 (RE)

The state governments are the other crucial pillar for infrastructure development in the economy. States' capex has a strong multiplier effect of 2 (RBI 2020) and plays a critical role in the nation's economic development. A large part of the States' capex goes into infrastructure sectors like energy, transport and communication and logistics. While the State Governments' allocation towards capital spending (19 large states) as a percentage of SGDP increased to around 2.6% in FY23 (RE) from 2.3% in FY19, the actual capex for FY23 may turn out to be lower than the revised estimate. The states have been slow in their capex due to rising revenue uncertainties amidst other fiscal commitments. However, to supplement the Centre's effort for infra push, states need to prioritize capex.

Going forward, India's infrastructure investment requirement is going to grow sharply. As per CareEdge's estimate, India will require additional infrastructure investment of USD 18-20 trillion in the next 25 years as it becomes a USD 25-30 trillion economy by 2047. Currently, more than 70% of the financing for infrastructure projects comes from the General government and public sector. However, owing to the limited financial

flexibility of the government, it becomes important to encourage private investment in the infrastructure sector to bridge the infrastructure investment gap.

Large lump sum expenditure as well as the long gestation period for infrastructure projects acts as a deterrent for the private players' participation. Hence, there is a need to create an enabling environment for the private sector through apt policy frameworks and financial sector reforms. The Public-Private Partnerships model has emerged as an apt framework. The government has introduced financial instruments like viability gap funding (VGF) and special purpose vehicle (SPV) for funding large infrastructure projects. Moreover, Infrastructure Investment Trusts (InvITs) have opened avenues for fund mobilisation through retail and institutional investors. The National Monetisation Pipeline (NMP), under which the government plans to monetise its underutilised brownfield investment projects, will also provide a fillip to private sector participation. Further, reforms in the corporate bond market, strengthening of the municipal bond market, attracting foreign investment and other measures for improving the long-term financing landscape will aid the infrastructure sector.

In recent times, there has been an increased global focus on 'sustainable investment' that takes into account Environmental, Social & Governance (ESG) aspects. Corporations, and investors, including sovereign wealth funds, pension funds, private equity players, and other financial investors are increasingly focussing on sustainable growth. Hence, going forward, it is critical that infrastructure development considers sustainable, equitable and green growth.

Airports: Preparing for the Next Take-off

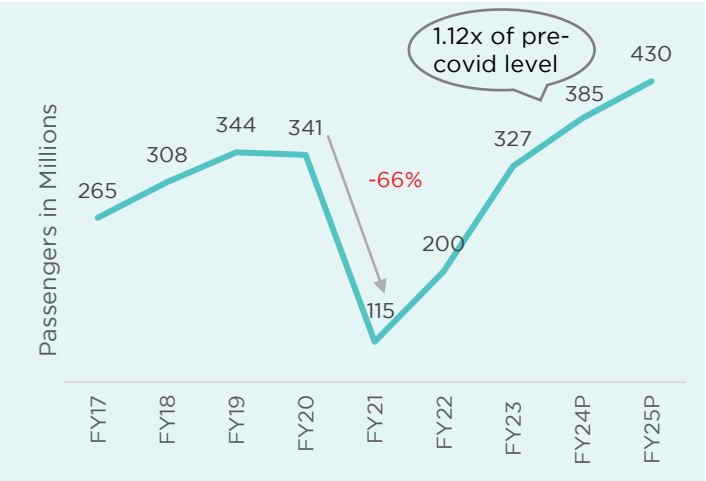
The Indian airport sector has witnessed remarkable growth, fuelled by robust economic expansion, escalating demand for air travel, and extensive infrastructure development. This article examines the regulatory evolution of the Indian airport sector, forecasts for air passenger traffic, and transformative initiatives propelling the sector's expansion during the Amrit Kaal period.

In FY23, air traffic in India rebounded vigorously, reaching 95% of pre-pandemic levels, demonstrating a V-shaped recovery for the sector. CareEdge Ratings anticipates that air passenger traffic will surpass pre-Covid levels in FY24, reaching 1.12 times the previous figures. Over the period of FY23 to FY25, CareEdge Ratings projects a growth rate in air traffic that is 2.25 times that of the GDP growth rate, primarily driven by a low base in FY22, favourable demographics characterised by a rising working population, and expansions in both greenfield and brownfield capacities.

A conducive regulatory environment will bolster investor interest in Indian airport operators. Furthermore, the future growth of non-aero revenue will be influenced by increased international traffic, a higher proportion of transfer traffic, the utilization of technology to enhance passenger satisfaction, and expanded product offerings. Going forward, the narrowing of tariff disparities between major and non-major airports and timely issuance of the first tariff order without deferment of approved revenue requirement to the next control period will be crucial for the successful privatization of airports.

Passenger Traffic Forecast: Growth Fundamental to Stay Strong in Medium-term

Exhibit 1: Annual Passenger Traffic



Source: Airport Authority of India and CareEdge Ratings

The Covid-19 pandemic dealt a severe blow to air passenger traffic in India, leading to a substantial decline to 115 million passengers during FY21. However, as international traffic resumed on March 25, 2022, accompanied by an accelerated pace of vaccination and the gradual decline in the impact of COVID-19, the sector experienced a robust recovery in passenger traffic.

In line with CareEdge Ratings estimation, passenger traffic recovered to 327 million passengers during FY23, marking a V-shape recovery for the sector.

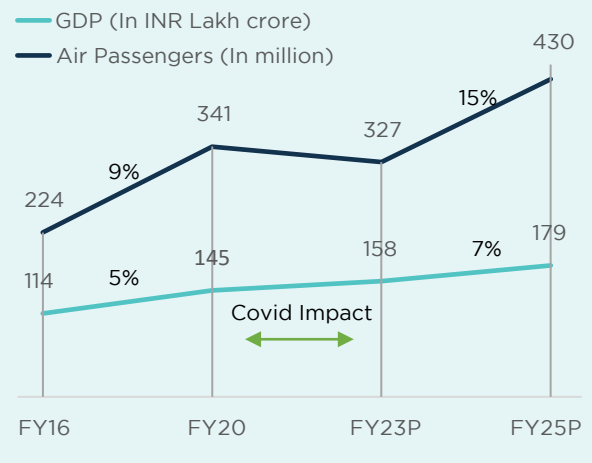
While the domestic traffic witnessed near full recovery of pre-pandemic level during FY23, international traffic recovered to 85% of the pre-pandemic levels.

CareEdge Ratings expects the buoyancy to continue in passenger traffic and surpass pre-Covid levels by 1.12 times during FY24 to reach 385 million passengers. The momentum is expected to continue in FY25 with double-digit year-on-year growth of 12%.

The air passenger traffic growth rate and gross domestic product (GDP) growth rate have a multiplier effect. From FY16 to FY20, the air passenger traffic's CAGR was 1.80 times of GDP CAGR. For FY23-FY25, CareEdge Ratings anticipates an air traffic growth rate of 2.25 times the GDP growth rate, primarily driven by the low base in FY22.

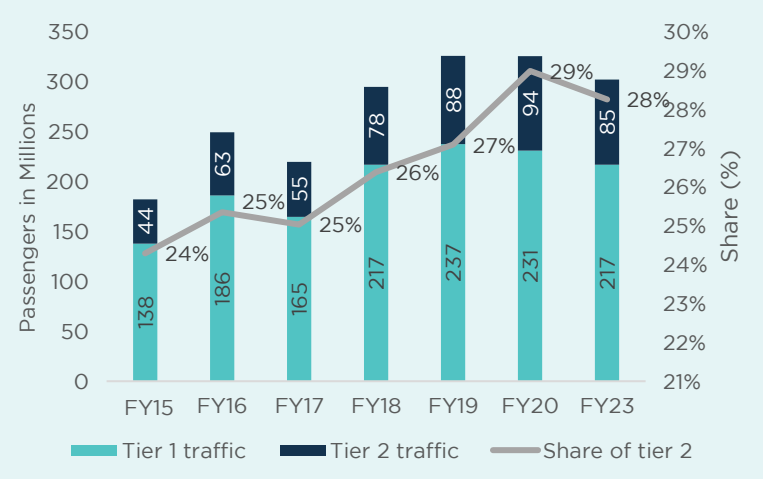
Growth Propellers of Air Passenger Traffic: Advantage India

Exhibit 2: Economic Growth & Passenger Traffic



Source: AAI and CareEdge Ratings

Exhibit 3: Tier-1 and Tier-2 passenger traffic and growth



Source: AAI

India's advantageous demographics, characterised by a substantial working population (67% in the 15-64 age group in 2020), an expanding middle class, and a rising per capita income, are expected to propel the growth of air passenger traffic. This is further supported by the fact that tier 2/3 airports experienced a higher CAGR of 16% in passenger traffic over the past six years, compared to the compounded annual growth rate (CAGR) of 11% witnessed by tier-I airports until 2020. This growth can be primarily attributed to the robust expansion of domestic passenger traffic.

Fleet expansions by major airlines and the expansion of airports shall also contribute to passenger traffic growth.

Evolving Regulatory Environment: Conducive for New Airports

Before 2016, the Indian airport sector functioned under the cost-plus and single-till system, which imposed a cap of 16% on investors' maximum return on capital investments. However, a significant change occurred in 2016 with the adoption of the Hybrid Till method. This method introduced the inclusion of 30% of non-aeronautical revenue, in addition to aeronautical revenue, when determining future tariffs. This shift represented a departure from the previous system and allowed for a more comprehensive approach to tariff determination in the Indian airport sector. Globally, the dual till mechanism is the predominant approach, with 52% of airports operating under this system. The single till mechanism is employed by 25% of airports, while the hybrid till mechanism is utilized by 23% of airports.

In India, the tariff determination of 27 major airports is governed by the Airport Economic Regulatory Authority of India (AERA) Act, which provides a predefined method for computing the Aggregate Revenue Requirement (ARR) to arrive at the return on regulatory asset base. Under the Hybrid till mechanism, the ARR is calculated using the following methodology:

Over the years, favourable developments encompassing the tariff-setting process has matured through consultation method with stakeholders. This has led to visible improvement in tariff determination process timelines as given below:

Period	Average delay (in years)
Before 2015	3
2015-2020	2
2022	0.5

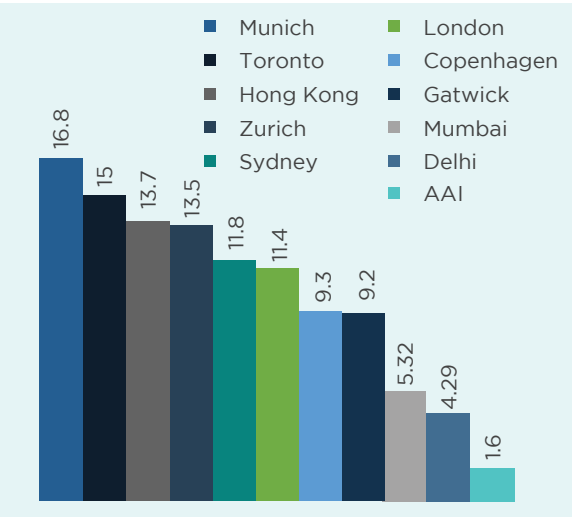
After their privatisation, non-major airports are brought under the purview of AERA regulations. However, the Ministry of Civil Aviation (MoCA) governs the tariff determination of non-major airports, specifically those with an annual traffic volume of less than 3.50 million passengers. It is worth noting that the calculation of revenue entitlement by MoCA often results in lower allowances than estimated, leading to a significant disparity between the tariffs of major and non-major airports.

During the initial phase of privatization, concessions were granted for a period of 30 years, with an option to extend for an additional 30 years, including a first right of refusal. However, from 2021, the tenure for airport concessions has been extended to 50 years. This change allows airport operators to have a longer timeframe to recover their investments and provides them with increased stability and certainty in their operations. The revenue sharing mechanism underwent changes, transitioning to a per-passenger fee model from the proportion of Aero-revenue sharing. This new model allowed for a more equitable distribution of revenues between the airport operator and the airport authority.

Non-Aero Revenue Potential: A Gamechanger

Non-aeronautical revenue serves as a significant revenue stream for airports. As illustrated below, international peers typically generate 2 to 3 times more non-aeronautical spending per passenger compared to Indian airports. In the case of Indian airports, the non-aeronautical revenue per passenger was USD 1.4 for AAI-operated airports (in contrast to USD 5.3 for Mumbai), indicating substantial growth potential in this area.

Exhibit 4: Non-Aero Revenue per pax (2020)



Source: Industry reports

When comparing India to the Asia Pacific (APAC) region for the year 2019, it is observed that the income from Food and Beverages (F&B) and advertisement in Indian airports are comparable to the APAC average during the pre-Covid era. However, the contribution from car parking revenues is relatively lower in India due to the availability of multi-modal transportation options. One notable disparity lies in the "Income from retail" category, where India lags significantly behind with a rate of 34% compared to the APAC average of 57%. This gap can be attributed to lower duty-free income per international passenger in Indian airports, which explains the difference in retail income between the two regions.

Future growth in non-aero revenue will be influenced by higher international traffic, a higher proportion of transfer traffic, the use of technology and analytics to better predict passenger preferences and wider product offerings.

AAI has identified 25 airports to be privatized between 2022-25 through the National Monetization Policy. The government is planning to bundle one small airport with one big airport for privatisation.

The sector missed its FY22 and FY23 privatization targets and hence, in this backdrop, CareEdge Ratings believes that these timelines are likely to be further deferred.

Privatization under National Monetisation Policy for Airports: Lagging Targets

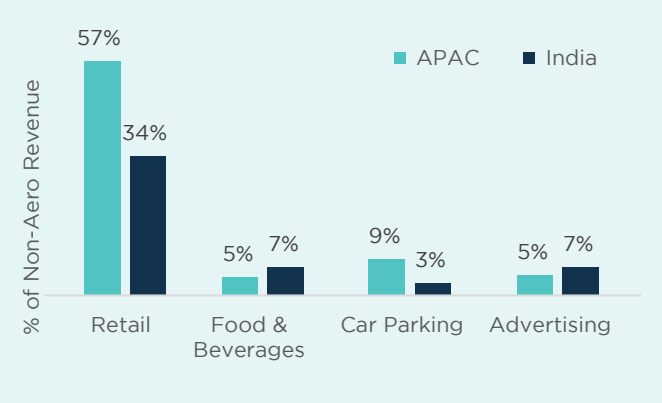
25	Number of AAI airports considered for monetisation
18%	% of existing AAI airports planned for monetisation
~ INR 21,000 crore	Indicative Monetisation Value over FY22-25
4%	Share in overall NMP in value terms (%)

Challenges Faced by Airports: Need a Relook

As stated earlier, when non-major airports are privatized, they demand large tariff hikes due to the disparity between tariffs of non-major and major airports and subsequent delays are observed in the issuance of the first tariff order for such airports. In view of the large tariff hike post-privatization, AERA also took decisions to defer a certain portion of the tariff hike to the next control period. This can lead to a lower project life coverage ratio for these airports. Timely release of the first tariff order without deferment of approved revenue requirement to the next control period is essential to ensure financial viability and sustain investor interest in airport projects.

The primary objective of the UDAN scheme was to enhance regional air connectivity and make air travel affordable for the common citizens of India. As on January 30, 2023, 459 UDAN routes involving 72 Airports have been operationalized. While the UDAN scheme has seen some success hindrances in the form of moderate to weak financial viability of airlines, lack of sustained market demand and infrastructural constraints have restricted it from being entirely successful.

Exhibit 5: Non-Aero Revenue APAC Vs India (2019)



Source: AAI, Industry reports

Way Forward

As the Indian airport sector gears up for remarkable growth, there are certain areas that require attention to boost private sector participation. One crucial aspect is the timely release of the first tariff order without deferment of approved revenue requirement to the next control period, which will provide revenue visibility and attract investor interest in financing. Collaboration between airports and airlines is also essential to develop viable and profitable route strategies. Adopting a collaborative approach, such as implementing hub and spoke methods, can facilitate airlines in optimizing fleet planning and ensuring efficient passenger travel.

The estimated total capital expenditure for the sector in FY24-FY25 is approximately Rs 75,000 crore, primarily aimed at expanding passenger capacities and monetising non-aeronautical revenues. This indicates a funding requirement of around Rs 52,000 crore. Funding challenges for the capex are relatively moderate due to the anticipated true-up of the same in future aero revenues and the longer residual concession period ranging from 30 to 50 years.

The credit profiles of airport entities have improved in FY23 and are expected to remain stable in the medium term, driven by the improved sector outlook following the pandemic.

Roads: Offer a Roadmap for Amrit Kaal Growth

Infrastructure investment is a crucial component of India's Amrit Kaal growth roadmap, with the roads and highways sector playing a significant role in shaping the country's growth trajectory. Over the period of FY15-FY23, the cumulative investment in the roads sector amounted to Rs. 23.53 lakh crore. The Government of India's commitment to implementing successive reforms, the focus on executing the ambitious Bharatmala Phase-I project under the National Infrastructure Pipeline (NIP) and the growth in state capital expenditure have all contributed to creating a favourable investment climate.

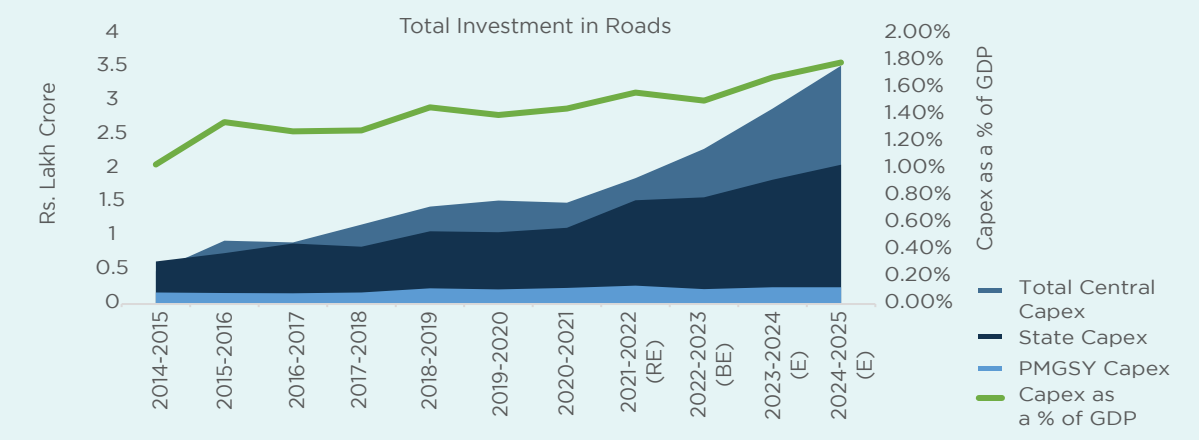
CareEdge Ratings anticipates a healthy Compounded Annual Growth Rate (CAGR) of 19% in the capital outlay for roads, projecting an increase from Rs. 4.10 lakh crore in FY23 to Rs. 5.85 lakh crore in FY25. The introduction of the Hybrid Annuity Model (HAM), Toll-Operate -Transfer (TOT), and FasTag, along with the harmonious substitution of sponsors, stands out as major successful reforms implemented by the Government of India. The momentum of Infrastructure Investment Trusts (InvITs) has also been gaining traction, with 101 assets transferred nder InvITs. Additionally, 9 roads InvITs have managed assets totalling Rs. 1.20 lakh crore.

However, the road sector faces several prominent hurdles that impede its progress. These challenges include the increased cost of land acquisition, heightened competition leading to funding challenges, particularly for moderate sponsors, limited contractors' bandwidth, higher indebtedness of NHAI (National Highways Authority of India), and a relatively slower pace of monetisation by NHAI. As a result, the completion of Bharatmala Phase-I is estimated to be delayed from the original schedule of March 2024 to March 2027-September 2027. Nevertheless, the sector holds significant potential for monetization in the medium term through an expanded portfolio of completed HAM assets and EPC (Engineering, Procurement, and Construction) projects.

Healthy Capital Outlay of Rs. 23.53 lakh crore from FY15-FY23

Capital outlay for roads increased from 1.03% of GDP in FY15 to 1.57% during FY23.

Exhibit 1



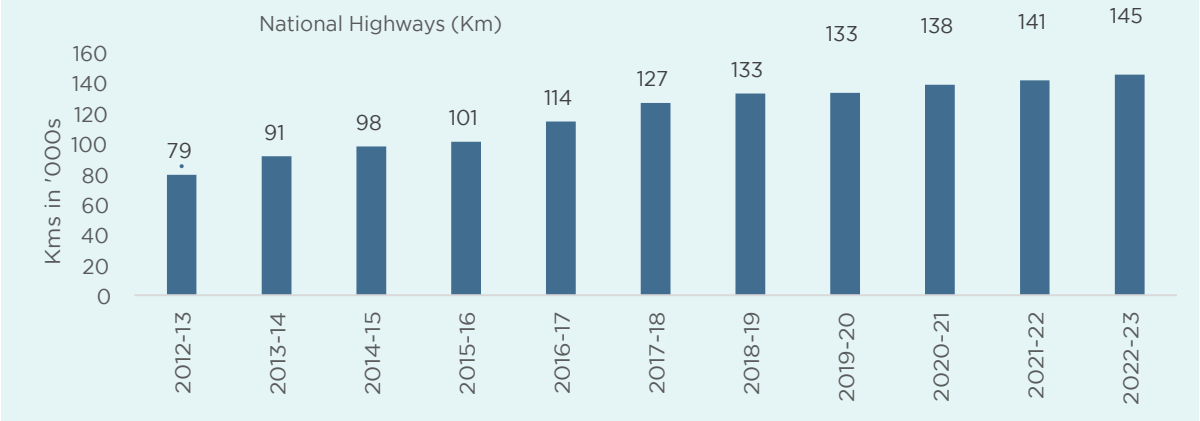
Source: RBI, PMGSY, MoRTH

Capital outlay for the roads grew at a healthy CAGR of 16% for FY15-FY23 supported by investment from Centre and State.

Policy Reforms Support Steady Increase in NH Roads Completion

There has been steady increase in construction of National Highways in India from 98,000 km in FY15 to 1,45,000 km in FY23.

Exhibit 2



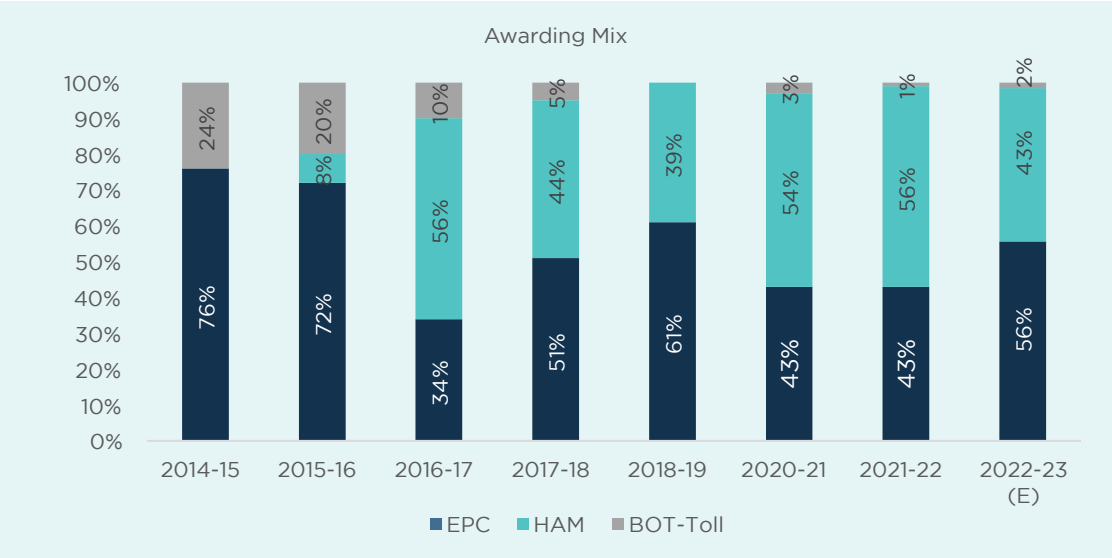
Source: MoRTH

The government of India initiated path-breaking series of reforms (enumerated below) over last 10 years to resurrect investor confidence and expedite the project execution.

1. Introduction of Hybrid Annuity Model (HAM): Aggressive bidding in toll roads with high premium payout to NHAI, hurdles in Right of Way (RoW), optimistic traffic projections and high project leverage led to the failure of many toll projects awarded between FY09 to FY12 leading to lackluster investor appetite. During FY15, NHAI introduced Hybrid Annuity Model (HAM) with emphasis on cost-based bidding and favourable features as presented below:

- Annuity nature of the revenue stream linked to benchmark lending rates and inflation indexation have safeguarded lender's interest.
- Favourable changes have also been introduced in the model concession agreement to descope unavailable work-front for issuance of provisional commercial operations date (PCOD) upon completion of 100% work on available land.
- Availability of a 40% grant during the construction phase has lowered equity requirements for developers to 12% instead of 20-25% in toll roads/annuity projects.

Exhibit 3

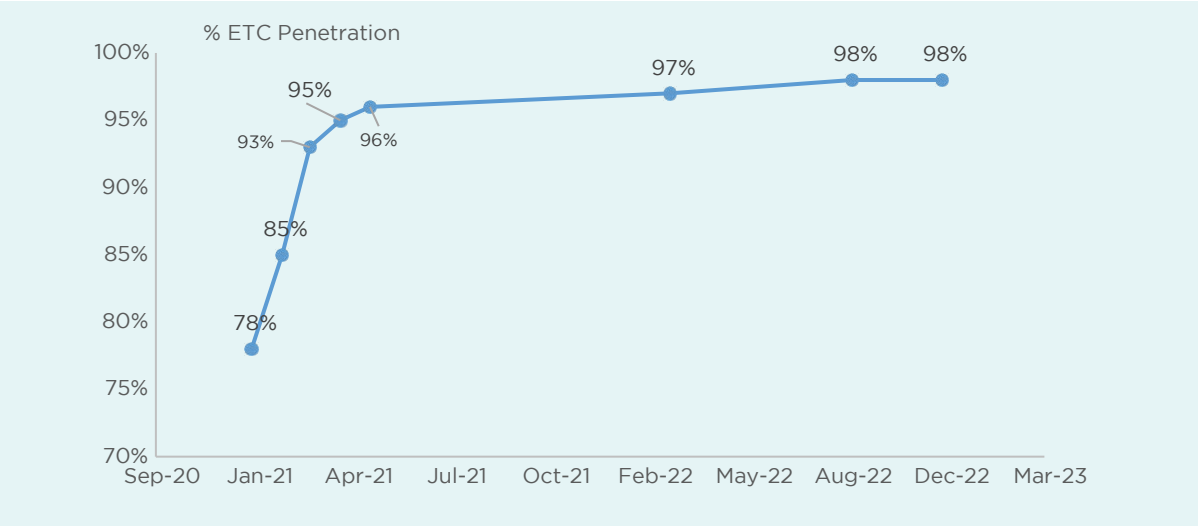


Source: CareEdge Ratings

- Effectively, the introduction of HAM has led to a steady increase in private participation as reflected below:

2. Declaration of appointed date only after the availability of 80% RoW: This measure has accelerated the construction pace.
3. Change in ownership: Permitting a change in ownership from two years from PCOD to one year from PCOD for toll roads and six months from PCOD for annuity projects has led to gaining momentum of the stake sale.
4. Introduction of toll-operate-transfer (TOT) model: The government announced the TOT model in May 2016 to meet the large funding requirements of NHAI. Till March 31, 2023, road projects with an aggregate length of 1615 km have been auctioned under TOT leading to a receipt of Rs.26,365 crore to NHAI.
5. Harmonious substitution of sponsor: Timely sponsor substitution has benefited HAM projects worth Rs.12,000 crore apart from languishing toll roads.
6. Monthly release of payment and grant under Aatmanirbhar scheme: This has boosted the cash flow of developers and led to the achievement of a high daily construction rate of 36 km per day in FY21.
7. Introduction of FasTag: Penetration of electronic toll collection reached 98% in September 2022 from 78% in January 2021 post-mandatory introduction of FasTag. This has helped not only in curbing leakages but also bolstered investor confidence.

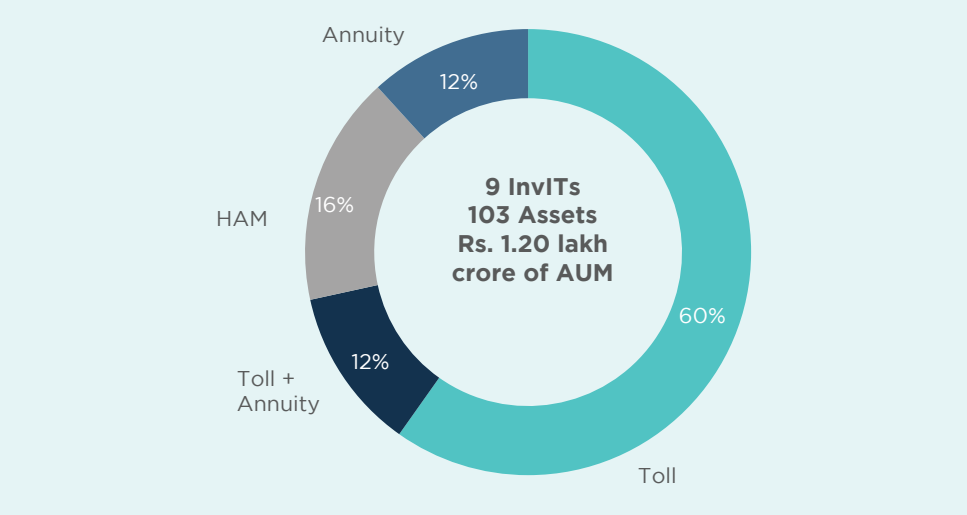
Exhibit 4



Source: MoRTH

8. Gaining momentum in InvIT: 101 road assets have already been transferred to 9 InvITs till April 30, 2023, with a large asset under management (AUM) of Rs.1.20 lakh crore in short span of five years. NHAI has also raised Rs10,200 crore through transfer of roads assets of 636 km to NHAI InvIT.

Exhibit 5

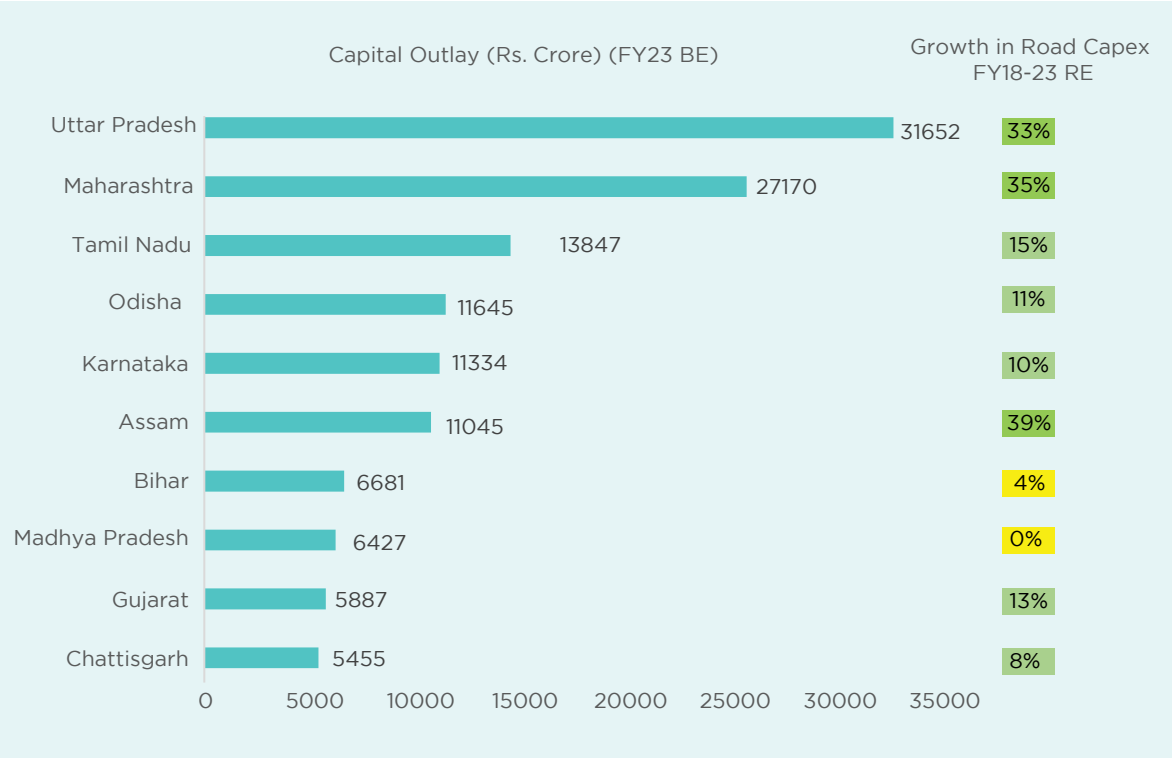


Source: CareEdge Ratings

Healthy Capital Outlay in State Capex for Roads Supported by NIP and Greenfield Expressways

State capex on the roads grew at a healthy CAGR of 12% for FY15-FY23 with a CAGR of 14% for FY20-FY23 primarily due to the launch of the National Infrastructure Pipeline (NIP). Construction of prominent expressways like Purvanchal Expressways, Nagpur Mumbai Expressway etc. has bolstered state investments in Uttar Pradesh and Maharashtra. Capital outlay from the top 10 states constituted 66% of the total outlay of states in India as presented below:

Exhibit 6



Opportunities

Modest road density as compared to global standards to drive investments

For India, the contribution of national and state highways to total surfaced roads stands at a mere 5% which augurs well in terms of the investment potential. India has a relatively modest road density of 4.52 km per 1000 people as compared to 20.50 km in the USA and 9.33 km in Brazil. On the World Economic Forum's Global Competitiveness Index, India ranks 72 on road connectivity. Growing population and rapid urbanization further highlight the need for a mammoth investment in road infrastructure.

Strong pipeline under NIP and emphasis on Gati Shakti bode well for the sector

The ongoing development of national highways encompasses a substantial network spanning over 65,000 km, with a total investment exceeding Rs. 11 lakh crore. Out of this, projects accounting for more than 39,000 km have been completed, while work on the remaining stretch of over 26,000 km is still in progress. As of December 2022, there are around 6,500 km of projects yet to be awarded under Bharatmala Phase-I. Notably, there has been a heightened focus on upgrading existing 4-lane roads to 6 to 8-lane greenfield roads, which necessitates significant investment.

Looking ahead, Bharatmala Phase-II is estimated to cover approximately 8,500 km of road length, with an anticipated capital outlay of Rs. 3.50 lakh crore. This next phase will continue the ambitious infrastructure development efforts, further enhancing connectivity across the country's road network.

Key challenges for the sector:

1. Increase in Land Acquisition Costs: The cost of land acquisition has seen a significant rise, increasing from 9 million per hectare in FY14 to 25 million per hectare in FY20. This escalation can be attributed to higher compensation requirements under the current land acquisition bill. The NHAI faces a key challenge with higher capital expenditure associated with approximately 70% of ongoing high-value expressway projects.
2. Heightened Competition: In March 2020, NHAI relaxed bidding criteria, leading to intensified competition among developers. This has resulted in the entry of mid-sized sponsors with moderate credit profiles, increasing the share of moderate and weak sponsors from 22% in projects awarded before FY20 to 36% in projects awarded during FY21 and FY22. CareEdge Ratings predicts elevated execution and funding risks for moderate sponsors, estimating their equity commitments to be 3.7 times their current cash accruals. Moreover, moderate sponsors lacking an operational asset portfolio may experience higher debt levels. Even strong sponsors have ventured into new geographies and secured structurally complex projects due to intensified competition, leading to overall execution challenges for the sector and limiting the construction pace in the medium term.
3. Slower Pace of Asset Monetisation: The pace of asset monetization has been slower, with only 10% achievement of the targeted length of 10,476 km under the National Monetization Pipeline (NMP). However, investor appetite remains strong, indicated by a high realisation of Rs 22 crore per km compared to the assumed Rs 6 crore per km for the NMP targets. To meet the NMP targets for FY24, there is a need for a significant scaling up of bidding activity.
4. Threats from Alternate Routes and Transport Modes: The development of alternate routes, including the ongoing construction of parallel greenfield expressways, poses a risk of traffic diversion for toll road projects. Additionally, the completion of the dedicated freight corridor by the end of June 2024 and subsequent improvement in first and last-mile connectivity through rail may gradually lead to a modal shift from roads to rail. These factors may limit long-term investor appetite for road projects.

Way Forward

CareEdge Ratings expects the capital outlay for roads to grow from Rs 4.10 lakh crore in FY23 to Rs 5.85 lakh crore in FY25, implying a healthy CAGR of 19%. However, several prominent hurdles hinder the sector's progress. These include the increased cost of land acquisition, heightened competition leading to elevated funding challenges, especially for moderate sponsors, limited availability of contractors, higher indebtedness of NHAI, and a relatively slower pace of monetization by NHAI. Due to these challenges, the completion of Bharatmala Phase-I is estimated to be delayed from the original schedule of March 2024 to March 2027-September 2027. Nevertheless, the sector presents significant monetization potential through an increased portfolio of HAM assets and the length of NHAI's EPC projects. CareEdge Ratings estimates a monetization potential of HAM projects with an enterprise value of Rs. 2.00-2.50 lakh crore over FY24-FY27. Additionally, an EPC length of 4,000-4,500 km is expected to be operational for NHAI each year, which can potentially be transferred to InvIT. The credit perspective for the sector has remained stable with a positive bias, thanks to a satisfactory operational track record and the visibility of a large number of project awards, offering significant refinancing potential.

Renewable Energy: Sustained Growth Amidst Execution Challenges

India has achieved a significant milestone in its renewable energy (RE) sector, with an installed capacity of approximately 125 GW as of March 31, 2023. This remarkable achievement is driven by a solar capacity of 67 GW, followed by a wind capacity of 43 GW. The contribution of renewable energy in India's overall energy mix has shown notable improvement, rising from 15% at the end of FY16 to 30% by FY23. The Government of India has set an ambitious bidding trajectory of 50 GW annually for the next five years, providing a significant boost towards achieving the target of 500 GW capacity from non-fossil fuel sources by 2030.

While recent bids have seen an increase in discovered tariffs, reaching Rs 2.70/unit for solar and Rs 3.16/unit for wind, compared to the low of Rs 1.99 per unit achieved in December 2020, tariff competitiveness remains high. In terms of sub-segments, solar energy has surpassed the installed wind power capacity, despite a delayed start. This signifies the growing prominence and success of solar energy in India's renewable energy landscape.

Exhibit 1: Sector-wise total power capacity (GW) of India as on FY23-end

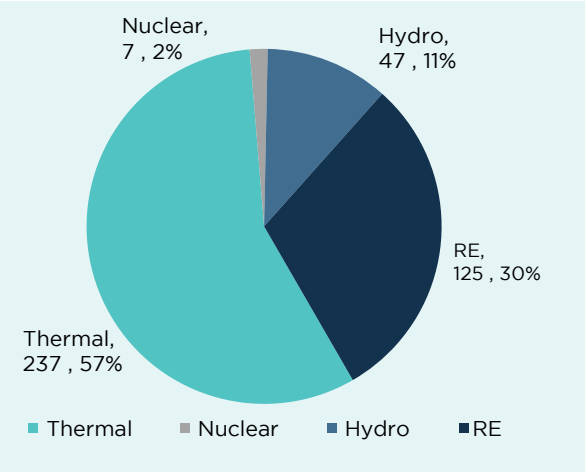
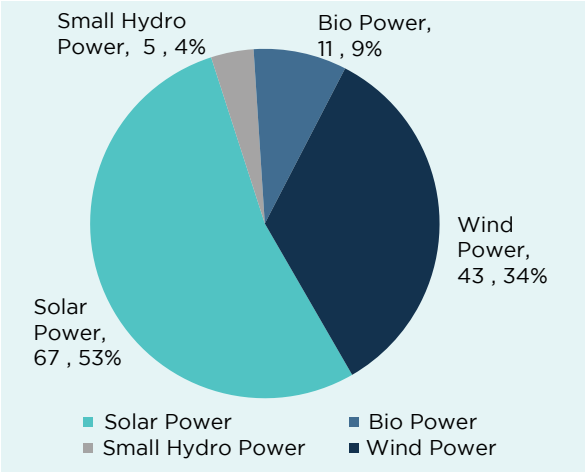


Exhibit 2: Break up of total renewable capacity (GW) as of FY23-end



Source: NPP, CEA, CareEdge Ratings

Solar Leads the Renewable Installations

Over the past seven years, the solar power segment has emerged as the primary driver of capacity addition in the RE sector. This substantial capacity growth has elevated its share in the overall RE mix to 53% as of March 2023, a significant increase from 17% in March 2016. However, despite RE accounting for approximately 30% of the overall energy mix, its contribution to overall generation remains relatively subdued at 10-11%. This is primarily due to lower Plant Load Factors (PLFs) resulting from intermittent resource availability, which affects the consistent generation of renewable energy.

Exhibit 3: Trends in cumulative RE installed capacity (GW)

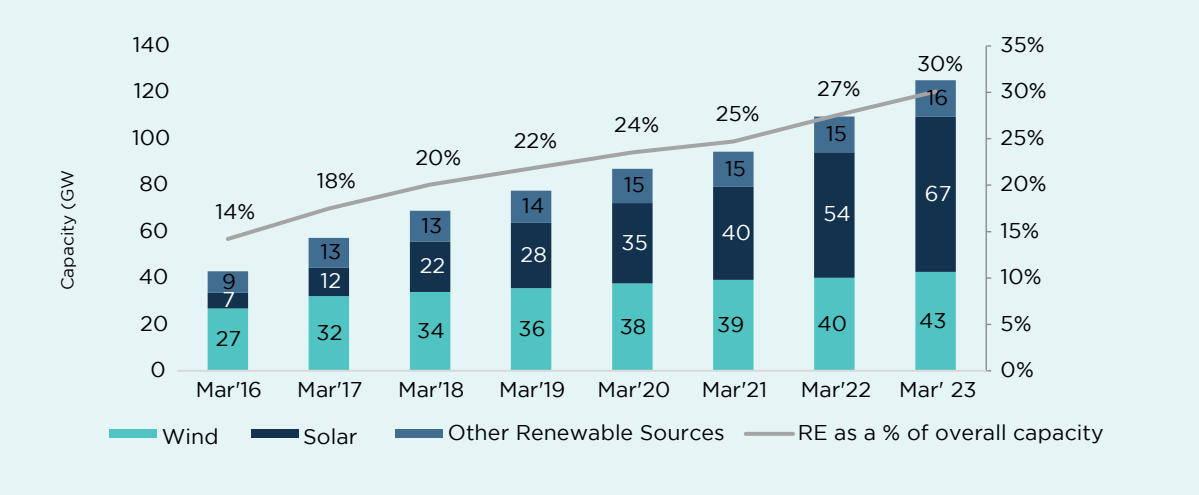
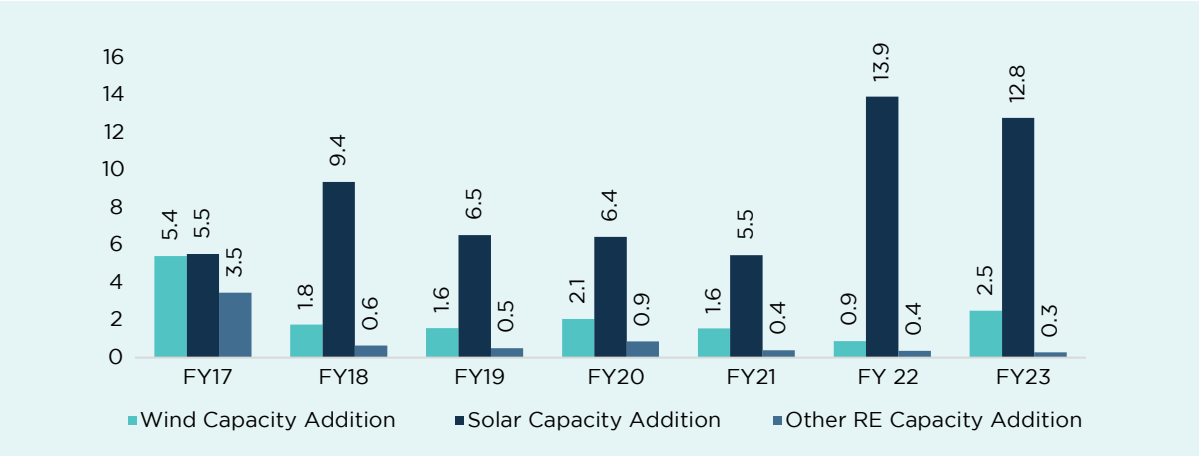


Exhibit 4: Trends in Annual RE Capacity Addition (GW)



Source: NPP, CEA, CareEdge Ratings

In FY23, India witnessed the installation of 15.6 GW of renewable energy (RE) capacity, marking a 3% increase compared to the capacity added in FY22. The capacity addition in FY23 was front-loaded due to uncertainties surrounding the Approved List of Modules and Manufacturers (ALMM) issue and the imposition of basic customs duty (BCD) on imported cells and modules starting from April 2022. Looking ahead, with the ALMM applicability being put on hold for projects commissioned in FY24, coupled with a decline in solar module prices, annual installations are expected to experience a significant surge.

CareEdge Ratings anticipates annual installations of approximately 20 GW in the current fiscal year, with further growth to reach 25-30 GW annually, provided the bidding trajectory aligns with the targets outlined by the Ministry of New & Renewable Energy (MNRE). This positive outlook reflects the potential for accelerated renewable energy development in the coming years.

Indicative Bidding Trajectory of 50 GW to be Key to Achieve 500 GW Non-fossil Fuel Capacity by 2030

During COP26, India made a commitment to achieve 500 GW of capacity through non-fossil fuel sources by 2030. To meet this ambitious target, the country needs to install over 40 GW of renewable energy capacity annually starting now. To facilitate this, the Indian government has decided to invite bids for 50 GW of renewable energy capacity each year for the next five years through central Renewable Energy Implementing Agencies (REIA) such as NTPC, SECI, NHPC, and SJVN.

The 50 GW trajectory for FY24 includes a wind capacity of 10 GW, along with solar, hybrid, and storage-based capacity totalling 40 GW. In addition to the central agencies, key states like Gujarat, Maharashtra, Karnataka, and others are actively conducting state-specific auctions to promote renewable energy development. Furthermore, the commercial and industrial (C&I) segment has garnered significant investor interest, and CareEdge Ratings expects substantial capacity additions from this segment as well.

Table 1: Central Bidding Trajectory for FY24 (Capacities in GW)

Period	Type	SECI	NTPC	NHPC	SJVN	Total
Q1	Non-Wind	3.5	3	3	3	12.5
	Wind	2.5	0	0	0	2.5
Q2	Non-Wind	6	3	1.5	2	12.5
	Wind	0	2.5	0	0	2.5
Q3	Non-Wind	2	3	1.5	1	7.5
	Wind	0	0	2.5	0	2.5
Q4	Non-Wind	1	3.5	1.5	1.5	7.5
	Wind	0	0	0	2.5	2.5
FY24	Non-Wind	12.5	12.5	7.5	7.5	40
	Wind	2.5	2.5	2.5	2.5	10
Grand Total		15	15	10	10	50

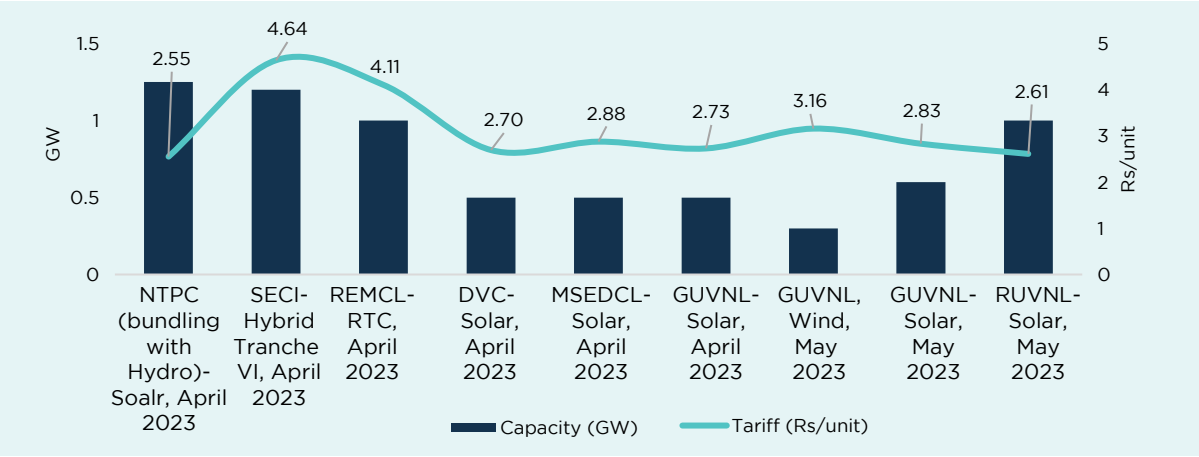
Source: MNRE, CareEdge Ratings

Rise in Determined Tariffs in Latest Few Bids

In recent years, there has been a decrease in the number of plain vanilla renewable energy (RE) bids. However, the bidding activity in the first few weeks of the current fiscal year has experienced a significant upswing, with completed auctions for 4.3 GW of plain vanilla solar projects, 0.3 GW of wind projects, and 2.3 GW of hybrid/storage-based projects. The tariffs determined in these bids have seen an increase, primarily influenced by the rise in equipment pricing, government duties, and interest rates.

Furthermore, there has been a notable increase in the proportion of innovative bids, including "peak off-peak" supply, "round the clock" supply, and supply utilizing battery solutions. Despite the tariff increase, these bids remain competitive when compared to the cost of generation for recently commissioned as well as upcoming thermal power projects.

Exhibit 5: RE Bidding Results in FY24



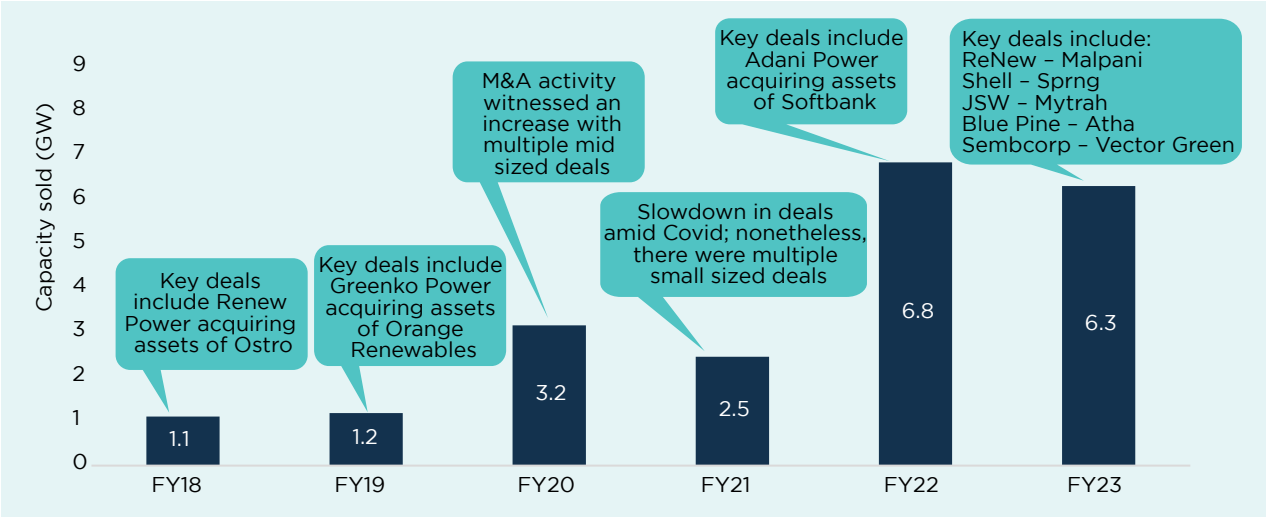
Source: CareEdge Ratings

Consolidation over the Last Two Years

The renewable energy sector in India has experienced a notable increase in mergers and acquisitions (M&A) activity over the past 24 months, resulting in the transfer of ownership of more than 13 GW of renewable energy assets. Looking ahead, CareEdge Ratings anticipates further consolidation in the industry, driven by strong interest from global investors, significant growth potential, and the benefits derived from a diversified and substantial asset base.

Most of the M&A deals in the renewable energy space have been concluded with an EV/EBITDA multiple ranging from 7.5x to 10.0x. These multiples may vary based on factors such as the remaining life of the asset, power purchase agreement (PPA) tariffs, counterparty involvement, and the operating performance of the asset. The valuation of these deals takes into account various aspects to determine the attractiveness and potential return on investment.

Exhibit 6: M&A activities in RE



Source: MNRE, CareEdge Ratings

Growth Aided by Buoyant Investor Interest and Adequate Financing Avenues

The growth of the renewable energy (RE) sector in India can be attributed to strong policy support from the Indian government, as well as robust investor interest driven by a greater focus on environmental, social, and governance (ESG) factors and attractive returns on assets. The market has attracted a wide range of global investors, including pension funds, sovereign wealth funds, private equity funds, and conglomerates that have established a presence in India.

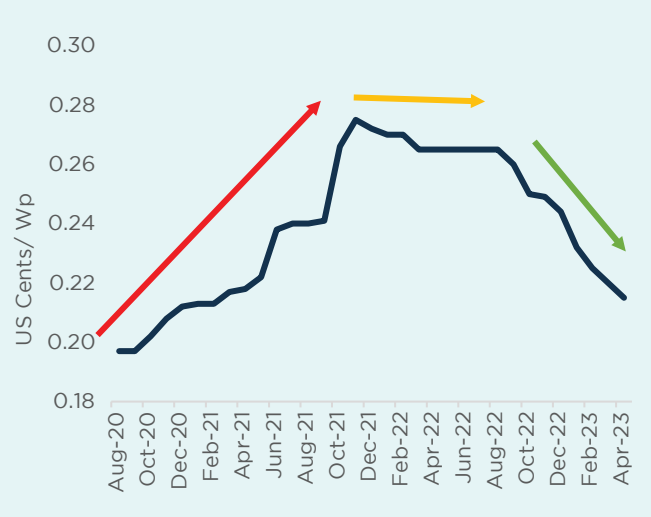
Over the years, participants in the RE sector have found it relatively easier to raise debt both domestically and internationally. This is due to the improved creditworthiness of the participants and a general decrease in interest rates over the medium term. Various avenues have been explored by Indian RE players to raise funds, including domestic loans, domestic bonds, external commercial borrowings (ECBs), and green bonds.

Lender appetite has been supported by the introduction of new and innovative financing structures. These include cross-collateralization between multiple projects, cash pooling, and co-obligor structures. Additionally, credit enhancement has been achieved through partial or full guarantees provided by stronger entities or institutions.

Moderation in Solar Module Prices

The average price of mono-PERC modules, considered to be the mainstream modules, had increased by more than 35% from ~20 cents in Q2 CY20 to ~27 cents in Q3 CY22. The project cost further increased for the Indian developers due to the depreciation of INR against the USD by ~8% during the same time period and the increase in GST rates on modules from 5% to 12%. The landed price of solar modules post including BCD and other taxes had gone beyond 40 cents thereby affecting the economic viability of a significant proportion of capacity. However, with the increase in polysilicon capacity in China, the supply of modules has increased resulting in moderation in module prices to 20-21 cents (ex-duty) or 26-29 cents (all inclusive).

Exhibit 7: Global Module Price Trend



Source: PV Infolink, CareEdge Ratings

Key Challenges

Availability of land and transmission infrastructure – Renewable energy projects, such as solar and wind, require significant land resources, with approximately 4.5 acres and 2 acres of land per MW, respectively. However, developers often face challenges in acquiring contiguous land parcels in key RE states, which can pose obstacles to the growth of the RE sector. In addition to land acquisition challenges, there is a need to enhance the transmission infrastructure to keep up with the rapid growth of RE capacity. The Ministry of Power (MoP) initiated the first phase of the Green Energy Corridor (GEC) in FY2016, which is nearing completion and is expected to facilitate the evacuation of over 20 GW of RE capacity. The second phase of the GEC is currently under implementation and is anticipated to be completed by FY26.

Rise in input prices along with interest rates - Solar modules and wind turbines are significant components of the capex in solar and wind power plants, respectively. Any significant increase in input prices for these components can have a negative impact on project returns. The prices of these inputs have shown volatility in recent quarters, leading to delays in the execution of a considerable portion of the capacity. Furthermore, infrastructure projects, including renewable energy projects, typically involve high levels of leverage. Therefore, if there is an increase in yields or interest rates, it can adversely affect project returns. The higher cost of borrowing can impact the financial viability of projects and potentially reduce overall profitability.

Lack of adequate domestic manufacturing capacity – The Indian government has placed a strong emphasis on bolstering the domestic manufacturing ecosystem, particularly in the renewable energy sector. To support this objective, two Production Linked Incentive (PLI) schemes have been launched, specifically targeting fully integrated and partially integrated solar module manufacturing units. These initiatives are expected to result in a cumulative module manufacturing capacity exceeding 50 GW per annum. The PLI scheme encompasses various types of manufacturing capacities, including over 27 GW of fully integrated capacity (from polysilicon to module), 17 GW of semi-integrated capacity (from wafer to module), and more than 7 GW of non-integrated capacity (from cell to module). The aim is to develop a comprehensive manufacturing ecosystem that covers the entire value chain of solar module production within the country. However, it is worth noting that the global solar module production and technology landscape is currently dominated by Chinese entities. These entities have limited the exchange of technical know-how with other countries, which may pose challenges for Indian manufacturers seeking to compete in this rapidly evolving market. The Indian manufacturers will need to focus on innovation, operational efficiency, and cost optimization to establish a strong foothold in the global solar module market.

Regulatory challenges – As per industry reports, as on FY23 end, Power Sale Agreement (PSA) signing for 8+ GW of RE projects still remains pending which has stalled project progress. Further, full clarity on the Great Indian Bustard (GIB) issue is awaited in the key states of Rajasthan and Gujarat. C&I projects continue to face resistance in some of the key states with discoms proposing to increase the open access charges or delay the approval process thus affecting the economic viability of these projects. According to industry reports, the signing of Power Sale Agreements (PSAs) for over 8 GW of RE projects is still pending as of the end of FY23, causing delays in project development. This lack of progress in PSA signings has been a significant hurdle for the industry. Another issue that requires further clarity is the Great Indian Bustard (GIB) issue, particularly in the states of Rajasthan and Gujarat. The presence of GIBs in these areas has led to concerns and regulatory restrictions on project development, creating uncertainty for developers and impacting the advancement of RE projects. In addition, commercial and industrial (C&I) projects face resistance in some key states, as the respective distribution companies (discoms) propose to increase open access charges or delay the approval process. These challenges directly affect the economic viability of C&I projects and hinder their growth prospects.

Way Forward

With India setting up an ambitious target of achieving 500 GW of non-fossil fuel generating capacity by 2030, the regulatory framework is expected to remain supportive. The MNRE has given a bidding trajectory of 50 GW by central off-takers, which is expected to lead to continued greenfield capacity expansion in the sector. Further, the tariff competitiveness for RE projects remains high as against conventional energy and the investor interest remains buoyant. India has developed considerable plain vanilla solar and wind capacity thus far and the ability to scale up utility-scale storage/battery-based projects would be critical for the growth of the sector as the same could aid in meeting the base load requirements of the country.

Thermal Power: Sheen to Remain Intact till FY30

The relevance of thermal capacity and generation is expected to remain high until FY30, despite some moderation in recent years. In FY23, thermal capacity accounted for more than 50% of the overall capacity, while thermal generation contributed to over 70% of the total generation. These shares are projected to remain above 30% and 50%, respectively, by FY30. The plant load factor (PLF) for the sector experienced a significant rebound in FY23 and is anticipated to remain above 62% until FY25. This positive trend is supported by increased demand and reduced output from alternative sources.

Due to its superior base load meeting ability and reliable generation, the Central Electricity Authority (CEA) forecasts a requirement for an additional capacity of approximately 16 GW by FY30, in addition to the existing project pipeline. Timely commissioning of new projects will be crucial to meet the nation's uninterrupted power demand, despite challenges encountered in project implementation in the past.

The record thermal generation achieved in recent years was facilitated by high coal production and transportation activities throughout India. The proactive measures undertaken by the Government of India have played a significant role in supporting this achievement. Furthermore, the dependence on coal imports is expected to decrease as captive mine production increases and there is sustained dispatch of linkage/e-auction coal. However, occasional coal availability challenges during sudden spikes in power demand, albeit for shorter durations in the medium term, are likely to keep merchant prices firm.

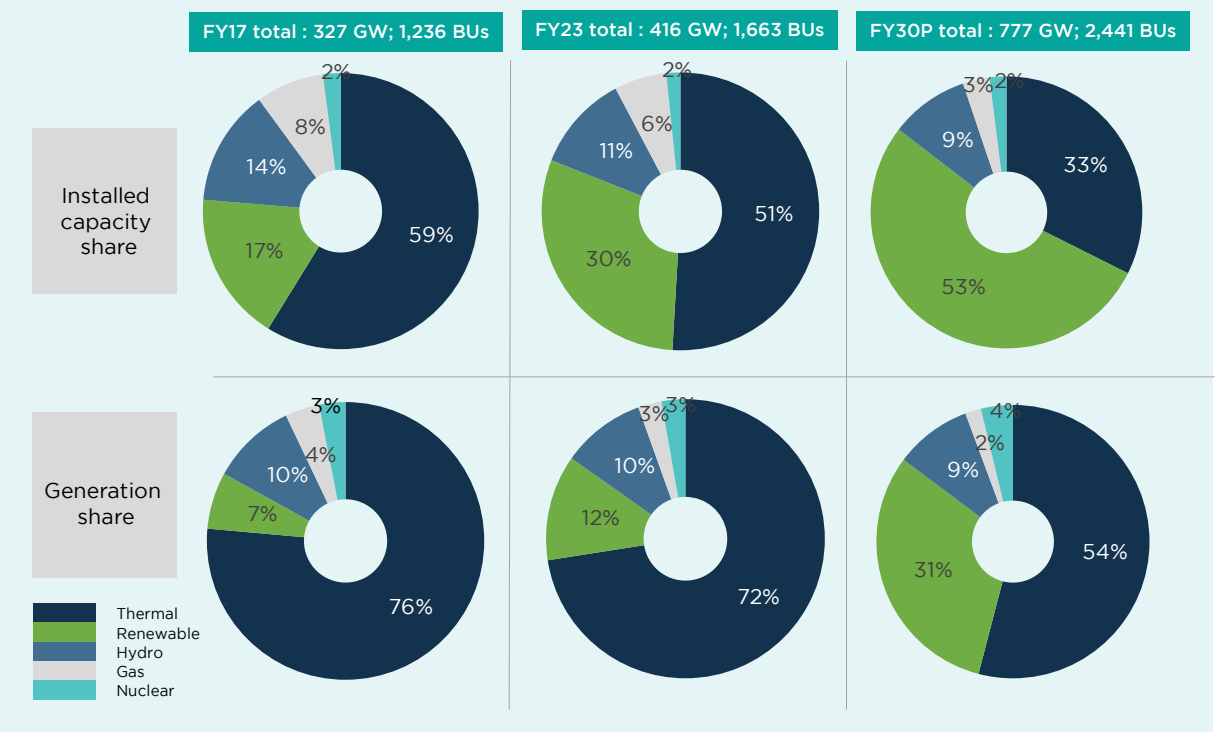
Concerns regarding elevated receivables have been largely mitigated in the past 18 months through the adoption of various liquidity measures to support distribution companies (discoms). Nonetheless, there is a pressing need for a comprehensive and enduring solution to address this issue effectively.

In terms of environmental impact, thermal plants have made noticeable improvements in fly ash utilisation. However, the implementation of flue gas desulfurization (FGD) measures has been relatively slower. The introduction of proactive policies and sufficient financing measures is expected to assist the sector in meeting emission norms and ensuring long-term sustainability.

Thermal Power: Dominant Share in both Capacity and Generation

The electricity generation mix of India had remained largely skewed towards coal-based power plants in the past. As per the national power portal, thermal capacity contributed more than half (~60%) of total capacity in India while it accounted for an overwhelmingly large share of 76% in terms of electricity generation in FY17. Between FY17-FY23, India has witnessed significant addition in renewable capacity installations leading to a moderation in the share of thermal capacity to 51% as on March 31, 2023. However, thermal capacity continued to maintain the lion's share in overall generation at 73% in FY23.

Exhibit 1: Source-wise Capacity and Generation Mix



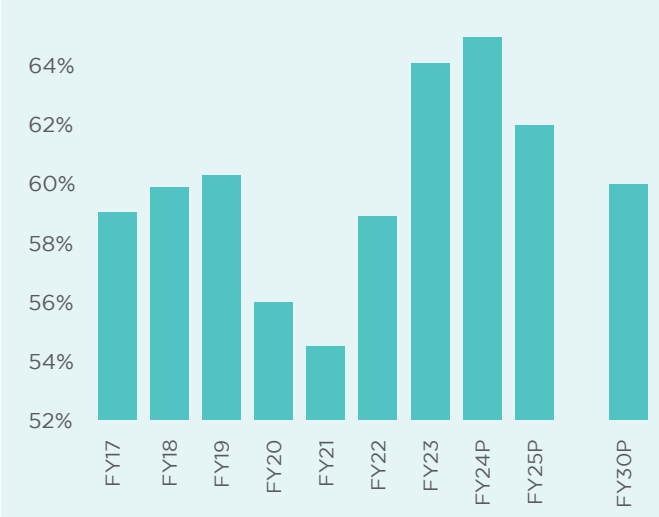
Source: National Power Portal, CEA, CareEdge Ratings

The Government of India maintains continued focus on the renewable power sector including the recent Ministry of Power announcement of a progressive plan in renewable energy bidding trajectory. Upon implementation, the share of thermal capacity in the overall capacity mix is expected to reduce further. However, it is expected to still account for more than 50% of overall annual generation. The Ministry of Power has been exploring bringing flexibility in the generation and scheduling of thermal plants. Given better coal availability as compared to other fossil fuels in India, ample idle capacity and superior base load meeting capability, the capacities are expected to remain relevant for the power sector even in the longer run.

Rebound in Thermal PLF with Anticipated Sustenance

The all-India thermal PLF significantly reduced to below 55% during the Covid-19 pandemic. It had been hovering around 60% since FY17. In FY23, it clocked impressive growth to 64.1% (FY22: 58.9%). However, such unprecedented power demand could not be met through other sources of generation which remained insufficient. Sluggish renewable capacity addition during FY23, inferior wind speed causing lower generation from wind farms as well as non-availability of adequate gas were the prominent drawbacks of such poor generation. CareEdge Ratings estimates thermal PLF to sustain a higher level of around 65% during FY24 as well with the central gencos as frontrunners. However, the PLF may witness some moderation to the level of 62% in FY25 due to a significant increase in renewable, hydro and nuclear capacity. CEA has estimated that the thermal PLF is expected to remain around 60% even during FY30.

Exhibit 2: PLF Trend Year-wise

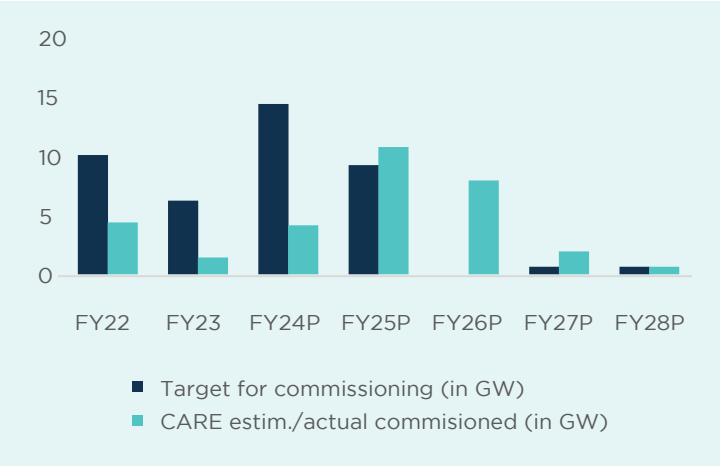


Source: National Power Portal, CEA, CareEdge Ratings

Sizeable Capacity Under Construction led by Central & State Gencos

As per the Thermal Broad Status Report dated March'23 published by CEA, 28.2 GW of thermal capacity is under implementation. CEA has projected that roughly 25 GW of capacity is likely to get commissioned during the next five years. Implementation challenges have been multiple – local or labour agitation, contractors issues and logistic challenges during covid'19 outbreak – in the past leading to sustained under-achievement of capacity commissioned during the year vis a vis planned. Almost 15 GW of capacity is under the advanced stages of completion and thus CareEdge Ratings expects these plants are likely to get commissioned by Q1FY26. As these capacities are being implemented by central/ state generating companies (Gencos) with Power Purchase Agreement (PPA) and Fuel Supply Agreement (FSA) tie-up in place, they shall be instrumental in meeting the incremental power demand.

Exhibit 3: Thermal Capacity Targeted for Commissioning vis-a- vis Achieved/Estimated



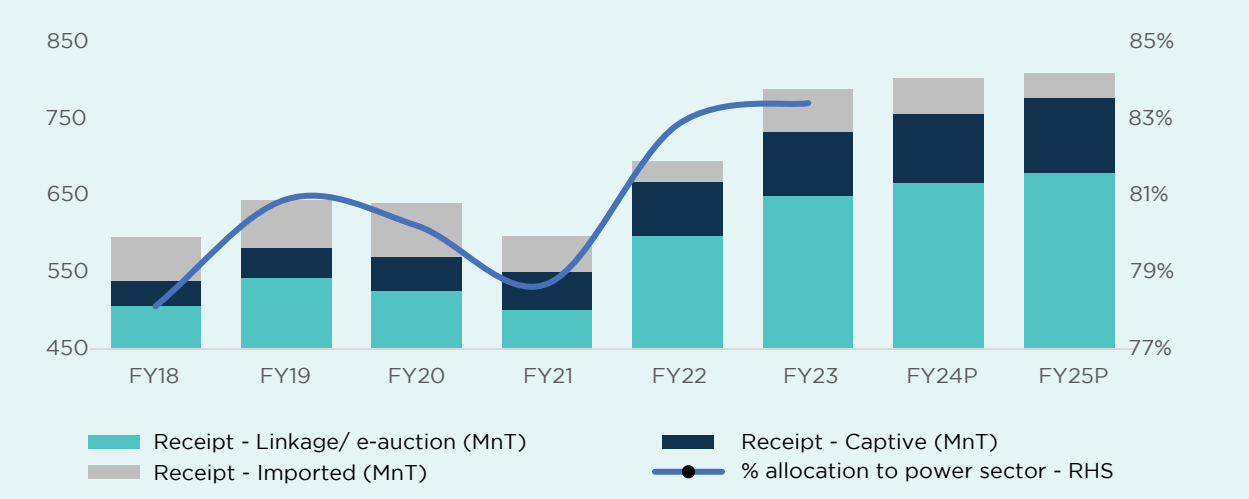
Source: CEA, CareEdge Ratings

Based on its long-term studies, CEA has estimated the requirement of additional capacity of approximately 16 GW apart from these pipeline projects to meet the overall power demand in the long run.

Record Coal Production; Sustained Growth Needed to Cut Import Dependency

Aggregate coal requirement for the thermal power sector had been range bound during the FY18-FY21 period. Prior to covid'19 outbreak, the thermal power sector had been importing at least 56 million tonnes (Mn T) of coal annually. Hence the pressure on Coal India Limited/ Singareni Collieries Company Limited (CIL/SCCL) for dispatch to the power sector was moderate. As the power demand sharply increased as compared to coal production in India during FY22 and FY23, the government had to take supportive steps to ensure higher availability of coal with thermal plants as compared to other industries. The allocation percentage of CIL/SCCL produce to the power sector as compared to other industries stood at a historic high of 83.4% in FY23.

Exhibit 4: Coal Source Mix Over the Years



Source: CEA, Draft National Electricity Plan Sep'22, Ministry of Coal, CareEdge Ratings

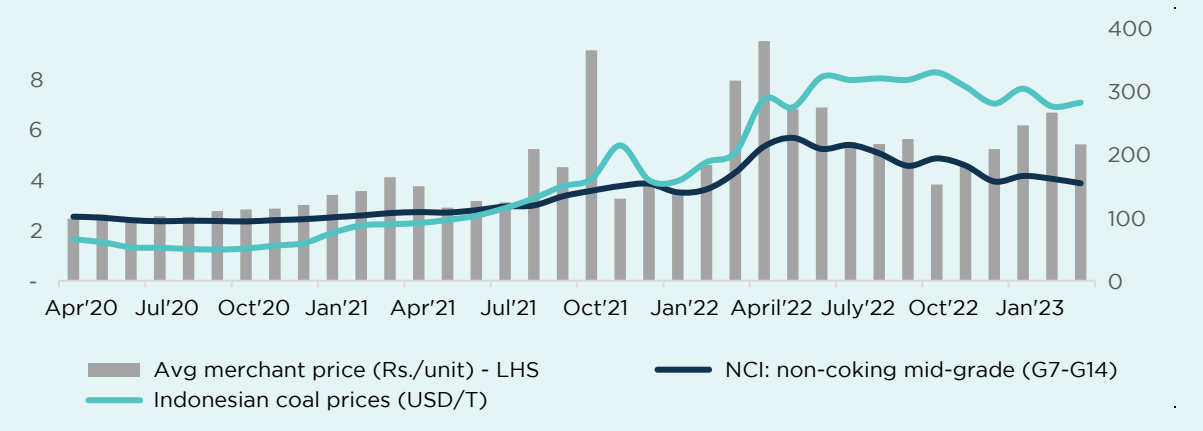
CareEdge Ratings envisages that the allocation of coal from CIL/SCCL is expected to remain elevated for FY24 as well since the coal requirement for the sector has not attained its peak. In the last two years, the output from captive mines has increased impressively. Proactive policies for bidding and development of commercial mines have enabled progress. Going forward, higher production from captive mines is expected to reduce reliance on imported coal.

Strong Demand Augurs Well for Volume and Price in Short-term Power Market

Historically, the short-term power market has remained very sensitive to international coal prices as well as to the peak power deficit.

In April 2022, high demand due to the early onset of summer was unprecedented. Supply was impacted with sizable capacity under scheduled maintenance coupled with lower coal availability. Shortage of domestic coal and lower coal import due to high international coal prices created large spike in merchant rates.

Exhibit 5: Merchant Price Trend vis-a-vis Domestic and Imported Coal Price



Source: Ministry of Coal, ESDM Indonesia website, CareEdge Ratings

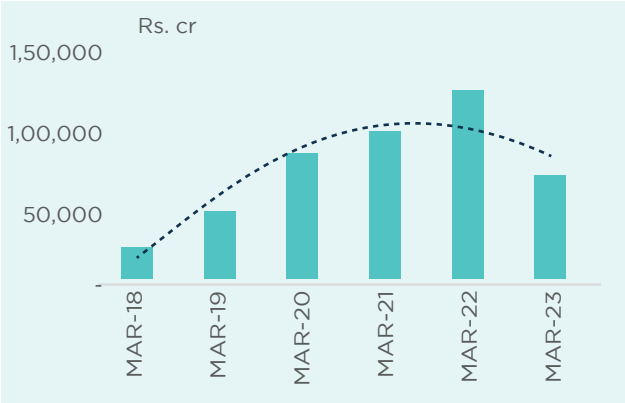
With the demand for power expected to stay strong in the medium term, supply constraints are expected to drive the spot rates. Unpredictable weather changes, production and logistical bottleneck for domestic coal along with geopolitical uncertainty affecting international coal prices shall remain the key price determinants in the short-term market.

Waning Overhang of Discoms Overdues, Yet Warrants a Structural Fix

The thermal gencos have faced the perennial issue of stretched working capital requirements on account of elongated payment cycles from power distribution companies (discoms). The power distribution sector is crippled by high aggregate technical and commercial loss, limited tariff hikes, high power purchase costs and rising interest burden causing operating loss. This had led to sustained elongation in payable days of the discoms.

Over the recent past, the government has introduced several schemes to enable discoms to liquidate their overdues including the current Electricity (Late Payment Surcharge and Related Matters) Rule 2022. The LPS scheme aided the discoms to liquidate their overdues across several monthly equal instalments leading to reduced payables for the first time in the last five years as shown below:

Exhibit 6: Aggregate payables level in power distribution sector



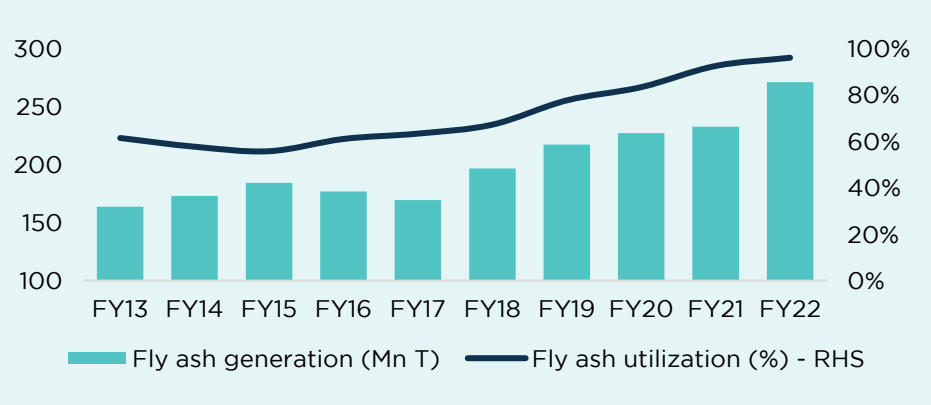
The discoms in India are already highly leveraged. As per a report by the Power Finance Corporation, the aggregate debt outstanding in the power distribution sector was Rs. 6.20 lakh crore as on March 31, 2022. CareEdge Ratings estimates that the aggregate debt outstanding is likely to exceed Rs. 6.60 lakh crore as on March 31, 2023. This is on account of continued high losses and financing of payables. Till the time structural issues of the discoms (like reduction in AT&C losses on a sustained basis, regular tariff hikes, timely collection of subsidy and receivables from various government departments) are mitigated to a large extent, the sector is prone to liquidity issues thus affecting the players in the value chain.

Emission Control would be Important Part of ESG Compliance

The Ministry of Environment, Forest & Climate Change (MoEF&CC) had notified thermal power stations for compliance with new emission norms through the installation of Flue Gas Desulphurization (FGD) equipment. It had stipulated a timeline for compliance of December 31, 2024, December 31, 2025 and December 31, 2026 for the plants located in category A, B and C zones respectively. As on March 31, 2023, the installation has been completed for 9.28 GW (4% of total installed capacity) while the installation is in process for 100.4 GW (47% of total). For the balance 48% of the capacity, tendering process has either not started or is underway. While the additional capex is recoverable through future tariff, timely financial closure, implementation and extent of recognition of capital cost for revised tariff by the regulator are some of the monitorable.

Generally, domestic coal has high ash content and thus disposal and utilization have been a challenge. MOEF has taken proactive measures in terms of setting targets for fly ash utilization for thermal stations based on their commercial date of operation. There is an improving trend in fly ash utilization in the sector as shown below:

Exhibit 7: Fly Ash Generation and Utilisation Trend



Source: CEA, CareEdge Ratings

Way Forward

The power sector has witnessed healthy growth during FY22 and FY23 characterised by higher-than-last-ten-year average growth in peak and base demand. This augured well for thermal PLF which saw a rebound. Demand growth, though expected to moderate mildly, is expected to remain healthy leading to the sustenance of thermal PLF above the long-term average in the next three years.

While the current operational thermal capacity faces numerous challenges, its importance in the overall power supply position in India remains unaffected. The alternative energy sources in India have so far not been able to display superior generation characteristics of the thermal power sector. Technologies providing steady power at competitive capital cost along with relatively lower execution challenges are yet to be tested and hence do not pose a formidable threat to the current operational thermal capacity.

Fuel availability has remained a challenge, especially during high-demand seasons in the past. While there has been improvement in a dispatch from CIL/SCCL/ Captive mine coupled with the reduction in logistical challenges with respect to railway rake, continuous initiatives from the government will be required to ensure smoothening of the supply chain.

India is poised for healthy economic growth for the next five years. Power demand, which is still under-penetrated, is likely to remain robust to fuel this growth. Given the magnitude of the contribution of the thermal sector today, reasonable policies will remain conducive for thermal power to aid the growth story.

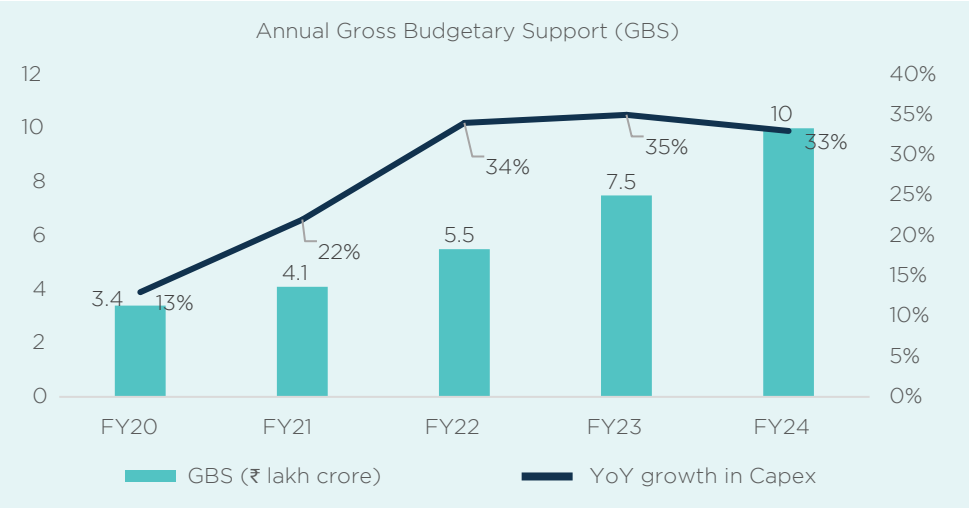
Infrastructure: Financing Emerging Strong

India's G20 presidency presents an opportunity for the country to shape its infrastructure agenda and lead the way in global infrastructure development. With the aim of achieving a $5 trillion economy by 2025, India recognizes the crucial role of infrastructure in sustaining its high growth trajectory. Given its youthful population, expanding middle class, and vast domestic market, global investors are increasingly drawn to India as a preferred destination for infrastructure investments. The Indian infrastructure financing landscape is maturing, with the availability of private equity, robust regulatory frameworks, competitive debt financing, and innovative financing structures like InvITs (Infrastructure Investment Trusts).

However, addressing challenges and maintaining government focus on stakeholder needs will be vital for unlocking India's growth potential in the coming decades.

To meet the demands of India's growing population and economic development, substantial investments in transport infrastructure are necessary. The budget for overall capex in 2023-24 has seen a significant increase of 33% to Rs 10 lakh crore (USD 122 billion), amounting to approximately 3.3% of GDP. Additionally, the establishment of the Infrastructure Finance Secretariat aims to facilitate private investment opportunities in various sectors, including railways, roads, urban infrastructure, and power.

Exhibit 1



Source: Economic Survey and Union Budget

- As per the World Bank's Financing India's Urban Infrastructure Needs report, 600 million people will be living in urban cities in India by 2036, representing 40% of the population.
- This is likely to put additional pressure on the already stretched urban infrastructure and services of Indian cities.
- In contrast to the global scenario, a mere 5% of the infrastructure needs of cities are being financed through private sources.

Banks are the predominant source for infrastructure lending; with total exposure at ~ Rs 12 lakh crore for FY23.

Table 2: Infrastructure Exposure by Indian Banks

Year	Power	Telecom	Roads	Airports	Ports	Railways	Other Infra	Total Infrastructure exposure by Banks
FY19	5.70	1.11	1.76	0.04	0.09	0.10	1.64	10.4
FY20	5.77	1.47	1.82	0.05	0.13	0.11	1.49	10.8
FY21	5.71	1.15	2.26	0.09	0.10	0.12	1.52	11.0
FY22	6.11	1.30	2.70	0.07	0.09	0.11	1.57	12.0
FY23	6.05	1.11	2.85	0.09	0.08	0.11	1.57	11.9

in Rs Lakh crore; Source:RBI

On a sectoral basis, disbursals to the power sector constitute the highest at 50%, followed by roads & highways.

Global Trends of Private Investment in Infra

The global infrastructure asset class has emerged as a resilient and effective investment avenue in the post-pandemic era. Infrastructure investments offer a robust hedge against inflation compared to other options, thanks to the inelasticity or indexation of cash flows. However, private sector investments in emerging economies, where the infrastructure demand is highest, have remained relatively low. It is estimated that emerging economies account for nearly two-thirds of the world's infrastructure needs by 2035 and India cannot be isolated from this phenomenon. To support economic growth and address the challenges posed by rapid climate change, it is imperative to accelerate private investments in Indian infrastructure.

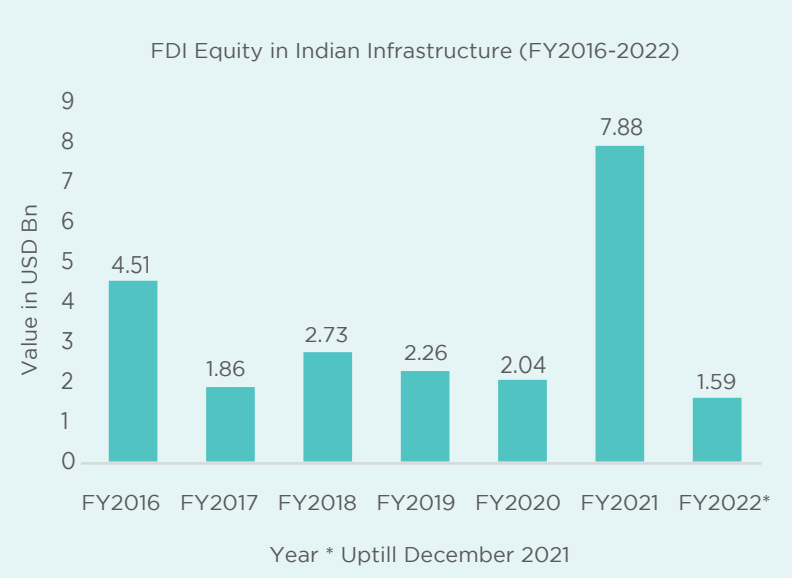
Stepping Up Infra Financing

Despite facing certain challenges, the Indian infrastructure sector has experienced significant activity in the financing landscape, attracting attention from both debt and equity investors. The relaxation of FDI norms has played a crucial role in drawing investments towards India's infrastructure projects. A major milestone in this regard is the implementation of the National Infrastructure Pipeline (NIP), initiated in 2019, which aims to compile an extensive "masterlist of infrastructures" across the country. This ambitious undertaking involved meticulous groundwork in gathering data on various infrastructure sub-sectors. The NIP encompasses a diverse range of projects with significant potential for foreign investment, including water and sanitation, commercial and social infrastructure, transport, energy, communication, and logistics. This comprehensive project list empowers foreign investors to assess and select projects that align with their risk-return preferences, thus paving the way for substantial investments in India's infrastructure sector.

Increased FDI (Equity): Various global sovereign funds, Pension funds, and PE funds have made long-term investments in operational projects across sub-sectors viz highways, transmission assets and renewable energy. As reflected in the chart below, FDI equity in Indian infrastructure has shown a sharp increase in FY2021 largely reflecting the confidence of the overseas financing fraternity. Track record of stable operational performance, improving regulatory framework, conducive reform policies and a wide array of projects supported the investment sentiment.

Launch of InvITs Picks Pace: After a tepid start in 2016, the launch of InvITs caught traction and

Exhibit 2

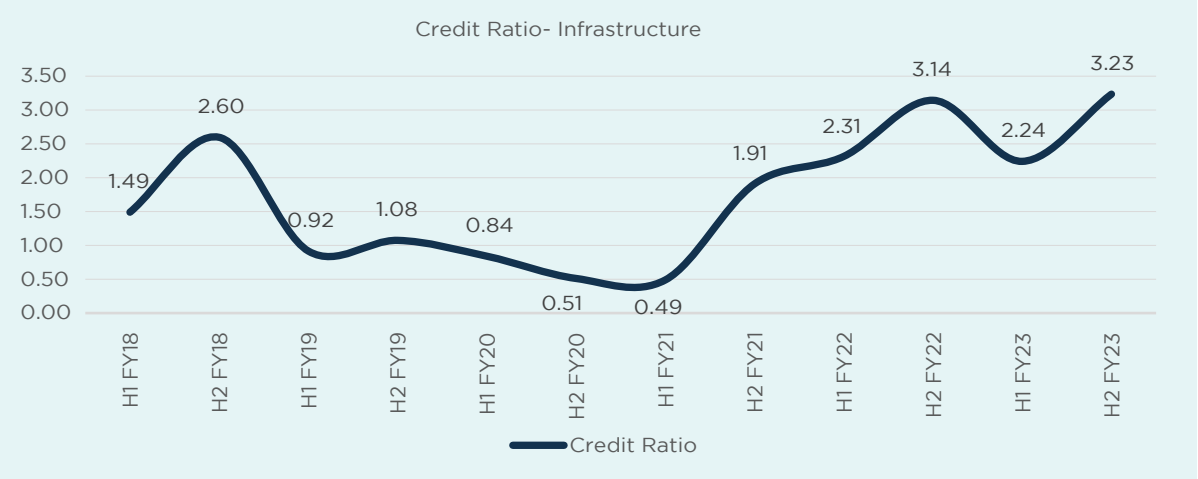


Source: Statista

until March 2023, 20 InvITs have been registered with SEBI. 11 of these 20 were registered between 2020-2023. With total Assets under Management (AUM) close to Rs 4.2 lakh crore InvITs have been a major driver in India's push for robust infrastructure across the country in recent times. So far, roads & highway, and transmission assets have dominated the InvITs. Increased awareness and acceptance of the concept supplemented with a higher number of eligible infrastructure projects have facilitated this spurt. Over the years, FIIs and DIIs have played a pivotal role in capital raising to the tune of over Rs 75,000 crore by REITs/InvITs. With the rising push on green financing and ESG investments, renewable energy InvITs are likely to be the next sunrise investment avenue thus boosting monetisation activity for the sector. Asset classes like gas pipelines, ports, telecom towers, airports and railways etc. may also emerge as probable options to be taken under InvITs in the medium term.

Innovative Debt Financing Structures Support Credit Perspective- In our experience of assessing infrastructure projects over the last few years, significant traction is witnessed in their credit profile. CareEdge Ratings' modified credit ratio (MCR) for infrastructure measured as a ratio of the total number of upgrades to the total number of downgrades saw a marked improvement in the last two years from the pre-pandemic levels.

Exhibit 3



Source:- CareEdge Ratings

Large push has emanated prominently from:

- Increased level of capitalisation of infrastructure focussed companies translating into comfortable leverage levels.
- Relatively low cost of interest rates aiding refinancing.
- Availability of a high number of operational projects across the spectrum to be offered for stake sale or InvITs enabling efficient capital recycling.
- Refinancing of project debt linked to Repo rate boosting the coverage indicators.
- Restricted group (RG) or co-obligor structures for the debt of homogenous renewable projects. This led to a surge of bond issuances2, particularly in overseas markets which signifies improved financial flexibility for the infrastructure developers.
- Steady performance of counterparties/ off-taker for concession-based projects generated confidence amongst the private sector to partake in new projects and boost their revenue visibility.

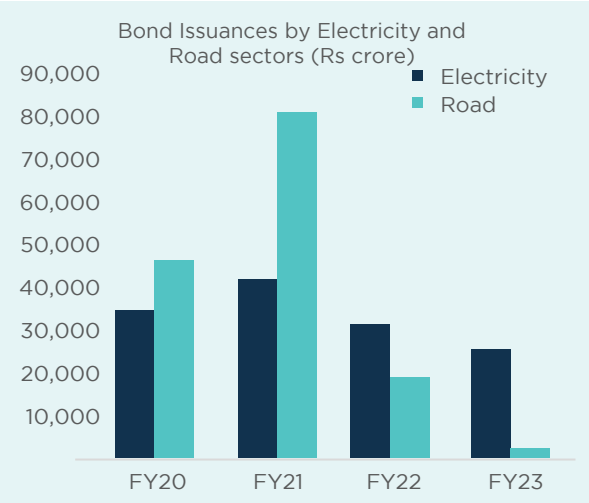
The Headwinds....

India possesses immense potential for infrastructure development, with attractive returns on investment. However, certain pitfalls hinder the acceleration of its growth pace. Identifying and addressing these challenges is crucial to harness the full potential of infrastructure in the country.

Colossal Infrastructure Financing Gap during Construction Phase: India faces a significant infrastructure financing gap, exceeding 5% of GDP. While traditional sources such as Indian banks and government aid have been relied upon during the construction phase, the need for alternative financing options is evident. With operating infrastructure assets offering low-risk factors, various avenues have emerged, including the bond market, InvITs, and Infrastructure debt funds. These avenues have gained prominence, with power and road sectors witnessing a surge in bond issuances for operational projects, particularly during periods of favourable interest rates.

Delays in Land Acquisition, Forest and Environment Clearances: Across sub-sectors viz highways, ports, airports, renewable power, land acquisition & approval-related delays have

Exhibit 4



deterred private participation. Implementation delays resulting in significant cost overruns not only impair the viability of the project but also strain the financial health of the developers. Outcome- banks and financial institutions shied away from funding greenfield/brownfield projects creating a void in the financing avenues. According to the Ministry of Statistics and Programme Implementation of December 2022, which monitors infrastructure projects worth Rs 150 crore and above, out of 1,454 projects, 335 reported cost overruns of Rs 4.5 lakh crore (22.12% of the original cost) and as many as 871 projects were delayed.

Inconsistent Regulatory Policies: Lack of consistency and policy coherence across different government departments has hindered global investors and sovereign funds from actively participating in India's infrastructure development. Uncertainty in policy enforcement and instances of contract reneging have shaken their confidence. In recent years, the government has taken several initiatives to address these issues, aiming to restore private sector participation. Standardizing Model Concession Agreements, and bid parameters, and abolishing inefficient tax mechanisms are among the measures implemented to address investor and lender concerns.

Instability in Credit Interest Rates: Long-tenor bank debt with periodic interest resets jeopardise the overall investment yields from infrastructure assets, whose returns are typically back-ended.

Unreliable Demand Forecasting Studies: Be it renewable power generation, toll traffic, or cargo volumes or airline passenger growth assessment studies, wide disparity between forecasted and actual volumes has resulted in increased non-performing assets in the infrastructure sector in the past.

Focus Areas

- Stricter enforceability of contractual agreements and legal protection to avoid litigations and ambiguity in ascertaining cash flows and investment returns.
- Deepen bond markets by pushing the investors to increase their exposure in 'A" category and above entities. Alternatively mandatory adoption of EL ratings for infrastructure projects, which will expand the basket of eligible projects for monetisation and refinancing.
- Encourage AIFs/ sovereign funds to take exposure in under-construction infrastructure projects. Partial credit enhancements from Multilateral Funding agencies and large financial institutions can be used/introduced to facilitate this aspect.
- In India, a substantial quantum of infrastructure development is required to be undertaken at the state and city levels. Especially with the large migrating population to cities, the demand for sustainable infrastructure has risen manifold. Therefore, it is imperative to empower the Urban Local Bodies to come out with more frequent, sizeable value capital market issuances. If retail participation in ULB bond issuances is encouraged, then substantial resource mobilisation can happen to fund the infrastructure asset creation.
- Institutionalising demand forecasting agencies may address the gaps in volume forecasts and viability studies. This should increase the confidence of the private sector developers, lenders and global investors.
- Adequate availability and training of skilled manpower for implementation and monitoring of infrastructure assets. This is bound to improve operational efficiencies and consequent investment returns.

Way Forward

Thanks to policy reforms, increased project awards by central and state authorities, and capital recycling through stake sales of completed projects, the credit profile of most infrastructure entities in India has witnessed improvement over the past two years, despite the challenges posed by the pandemic. Against the backdrop of growing economic and political uncertainty worldwide, the stability and resilience of infrastructure projects provide a ray of hope for patient capital, while contributing to climate targets and the development of more robust and inclusive infrastructure. As India embarks on the 'Amrit Kaal' era, a period of great significance, it is crucial for public and private partnerships to seize this golden opportunity by collaborating towards infrastructure-led economic growth.

ESG: Integrated Infra is the Way

Infrastructure has emerged as a crucial driver for sustainable growth and a fundamental pillar for the transition to a low-carbon economy, particularly in light of the Covid-19 pandemic. The sector has faced significant challenges due to various climate-related events, including floods, unseasonal rains, droughts, hurricanes, and wildfires, which have become increasingly frequent and severe. These challenges have been further exacerbated by the disruptions caused by the pandemic.

According to estimates, developing countries are projected to experience residual damages worth $1.2 trillion from climate impacts by 2050[1a]. In 2021 alone, weather and water-related hazards in Asia caused a total damage cost of US$ 35.6 billion, impacting nearly 50 million[1b] individuals. These figures highlight the urgent need to address climate change and its impact on infrastructure.

ESG Integration in Infrastructure

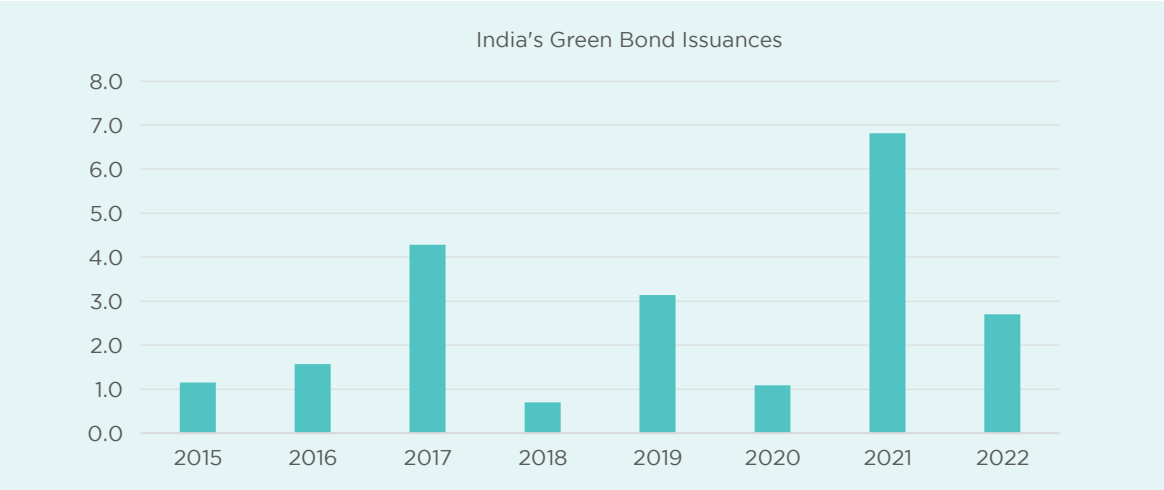
ESG integration is critical for infrastructure projects. Evaluation of the potential environmental impact of projects on factors like biodiversity, resource use and possibly energy transition is critical prior to investment. Additionally, infrastructure assets also have a significant impact on social aspects, such as health and safety, community engagement, diversity and inclusion. The ability to mitigate these risks with effective policies and programs ensure long-term sustainable growth of these assets and thus commands superior returns for the investors.

According to Bloomberg Intelligence, ESG assets are on track to exceed $53 trillion by 2025 and represent more than a third of the $140.5 trillion in projected total assets under management (AUM). This does indicate the transition of the assets is being pushed more aggressively and this also suggests trends in financing are gradually shifting towards a green economy. Further, the study by Bloomberg Intelligence adds that the world is on track to have a $1 trillion ESG ETF market and an $11 trillion ESG debt market by 2025. Both ESG ETF and ESG debt are leading the growth among ESG investing strategies.

Green Financing Trends

Considering investors' rising appetite for ESG financing, and the growing concerns around climate change, there has been a slow yet steady rise in the issuance of green bonds. Indian corporates have been issuing green bonds since 2015, with total issuances of over nearly $21 billion. India has also completed its maiden $2 billion sovereign green bond issuance in the first quarter of 2023, which will be utilised to finance green projects in the country. Sustainability and green development are priority areas mentioned in the budget and this is expected to enable a steady pick-up in green financing. Proceeds from the issuance of sovereign green bonds align with broader sustainable goals, such as net-zero emissions by 2070, and reducing emission intensity of GDP by 45 per cent by 2030 over the 2005 levels.

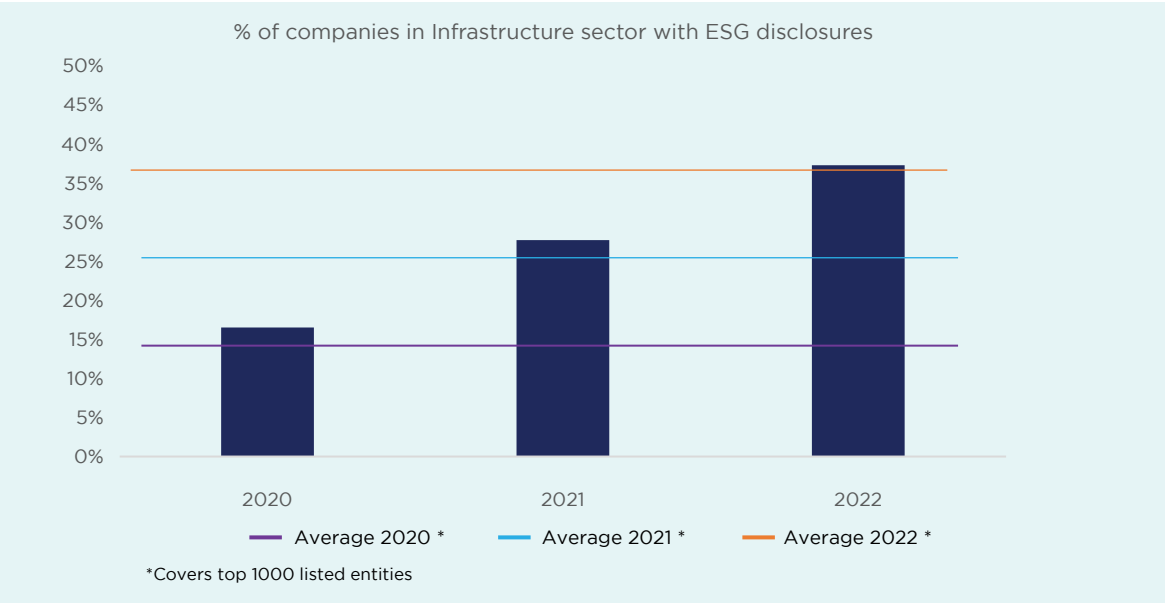
[1a] https://www.deccanherald.com/opinion/in-perspective/climate-change-why-loss-and-damage-is-a-big-deal-1122258.html
[1b] World Meteorological Organization (WMO)



Source: Climate Bonds Initiative

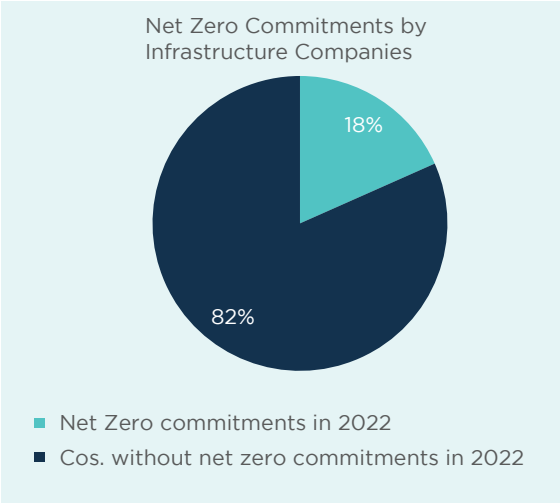
Emergence of ESG in Indian Infrastructure

While overall ESG integration in Indian market is still at nascent stage as compared to developed economies. However, there has been a significant spike in the regulatory push on ESG adoption across corporates. This has magnified the traction of corporates on ESG topics and it has resulted in significant headwinds on ESG disclosures in the last three years. A number of companies in the infrastructure sector reporting ESG has gone up from ~15% in 2020 to 37% in 2022. The study includes infrastructure companies within the top 1000 listed entities in India over the last three years. Interestingly, the percentage of companies reporting ESG in the infrastructure sector is above than percentage of companies reporting ESG disclosures across sectors in the top 1000 listed entities.



Source: CareEdge Research

While there is a positive trend on ESG disclosures among infrastructure companies, we also notice that there is still enough scope to adopt ESG as part of long-term strategy in business operations. Some of the key aspects of the transition to a low carbon economy are commitment to net zero and carbon neutrality-related targets. Our study finds that in the year 2022, 18% of companies are currently committing to net zero targets in the long run. While this number represents a small portion of the sector, however, compared to the year 2020; the percentage of companies with net zero commitment was less than 10%. Considering that, there is certainly an uptick in terms of a higher level of awareness of ESG issues and commitment towards the same.



Source: CareEdge Research

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Further, on governance part we also observe that Indian organisations board are still evolving to include ESG as part of board level strategy. From our study of top listed infrastructure companies, we found that in the 2022, over 23% of companies developed board-level ESG strategy, which includes adopting firm level ESG policy and aligning companies' ESG actions with broader objectives of United Nations Sustainable Development Goals (UN SDGs). Similarly, on board-level oversight too, we notice an upward trend compared to 2020 when less than 15% of companies were adopting board-level ESG policies and action plans. With more regulatory push and pressure from investors, we expect this number to significantly improve in the coming years.

Recent Developments

While there is uptick on ESG disclosures and adoption of green measures in operations, government agencies and regulatory bodies are also moving swiftly on some of these measures. In the recent Union Budget, the Indian government has committed over Rs 35,000 crores of financial support for net zero and energy transition-related activities. SEBI has mandated the top 1000 listed entities to initiate reporting on ESG performance under the framework – Business Responsibility and Sustainability Reporting (BRSR). Moreover, the RBI has also come up with a consultation paper on sustainable finance for the banking sector as well as released its framework on green deposits to channel funding for sustainable economic activities. All these developments clearly indicate that ESG is no longer a "good to have" option for corporates and has become must-have element in every corporate strategy and planning.

Way Forward

Given investor pressure on companies to adopt ESG practices coupled with regulatory push on ESG disclosures which is equally supported by the Indian Government on facilitating financing towards green economy indicate positive headwind towards adoption of ESG practices in Infrastructure sector. While the moment has begun towards integrating ESG practices, we expect this is going to be a mainstream topic of consideration in most of the investment decisions in this sector.

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