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INDIA'S INFRASTRUCTURE SECTOR:
GROWTH TRAJECTORY AND WAY FORWARD

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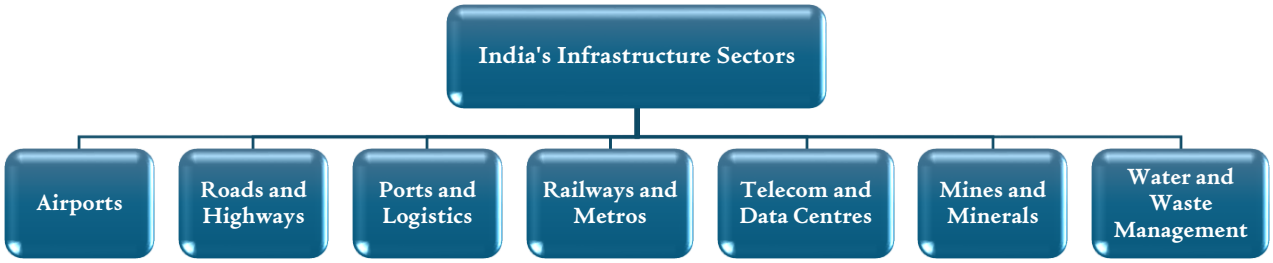
INTRODUCTION

India's infrastructure sector has undergone a significant shift over the past decade – from project-wise execution to a programmatic, policy-led build-out spanning across sectors such as airports, roads and highways, railway and metro, ports and logistics, telecom and data centers, mines and minerals, as well as water and waste management. Infrastructure is considered as a core growth driver and a central tool of structural reform reflecting the overall development of a nation. Policy frameworks such as the PM-Gati Shakti, SagarMala, National Infrastructure Pipeline, National Logistics Policy, etc. have improved coordination across ministries and layers of government, streamlined procurement and clearances, and standardized contract and risk frameworks, resulting in a clearer pathway to bankability, more predictable execution, and growing investor confidence across greenfield and brownfield assets.

The Indian Constitution plays a pivotal role in defining the legislative competence regarding infrastructure. Powers relating to infrastructure are distributed between the union and state governments pursuant to Schedule VII of the Constitution of India. The central government has been empowered to formulate laws on national highways, railways, major ports, airports, and telecommunications, while the States regulate local infrastructure including water supply and municipal services. This division of power necessitates robust coordination mechanisms among various levels of government to ensure seamless project execution.



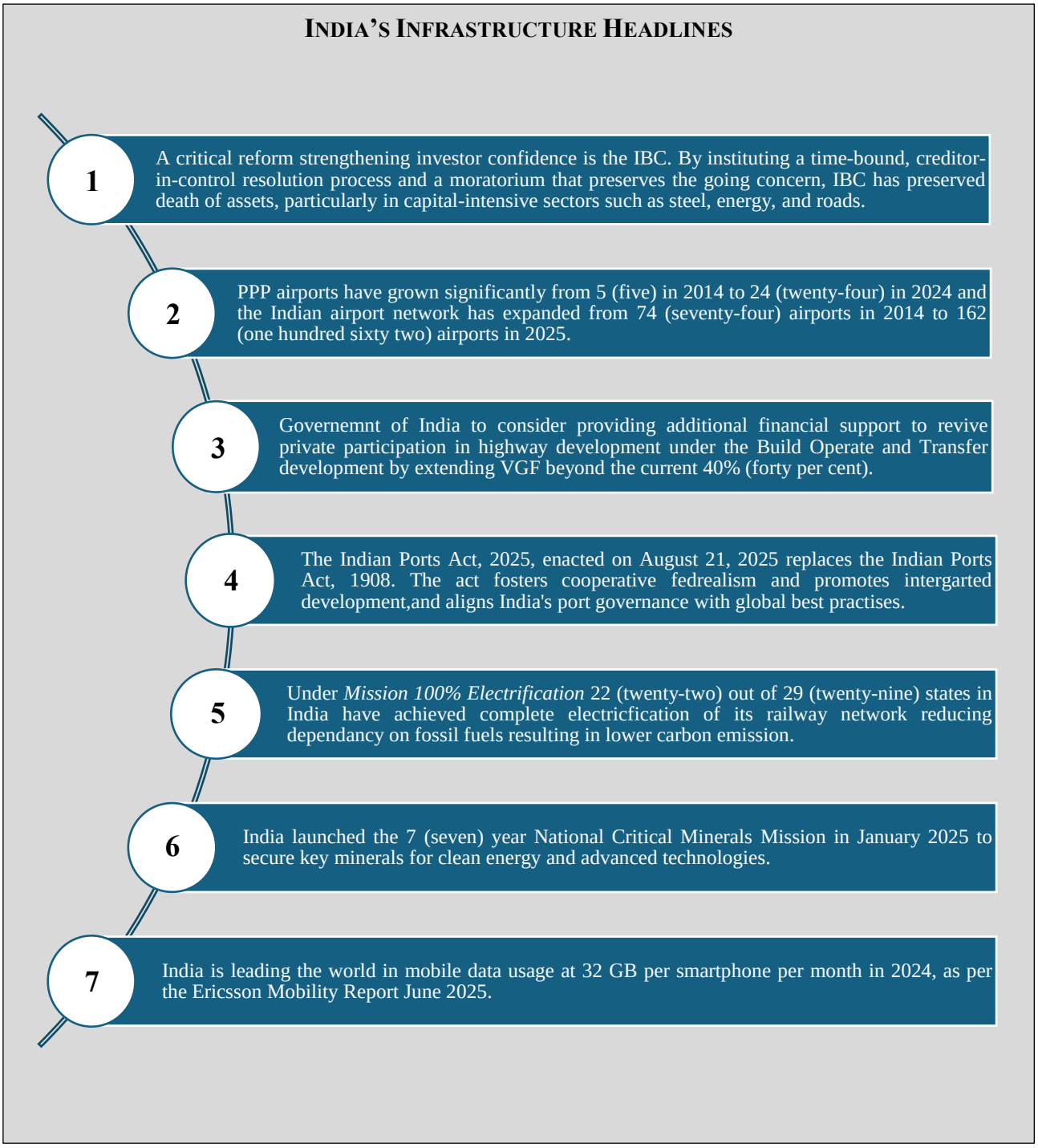
While the government plays a vital role in the development of India's infrastructure, role of the private is indispensable in scaling India's infrastructure ambitions. Legal and contractual frameworks enabling public-private partnerships ("**PPP**") have become central to leveraging private expertise and capital. Models such as build-operate-transfer ("**BOT**"), build-own-operate, and build-lease-transfer have been institutionalized to attract private participation. Financial institutions, including banks and non-banking financial companies have increasingly supported infrastructure financing, complemented by innovative funding instruments like non-convertible debentures and foreign direct investment ("**FDI**"). The establishment of the National Bank for Financing Infrastructure and Development marks a significant step towards easing long-term financing constraints. This is the most visible in the transport and urban development sector. Expansion and upgradation of the national highways have followed a mix of engineering, procurement and construction, hybrid-annuity model ("**HAM**"), and toll-operate-

transfer modalities, driving standardisation in contracts and performance obligations while also attracting private and institutional capital to operating assets. Railways have prioritised capacity augmentation, logistics efficiency, and safety modernisation, with dedicated freight corridors, station redevelopment, and multimodal integration supporting throughput and last-mile connectivity. Port-led development has advanced under a landlord port model, with private sector participation anchored in long-term concessions and tariff clarity, while regional airport modernisation and UDAN – led route expansion have broadened connectivity and fostered hub-and-spoke networks. Water and waste-management programs have adopted similar PPP structures with clear performance metrics and viability gap funding ("**VGF**"), supporting bankable models in municipal services. Looking forward, legal and contractual environment will continue to mature, with model documents refined to better allocate force majeure and change-in-law risks, strengthen termination and cure mechanics, and embed robust step-in and substitution rights that protect lenders and the public interest.

A critical reform strengthening investor confidence is the Insolvency and Bankruptcy Code, 2016 ("**IBC**"). By instituting a time-bound, creditor-in-control resolution process and a moratorium that preserves the going concern, IBC has preserved death of assets, particularly in capital-intensive sectors such as steel, energy, and roads.

In substance, the growth story of India's infrastructure is moving from policy ambition to execution discipline and asset-class maturity. The outlook is defined by scale, standardization, and sustainability, with an emphasis on life-cycle performance, regulatory clarity, and investor protections. As the project pipeline broadens and secondary market depth improves, the sector is positioned to support long-run productivity gains, catalyse private capital, and advance the country's objectives of competitive manufacturing, resilient supply chains, and inclusive urban and regional development. Since liberalisation of the Indian economy in 1991, India's PPP framework has evolved in distinct phases. The core sectors opened to private participation, early BOT/build-own-operate-transfer ("**BOOT**") projects emerged under sectoral policies and applicable laws, model concession agreements have been introduced, and bidding documents have been standardised to improve bankability and risk allocation.

KEY GROWTH INSIGHTS: 2025



AIRPORTS

(a) Overview

India's civil aviation sector has emerged as one of the fastest growing sectors of the economy, while also playing a vital role in trade, connectivity and tourism. In line with India's commitment to develop state-of-the art infrastructure and enhance connectivity, today India has grown to become the world's third largest domestic aviation market after USA and China. In the last decade, PPP airports have grown significantly from 5 (five) in 2014 to 24 (twenty-four) in 2024. The sector has received ambitious investments through the Airports Authority of India ("**AAI**") and PPPs. According to the International Civil Aviation Organization ("**ICAO**"), investments in aviation have a strong ripple effect on the economy.

Airports have traditionally been owned and managed as government entities. The Ministry of Civil Aviation operates all airlines and airport-related businesses in the country. Until the 1980s, civil aviation functioned completely under the Government of India ("**GoI**"), as a first step of deregulation the GoI started to provide taxi services for private players. At that time, Indian airports operating internationally fell under the purview of International AAI and the domestic airports fell under the purview of National Airports Authority. For better governance and seamless execution of India's goals in the aviation sector, the 2 (two) authorities were merged as one, forming the AAI. Today, the Indian aviation sector is dominated by private players, and these include low-cost carriers for domestic travel.

(b) Current State and Outlook

The Government of India formulated a new national policy on airport infrastructure in 1997 to provide a broad framework for development of airport infrastructure with public and private sector participation, while also permitting development of greenfield airports. In addition to the established practices such as the award of PPP projects, the transport sector, as a whole, benefits from policy initiatives such as: (i) financial incentives under the annual budget; (ii) the provision of 100% (one hundred per cent) FDI in the development of airports and air transport services; (iii) the inclusion of ports, inland waterways, airports, and urban public transport in the 'Harmonised Master List of Infrastructure' sub-sectors issued by the Department of Economic Affairs, GoI; (iv) accelerating greenfield project development within a clear approvals pathway; (v) recycling brownfield assets through standardized concessions; and (vi) integrating airports into multimodal networks. These policy initiatives enhance the viability of infrastructure projects by providing access to further sources of lending, at domestic and foreign levels.

On December 11, 2024, the government introduced the Bhartiya Vayuyan Adhiniyam, 2024 which aims to foster indigenous manufacturing under the 'Make in India' and 'Atmanirbhar Bharat' initiatives, aligning with international conventions like Chicago Convention and ICAO and streamlining regulatory processes. In 2016, the government launched the Ude Desh ka Aam Nagrik ("**UDAN**") scheme which aims to bring essential air travel access to previously isolated communities, boost regional economic development while also reviving existing airstrips and airports.

The evolution of PPP framework has been considerable since the signing of the Kochi Airport in the mid-1990s which marked the entry of multiple private players. This wave was quickly followed by the second wave which modernized the Delhi and Mumbai airports via operation, management and development agreement-based brownfield PPPs. The Greenfield Airports Policy, 2008 and companion central guidelines/compendium clarified the licensing route under the Aircraft Act, 1934 and reserved sovereign functions for central agencies. The third wave since the late-2010s added programmatic privatization/asset recycling by AAI, notably long-tenor concessions at multiple brownfield airports. The investment demand of the sector underscores the need to diversify and expand the pool for private investment. Currently, private players face several challenges with the existing concession agreements such as long equity lock-in periods and ambiguity in existing traffic structure. The 2 (two) key regulatory framework for PPPs are: (i) the General Financial Rules, 2017 ("**GFR**"), which compiles all the rules and orders issued by the GoI with respect to subject matter involving public finances; and (ii) Guidelines on Public Procurement – the Manual for Procurement of Works ("**Manual**"), issued by the Department of Expenditure ("**DoE**"), serves as a guiding framework for government departments undertaking public procurement of works. The guiding framework for procurement under the Manual is aligned with the provisions of the GFR.

Cities like Delhi and Mumbai are already in the process of constructing 2 (two) airports to cater to its passenger demands. On October 25, 2025 the Navi Mumbai International Airport was inaugurated, though it is not yet operational. The rapid rise in the sector has increased the requirement of new airports evidencing the

unutilized potential and resources of India to emerge as a global leader in the aviation sector.

(c) International Cooperation and Bilateral Arrangements

India has executed bilateral air services agreements with 116 (one hundred and sixteen) countries to facilitate operation of international flights between India and these countries and seeking global connectivity and support economic and tourism growth.

The USA – India Aviation Cooperation Program was established in 2007 as a PPP between the U.S. Federal Aviation Administration, the U.S. Trade and Development Agency, the U.S. Departments of Commerce and State, Transportation Security Administration and U.S. Companies with an aim to support the growth of the Indian civil aerospace sector, to promote greater engagement between USA and Indian government agencies and industry to enhance civil aviation in India, to provide training and technical assistance to accelerate excellence in aviation operations.

ROADS AND HIGHWAYS

(a) Overview

A robust roads and highways infrastructure is an essential catalyst for accelerating the growth of the Indian economy. Post-independence, development of highways centered on the National Highways Act, 1956 and the establishment of the National Highways Authority of India ("**NHAI**") under the National Highways Authority of India Act, 1988. The 1990s–2000s saw programmatic expansion through the National Highways Development Programme (Golden Quadrilateral and North-South and East-West corridors) and the adoption of standardized model concession agreements for BOT (Toll) and BOT (Annuity).

From 2014 onwards, the sector pivoted to scale and de-risking with introduction of the HAM to revive PPPs after the BOT downturn and asset monetization commenced via Toll-Operate-Transfer bundles and the National Highways Infra Trust. Innovative financing models are also reshaping the sector. The expansion of HAM projects under the Infrastructure Investment Trust framework presents a compelling opportunity to attract long-term institutional capital. These models offer stable returns and reduced risk exposure, making them attractive to both domestic and global investors. Recent years feature greenfield expressways, multimodal logistics parks and a maturing secondary market for operating road assets

(b) Current State and Outlook

The network is in a build-and-monetize cycle with: (i) greenfield expressways and access-controlled corridors being delivered alongside monetization of stabilized toll roads; (ii) HAM remains the preferred greenfield PPP modality for national highways, while EPC is used for complex stretches and state highways; and (iii) BOT (Toll) is selectively being reconsidered where demand is robust. The Ministry of Road Transport and Highways ("**MoRTH**") notified the National Road Safety Board Rules, 2025 to reduce road accidents, promote awareness and education, develop a road safety information system and ensure safer road infrastructure. The Government of India is considering providing additional financial support to revive private participation in highway development under the Build Operate and Transfer PPP model by extending VGF beyond the current 40% (forty per cent) cap of total project cost. The excess amount would be disbursed by the highway authorities through instalment-based annuity payments rather than an upfront grant. This initiative coincides with NHAI and MoRTH's efforts to revamp the standard BOT-Toll contract document to address investor concerns and improve project bankability.

Cross-cutting features include standardized model concession agreements (relief events, compensation formulas, termination payments), payment security (escrows, waterfall mechanisms, annuity-backed receivables), performance indicators, independent engineers, audited traffic/revenue measurement, and arbitration provisions tailored to the sector. India's roads and highways sector operates within a mature statutory procurement and PPP architecture, now oriented to corridor-scale delivery and systematic monetization.

Although India has seen great advancements in the roads and highways sector, there still exist challenges, required to be addressed through India's regulatory framework. The development of roads and airports requires several approvals such as environmental clearance, forest clearance, gram panchayat approvals, aerodrome licenses, among others. Each of these approvals take considerable time and non-adherence to timelines results in cost overruns due to delays. In addition, other factors like enforcement issues and lack of construction material also result in delays in the implementation of the project.

(c) International Cooperation and Bilateral Arrangements

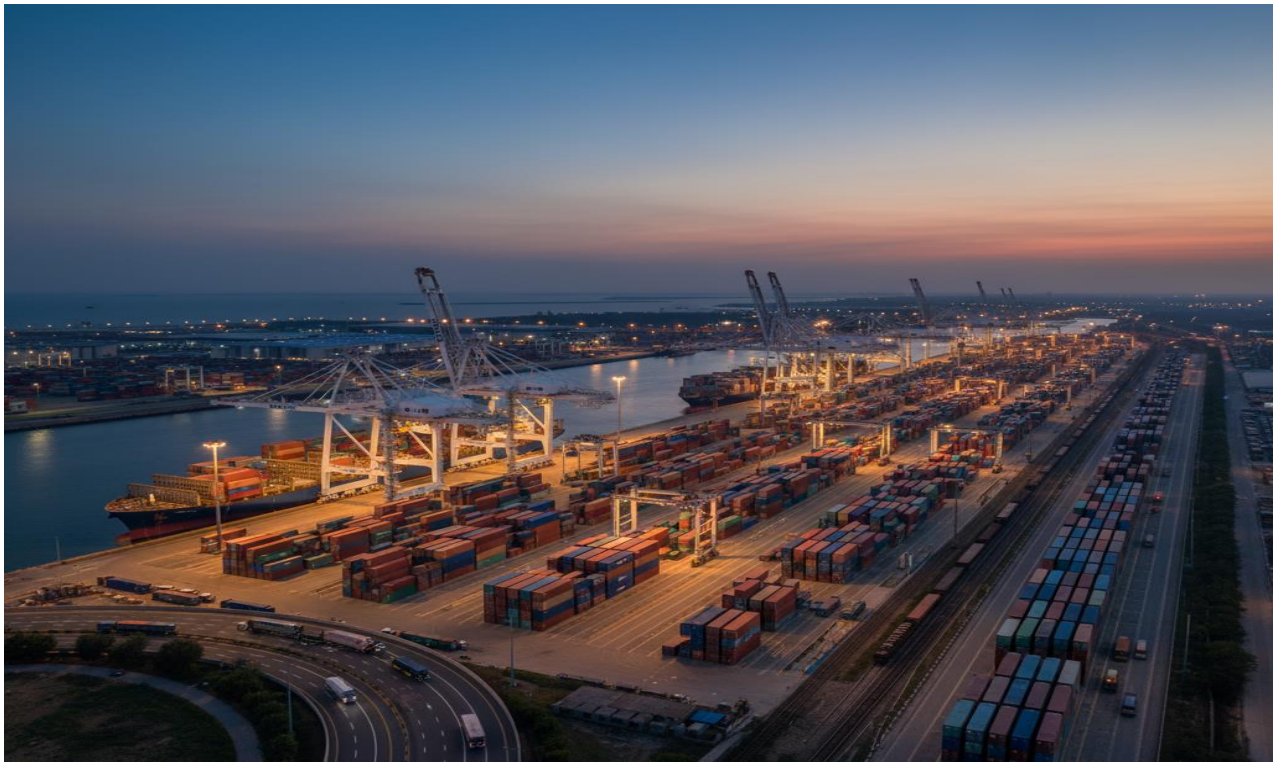
India and the United Arab Emirates have signed an MoU to establish a long-term and effective bilateral relationship and cooperation in road transportation and highway infrastructure, technologies and systems.

Japan International Cooperation Agency ("**JICA**") has extended an official development assistance loan of approximately INR 19,27,00,00,000 (Rupees One Thousand Nine Hundred and Twenty Seven Crores) for the Mumbai Trans Harbour Link ("**MTHL**") project (III) in the state of Maharashtra. This loan agreement is the third tranche of JICA financing for MTHL, and the loan agreement for the first tranche and the second tranche were in 2017 and 2020, respectively.

PORTS AND LOGISTICS

(a) Overview

India's ports and logistics sector has transitioned from a service-heavy, state-controlled framework under the Major Port Trusts regime to a mixed landlord model with significant private participation and multi-modal integration. India's central and strategic location in the Indian Ocean region provides an advantage to capitalize on the same as India's maritime trade increases. From crude oil and coal to electronics, textiles, and agricultural products, vast majority of imports and exports flow through bustling ports, connecting India to markets around the world. Post-independence, port governance bifurcated between 'major' ports, regulated by the Union government and 'non-major/minor' ports, regulated by the respective state governments, anchored in the Indian Ports Act, 1908 and the Major Port Trusts Act, 1963. Liberalization in the 1990s brought the National Maritime Development Programme and the first private container terminals under landlord-style concessions. PPP mode of development was introduced in the Indian port sector in mid 1990s along with other infrastructure sectors. Jawaharlal Nehru Port Authority entered into the first agreement with the private player, viz., Nhava Sheva International Container Terminal in 1997 making it the first port terminal to be developed on a PPP basis. Since then, PPP mode has become the preferred mode of infrastructure development in major ports accounting for nearly 90% (ninety per cent) of the new investment in berth/terminal infrastructure.



(b) Current State and Outlook

The current regulatory framework governing the ports sector in India comprises of, among others, the following: (i) the Maritime India Vision 2030 setting quantified targets for capacity, efficiency, and digitization; and (ii) the Major Port Authorities Act, 2021("**MPA Act**") recasting major ports' governance and economic regulation. The current 'Amrit Kaal Vision 2047' is the Indian government's long-term roadmap to transform India into a global maritime hub, building on the Maritime India Vision 2030. In parallel, the National Logistics Policy, launched in 2022, and PM Gati Shakti – National Master Plan integrated multimodal planning across ports, rail, road, and inland waterways. The 'SagarMala' initiative was launched in 2015 and is the flagship initiative of the Ministry of Ports, Shipping, and Waterways, aimed at revolutionizing India's maritime sector. The government is driving sustainable maritime operations by setting up green corridors, introducing green hydrogen bunkering at major ports, and promoting the use of methanol-fueled vessels. Cargo is increasingly split between major ports and dynamic non-major ports under state maritime boards, both adding mechanized capacity and deeper drafts to handle larger vessels and transshipment.

The MPA Act provides for greater tariff-setting autonomy for major ports' boards, establishes an adjudicatory board, and aligns land-use/PPP frameworks with model documents updated in 2021. India's port PPPs have matured from early build-operate terminal leases to a diversified toolkit including: (i) BOT/DBFOT terminal concessions at major ports under the revised Model Concession Agreement (2021), with clearer change-in-law, step-in/substitution, termination payments, authority KPIs, indexed royalties, and rationalized lease rentals; (ii) Private terminals increasingly operate within a market-linked tariff setting landscape under the MPA Act and applicable tariff guidelines; (iii) concessions at non-major ports under state maritime policies use BOOT/BOO structures and long-tenor leases; (iv) brownfield berths and estates are leased via PPP to recycle capital.

Recently, the Indian government has also enacted the Indian Ports Act, 2025 – replacing the century-old Indian Ports Act, 1908 with a forward-looking, integrated framework tailored to the demands of a modern economy. Indian Ports Act, 2025 replaces outdated provisions of the Indian Ports Act, 1908, with modern and contemporary regulations. The legislation mandates global green norms and disaster readiness for the Indian ports. It also simplifies port procedures and digitalizes operations to enhance ease of doing business.

(c) International Cooperation and Bilateral Arrangements

India is leveraging bilateral cooperation to de-risk supply chains, capture transshipment, and advance green shipping. A notable instrument is the long-term arrangement signed between India Ports Global Limited and Port and Maritime Organisation of Iran for the Chabahar Port, providing India direct access to Afghanistan and Central Asia and reinforcing strategic logistics autonomy.

The Inter-Governmental Framework Agreement ("**IGFA**") was signed between India and the United Arab Emirates in 2024 on cooperation for the empowerment and operation of the India-Middle East Europe Economic Corridor. The aim of the IGFA is to enhance the bilateral relations and to further strengthen the relations between the two countries in the ports, maritime and logistics sectors.

RAILWAYS AND METROS

(a) Overview

The Indian railway network constitutes one of the world's largest railway networks under a single management and has been a critical backbone of national integration, trade, and urbanization since the mid – 19th century. The railway network in India was nationalized with the implementation of the Railways Act, 1989 providing the principal statutory framework for operations and safety in conjunction with subordinate rules and the oversight. The liberalization era induced freight modernization, and specialized entities such as the Dedicated Freight Corridor Corporation of India Limited and the Indian Railway Finance Corporation. The government of India has focused on investing in railway infrastructure by making investor-friendly policies such as by permitting 100% (one hundred per cent) FDI in the railway sector. To decarbonize the rail transport, Indian Railways is collaborating with various public sector enterprises to accelerate track electrification and is proactively working towards achieving net zero carbon emission. Under the Mission 100% Electrification, 22 (twenty-two) of the Indian states have achieved full electrification and about 98% (ninety-eight per cent) of the Indian Railways' broad-gauge network has been electrified.

Urban development is a state subject under Schedule VII of the Constitution of India, thus, empowering the state governments, who have the overall perspective of the city, to formulate the plans for urban transport for the city. Urban rail, popularly known as the metro rail matured has seen substantial growth in India in the recent years with Kolkata metro (began service in 1984) being the first operational rapid transit system in India. Most of the urban rail projects have either been financed by the central government in partnership with the state governments or by the state governments either on their own or under the PPP model. The existing 50:50 joint venture model that is predominantly the major model available for the financing and organization structure was started with the Delhi Metro Rail Corporation and later followed in other metro cities like Bangalore, Mumbai Line-3, and Chennai. The state governments are promoting private partnership for development, implementation and operation and maintenance of urban rail projects to capitalize on the private resources, expertise, managerial efficiencies and entrepreneurship. Many metro stations in cities such as Delhi, Kochi, Nagpur, and Pune have received Indian Green Building Council Certifications, aligning with India's sustainability goals and demonstrating metro's growing role in clean urban mobility.

Present milestones include the dedicated freight corridors, the ongoing Mumbai – Ahmedabad High – Speed Rail Corridor, modernization of stations and signaling, and initiatives such as the National Rail Plan for India – 2030, PM Gati Shakti – National Master Plan for Multi-modal Connectivity, the Make in India drive and green urban mobility promote comprehensive mobility plans, fiscal discipline, and private participation.

(b) Current State and Outlook

The railway sector is in an investment-heavy phase emphasizing capacity growth, safety, passenger experience, and urban mobility integration. On the passenger side, there is a sustained push toward semi-high-speed services, station redevelopment, and transit-oriented development. Urban rail is expanding rapidly across Tier – I and II cities, with metro-lite/metro-neo concepts under consideration for cost-effective corridors. Private participation in Indian Railways has evolved from piecemeal service contracts to structured PPPs in freight terminals, station redevelopment, rolling stock maintenance, and select metro corridors. The Metro Rail Policy, 2017 conditions central assistance on exploring PPP. Dispute resolution typically relies on institutional arbitration seated in India, with sovereign protections addressed via termination payments and change-in-law constructs, and bankability supported by escrow mechanisms and deemed performance regimes. Foreign agencies such as the Japan International Cooperation Agency, European Investment Bank and the French Development Agency provide loans with low interest rates and long repayment periods to aid development of the metro network in India.

(c) International Cooperation and Bilateral Arrangements

International cooperation has been central to technology transfer and long-tenor financing.
India and Japan have signed a memorandum of understanding ("**MoU**") in 2015 on cooperation and assistance in the Mumbai – Ahmedabad High Speed Rail Project, with Japan offering financial assistance at low interest rates and a 50 (fifty) year long repayment period.

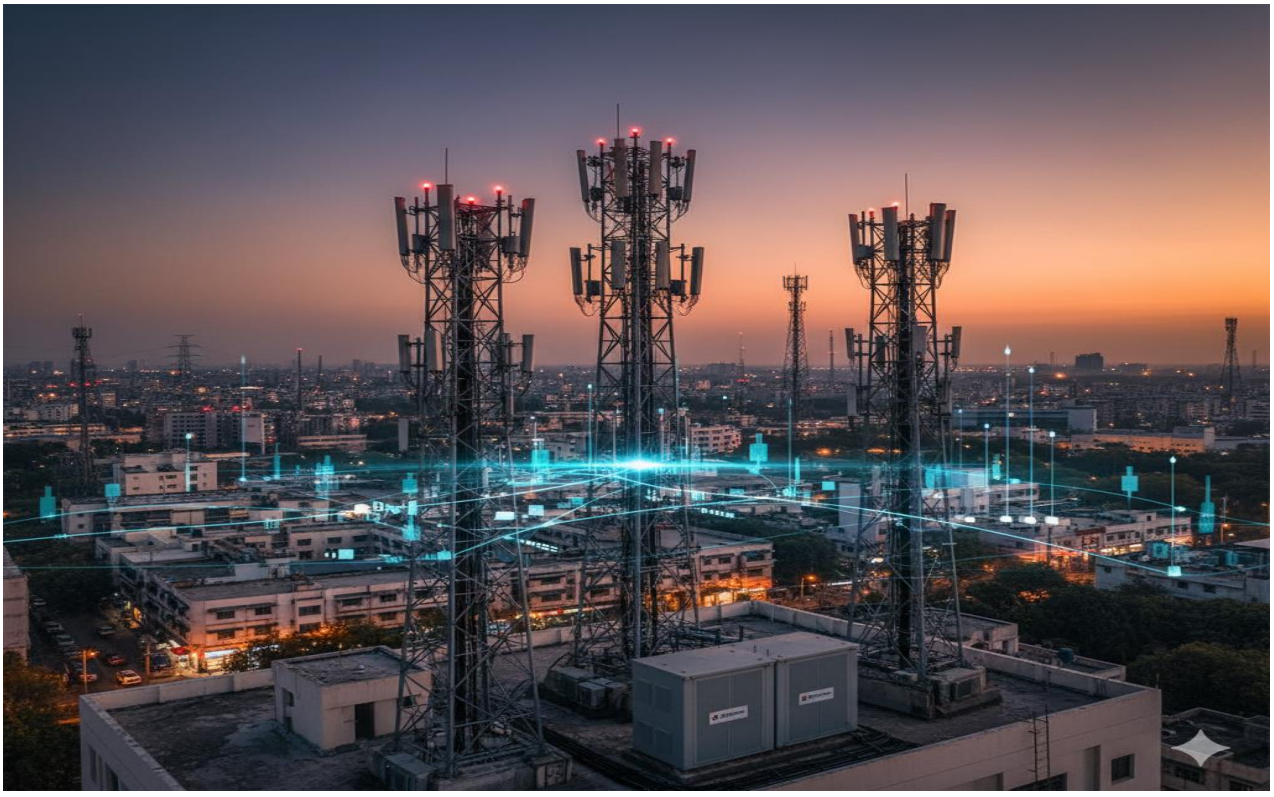
The underground metro line in Mumbai has been developed with financial support from Japan International Cooperation Agency.

TELECOM AND DATA CENTERS

(a) Overview

India's telecom sector has transitioned from state monopoly to competitive market during the 1990s on account of liberalization, National Telecom Policy, 1994 (with a new draft of telecom policy under consideration at the present), and establishment of the Telecom Regulatory Authority of India in 1997. The move from fixed – line to nationwide mobile services accelerated after the early – 2000s migration from fixed license fees to a revenue – sharing regime, strengthening private participation and tower infrastructure sharing. The 3G/4G phases (2010s) drove data adoption at scale, consolidation followed spectrum auctions and financial stress, leaving a few nationwide operators. The 5G auction and launches (from 2022) marked the next investment cycle, with use fiber cables small cells, and private networks in focus.

Data centers have emerged as a distinct infrastructure class since the late 2010s, supported by demand of hyper-scalers, growth of fintech and over-the-top platforms, and migration of enterprise cloud. State-level policies in states such as Maharashtra, Uttar Pradesh, Tamil Nadu, Karnataka, Telangana, etc. offer land, power, and fiscal incentives, promoting campus-scale developments by international as well as domestic operators.



(b) Current State and Outlook

The telecom sector is in a capacity and densification phase. Telecom operators are deploying 5G radio, upgrading transport networks, and expanding fiber – to – the – home. Infrastructure providers focus on passive sharing, small cell deployment, in-building solutions, and submarine/terrestrial fiber routes. On the regulatory front, the Telecommunications Act, 2023 aims to modernize and consolidate India's telecom legal framework by replacing colonial-era statutes and establishing a unified regime for telecommunication services, networks, and infrastructure. Its objectives include transparent spectrum assignment, streamlined authorizations, facilitation of right-of-way, user protection, security safeguards, and promotion of innovation and expansion of digital connectivity. The Digital Personal Data Protection Act, 2023 reframes processing obligations and cross-border transfers via a notified country list approach, with implications for contracting, data residency, and vendor governance.

Telecom sector in India has largely been served by the private sector following the licensing regime, with PPP manifestations primarily in government-funded programs and access facilitation rather than traditional traffic-risk concessions.

(c) International Cooperation and Bilateral Arrangements

India and Japan have signed an MoU to enhance cooperation in the field of in the field of 5G technologies, telecom security, setting up submarine optical fiber cable system in islands of India, spectrum management, smart cities, high altitude platform for broadband in unconnected areas, disaster management and public safety, etc.

The India – Singapore Comprehensive Economic Cooperation Agreement aims to strengthen economic cooperation by removing tariffs on goods, improving services, promoting investment, and eliminating double taxation.

MINES AND MINERALS

(a) Overview

India's mining sector has evolved through distinct regulatory periods that mirror the country's industrial policy. The Mines and Minerals (Development and Regulation) Act, 1957 ("**MMDR Act**") established the federal – state architecture for mineral regulation and set the foundation for classification of 'major' and 'minor' minerals, with the union government retaining control over major minerals and the state governments administering mineral concessions subject to the central policy. The liberalization era prompted the National Mineral Policy, 1993, which paved way for liberalization of the mining sector. Parallel reforms in coal – principally the Coal Mines (Special Provisions) Act, 2015, was enacted to re-allocate coal blocks that the Supreme Court of India had cancelled in 2014 and to establish a transparent auction process, culminating in the Mineral Laws (Amendment) Act, 2020 that opened commercial coal mining to the private sector and simplified approvals by enabling prior approvals to vest with successful bidders. The National Mineral Policy, 2019, further emphasized exploration, critical minerals security, and downstream value addition by encouraging the development of industries that process minerals into higher-value products. This is to be achieved by providing fiscal and non-fiscal incentives, promoting private investment, and improving mining infrastructure. The MMDR (Amendment Act), 2023 created an auction-based exploration licence, for undertaking reconnaissance operations or prospecting operations or both, for minerals specified in Schedule VII of the Indian Constitution through auction, with scale caps and central backstops on state timelines. It introduced 'critical and strategic minerals' and empowered the Union Government to conduct auctions for these minerals, while fiscal proceeds continue to accrue to states. The MMDR (Amendment) Act, 2025 has introduced an electronic trading platform or marketplace for mineral trading, and allows a one-time extension of contiguous areas for deep-seated minerals.

(b) Current State and Outlook

The sector is in a transition from allocation-driven extraction to an auction-led ecosystem with heightened environmental, social and governance scrutiny. Production in coal remains central to energy security even as generation of renewable energy scales, while ferrous and non-ferrous minerals track infrastructure and manufacturing demand. Key legal trends include continued refinement of the auction framework and model tender documents, expansion of exploration through notified private exploration agencies, streamlining of approvals through deemed transfer or vesting on auction, and a deeper integration of mineral policy with climate and industrial policies.

Classic PPPs in extraction are limited by sovereign ownership of minerals and concession statutes, however, PPP – like constructs have matured in exploration, mine development, and evacuation. In coal, the mine developer and operator model has institutionalized private sector participation in development and operations under service or hybrid arrangements while the state or central public sector undertaking retains resource ownership. In non-coal minerals, PPPs feature appear through composite licences, private exploration under government oversight, and viability-gap-style support in data and baselining. Evacuation has seen the most orthodox PPP adoption – last-mile rail spurs, private freight terminals, and common user facilities are developed via special purpose vehicles and joint ventures. Bankability has improved through clearer vesting of approvals on auction, recognition of step-in rights for lenders, and the use of escrow and waterfall mechanisms tied to offtake.

India's partnerships with financial institutions and export credit agencies have supported high-capex rail and metro assets with long-tenor, concessional financing and technical standards transfer. While specific financial commitments vary by project and counterparty, the legal takeaway is the increasing use of standardized financing covenants and performance benchmarks that cascade into concession and access agreements affecting mineral evacuation. Auction documentation has improved but still presents bankability gaps around change-in-law, force majeure, and compensation mechanisms for pre-operational risks. Royalty, additional levies and state-specific cesses can combine to create effective tax burdens that challenge project economics, especially for lower-grade deposits. In coal, the transition to commercial mining introduces market risks around offtake and price discovery, requiring careful calibration of revenue-sharing bids and transportation cost pass-throughs.

(c) International Cooperation and Bilateral Arrangements

India and Australia have entered into a partnership (India-Australia Critical Minerals Investment Partnership) seeking to build new supply chains supported by critical minerals processed in Australia intending to lower emissions from the electricity networks and become a global manufacturing hub, including for electric vehicles. The Australia – India Economic Cooperation and Trade Agreement will support further growth and investment in Australia's world-leading critical minerals and resources sectors.

Khanij Bidesh India Limited has signed an exploration and development agreement with Caymen, a state-owned enterprise of Catamarca province of Argentina, for exploration and mining of 5 (five) lithium blocks in Argentina.

India is considering to tie-up with Chile and Argentina for lithium mining.

WATER AND WASTE MANAGEMENT

(a) Overview

Post-independence, regulatory foundations were laid by the Water (Prevention and Control of Pollution) Act, 1974 ("**Water Act**") and the Environment (Protection) Act, 1986, followed by the Air (Prevention and Control of Pollution) Act, 1981 ("**Air Act**"), establishing the Central Pollution Control Board and State pollution control boards. Urban services devolved under the Constitution (Seventy Forth Amendment) Act, 1992 which introduced framework related to municipalities. From 2014, programmes such as the *Swachh Bharat Mission* ramped processing and segregation of municipal solid waste. Introduction of codes governing management of various types of waste such as the Solid Waste Management Rules, 2016, Plastic Waste Management Rules, 2016, Construction and Demolition Waste Management Rules, 2016, among others, have become strengthened through reforms such as the extended producer responsibility ("**EPR**") since 2022. The circular economy agenda since 2021–2023 prioritizes recycling, wastewater reuse, and sludge valorization.

(b) Current State and Outlook

The policy framework governing areas of waste management emphasizes on circularity – source segregation, material recovery facilities, bio methanation/composting, reuse of treated wastewater, and sludge-to-energy. The recent regulatory trends include stronger EPR with centralized digital portals, state wastewater reuse policies and guidance of the Central Public Health and Environmental Engineering Organisation on fit-for-purpose reuse, and river-basin and dam safety oversight. The policy outlook promotes: (i) scaled tertiary treatment and reuse corridors; (ii) digital monitoring of compliance and outcomes; (iii) fiscal/market incentives for recycled inputs; and (iv) green financing via municipal bonds and blended facilities.

PPP models have migrated from asset-heavy BOTs to availability-and performance-linked O&M with clearer risk allocation and payment security. The HAM under the National Mission for Clean Ganga and state programs tie annuity to availability and output quality with viability gap support. Contracts embed change-in-law, sampling/verification protocols, energy pass-throughs, and sludge disposition obligations, with consent to establish/operate under Water Act/Air Act and environmental clearance, where applicable.

(c) International Cooperation and Bilateral Arrangements

JICA has been strongly supporting the development of water supply and sewerage treatment through Bangalore Water Supply and Sewerage Project for residential, commercial and industrial areas, together with introduction of volumetric based tariff system, metering system, non-revenue water reduction activities, and promotion of recycle/reuse of wastewater.

The Government of India has signed an MoU with United Nations Development Programme India to strengthen collection, segregation, recovery and recycling of all kinds of non-biodegradable waste, and integrated plastic waste management under *Swachh Bharat Mission – Urban 2.0*. India and Nepal have signed an MoU to strengthen cooperation in water, sanitation, and hygiene sector including waste management.