

MARCH 6, 2020

# Transforming the Infrastructure Landscape

ROLE OF REAL ESTATE IN SHAPING THE ROADMAP FOR INDIA



Sectoral report by:





# FOREWORD



## Rajaneesh Dasgupta

Trustee & Director General

Association of Infrastructure Industry (India)

*Namaskar,*

One of the greatest inventions in human history is that of a wheel. The invention of a wheel was a stepping stone for infrastructure development that eventually also played a pivotal role in human development. One can never undermine the importance of infrastructural growth as it governs the way people live and invest. Just as it is important to keep the wheel spinning, it is also important to ensure that infrastructure development remains ongoing and does not reach a standstill at any given point of time.

The Indian government has been relentlessly working towards upgrading infrastructure development in the country by means of increasing road connectivity, launching of metros, building new national highways etc. and all of this with an aim to bridging the urban rural gap. The last five years have witnessed rapid strides in infrastructure development in India in terms of construction of roads and highways, railway up-gradation and development of airport infrastructure in India. These all put together have helped further the concept of smart cities as well.

It would be no exaggeration to state that the impact of infrastructure development has a direct relation to the development of Indian economy. The sector is highly responsible for driving the overall development of India as it remains a critical factor in boosting the economy and offering enhanced growth prospects to strengthen India's global competitiveness. The merits of infrastructure development have a direct impact on employment as well considering construction of infrastructure is labour intensive, leading to increased opportunities for employment and thus increasing domestic demand. All of this together can help the economy to trigger a virtuous cycle of higher investment, productivity and job creation.

The impact of infrastructure also has a strong impact on real estate in terms of land value as well as rental while it also triggers new trends in real estate activity. Furthermore, many new asset classes and investment options are generated in the process as land use patterns change too where real estate development is planned taking into account the value additions accrued from the existing infrastructure and the scope of future infrastructural development.

The Indian government's commitment to the sector's development can be accentuated by the fact that huge amount of investment is expected in the infrastructure sector, mainly highways, renewable energy and urban transport. A significant number of major government's initiatives like Smart Cities Mission, Pradhan Mantri Awas Yojana, new metro rail policy, Housing for all, North East Special Infrastructure Development Scheme (NESIDS), etc. have been undertaken in order to drive the growth of the sector. As per the union budget 2019-20, close to INR 100 trillion (USD1.4 trillion) worth of investment is planned to flow into India's infrastructure in the next 5 years. Private sector participation is integral to these plans. PPPs have emerged as a very feasible, viable, and growing mode of creating infrastructure for our country and indeed, are rapidly becoming the funding norm. Private equity and venture capital (PE/VC) investments in the infrastructure related industries reached INR14.17 trillion (USD200 billion) with 74 deals during the year 2019 compared to INR552.8 billion (USD7.8 billion) across 82 deals in 2018. Technology plays a pivotal role in development of infrastructure in a country. Multiple upcoming technological advancements such as electric vehicles, autonomous vehicles and multi-modal integration leading to enhanced last mile connectivity are expected to be at the heart of infrastructural development in the near future.

To conclude, I would like to highlight that much of the infrastructure built in the past has now reached its design capacities and this has eventually led to expansion programs in many sectors in leading cities, while the smaller cities are seeing development of new infrastructure in order to improve their connectivity with major urban centres. But for all of this to materialize to its full capacity, it prompts the need for greater investment by the government as well as efforts to encourage private investments into the sector.

*Jai Hind!*







# FOREWORD

## Sankey Prasad

Managing Director & Chairman  
Colliers International, India



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During the last five years, the government has taken rapid strides in upgrading infrastructure across the length and breadth of the country. Building economic corridors, railway modernization, development of highways and road infrastructure, connecting cities through airports network, developing smart cities have been some prominent ventures. These have not only contributed to improving the quality of life, travel and work in India but have also added to enhancing the ease of doing business and improving the country's business profile while also attracting foreign investment and business opportunities. However, the infrastructure landscape is still evolving and much more is expected out of the Infrastructure Pipeline announced by the government on the eve of the new year 2020. Also, much scope exists to plug in the gaps in the existing infrastructure in the country, abridging the gap in rural urban infrastructure being the prominent one. Enhancing rural infrastructure and rural urban connectivity, reach of technology to rural areas and bringing the rural areas on par with the national flow in terms of business enhancement and commercial opportunities is crucial for the country's balanced development and it still stands as a major challenge.

The real estate and allied sectors have a major role to play in implementing the infrastructure agenda of the government. The forthcoming years indeed ring in profitable business opportunities in real estate sector for developers, occupiers and investors to contribute to India's infrastructure story.

It gives me immense pleasure to present our report 'Transforming the Infrastructure Landscape: Role of Real Estate in Shaping the Roadmap for India' on the auspicious occasion of India Infrastructure Summit, 2020. I also extend my heartiest best wishes to India Infrastructure Summit 2020 and to all the stakeholders.

With the Government policies and benefits, we need to unlock the potential of real estate through infrastructure. Creating satellite towns, smart cities, airports, metro connectivity etc. is possible only through a major paradigm shift from the present focus. This dream can only be realized through engaging in public private partnerships, a combination of local and international players.

# EXPERTS SPEAK

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**Dr. P R Swarup**  
Director General  
Construction Industry  
Development Council



“As India marches ahead on its path of Infrastructure creation, the moot challenges of land, labour, capital and entrepreneurship undergo a paradigm shift. The increased headwinds, technological challenges and modern shift towards digitalization for enhancing throughput assume different meaning. Artificial Intelligence and how emerging technologies impact the unfolding Infra story are to be watched keenly and imbibed to achieve our objectives”.

I am sure the India Infrastructure Summit 2020 will definitely provide important inputs for delivering Executable Intelligence and enrich this domain.

**Dr. Shailesh Kr. Agrawal**  
Executive Director  
Building Materials & Technology  
Promotion Council  
Ministry of Housing & Urban Affairs  
Government of India



As per the clarion call given by the Hon'ble Prime Minister of India to establish New India by 2022, housing and infrastructure is going to play a pivotal role. It is time to introduce cutting edge technologies along with innovative policy interventions so as to ensure rapid growth, holistic sustainable development with better ease of living and inclusivity. At present the real estate sector is of the order of Rs.8.5 trillion, contributing 7% to GDP, employing 55 million people and influencing more than 200 allied sectors. By 2040, it is presumed to be of the order of Rs.46.2 trillion contributing 14% to GDP and employing 66 million people.

The Association of Infrastructure Industry (India) have been doing commendable work by bringing out Report on Transforming The Infrastructure Landscape to be released in the forthcoming India Infrastructure Summit. The report is ensemble of progress made in different infrastructure sectors by India and puts forward the road ahead in comprehensible manner. I am pretty sure the report will greatly benefit all the stakeholders and go a long way in fulfilling the dream of our Government to become \$5 trillion economy by the time we celebrate our 75th year of independence.

## Prof. Dr. P.S.N. Rao

Director  
School of Planning and  
Architecture



" In the global economic scenario, India is strategically poised in more ways than one - a huge population loaded with consumption demand, a substantial English speaking demography, the largest chunk of youth in the world - all these point towards a favourable economy, both for production and consumption. Most segments of Indian infrastructure, be they roads, railways, airways, sea ports, construction and real estate, industry, banking, IT and digital operations and many other areas, India is at the fore front. Keeping in tune with the changing times, transformations have been taking place in all these above mentioned areas in the recent past. These are business cycles and the current churn is not only inevitable but also necessary. Soon, we are going to see an upward trajectory of growth and overall development. The last mile push in terms of 'ease of doing business', appropriate governance architecture and fiscal incentives need to be structured by the governments at both the centre and the states so as to unleash the potential of Bharat. "

*Chairman, DUAC, Ministry of Housing and Urban Affairs, Government of India  
Chairman, All India Board of Town & Country Planning, AICTE, Government of India  
Chairman, Delhi Chapter, Institute of Town Planners, India  
Independent Director, Ujjain Smart City Limited*

## Oscar Esteban

President  
Indo Spanish Chamber  
of Commerce



"Infrastructure is key for any country economic development, supporting GDP growth as the foundation for trade. Beyond, and in today's global economy environment, infrastructure is a competitiveness weapon, supporting initiatives like "Make in India/Invest in India". Finally we should not forget citizenship, for whom the right and appropriate infrastructure is part of the public service, and a mean to assess Government action or inaction. Government of India has understood well its relevance making infrastructure a clear priority of the recent 20-21 Union Budget, with an investment proposal of 100 lakh crore (equivalent to eur 1.300b). And it is as such, because there is much to catch up: India being the 5th worldwide economy, is ranked in the 69th position as per its infrastructure."


## Pushpraj Singh

President Marketing  
JK Cement Ltd.



Indian cement industry is destined to play a distinguished part in building the new India due to its significant role in building an infrastructure that drives growth, generating employment, contributing to tax revenues, attracting foreign direct investment (FDI) in manufacturing and ensuring environmentally sustainable development.

Towards the end of this decade, cement-intensive infrastructure development will be key to sustaining the high-level of GDP growth that India requires to lift the living standards of a population that will have surpassed 1.5 billion mark.



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# SUMMARY AND RECOMMENDATIONS

Infrastructure growth governs the way people live and invest. In the long run, it impacts land values and rental rates while also triggering new trends in real estate activity. Further, real estate development is planned with the value of existing infrastructure and the scope of future infrastructural development in mind. Infrastructure development and changing land use patterns open up new asset classes and investment options. Infrastructure investment also carries a financial risk in terms of its viability and development timelines; however, India has much to gain from the upcoming infrastructural growth.

The government has been investing heavily on infrastructure development. Rapid strides have been achieved in infrastructure development in India across last five years in terms of construction of roads and highways, railway upgrades and the development of airport infrastructure. Smart cities are also being developed with an aim of improving the standard of living, modes of transport and improving the convenience of life. The Government of India (GoI) has also been encouraging affordable housing projects considering the affordability of the end users and the funding needs of the developers, and these projects have been contributing to a rise in land and rental values.

Challenges remain, and there is wider scope for further infrastructure development across the length and breadth of the country. During the next decade India is poised to experience a huge need for private investment and overseas funding in infrastructure as cities become more connected, districts within cities become more accessible and urban-rural connectivity improves. Given the government's thrust on the ease of doing business and ease of living, government's policies need speedier implementation.



# Recommendations

- ✔ **We recommend developers and investors consider the effect of the planned infrastructure projects in their project and investment plans.**  
The government has emphasized transport infrastructure including economic and freight corridors. Plans for augmenting roads and highways, modernisation of railways, metro connectivity and improved aviation connectivity bode well for the development of real estate. Further, we believe this infrastructure push will enhance opportunities for allied sectors including travel and tourism, hospitality, logistics and warehousing.
- ✔ **We recommend the real estate industry focus its efforts on following the government's emphasis on transport infrastructure and smart cities** with the adjacent development of new business districts around the planned infrastructure.
- ✔ **We recommend developers tap the government's thrust on developing smart cities and the Housing For All scheme not only in Tier 1 but also in Tier 2 and 3 cities.** We believe there are untapped business opportunities not only for residential developers but also for commercial space due to the increasing demand for supporting infrastructure.
- ✔ **We recommend developers be at the forefront of technological innovations like electric and autonomous mobility and multimodal integration.** With the current policies supporting these innovations, we expect developers to require additional capital and operational expenditure to deploy the supporting infrastructure like retrofitting of properties, charging stations and other electric mobility infrastructure. We also expect the boost to electric mobility to generate demand for EV manufacturing facilities and to commercial real estate demand driven by the engineering sector like original equipment manufacturers, data centres and the battery industry.
- ✔ **We recommend developers take advantage of improving urban-rural connectivity.** Despite the rapid strides in infrastructure attained across the country, the urban-rural gap in terms of connectivity and infrastructure still exists. Improving connectivity within the rural areas and between rural and urban areas and improving rural infrastructure is a major challenge but it also provides opportunity for commercial development in these areas. Real estate developers should pitch in and take advantage of the huge business potential in these areas.
- ✔ **We recommend developers explore alternative financing methods.** Financing infrastructure carries challenges and risks. Policy, procedural and environmental challenges coupled with the cost of bank capital keep investors wary. Apart from the regular budget allocations, there is a need for the government to adopt and developers to take advantage of innovative financing methods like asset monetization and infrastructure bonds. Encouraging private and foreign investments and public private partnerships will also help in the process.

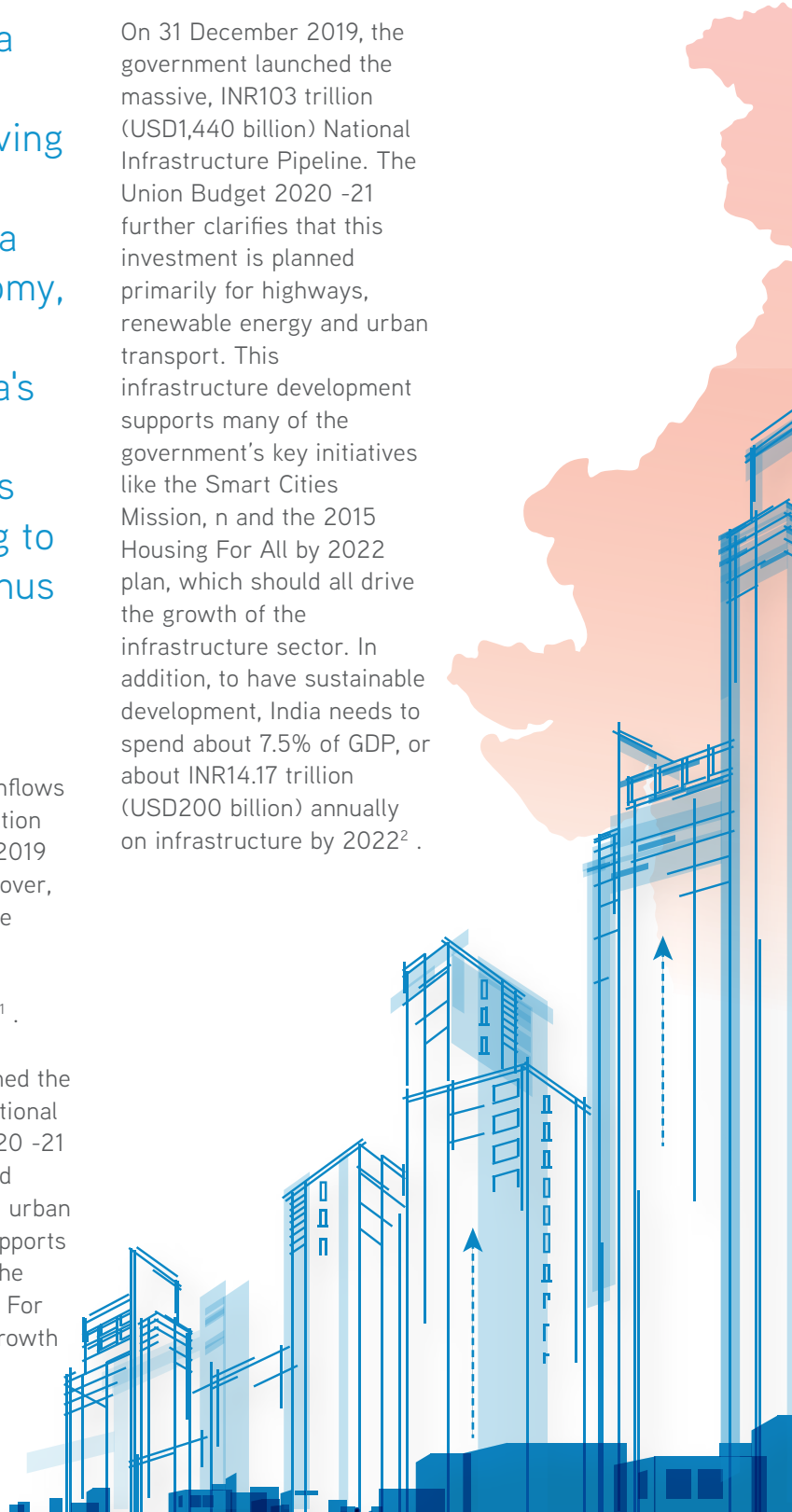
# INTRODUCTION

The infrastructure sector is a key driver of the Indian economy, and critical for driving India's overall development. Developing infrastructure is a crucial in boosting the economy, offering enhanced growth prospects to strengthen India's global competitiveness. Infrastructure development is also labour-intensive, leading to increased employment and thus increasing domestic consumption.

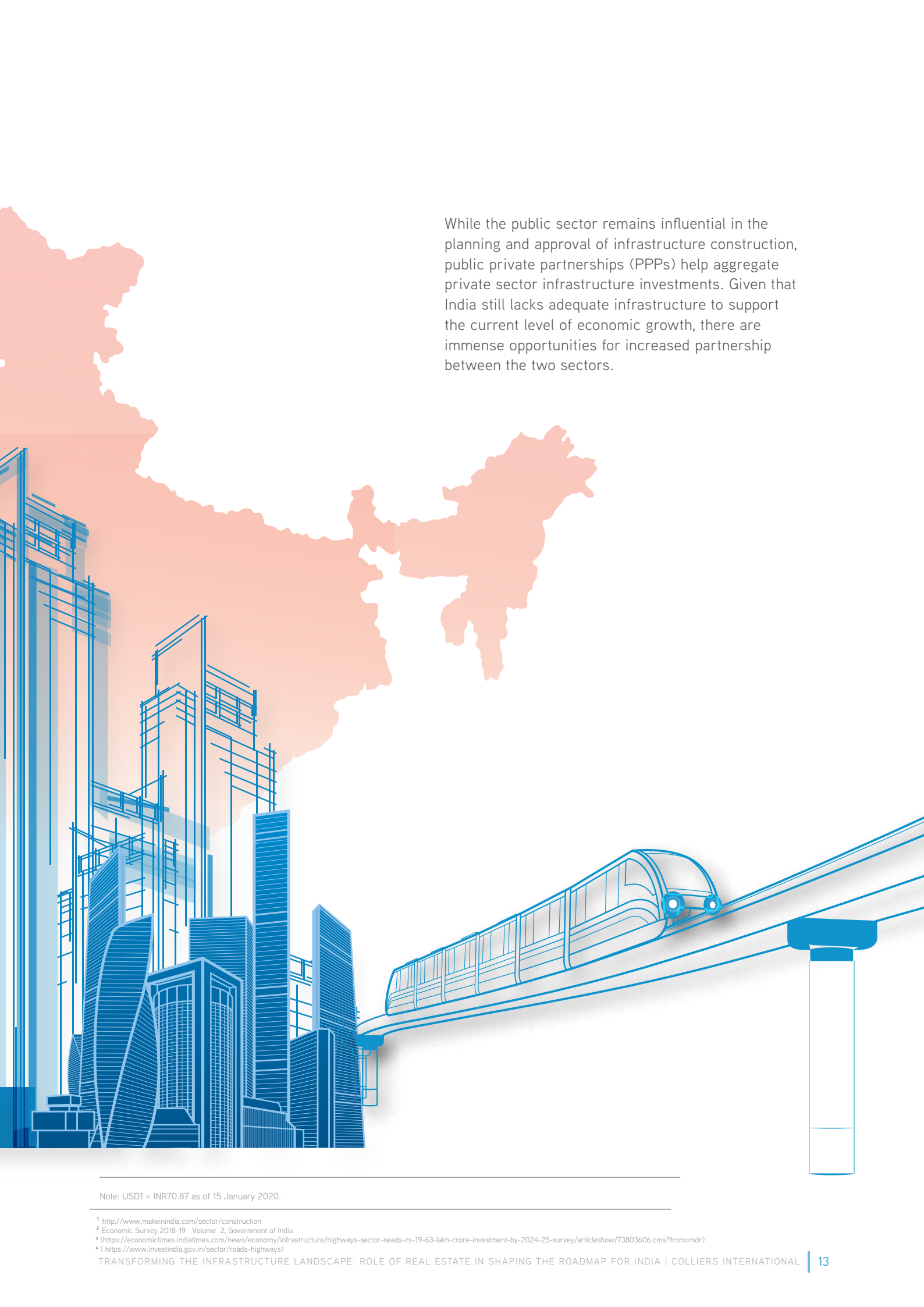
India ranks among the top 10 destinations for foreign direct investment (FDI) globally. FDI inflows in the construction development and construction sector during the period April 2000 - March 2019 stand at INR1.77 trillion (USD25 billion). Moreover, the government has permitted 100% FDI in the Infrastructure development projects such as townships, affordable housing and built-up infrastructure and construction developments<sup>1</sup>.

On 31 December 2019, the government launched the massive, INR103 trillion (USD1,440 billion) National Infrastructure Pipeline. The Union Budget 2020 -21 further clarifies that this investment is planned primarily for highways, renewable energy and urban transport. This infrastructure development supports many of the government's key initiatives like the Smart Cities Mission, n and the 2015 Housing For All by 2022 plan, which should all drive the growth of the infrastructure sector.

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While the public sector remains influential in the planning and approval of infrastructure construction, public private partnerships (PPPs) help aggregate private sector infrastructure investments. Given that India still lacks adequate infrastructure to support the current level of economic growth, there are immense opportunities for increased partnership between the two sectors.

Note: USD1 = INR70.87 as of 15 January 2020.

<sup>1</sup> <http://www.makeinindia.com/sector/construction>

<sup>2</sup> Economic Survey 2018-19 Volume 2, Government of India

<sup>3</sup> (<https://economictimes.indiatimes.com/news/economy/infrastructure/highways-sector-needs-rs-19-63-lakh-crore-investment-by-2024-25-survey/articleshow/73803606.cms?from=mdr>)

<sup>4</sup> (<https://www.investindia.gov.in/sector/roads-highways>)

# GOVERNMENT THRUST ON EVOLVING INDIAN INFRASTRUCTURE

Infrastructure is important for increasing the country's economic growth and the integration of the Indian economy with other economies of the world. The National Highways Authority of India (NHAI) has created a National Infrastructure Pipeline plan worth INR103 trillion (USD1.5 trillion) to help achieve an average growth rate of 8% in the Indian economy over the next five years.

## Roads: A major priority

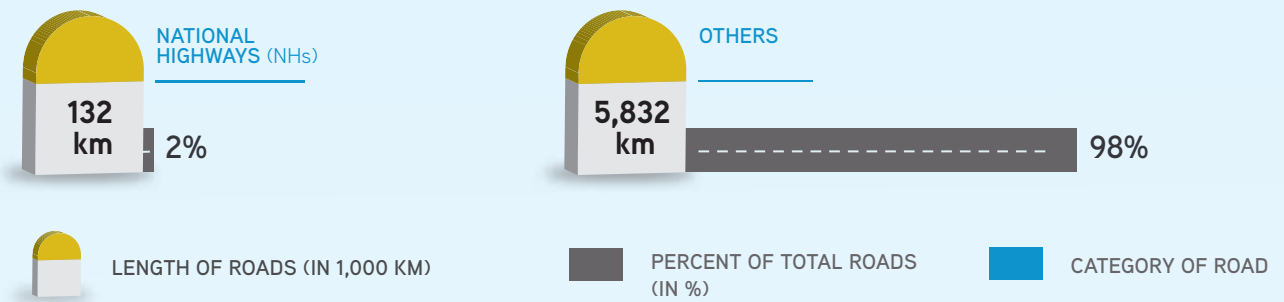
Road transport is the dominant mode of transport in India, both in terms of traffic share and contribution to the economy<sup>3</sup>, and India has one of the largest road networks in the world, spreading over 5.9 million kilometers. Of this total, national highways account for 2% of the total road network but carry about 40% of the total road traffic.<sup>4</sup>

The government is planning to expand the National Highway network to over 200,000km by 2022. In the next five years, the government aims to build at least 90,000km of highway. Almost 25,000km of highway was built in fiscal year 2019 and another 30,000km is planned in 2020. The Union Budget 2020 -21 proposes spending INR1.70 trillion (USD23.8 billion) towards transport infrastructure, including development of 15,500 additional kilometers of road.

The Indian Ministry of Road Transport and Highways (MoRTH) declared 2018-19 the *Year of Construction*, and has made construction, expansion and upgrading of the road network in the country a major priority. National Highway construction in 2018-19 set a record of 30kms of new roads constructed per day, up 150% from 2014-15.



Figure 1: Road Length Category wise



Source: Economic survey 2019-20, Government of India

In addition to the overall roadbuilding plan, the government launched various targeted infrastructure schemes, including:

- › Bharatmala Pariyojana, which plans to develop four-lane connectivity to 550 districts, increase vehicular speeds by 20-25% and reduce supply chain costs by 5-6%. The first phase (2017-18 to 2021-22) of the programme hopes to attract INR5.8 trillion (USD82 billion) of PPP investment by 2022 for the development of 34,800km of highway.
- › Pradhan Mantri Gramin Sadak Yojana (PMGSY-III), which plans to bridge the connectivity gap between urban and rural India by revamping 125,000kilometers of existing state roads.

Total Indian investment in roadbuilding increased by almost 200% to INR1.59 trillion (USD22.4 billion) in 2018-19 compared to that in 2014-15, and private investment accounts for 14% of that. As of 6 December 2019, 47% of PPPs in India were related to road and bridge construction<sup>3</sup>. The NHAI plans to tender 950km of road construction for PPPs worth INR300 billion (USD4.23 billion)<sup>4</sup>, while also supporting the sector by offering tax exemptions and duty-free import of roadbuilding equipment and heavy machinery.





## Indian Railways: A lifeline of the Indian transport industry

Since 1853, Indian railways have facilitated geographical connectivity enabling mobility and transport in India. Further, railways have served as a backbone infrastructure for commercial activities across the length and breadth of the country.

### Passenger

Railways are the primary means of urban-rural transport in India, in part due to their affordability.



# Indian Railways in need of modernisation to enhance passenger experience

Indian Railway is modernizing its stations, rolling stock and equipment. The Adarsh Station scheme plans the modernisation of stations, with 92% of 1,253 eligible railway stations already renovated as of November 2019. Upgrades include integrated braille signs, escalators, lifts and WiFi. Additional stations are planned to be renovated by the Indian Railway Stations Development Corporation Limited (IRSDC). These stations will be renovated based on the outcome of feasibility studies, with a priority for stations located in major cities, pilgrimage centres and important tourist destinations.<sup>3</sup>



- ✓ Segregation of arriving and departing passengers
- ✓ Essential facilities on concourses
- ✓ Integration with other modes of transport
- ✓ No parcel movement across the length of platform
- ✓ User-friendly international signage

## Railways aim at higher private sector involvement to boost infrastructure growth

Redevelopment work is currently in progress at Gandhinagar (Gujrat) and Habibganj (Madhya Pradesh) stations under Public Private Partnership (PPP) models. Contracts for redevelopment have been awarded for Gomtinagar, Charbagh (Uttar Pradesh) and Puducherry stations. All redeveloped stations in this mode will generally include the provision of following amenities:





# Freight

Indian Railways aims to increase its freight haulage, which as of December 2019 was about 33% of total Indian freight movement, in part by developing Dedicated Freight Corridors (DFC). The first two of six planned freight corridors, the Eastern Dedicated Freight Corridor of 1,860km from Ludhiana to Dankuni and the Western Dedicated Freight Corridor of 1,500km from Dadri to the Jawaharlal Nehru Port (JNPT) are already under construction.

**The Western Dedicated Freight Corridor<sup>6</sup>** (WDFC) covers a route length of 1,500km of electrified double track from JNPT to Dadri via Vadodara, Ahmedabad, Palanpur, Phulera and Rewari. The corridor passes through Haryana, Gujarat, Maharashtra, Uttar Pradesh and Rajasthan. It is expected to join the Eastern Dedicated Freight Corridor at Dadri.

**The Eastern Dedicated Freight Corridor<sup>4</sup>** (EDFC), passes through **six states** of Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand and West Bengal, covering a route length of 1,860km. Due to a lack of space along the existing network, especially near prominent city centres and industrial hubs, the corridor bypasses densely populated towns.

## High speed rail corridors to boost connectivity across the country

In addition to freight corridors, Indian Railways plans to build seven high-speed rail corridors at an estimated cost of INR1.2 billion (USD17 million) to provide faster rail connectivity across the country.

The project is planned to create new commercial, retail and residential destinations along the 508km corridor. Planned transit-oriented development (ToD) around 12 stations should benefit from the seamless connectivity between the existing international financial services centre (IFSC) near Ahmedabad and Mumbai's financial district of Bandra-Kurla Complex (BKC).



<sup>3</sup> <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1592450>

<sup>4</sup> <http://www.dfccil.com/>



## Electrification mission to be a major part of railway modernisation scheme

By 2025, the GoI aims to achieve 100% electrification of railways in a phased electrification process. Electrification projects should give a boost to infrastructure sector, reduce air pollution and benefit various allied industries.

### Proposed phasing of electrification

#### Target Route Kilometers

<b>7000</b>	<b>10500</b>	<b>10500</b>
2019-20	2020-21	2021-22

Source: [https://core.indianrailways.gov.in/view\\_section.jsp?lang=0&id=0,294,302,532](https://core.indianrailways.gov.in/view_section.jsp?lang=0&id=0,294,302,532)

## New lines to improve urban – rural connectivity

Along with electrification, the government aims to add 25,000km of new lines by the end of 2020, supported by government funding and PPP projects. Of this, at least 10,000km are planned to be socially desirable lines which the railways will operate regardless of their economic viability.

This will include the completion of the backlog of 11,985km of lines already sanctioned. This programme specifically aims to improve the connectivity to far-flung and rural areas in Uttarakhand, Himachal Pradesh, Jammu & Kashmir, and all the states in the north-east, namely, Arunachal Pradesh, Assam, Nagaland, Mizoram, Tripura, Manipur, Meghalaya and Sikkim.





## Metro rail projects: Facilitating easier urban connectivity

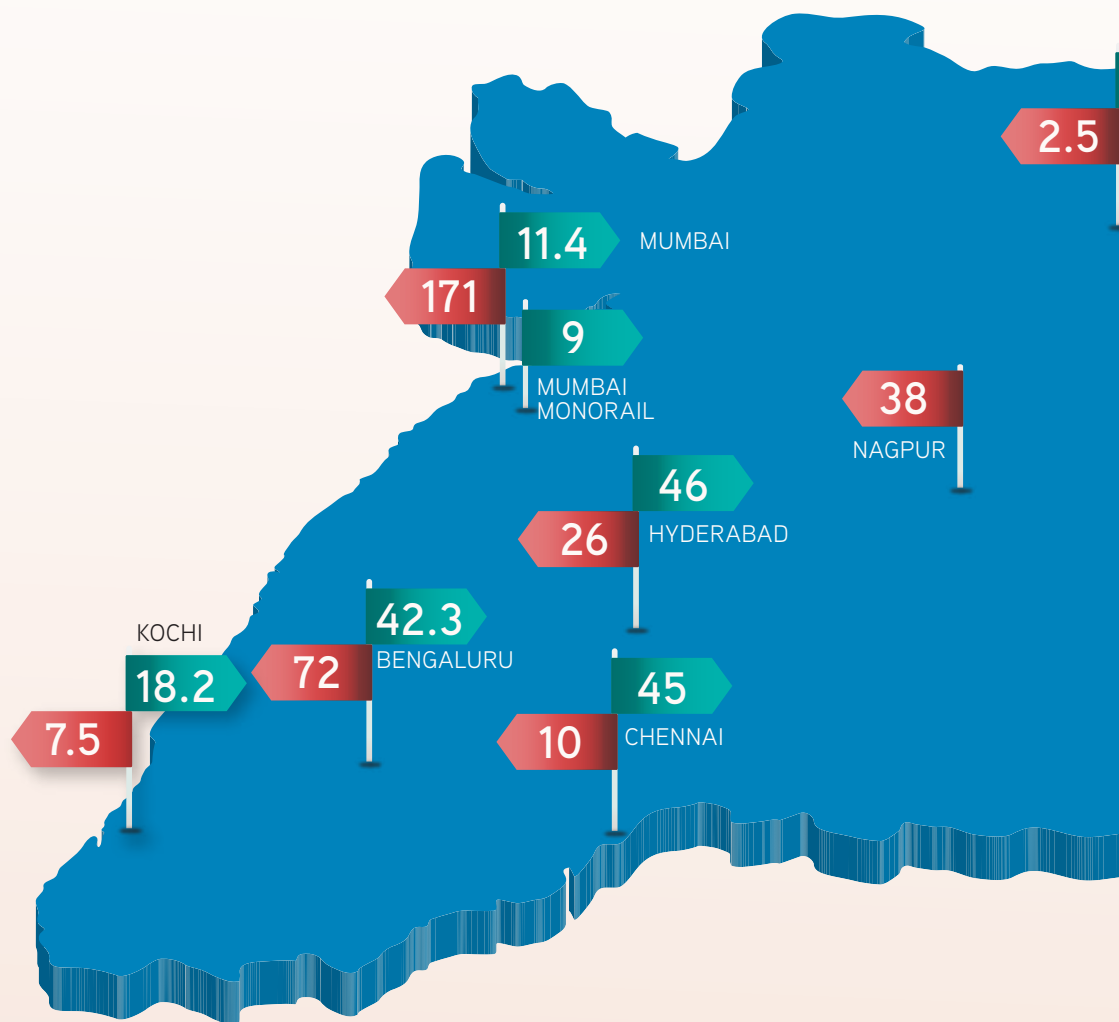
The government, as indicated in the Union Budget 2019-20, plans to enhance metro railway development by encouraging more PPP projects and ensuring the completion of sanctioned works, while supporting ToD to ensure commercial and residential activity around transit hubs.



There are currently 585km of operational metro lines in India, according to the Ministry of Housing and Urban Affairs (MoHUA). In the fiscal year 2018-19, 140km of metro lines have been opened for the public as of 10 February 2019.

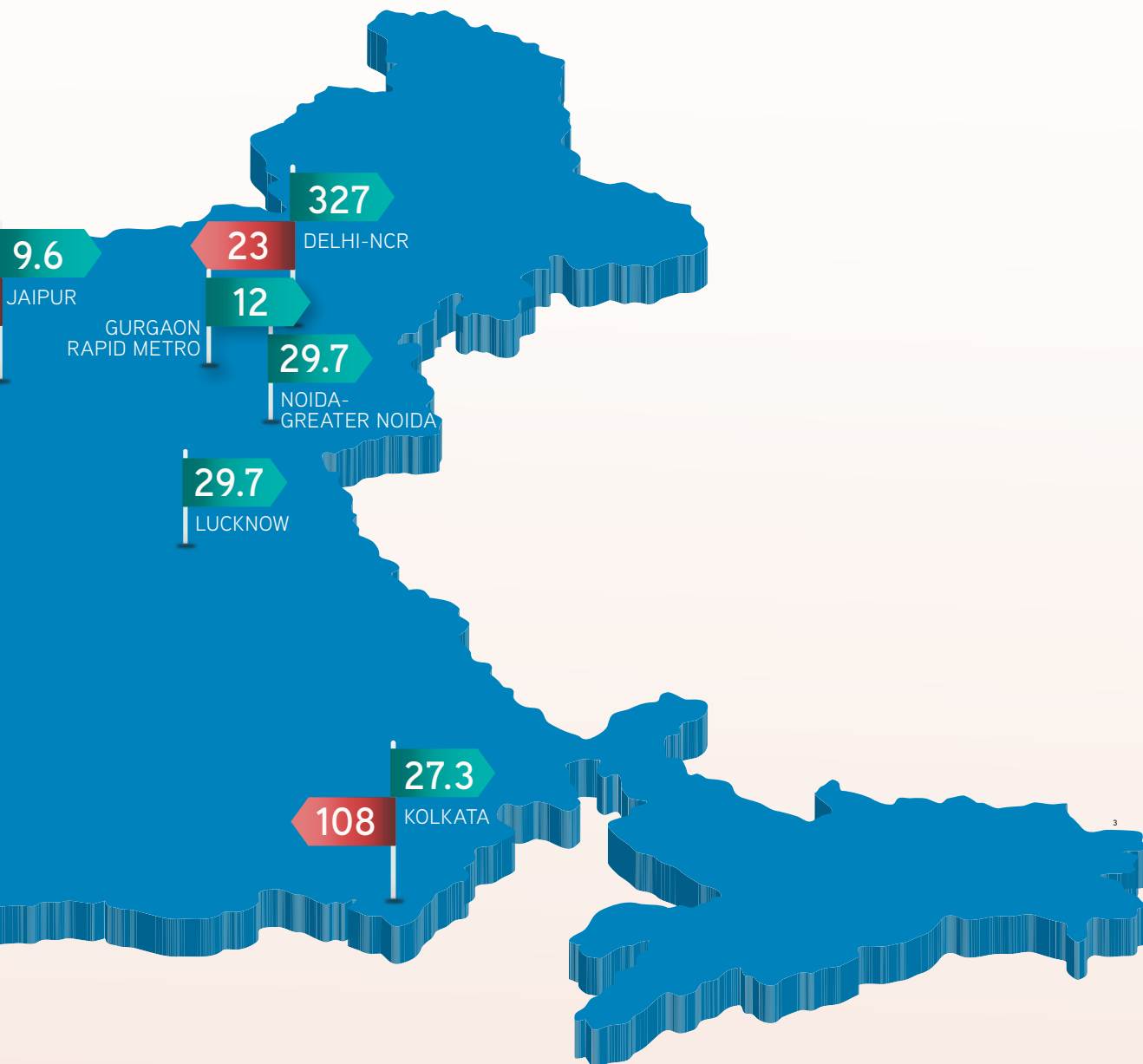
With the creation of the United Metropolitan Transport Authority (UMTA), the GoI has undertaken several steps to standardize the configuration of trains, signalling systems and fare collection systems under the 2017 Metro Rail Policy.



AS ON FEBRUARY 2019, OPERATIONAL METRO NETWORK IN INDIA AND METRO RAIL COMING ONLINE THROUGH 2024 ARE GIVEN BELOW:



-  Operational metro network (in kms)
-  Metro rail coming online through 2024



Source: <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1564876>

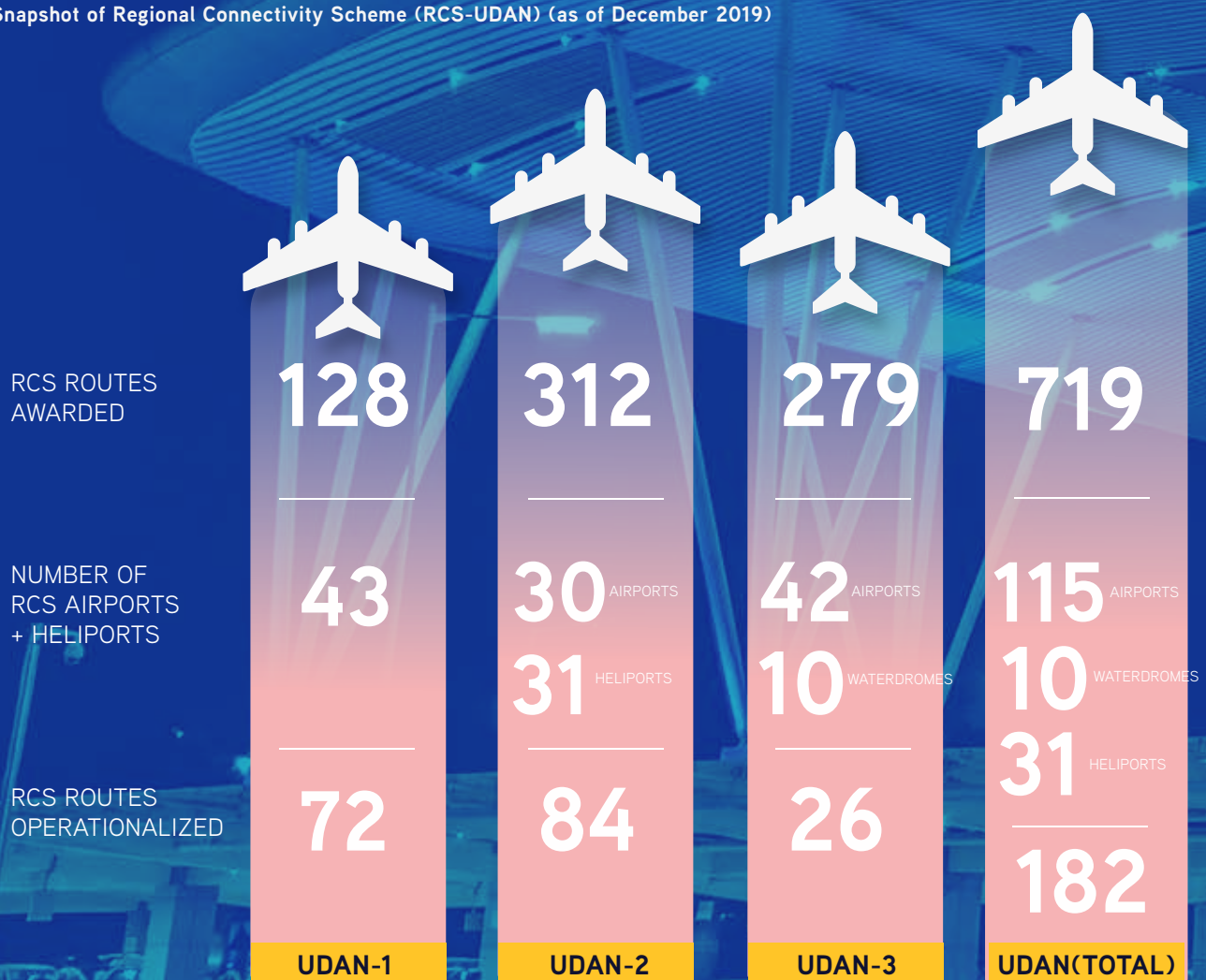


# Airports: Enhancing the coverage across the country

The aviation industry in India is one of the fastest growing sectors in India. According to International Air Transport Association (IATA), India is currently considered the third largest domestic civil aviation market in the world and is likely to overtake the UK, Japan, Spain and Germany to become the third largest air passenger market by 2024.

The Ude Desh ka Aam Naagrik (UDAN) Scheme aims to facilitate regional connectivity through financial support and infrastructure development. A total of 719 regional connectivity routes were awarded in three rounds of bidding, 182 of which are operational<sup>5</sup>.

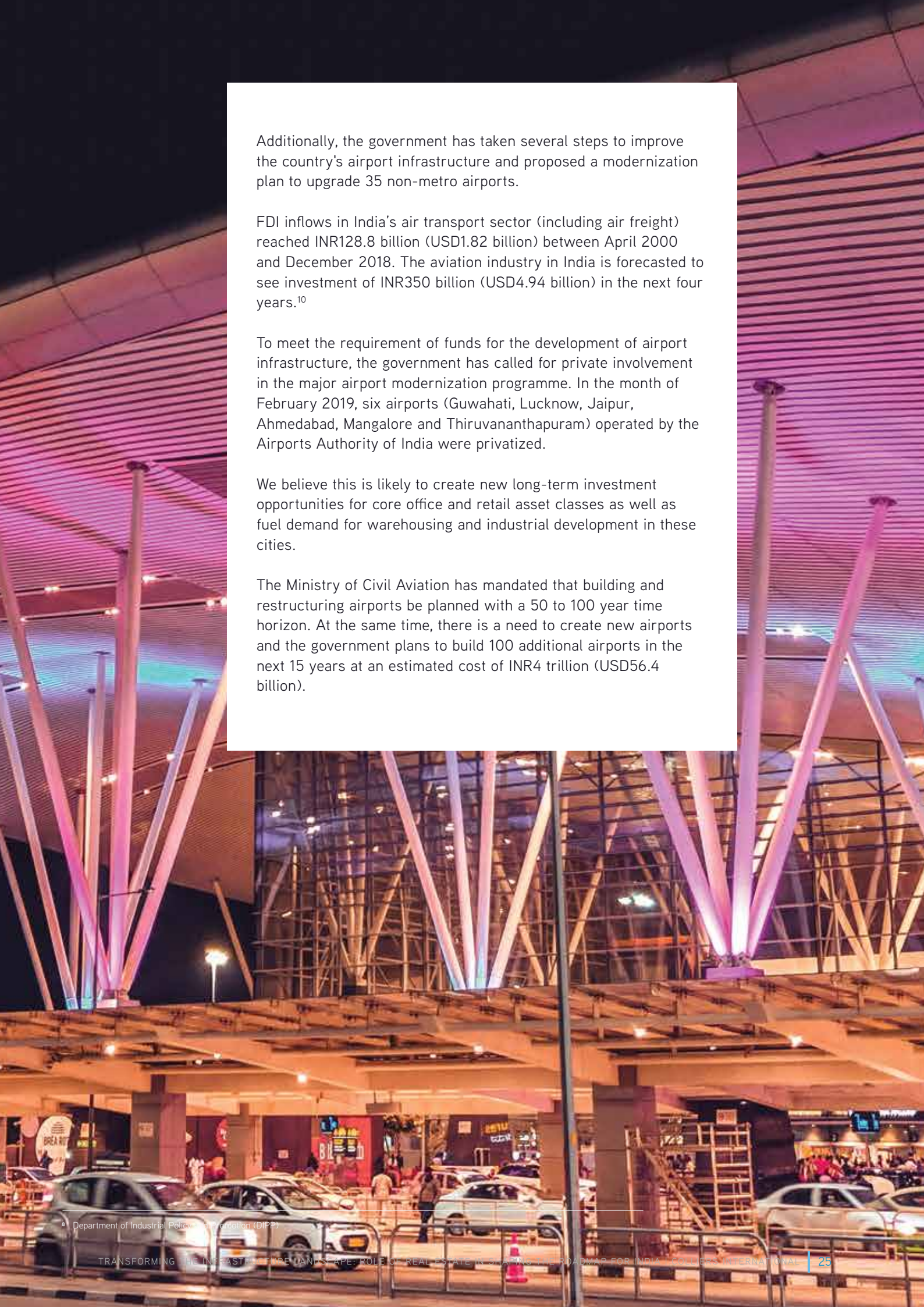
Snapshot of Regional Connectivity Scheme (RCS-UDAN) (as of December 2019)



Source: Ministry of Civil Aviation

<sup>5</sup> Ministry of Civil Aviation





Additionally, the government has taken several steps to improve the country's airport infrastructure and proposed a modernization plan to upgrade 35 non-metro airports.

FDI inflows in India's air transport sector (including air freight) reached INR128.8 billion (USD1.82 billion) between April 2000 and December 2018. The aviation industry in India is forecasted to see investment of INR350 billion (USD4.94 billion) in the next four years.<sup>10</sup>

To meet the requirement of funds for the development of airport infrastructure, the government has called for private involvement in the major airport modernization programme. In the month of February 2019, six airports (Guwahati, Lucknow, Jaipur, Ahmedabad, Mangalore and Thiruvananthapuram) operated by the Airports Authority of India were privatized.

We believe this is likely to create new long-term investment opportunities for core office and retail asset classes as well as fuel demand for warehousing and industrial development in these cities.

The Ministry of Civil Aviation has mandated that building and restructuring airports be planned with a 50 to 100 year time horizon. At the same time, there is a need to create new airports and the government plans to build 100 additional airports in the next 15 years at an estimated cost of INR4 trillion (USD56.4 billion).

<sup>8</sup> Department of Industrial Policy and Promotion (DIPP)



# The Vision 2040

for the Indian airport sector<sup>4</sup>

Total  
passengers  
(million)



OPERATIONAL AIRPORTS



INTERNATIONAL AIRPORTS



Year ended March 2018

Year ended March 2040

CAGR (%)

Source: <https://www.nbmcw.com/report/construction-infra-industry/40457-indian-aviation-on-a-growth-path.html>





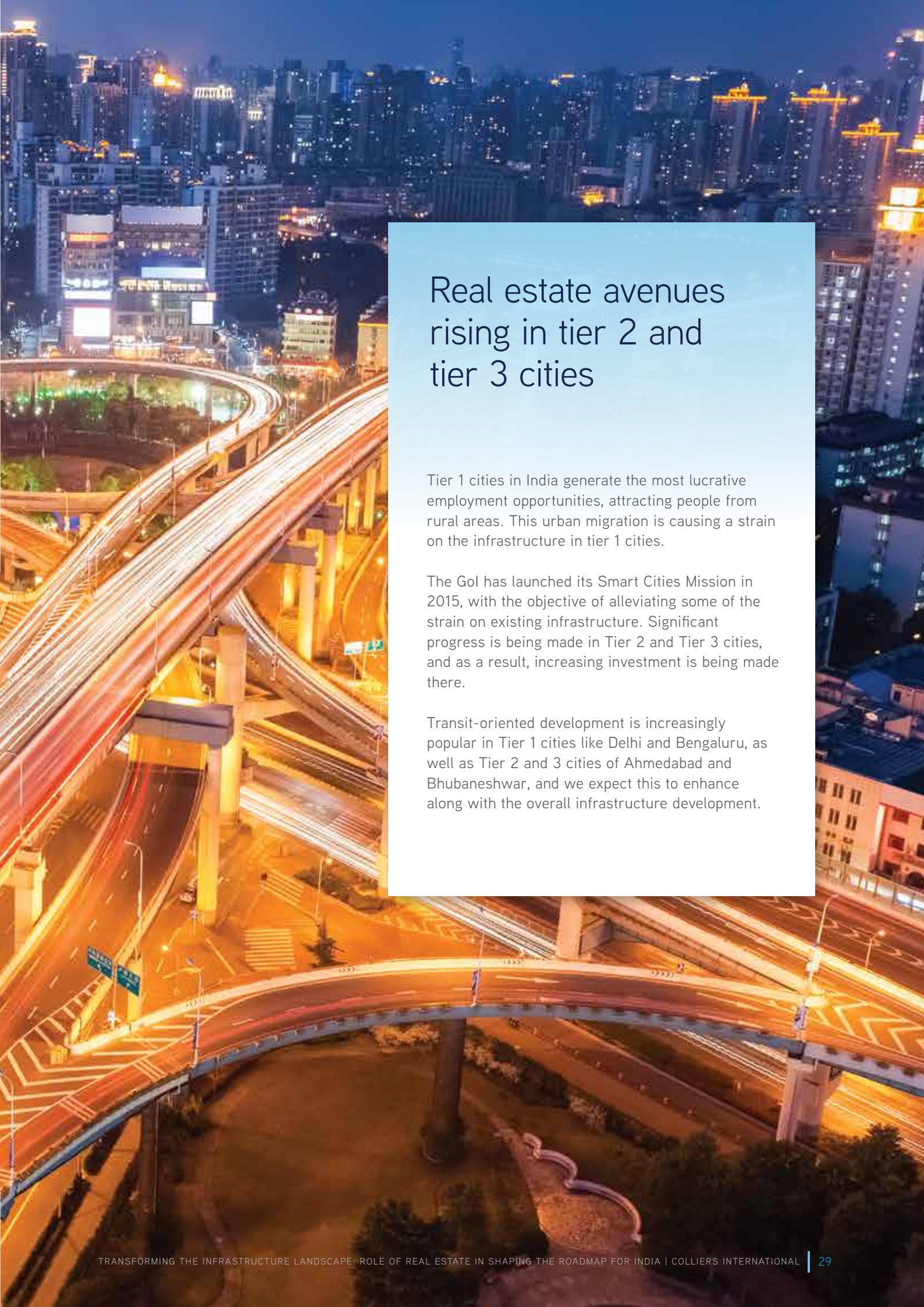


# REAL ESTATE TRENDS DEFINING INFRASTRUCTURE PATTERNS

The real estate sector is evolving with the emergence of alternate asset classes including senior living and student housing along with the growing prominence for mixed-use developments and affordable housing in Tier 2 and Tier 3 cities. This change is attracting increased interest from developers, occupiers and investors. While these changes are altering the industry, we believe the infrastructure developed by the government will be one of the key enablers in the success of these asset classes.







## Real estate avenues rising in tier 2 and tier 3 cities

Tier 1 cities in India generate the most lucrative employment opportunities, attracting people from rural areas. This urban migration is causing a strain on the infrastructure in tier 1 cities.

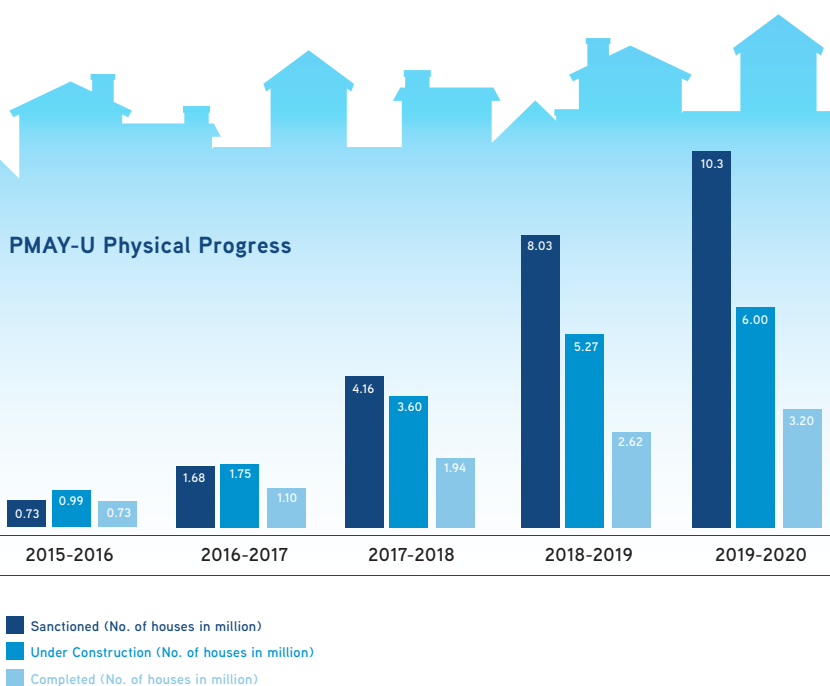
The GoI has launched its Smart Cities Mission in 2015, with the objective of alleviating some of the strain on existing infrastructure. Significant progress is being made in Tier 2 and Tier 3 cities, and as a result, increasing investment is being made there.

Transit-oriented development is increasingly popular in Tier 1 cities like Delhi and Bengaluru, as well as Tier 2 and 3 cities of Ahmedabad and Bhubaneswar, and we expect this to enhance along with the overall infrastructure development.



# Affordable housing gaining prominence in tier 2 and tier 3 cities

The Indian residential real estate segment is riding high on the government's Housing For All mission. As part of this mission, the government launched the Pradhan Mantri Awas Yojana – Urban (PMAY-U) Mission in 2015, under which it intends to provide pucca housing, that is, solid, permanent housing to all households by 2022.



Source: Ministry of Housing and Urban Affairs, Government of India

Developers have also been giving increasing attention to the residential market in Tier 2 and Tier 3 cities, on the back of improved infrastructure, which is leading to enhanced connectivity and relatively lower construction costs.

Many well-known developers have ventured into affordable housing projects in Tier 2 and Tier 3 cities, taking advantage of robust connectivity, infrastructure and lower land costs than in Tier 1 cities. This has helped them cater to the rising need for houses in this segment. Bhiwadi in Rajasthan is one such city that has witnessed significant traction from developers and homebuyers alike. Some of the reasons justifying this increasing preference for Bhiwadi are that it is well connected with the NCR, has a less polluted environment with large open spaces, hosts prominent health and educational facilities and offers less expensive homes than in NCR.





## Emergence of alternate asset classes - senior living and student housing



The elderly population in India is growing, with the United Nations Population Fund (UNFPA) projecting that the percentage of Indians over the age of 60 will increase from 8% in 2015 to 19% in 2050. These senior citizens' need for housing presents a huge opportunity for real estate developers.

Senior living projects already exist on the outskirts of Tier 1 cities as well as in Tier 2 and Tier 3 cities, that have lower traffic congestion, the availability of larger land parcels and easy accessibility to healthcare facilities.

In its size and diversity, the Indian education system is the world's third largest higher education system, after the United States and China. With more than 990 universities, 40,000 colleges and 10,700 private institutions, the system has a capacity of enrolling more than 37 million students. The All India Survey on Higher Education indicates that institutional accommodation (hostels, boarding houses and on-campus housing facilities) is available only to one-half of enrolled students. As a result of this captive demand, purpose-built student accommodation (PBSA) is an emerging asset class in India. PBSA offers students better amenities, and companies such as Stanza Living, Oxfordcaps and Your Space are already offering PBSA in India.





## Mixed-use developments offering greater mobility and convenience

Mixed-use development combines various residential, commercial, retail, industrial, educational and healthcare facilities in one master-planned development. This type of development offers shorter commutes, going a long way to enhance the livelihood of residents.

We believe that the emergence of millennials, who account for about 36% of the India's working population, will probably sustain the demand for integrated live-work-play environment as the concept of building offices, residential, malls, schools and hospitals within one community satisfies the millennials' demand for greater mobility and convenience.

Magarpatta City in Pune, developed by Magarpatta Township Development & Construction Company Limited (MTDCCL), is one such example of a mixed-use development. Comprising 500,000 sq meters of IT park and office space, 7,500 apartments, 12,000 sq meters of educational space and over 200,000 sq meters of retail and amenities, Magarpatta City caters to the needs of 130,000 people every day.

<sup>6</sup> [http://siteresources.worldbank.org/EDUCATION/Resources/278200-1121703274255/1439264-1193249163062/India\\_CountrySummary.pdf](http://siteresources.worldbank.org/EDUCATION/Resources/278200-1121703274255/1439264-1193249163062/India_CountrySummary.pdf)  
<sup>7</sup> <http://aishe.nic.in/aishe/viewDocument.action?documentId=262>

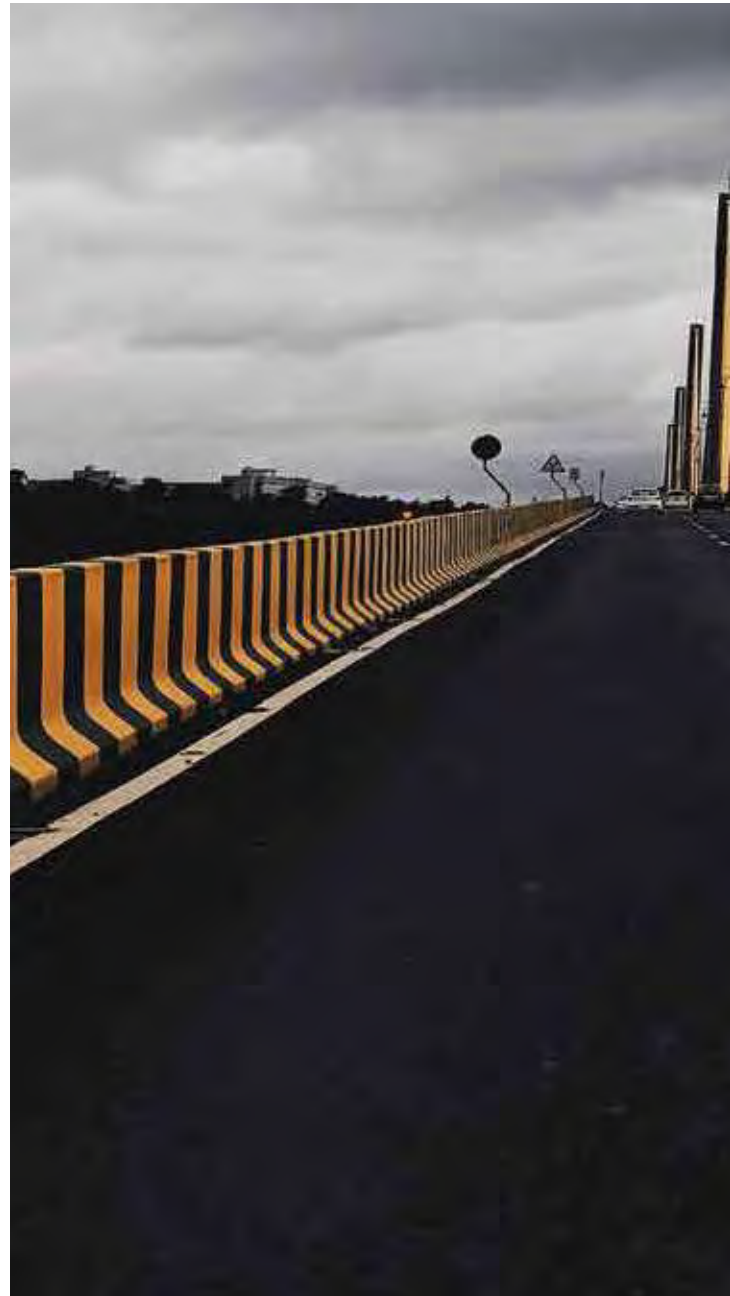
# CHALLENGES AND PROBABLE SOLUTIONS

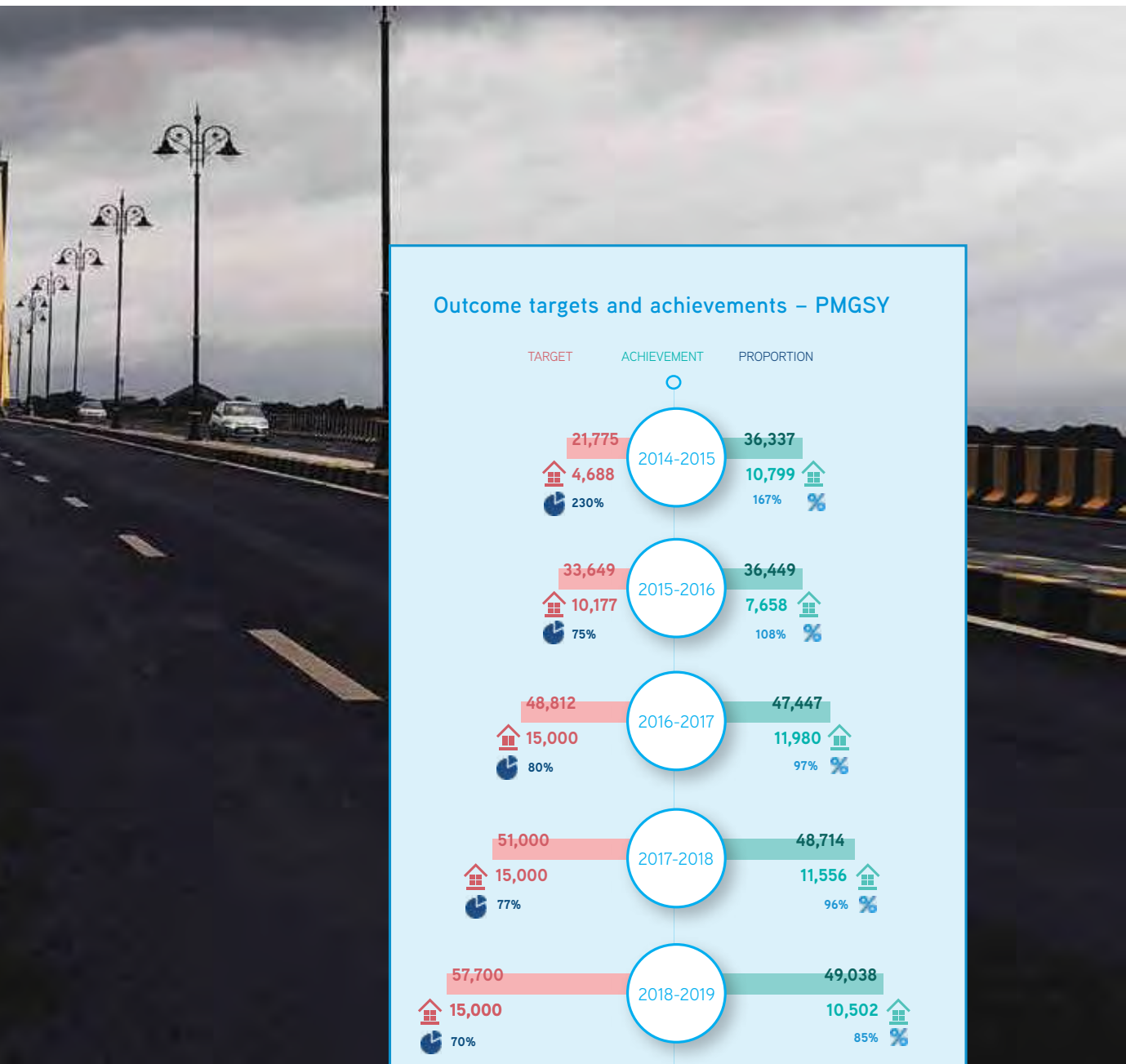
Infrastructure development is critical for improving India's manufacturing competitiveness and achieving higher growth. While infrastructure development can provide a boost to the economy, the primary step is to identify the issues associated with weak infrastructure in India.

## Rural road network providing insufficient access to rural areas

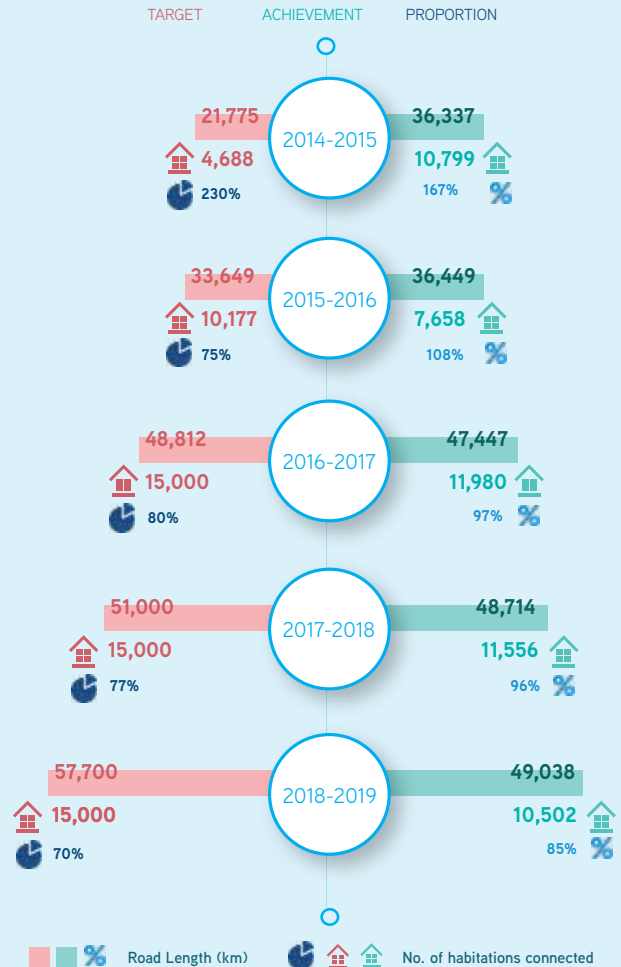
Increased road connectivity promotes economic growth while reducing poverty. Further, rural road development supports increasing rural incomes. One of the major benefits is greater access to markets. This increases employment and business opportunities, and encourages expansion of small-scale and cottage industry activities, roadside stalls, and shops in the villages.

In 2000, almost three-quarters of the Indian population lived in rural areas and nearly half of the country's habitations were unconnected via proper roads. To redress the situation, the Gol launched Pradhan Mantri Gramin Sadak Yojana (PMGSY) in 2000 with the objective of providing all-weather roads to unconnected rural areas. While significant progress has been achieved under the policy, about 30% of the target villages remained unconnected during fiscal year 2018-2019.





### Outcome targets and achievements – PMGSY



Source: Ministry of Rural Development, Government of India



# Land acquisition proves to be a hindrance in infrastructure development

Land availability is one of the foremost requirements for infrastructure development. In India, land ownership records are patchy and the acquisition process is complicated and protracted. As of December 2018, there are about 435 infrastructure and highway projects across India that are stuck on account of various factors including delay in acquisition of land and regulatory clearances.<sup>8</sup>

## Land acquisition in India – Issues and concerns

### OBTAINING APPROVAL

According to The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (Land Acquisition Act, 2013), consent of at least 80% of landowners is required for projects to be developed by private companies for public purpose. Consent of at least 70% of land owners is required for public-private partnership projects.

### TIMEFRAME FOR LAND ACQUISITION

Under the Land Acquisition Act, 2013, the minimum time required to complete the land acquisition process is 50 months. While it was proposed to be reduced to 42 months in the second amendment released in 2015, this length of time is a hindrance to infrastructure development.

Source: Colliers International

<sup>8</sup>Media article: The Economic Times 2018-12-13





## Challenges affecting infrastructure development – procedural, environmental and financing

Large infrastructure projects in India have often been stalled on account of environmental concerns. While new projects need to comply with environmental regulations, even a project under construction may sometimes have to meet revised standards in the middle of the execution stage, primarily due to the revised policy framework and lack of coordination between the agencies involved. The delay in regulatory and environmental clearance due to bureaucratic complexities and protracted procedures for securing approvals in conducting environment appraisal meetings slows the process of project approval, resulting in overall delays.

The development of infrastructure projects typically involves high levels of upfront financial investment, given the heavy capital expenditure required during the construction phase. These long-term projects are exposed to various risks arising out of policy changes and delays in regulatory approvals that may lead to delays in project completion. The sector is facing critical financing issues in terms of a high cost of capital, challenges in obtaining non-recourse funding and scarcity of long-term funding sources. Further, these challenges are aggravated due to increasing non-performing assets (NPAs) in the banking sector and lack of alternate sources of finance.





# Financing

**Government allocations – expenditure plans for next five years<sup>9</sup> are as follows:**


- In the Union Budget 2019-20, the Central Government announced that it will invest INR103 trillion (USD1.5 trillion) in infrastructure over the next five years. Railways received a budgetary allocation of INR940.7 billion (USD13.3 billion.) The government suggested an investment of INR50 trillion (USD705.5 billion) aimed at improving the railway infrastructure between 2018 and 2030. [Under the government's Pradhan Mantri Gramin Sadak Yojana-III \(PMGSY\) plan, it is envisaged that over the next five years it will cost INR802.5 billion \(USD11.3 billion\) to upgrade 125,000 kilometers of road length.](#)

In order to address key issues and attract foreign and private capital into infrastructure, in recent years, the government plans to resort to innovative financing strategies. Some of those are as follows:

## Credit Enhancement Fund for infrastructure projects

A Credit Enhancement Fund (CEF) is planned to be set up by the government to boost infrastructure sector projects to attract bond market investors to invest in infrastructure projects. Most infrastructure projects are ranked below investment-grade, preventing large institutional investors from financing these projects. We expect the CEF to help improve the ratings of projects and help trigger investment flows.

<sup>9</sup> Union Budget of India (2019-20)



## Strengthening the corporate bond market in India<sup>10</sup>

Raising funds for infrastructure by issuing bonds is another method adopted by the government. Given the challenge of obtaining bank financing and additional government financing for infrastructure projects, the Union Budget 2020-21 announced a 100% tax exemption for foreign Sovereign Wealth Funds on their interest, dividend and capital gains income before 31 March 2024, with a minimum lock-in period of three years

### **Some mandatory measures taken by the Reserve Bank of India (RBI) in recent years include:**

- Large companies to raise 25% of their incremental or fresh loans from the bond market.
- Large companies to raise part of their long-term borrowings from the corporate bond market rather than

<sup>10</sup> <https://indianexpress.com/article/explained/why-a-corporate-bond-market-union-budget-2019-nirmala-sitharaman-5823094/>







## Asset monetization

Asset monetization is being increasingly adopted by the government to raise money for infrastructure development given the large land parcels owned by the government and the need for funding in the infrastructure sector. This facilitates long-term institutional investor engagement and encourages private sector participation in order to generate much-needed funds for the infrastructure sector.

### Examples of the asset monetization model:

- In January 2020, Mahanagar Telephone Nigam Limited (MTNL) received approval to raise INR65 billion (USD917 million) from the monetisation of land and buildings through issuance of non-convertible debentures.
- The bailout prepared by the government for the revival of Air India has been generating revenue from the monetisation of land and properties. The total amount monetised since 2012-13 is INR4.45 billion (USD62.8 million).<sup>11</sup>
- In 2019, the government announced the monetization of the transmission lines of the Power Grid Corporation of India Limited (PGCIL) via an infrastructure investment trust (InvIT). This will be a first by any public sector company in India.<sup>12</sup>

<sup>11</sup> <https://www.thehindu.com/business/air-india-garnered-445-crore-from-land-assets-in-6-years/article22669577.ece>

<sup>12</sup> <https://economictimes.indiatimes.com/news/economy/policy/government-looks-at-inv-it-model-to-monetise-power-sector-psus-assets/articleshow/70645385.cms?from=mdr>



# Innovative Financing of smart cities and other infrastructure projects - the Swiss Challenge Method

The Smart Cities Mission has been planned with a total estimated project cost of INR2.05 trillion (USD28.9 billion) and a total area-based development cost of INR1.64 trillion (USD98.8 billion). Investment worth INR2.2 trillion (USD 31 billion) has been earmarked by the government for implementing the Smart Cities Mission's 4,800 projects (smart roads, roof top solar panels, waterfront projects, waste management, social development projects including smart education, smart transport, environment monitoring.). Of this total, around INR1.4 trillion (USD20 billion) will be contributed by the central and state governments while the rest is to be raised through a combination of loans, debt, multi-lateral funds, and PPPs.

Under the so-called Swiss Challenge method, an interested party initiates a proposal for a contract or bid for a project, as opposed to the government taking the initiative. The government then publishes the details of the project and invites proposals from other interested parties. The party with the best bid is awarded the contract or alternatively the original bidder gets an opportunity to enhance its bid to match the best bid. Thus, a private company can submit a proposal to the government with exclusive intellectual property rights. The government may then buy the intellectual property rights from the original bidder and invite competitive bidding to award the project.

In this way, private entities have a chance to take the initiative as well as to usher in innovation and technology. This outcome leads to cost efficiencies while cutting project timelines and avoiding excessive red tape. The method allows for more transparent project financials as well.

In 2009, the Supreme Court of India spoke in favour of adopting the Swiss Challenge Method for awarding contracts. Although concerns have been voiced against the method, the government has been using the Challenge or competition method to select cities for funding for their smart development and using a strategy of area-based development; wherein the central government grades the Indian states by certain parameters of development and awards the funding. The government has also been using this method in road and highway development and in sectors like IT, logistics, power and health.

<sup>19</sup> <http://www.uncrd.or.jp/content/documents/6617MS-2-P4.pdf>

## Applications

Gujarat has included the Swiss Challenge Method in the Gujarat Infrastructure Development Act, 1999, while in 2006, the state amended the act providing for direct negotiation. The method is also included in the Andhra Pradesh Infrastructure Development Enabling Act and Punjab Infrastructure (Development & Regulation) Act while Rajasthan and Madhya Pradesh have included it in their guidelines for financing of infrastructure projects.

In 2018, while clearing the Maharashtra Infrastructure Development Enabling Authority Act, provisions were made to allow allotment of infrastructure proposals to private players using the Swiss Challenge Method. On the same lines, there are steps to allot floating solar plant projects across reservoirs and water bodies to the bidders.

Andhra Pradesh Capital Region Development Authority and Singapore-Amaravati Investments Holding (SAIH) Ltd have signed a Concession and Development Agreement on June 7, 2018, under the Swiss Challenge Method with the intention of joint development of a 684-hectare start-up area in Amaravati.





# Technological innovations for faster infrastructure growth

Technology plays a pivotal role in development of infrastructure in a country. Upcoming technological advances such as electric vehicles, autonomous vehicles and multi-modal integration leading to enhanced last mile connectivity are most likely to be at the heart of future infrastructural development. To enhance the use of modern technology in the construction sector, the Prime Minister, Mr. Narendra Modi announced the fiscal year 2019-2020 as the Year of Construction Technology.

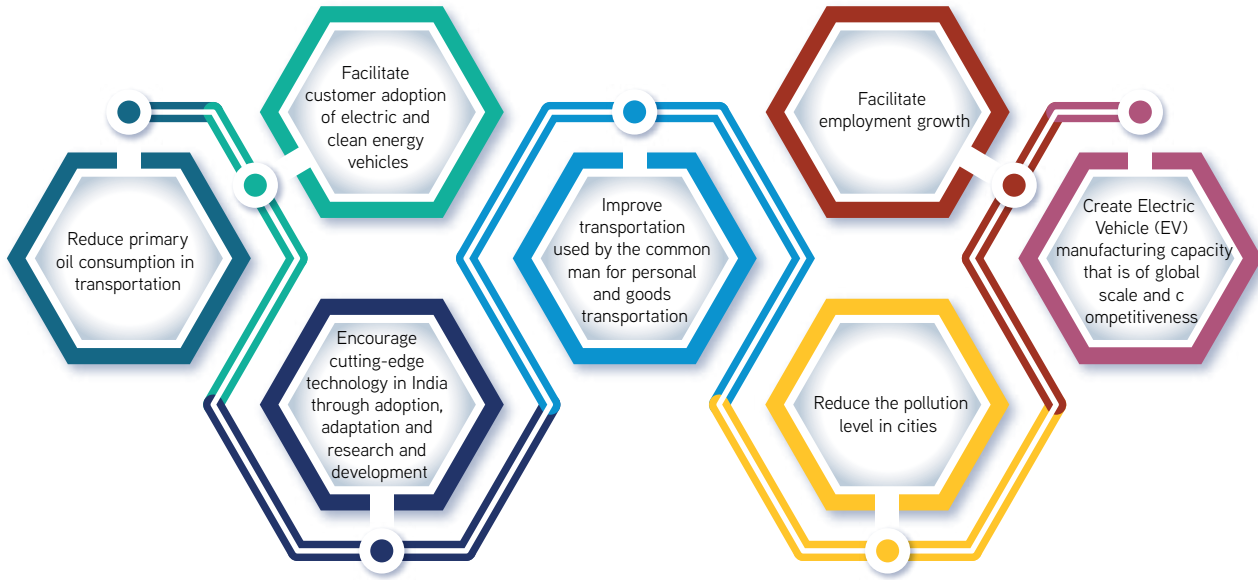
## Electric mobility

According to the National Electric Mobility Mission Plan 2020 (NEMMP), the total potential demand for electric vehicles in India by 2020 is likely to be in the range of 5-7 million new vehicle sales. To realise this potential demand, the sector will require government support in terms of policy reforms and incentives.

The GoI has taken significant steps towards electrification of vehicles. The Ministry of Heavy Industries & Public Enterprises' scheme for Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME II) came into effect from April 1, 2019.



## Key objectives of Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME II), 2019



Source: Department of Heavy Industry, Government of India



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To enable wider adoption of EVs, the government has floated incentives that directly help in generating demand for EVs. Demand incentives are available for buyers or end users of EVs in the form of an upfront reduced purchase price of hybrid and electric vehicles. Given that the cost of batteries is one of the main factors increasing the cost of EVs, demand incentives have been based on the battery capacity used in such vehicles. The government has proposed a uniform demand incentive of INR10,000 per KWh (USD141 per KWh) for all vehicles, except buses. To encourage public transport, the government has proposed a demand incentive of INR20,000 per KWh (USD282 per KWh) for buses.

To provide the necessary supporting infrastructure, the government envisages the setting-up of adequate public charging infrastructure through active participation and involvement of various stakeholders. The government aims to provide flexibility of funding for establishment of charging infrastructure to the extent of 100% of cost, depending upon the project proposal.

## Autonomous mobility

India has started moving towards autonomous mobility with the introduction of robotic tractors and cars. Several start-ups are working on developing autonomous vehicles such as trucks and minibuses.



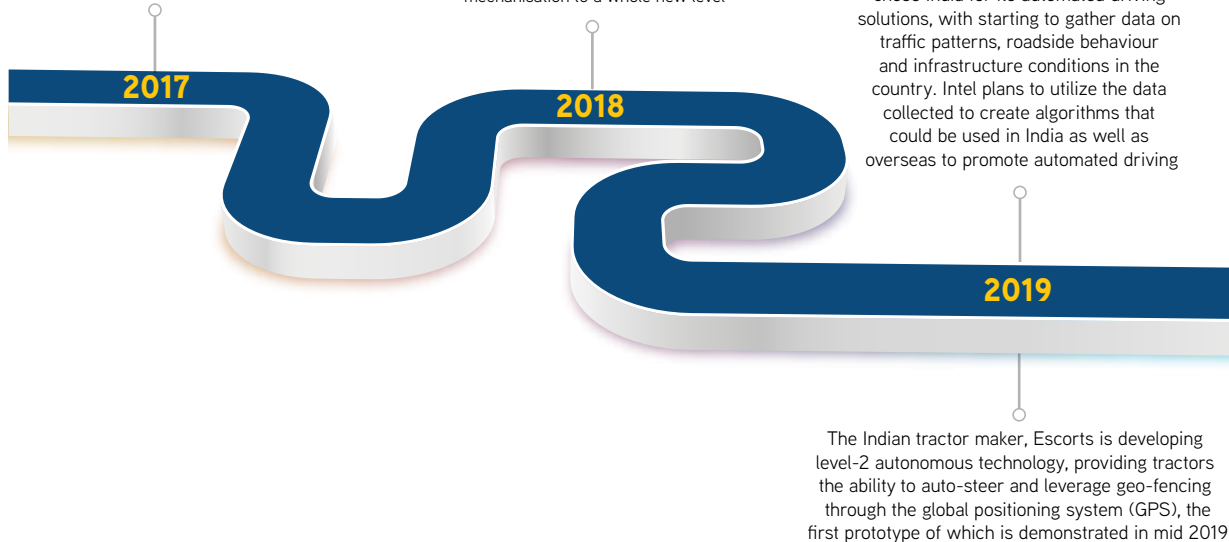


## Trials towards autonomous mobility:

In 2017, Infosys announced that a driverless car was developed at its Mysuru centre in southern India

In April 2018, Mahindra & Mahindra, showcased a semi-autonomous tractor and divulged plans for a fully-autonomous one in the coming years. The company, which is now the largest tractor manufacturer in the world by volumes, is planning to take farm mechanisation to a whole new level

In early 2019, Intel, a US based company, chose India for its automated driving solutions, with starting to gather data on traffic patterns, roadside behaviour and infrastructure conditions in the country. Intel plans to utilize the data collected to create algorithms that could be used in India as well as overseas to promote automated driving



Sources: Company websites



# Multi-modal integration improving last mile connectivity

Multi-modal integration comprises seamless connectivity between different modes of transport in order to maximize the impact of mass transport and enable sustainable urban mobility. It enables efficient use of public transport, reduced emissions, reduced energy consumption, lower traffic congestion and high-quality service standards. Coherency between related government policies, transport modes and other allied facilities is a must for such systems. Key segments in such a system include information (service availability, timings, fares and locations), service and payment integration.

Several cities in India have started implementing development plans to strengthen multi-modal integration. Delhi Metro has taken a step in this direction by planning a multi-modal integration system around 61 stations. Under this initiative, dedicated space is allotted for public transport near metro stations. NOIDA Metro is planning to improve last-mile connectivity using feeder bus systems and three-wheeler electric vehicles.

Mumbai Metro also plans to execute a multi-modal integration plan along 12 metro corridors in the city. This includes provision for buses, bicycles and other modes of transport at an estimated cost of INR35 billion (USD494 million).<sup>14</sup> The project includes widening of footpaths, bicycle tracks, parking zones, traffic signal improvement, street lighting, CCTV, path-finding maps, feeder services and street furniture.



<sup>14</sup> Media article: Indian Express 2019-07-09











Association of Infrastructure Industry (India) is a fledgling national body for stakeholders of the infrastructure industry and aims to represent the concerns, achievements, point-of-view of the industry across all platforms.

As a Trust, Association of Infrastructure Industry (India) seeks to act as nodal and premier body that not only brings together various stakeholders, but also aims to provide quality inputs to both governments as well as industry thereby facilitating inclusive infrastructure growth of the country. It aspires to create platforms that generate concrete executable intelligence as well as conducting research furthering inclusive infrastructure growth in the country.

Association of Infrastructure Industry (India) believes that the infrastructure transformation of India can be achieved only through inclusive approach of Government, Private Corporations and Citizens of the country and thereby wants to become the voice for all the stakeholders of the industry.

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# NOTES

A series of horizontal dashed lines for taking notes.

*Sectoral report by:*



*Unveiled at*



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