

# Industry and Infrastructure

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**Sloth makes all things difficult, but industry, all things easy.**

— Benjamin Franklin

**The king shall promote trade and commerce by setting up trade routes by land and by water and market town/ports.**

— The Arthashastra

*The story of economic growth is half-documented without narrating the story of industry-infrastructure nexus. India, being home to more than 133 crore people, needs to build a robust industry with a buoyant and resilient infrastructure. The industrial growth rate in terms of Index of Industrial Production (IIP) during 2018-19 stood at 3.6 per cent as compared to 4.4 per cent growth rate in 2017-18. The moderation in 2018-19 has been mainly due to subdued manufacturing activities in Q3 and Q4 due to slower credit flow to medium and small industries, reduced lending by NBFCs owing to liquidity crunch, tapering of domestic demand for key sectors such as automotive sector, pharmaceuticals, and machinery and equipment, volatility in international crude oil prices etc. Meanwhile, the eight core infrastructure supportive industries have achieved the overall growth rate of 4.3 per cent during 2018-19 similar to the increase achieved in 2017-18. The Government has initiated a number of measures in crucial sectors to accelerate higher manufacturing growth such as Start-up India, Ease of doing Business, Make in India, Foreign Direct Investment Policy reforms. India has considerably improved its ranking to 77<sup>th</sup> position in 2018 among 190 countries assessed by the World Bank Doing Business Report, 2019 in which India has leapt 23 ranks over its rank of 100 in 2017.*

*A robust and resilient Infrastructure is fundamental and essential for budding industries. While India has invested in its infrastructure over the years, the challenge is to mobilize adequate investment in infrastructure sector which runs into several trillions of dollars. The investment gaps in the infrastructure would have to be addressed through various innovative approaches with the collaboration of both public and private sector.*

## INDIAN INDUSTRY: AN OVERVIEW

8.1 Industry plays a decisive role in determining the overall growth of an economy. The industrial sector performance during 2018-19 has improved as compared to 2017-18. As per the provisional estimates

of the Annual National Income 2018-19 released by Central Statistics Office (CSO), the growth of industry real Gross Value Added (GVA) was higher at 6.9 per cent in 2018-19 as compared to 5.9 per cent in 2017-18 (Table 1). Construction and manufacturing

sectors have experienced 8.7 per cent and 6.9 per cent growth rate respectively during 2018-19. The mining and quarrying sector has experienced sluggish growth in 2018-19 as compared to 2017-18.

### Index of Industrial Production (IIP)

8.2 The IIP is a measure of industrial performance which sheds some light on where we stand in terms of industrial growth.

The IIP assigns a weight of 77.63 per cent to manufacturing sector, 14.37 per cent to mining sector and 7.99 per cent to electricity sector. The industrial growth rate in terms of IIP was 3.6 per cent in 2018-19 as compared to 4.4 per cent in 2017-18. The Mining, Manufacturing and Electricity sectors registered positive growth rates of 2.9 per cent, 3.6 per cent and 5.2 per cent respectively in 2018-19. (Table 2).

**Table 1: Gross Value Added in Industry Sector**

Sectors	Growth rate of GVA at constant prices (in per cent)			Share of GVA at current prices (in per cent)
	2016-17	2017-18	2018-19 (P)^	2018-19 (P)^
Mining & Quarrying	9.5	5.1	1.3	2.4
Manufacturing	7.9	5.9	6.9	16.4
Electricity, Gas, Water Supply & Other Utility Services	10.0	8.6	7.0	2.8
Construction	6.1	5.6	8.7	8.0
Industry	7.7	5.9	6.9	29.6

Source: Central Statistics Office (CSO). ^ P: Provisional estimates

**Table 2: Growth Rates of IIP (Base: 2011-12) (in Per cent)**

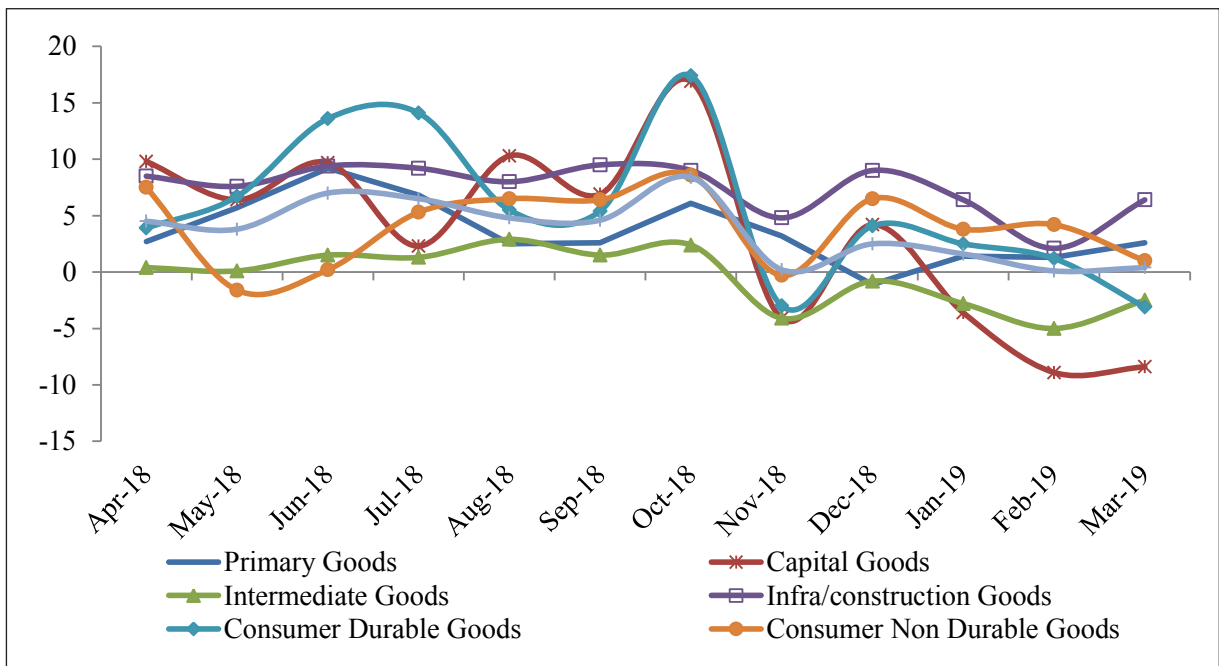
Sector/ UBC	Weight	2016-17	2017-18	2018-19 (P)
Sectoral classification				
Mining	14.3725	5.3	2.3	2.9
Manufacturing	77.6332	4.4	4.6	3.6
Electricity	7.9943	5.8	5.4	5.2
General Index	100.00	4.6	4.4	3.6
Use Based Classification (UBC)				
Primary goods	34.0486	4.9	3.7	3.5
Capital goods	8.2230	3.2	4.0	2.8
Intermediate goods	17.2215	3.3	2.3	-0.5
Infrastructure/ construction goods	12.3384	3.9	5.6	7.5
Consumer durables	12.8393	2.9	0.8	5.5
Consumer non-durables	15.3292	7.9	10.6	3.9

Source: CSO. P: Provisional

8.3 In terms of use-based classification of IIP, the index of infrastructure/construction goods remained higher at 7.5 per cent in 2018-19 driven by the robust performance of cement and steel sectors (Figure 1). Large scale public spending has boosted the demand for these sectors. Primary goods and consumer non-durables have registered a positive growth rate of 3.5 per cent and 3.9 per cent in 2018-19 respectively. On the other hand, the capital goods sectors registered a

moderate growth of 2.8 per cent in 2018-19 which is indicative of shortfall in investment activities. Overall investment as indicated by the real gross fixed capital formation has increased by 10 per cent in 2018-19. But its share in GDP at current prices is estimated to be only marginally higher at 29.3 per cent during 2018-19. Within consumer goods, consumer durables have shown improved performance with a growth of 5.5 per cent in 2018-19.

**Figure 1: Monthly growth (in per cent) of IIP (Use based classification)**



Source: CSO.

8.4 The Index of eight core industries measures the performance of Coal, Crude Oil, Natural Gas, Petroleum Refinery Products, Fertilizers, Steel, Cement and Electricity. The eight core industries comprise about 40.3 per cent weight in the IIP. The overall Index of eight core industries registered a growth rate of 4.3 per cent in 2018-19 similar to the increase achieved in 2017-18. The production of Coal, Steel, Cement, Electricity, Refinery Products, Natural Gas and

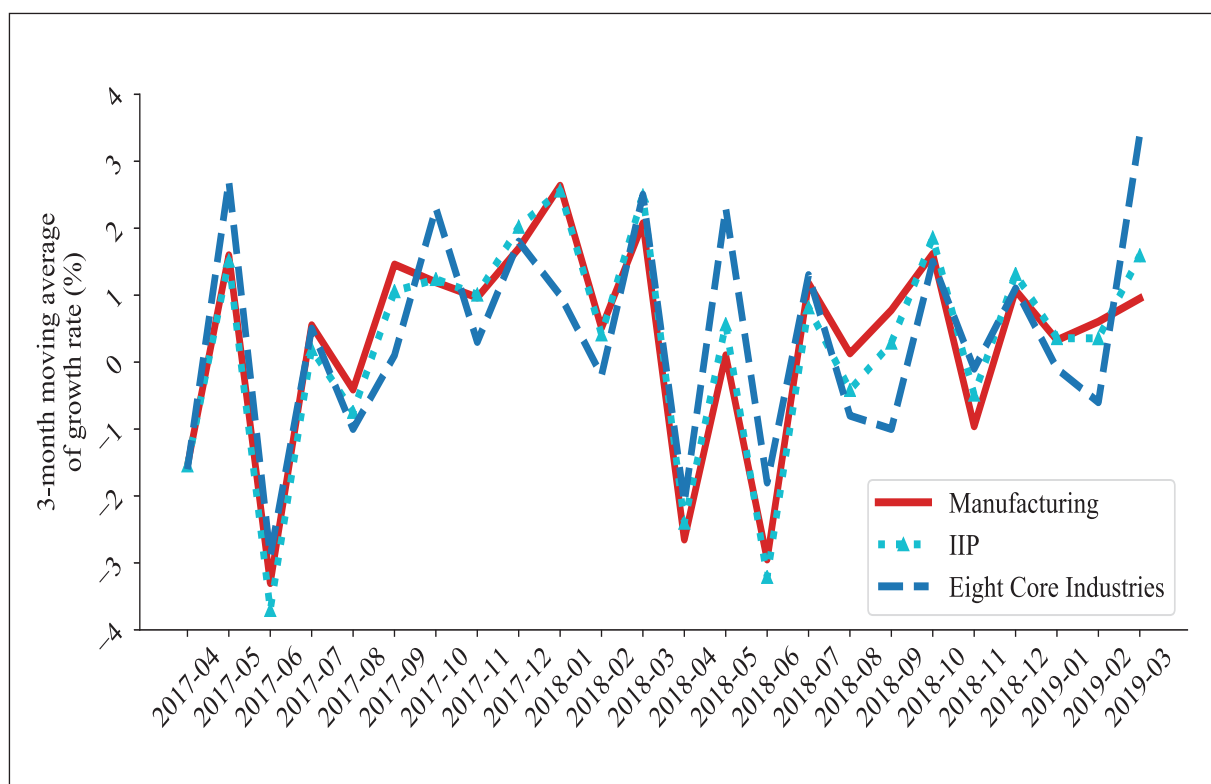
Fertilizers registered positive growth rate in 2018-19 with Cement and Coal registering a higher growth rate of 13.3 per cent and 7.4 per cent respectively (Table 3). The growth rate of 3 months moving average Month-on-Month (M-o-M) of IIP, eight core industries and manufacturing sector during 2017-18 and 2018-19 (in per cent) shows that the three indicators move simultaneously and started improving from February 2019 (Figure 2).

**Table 3: Growth in production of Eight Core Industries (in Per cent)**

Sector	Weight	2016-17	2017-18	2018-19 (P)
Coal	10.3335	3.2	2.6	7.4
Crude Oil	8.9833	-2.5	-0.9	-4.1
Natural Gas	6.8768	-1.0	2.9	0.8
Refinery Products	28.0376	4.9	4.6	3.1
Fertilizers	2.6276	0.2	0.03	0.3
Steel	17.9166	10.7	5.6	4.7
Cement	5.3720	-1.2	6.3	13.3
Electricity	19.8530	5.8	5.3	5.2
Overall Index	100.00	4.8	4.3	4.3

Source: Office of the Economic Adviser, DPIIT; P : Provisional

Note: The industry-wise weights indicated above are individual industry weight derived from IIP and blown up on pro rata basis to a combined weight of Index of Core Industries equal to 100.

**Figure 2: Growth rate of 3 Months Moving Average Month-on-Month (M-o-M) of IIP, Eight Core Industries and Manufacturing sector in 2017-18 and 2018-19 (in Per cent).**

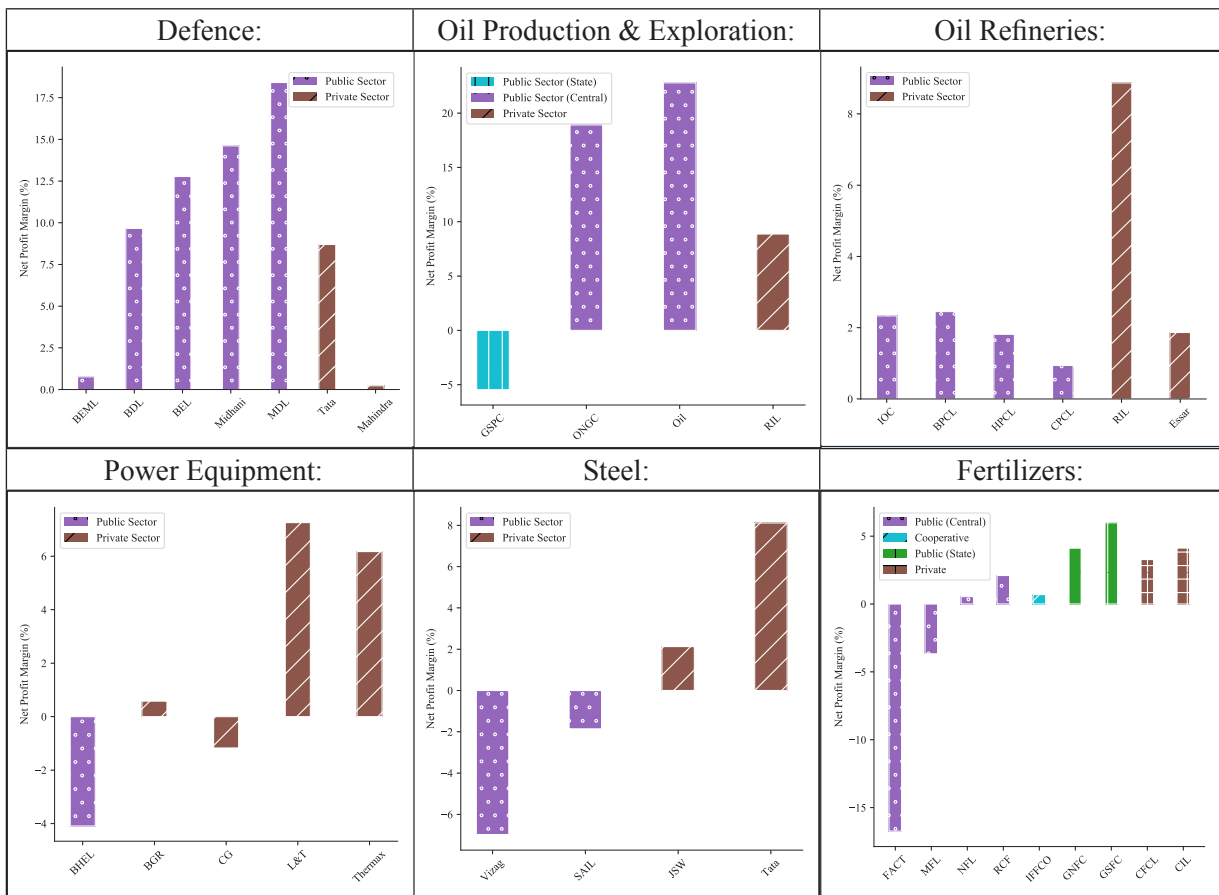
Source: Office of the Economic Adviser, DPIIT & CSO.

### Central Public Sector Enterprises (CPSEs)

8.5 The CPSEs play a significant role in Indian economy. According to Department of Public Enterprises, there are 339 CPSEs as on 31 March, 2018. Out of these 339 CPSEs, 257 are in operation and 82 are non-operational during 2017-18. Out of the operating 257 CPSEs, 184 CPSEs were profit making, 71 loss making and 2 CPSEs at no profit no loss. The profit of profit making CPSEs (184) stood at ₹1,59,635 crore, while the loss of loss-making CPSEs (71) stood at ₹31,261 crore during 2017-18. The overall net profit of the 257 operating CPSEs went up by 2.29

per cent to ₹1,28,374 crore during 2017-18. Further, the CPSEs contribution to the total Central Exchequer decreased by 2.98 per cent in 2017-18 as against the previous year. A comparative analysis of the performance of a few CPSEs vis-a-vis private sector using 5 year average net profit margin (in per cent) in selected sectors show that there is a great scope for improvement for CPSEs in some sectors as the private sector firms have performed relatively better than the public sector firms (Figure 3). The return on assets and return on equity depicts a similar picture of the public and private firms in these selected industries.

**Figure 3: Performance of a few CPSEs vis-a-vis Private sector in terms of 5 year average Net Profit Margin in selected sectors (in per cent).**



Source: CMIE

## Corporate sector Performance

8.6 Growth of sales (YoY) of over 1700 non-governmental non-financial (NGNF) listed manufacturing companies was 21.6 per cent in Q1, 19.3 per cent in Q2 and 13.2 per cent in Q3 during 2018-19. According to RBI, NGNF listed manufacturing companies posted double digit growth rate in nominal sales in Q4 of 2016-17 and continued its recovery path till Q2 of 2018-19 with minor moderations in between. In Q3 of 2018-19,

moderation was observed in nominal sales growth of manufacturing companies due to subdued demand conditions faced by textiles; iron and steel; motor vehicles and other transport equipments. On the positive side, the demand scenario improved for consumer driven sectors such as food products, beverages and pharmaceuticals. The capacity utilization of India's manufacturing sector increased to 75.9 per cent in Q3 of 2018-19 which is higher than Q3 of 2017-18 (Table 4).

**Table 4: Growth of Sales, Net Profits and Capacity Utilisation for the Corporate Sector (in Per cent)**

Item	2016-17				2017-18				2018-19		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Sales	-1.0	3.7	4.9	10.2	8.9	9.5	14.0	13.4	21.6	19.3	13.2
Net Profit	28.8	27.5	57.5	22.2	-33.6	-4.0	-2.4	6.3	59.8	29.4	43.1
Capacity Utilisation	71.7	72.0	71.0	74.6	71.2	71.8	74.1	75.2	73.8	74.8	75.9

Source: RBI.

Note: The sales and net profits of over 1700 listed manufacturing companies and capacity utilisation on a sample of over 800 responding Companies.

## Gross Capital Formation in Industrial Sector

8.7 As per the data on national income, consumption expenditure, saving and capital formation released by CSO on 31 January, 2019, the rate of growth of Gross Capital Formation (GCF) in industry has registered a sharp rise from (-) 0.7 per

cent in 2016-17 to 7.6 per cent in 2017-18, showing upward momentum of investment in industry. The Mining & Quarrying, Manufacturing, Electricity, Gas, Water Supply & Other Utility Services and Construction had registered a growth rate of 7.1 per cent, 8.0 per cent, 6.1 per cent and 8.4 per cent respectively in 2017-18 (Table 5).

**Table 5: Growth rate of GCF by Industry (at 2011-12 constant prices) (in Per cent)**

	2015-16*	2016-17#	2017-18@
Industry	11.1	-0.7	7.6
Mining & Quarrying	-19.6	16.4	7.1
Manufacturing	11.4	1.3	8.0
Electricity, Gas, Water Supply & Other Utility Services	22.4	-12.9	6.1
Construction	2.6	10.1	8.4

Source: CSO

Note:\*= Third Revised Estimates, #=Second Revised Estimates, @=First Revised Estimates

## Credit Flow to the Industrial sector

8.8 According to RBI, the growth in gross bank credit flow to the industrial sector has increased by 6.9 per cent in March, 2019 compared to the increase of 0.7 per cent in March, 2018. Credit flow to industries like chemicals and chemical products, cement and cement products, all engineering industries,

construction, infrastructure, other industries increased in 2018-19 while a sharp decline was noticed in industries like textiles, petroleum, coal products and nuclear fuel, basic metal & metal products in 2018-19. Mining and quarrying, food processing, vehicles, vehicle parts and transport equipment registered lower growth rate in 2018-19 (Table 6).

**Table 6: Growth of Industry-wise deployment of Gross Bank Credit (in Per cent)**

	2017-18*	2018-19**
Industry	0.7	6.9
Mining and Quarrying (including Coal)	19.7	1.1
Food processing	6.8	1.1
Textiles	6.9	-3.0
Petroleum, coal products & nuclear fuel	9.4	-3.1
Wood and Wood Products	3.3	10.2
Chemicals and Chemical Products	-5.5	17.5
Glass and glassware products	6.5	17.0
All engineering	3.8	8.6
Cement & cement products	-3.1	5.9
Basic metal & metal products	-1.2	-10.7
Vehicles, Vehicle Parts and Transport equipment	7.0	1.4
Construction	9.5	10.4
Infrastructure	-1.7	18.5
Other industries	-4.2	6.8

Source: RBI

Note: \* End March 2018 over end March 2017 : \*\* End March 2019 over end March 2018

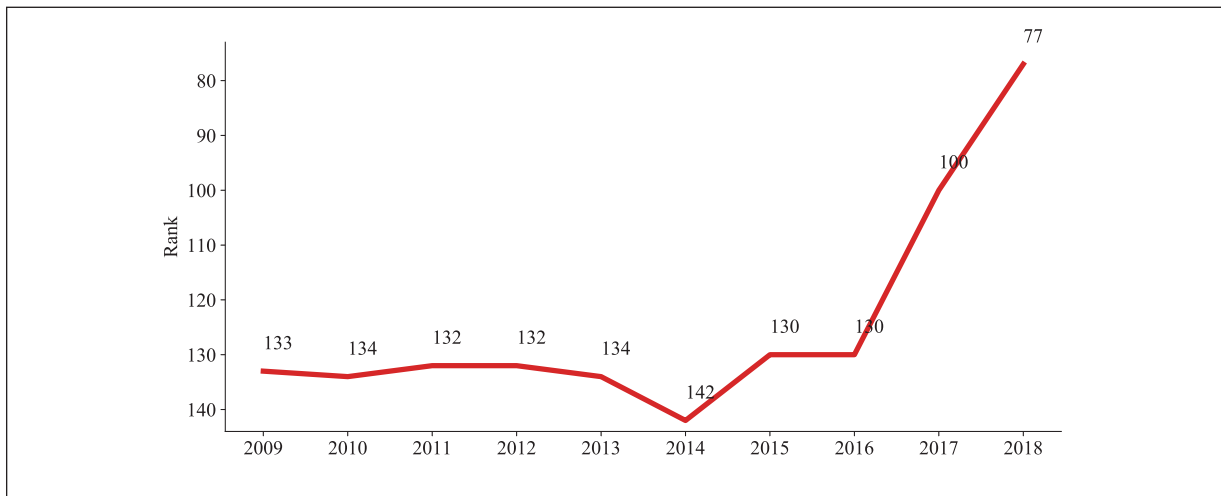
## Key Initiatives taken to boost Industrial Sector in India

8.9 The Government of India has taken several industry specific reform initiatives since 2014 that has significantly improved the overall business environment. To improve ease of doing business, the emphasis has been given to simplification and rationalization

of the existing rules and introduction of information technology to make governance more efficient and effective. As per the World Bank Doing Business (DB) Report released on 31 October 2018, India has considerably improved its ranking to 77<sup>th</sup> position among the 190 countries and has leapt 23 ranks over its previous rank of 100 (Figure 4).



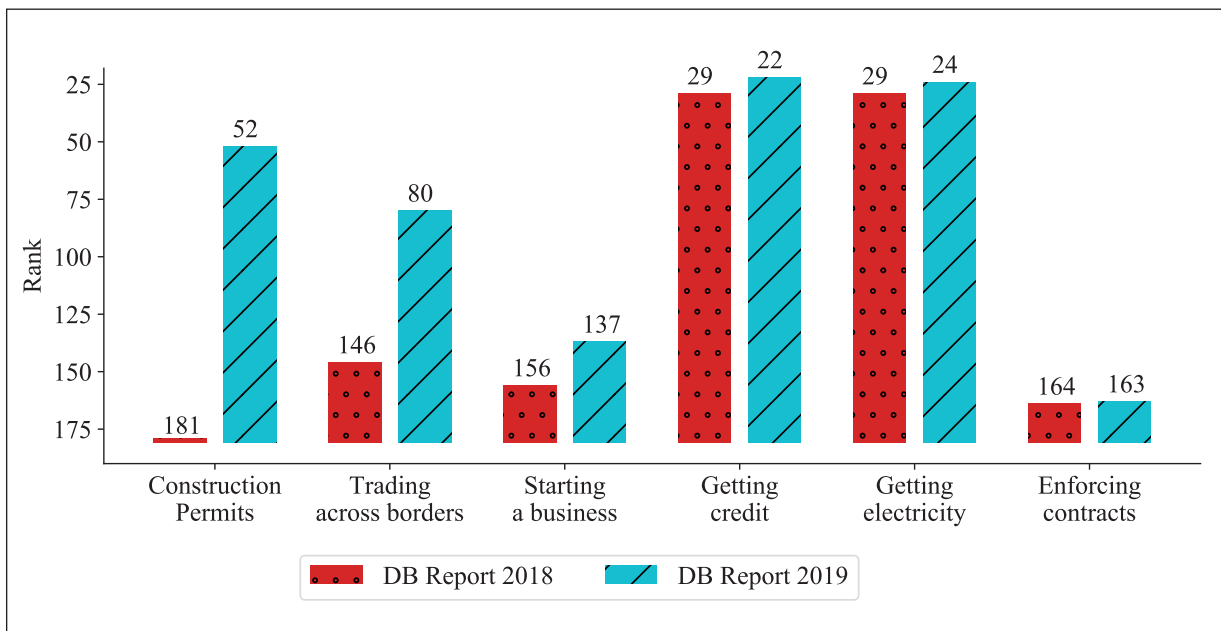
**Figure 4: India’s ranking in World Bank Ease of Doing Business Reports**



8.10 The World Bank Doing Business Report 2019 covers 10 indicators which span the life-cycle of a business. India has improved

its rank in 6 out of 10 indicators and has moved closer to international best practices (Distance to Frontier score) (Figure 5).

**Figure 5: India’s progress in Ease of Doing Business Report Rankings**



### Start-up India

8.11 Start-ups drive economic growth, create employment and foster a culture of innovation. In order to promote innovation and entrepreneurship among enterprising youth, the Hon’ble Prime Minister of India

had announced the “Start-up India, Stand-up India” initiative on August 15, 2015. The initiative aims to create an ecosystem that is conducive for the growth of Start-ups. A plan comprising 19 action points was unveiled on January 16, 2016. As on March 1, 2019, 16,578 new start-ups were recognized



across 499 districts, 47 per cent Start-ups from Tier II and III cities and 46 per cent of Recognized Start-ups have at least one woman director. Steps are taken for easing regulations such as exemption from Income tax on investments raised by Start-ups, 22 regulatory reforms implemented to improve Ease of Doing Business for Start-ups, Self-certification regime for six labour laws and three environmental laws, Start-up India Hub

as ‘One Stop Shop’ for the start-up ecosystem in which 2,37,902 users have availed free Start-up India Learning Program to build business plans, 647 Start-ups supported through dedicated facilitation services, 1,262 start-ups connected to mentors, etc. Maharashtra, followed by Karnataka and Delhi, are among the top ten performers in terms of State-wise distribution of recognized Start-ups in India (Table 7).

**Table 7 : Major State-Wise Distribution of recognized Start-ups in India (in per cent)**

Sl. No.	State / Union Territory	Percentage of Recognized Start-ups
1	Maharashtra	18.91
2	Karnataka	14.67
3	Delhi	13.38
4	Uttar Pradesh	8.23
5	Telangana	5.59
6	Haryana	5.33
7	Tamil Nadu	5.18
8	Gujarat	5.17
9	Kerala	4.00
10	West Bengal	3.03

Source: DPIIT

8.12 As per industry-wise distribution of recognized start-ups, IT Services accounted for around 15 per cent followed by

Healthcare and Life Sciences at around 9 per cent and education at 8 per cent (Table 8):

**Table 8: Major Industry-Wise Distribution of Recognised Start-ups in India (in per cent)**

Sl. No.	Industry	Per centage of Recognized Start-ups
1	IT Services	15.23
2	Healthcare & Life sciences	8.97
3	Education	8.07
4	Professional & Commercial Services	4.15
5	Food & Beverages	4.01
6	Agriculture	3.73
7	Finance, Technology	3.10
8	Renewable Energy	3.09
9	Internet of Things	3.05
10	Technology Hardware	3.04

Source: DPIIT

## Foreign Direct Investment (FDI)

8.13 FDI is a major driver of economic growth as it enhances productivity by bringing capital, skills and technology to the host country. The Government is playing a proactive role in investment promotion through a liberal FDI policy. During 2018-19, total FDI equity inflows were US\$44.36 billion as compared to US\$44.85 billion during 2017-18. Out of FDI equity inflows of US\$44.36 billion during 2018-19, more than 70 per cent have come mainly from Singapore, Mauritius, Netherlands, Japan and United Kingdom.

## SECTOR WISE ISSUES AND PERFORMANCES

### Steel

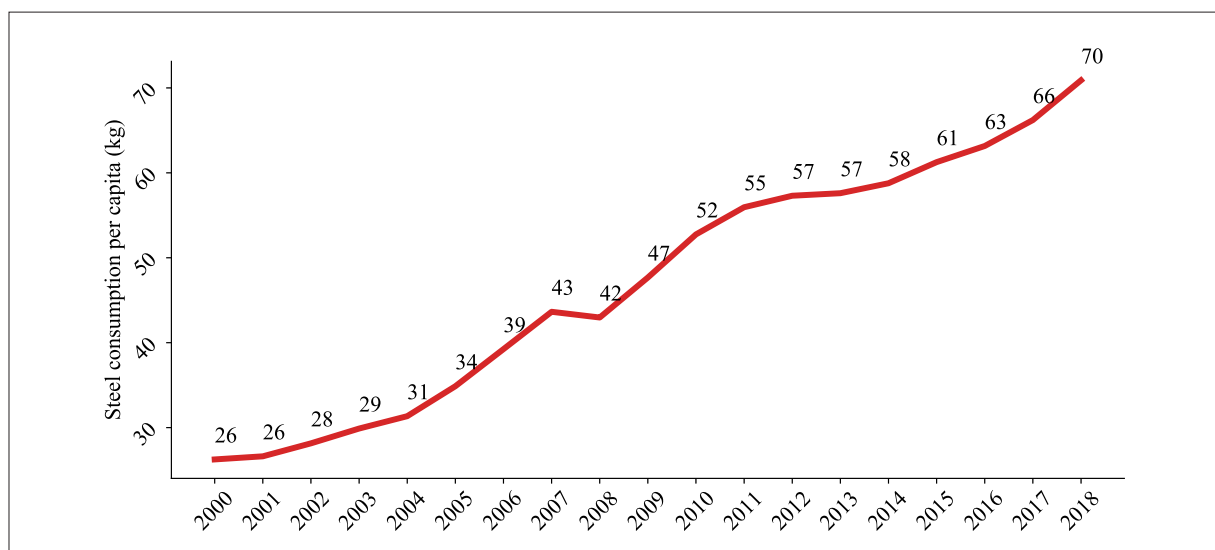
8.14 The steel sector is one of the core industries in the economy that have strong forward and backward linkages in terms of material flows and income generation. As per estimates, the Steel industry directly contributes to about 1.4 to 2 per cent of India's GDP and its weightage in the official

IIP is 7.22 per cent and it accounts for 7.53 per cent of the Wholesale Price Index (WPI). Globally, India is the second largest producer of crude steel in the world surpassing Japan with a global share of 6 per cent. During 2018-19, crude steel's production stood at 106.56 million tonnes, witnessing a growth rate of 3.3 per cent over the corresponding period of 2017-18 at 103.13 million tonnes with utilisation capacity of 77.24 per cent.

8.15 India is the third largest consumer of the finished steel after China and USA, however, its per capita consumption is only 69 kg as against the global average of 214 kg (Figure 6). With huge investments in infrastructure, construction and automobile sector, steel demand and corresponding consumption is growing at an average of 7.4 per cent. This will lead steel production to go up to 255 million tonnes by 2030 and per capita steel consumption to 160 kg.

8.16 In the global scenario, the year 2018-19 witnessed weakening of steel market fundamentals, increase in trade friction,

**Figure 6: Per capita consumption per kg of Indian steel sector from 2012 to 2018 (in Kg)**



Source: Ministry of Steel & World Steel Association

imposition of protectionist measures and excess steel capacity. Pursuant to the imposition of trade restrictive measures by USA, European Union and Canada, India's exports have declined. The total export with highest volume of 9.62 million tonnes during 2017-18 fell to 6.36 million tonnes during 2018-19. On the other hand, imports have gone up particularly from Korea, Japan and ASEAN countries. India remained an importer of finished steel at 7.84 million tonnes during 2018-19 as against 7.48 million tonnes during 2017-18.

8.17 The National Steel Policy, 2017 gives broad policy directives to the industry for encouraging long-term growth for Indian steel on both supply and demand fronts. It envisages focus on domestic production especially of value added steel in order to meet the growing demand. Further, there is a need for investment in capacity addition and infusion of modern technology for production.

8.18 Some of the key challenges faced by the Indian steel Industry are capacity expansion as the demand for steel is bound to rise with economic growth. High grade and value-added steel are used in power, defence and automobile which is currently imported. Difficulties in acquiring mining lease and high dependency on import of coking coal add to cost of steel production. High logistics costs also act as a major constraint.

### **Leather and Footwear**

8.19 Indian leather and footwear industry, a highly employment intensive sector, is the second largest producer of footwear, second largest exporter of leather garments and fifth largest exporter of leather goods. The global demand for footwear is moving towards non leather footwear, while Indian tax policies favour leather footwear production. India

faces high tariffs in partner country markets for leather goods and non-leather footwear. In order to address these challenges, a special package of ₹2600 crore under the scheme Indian Footwear and Accessories Development Programme is being implemented (2017-20). The special package for the leather industry has the potential to generate 3.24 lakh new jobs in three years and assist in formalization of 2 lakh jobs.

### **Gems and Jewellery**

8.20 The gem and jewellery sector contributes to exports and employment generation of around 5 million. During the year 2017-18, the gem and jewellery exports were 13.69 per cent of total merchandise exports in the country. With a view to strengthen the sector, the Government has taken a number of steps, such as establishment of Special Notified Zone, setting up of Common Facility Centres for gems and jewellery sector, creation of separate ITC HS Code for lab grown diamond, reduction of GST rates for cut and polished diamonds and precious stones, exempting Integrated Goods and Service Tax on import of gold by specified agencies and banks, exemption from GST on supply of gold by nominated agencies to exporters and providing financial assistance for participation of international fairs. To strengthen the domestic manufacturing and to help organise the small scale based domestic jewellery industry, a Domestic Council for Gems & Jewellery has been envisaged and launched in January 2019.

### **MSME**

8.21 The Micro, Small and Medium Enterprises (MSME) sector in India plays a crucial role by providing large employment opportunities, industrialization of rural

areas, reducing regional imbalances, etc. Government is committed to supporting this important sector with better credit flow, technology upgradation, ease of doing business and market access. In November 2018, Government made various key announcements for faster growth of this sector and for promoting ease of doing business that included ‘in-principle approval’ for loans up to ₹1 crore within 59 minutes through online portal. Interest subvention of 2 per cent for all GST registered MSMEs on incremental credit up to ₹1 crore is also being provided and will be in operation for a period of two financial years 2018-19 and 2019-20 with an allocation of ₹975 crore. Small Industries Development Bank of India acts as the Nodal Agency for implementation of the Scheme. The term loan or working capital extended by Scheduled Commercial Banks and RBI Registered Systemically Important Non-Banking Finance Companies and Regional Rural Banks will be covered under the Scheme.

8.22 The Government has undertaken a number of schemes/programmes like the Prime Minister’s Employment Generation Programme, Credit Guarantee Trust Fund for Micro and Small Enterprises, Credit Linked Capital Subsidy Scheme for Technology Up-gradation, Scheme of Fund for Regeneration of Traditional Industries, and Micro and Small Enterprises-Cluster Development Programme for the establishment of new enterprises and development of existing ones.

### **Textiles and Apparels**

8.23 Indian textile industry, the second largest manufacturer and exporter in the world, contributes 12.65 per cent to

manufacturing and 2.3 per cent to GDP. India has a share of 5 per cent of the global trade in textiles and apparel. During 2018-19, the share of textile and clothing in India’s total exports stands at a significant 12 per cent. The sector is the biggest employer after agriculture employing 4.5 crore people directly and another 6 crore people in allied sectors. Apparel also plays a critical role in improving social dynamics as mostly women are employed in the sector. Above all, the backward linkages of the sector to the rural economy give huge opportunities to millions of farmers, artisans, handloom and handicraft manufacturers. The sector is perfectly aligned with Government’s key initiatives viz., Make in India, Skill India, Women Empowerment and Rural Youth Employment.

8.24 The textile supply chain is perhaps one of the most diverse in terms of the raw materials used, technologies deployed and products produced. However, the challenges lie in the absence of scale or fragmented and scattered manufacturing. Except for the spinning segment, all other sectors lack scale. While the ginning and spinning sectors are on par with international standards, marginal technological gap exists in weaving, processing and embroidery and larger gaps in knitting, technical textile and garmenting segments. In recent times, several developing countries, enjoying zero/preferential duty access to key markets, have become major competitors of India in the garments sector. Indian exports of apparel continue to face higher average tariffs in external markets as compared with competing nations which enjoy duty free access.

8.25 To address the issue of competitiveness and to boost textiles and apparel exports, Government announced a Special Package for garments and made-ups sectors. The

package offers Rebate of State Levies, labour law reforms, additional incentives under Amended Technology Up-gradation Fund Scheme and relaxation of Section 80JJAA of Income Tax Act. Further, the rates under Merchandise Exports from India Scheme have been enhanced from 2 to 4 per cent for apparel, 5 to 7 per cent for made-ups, handloom and handicrafts from 1 November 2017. Products such as fibre, yarn and fabric in the textile value chain are being strengthened and made competitive through various schemes. Assistance is also provided to exporters under Market Access Initiative Scheme. Further, Government has enhanced interest equalization rate for pre and post shipment credit for the textile sector from 3 to 5 per cent with effect from 02 November, 2018. The benefit which was limited to only manufacturers earlier has been extended to merchant exporters from 2019.

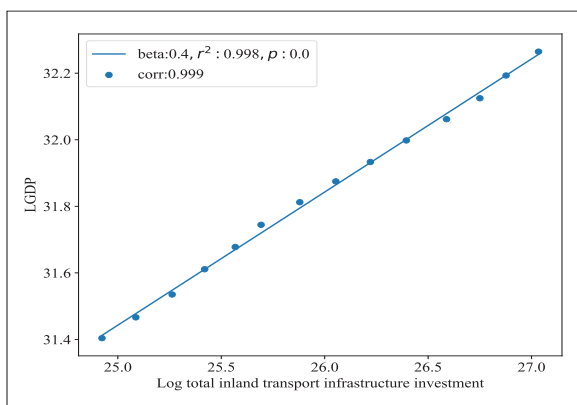
## INFRASTRUCTURE

8.26 In Economic literature, infrastructure is popular by the name “Overhead Capital” or “Social Overhead Capital”. The famous economist A.O Hirschman stated that Social Overhead capital is the “basic services without which primary, secondary

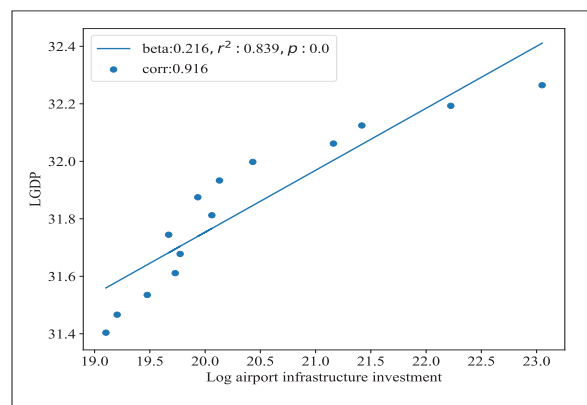
and tertiary productive activities cannot function”. The very success of social and economic transformation of an economy lies in providing inclusive and sustainable infrastructure amenities to the people and the pace of economic growth depends on how competently and judiciously an economy is able to address its infrastructure bottlenecks. SDG goal number 9 aims to “Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all”.

8.27 The role of infrastructure development in economic growth has been well recognized in the literature. The correlation between infrastructure investment and economic growth for India is very high (Figures 7 to 10). The correlation of investments in inland, road, rail and airport infrastructure to GDP are higher than 0.90 indicating that there exists a strong correlation between GDP and investment in infrastructure. This further reiterates the fact that massive investment is needed in infrastructure to achieve targeted economic growth in the country.

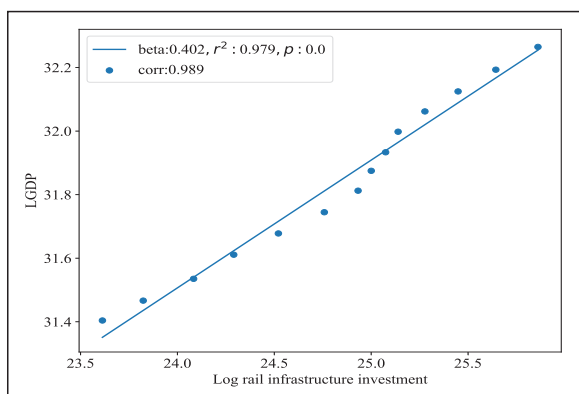
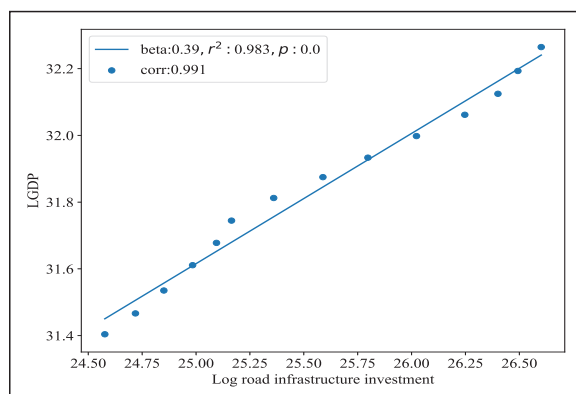
**Figure 7: GDP & Inland transport infrastructure investment**



**Figure 8: GDP & Airport infrastructure investment**





**Figure 9: GDP & rail infrastructure investment****Figure 10: GDP & road transport investment**

Source: Indian Public Finance Statistics, MOSPI & ITF-OECD (Rail Investment Data)

Note: beta is regression coefficient/slope,  $r^2$  is r squared, p is p-value

8.28 India needs to spend 7-8 per cent of its GDP on infrastructure annually, which translates into annual infrastructure investment of US\$200 billion currently. However, India has been able to spend only about US\$100-110 billion annually on infrastructure, leaving a deficit of around US\$90 Billion per annum. Given the fiscal constraints that leave less room for expanding public investment at the scale required, there is an urgent need to accelerate the flow of private capital into infrastructure. With the aim of boosting investment in infrastructure, National Investment and Infrastructure Fund has been created with a capital of approximately ₹400 billion to provide investment opportunities to commercially viable projects. In addition, a Credit Enhancement Fund for infrastructure projects for increasing the credit rating of bonds floated by infrastructure companies is going to be launched in the country. A new Credit Rating System for infrastructure projects, based on Expected Loss approach, has also been launched which seeks to provide additional risk assessment mechanism for informed decision making by long-term investors. Further, measures like infrastructure investment trusts and Real Estate Investment Trusts have been formulated to pool investment in infrastructure.

## Road Sector

8.29 Roads are part of an integrated multi-modal system of transport which provides crucial links to airports, railway stations, ports and other logistical hubs and acts as a catalyst for economic growth by playing a critical role in the supply chain management. It is the dominant mode of transportation in comparison with rail, air traffic and inland water-ways and accounts for about 3.14 per cent of GVA and 69 per cent and 90 per cent of the country wide freight and passenger traffic respectively. India has a road network of about 58.98 lakh kms as on 31 March, 2017 with rural roads constituting 70.65 per cent and National highways constituting 1.94 per cent (Table 9). Ministry of Road Transport and Highways (MORTH) declared 2018-19 as the 'Year of Construction', and has been making constant efforts to expand and upgrade the network of National Highways in the country as a result of which road construction in kms grew @ 30 kms per day in 2018-19 as compared to 12 kms per day in 2014-15 (Table 10).

8.30 The major constraints faced are availability of funds for financing large projects, lengthy processes in acquisition of land and payment of compensation to the

**Table 9 : Road Length Category wise**

Category of Road	Length of Roads (km)	Share of Total Roads (per cent)
National Highways (NHs)	1,14,158	1.94
State Highways	1,75,036	2.97
District Roads	5,86,181	9.94
Rural Roads(including JRY Roads)	41,66,916	70.65
Urban Roads	5,26,483	8.93
Project Roads	3,28,897	5.58
Total	58,97,671	100

Source: MORTH, Government of India

**Table: 10: Road Length Awarded & Constructed (Length in km)**

Information regarding Road Length Awarded & Constructed during the period 2014 -15 to 2018-19					
	2014-15	2015-16	2016-17	2017-18	2018-19
Award of NHs/ Road projects	7,972	10,098	15,948	17055	5470
Construction of NHs/ Roads	4,410	6,061	8,231	9,829	10,824
Road construction per day	12	17	23	27	30

Source: MORTH, Government of India

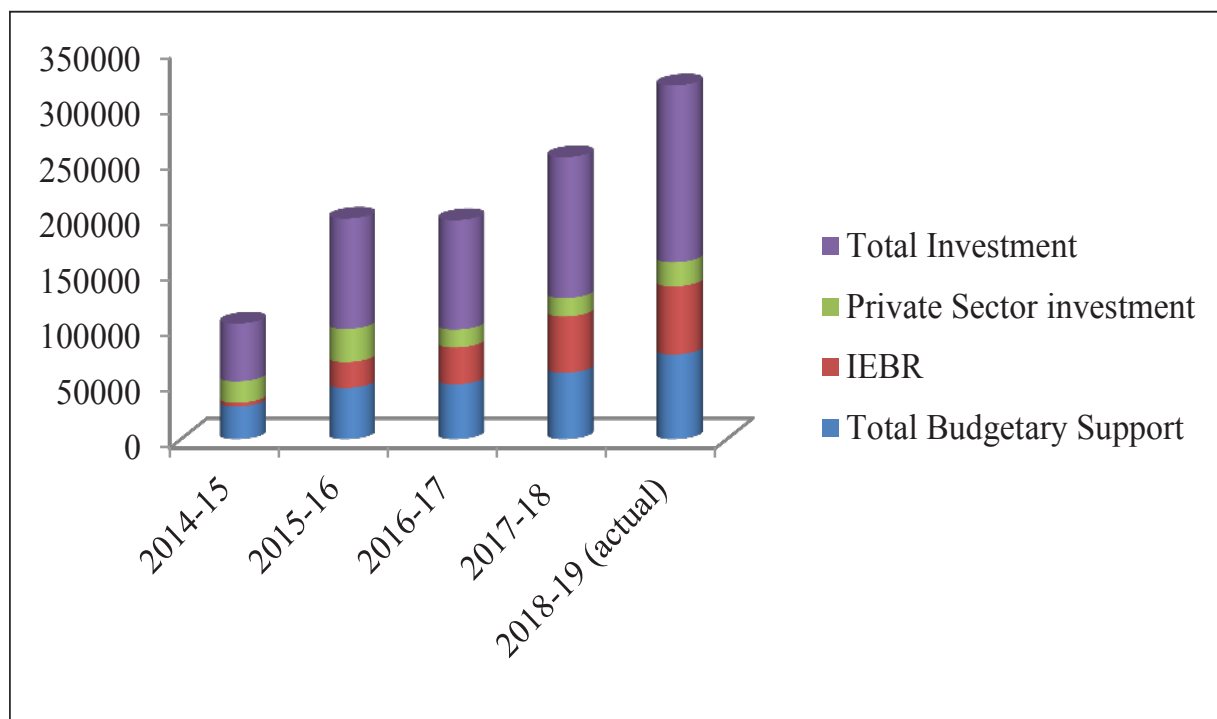
beneficiaries, environmental concerns, time and cost overruns due to delays in project implementation, procedural delays, lesser traffic growth than expected increasing the riskiness of the projects resulting in stalled or languishing projects and shortfall in funds for maintenance.

8.31 The increase in the pace of construction was achieved by introducing a proactive sector policy to respond to the major challenges faced by the sector, including process streamlining indicating approval authorities with enhanced delegation of approval limits, putting in place mechanisms for inter-ministerial coordination, detailing steps to be taken for languishing projects, introducing innovative project financing

for leveraging both private and public funding, streamlining land acquisition processes, issue of explicit guidelines on standards of road construction in hill areas etc.

8.32 Huge investments have been made in the sector with total investment increasing more than three times from ₹51,914 crore in 2014-15 to ₹158,839 crore in 2018-19. In India, the investments in roads have been financed from budgetary support, internal and extra-budgetary resources (IEBR) and private sector investment. Budgetary Support accounted for 48 per cent of the investments in 2018-19 and IEBR accounted for 39 per cent with private investment accounting for 14 per cent (Figure 11).



**Figure 11: Investment in Road Sector (in ₹ crore)**

Source: MORTH

8.33 Private sector investment has been tardy as private investors are interested in short term investments while NHAI and NHIDCL were looking for long-term borrowing arrangements keeping in view long gestation period of road projects. There are also the associated risks from the projected revenue streams not materialising from tolls because of uncertainty of traffic.

8.34 Central Road Fund (CRF) which is a major source of budgetary support for the Highway sector was also amended by the Finance Act, 2018, and replaced by Central Road and Infrastructure Fund (CRIF) wherein the fund now is to be earmarked for various infrastructure sectors such as Transport, Energy, Water and Sanitation, Communication, Social and Commercial infrastructure.

8.35 Major outcomes in Road sector during the period 2014-15 to 2018-19 were construction of Eastern Peripheral Expressway, Delhi-Meerut expressway and Dhola-Sadiya Bridge. Eastern Peripheral Expressway constructed with the objective to decongest the national capital by providing an alternate route to the traffic not destined for Delhi. Delhi-Meerut Expressway is the first national highway in the country with 14 lanes, dedicated cycle tracks and pedestrian paths with several eco-friendly features. Dhola-Sadiya Bridge connects Assam to Arunachal Pradesh and ensures 24X7 connectivity.

### Railways

8.36 The history of rail transport in India dates back to 1832. Being a cost-effective

long distant transport mode, Indian Railways (IR) has witnessed commendable progress. In order to provide safe, secure and comfortable journey to passengers, IR has taken numerous steps such as provision of lifts/escalators, plastic bottle crusher machines, mechanized cleaning and housekeeping etc. at major stations.

8.37 Freight and passenger performance: Revenue Earning Freight loading (excluding loading by Konkan Railways) by Indian Railways during 2017-18 was placed at 1159.55 million tonnes, as against 1106.15 million tonnes during 2016-17, registering an increase of 4.83 per cent, with incremental loading of 53.40 million tonnes over 2016-17. In 2018-19, IR carried 1221.39 million tonnes of revenue earning

freight showing an increase of 61.84 million tonnes over the freight traffic of 2017-18 and translating into an increase of 5.33 per cent. There is an increase of 2.09 per cent the number of passengers carried by IR during 2017-18 as compared to 2016-17 and 0.64 per cent increase in 2018-19 as compared to 2017-18.

8.38 Rail Safety: The category-wise break-up of consequential train accidents shows that the incident of train collisions has come down to zero in the year 2018-19 (Table 11). The incidents of derailment have decreased from 78 in 2016-17 to 46 in the year 2018-19. However, the occurrence of fire in trains has increased to six in the year 2018-19 as compared to one in 2016-17 (Table 11).

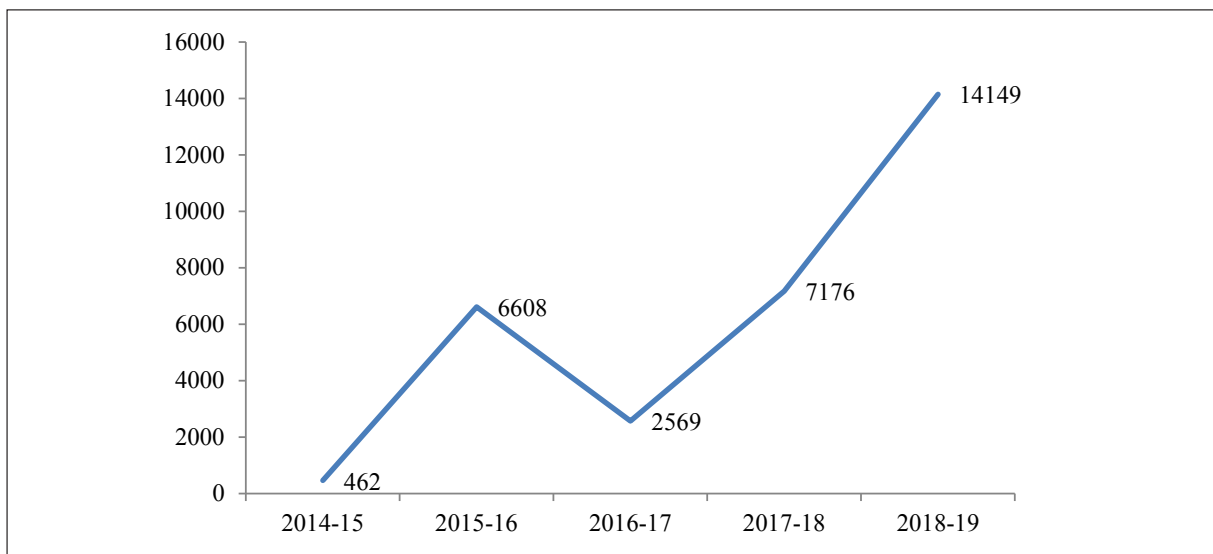
**Table 11: Rate of occurrence of rail accidents**

Type of Accidents	2016-17	2017-18	2018-19
Collisions	5	3	0
Derailments	78	54	46
Manned Level Crossing Accidents	0	3	3
Unmanned Level Crossing Accidents	20	10	3
Fire in Trains	1	3	6
Miscellaneous	0	0	1
Total	104	73	59

Source: Ministry of Railways

8.39 Mission Electrification: IR has initiated a major electrification program for electrifying 100 per cent of its Broad Gauge network. This would reduce the nation's dependence on imported diesel oil. As on 01 April, 2019, Indian Railways has 35,488 Route Kilometre (RKM) of network commissioned on electric traction

which constitutes 51.85 per cent of total network and carries 64.50 per cent of freight and 53.70 per cent of coaching traffic. The pace of electrification accelerated and a total of 38,000 RKM has been identified for electrification by 2021 (Figure 12).

**Figure 12: Trends of Electrification works sanctioned (Route Kilometre)**

Source: CORE Website <https://core.indianrailways.gov.in>

8.40 ‘Swachh Rail, Swachh Bharat’, mission focuses on cleanliness. As per the swachh rail portal, Beas station ranked first in India in the case of cleanliness among ‘A’ category stations and ‘Visakhapatnam’ tops the list among ‘A1’ category stations. IR has also made sincere efforts in the area of energy and water conservation and there is an increasing competition among stations to

obtain “Green Rating”. Similarly IR has also encouraged Green Certification of Workshop and Production Units through Green Industries Certification in collaboration with Confederation of Indian Industry. So far 10 Railway Stations, 34 workshops and 4 production units have been green certified by CII. The progress made in Swachh Rail, Swachh Bharat is given in Table 12.

**Table 12: Progress of Swachh Rail; Swachh Bharat**

Activity	Status as on 31.03.2015	Status as on 31.03.2019
Bio-toilets in passenger coaches	19746 Nos	195917 Nos
Mechanized cleaning contracts at stations	584 stations	890 stations
Plastic bottle crushing machines	Nil	128 stations
Rag picking contracts	877 stations	1280 stations
Dustbins	Provided at some stations only	Provided at all major stations
EMS (ISO: 14001) certification	Nil	8 stations
Funds allocated for Station sanitation (₹)	294 Crore	643 Crore
No. of persons penalized for littering activities	3.7 lakhs	4.4 lakhs

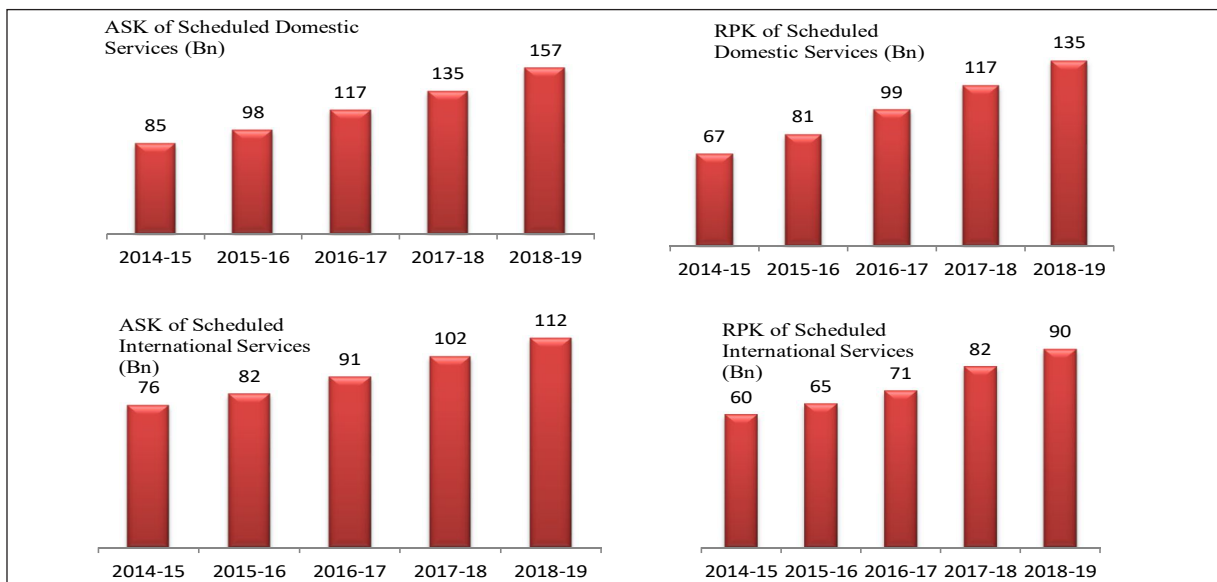
Source: Ministry of Railways

### Civil Aviation

8.41 India’s scheduled domestic air transportation for passengers and goods has grown by 14 per cent and 12 per cent respectively in 2018-19. Domestic passenger traffic in revenue passenger kilometre (RPK) recorded the fastest growth in the world at about 20 per cent for over 50 consecutive months up to December 2018, which has positively impacted India’s economy. Total domestic and international passengers were 204 million in 2018-19. To meet the surging demand and providing air connectivity to remote regions, new Greenfield airports are being rapidly developed. At the end of

2018-19, a total of 107 airports provided scheduled airline operations. Based on the performance of joint ventures in the airport sector, Government has decided to lease out six brownfield airports of Airports Authority of India (AAI) in Public-Private Partnership on Operation, Maintenance and Development model (Guwahati, Lucknow, Jaipur, Ahmedabad, Mangalore and Thiruvananthapuram), which is expected to enhance service quality at these airports besides bringing enhanced revenue to AAI. The demand and supply trends in civil aviation shows that passenger demand is higher than the seat supply (Figure 13).

**Figure 13: Indian Aviation Demand and Supply Trends**



Source: DGCA data, 2019

ASK: Available Seat Kilometres; RPK: Revenue Passenger Kilometres

8.42 UDAN: Under “Ude Desh ka Aam Naagrik-UDAN”, a total of 719 routes have been awarded in three rounds of bidding for regional connectivity, 182 of which are operational (Table 13). The routes are widely spread geographically providing connectivity country-wide and ensuring balanced regional growth, while making air travel convenient and affordable. Currently, connectivity has

already been provided to more than 22 States/UTs. Once all routes are operationalized, more than 1 crore RCS-UDAN seats will be provided annually, and 21 States would have more than 3 operational airports each. Prior to UDAN, only 7 States had more than 3 operational airports each. Overall, the scheme has provided connectivity to 23 unserved airports out of the aim to operationalize 100

by the year 2026-27. UDAN (International) Scheme has been launched recently, under which Guwahati Airport will be connected

to Bangkok and Dhaka shortly. The benefit of international connectivity is open to other cities as well.

**Table 13 : Snapshot of Regional Connectivity Scheme (RCS-UDAN)**

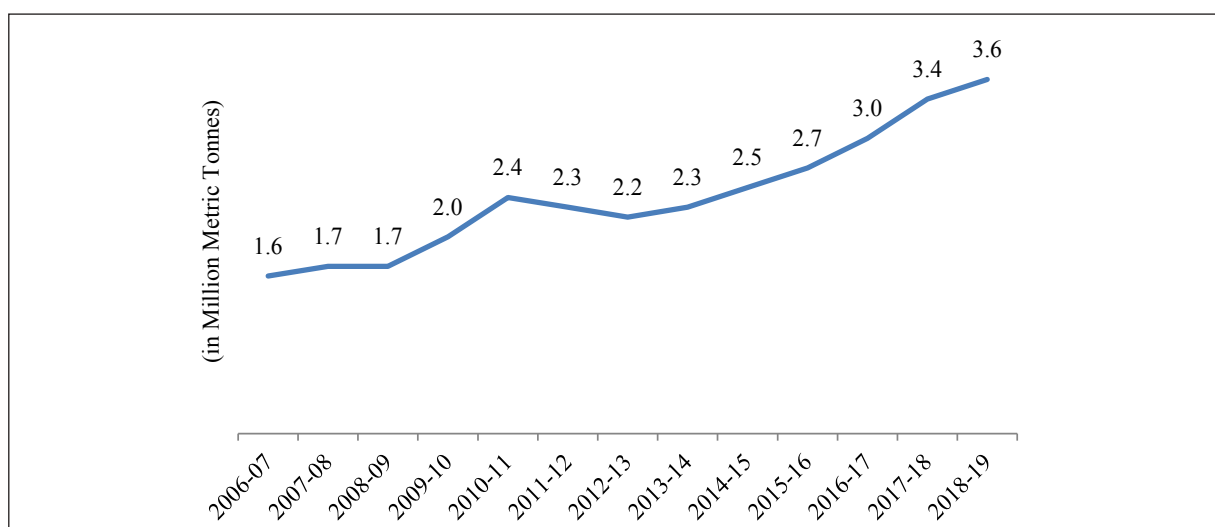
Scheme	RCS Routes awarded	Number of RCS Airports + Heliports	RCS routes operationalized
UDAN-1	128	43	72
UDAN-2	312	30 Airports+31 Heliports	84
UDAN-3	279	42 Airports+10 Waterdromes	26
UDAN (Total)	719	115 Airports+ 31 Heliports + 10 Waterdromes	182

Source : Ministry of Civil Aviation

8.43 Air Cargo: Impressive double-digit domestic air cargo growth of 12.1 per cent in 2018-19 over 2017-18 was achieved and air cargo handled reached 3.6 MMT. General cargo tonnage handled increased by over 10 per cent per year in last four years with courier services increasing by 17 per cent. In conformance with the objectives of the holistic National Civil Aviation Policy, 2016, a number of initiatives and measures were taken up. The first National Air Cargo Policy's outline was released at the Global Aviation Summit in January 2019. It aims

to achieve fundamental re-engineering of the whole-of-the-value-chains for domestic and export-import air freight for reaching the target of handling 10 million tonnes by 2026-27. The objectives are to leverage the Indian air cargo network to provide cargo transportation by air at an affordable cost and connect every village to the national and global supply chains. It also aims to make air cargo and logistics in India among the most efficient, seamless, and cost and time effective in the world over a period of 10 years (Figure 14).

**Figure 14: Indian Air Cargo growth**

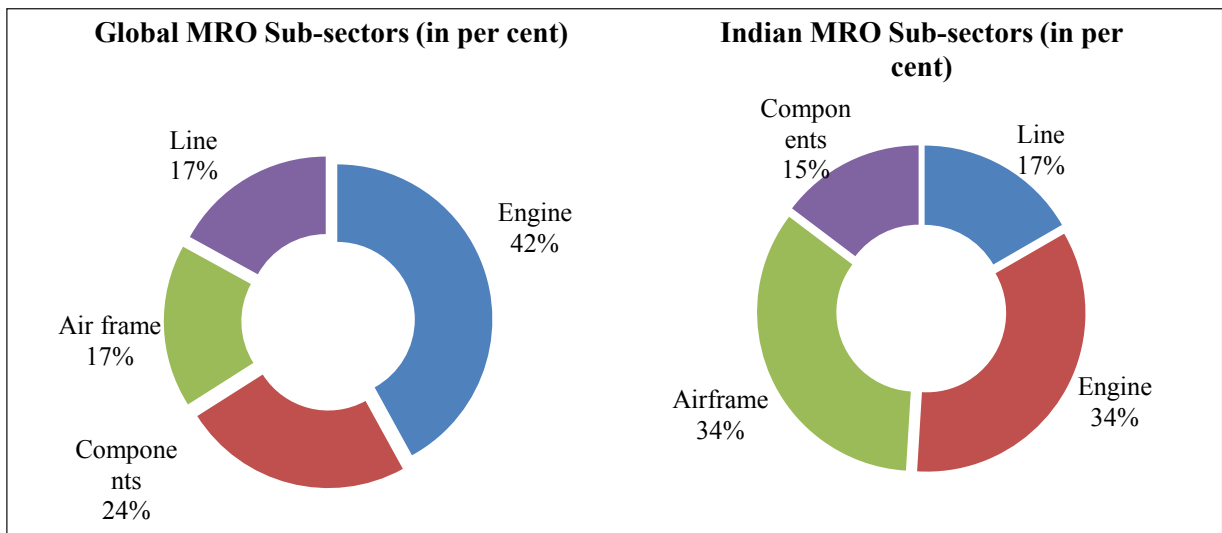


Source : Ministry of Civil Aviation

8.44 MRO: High airport tariffs, royalty and other charges, shortages of certain skilled manpower in civil aviation sector and recourse to overseas suppliers of Maintenance Repair & Overhaul (MRO) facilities, particularly for periodic engine, landing gears, propellers and airframes, besides the intensive and multiple checks at the end of lease tenor of aircraft, have contributed to engendering cut-throat

competition amongst domestic airlines. Currently annual import of MRO services by airlines in India is about ₹9,700 crore. With airlines' fleet growing annually by 100, the size of domestic and imported Indian airline MRO is set to grow annually to ₹21,600 crore in the next five years and to ₹36,000 crore once the fleet size reaches 2,000 aircraft (Figure 15).

**Figure 15. India MRO as of May 2019**



Source : Ministry of Civil Aviation

8.45 Aviation Turbine Fuel: High and unpredictable change in global crude oil prices during 2018-19 have been compounded by a high domestic tax regime on aviation turbine fuel. These have led to the demand from airline carriers and general aviation to bring the fuel within the ambit of GST with input tax credit in order to create a level playing field for them vis-à-vis international carriers.

**Shipping**

8.46 Shipping plays a pivotal role in India's trade dynamics. As per the Indian Shipping Statistics 2018, "India had a fleet strength of 1400 vessels with gross registered tonnage (GRT) of 12.68 million as compared to fleet strength of 1371 vessels with 12.35 million GRT at the end of December 2017". As on

January 31, 2019, India had a fleet strength of 1405 ships with dead weight tonnage (DWT) of 19.22 million (12.74 million GT) including Indian controlled tonnage, with Shipping Corporation of India (SCI) having the largest share of around 30.52 per cent. Of this, around 458 ships of 17.58 million DWT (11.26 million GT) cater to India's overseas trade and the rest to coastal trade.

8.47 Ports Sector: Port sector development is very crucial for the development of any economy. Ports handle around 90 per cent of EXIM Cargo by volume and 70 per cent by value. In order to meet the ever increasing trade requirements, expansion of Port Capacity has been accorded the highest priority with implementation of well-conceived infrastructure development projects like



sagarmala, project Unnati etc. As per the Port Performance Benchmarking & Performance Index published by Logistics Data Bank for February, 2019, Gateway Terminals India is in the top performing category and International Container Transshipment Terminal, Kochi in the low performing category.

8.48 Towards facilitating Ease of Doing Business, Ministry of Shipping had identified various parameters for reducing dwell time and transaction costs in the major ports. These include elimination of manual forms, accommodation for laboratories to Participating Government Agencies, Direct Port Delivery, Installation of Container Scanners, E-delivery orders, Radio Frequency Identification based Gate-automation System, etc. These initiatives have already been implemented at Jawaharlal Nehru Port Trust and are being taken up in other major ports.

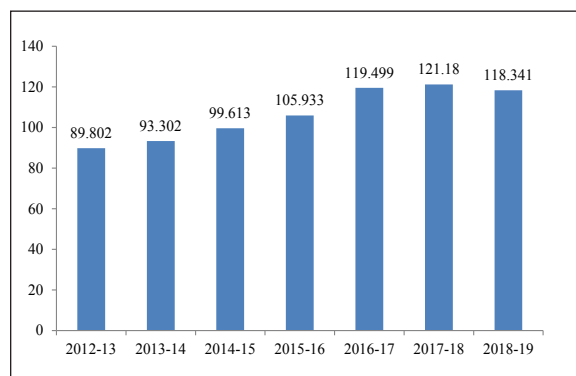
8.49 Inland Water Transport: India's first inland waterway multimodal terminal (MMT) at Varanasi was inaugurated on 12 November 2018 by Hon'ble Prime Minister and the first container consignment on Ganga which had sailed from Kolkata was received at Varanasi MMT on the same day. The main focus of MMT is to promote inland waterways as it is cheap and environment friendly. To enhance the access and establish alternative connectivity to the North East through Indo-Bangladesh Protocol route, dredging works between Ashuganj and Zakiganj and Sirajganj and Daikhawa in Bangladesh through 80:20 sharing (80 per cent by India and 20 per cent by Bangladesh) have been awarded. In October 2018, a Standard Operating Procedure of MoU on Passenger and Cruise service on the Coastal and Protocol routes between India and Bangladesh has been signed to enhance bilateral movement of passengers/tourists. The cargo traffic on National Waterways was 55 million tonnes in 2017-18 and has increased by 31 per cent in 2018-19.

## Telecom Sector

8.50 Telecommunication has been recognized world-over as a powerful tool of development and poverty reduction through empowerment of masses. Growth in the telecom sector in India remains strong over the last few years on the back of strong consumer demand and supportive policies of the Government.

8.51 From a low of 93.30 crore in 2013-2014, total telephone connections in India touched 118.34 crore in 2018-19, registering a growth of 26.84 per cent (Figure 16). As on March 2019, the total subscription stood at 118.34 crore out of which 51.42 crore connections were in the rural areas and 66.91 crore in the urban areas. The wireless telephony now constitutes 98.17 per cent of all subscriptions whereas share of landline telephones now stands at only 1.83 per cent. The overall tele-density in India stands at 90.10 per cent, the rural tele-density being 57.50 per cent and urban tele-density being 159.66 per cent at the end of March 2019. The private sector dominated overall connections with a share of 88.72 per cent (104.99 crore) at the end of March '19 while the share of public sector was 11.28 per cent (13.35 crore).

**Figure 16: Total telephone connections (in crore)**



Source: Ministry of Telecommunications



**8.52 India's Mobile Economy:** The mobile industry has witnessed exponential growth over the last few years driven by affordable tariffs, wider availability, roll out of Mobile Number Portability (MNP), expanding 3G and 4G coverage, evolving consumption patterns and a conducive policy and regulatory environment. As per a GSMA report, the mobile industry supports about 6.5 per cent of India's GDP. Telecom industry contribution to GDP is expected to reach 8.2 per cent by 2020. In 2018, mobile technologies and services generated 4.6 per cent of GDP globally, a contribution that amounted to US\$3.9 trillion of economic value added. By 2023, mobile's contribution will reach US\$4.8 trillion (4.8 per cent of GDP). The wider mobile ecosystem also supported a total of 32 million jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with almost US\$500 billion raised through general taxation (before regulatory and spectrum fees). Further ahead, 5G technologies are expected to contribute US\$2.2 trillion to the global economy over the next 15 years, with key sectors such as manufacturing, utilities and professional/financial services benefiting the most from the new technology.

#### Policy Initiatives

**8.53 Making India 5G ready by 2020:** The world is at the cusp of a next generation of wireless technology-5G. The 5G has been conceived as a foundation for expanding the potential of the Networked Society. The landscape is expanding to include massive scale of "smart things" to be interconnected. For India, 5G provides an opportunity for industry to reach out to global markets, and consumers to gain with the economies of scale and citizens to reap the benefits

of doorstep governance and availability of services, medical support, benefits transfers, education, entertainment and build a digital payment, knowledge and services economy. The Government has constituted High Level 5G India 2020 Forum to articulate the Vision for 5G in India and submitted its report on "Making India 5G Ready" in August, 2018. Based on the recommendations of the forum, seven committees have been constituted for action on Spectrum Policy, Regulatory Policy, Education and Awareness Promotion Program, Application & Use Case Labs, Development of Application Layer Standards, Major Trials & Technology Demonstration and Participation in International Standards for 5G.

**8.54 13-digit Machine to Machine (M2M) Numbering Plan for M2M communication:** M2M Communications /Internet of Things (IoT) refers to technologies which involve machines or devices communicating among themselves through a network without human intervention. Sensors and communication modules are often embedded within M2M devices, enabling data to be transmitted from one device to another device through wired and wireless communications networks. The transformational impact of M2M/IoT for the common people will be realized through transformation of the way services are designed and how they utilize information to meet the needs of citizens more efficiently and effectively.

**8.55 FDI in telecom sector:** FDI has played a crucial role in shaping the progress of the telecom sector over the years by providing much needed finances for expansion of telecom infrastructure in the country. During 2018-19 FDI equity inflow touched US\$2.67 billion – more than double rise from the level of US\$1.3 billion witnessed in 2015-16. The substantial foreign inflows in the telecom sector is indicative of the faith of global

community in Government policy, reforms and measures taken towards ease of doing business, as well as the bright prospects of the telecom sector in the country.

8.56 Digital Communications Commission: until recently known as the Telecom Commission, was set up by the Government of India vide resolution dated 11 April, 1989 with administrative and financial powers of the Government of India to deal with various aspects of Telecommunications. Vide Resolution dated 22 October, 2018, the ‘Telecom Commission’ has been re-designated as the ‘Digital Communications Commission’ to ensure effective implementation and monitoring of the newly announced ‘National Digital Communications Policy- 2018’.

### **Petroleum & Natural Gas**

8.57 The Government aims to “Reform, Perform and Transform” the energy sector of the country by achieving self-sufficiency. India’s primary energy demand is expected to grow at a CAGR of 4.2<sup>1</sup> per cent during 2017-2040, much faster than any major economy in the world. There is thus a need to augment refining capacity to meet growing demand for petroleum fuels and petrochemicals, which play significant role in sustaining GDP. Crude oil production during 2018-19 was 34.203 Million Metric Tonnes (MMT) which was 4.15 per cent lower as compared to production achieved during 2017-18. Crude oil production during March, 2019 was 2854.32 Thousand Metric Tonnes (TMT) which is 12.99 per cent lower than target and 6.16 per cent lower compared with March, 2018 (Figure 17). Natural gas production during 2018-19 was 32.873 BCM which was 0.69 per cent higher than the production achieved in 2017-18.

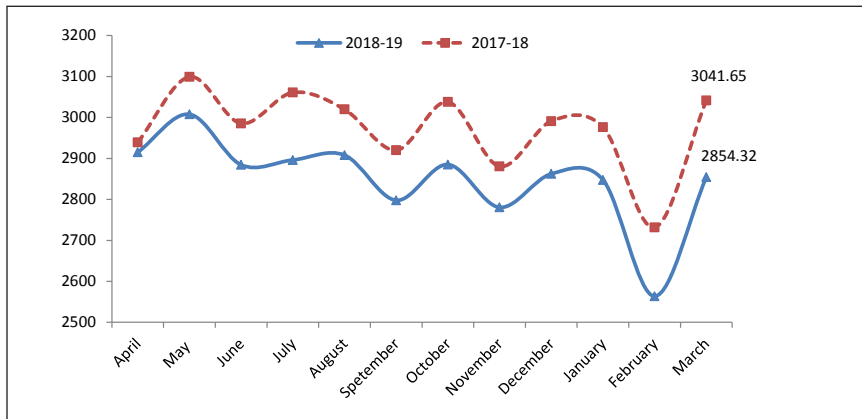
8.58 Refinery production (in terms of crude oil processed), during 2018-19 was 257.20 MMT which was 2.09 per cent higher than the production in year 2017-18. Refinery production during March, 2019 was 22495.43 TMT which is higher at 6.51 per cent compared to March, 2018 and 8.18 per cent higher than the target for the month. There are total 23 refineries in the country, 18 in the public sector, 2 in the joint venture sector and 3 in the private sector. Refinery capacity in India is projected to be 400 approximately MMTPA by the year 2030 through capacity revamps/ expansions at existing refineries and a number of grass-root refineries (Figure 18).

### **Policy Initiatives**

8.59 Ministry of Petroleum & Natural Gas has undertaken a series of reforms and new initiatives. Some of these include Hydrocarbon Exploration Licensing Policy (HELP)/ Open Acreage Licensing Policy (OALP), Discovered Small Field (DSF) Policy, Policy to Promote and Incentivize Enhanced Recovery Methods for Oil and Gas, Policy framework for exploration and exploitation of Unconventional Hydrocarbons under existing Production Sharing Contracts (PSCs), Coal Bed Methane contracts and Nomination fields, Policy for Relaxations, Extensions and Clarifications under PSC regime for early monetization of hydrocarbon discoveries, Policy for early monetization of Coal Bed Methane, Setting up of National Data Repository, Appraisal of Unappraised areas in Sedimentary Basins, Re-assessment of Hydrocarbon Resources, Policy for Extension of PSCs, Policy framework to streamline the working of PSCs in Pre-NELP and NELP Blocks.

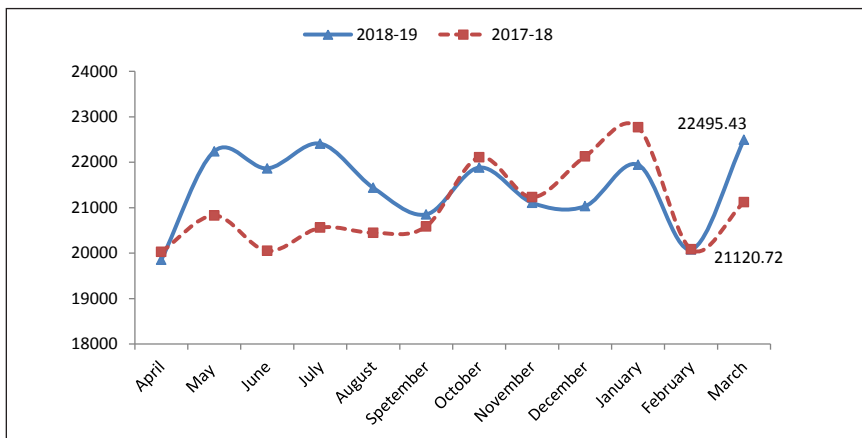
<sup>1</sup> BP Energy Outlook 2019

**Figure 17: Monthly Crude Oil Production (Quantity in TMT)**



Source: Monthly Report, MoP&NG

**Figure 18: Monthly Refinery Production (Quantity in TMT)**



Source: Monthly Report, MoP&NG

8.60 With a view to promote exploration, early monetization, incentivise production, streamline procedure and promote ease of doing business, a series of policy decisions have been taken by the Government on 19 February, 2019 in the hydrocarbon sector, the highlights of which are given below:

- (i) Weightage to Minimum Work Programme (MWP) has been enhanced.
- (ii) Revenue sharing ceiling at highest revenue point to be set at 50 per cent.
- (iii) The timeline for completion of committing Minimum Work

Programme reduced.

- (iv) No production and revenue sharing, only statutory levies except in case of windfall gain.
- (v) Full marketing and pricing freedom at Arm's Length basis based on competitive bidding.
- (vi) Grant of concessional royalty, if production commences within 4 years / 5 years.
- (vii) National Oil Companies (NOCs) have been given freedom to choose field specific implementation model

like Technical Services Model, Joint-Venture Model, Farming-out Model, etc., for enhancing production.

- (viii) New gas discoveries to get pricing and marketing freedom.
- (ix) NOCs have also been mandated to bid-out fields with complete marketing and pricing freedom on revenue sharing model under the supervision of DGH.

8.61 Pradhan Mantri Ujjwala Yojana (PMUY) was launched with the objective of providing LPG connections to five crore women belonging to the Below Poverty Line (BPL) families over a period of three years starting from 2016-17. The target was subsequently increased from 5 crore to 8 crore to be achieved by 2019-20. More than 7.189 crore LPG connections have been released under this scheme as of 31 March, 2019. The original target of issuing 5 crore LPG connections was achieved by 3 August, 2018, eight months in advance of the target.

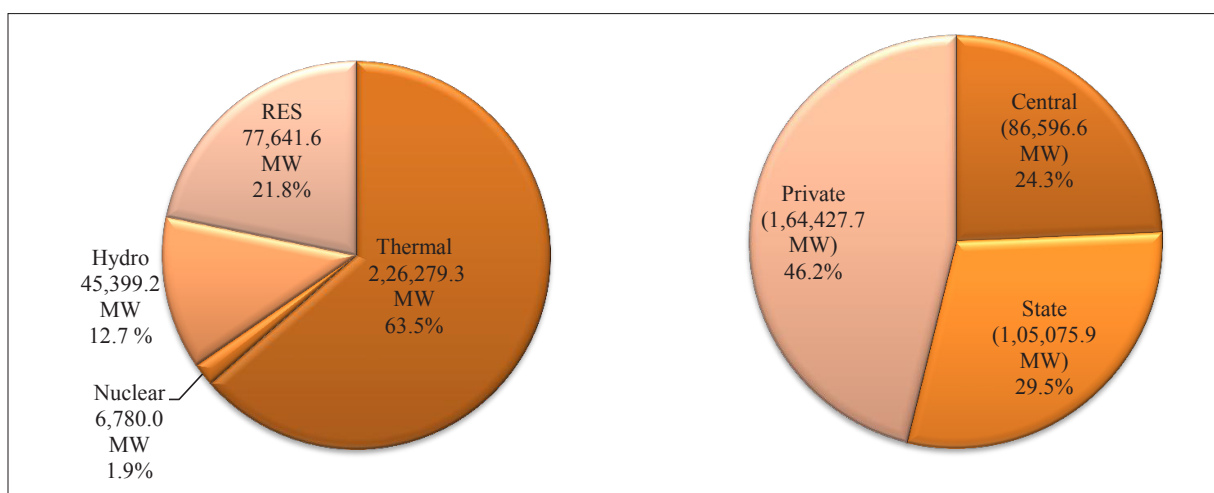
## Power Sector

8.62 Power sector in India has witnessed a paradigm shift over the years due to the

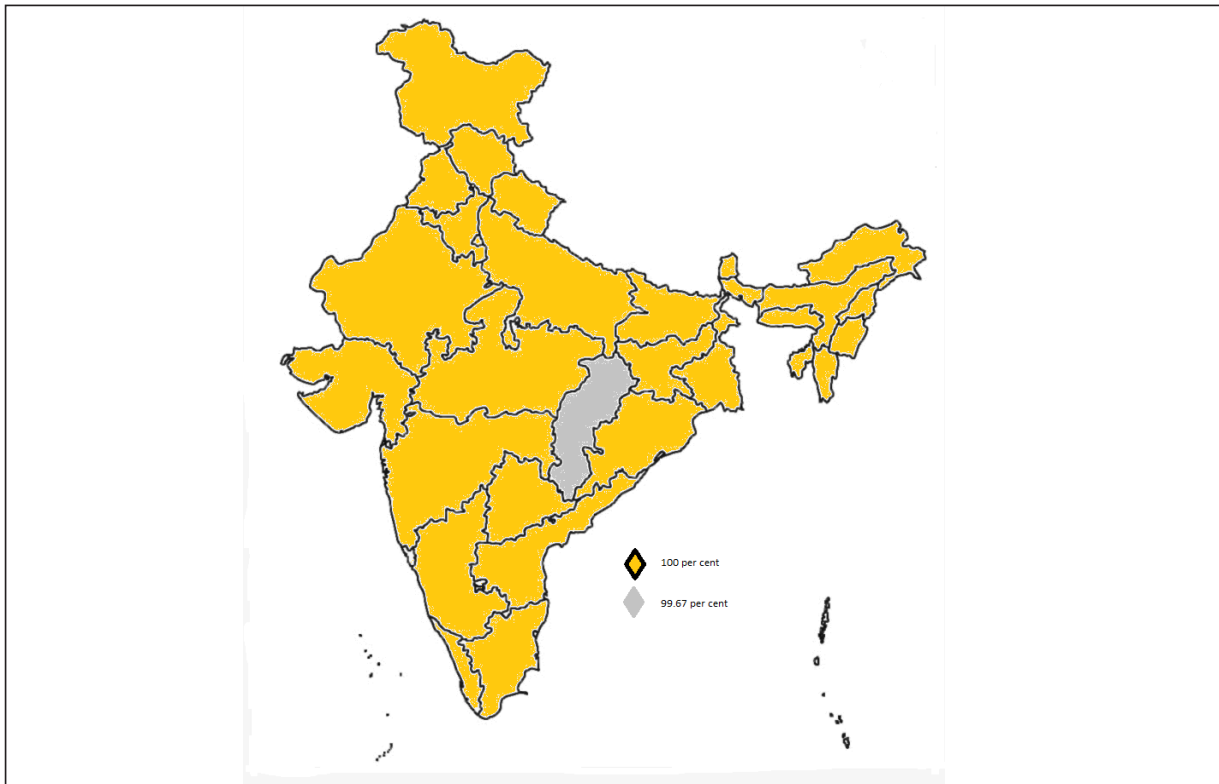
constant efforts of Government to foster investment in the sector. As a result, India improved its ranking in the Energy Transition Index published by World Economic Forum (76<sup>th</sup> position). Fostering Effective Energy Transition, 2019 report of WEF states that “India, Indonesia and Bangladesh have made fast progress towards universal electrification due to strong political commitment, a stable policy regime, use of grid expansion, and decentralized generation sources, and a supportive environment for investment in infrastructure.”

8.63 Along with universal electrification, commendable progress has been made in generation and transmission of electricity. The installed capacity has increased from 3,44,002 MW in 2018 to 3,56,100.19 MW in 2019. Total generation of energy during 2018-19 was 1376 BU (including imports and renewable sources of energy). The capacity of thermal power is 64 per cent followed by renewable energy (Figure 19). Further, more than 46 per cent of power generation comes from private sector. In addition, the peak deficit i.e. the percentage shortfall in peak power supply vis-à-vis peak hour demand has

**Figure 19: Total Power Generation Capacity as on April, 2019 (Fuel-wise & Sector-wise)**



Source: Ministry of Power

**Figure 20: Electrification Status**

Source: <https://saubhagya.gov.in>

declined from around 9 per cent in 2012-13 to 0.8 per cent during 2018-19 (March 2019).

8.64 The Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA) was launched in October, 2017 with the aim of universal household electrification by providing last mile connectivity and electricity connections to all remaining un-electrified households in rural and all poor households in urban areas. As on March 2019, 2.62 crore households have been electrified since the launch of SAUBHAGYA scheme (Figure 20).

### Housing

8.65 Housing is one of the fastest moving sectors in the country. According to Census 2011, 377.1 million Indians comprising 31.14 per cent of the country's population lived in urban areas, which are projected to grow more than 600 million by 2031. Urbanization

in India has become an important and irreversible process, and it is an important determinant of economic growth and poverty reduction. The process of urbanization has been characterized by increase in the number of large cities, although India may be said to be in the midst of transition from a predominantly rural to a quasi-urban society. Ministry of Housing and Urban Affairs (MoHUA) addresses various issues relevant to urban sector through appropriate policy guidelines, subordinate legislation and sectoral programmes.

### Policy Initiatives

8.66 The Real Estate (Regulation and Development) Act, 2016 (RERA): One of the important concerns in the real estate sector is the legal battle being fought by home buyers against the builders for delaying the housing



**Table 14: Four rounds of SCM**

	Round 1	Round 2	Round 3	Round 4	Total
No. of selected cities	20	40	30	10*	100
Period of selection	Jan 2016	May to Sep 2016	Jun 2017	Jan 2018	
Total No. of projects	829	1,959	1,891	472	5,151
Investment (in Rs. crores)	48,064	83,698	57,393	15,863	2,05,018
Avr. SCP size (in Rs. Crores)	2,403	2,092	1,913	1,586	2,050

Source : Ministry of Housing and Urban Affairs

Note: \*Shillong selected as 100<sup>th</sup> Smart City in June 2018

projects. The RERA is one of the significant reforms implemented in the real estate sector. The core objective of this transformative legislation is to ensure regulation and promote real estate sector in an efficient and transparent manner and to protect the interest of home buyers. Rules under RERA has been notified by 30 States/UTs and 28 States/UTs have set up the Regulatory Authorities. North Eastern States (Arunachal Pradesh, Meghalaya, Nagaland and Sikkim) are under process to notify the rules under RERA. Though RERA was not applicable in the state of Jammu & Kashmir, the State has notified its own legislation named as ‘The Jammu and Kashmir Real Estate (Regulation and Development) Act, 2018’ on 16 December, 2018.

8.67 Pradhan Mantri Awas Yojana (Urban): PMAY was launched on 25 June 2015 with the objective of providing housing facilities to all the eligible families/beneficiaries by 2022. So far 4,427 cities/towns have been included under PMAY (U). The duration of the Mission is seven years (2015-16 to 2021-22) and has four components: “In-situ” Slum Redevelopment, Credit Linked Subsidy Scheme, Affordable Housing in Partnership with public or private sector and Beneficiary-led individual house construction/ enhancements.

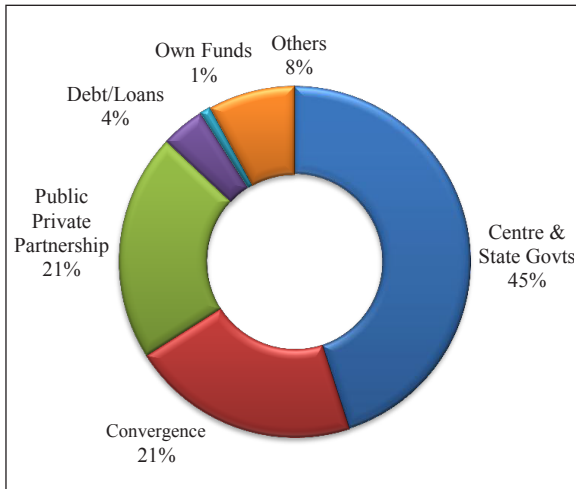
### Smart Cities Mission

8.68 Smart Cities Mission (SCM) was launched in June 2015 for a 5-year period with the objective of promoting cities that provide core infrastructure and give a decent quality life to its citizens (Table 14). The strategic components of Smart Cities initiative are area-based development involving city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) and a Pan-city development in which Smart Solutions are applied covering larger parts of the city. The 100 cities under the Mission have proposed to execute 5,151 projects worth ₹2,05,018 crore in 5 years from their respective dates of selection. Financial innovation is in-built in the design of the programme. The distribution of funding from Central and State Government is ₹93,552 crore (45 per cent) and funds from PPP is ₹41,022 crore (21 per cent) (Figure 21).

### Current Implementation Status

8.69 Under the SCM, all 100 cities have incorporated Special Purpose Vehicles (SPVs), City Level Advisory Forums (CLAFs) and appointed Project Management Consultants (PMCs). Significant progress has been made with respect to implementation of projects pertaining to

**Figure 21: Source of funding under the Smart Cities Mission**



Source : Ministry of Housing and Urban Affairs







Integrated Command and Control Centres, Smart Roads, Smart Water, Solar Rooftops, and Vibrant Public Spaces (Table 15).

**Other Smart Cities Mission Initiatives**

8.70 The Mission has launched several new initiatives that will not only ensure integrated development across various aspects of urban development but also catapult the mission

to the next stage of development. The first framework on ‘Ease of Living’ Index for cities was launched in June 2017 with the objective of framing an index to enable a shift to data driven approach in urban planning and management and promote healthy competition among cities. As a part of improving the index, a new edition ‘The Ease of Living (EoL) Index 2019’ was introduced with more focus on outcomes and aims to assess the ease of living of citizens across three pillars such as quality of life, economic ability and sustainability which are further divided into 14 categories across 50 indicators. Another index, Municipal Performance Index (MPI), 2019, seeks to examine the sectoral performance of municipalities across a set of 5 verticals namely Service, Finance, Planning, Technology and Governance. The EoL 2019 focuses on outcome indicators, accompanied by MPI 2019 which would assess the performance of cities based on enablers. The Ease of Living indicators are strongly linked to Sustainable Development Goals (SDGs) and this exercise will help our Country to track and achieve SDGs.

**Table 15: Progress achieved under Smart Cities Mission**

 <p><b>Smart Command &amp; Control Centres</b></p> <ul style="list-style-type: none"> <li>•Completed- 16 cities (₹ 2, 927 cr)</li> <li>•Work started- 44 Cities (₹ 4, 170 cr)</li> <li>•Tendered- 11 cities (₹1,509 cr)</li> </ul>	 <p><b>Smart water</b></p> <ul style="list-style-type: none"> <li>•Completed- 24 cities (₹ 1,218 cr)</li> <li>•Work started- 54 cities (₹10,119 cr)</li> <li>•Tendered - 36 cities (₹9,614 cr)</li> </ul>
 <p><b>Smart Roads</b></p> <ul style="list-style-type: none"> <li>•Completed- 23 cities (₹ 835 cr)</li> <li>•Work started -58 cities (₹9,511 cr)</li> <li>•Tendered- 36 cities (₹4,119 cr)</li> </ul>	 <p><b>Public Private Partnership</b></p> <ul style="list-style-type: none"> <li>•Completed- 26 cities (₹2,282 cr)</li> <li>•Work started- 45 cities (₹10,552 cr)</li> <li>•Tendered- 36 cities (₹9,614 cr)</li> </ul>
 <p><b>Smart Solar</b></p> <ul style="list-style-type: none"> <li>•Completed- 15 cities (₹ 113 cr)</li> <li>•Work started -37 cities (₹707 cr)</li> <li>•Tendered- 8 cities (₹140 cr)</li> </ul>	 <p><b>Vibrant Public Spaces</b></p> <ul style="list-style-type: none"> <li>•Completed- 21 cities (₹277 cr)</li> <li>•Work started- 34 cities (₹4,688 cr)</li> <li>•Tendered- 20 cities (₹3,293 cr)</li> </ul>

Source : Ministry of Housing and Urban Affairs



8.71 To drive the new urban transformation agenda of the Government through innovation and delivery, there is a growing need to nurture a well-knit ecosystem of urban innovation to encourage innovation in technology, governance, financing, and citizen engagement. It is envisaged that NUIH with necessary physical and digital infrastructure will anchor the innovation efforts and build necessary capacity for urban transformation. NUIH will be the apex national level institution that will drive the MoHUA's whole-of-system innovation through a Hub-and-Spoke network across states and UTs and for delivering the capacity building and governance reforms in urban sector.

### **Infrastructure Financing: Public Private Partnerships (PPPs)**

8.72 Private investment in infrastructure has come mainly in the form of PPPs. More than a third of the infrastructure investment in India in the past decade has come from the private sector. PPPs help in addressing the infrastructure gap as well as improving efficiency in infrastructure service delivery. As per the Private Participation in Infrastructure database of World Bank, India is ranked second among developing countries both by the number of PPP Projects as well as the associated investments. Indian private participation in infrastructure program supports a number of PPP models including management contracts, Build-Operate-Transfer (BOT) contracts, Design-Build-Finance-Operate-Transfer contracts, Rehabilitate - Operate - Transfer, Hybrid Annuity Model, and Toll-Operate-Transfer model. Under the BOT model, there are two variants – BOT (Toll) and BOT (Annuity) depending on who bears the traffic risk. In the case of BOT (Toll), the traffic risk is borne by the PPP concessionaire while in the case of BOT (Annuity), it is borne by the Government (Public Authority).

8.73 One of the challenges facing this sector is to devise a comprehensive resolution/ settlement option for projects which are either stuck-up mid-way or wherein the arbitral disputes/ claims have not been settled. The need is to establish an institutional mechanism to deal with time-bound resolution of disputes in infrastructure sectors. Further, private developers have faced issues of leveraged balance sheets and aggressive bidding making it difficult for them to mobilize resources for completion of projects. Accordingly, Government has adopted the Hybrid Annuity Mode of PPP to encourage private participation in infrastructure projects. Government contributes 40 per cent of the total project cost in the construction period, remaining 60 per cent is paid as biannual annuity after the completion of the project construction. The HAM model is considerably de-risked for the private concessionaires. In order to discourage aggressive bidding under HAM model, there is a provision of Additional Performance Security which will be applicable in case the Bid Project Cost of the Lowest Bidder is lower by more than 10 per cent with respect to the estimated project Cost.

### **WAY FORWARD**

8.74 In a fast moving world to maintain growth momentum, India has to develop its industry and infrastructure. As an emerging economy, the scope for Industry 4.0 and Next generation infrastructure are enormous. To experience the potential of the perfect blend of Industry 4.0 and next generation infrastructure, it is necessary to clear the decks which are obstructing the way forward. Industry 4.0 encompasses automation in industrial sectors whereas next generation infrastructure brings physical infrastructure and technology like internet of things, automation together to maximize

the efficiency of physical infrastructure. For a smooth and fast travelling, India needs adequate and timely investment in quality infrastructure.

8.75 In order to create a ten trillion dollar economy by 2032, India needs a robust and resilient infrastructure. Public investment cannot fund the entire infrastructure investment requirements of the country. Further, private players are usually

eager to bring their capital into developed Indian states as compared to less developed states. Therefore, the real challenge lies in bringing adequate private investment across the country with the collaboration of public sector. Along with physical infrastructure; provision of social infrastructure is also equally important as these two would determine where India will be placed in the world by 2030.

## CHAPTER AT A GLANCE

- The industrial growth in terms of Index of Industrial Production (IIP) registered 3.6 per cent in 2018-19 as compared to 4.4 per cent growth rate in 2017-18. The moderation in IIP growth is mainly due to subdued manufacturing activities in Q3 and Q4 of 2018-19.
- The overall Index of Eight Core Industries registered a growth rate of 4.3 per cent in 2018-19 similar to the increase achieved in 2017-18.
- India has considerably improved its ranking to 77<sup>th</sup> position in 2018 among 190 countries assessed by the World Bank Doing Business (DB) Report, 2019 in which India has leapt 23 ranks over its rank of 100 in 2017.
- Building sustainable and resilient infrastructure has been given due importance with the formulation of sector specific programmes such as SAUBHAGYA scheme, PMAY etc.
- Road construction in kms grew @ 30 kms per day in 2018-19 as compared to 12 kms per day in 2014-15.
- Rail freight and passenger traffic grew by 5.33 per cent and 0.64 per cent respectively in 2018-19 as compared to 2017-18.
- Total telephone connections in India touched 118.34 crore in 2018-19.
- The installed capacity of electricity has increased from 3,44,002 MW in 2018 to 3,56,100 MW in 2019.
- Public Private Partnerships are quintessential for addressing infrastructure gaps in the country.
- There is a need for establishing an institutional mechanism to deal with time-bound resolution of disputes in infrastructure sectors.