INFRASTRUCTURE
Table of Content

- Executive Summary.............................3
- Advantage India.................................4
- Market Overview and Trends...............6
- Strategies adopted.............................13
- Growth Drivers and Opportunities.........15
- Industry Organisations.......................26
- Useful Information.............................28
EXECUTIVE SUMMARY

| High budgetary allocation for infrastructure | In the Union Budget 2019-20, the Government of India has given a massive push to the infrastructure sector by allocating Rs 4.56 lakh crore (US$ 63.20 billion) for the sector. |
| Increasing private sector involvement | Private sector is emerging as a key player across various infrastructure segments, ranging from roads and communications to power and airports. |
| Improvement in logistics | The logistics sector in India is growing 10.5 per cent annually and is expected to reach US$ 215 billion in 2020. |
| Rising foreign direct investment (FDI) in the sector | FDI received in Construction Development sector (townships, housing, built up infrastructure and construction development projects) from April 2000 to March 2019 stood at US$ 25.05 billion and in Construction (Infrastructure) activities stood at US$ 14.81 billion. |

**Note:** * prepared by Agility for ranking emerging countries in terms of their logistics performance

**Source:** Media sources, DPIIT, Aranca Research, Equirius Capital, EY
ADVANTAGE INDIA
India is expected to become the third largest construction market globally by 2022.

India has a requirement of investment worth Rs 50 trillion (US$ 777.73 billion) in infrastructure by 2022 to have sustainable development in the country.

Sectors like power transmission, roads & highways and renewable energy will drive the investments in the coming years.

Development of world class infrastructure will lead to 9-10 per cent growth of Indian economy.

Favourable valuation and earnings outlook makes this sector an attractive opportunity.

Only 24 per cent of the National Highway network in India is four-lane, therefore there is immense scope for improvement.

- The Regional Connectivity Scheme (RCS) gives opportunity for development of airports.

Increasing impetus to develop infrastructure in the country is attracting the major global players like China Harbour Engineering and Mizuho Financial Group.

Construction Development sector and Infrastructure activities sector received FDI inflows amounting to US$ 25.05 billion and US$ 14.81 billion, respectively from April 2000 to March 2019.

Infrastructure sector is one of the largest receivers of FDI inflows to India.

With initiatives like ‘Housing for All’ and ‘Smart Cities Mission’ the Government of India is working on reducing bottlenecks and impeding growth in the infrastructure sector. Rs 2.05 lakh crore (US$ 31.81 billion) will be invested in the smart cities mission. All 100 cities have been selected as of June 2018.

100 per cent FDI is permitted under the automatic across various infrastructure sectors.

Note: UDAY – Ujwal Discom Assurance Yojana
Source: Media Sources, DIPP, Aranca Research, PricewaterhouseCoopers
MARKET OVERVIEW AND TRENDS
The eight core infrastructure industries include coal, crude oil, natural gas, refinery products, fertilisers, steel, cement and electricity.

The cumulative growth of the index was 4.3 per cent in 2017-18 and 4.3 per cent year-on-year in 2018-19.

In 2018-19, growth in the index was led by cement (13.3 per cent), coal (7.3 per cent), and electricity (5.1 per cent).

**Source:** Ministry of Commerce and Industry
GROWTH IN INFRASTRUCTURE RELATED ACTIVITIES

- Infrastructure related activities witnessed strong growth during 2017-18.
- National highway construction recorded the highest increase of 20 per cent, in line with government's increased focus on improving logistics.
- Freight traffic handled by Indian Railways increased 3.19 per cent year-on-year during FY20 (up to April 2019), while its gross earnings increased by 3.12 per cent year-on-year during the same time.
- Electricity generation in the country increased by 4.85 per cent during FY20 (up to April 2019).
- Cargo handled by major Indian ports increased by 5.65 per cent during 2019-20 (as of 2019-20).

**Note:** Data is as per latest available information, P – Provisional

**Source:** Economic Survey 2017 Ministry of Railways, Union Budget 2018-19, Indian Ports Association, Central Electricity Authority
Highway construction in India increased at 23 per cent CAGR between FY14-18. In FY18, 9,829 km of highways were constructed with an expenditure of Rs 1.16 trillion (US$ 18.05 billion).

Road building in India has become the second cheapest in Asia.

In Union Budget 2019-20, Rs 83,015.97 crore (US$ 11.51 billion) was allocated for National Highways Authority of India (NHAI) while Rs 19,000 crore (US$ 2.63 billion) was allocated to Pradhan Mantri Gram Sadak Yojana (PMGSY) for development of roads in rural and backward areas of the country.

All villages in India will be connected through a road network by 2019 under Pradhan Mantri Gram Sadak Yojana (PMGSY).

A target of constructing 10,000 km long National Highways during 2018-19 was set up out of which 6,715 km have been constructed, as of December 2018.

Note: FY - Financial Year, F – Forecast, ^ - CAGR upto FY18
Source: Business Monitor International (BMI), Ministry of External Affairs, Union Budget 2019-20
STRONG REVENUE GROWTH FOR INDIAN RAILWAYS

- Revenue growth has been strong over the years; during FY07-18, gross revenues increased at a CAGR of 6.20 per cent to Rs 1.85 trillion (US$ 27.71 billion) in FY18. Revenues from the sector are estimated to reach to US$ 44.5 billion by the end of FY20. Revenue during FY20 (up to April 2019) stood at Rs 14,093.42 crore (US$ 2.02 billion).

- The Indian Railways received allocation under Union Budget 2019-20 at Rs 66.77 billion (US$ 9.25 billion). Out of this allocation, Rs 64.587 billion (US$ 8.95 billion) is capital expenditure.

- The Ministry of Railways is working on a plan to earn Rs 15,000 crore (US$ 1.56 billion) over the next 10-20 years through a rail display network (RDN), enabling real-time information to passengers.

- Indian Railways will require investment of Rs 35.3 trillion (US$ 545.26 billion) by 2032 for capacity addition and modernisation. The capital expenditure in the sector is expected to be increased 92 per cent annually.

- All Indian Railways trains will become electric by 2022.

Note: CAGR – Compound Annual Growth Rate, FY – Indian Financial Year (April–March), P – Provisional, ^ - CAGR upto FY18
Source: Vision 2020, Ministry of Railways, Aranca Research
POWER GENERATION CAPACITY HAS INCREASED AT A HEALTHY PACE

- Installed capacity increased steadily over the years, posting a CAGR of 8.6 per cent in FY07–19 and stood at 356 GW by the end of FY19.
- As of May 2019, installed capacity had reached 356.82 GW.
- Indian energy sector is expected to offer investment opportunities worth US$ 300 billion over the next 10 years.
- As of December 2018, 26 states have achieved 100 per cent electrification under the Saubhagya Scheme.

**Note:** GW - Gigawatt, GWH – Gigawatt Hour CAGR - Compound Annual Growth Rate, ^ - CAGR upto FY18, **From conventional source

**Source:** CEA (Central Electricity Authority), Aranca Research
KEY PRIVATE PLAYERS

**IRB Infrastructure Developers Ltd**
- Major projects: Mumbai–Pune BOT Project, Pune–Nashik BOT Project, Bharuch–Surat BOT Project, Thane–Bhiwandi by-pass 4 Lane Project, Thane Ghodbunder BOT Project, Ahmedabad–Baroda NH-8, 6 laning of Agra - Etawah bypass

**Ashoka Buildcon Limited**
- Major projects: NH6 Dhankuni to Kharagpur, Sambalpur Baragarh, NH4 Belgaum Dharwad, NH-3 Pimpalgaon – Nashik – Gonde Road (JV with L&T), Jaora – Nayagaon Road, Chennai Outer Ring Road, Modhul – Nippani Road, Indore Edalabad Road, Wainganga Bridge, Ahmednagar Aurangabad Road

**HCC**
- Major projects: Bandra–Worli Sea Link, Badarpur Elevated Highway Project, Delhi Faridabad Elevated Expressway, Breakwater construction for new port at Ennore, Chennai, New Railway Line Project from Jiribam - Tupul

**Punj Lloyd**
- Major Projects: Hyderabad-Vijayawada Road Project, Sikkim’s Greenfield Airport, The Medanta (Medicity), Bangalore Metro Rail Project, Upgradation of Belgaum-Maharashtra Border Section of NH-4, Elevated Viaduct, Delhi Metro

**Larsen & Toubro**
- Major Projects: Hyderabad Metro Rail, Construction of a 6-lane bridge over the Ganges river, Mechanise Track Laying for India’s first 626 km Dedicated Freight Corridor, Monorail in Mumbai, Railway electrification works and Rigid Overhead Contact System for the Delhi Metro, Kakrapar nuclear power project and Srinagar Hydel Power Project, Uttaranchal

*Source: Company websites, Aranca Research*
STRATEGIES
ADOPTED
STRATEGIES ADOPTED

- The company selected countries and regions with the maximum congruence to its strengths and the most favourable logistics. The Middle East and China have been identified as prime centres for expansion for manufacturing and projects businesses. L&T seeks to ramp up its presence in these markets through a slew of new projects and business initiatives that will add breadth and depth to the existing association with the industry and infrastructure of the GCC countries and other states in the region. L&T is setting up a Modular Fabrication Yard in Oman that will build equipment for offshore applications and for the hydrocarbon sector.

- Global sourcing policy is another key area that has given a thrust to its international strategy. With a steady rise in material costs, the company has placed sourcing teams in China, Europe and Russia.

- To expand nuclear energy portfolio, efforts to increase scope by offering products beyond conventional island in Nuclear business are under way.

- Considering the National Action Plan on Climate Change targeting 15 per cent of electricity generation from renewables by 2020, BHEL is looking towards expanding its capacity to manufacture photo voltaic modules and cells.

- BHEL’s collaborative initiatives to address the growing demand potential in Railway Transportation including Metro and Suburban Railways include initiative with Indian Railways for setting up a greenfield Mainline Electrical Multiple Unit (MEMU) Coach Factory in Rajasthan.

- GMR Energy Limited (GEL), a subsidiary of GMR Infrastructure Ltd (GIL) and TNB Repair and Maintenance Sdn Bhd (TNB Remaco) have signed an MoU to collaborate and set up an O&M joint venture. As per the three-year MOU, GEL and TNB Remaco will identify business opportunities in the high-potential Indian market and provide operation and maintenance services to the power plants. Through this JV, GEL and TNB REMACO will extend their technical expertise to the several power plants in India. The company is planning to expand its airport vertical and consolidate the energy business along with divesting its highway projects.

- Adani Ports and Special Economic Zone (APSEZ) Ltd aims to complete expansion of Adani International Container Terminal Pvt. Ltd (AICTPL) at Mundra port by 2017 to create a transhipment hub for the Middle East, South Asia and India. Adani Ports has also secured a contract from Tamil Nadu State Electricity Board for shipment of coal, adding muscle to its coastal shipping plan.

Source: Company websites, Media sources, Aranca research
GROWTH DRIVERS
AND OPPORTUNITIES
GROWTH DRIVERS FOR INFRASTRUCTURE IN INDIA

- Government Initiatives
- Public Private Partnerships
- International Investment
- Infrastructure Needs
- Housing Development

Growth Drivers
GOVERNMENT INITIATIVES DRIVING GROWTH IN THE SECTOR

- For 2019-20, the total capital expenditure of Railways is expected to be Rs 1.59 trillion (US$ 22.04 billion).
- As per Union Budget 2018-19, capacity constraints in the railways network will be eliminated through doubling of 18,000 km of tracks, third and fourth lines and conversion of 5,000 km of tracks into broad gauge.
- A new Metro Rail Policy was approved in August 2017.

- Total allocation for infrastructure in Budget of 2019-20 stands at US$ 63.20 billion.

- In 2019-20 Union Budget, government announced Rs 83.02 billion (US$ 11.51 billion) for road transport and highway.
- National Housing Bank assistance by World Bank to support low income housing finance project in Union Budget 2019-20.
- The National Steel Policy 2017 aims at higher spending on infrastructure and construction through government initiatives.

- 2,000 kms of coastal connectivity roads have been identified for construction and development.
- Select airports in Tier 2 cities will be taken up for operation and maintenance in the PPP mode in the coming years.
  - The Government of India will construct 65,000 km of highways by 2022.

- Rs 8,350.00 crore (US$ 1.16 billion) allocated in Union Budget 2019-20 for creation and augmentation of telecom infrastructure in the country.
- In the second phase of Strategic Crude Oil reserves, reserve capacity will be increased to 15.33 MT.
- In the second phase of Solar Park Development an additional capacity of 20,000 MW will be generated.

Source: Union Budget 2019-20, Media sources, Aranca research
In Budget 2017-18, affordable housing was given infrastructure status. “Housing for All” programme, launched in June 2015 aims to build 20 million urban homes and 30 million rural houses by 2022. Between 2011-18, seven major Indian cities have witnessed increased affordability in housing segment.

Homes in India are currently most affordable in nearly two decades with mortgage payment on a Rs 3 million (US$ 46,547) house at 22 per cent of average post-tax income.

In November 2017, the Government of India increased the carpet area for houses falling under the affordable housing scheme, giving a boost to developers having large inventories.

Source: Bloomberg, Economic Times, JLL, Anarock
As of September 2018, Rs 1.90 trillion (US$ 27.07 billion) has been sanctioned for construction of about 12,000 km of road in the northeast region in India.

The Indian Prime Minister has launched three transport link in February 2019, this is a strategically important region abutting the Chinese border in North East.

The Civil Aviation Ministry has launched UDAAN 3.1 in February 2019, the ministry invited bids for airlines to fly over 28 to 30 routes to cover the North East region of India.


With an eye on China, India is working on a slew of road and bridge projects to improve connectivity with Bangladesh, Nepal and Myanmar.

The Sikkim Pakyong Airport will operate from September 24, 2019.

Government announced plans to invest US$ 6.98 billion in Northeast States.

Arunachal Pradesh was brought on the railway map of India with India’s longest rail-cum-road bridge — the 4.94-km long Bogibeel bridge over Brahmaputra.

Government, has also, announced plans to convert all meter gauge tracks in the northeastern states to broad gauge tracks.

Source: Media sources, Aranca research
Logistics and warehousing play an important role in the industrial advancement of the country. They are a fundamental part of business infrastructure and one of the key enablers in the global supply chain.

In 2017, the logistics sector was given infrastructure status in India. Logistics market in India stood at US$ 160 billion in 2017. The sector is expected to grow at a CAGR of 10.5 per cent to reach US$ 215 billion by 2020.

In 2018, India was ranked 44th out of 167 countries in World Bank’s Logistics Performance Index (LPI) 2018. India was also ranked second in the 2018 Agility Emerging Markets Logistics Index.

In 2017, about 22 million people were employed in the logistics sector. It is expected to employ about 40 million people by 2020.

In 2017-18, logistics cost in India was 14 per cent of the GDP. However, it is expected to go down to 10 per cent by 2022.

Investment in the logistics sector is expected to reach US$ 500 billion annually by 2025. Warehousing in India is expected to get investment of Rs 50,000 crore (US$ 7.12 billion) between 2018-20. As of October 2018, Hiranandani Group is planning to enter the logistics and warehousing sector with an investment of Rs 25 billion (US$ 356.23 million) in two projects in the first quarter of 2019.

Source: Economic Survey 2017-18, KPMG Report, News Articles, Aranca Research
AIRPORTS INFRASTRUCTURE INVESTMENT

<table>
<thead>
<tr>
<th>Metro airports</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Airports Authority of India aims to bring around 250 airports under operation across the country by 2020</td>
</tr>
<tr>
<td>The AAI has developed and upgraded over 23 metro airports in the last 5 years</td>
</tr>
<tr>
<td>AAI plans to develop city-side infrastructure at 13 regional airports across India, with help from private players for building of hotels, car parks and other facilities, and thereby boost its non-aeronautical revenues.</td>
</tr>
<tr>
<td>Airport housing will also have height restrictions to avoid interference with flight paths. They will also have to be far from the runway and 45m above a defined level of the airport, which will allow 4-5 floors to be built</td>
</tr>
<tr>
<td>The development of Navi Mumbai airport has been approved. The project will be developed on 74:26 per cent partnership between MIAL and Cidco and airport’s phase 1 with annual handling capacity of 10 million passengers each year rephrasing it from the origin</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Non-metro airports</th>
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<tbody>
<tr>
<td>The AAI plans to spend over Rs 21,000 crore (US$ 3.2 billion) between 2018-22 to build new terminal and expand capacity of existing ones.</td>
</tr>
<tr>
<td>The Government of Andhra Pradesh is to develop greenfield airports in six cities-Nizamabad, Nellore, Kurnool, Ramagundam, Tadepalligudem and Kothagudem under the PPP model.</td>
</tr>
<tr>
<td>Upfront subsidy has been proposed through which non-metro airports would be funded by imposing 2 per cent levy on both domestic and international airfares.</td>
</tr>
<tr>
<td>About 22 airports to get connected under regional connectivity scheme of AAI.</td>
</tr>
<tr>
<td>Over 30 airport development projects are under progress across various regions in Northeast India.</td>
</tr>
<tr>
<td>AAI plans to develop over 20 airports in tier II and III cities in next 5 years</td>
</tr>
<tr>
<td>56 new airports are expected to become functional in the country over the next few years (as of April 2018).</td>
</tr>
</tbody>
</table>

Source: Media sources, Aranca research
### Metro Rail

- At least ten Indian cities are working on metro railway projects and the government initiated a plan in 2012 to study the feasibility of such networks in all cities with a population of more than 2 million.
- Metro rail projects worth over Rs 500 billion ($7.7 billion) are underway in India and this pile will probably grow.
- Around 200 trains cover 70,000 km everyday on 190-km-long Metro corridors in Delhi. The numbers have increase after another 140 km addition of lines in 2016.
- A new Metro Rail Policy was announced in August 2017, which will give boost to private investments by mandating public private partnership (PPP) component in new projects. A new committee to lay down standards for metro rail systems was approved in June 2018.
- As of August 2018, 22 metro rail projects are ongoing or are under construction.

### Monorail

- Monorail has made its beginning in India with Mumbai being the first city in the country to have this transport system in place.
- It took more than six years from the date of inviting Request for Qualification for MMRDA (Mumbai Metropolitan Region Development Authority) to complete a part of the project involving a stretch of 8.26 km.
- Monorail Projects are being developed in Chennai, Pune, Thiruvananthpuram, Bengaluru, Thane, Delhi, Port Blair, Dehradun, Chandigarh etc.

*Source: Media sources, Aranca research*
INCREASING INVESTMENTS IN INDIAN INFRASTRUCTURE

- Cumulative FDI inflows in the Construction Activities sector, which includes infrastructure, reached US$ 14.81 billion between April 2000 – March 2019 and in the Construction Development sector reached US$ 25.05 billion.

- During Jan-Dec 2018, infrastructure sector witnessed PE/VC twelve deals worth US$ 500 million and eight US$ 1 billion plus deals.

**Note:** FDI – Foreign Direct Investment

**Source:** DIPP, Media sources, Venture Intelligence & mint Research, EY
KEY HIGHLIGHTS OF UNION BUDGET 2019-20

- The Government of India has given a massive push to the infrastructure sector by allocating Rs 4.56 lakh crore (US$ 63.20 billion) for the sector.
- Communication sector allocated Rs 38,637.46 crore (US$ 5.36 billion) to development of post and telecommunications departments.
- The Indian Railways received allocation under Union Budget 2019-20 at Rs 66.77 billion (US$ 9.25 billion). Out of this allocation, Rs 64.587 billion (US$ 8.95 billion) is capital expenditure.
- Rs 83,015.97 crore (US$11.51 billion) allocated towards road transport and highway.
- Rs 3,899.9 crore (US$ 540.53 billion) to increase capacity of Green Energy Corridor Project along with wind and solar power projects.
- Allocation of Rs 8,350.00 crore (US$ 1.16 billion) to boost telecom infrastructure.
- Water supply to be provided to all households in 500 cities.
- Allocation of Rs 888.00 crore (US$ 110.88 million) for the upgradation of state government medical colleges (PG seats) at the district hospitals and Rs 1,361.00 crore (US$ 188.63 million) for government medical colleges (UG seats) and government health institutions.

Source: Union Budget 2019-20
### Government Initiatives
- The Government is making an attempt to revive and give boost to Public Private Partnerships.
- For creating an eco-system to make India a global hub for electronics manufacturing a provision of US$115.62 million in 2017-18 in incentive schemes like M-SIPS and EDF.
- Introduction of National Steel Policy in 2017 to aim at higher spending on infrastructure and construction through government initiatives.
- Total allocation for infrastructure in Budget of 2019-20 stands at Rs 4.56 lakh crore (US$ 63.20 billion).
- In November 2017, logistics sector was given the status of infrastructure, to boost investments in the sector.

### International Associations
- In June 2018, the Asian Infrastructure Investment Bank (AIIB) has announced US$ 200 million investment into the National Investment & Infrastructure Fund (NIIF).
- Japanese investment has played significant role in India’s growth story. Japan has pledged investments of around US$35 billion for the period of 2014-19 to boost India’s manufacturing and infrastructure sectors.
- As of October 2018, the US government’s Overseas Private Investment Corporation (OPIC) is planning to invest in India’s infrastructure, port and solar energy sectors.

### Urban Indian Real Estate
- With every sixth urban person globally being an Indian, the real estate and construction sector holds significant opportunity for both global and domestic companies engaged across the value chain.
- India will need to construct 43,000 houses every day until 2022 to achieve the vision of Housing for All by 2022. Hundreds of new cities need to be developed over the next decade.
- This has the potential for catapulting India to 3rd largest construction market globally. The sector is expected to contribute 15 per cent to the Indian economy by 2030.
- The recent policy reforms such as the Real Estate Act, GST, REITs, steps to reduce approval delays etc. are only going to strengthen the real estate and construction sector.

**Source:** Media sources, Ministry of Finance, M-SIPS - Modified Special Incentive Package Scheme, EDF – Electronics Development Funds
KEY INDUSTRY ORGANISATIONS
## INDUSTRY ORGANISATIONS

<table>
<thead>
<tr>
<th>National Highways Authority of India (NHAI)</th>
<th>Airports Authority of India (AAI)</th>
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<tr>
<td><strong>Address:</strong> G 5 and 6, Sector 10, Dwarka</td>
<td><strong>Address:</strong> Rajiv Gandhi Bhawan, Safdarjung Airport,</td>
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<tr>
<td>New Delhi – 110 075</td>
<td>New Delhi - 110003</td>
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<tr>
<td>Phone: 91-11-25074100, 25074200</td>
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<th>Infrastructure Industry And Logistics Federation of India (ILFI)</th>
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<td>Website: <a href="http://www.ilfi.in">www.ilfi.in</a></td>
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USEFUL INFORMATION
GLOSSARY

- FY: Indian Financial Year (April to March) – So FY11 implies April 2010 to March 2011
- FDI: Foreign Direct Investment
- CAGR: Compounded Annual Growth Rate
- GOI: Government of India
- R&D: Research and Development
- JV: Joint Venture
- SEZ: Special Economic Zone
- BOT: Build-Operate-Transfer
- IBEF: Indian Brand Equity Foundation
- NHAI: National Highways Authority of India
- PPP: Public-Private-Partnership
- Wherever applicable, numbers have been rounded off to the nearest whole number
## EXCHANGE RATES

### Exchange Rates (Fiscal Year)

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<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
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<tr>
<td>2005–06</td>
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### Exchange Rates (Calendar Year)

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<td>65.12</td>
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<td>2018</td>
<td>68.38</td>
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*Source: Reserve Bank of India, Average for the year*
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