ENGINEERING AND CAPITAL GOODS
EXECUTIVE SUMMARY … (1/2)

- Increasing industrialisation and economic development drives growth in the capital goods and engineering market.

- Capital goods and engineering turnover expected to reach US$ 125.4 billion by FY17 from US$ 46.18 billion in FY15.

- Growth in the power industry is expected to drive growth in the electrical equipment industry.

- Electrical equipment market size is forecasted to reach US$ 100 billion by FY22 from US$ 21 billion in FY17.

- Engineering research and design segment revenues to increase fourfold by 2020.

- E R&D revenues projected to reach US$ 45 billion in FY20 from US$ 22 billion in FY16.

**Note:** *Information is as per latest available data

**Source:** Dept. of Heavy Industries, India Electrical and Electronics Manufacturer Association, NASSCOM
The construction equipment market in India is expected to reach 131,000 units by 2022. The sector grew 25-30 per cent in August–September 2017.


The number of units sold between January-September 2017 stood at 42,710.

Indian telecom equipment market to increase at a growth rate of 50 per cent by 2020.

Telecom equipment market to reach US$ 30 billion by FY20 from US$ 20 billion in 2016.

Increased production of Central Public Sector Enterprises (CPSEs).

Production by CPSEs under DHI reached Rs 32,641.89 crore (US$ 5.1 billion) in FY16 and is estimated to have reached Rs 36,826.89 crore (US$ 5.71 billion) in FY17.

Note: DHI – Dept. of Heavy Industries
Source: Booz and Company, Volvo India Ltd, Estimates, Ministry of Heavy Industries and Public Enterprise, ACE annual report 2016-17, ICEMA, India Today
ADVANTAGE INDIA
ADVANTAGE INDIA

- Capacity creation in sectors such as infrastructure, power, mining, oil and gas, refinery, steel, automotive and consumer durables driving demand in the engineering sector.
- Rising demand for electrical and construction equipment.
- Comparative advantage vis-à-vis peers in terms of manufacturing costs, market knowledge, technology and creativity.
- Highly organised sector, dominated by large players employing over 4 million skilled and semi-skilled labour.
- Nuclear capacity expansion to provide significant business opportunities to the electrical machinery industry.
- Rapid increase in infrastructure investment and industrial production to fuel further growth.
- Entry of international players.
- De-licensed engineering sector; 100 per cent FDI permitted.
- Cumulative FDI into the miscellaneous mechanical and engineering sector, during April 2000 to September 2017, stood at US$ 3,358.52 million.
- Basic customs duty was reduced from 10 per cent to 5 per cent on forged steel rings used in wind operated electricity generators.

Notes: FDI - Foreign Direct Investment, FY - Indian Financial Year (April – March), US$ - US dollar
Source: Government of India, Ministry of Heavy Industries, Department of Industrial Policy and Promotion, India Electrical and Electronics Manufacturer Association.
MARKET OVERVIEW
TWO MAJOR SEGMENTS

Engineering

- Heavy engineering
  - Heavy electrical
  - Heavy engineering and machine tools

- Light engineering
  - Automotive
  - Low technology products
  - High technology products
## HEAVY ELECTRICAL – KEY SEGMENTS

<table>
<thead>
<tr>
<th>Segment</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Boilers**              | - As per the latest data available, the Indian boiler industry has the capability to manufacture boilers with super critical parameters up to 1000 MW unit size.  
                          | - The industry’s market size was US$ 2.2 billion in FY15 and reached US$ 5.8 billion in FY17 and expected to reach US$ 11.7 billion in FY22.          |
| **Turbines and generator sets** | - As per the latest data available, the industry manufactures various turbines in the range of 800–7000 MW per annum and generators ranging from 0.5 KVA to (ones even higher than) 25000 KVA.  
                                  | - Foreign players like Siemens also in race to supply Indian market.  
                                  | - Total production of turbines and generators stood at approximately US$ 6.6 billion in FY17 and is expected to reach US$ 13.4 billion by FY22.          |
| **Transformers**         | - A whole range of power and distribution transformers, including special type of transformers required for furnaces, electric tracts and rectifiers, are manufactured in India. The Ministry of Power, Government of India is target of adding 93,000 MW by 2022, promises a huge potential for the transformer market. Revenues are expected to grow at CAGR of 14 per cent till 2018.  
                          | - The transformers market in India was valued at US$ 1.78 billion in FY16 and is estimated at US$ 5.9 billion in FY17 and expected to reach US$ 11.1 billion by FY22. |
| **Switchgear and control gear.** | - Production of switchgears and control gears is projected to witness a CAGR of 10 per cent during 2012-17, to reach about 33.7 million units  
                               | - The switchgear market size touched US$ 2.4 billion in FY15 and is estimated at US$ 4.4 billion in FY17 and US$ 8.2 billion in FY22.               |

**Notes:** MW - Mega Watt, KVA - KiloVolt - Ampere  
**Source:** Ministry of Heavy Industries and Public Enterprise Annual Report, Aranca Research
### HEAVY ENGINEERING – KEY SEGMENTS … (1/2)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Machine tools**            | - This segment churns out basic machinery for all major industries and determines competitiveness in other sectors such as automobiles, heavy electrical and defence  
                                - Nearly 200 machine tool manufacturers are operational in the organised sector along with 400 small-scale units  
                                - Production of machine tools totalled Rs 5,803 crore (US$ 896.35 million), while exports stood at Rs 360 crore (US$ 55.61 million) in FY17. |
| **Textile machinery**        | - It comprises over 1,446 units involved in churning out machinery and components; another 600 units manufacture complete machinery  
                                - Market size of textile machinery stood at US$ 3.8 billion in 2017 and is expected to reach US$ 5.2 billion by 2021.  
                                - The industry had produced goods worth US$ 1.02 billion in FY16.  
                                - In FY16, total exports from textile machinery stood at US$ 392.91 million. |
| **Cement machinery**         | - Cement plants based on raw mill grinding, pre-processing and cement grinding process technology (for capacities up to 10,000 TPD) are being manufactured in India  
                                - Currently, 100 per cent FDI is allowed under the automatic route  
                                - With an installed capacity of around 420 million tonnes as of March 2017, the industry is capable of catering to the domestic demand, the growth in construction to drive cement demand in coming years owing to new government’s policy. |
| **Material handling equipment** | - Material handling equipments have 4 categories: storage and handling equipments, engineered systems, industrial trucks and bulk material handling.  
                                - With around 50 units in the organised sector, the material handling equipment industry is engaged in the setting up of coal/ore/ash handling plants and manufacturing associated equipment. |

Notes: TPD - Tonnes Per Day  
Source: Indian Machine Tool Manufacturers’ Association, Textile Machinery Manufacturing Association, Cabinet Committee on Infrastructure report, ITMACH India
### Plastic processing machinery
- There are 11 major and nearly 200 small and medium manufacturers.
- Total consumption of plastics in India is expected to grow from 12 million metric tonnes per annum (MMTPA) in 2016 to 20 MMTPA by the end of 2020. Number of machines deployed will increase from 113,000 in 2016 to 180,000 by 2020.
- India’s demand for plastics in irrigation alone was pegged to cross 2.5 MT in 2015 while the plastic in packaging was expected to increase 9MT by 2020.

### Dies, moulds and tools industry
- It includes over 500 commercial tool manufacturers.
- Total production of dies, moulds and tools was expected to touch US$ 3.68 billion in FY15.
- Exports in the industry were expected to touch US$ 828.3 million in FY15.

### Process plant equipment
- Over 200 manufacturers are engaged in the production of process plant machinery.
- Nearly 65 per cent of the total manufacturers are small and medium enterprises.
- Production and exports were expected to be totalled US$ 4.6 billion and US$ 1037.3 million, respectively, in FY15.

### Earth moving, construction and mining equipment
- Currently, 20 large and global manufacturers and 200 small and medium manufacturers operate in the industry.
- The construction equipment industry's size is estimated to reach US$ 7 billion by 2020 from US$ 4.2 billion in FY17.

**Note:** Information is as per latest available data.

**Source:** Ministry of Heavy Industries and Public Enterprise Annual Report 2012-13 and 2013-14, PLEX Council, Aranca Research.
### AUTOMOTIVE – KEY SEGMENTS

**Passenger and utility vehicles**
- Currently, there are 16 manufacturers of passenger cars and multi-utility vehicles, 13 manufacturers of commercial vehicles and 16 manufacturers of 2 wheelers and 3 wheelers.
- Total production in the automobiles sector stood at approximately 21.4 million units in April-December 2017.
- In April-December 2017, sales of passenger vehicles went up by 8.13 per cent, whereas the sales of utility vehicles rose by 19.43 per cent.

**Auto components**
- The auto components industry has more than 500 companies in the organised sector and about 10,000 entities in the unorganised sector.
- During 2016-17, exports of auto components increased at a CAGR of 9.96 per cent, from US$ 5.1 billion in FY09 to US$ 10.9 billion in FY17.
- In March 2017, Wipro opened an automotive engineering centre in Detroit North America, to serve as a hub to support automotive engineering and IT requirements of Original Equipment Manufacturers (OEMs) and tier-I suppliers.

**Agriculture machinery**
- Agricultural tractors dominate the agriculture machinery sector.
- The Indian tractor industry is the world’s largest and accounts for one-third of the global production, and is the cheapest producer world over providing room for more exports in tractors.
- Indian tractors are exported to the US, Malaysia, Turkey and Africa.
- In November 2016, the Central Government directed the states of Punjab, Haryana and U.P. to promote use of agri-equipment for effective management of crop residue.

Source: Ministry of Heavy Industries and Public Enterprise Annual Report, SIAM, Cabinet Committee on Infrastructure report, ACMA, Aranca Research
**LIGHT ENGINEERING – KEY SEGMENTS**

**Casting and forging**
- The Indian casting industry produces 6 MMT of various grades of casting and ranks 6th in the world. The total production by the Indian forging industry in 2016 stood at 2.45 MMT and is expected to reach 2.97 MMT in FY18.
- The forging industry comprises around 10 organised players, with nearly 100 players in the small and medium sector and an installed capacity of 3.76 million tonnes in 2016-17.

**Medical and surgical equipment**
- The medical and surgical equipment industry manufactures a wide range of medical equipment such as ECG and X-ray scanners
- The indigenous industry caters to 40 per cent of demand, while the remaining is met through imports.
- Exports of optical, measuring, and medical instruments reached Rs 92.04 billion (US$ 1.43 billion) between April-September 2017.

**Industrial fasteners**
- The fastener industry in India can be classified into high tensile and mild steel fasteners
- Mild steel fasteners are primarily manufactured by the unorganised sector, while the high tensile steel segment is dominated by the organised sector

*Notes: MMT - Million Metric Tonnes MT-Million Tonnes
Source: Ministry of Heavy Industries and Public Enterprise Annual Report, Association of Indian Forging Industry (AIFI), IVG Research, Aranca Research*
ROBUST GROWTH IN INDIA’S ENGINEERING EXPORTS OVER THE YEARS

- Engineering exports from India stood at US$ 65.23 billion in FY17. Engineering exports for the period of April-December 2017-18 was US$ 56,091.89 million as against US$ 45,696.36 million in the same period previous year.
- During FY08–FY17, engineering exports from India registered growth at a CAGR of 7.61 per cent
- Engineering exports include transport equipment, capital goods, other machinery/equipment and light engineering products such as castings, forgings and fasteners
- With the revival of demand for iron and steel in China and the US, India’s engineering exports reached US$65.2 billion in FY17.

**India’s engineering exports (US$ billion)**

**Notes:** FY - Fiscal Year  
**Source:** Reserve Bank of India, Engineering Export Promotion Council, Engineering Export monitoring report, Ministry of Commerce and Industry Estimates, Aranca Research
KEY CATEGORIES OF ENGINEERING EXPORTS

- Transport equipment (which includes Auto and auto component including Aircraft and ship boats) is the leading contributor to engineering exports. The segment accounted for 32.46 per cent of the total engineering exports from India in FY17.

- Exports of iron and steel products accounted for a market share of around 22.44 per cent, in the overall exports, while industrial machinery including electrical machinery accounted for 23.85 per cent of the total engineering exports in FY17.

- Other commodities includes medical and scientific instruments, hand tools and cutting tools, bicycle parts, office equipment, prime mica and mica products, etc. and accounted for a share of 10 per cent of the total engineering exports from India in FY17.

- Attractive markets for Indian engineering products are USA, China, Germany, U.K., Canada, France, Russia, Japan, Australia, South Korea, Saudi Arabia and Southern Africa.

Source: Engineering Export Promotion Council, Department of Commerce, Aranca Research
ROBUST GROWTH IN INDIA’S ENGINEERING EXPORTS OVER THE YEARS

- Exports of electrical machinery rose to US$ 4.6 billion in FY17 from US$ 3.7 billion in FY16 with a CAGR of 2.02 per cent between 2009-15.
- Electrical equipment industry’s production for FY17 is estimated at US$ 23.64 billion
- Boilers, parts, electrical wires & cables were the primary drivers of the increase in exports
- Indian manufacturers with capacity & advanced technology in industry export a wide array of equipment, including transformers & cables

**Notes:** Export data includes - Boiler & Parts, Electric Power Equipments & Parts, Electric Wires & Cables and Transmission Line Towers & Parts

**Source:** Engineering Exports Promotion Council (EEPC) India
### KEY PLAYERS ... (1/2)

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues (FY17)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsen and Toubro</td>
<td>US$ 17.07 billion</td>
<td>Engineering and construction, cement, electrical and electronics</td>
</tr>
<tr>
<td>Bharat Heavy Electricals Ltd</td>
<td>US$ 4.47 billion</td>
<td>Power generation, transmission, transportation</td>
</tr>
<tr>
<td>Siemens India Ltd&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>US$ 1.81 billion</td>
<td>Power generation and distribution equipment, transportation systems, communication and healthcare products</td>
</tr>
<tr>
<td>ABB India Ltd</td>
<td>US$ 1.34 billion</td>
<td>Transformers, switch gears, control gears</td>
</tr>
<tr>
<td>Crompton Greaves Ltd</td>
<td>US$ 0.61 billion</td>
<td>Power generation and transmission equipment</td>
</tr>
</tbody>
</table>

**Source:** Company Annual reports, News article, Money control, Bloomberg, Aranca Research
### KEY PLAYERS ... (2/2)

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues (FY17)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers India Ltd</td>
<td>US$ 0.26 billion</td>
<td>Highways and bridges, mass rapid transport systems construction, specialist materials manufacturing</td>
</tr>
<tr>
<td>Kirloskar Oil Engines Ltd</td>
<td>US$ 0.45 billion</td>
<td>Engines, engine bearings and valves, grey iron casting</td>
</tr>
<tr>
<td>Cummins India Ltd</td>
<td>US$ 0.84 billion</td>
<td>Power generation, construction and mining equipment, fire pumps and cranes, compressors</td>
</tr>
<tr>
<td>Thermax</td>
<td>US$ 0.73 billion</td>
<td>Boilers, heaters, air pollution and purification, absorption cooling</td>
</tr>
<tr>
<td>BGR Energy</td>
<td>US$ 0.53 billion</td>
<td>Boilers, turbines, generators</td>
</tr>
</tbody>
</table>

**Source:** Company Annual Report, News article, Aranca Research
### NOTABLE TRENDS IN THE INDUSTRY

#### Diversification
- Several companies in the engineering sector have diversified, either geographically (mainly to Middle Eastern countries) or sector-wise
- BHEL plans to foray into Ukraine
- Simplex Infra has moved to the Middle East
- Larsen and Toubro (L&T) has diversified into power equipment manufacturing
- Thermax entered the power utility segment

#### Shift to value-added products
- Rising competition is driving domestic players to focus on improving their capabilities, become more quality conscious and upgrade their technology base in line with global requirements
- More than 2,500 firms in the engineering sector have ISO 9000 accreditation
- Companies are increasingly focusing on R and D and product development
- To enhance competitiveness in India’s capital goods industry, the Dept. of Heavy Industry has approved 4 Centres of Excellence in textile machinery, machine tools, welding technology and smart pumps.

#### Entry of international companies
- With 100 per cent FDI allowed through the automatic route, major international players such as Cummins, ABB and Alfa Laval have entered the Indian engineering sector due to growth opportunities
- In January 2017, Boeing, a US aircraft maker, announced the launch of its engineering and technology centre in Bangalore
- In September 2017, Force Motors Ltd entered into a joint venture (JV) with Rolls Royce Power Systems AG to form an Indian company which will manufacture engines for power generation and rail application.
- As of September 2017, with an aim to increase its presence in India, Denmark-based heating ventilation and air-conditioning (HVAC) giant, Danfoss, is planning to take its manufacturing localisation to 50 per cent as well as double its supplier base in India by 2020.

**Notes:** BHEL - Bharat Heavy Electricals Ltd  
**Source:** Aranca Research
## Porter’s Five Forces Framework Analysis

### Threat of Substitutes
- Threat is low because of the nature of the industry
- Even if the buyer wants to revamp or renovate its existing stock, it is likely to go to the same players

### Bargaining Power of Suppliers
- Bargaining power of suppliers is low due to cut-throat competition
- Suppliers have a strong hand in the high-end technology segment

### Competitive Rivalry
- Competition is intense among major players
- Companies basically compete on pricing, experience in a particular field, product quality, and capability of handling projects
- Small companies are also trying to revamp their scale and size

### Threat of New Entrants
- Threat is low considering the capital intensive nature of the industry and reputation attached to the existing players

### Bargaining Power of Buyers
- Bargaining power in tech-oriented segments is low
- Competition in power generation and T and D equipment sector gives bargaining power

---

**Source:** Aranca Research
STRATEGIES ADOPTED
### STRATEGIES ADOPTED

| Leveraging Indian operations |  ▪ Bigger companies are currently focusing on process improvement and a smaller set of key strategies  
|                            |  ▪ ABB has set up global R&D centre in Bengaluru and is also aiming at making India as production hub for markets worldwide due to its labour cost advantage  
|                            |  ▪ Cummins has also opened R&D centre in Pune, for providing designing and technical abilities worldwide  |
| Operational efficiency      |  ▪ Companies are understanding the need of operations management following the crisis period  
|                            |  ▪ Good set of operational structure in place helps them target future business opportunities with better precision  
|                            |  ▪ There is emphasis on human resource management, automation and higher labour productivity  |
| Geographical expansion      |  ▪ Most Indian companies are increasing their global footprints  
|                            |  ▪ Cheap cost of labour in India is giving them an edge over companies in higher wage economies  
|                            |  ▪ Besides targeting the developed economies of Europe and US, Indian companies are currently diversifying in the developing markets of Africa, South America and the Middle East  |
| Skill Improvement           |  ▪ Many companies are collaborating with institutions for developing skilled manpower for the highly technical engineering sector.  
|                            |  ▪ In June 2017, Schneider Electric signed an MoU with Kalinga Institute of Technology (KIIT) and CV Raman College of Engineering in Odisha for training students to enhance their engineering skills.  |
| PSU Stake Sale              |  ▪ In April 2017, the government divested 10 per cent stake in the National Aluminium Company (NALCO) for the cost of US$ 193.37 million.  |

*Source: Aranca Research, KPMG Report on Engineering sector*
Engineering and Capital goods

GROWTH DRIVERS
GROWTH DRIVERS FOR THE INDIAN ENGINEERING SECTOR

Demand-side drivers

- Capacity addition for power generation
- Increase in infrastructure spending
- Rise in exports which is touched US$ 65.23 billion during FY17

Demand-side drivers

- De-licensing
- Reduction in tariff and customs
- Supportive government policies leading to higher investments

Policy

- Increasing FDI inflows
- Higher M&A
- Easy credit facilities for manufacturing companies

Investment

- Capacity addition for power generation
- Increase in infrastructure spending
- Rise in exports which is touched US$ 65.23 billion during FY17
During FY07-17, India’s energy requirement grew at a CAGR of 4.68 per cent, with the energy requirement reaching to 1,143 billion units in FY17.

India’s share of global energy demand is expected to rise to 9 per cent by 2035.

Higher demand for energy has led to increasing capacity additions for power generation that, in turn, boosted demand for power generation and transmission equipment.
Investments to increase capacity have led to rising demand for power generation and transmission equipment.

- Generation capacity has increased by 14,209 MW in FY17.
- India added 622 MW of capacity during in September 2017.

**Notes:** MW - Mega Watt
**Source:** Ministry of Power, Annual report, Aranca Research
The Infrastructure Index (part of the wider Index of Industrial Production) comprises 8 core industries: coal, crude oil, natural gas, petroleum refinery products, fertilisers, steel, cement and electricity.

The infrastructure index rose to 180.1 in FY17, implying a growth rate of 3.9 per cent in FY17. Between April-August 2017, the index increased by 2 per cent.

During FY07-FY17, infrastructure index grew at a CAGR of 4.81 per cent.

L&T Hydrocarbon Engineering bagged a 5 year framework agreement with Shell Global Solutions International B.V., to provide procurement, construction management services and engineering services for latter’s projects in South East Asia, Middle East and India.

Under the Deen Dayal Upadhyay Gram Jyoti Yojana, ILandFS Engineering and Construction Company Ltd. secured an order worth US$ 33.13 million for rural electrification from Jharkhand Bijli Vitran Nigam for Pakur and Sahibganj, over a period of 2 years.

Infrastructure, construction and capital goods companies in India bagged orders worth Rs 55,814 crore (US$ 8.68 billion) between October and December 6, 2017.

Notes: The base year for FY13 and FY14 infrastructure index has been changed from 1993-94 to 2004-05.
Source: Office of the Economic Adviser, Aranca Research
India has 2nd largest road network (3.3 million km) comprising expressways, national, state highways, districts and village roads

During the 11th Five-Year Plan, development of roads and bridges accounted for 15.3 per cent of the total US$ 456.9 billion investments in infrastructure

Demand for related machinery in building roads has increased significantly due to large-scale public and private investments in roads.

As of April 2017, a record 47,350 Kms of PMGSY roads have been constructed. Further, 113.13 kms. of PMGSY roads were constructed using “Green” technologies, in 2016-17. This is higher than 2,634.02 kms. achieved during 2014-2016 and 806.93 kms achieved during 2000-2014.

In April 2017, Meinhardt, a Singapore based company, announced that it is strengthening its engineering position, to bid for mega infra projects in India. The firm has worked on 60 urban development projects in the last 17 years in India

An outlay of Rs 6.92 trillion (US$ 107.64 billion) was approved by the Government of India in October 2017 to build a road network of 83,677 km over the next five years.

Notes: Physical Achievements under National Highways Development Project during 11th Five Year Plan up to Sept, 2011
Source: National Highway Authority of India, Ministry of Road Transport and Highways, Aranca Research
STRONG POLICY SUPPORT CRUCIAL FOR THE SECTOR…(1/2)

| De-licensing | ▪ The engineering industry has been de-licensed and 100 per cent FDI has been permitted in the sector  
▪ Foreign technology agreements are allowed under the automatic route |
| Tariffs and custom duties | ▪ The government has eliminated tariff protection on capital goods  
▪ It has reduced custom duties on a range of engineering equipment |
| Focus on power generation and infrastructure | ▪ Governmental infrastructure projects such as Golden Quadrilateral and the North-South and East-West corridors fuelled growth in the engineering sector |
| Special Economic Zones (SEZs) | ▪ The government approved a significant number of SEZs across the country for the engineering sector  
▪ Delhi Mumbai Industrial Corridor (DMIC) is being developed across 7 states; it is expected to bolster the sector |
| Make in India | ▪ Under the Make in India initiative, the central government has approved the policy giving preference to domestically produced steel and iron products for government procurement in May 2017. |

Notes: GW - Giga Watt  
Source: DHI Annual Report, Ministry of Power Annual Report, Make in India, Aranca Research
STRONG POLICY SUPPORT CRUCIAL FOR THE SECTOR…(2/2)

<table>
<thead>
<tr>
<th>Tax Holiday For MSMEs</th>
<th>The government would give 3 years Tax Holiday with a stipulation that this money should be used (the tax amount that works out for the unit) to invest in the plant, machinery or new land for the expansion of the current line of business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut in excise duty to aid the auto industry</td>
<td>A cut in excise duty on chassis for ambulance is being reduced from 24 per cent to 12.5 per cent. Short-term crop loans to farmers at 7 per cent per annum and additional subvention of 3 per cent for prompt paying farmers so that they can take tractors.</td>
</tr>
<tr>
<td>Investment on building Internal and External Infrastructure in Smart Cities</td>
<td>The government has planned to build 100 smart cities, by allocating US$ 8.29 billion. The plan would need more PPP’s for better and fast execution.</td>
</tr>
<tr>
<td></td>
<td>In February 2017, Government of Tamil Nadu allotted land to 14 companies, for setting up an Aerospace park in Sriperumbudur, along with establishing an Advanced Computing and Design Engineering Centre, with an outlay of US$ 52.06 million</td>
</tr>
<tr>
<td>Higher allocation to the defence sector</td>
<td>Allocation to the defence sector was raised to US$ 40 billion. Make in India policy is being carefully pursued to achieve self-sufficiency in the defence equipment sector including air-craft.</td>
</tr>
<tr>
<td>Budgetary support</td>
<td>In the Union Budget 2017, government allocated US$ 58.90 billion for the infrastructure sector.</td>
</tr>
</tbody>
</table>

**Notes:** Capex - Capital Expenditure, JNNURM - Jawaharlal Nehru National Urban Renewal Mission  
**Source:** Union Budget FY14, Union Budget 2015-16
### SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (1/3)

<table>
<thead>
<tr>
<th>Developer</th>
<th>Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC)</td>
<td>Ranga Reddy, Andhra Pradesh</td>
<td>Aerospace and precision engineering</td>
</tr>
<tr>
<td>Deccan Infrastructure and Land Holdings Ltd</td>
<td>Nalgonda, Andhra Pradesh</td>
<td>Light engineering</td>
</tr>
<tr>
<td>M/s Essar Hazira SEZ</td>
<td>Hazira, Gujarat</td>
<td>Engineering</td>
</tr>
<tr>
<td>Gujarat Industrial Development Corporation Ltd (GIDC)</td>
<td>Gandhinagar, Gujarat</td>
<td>Electronic products</td>
</tr>
<tr>
<td>N.G. Realty Pvt Ltd</td>
<td>Ahmedabad, Gujarat</td>
<td>Engineering</td>
</tr>
<tr>
<td>M/s Synefra Engineering and Construction Ltd</td>
<td>Vadodara, Gujarat</td>
<td>High-tech engineering and related products</td>
</tr>
<tr>
<td>E. Complex Pvt Ltd</td>
<td>Amreli, Gujarat</td>
<td>Engineering</td>
</tr>
<tr>
<td>Dishman Infrastructure Ltd</td>
<td>Ahmedabad, Gujarat</td>
<td>Engineering</td>
</tr>
<tr>
<td>Ansal Properties and Infrastructure Ltd</td>
<td>Sonepat, Haryana</td>
<td>Engineering</td>
</tr>
<tr>
<td>Raheja Haryana SEZ Developers Pvt Ltd</td>
<td>Gurgaon, Haryana</td>
<td>Engineering</td>
</tr>
<tr>
<td>Ansal Kamdhenu Engineering SEZ Ltd</td>
<td>Sonepat, Haryana</td>
<td>Engineering</td>
</tr>
<tr>
<td>Karnataka Industrial Areas Development Board</td>
<td>Shimoga, Karnataka</td>
<td>Engineering</td>
</tr>
<tr>
<td>Suzlon Infrastructure Ltd</td>
<td>Mangalore, Karnataka</td>
<td>Port-based for high-tech engineering products</td>
</tr>
</tbody>
</table>

*Source: SEZ India, Aranca Research*
SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (2/3)

<table>
<thead>
<tr>
<th>Developer</th>
<th>Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quest Machining and Manufacturing Pvt Ltd</td>
<td>Belgaum, Karnataka</td>
<td>Auto, aerospace and industrial engineering</td>
</tr>
<tr>
<td>Viraj Profiles Ltd</td>
<td>Thane, Maharashtra</td>
<td>Stainless steel engineering products</td>
</tr>
<tr>
<td>Navi Mumbai SEZ Pvt Ltd</td>
<td>Navi Mumbai, Maharashtra</td>
<td>Light engineering</td>
</tr>
<tr>
<td>Maharashtra Industrial Development Corporation (MIDC)</td>
<td>Satara, Maharashtra</td>
<td>Engineering</td>
</tr>
<tr>
<td>Township Developers India Pvt Ltd</td>
<td>Pune, Maharashtra</td>
<td>Engineering</td>
</tr>
<tr>
<td>Maharashtra Industrial Development Corporation (MIDC)</td>
<td>Aurangabad, Maharashtra</td>
<td>Engineering and Electronics</td>
</tr>
<tr>
<td>Orissa Industrial Infrastructure Development Corporation (IDCO)</td>
<td>Jajpur, Orissa</td>
<td>Metallurgical engineering</td>
</tr>
<tr>
<td>Vividha Infrastructure Pvt Ltd</td>
<td>Patiala, Punjab</td>
<td>Engineering</td>
</tr>
<tr>
<td>Mahindra Worldcity (Jaipur) Ltd</td>
<td>Jaipur, Rajasthan</td>
<td>Light engineering</td>
</tr>
<tr>
<td>New Chennai Township Pvt Ltd</td>
<td>Kanchipuram, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>Perundurai Engineering SEZ by SIPCOT</td>
<td>Erode, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>Uttar Pradesh State Industrial Development Corporation (UPSIDC)</td>
<td>Kanpur, Uttar Pradesh</td>
<td>Engineering</td>
</tr>
</tbody>
</table>

Source: SEZ India, Aranca Research
## SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (3/3)

<table>
<thead>
<tr>
<th>Developer</th>
<th>Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Vadodara, Gujarat</td>
<td>High-tech Engineering products and related Services</td>
</tr>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Karnataka</td>
<td>High-tech Engineering products and related Services</td>
</tr>
<tr>
<td>Quest SEZ Development Private Ltd.</td>
<td>Belgaum District, Karnataka</td>
<td>Precision Engineering Product</td>
</tr>
<tr>
<td>Khed Economic Infrastructure Limited (Bharat Forge Ltd.)</td>
<td>Pune, Maharashtra</td>
<td>Engineering and Electronics</td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Vellore, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Erode, Tamil Nadu</td>
<td>Engineering</td>
</tr>
<tr>
<td>Aspen Infrastructures Ltd.</td>
<td>Coimbatore District, Tamil Nadu</td>
<td>High-tech Engineering products and related Services</td>
</tr>
</tbody>
</table>

**Source:** SEZ India, Aranca Research
Cumulative FDI inflows into the engineering sector increased to US$ 3.36 billion in FY18* from US$ 0.89 billion in FY10.

The government’s increasing focus on attracting foreign investors in manufacturing and infrastructure is likely to boost FDI in the sector.

During FY 2010-17, there has been a 20.44 per cent rise in cumulative FDI flows into the Indian engineering industry.

In February 2017, the World Bank signed an agreement with the Government of India, for providing a loan of US$ 201.50 million, for facilitating development of infrastructure to impart quality engineering education across various states in India. The loan being a part of the Technical Education Quality Improvement Project (TEQIP III), is in the 3rd phase of 15-20 year programme, which begun in 2002.

**Note:** FY18* - up to september 2017

**Source:** Department of Industrial Policy and Promotion, Aranca Research
# INFLOW OF FOREIGN INVESTMENTS; RISE IN M&A ACTIVITY ... (2/2)

## M&A deals

<table>
<thead>
<tr>
<th>Acquirer</th>
<th>Target</th>
<th>Type</th>
<th>Acquisition date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axiscades</td>
<td>Mistral Solutions</td>
<td>Acquisition</td>
<td>November 2017</td>
</tr>
<tr>
<td>ABB Group</td>
<td>GE Industrial Solutions</td>
<td>Acquisition</td>
<td>September 2017</td>
</tr>
<tr>
<td>Hero Electronix</td>
<td>Spectrum Integrated Technologies and Lynxemi Pte Ltd</td>
<td>Acquisition</td>
<td>August 2017</td>
</tr>
<tr>
<td>Warburg Pincus</td>
<td>Tata Technologies Ltd.</td>
<td>Minority Stake</td>
<td>June 2017</td>
</tr>
<tr>
<td>Havells India</td>
<td>Lloyd Electricals – consumer durables unit</td>
<td>Acquisition</td>
<td>February 2017</td>
</tr>
<tr>
<td>Birla Corp. Ltd.</td>
<td>Reliance Cement Company Pvt. Ltd.</td>
<td>Acquisition</td>
<td>July 2016</td>
</tr>
<tr>
<td>Fairfax India Holdings Corp. and Fairfax Financial Holdings Ltd.</td>
<td>Bangalore International Airport Ltd.</td>
<td>Minority stake</td>
<td>March 2016</td>
</tr>
<tr>
<td>Royal Enfield</td>
<td>Harris Performance company</td>
<td>Acquisition</td>
<td>March 2016</td>
</tr>
<tr>
<td>Balasore Alloys Ltd – Ispat Group</td>
<td>Rohit Ferro-Tech</td>
<td>Acquisition</td>
<td>May 2015</td>
</tr>
<tr>
<td>Reliance Infrastructure</td>
<td>Pipavav Defence and Offshore Engineering</td>
<td>Majority stake</td>
<td>March 2015</td>
</tr>
<tr>
<td>Systran S.A.</td>
<td>SAI Consulting Engineers</td>
<td>Majority stake</td>
<td>December 2014</td>
</tr>
<tr>
<td>Tractors India Pvt Ltd</td>
<td>Caterpillar Global Mining LLC</td>
<td>Acquisition</td>
<td>February 2014</td>
</tr>
<tr>
<td>Geometric(1)</td>
<td>3Cap Technologies GmbH</td>
<td>Acquisition</td>
<td>January 2013</td>
</tr>
<tr>
<td>Simplex Infrastructures Ltd</td>
<td>Joy Mining Services India Pvt Ltd</td>
<td>Acquisition</td>
<td>May 2012</td>
</tr>
<tr>
<td>Larsen and Toubro Ltd</td>
<td>Thalest Ltd</td>
<td>Acquisition</td>
<td>April 2012</td>
</tr>
<tr>
<td>Titagarh Wagons Ltd</td>
<td>Titagarh Marine Ltd</td>
<td>Acquisition</td>
<td>March 2013</td>
</tr>
<tr>
<td>JBM Cadmium Pvt Ltd</td>
<td>Tesco GO</td>
<td>Acquisition</td>
<td>January 2012</td>
</tr>
<tr>
<td>Diamond Power Infrastructure Ltd</td>
<td>Utkal Galvanizers Ltd</td>
<td>Acquisition</td>
<td>April 2011</td>
</tr>
<tr>
<td>Yash Birla Group</td>
<td>Aircon Engineering Services</td>
<td>Majority stake</td>
<td>May 2011</td>
</tr>
</tbody>
</table>

**Note:** Acquired by its German subsidiary - Geometric Europe GmbH  
**Source:** Grant Thornton, Aranca Research, Thomson Banker, VC circle
### Defence
- Allocation to the defence sector was raised to US$ 40.75 billion under Union Budget 2017-18. In addition, Make in India policy is being carefully pursued to achieve greater self-sufficiency in the area of defence equipment including air-craft.
- Government initiatives, such as allowing private sector participation, have been reinforced by opening up the sector to 100 per cent FDI (49 percent through automatic route), and its offset policy is expected to enhance private sector (including SME) participation.

### Civil nuclear sector
- India’s nuclear capacity was 6.78 GW in CY2017; an additional 12,000 MW of capacity has been planned under the 12th Five-Year Plan (2012–17). The country is aiming to increase nuclear capacity to 14.6 GW by 2024.
- It represents business opportunity worth US$ 312 million for the manufacturing industry,

### Auto components
- Global auto majors are rapidly ramping up the value of components they source from India, steered by the country’s advanced engineering skills, established production lines, a thriving domestic automobile industry and competitive costs
- Industry sales are expected to increase to US$ 50 billion in 2017-18
- In auto components sector, 100 per cent FDI is allowed under the automatic route

**Notes:** GW - Giga Watt, SME - Small and Medium Enterprises, CY – Calendar Year
**Source:** Aranca Research
GROWTH OPPORTUNITIES IN THE ENGINEERING SECTOR … (2/2)

Power Transmission and Distribution (T and D)
- T and D expenditure is set to increase on growth in power generation and privatisation of distribution
- In FY17 25,583 ckm of transmission lines have been commissioned. This is 100.9 per cent of the annual target of 23,384 ckm fixed for 2016-17.

Material handling equipment
- The material handling equipment sector is expected to gain from robust demand from steel, power, mineral and other infrastructure industries
- On November 22, 2016, L&T bagged orders worth US$ 45.52 million in the metallurgical and material handling business. This is expected to increase the demand for material handling equipment across the country.

Machine tools
- Demand for machine tools from the capital goods sector (especially automobile and textile industries) is projected to remain high
- Considering the industry’s demand for higher productivity, superior precision and accuracy, as well as low-cost manufacturing solutions, Computer Numerically Controlled (CNC) machine tools are set to be in greater demand

Note: CKM- Circuit Kilometres
Source: Aranca Research
India’s electrical equipment industry has witnessed significant growth in the last few years.

- Major electrical equipment manufactured include Electric power equipment and parts, Electric wires and Cables, Boilers and Parts and Transmission line towers and parts.
- India exported electric machinery and equipment worth US$ 4.64 billion during April – December 2017.

**Exports of electrical machinery and equipment (US$ billion)**

- FY13: 3.41
- FY14: 3.68
- FY15: 3.97
- FY16: 3.93
- FY17: 4.74
- FY18*: 4.64

**T&D equipment demand projection (US$ billion)**

- FY15: 15.1
- FY17: 39.9
- FY22: 75.0

**Note:** T&D - Transmission and Distribution, BTG - Boilers, Turbine, Generator. FY18* - From April to December 2017

**Source:** Indian Electrical and Electronics Manufacturers Association, Department of Heavy Industries, DGCIS
The generation equipment (BTG) segment is projected to grow to US$ 25 billion by the year FY22.

Production of generation equipment (boilers, turbines and generators) in India is estimated at around US$ 5.7 billion by 2022.

Demand for generation equipment is projected to rise to US$ 25.1 billion in FY22 from US$ 3.3 billion in FY15.

Exports of electrical machinery grew stood at US$ 4.6 billion in FY17.

The electrical equipment industry witnessed a growth of 9.7 per cent in the first half of FY18.

**Generation equipment-wise demand projection (US$ billion)**

<table>
<thead>
<tr>
<th></th>
<th>FY15</th>
<th>FY17</th>
<th>FY22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boilers</td>
<td>0.5</td>
<td>2.2</td>
<td>6.7</td>
</tr>
<tr>
<td>Turbines</td>
<td>0.6</td>
<td>3.3</td>
<td>11.7</td>
</tr>
<tr>
<td>Generators</td>
<td>4.8</td>
<td>5.8</td>
<td>6.7</td>
</tr>
</tbody>
</table>

**Exports of electrical machinery (US$ billion)**

- FY10: 3.9
- FY11: 4.1
- FY12: 4.7
- FY13: 4.9
- FY14: 4.9
- FY15: 5.3
- FY16: 3.7
- FY17: 4.6

CAGR: 2.38%

**Note:** BTG - Boiler, Transmission and Generation

**Source:** Indian Electrical and Electronics Manufacturers Association
GROWTH POTENTIAL IN THE CONSTRUCTION EQUIPMENT INDUSTRY

- India’s Earthmoving and Construction Equipment (ECE) industry has enjoyed strong growth over the last seven years due to rapid economic development.

- The organised construction sector in India (for example, roads, urban infrastructure) accounts for approximately 55 per cent of the ECE industry. Mining, irrigation and other infrastructure segments (power, railways) account for the remaining.

- Earthmoving sector is continuing to make headways and could command a share of 56.2 per cent, followed by concrete equipment and material handling equipment.

- Construction equipment industry recorded sales of 76,000 and 68,000 units of construction equipment in FY16 and FY17 respectively. This is further expected to grow to 96,730 units by 2018.

- Growth of India’s construction equipment sector is expected at 13-17 per cent* in 2017 driven by increase in infrastructure spending.

### Expected unit sales by 2020

<table>
<thead>
<tr>
<th>Equipment</th>
<th>2015 (Actual Sales)</th>
<th>2016</th>
<th>2020F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe Loaders</td>
<td>21192</td>
<td>28,000</td>
<td>31,000</td>
</tr>
<tr>
<td>Crawler Excavators</td>
<td>11013</td>
<td>15,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Mobile Compressors</td>
<td>3542</td>
<td>4,300</td>
<td>5,000</td>
</tr>
<tr>
<td>Mobile Cranes</td>
<td>4863</td>
<td>5,500</td>
<td>6,800</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>2771</td>
<td>3,300</td>
<td>3,500</td>
</tr>
<tr>
<td>Wheeled Loaders</td>
<td>2097</td>
<td>2,300</td>
<td>3,200</td>
</tr>
<tr>
<td>Crawler Dozers</td>
<td>391</td>
<td>350</td>
<td>650</td>
</tr>
</tbody>
</table>

*Note: F – Forecast, *As per ICRA

*Source: NBM and CW*
CASE STUDIES
BHEL – MAINSTAY OF THE ELECTRICAL MACHINERY INDUSTRY ... (1/2)

- One of the largest engineering and manufacturing companies with ‘Maharatna’ status
- One of the major Integrated Power Plant Equipment (IPPE) manufacturers in the world with operations in over 75 countries
- The company is profit-making since 1971–72 and has installed base of more than 124,064 MW.
- 17 manufacturing units, 2 subsidiaries, 5 joint ventures and over 150 project sites
- Accounted for over 55 per cent of India’s total installed generating capacity in FY16.
- Net Sales stood at US$ 3.3 billion in 2017 (Up to September 2017)

Note: ‘Navratna’ is the title given to nine Public Sector Enterprises (by the Government of India) having distinct comparative advantages, 2017* - Data upto June 2017.
Source: Company reports, Indian Express, Aranca Research
In May 2017, BHEL commissioned a 270 MW thermal unit in Maharashtra.

By FY17, cumulative power projects installed worldwide is estimated to be around 11 GW.

BHEL commissioned three supercritical units of 660 MW each in Uttar Pradesh at the 1980 MW coal-based Lalitpur Super Thermal Power Project (STPP) in June 2016 and has set a new benchmark in project commissioning.

The company won “DSIJ Award 2015” for the Most Efficient Maharatna PSU.

The company also won “India Pride Award 2015-16” for excellence in heavy industries sector.

The company won ICAI National Award for Excellence in Cost Management 2016.

BHEL was awarded the CBIP Award 2018 for best power equipment organisation in January 2018.

Key success factors:
- Boiler efficiency
- Lower auxiliary power consumption
- Lower design heat rate
- Lower lifecycle cost
- Better PLF

Source: Company Website, Annual Report, News Articles

Note: CBIP - Central Board of Irrigation and Power
INDUSTRY ASSOCIATIONS
## INDUSTRY ASSOCIATIONS

<table>
<thead>
<tr>
<th>Agency</th>
<th>Contact Information</th>
</tr>
</thead>
</table>
| **National Automotive Testing and R&D Infrastructure Project (NATRiP)** | NBCC Place, South Tower, 3rd Floor, Bhishma Pitamah Marg, Pragati Vihar, Lodhi Road, New Delhi - 110003  
Tel: + 91-11-49215555  
Fax: +91-11-24369333  
E-mail: team@natrip.in |
| **The Automotive Research Association of India**               | Survey No 102, Vetal Hill, Off Paud Road, Kothrud, Pune - 411 038  
P.B. No 832, Pune - 411 004  
Tel. No: +91-020-30231111  
Fax No: +91-020-25434190  
Email Id: info@araiindia.com |
| **Fluid Control Research Institute**                          | Kanjikode West, Palakkad - 678623.  
Phone: 91-491-2566120/2566206  
Fax: 0491-2566326  
E-mail: fcri@fcriindia.com |
| **Engineering Export Promotion Council (EEPC)**               | ‘Vanijya Bhawan’, 1st Floor  
International Trade Facilitation Centre  
1/1, Wood Street  
Kolkata, West Bengal–700016  
Phone: 91-33-22890651, 22890652  
Fax: 91-33-22890654  
E-mail: eepc@eepcindia.org |
USEFUL INFORMATION
GLOSSARY

- BTG: Boilers, Turbines, Generators
- BHEL: Bharat Heavy Electricals Limited
- MHI: Mitsubishi heavy industries
- DHI: Department of Heavy industries
- BHEL: Bharat Heavy Electricals Ltd
- ICEMA: Indian Construction Equipment Manufacturer’s Association
- HAL: Hindustan Aeronautics Limited
- IEEMA: Indian Electrical and Electronics Manufacturers Association
- EEPC material handling: Engineering Export Promotion Council
- TPD: Tonnes Per Day
- NHAI: National Highway Authority of India
- MORTH: Ministry of Road Transport and Highways
- CEA: Central Electrical Authority
- HVDC: High Voltage Direct Current
- US$: US Dollar
- FY: Indian Financial Year (April to March)
- Wherever applicable, numbers have been rounded off to one decimal
## EXCHANGE RATES

### Exchange Rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year INR</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
</tr>
<tr>
<td>2007–08</td>
<td>40.27</td>
</tr>
<tr>
<td>2008–09</td>
<td>46.14</td>
</tr>
<tr>
<td>2009–10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010–11</td>
<td>45.62</td>
</tr>
<tr>
<td>2011–12</td>
<td>46.88</td>
</tr>
<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15</td>
<td>61.06</td>
</tr>
<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–17</td>
<td>67.09</td>
</tr>
<tr>
<td>Q1 2017-18</td>
<td>64.46</td>
</tr>
<tr>
<td>Q2 2017-18</td>
<td>64.29</td>
</tr>
<tr>
<td>Q3 2017-18</td>
<td>64.74</td>
</tr>
</tbody>
</table>

### Exchange Rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
</tr>
<tr>
<td>2007</td>
<td>41.34</td>
</tr>
<tr>
<td>2008</td>
<td>43.62</td>
</tr>
<tr>
<td>2009</td>
<td>48.42</td>
</tr>
<tr>
<td>2010</td>
<td>45.72</td>
</tr>
<tr>
<td>2011</td>
<td>46.85</td>
</tr>
<tr>
<td>2012</td>
<td>53.46</td>
</tr>
<tr>
<td>2013</td>
<td>58.44</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016</td>
<td>67.21</td>
</tr>
<tr>
<td>2017</td>
<td>65.12</td>
</tr>
</tbody>
</table>

*Source: Reserve bank of India, Average for the year*
India Brand Equity Foundation (IBEF) engaged Aranca to prepare this presentation and the same has been prepared by Aranca in consultation with IBEF.

All rights reserved. All copyright in this presentation and related works is solely and exclusively owned by IBEF. The same may not be reproduced, wholly or in part in any material form (including photocopying or storing it in any medium by electronic means and whether or not transiently or incidentally to some other use of this presentation), modified or in any manner communicated to any third party except with the written approval of IBEF.

This presentation is for information purposes only. While due care has been taken during the compilation of this presentation to ensure that the information is accurate to the best of Aranca and IBEF’s knowledge and belief, the content is not to be construed in any manner whatsoever as a substitute for professional advice.

Aranca and IBEF neither recommend nor endorse any specific products or services that may have been mentioned in this presentation and nor do they assume any liability or responsibility for the outcome of decisions taken as a result of any reliance placed on this presentation.

Neither Aranca nor IBEF shall be liable for any direct or indirect damages that may arise due to any act or omission on the part of the user due to any reliance placed or guidance taken from any portion of this presentation.