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EXECUTIVE SUMMARY … (1/2)

Increasing industrialisation and economic development to drive capital goods & engineering market

Expansion in the electrical equipment industry, with the growth seen in power industries

Engineering research & design segment revenues to increase fourfold by 2020

Capital goods & engineering turnover expected to reach USD125.4 billion by FY17 from USD46.18 billion in FY15

Electrical equipment market size forecasted to reach USD100 billion by FY22 from USD21 billion in FY15

ER&D revenues projected to reach USD45 billion in FY20 from USD22 billion in FY16

Source: Dept of Heavy Industries, India Electrical and Electronics, Manufacturer Association, NASSCOM, TechSci Research
Notes: CG - Capital Goods, ER&D - Engineering Research & Design; E-Estimates

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Indian construction equipment market to grow more than threefold from 2015 to 2020

Indian telecom equipment market to more than double by 2020

Increased production of Central Public Sector Enterprise (CPSE)

Construction equipment market projected to reach USD22.7 billion by FY20 from USD2.9 billion in FY15

Telecom equipment market to reach USD37 billion by FY20 from USD19 billion in FY15

Production of CPSE under DHI to aggregate USD6.4 billion by FY15 from USD7.7 billion in FY14

Source: Booz & Company, Volvo India Ltd, Estimates, Ministry of Heavy Industries and Public Enterprise, TechSci Research
Notes: DHI - Dept. of Heavy Industries, CPSE - Central Public Sector Enterprise
P-Projected, E-Estimated
Growing demand

- Capacity creation in sectors such as infrastructure, power, mining, oil & gas, refinery, steel, automotives, and consumer durables driving demand in the engineering sector
- Rising demand for electrical and construction equipment

Attractive opportunities

- 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

Higher investments

- 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 four million skilled and semi-skilled labour

Policy support

- De-licensed engineering sector; 100 per cent FDI permitted
- Cumulative FDI into the sector, during April 2000 to March 2016, stood at USD28.22 billion.
- Basic customs duty was reduced from 10 per cent to 5 per cent on forged steel rings used in wind operated electricity generators

Source: Government of India, Ministry of Heavy Industries, Department of Industrial Policy & Promotion, India Electrical and Electronics Manufacturer Association, TechSci Research
Notes: FDI - Foreign Direct Investment, FY - Indian Financial Year (April – March), USD - US dollar

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ENGINEERING

TWO MAJOR SEGMENTS

Engineering

Heavy engineering

Heavy electrical

Heavy engineering and machine tools

Automotive

Light engineering

Low technology products

High technology products

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## Boilers
- As per the latest data available, the Indian boiler industry has the capability to manufacture boilers with super critical parameters up to 1,000 MW unit size
- The industry’s market size was USD2.2 billion in FY15 and is expected to reach USD5.8 billion in FY17 and USD11.7 billion in FY22

## Turbines and generator sets
- As per the latest data available, the industry manufactures various turbines in the range of 800–7,000 MW per annum, and generators ranging from 0.5 KVA to (ones even higher than) 25,000 KVA
- Foreign players like Siemens also in race to supply Indian market
- Total production of turbines and generators stood at US1.1 billion in FY15 and is estimated to reach USD6.6 billion by FY17 and USD13.4 billion by FY22

## Transformers
- As per the latest data available, a whole range of power and distribution transformers, including special type of transformers required for furnaces, electric tracts and rectifiers, are manufactured in the country, revenues are expected to grow at CAGR of 14 per cent till 2018
- The transformers market in India was valued at USD1.7 billion in FY15 and is expected to reach USD5.9 billion in FY17 and USD11.1 billion in 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 USD2.4 billion in FY15 and is projected to reach USD4.4 billion in FY17 and USD8.2 billion in FY22
- In 2015, Crompton Greaves sold 50 per cent of its stake to their joint venture partner CG Lucy Switchgear for a deal value of around USD6.58 million

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

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 USD722 million, while exports stood at USD45.22 million in FY16

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 USD2.02 billion in FY15
- The industry is de-licensed with FDI permitted up to 100 per cent
- The industry has an installed capacity of USD1.7 billion in FY14 and produced goods worth USD1.14 billion in FY15
- In FY15, total exports from textile jute mill machinery stood at USD404 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 390 million tonnes by FY15, 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. Also, the cement capacity in India is further expected to reach 421 million tonnes by the end of 2017

Material handling equipment

- Material handling equipments have four 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


Note: TPD - Tonnes Per Day
### Plastic processing machinery
- There are 11 major and nearly 200 small & medium manufacturers
- Domestic manufacturers cater to 95 per cent of the processing industry’s needs
- Total consumption of plastics in India is expected to grow from 7.5MMT in 2014 to 12.8MMT by 2016 and become the third largest consumer of plastic in the world.
- India’s demand for plastics in irrigation alone is pegged to cross 2.5MT by 2015 while the plastic in packaging would expected to increase 9MT by 2020.

### Dies, moulds & tools industry
- It includes over 500 commercial tool manufacturers
- Key locations are Mumbai, Chennai and Pune
- Nearly 18 governments tool rooms as well as training centres are operating in the country
- Total production of dies, moulds & tools was expected to touch USD3.68 billion in FY15
- Exports in the industry was expected to touch USD828.3 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
- Major process machineries are tanks, pressures vessels, evaporators and stirrers
- Production and exports were expected to be totalled USD4.6 billion and USD1037.3 million, respectively, in FY15

### Earth moving, construction and mining equipment
- Currently, 20 large and global manufacturers, and 200 small & medium manufacturers operate in the industry
- The construction equipment industry’s revenues are estimated to reach USD22.7 billion by 2020 from USD2.9 billion in FY15. Unit sale of construction equipment is expected to grow to 96,730 by 2018 from 60,655 in FY14

### 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 two-wheelers and three-wheelers.
- Total production in the automobiles sector stood at approximately 24 million units in FY16 and 23.3 million units over FY15.
- Total exports stood at 3.6 million units during FY15 and 3.2 million units over FY14.
- Sales of passenger vehicles has expanded by 11.04 per cent to 242,060 units in April 2016.
- In September 2016, sales of passenger vehicles went up by 15.14 per cent, whereas the sales of utility vehicles rose by 37.93 per cent.
- The passenger vehicles segment is likely to grow by 10-13 per cent during 2016-17.

### Auto components
- The auto components industry has more than 500 companies in the organised sector and about 10,000 entities in the unorganised sector.
- The industry’s turnover expanded at a CAGR of 14.6 per cent to reach USD66 billion in FY16 from USD22.2 billion in FY08 and is expected to reach USD115 billion in 2020.
- During FY09–15, exports of auto components increased at a CAGR of 14.01 per cent to USD11.2 billion and reached USD12 billion in FY16.

### 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.
- Around 626,839 number of tractors were sold in 2015 by 13 manufacturers. The total numbers include total domestic sales and total exports to the other countries.
- Indian tractors are exported to the US, Malaysia, Turkey and Africa.
- In November 2016, the Central Government directed the states of Punjab, Haryana and Uttar Pradesh to promote use of agri-equipment for effective management of crop residue.


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Casting and forging

- The Indian casting industry produces 6 MMT of various grades of casting and ranks sixth in the world. The total production by the Indian forging industry in 2016 stood at 2.45 MMT.
- The forging industry comprises around 10 organised players, with nearly 100 players in the small and medium sector, and an installed capacity of 3.7 million tonnes in 2015-16.
- The industry exports a substantial part of its production apart from catering to the local demand.

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 industry is highly fragmented and dominated by small players.
- The indigenous industry caters to 40 per cent of demand, while the remaining is met through imports.

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.
- Total exports of industrial fasteners stood at USD621.9 million in FY13, up 13.8 per cent from FY12.
- Total exports of industrial fasteners (which includes bolts & nuts and railway track materials) stood at USD811 million in FY14.

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

* Engineering exports from India stood at USD 58.8 billion in FY16
* During FY08–FY16, engineering exports from India registered growth at a CAGR of 7.2 per cent
* Engineering exports include transport equipment, capital goods, other machinery/equipment and light engineering products such as castings, forgings and fasteners
* In August 2016, engineering exports by India, to its top 25 destinations, registered a growth of 5.8 per cent over August 2015

India’s engineering exports (USD billion)

<table>
<thead>
<tr>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.7</td>
<td>40.5</td>
<td>32.6</td>
<td>49.8</td>
<td>58.6</td>
<td>56.8</td>
<td>61.6</td>
<td>70.6</td>
<td>58.8</td>
</tr>
</tbody>
</table>

CAGR: 7.2%

Transport equipment (which includes Auto & auto component including Aircraft and ship boats) is the leading contributor to engineering exports. The segment accounted for 34.5 per cent of the total engineering exports from India in FY16.

Exports of iron & steel products accounted for a market share of around 19.8 per cent, in the overall exports, while industrial machinery including electrical machinery accounted for 24.8 per cent of the total engineering exports in FY16.

Other commodities includes medical and scientific instruments, hand tools & cutting tools, bicycle parts, office equipment, prime mica & mica products, etc. and accounted for a share of 10.5 per cent of the total engineering exports from India in FY16.

Around 74% of India’s engineering exports were accounted for by top 25 export destinations in 2016.

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 TechSci Research
### Engineering

#### Key Players (1/2)

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues (FY16)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsen &amp; Toubro</td>
<td>USD15.48 billion</td>
<td>Engineering &amp; construction, cement, electrical &amp; electronics</td>
</tr>
<tr>
<td>Bharat Heavy Electricals Ltd</td>
<td>USD3.95 billion</td>
<td>Power generation, transmission, transportation</td>
</tr>
<tr>
<td>Siemens India Ltd(^{(1)})</td>
<td>USD1.7 billion</td>
<td>Power generation and distribution equipment, transportation systems, communication and healthcare products</td>
</tr>
<tr>
<td>ABB India Ltd(^{(1)})</td>
<td>USD0.6 billion</td>
<td>Transformers, switch gears, control gears</td>
</tr>
<tr>
<td>Crompton Greaves Ltd</td>
<td>USD0.81 billion</td>
<td>Power generation and transmission equipment</td>
</tr>
</tbody>
</table>

*Source: Company Annual reports, News article, Money control, Bloomberg, TechSci Research
Note: (1) Revenue for (6 month ended, from April-September 2015)*
<table>
<thead>
<tr>
<th>Company</th>
<th>Revenues USD Billion(FY16)</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers India Ltd(1)</td>
<td>USD0.14 billion</td>
<td>Highways &amp; bridges, mass rapid transport systems construction, specialist materials manufacturing</td>
</tr>
<tr>
<td>Kirloskar Oil Engines Ltd</td>
<td>USD0.39 billion</td>
<td>Engines, engine bearings &amp; valves, grey iron casting</td>
</tr>
<tr>
<td>Cummins India Ltd</td>
<td>USD0.76 billion</td>
<td>Power generation, construction and mining equipment, fire pumps &amp; cranes, compressors</td>
</tr>
<tr>
<td>Thermax</td>
<td>USD0.84 billion</td>
<td>Boilers and heaters, air pollution and purification, absorption cooling</td>
</tr>
<tr>
<td>BGR Energy</td>
<td>USD0.49 billion</td>
<td>Boilers, turbines, generators</td>
</tr>
</tbody>
</table>

Source: Company Annual Report, News article, TechSci Research
Note: (1) Revenue for (6 month ended, from April-September 2015)
**ENGINEERING**

**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 & Toubro (L&T) has diversified into power equipment manufacturing
    - Thermax entered the power utility segment
    - EIL (Engineering India Limited) has ventured in Nigeria and constructed a refinery and polypropylene plant worth USD139 million in FY15. This 20 MMTPA Refinery and 600,000 TPA Polypropylene plant is the single largest consultancy order received by the company

- **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&D and product development

- **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
  - Entry of new players has raised the industry’s competitiveness

Source: TechSci Research
Note: BHEL - Bharat Heavy Electricals Ltd
PORTERS FIVE FORCES ANALYSIS

**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

**Substitute Products**
- 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

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

Source: TechSci Research
ENGINEERING

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

ENHANCING R&D ECOSYSTEM

- Most of the companies are targeting R&D to increase scope for growth


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GROWTH DRIVERS FOR THE INDIAN ENGINEERING SECTOR

Demand-side drivers

- Capacity addition for power generation
- Increase in infrastructure spending
- Rise in exports which is expected to touch USD120 billion by 2015

Growth drivers

Policy

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

Investment

- Increasing FDI inflows
- Higher M&A
- Easy credit facilities for manufacturing companies
During FY07-FY16, India’s energy requirement grew at a CAGR of 5.5 per cent, with the energy requirement reaching to 1,114 billion units by FY16.

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

Note: BU - Billion Unit
CEA - Central Electrical Authority
 Investments to increase capacity have led to rising demand for power generation and transmission equipments.

Generation capacity has increased by 20,037 MW in FY16 from 17800 MW in FY15.

Addition in generating capacity (‘000’ MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>Addition</th>
</tr>
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<tbody>
<tr>
<td>FY90</td>
<td>8.1</td>
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<tr>
<td>FY97</td>
<td>12.1</td>
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<tr>
<td>FY10</td>
<td>12.77</td>
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<tr>
<td>FY11</td>
<td>21.44</td>
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<tr>
<td>FY12</td>
<td>17.19</td>
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<td>FY13</td>
<td>17.95</td>
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<td>FY14</td>
<td>18.4</td>
</tr>
<tr>
<td>FY15</td>
<td>17.8</td>
</tr>
<tr>
<td>FY16</td>
<td>20.03</td>
</tr>
</tbody>
</table>

Source: Ministry of Power, Annual report, TechSci Research

Note: MW - Mega Watt
The Infrastructure Index (part of the wider Index of Industrial Production) comprises eight core industries: coal, crude oil, natural gas, petroleum refinery products, fertilisers, steel, cement and electricity.

The infrastructure index rose to 173.0 in FY16, implying a growth rate of 2.7 per cent in FY16.

During FY09-FY16, infrastructure index grew at a CAGR of 5.14 per cent.

**Source:** Office of the Economic Adviser, TechSci Research

**Note:** The base year for FY13 and FY14 infrastructure index has been changed from 1993-94 to 2004-05.

**FY17:** Expected

**Index and Growth Rate**

CAGR: 5.14%
India has second largest road networks (3.3 million km) comprising expressways, national highways, 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 USD456.9 billion investments in infrastructure.

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

**Share in roads network (FY16)**

- Expressways: 79.20%
- State Highways: 13.98%
- Major District Roads: 2.88%
- Rural and Other Roads: 3.94%
- Other: 0.006%

**Total highway length added during Five-Year Plans (KM)**

<table>
<thead>
<tr>
<th>Plan</th>
<th>Length (KM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Plan</td>
<td>23,814</td>
</tr>
<tr>
<td>10th Plan</td>
<td>7,091</td>
</tr>
<tr>
<td>11th Plan</td>
<td>9,044</td>
</tr>
<tr>
<td>12th Plan</td>
<td>36,500</td>
</tr>
</tbody>
</table>

*Source: National Highway Authority of India, Ministry of Road Transport and Highways, TechSci Research*

Note:⁽¹⁾ Physical Achievements under National Highways Development Project during 11th Five Year Plan up to Sept, 2011
STRONG POLICY SUPPORT CRUCIAL FOR THE SECTOR

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 seven states; it is expected to bolster the sector

Make in India plan to promote manufacturing facilities in India
- Government of India launched the Make in India plan in 2014 with the aim of enhancing the manufacturing facilities and employability in India. The key objective of Make in India plan is to make India a renowned manufacturing hub and invite companies to investment. Mission of the Make in India plan is to manufacture in India and sell the products worldwide.

Source: DHI Annual Report, Ministry of Power Annual Report, Make in India, TechSci Research
Note: GW - Giga Watt
BUDGET FY16 TO FURTHER BOOST INVESTMENTS IN THE SECTOR

- **Tax Holiday For MSMEs**
  - 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) for investment in the plant & machinery or new land for the purpose of the expansion of the current line of business.

- **Cut in excise duty to aid the auto industry**
  - 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.

- **Investment on building Internal and External Infrastructure in Smart Cities**
  - Indian government has planned to build 100 smart cities. The government has allocated USD8.29 billion for this project. This plan would need more PPP’s for better and fast execution. In addition, smart city will be build in three different phases.

- **Higher allocation to the defence sector**
  - Allocation to the defence sector was raised to USD40 billion. In addition, Make in India policy is being carefully pursued to achieve greater self-sufficiency in the area of defence equipment including air-craft.

- **Budgetary support**
  - In the Union Budget 2015-16, investment on infrastructure sector increased by USD11.62 billion.

*Source: Union Budget FY14, Union Budget 2015-16*

Notes: Capex - Capital Expenditure, JNNURM - Jawaharlal Nehru National Urban Renewal Mission
## 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>
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<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, TechSci 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 &amp; 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, TechSci Research
### SPECIAL ECONOMIC ZONES (SEZs) TO PROMOTE EXPORTS ... (3/3)

<table>
<thead>
<tr>
<th>Developer</th>
<th>Location</th>
<th>Product</th>
<th>Source: SEZ India, TechSci Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen Infrastructures Limited</td>
<td>Vadodara, Gujarat</td>
<td>High-tech Engineering products and related Services</td>
<td></td>
</tr>
<tr>
<td>Aspen Infrastructures Limited</td>
<td>Karnataka</td>
<td>High-tech Engineering products and related Services</td>
<td></td>
</tr>
<tr>
<td>Quest SEZ Development Private Limited</td>
<td>Belgaum District, Karnataka</td>
<td>Precision Engineering Product</td>
<td></td>
</tr>
<tr>
<td>Khed Economic Infrastructure Limited (Bharat Forge Limited)</td>
<td>Pune, Maharashtra</td>
<td>Engineering &amp; Electronics</td>
<td></td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Vellore, Tamil Nadu</td>
<td>Engineering</td>
<td></td>
</tr>
<tr>
<td>State Industries Promotion Corporation of Tamil Nadu</td>
<td>Erode, Tamil Nadu</td>
<td>Engineering</td>
<td></td>
</tr>
</tbody>
</table>
* Cumulative FDI inflows into the engineering sector increased to USD28.22 billion in FY16\(^{(1)}\) from USD8.9 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 2010-2016, there has been a 195.5% rise in cumulative FDI flows into the Indian engineering industry.

**Cumulative FDI inflows in engineering sector (USD billion)\(^{(1)}\)**

<table>
<thead>
<tr>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16(^{(1)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.9</td>
<td>11.2</td>
<td>14.7</td>
<td>17.3</td>
<td>19.8</td>
<td>25.3</td>
<td>28.22</td>
</tr>
</tbody>
</table>

**Source:** Department of Industrial Policy & Promotion, TechSci Research

Notes: \(^{(1)}\) - Cumulative from April 2000 to October 2014 and so on, FY16\(^{(1)}\). Till March 2016,

FDI inflows includes Automobile industry, Electrical equipment, Miscellaneous mechanical and engineering industry, Industrial machinery, Machine tools, Agriculture machinery, Earth-moving machinery and Industrial instrument
## INFLOW OF FOREIGN INVESTMENTS; RISE IN M&A ACTIVITY ... (2/2)

<table>
<thead>
<tr>
<th>Acquirer</th>
<th>Target</th>
<th>Type</th>
<th>Acquisition date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birla Corp. Limited</td>
<td>Reliance Cement Company Private Limited</td>
<td>Acquisition</td>
<td>July 2016</td>
</tr>
<tr>
<td>Fairfax India Holdings Corp. and</td>
<td>Bangalore International Airport Limited</td>
<td>Minority stake</td>
<td>March 2016</td>
</tr>
<tr>
<td>Fairfax Financial Holdings Limited</td>
<td></td>
<td></td>
<td></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 &amp; Offshore Engineering</td>
<td>Majority stake</td>
<td>March 2015</td>
</tr>
<tr>
<td>Systra 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 &amp; Toubro Ltd</td>
<td>Thales 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>

**Source:** Grant Thornton, TechSci Research, Thomson Banker, VC circle

**Note:** (1) - Acquired by its German subsidiary - Geometric Europe GmbH

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GROWTH OPPORTUNITIES IN THE ENGINEERING SECTOR … (1/2)

**Defence**

- Allocation to the defence sector was raised to USD52.2 billion under Union Budget 2016-17. 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 26 per cent FDI, and its offset policy is expected to enhance private sector (including SME) participation. FDI was increased to 49 per cent without technology transfer and above that with technology transfers, by the Department of Industrial Policy and Promotion (DIPP). In 2016, the government introduced 100 per cent FDI in defence sector

**Civil nuclear sector**

- India’s nuclear capacity is estimated to be over 5.8 GW in FY16; an additional 12,000 MW of capacity has been planned under the 12th Five-Year Plan (2012–17). The country is aiming to produce nuclear capacity of 10.1 GW by FY17
- It represents business opportunity worth USD312 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 USD40 billion by 2016, with about USD20 billion generated from exports
- In auto components sector, 100 per cent FDI is allowed under the automatic route

Source: TechSci Research
Notes: GW - Giga Watt, SME - Small and Medium Enterprises
GROWTH OPPORTUNITIES IN THE ENGINEERING SECTOR … (2/2)

Power Transmission and Distribution (T&D)

- T&D expenditure is set to increase on growth in power generation and privatisation of distribution
- In FY17(1), 5,743 ckm of transmission lines have been commissioned, which accounted for 24.6 per cent of the annual target of 23,384 ckm

Material handling equipment

- The material handling equipment sector is expected to gain from robust demand from steel, power, mineral and other infrastructure industries
- Market demand for material handling equipment is estimated at USD30 billion over 2007–14
- On November 22, 2016, L&T bagged orders worth USD45.52 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

Source: TechSci Research
Note: CKM- Circuit Kilometres
(1): Data is from April – June 2016
By 2020, the ESO market in India is expected to reach USD40–50 billion, propelled by increasing onshore to offshore movement of services.

FY14
- As per the latest data available, the global engineering services spending is estimated to be around USD952 billion.
- About USD75 billion is expected to flow through the outsourcing channel into vendor countries.
- India accounts for about 16.5 per cent of the R&D outsourced market.

2020
- The global engineering services spending is projected to reach USD1,100 billion.
- About USD180 billion is estimated to flow through the outsourcing channel into vendor countries.
- India can account for about 25–30 per cent of this outsourced revenue.

Source: Booz Allen Hamilton, Nasscom, TechSci Research
Note: ESO is Engineering Services Outsourcing
*Rising Demand for Electrical Equipment … (1/2)*

- India’s electrical equipment industry has witnessed significant growth in the last few years.
- Major electrical equipment manufactured include Electric power equipments & parts, Electric wires & Cables, Boilers & Parts and Transmission line towers & parts.
- Electric power equipments & parts contributes 63 per cent in the total electrical equipment industry while wires & cables contributed 17 per cent in FY14.
- Demand for T&D equipment is projected to reach USD 75.0 billion in FY22 from USD 15.1 billion in FY15.
- Indian Electrical Equipment Industry posts marginal 3.5 per cent growth in 2013-14, out of which capacitors and energy meters showed the maximum growth of 41.1 per cent and 10 per cent.

Source: Indian Electrical and Electronics Manufacturers Association, Department of Heavy Industries
Notes: T&D - Transmission and Distribution, BTG - Boilers, Turbine, Generator

**T & D equipment demand projection (USD billion)**

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

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RISING DEMAND FOR ELECTRICAL EQUIPMENT … (2/2)

- The generation equipment (BTG) segment is projected to grow to USD25 billion by the year FY22
- Production of generation equipment (boilers, turbines and generators) in India is estimated at around USD5.7 billion by 2022
- Demand for generation equipment is projected to rise to USD25.1 billion in FY22 from USD3.3 billion in FY15
- Exports of electrical machinery grew at 6.4 per cent CAGR between 2010-15

Generation equipment-wise demand projection (USD billion)

Exports of electrical machinery (USD billion)

Source: Indian Electrical and Electronics Manufacturers Association
Note: BTG - Boiler, Transmission and Generation
FY16⁽¹⁾: April to September 2015
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.

During January 2016 to May 2016, the construction equipment industry recorded sales of 21,869 units of construction equipment, which represents a growth of 47.6 per cent over the same period previous year.

### Expected unit sales by 2019

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Sold in 2015</th>
<th>Forecast 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe Loaders</td>
<td>21192</td>
<td>27000</td>
</tr>
<tr>
<td>Crawler Excavators</td>
<td>11013</td>
<td>22000</td>
</tr>
<tr>
<td>Mobile Compressors</td>
<td>3542</td>
<td>4800</td>
</tr>
<tr>
<td>Mobile Cranes</td>
<td>4863</td>
<td>6500</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>2771</td>
<td>3400</td>
</tr>
<tr>
<td>Wheeled Loaders</td>
<td>2097</td>
<td>3200</td>
</tr>
<tr>
<td>Crawler Dozers</td>
<td>391</td>
<td>650</td>
</tr>
</tbody>
</table>

### Product segment-wise CE market by 2014

- Earth Moving: 56.23%
- Concrete Equipment: 13.22%
- Material handling: 8.51%
- Road Construction Equipment: 19.00%
- Material Processing: 3.04%

Source: Indian Construction Equipment Manufacturer’s Association, Notes: CE - Construction Equipment, ECE - Electrical and Construction Equipment

For updated information, please visit www.ibef.org
BHEL – MAINSTAY OF THE ELECTRICAL MACHINERY INDUSTRY ... (1/2)

Salient features

- 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
- Profit-making since 1971–72
- Installed base of more than 124,064 MW
- Seventeen manufacturing units, two subsidiaries and five joint ventures, and over 150 project sites
- Accounted for over 55 per cent of India’s total installed generating capacity in FY15
- Net Sales stood at USD4 billion in FY16 (Upto 31st March, 2016)

Net sales (USD billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>3.9</td>
</tr>
<tr>
<td>FY08</td>
<td>4.9</td>
</tr>
<tr>
<td>FY09</td>
<td>5.8</td>
</tr>
<tr>
<td>FY10</td>
<td>7.0</td>
</tr>
<tr>
<td>FY11</td>
<td>9.3</td>
</tr>
<tr>
<td>FY12</td>
<td>10.2</td>
</tr>
<tr>
<td>FY13</td>
<td>8.9</td>
</tr>
<tr>
<td>FY14</td>
<td>6.5</td>
</tr>
<tr>
<td>FY15</td>
<td>4.9</td>
</tr>
<tr>
<td>FY16</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Source: Company reports, Indian Express, TechSci Research
Notes: ‘Navratna’ is the title given to nine Public Sector Enterprises (by the Government of India) having distinct comparative advantages,

⁽¹⁾FY16- Data for year ended 31st March 2016
### Key success factors

- **Boiler efficiency**
- **Lower design heat rate**
- **Lower auxiliary power consumption**
- **Better PLF**
- **Lower lifecycle cost**

### Recent awards and recognitions

- **BHEL, On 15th December 2015** commissioned 500 MW Thermal Unit in West Bengal.
- **By FY16**, cumulative power projects installed worldwide is estimated to be around 10 GW.
- **First 800 MW Boiler** synchronised for APPDCL at Krishnapatnam in 2014.
- **Received PSE Excellence award 2014** for R&D and Technology development.
- **Conferred the PSE Excellence Award by Indian Chamber of Commerce (ICC)** in 2013.
- **Awarded “Maharatna”** status by the Indian government (2013).
- **BHEL commissioned 3 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.
BHARAT FORGE: INDIA’S LARGEST AUTO COMPONENTS EXPORTER

Organic growth & integration

Entry into new markets such as US and Greece

ISO accreditations

Acquisitions in various countries

Joint ventures and technical partnerships

FY05 USD245 million turnover

FY16 Launched a new facility in November, 2015 for Su30 ROH at HAL Nashik

Construction of a hydro power plant in Rwanda

Awarded Sword of Honour for Safety Success

Completed first titanium flap-track forgings for Boeing Next-Generation 737

FY15 USD1,262.9 million turnover

FY16 USD657.72 million turnover

Source: Company reports, TechSci Research

For updated information, please visit www.ibef.org
Salient features

- Launched a new center for aerospace Management Excellence & Leadership on December 15, 2015
- One of Asia’s largest aerospace companies with ‘Navratna’ status
- Produced over 3,700 aircraft, including 15 types of indigenous designs and over 4,300
- Nineteen production units and 10 research & design centers across eight locations in India
- Promoted and established 11 joint venture companies in collaboration with leading international and Indian aviation organisations
- Offers services for aircraft accessories, foundry and forge, engine, helicopter, industrial & marine gas turbine division and transport aircraft division
- In July 2016, Hindustan Aeronautics Ltd. and Safran Helicopter Engines agreed to form a joint venture to support Indian rotorcraft customers
- The company installed a 6.3 MW wind energy power plant at Harapanahalli in Karnataka in July 2016

Net sales (USD billion)

<table>
<thead>
<tr>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>2.2</td>
<td>2.4</td>
<td>2.9</td>
<td>3.0</td>
<td>2.6</td>
<td>2.5</td>
<td>2.6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Source: Company reports, TechSci Research
Notes: ‘Navratna’ is the title given to nine Public Sector Enterprises (by the Government of India) having distinct comparative advantages.
HAL - Hindustan Aeronautics Limited
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
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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
**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

USD: US Dollar

FY: Indian Financial Year (April to March)

Wherever applicable, numbers have been rounded off to one decimal
### Exchange rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</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>
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<td>2008–09</td>
<td>46.14</td>
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<td>2009–10</td>
<td>47.42</td>
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<td>2010–11</td>
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<td>2012–13</td>
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<td>60.28</td>
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<td>2014–15</td>
<td>61.06</td>
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<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–2017E</td>
<td>66.95</td>
</tr>
</tbody>
</table>

### Exchange rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR equivalent of one USD</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>
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<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>
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<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( Expected)</td>
<td>67.22</td>
</tr>
</tbody>
</table>

Source: Reserve bank of India, Average for the year
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