

# Engineering

AUGUST  
2012



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## Contents

- ❖ Advantage India
- ❖ Market overview and trends
- ❖ Growth drivers
- ❖ Success stories: BHEL, Bharat Forge
- ❖ Opportunities
- ❖ Useful information

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## Advantage India

### Growing demand

- Capacity creation in sectors like infrastructure, power, mining, oil & gas, refinery, steel, automotives, and consumer durables is driving demand growth in the engineering sector

### Opportunities

- Nuclear capacity expansion is expected to provide significant business opportunities to the electrical machinery industry
- Rapid increase in infrastructure investment and industrial production to fuel further growth

FY15E

Engineering exports from India:  
USD68.0 billion

### Advantage India

### Competitive advantages

- India has a comparative advantage in manufacturing costs due to lower design, research and labour costs, and economies of scale
- Highly organised sector and dominated by large players employing over 4 million skilled and semi-skilled labour

### Policy support

- The engineering sector is delicensed; 100 per cent FDI is allowed in the sector
- Due to policy support, there was cumulative FDI of USD14.0 billion into the sector over April 2000 – February 2012, making up 8.6 per cent of total FDI into the country in that period

FY11

Engineering exports from India:  
USD65.3 billion

*Source:* Engineering Export Promotion Council (EEPC), Aranca Research  
Notes: E – Estimate, FDI – Foreign Direct Investment

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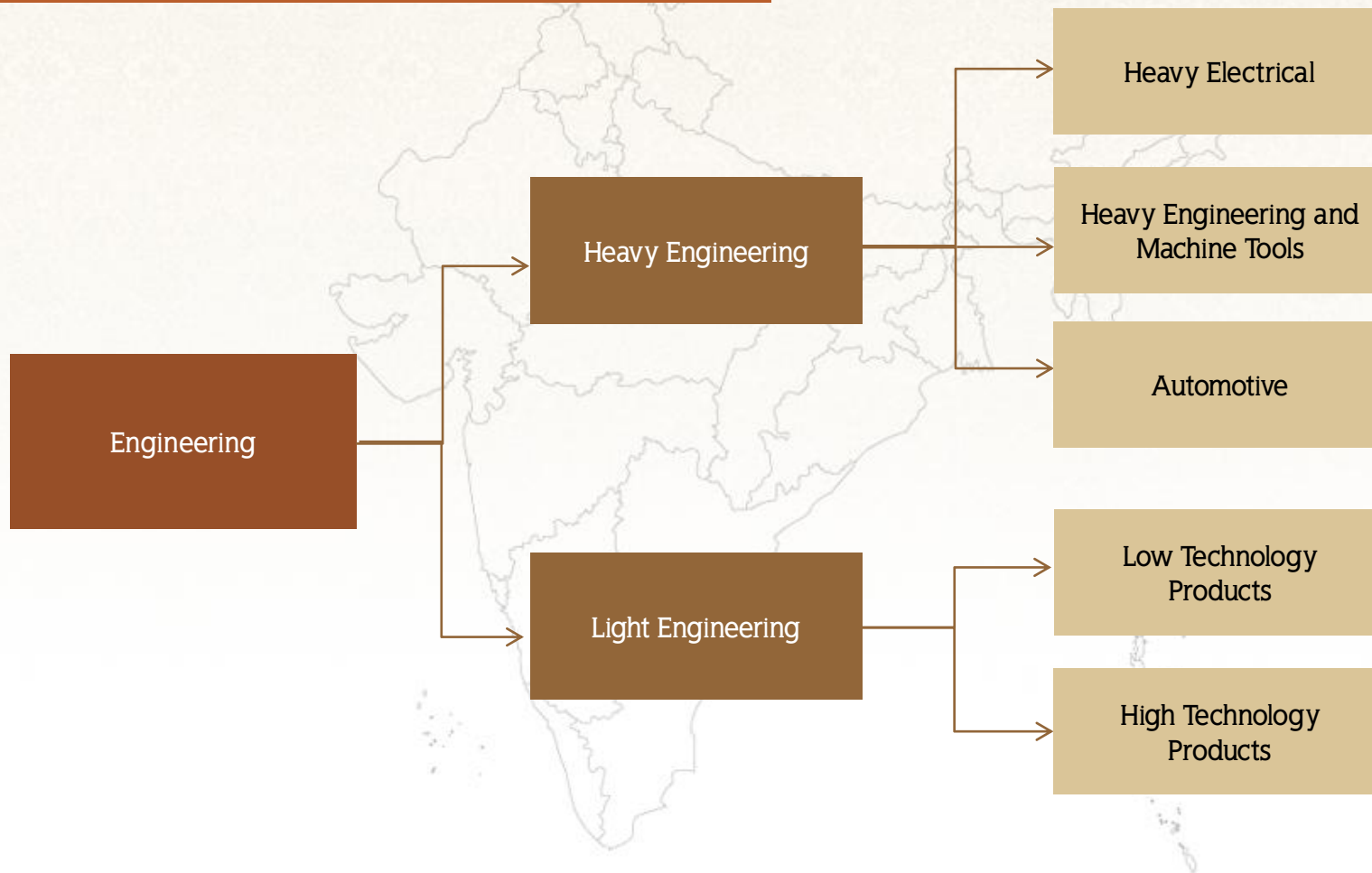
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## Engineering has two major segments



## Heavy Electrical - Key segments

### Boilers

- The Indian boiler industry has the capability to manufacture boilers with super critical parameters up to 1000 MW unit size
- Market size of the industry stood at USD5.1 billion in FY12

### Turbines and generator sets

- India's turbine industry manufactures various kinds of turbines in the range of 800- 7000 MW per annum, and generators ranging from 0.5 KVA to (ones even higher than) 250,00 KVA
- Market size of the industry stood at USD2.4 billion in FY12

### Transformers

- Whole range of power and distribution transformers are manufactured in the country, including special type of transformers required for furnaces, electric tracts and rectifiers
- Energy-efficient amorphous core transformers with lesser losses and low noise levels are also being developed to meet rising demand

### Switchgear and control gear

- The total production was 32.6 million during FY12
- Significant advances in technology have allowed the control gear industry to shift to production of digital relays in place of conventional relays

*Source:* DHI Annual report 2011-12, Aranca Research  
Notes : MW - Mega Watt, KVA – KiloVolt - Ampere

## Heavy Engineering – Key segments

### 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
- 200 machine tool manufacturers are operational in the organised sector along with 400 small scale units
- Size of the machine tool industry was around USD755 million in FY11

### Textile machinery

- Comprises over 1446 units involved in churning out machinery and components; another 600 units produce complete machinery
- The industry is de-licensed with FDI up to 100 per cent allowed
- The industry has an installed capacity of USD1.7 billion and produced goods worth USD1.3 billion in FY11

### Cement machinery

- Cement plants based on raw mill grinding, pyroprocessing and cement grinding process technology for capacities up to 10000 TPD are being manufactured in India
- Currently, 100 per cent FDI is allowed under automatic route
- With an installed capacity of around USD125 million, the industry is fully capable of meeting domestic demand

### Material handling equipment

- With around 50 units in the organised sector, the material handling equipment industry manufactures a range of equipment, including coal/ore/ash handling plants and associated equipment
- The sector's total imports were worth USD331 million in FY11 while corresponding exports were USD31.9 million

*Source:* DHI Annual report 2011-12, Cabinet Committee on Infrastructure report, Aranca Research  
Notes: TPD: Tonnes per day

## 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 two-wheelers and three-wheelers
- Total production in the automobiles sector stood at approximately 17.9 million units in 2011; total exports during the year was 2.3 million units

### Auto components

- The auto components industry has more than 500 companies in the organised sector and about 10,000 companies in the unorganised sector
- The industry's turnover has grown at a CAGR of 19.6 per cent over FY08-11 to USD37.9 billion from USD22.2 billion

### Agriculture machinery

- The agriculture machinery sector is primarily dominated by agricultural tractors
- The Indian tractor industry is the world's largest and accounts for one-third of global production
- More than 250,000 tractors are manufactured every year by 13 manufacturers
- Indian tractors are exported to US, Malaysia, Turkey and Africa

*Source:* DHI Annual report 2011-12, Cabinet Committee on Infrastructure report, Aranca Research



## Light Engineering – Key segments

### Casting and forging

- Indian casting industry produces 6 MMT of various grades of casting and ranks sixth in the world
- The forging industry comprises around 10 organised players, with around 100 players in the small and medium sector
- The industry exports a substantial part of its production apart from meeting 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 meets 40 per cent of demand and the rest is met through imports

### Industrial fasteners

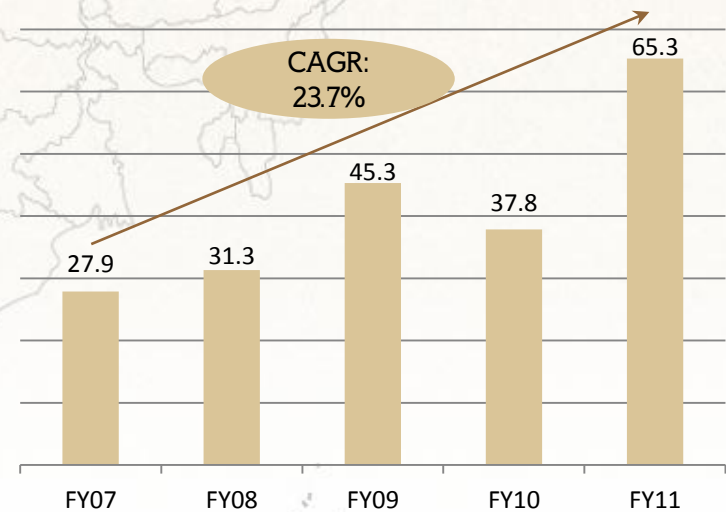
- The fastener industry in India can be classified into high tensile and mild steel fasteners
- Mild steel fasteners are primarily manufactured by the unorganised sector, while the high tensile steel segment is dominated by the organised sector
- Total production stood at 112.5 thousand tonnes in FY12

*Source:* DHI Annual report 2011-12; IVG Research Aranca Research  
Notes: MMT – Million Metric Tonnes

## India's engineering exports have been growing at a healthy pace over the years

- Indian engineering exports stood at USD65.3 billion in FY11, rising by nearly three-fourth of its FY10 level
- Over the period FY07-11, exports from the sector have posted a CAGR of 23.7 per cent

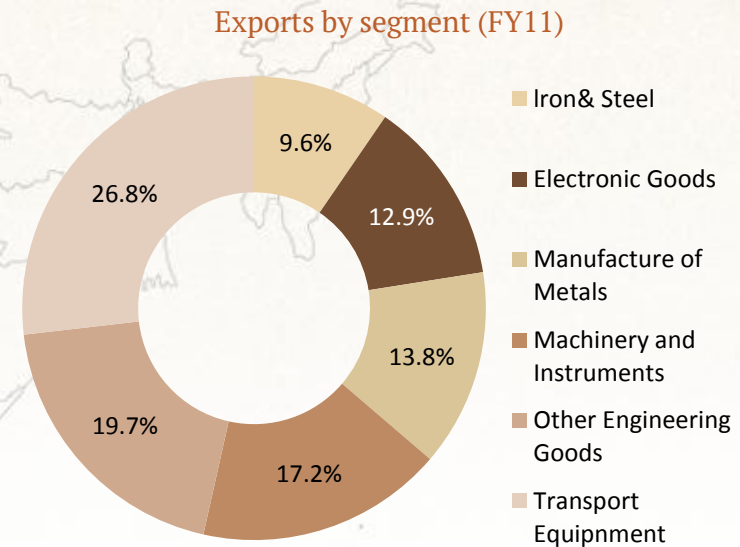
India's growing engineering exports (USD billion)



Source: Reserve Bank of India, Aranca Research




## Key categories of engineering exports

- Transport equipment is the leading contributor to engineering exports; the segment accounted for 26.8 per cent of India's engineering exports in FY11
- Machinery and instruments is the other major contributor with a share of 17.2 per cent








Source: Reserve Bank of India(RBI), Aranca Research

## Key Players ... (1/2)

	Company	Revenues (FY12)	Products
	Larsen & Toubro	USD13.4 billion	Engineering & Construction, Cement, Electrical & Electronics
	Bharat Heavy Electricals Ltd	USD10.4 billion	Power Generation, Transmission, Transportation
	Siemens India Ltd	USD2.5 billion	Power Generation and Distribution equipment, Transportation Systems, Communication and Healthcare Products
	ABB Ltd	USD1.6 billion	Transformers, Switch gears, Control gears
	Crompton Greaves Ltd	USD2.3 billion	Power Generation and Transmission Equipment



## Key Players ... (2/2)

	Company	Revenues (FY12)	Products
	Engineers India	USD0.8 billion	Highways & Bridges, Mass Rapid Transport Systems Construction, Specialist Materials Manufacturing
	Kirloskar Oil Engines Ltd	USD0.5 billion	Engines, Engine bearings & Valves, Grey Iron Casting
	Cummins India Ltd	USD0.8 billion	Power Generation, Construction and Mining Equipment, Fire Pumps & Cranes, Compressors
	Thermax	USD1.1 billion	Boilers and Heaters, Air Pollution and Purification, Absorption Cooling
	BGR Energy	USD0.7 billion	Boilers, Turbines, Generators

## Notable trends in the industry

### Diversification

- Many companies in the engineering sector have diversified, either geographically (mainly to the 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 forayed into power equipment manufacturing
  - Thermax has 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 sync with the global market requirements
- More than 2,500 firms in the engineering sector have the ISO 9000 accreditation
- Companies are now increasingly focusing on R&D and product development efforts

### Entry of International companies

- With 100 per cent FDI through the automatic route being permitted, major international players such as Cummins, ABB and Alfa Laval have entered the Indian engineering sector, given the growth opportunities offered by this market
- This has increased industry competitiveness

*Source:* Aranca Research;  
Note: BHEL – Bharat Heavy Electricals Ltd

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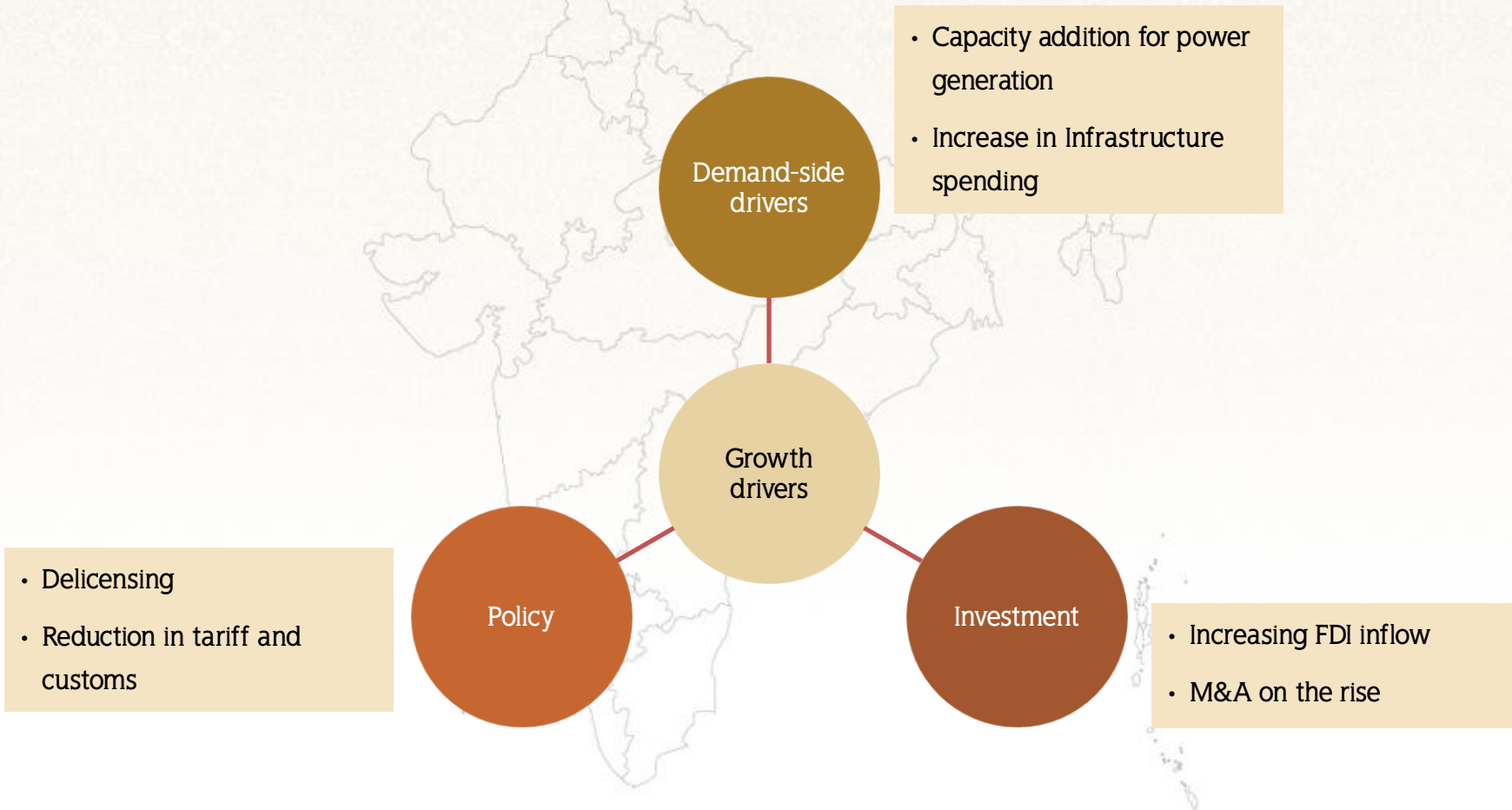
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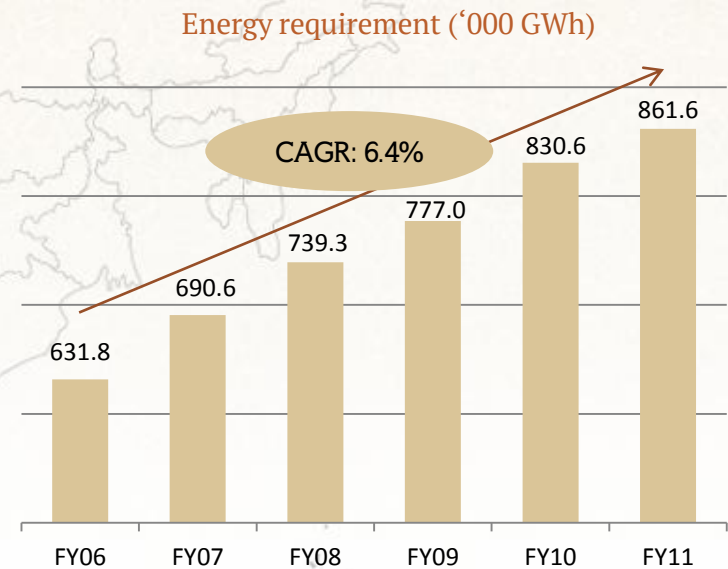
## Growth drivers of the Indian engineering sector





## Capacity augmentation leads to increasing demand ... (1/2)

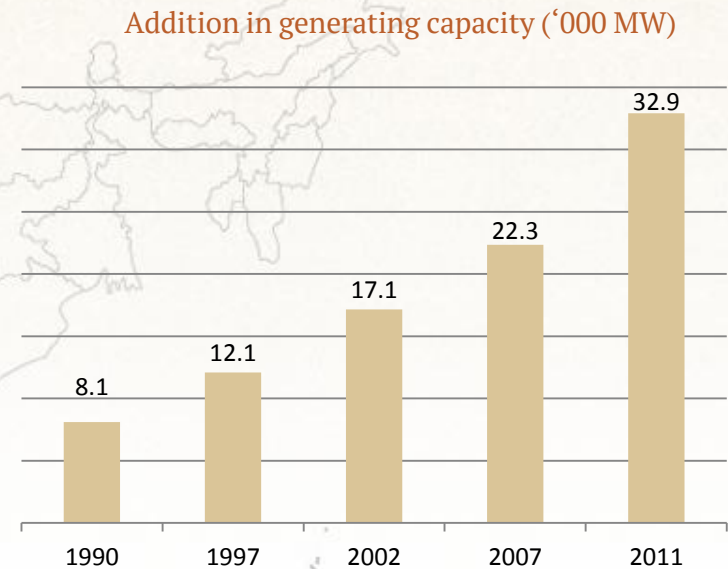
- India's energy requirement increased at a CAGR of 6.4 per cent over FY06-11 to 861,591 billion GWh
- The rising demand for energy has led to increasing capacity addition for power generation, which in turn has led to higher demand for power generation and transmission equipment



Source: Ministry of Power, Aranca Research  
Note: GWh –Gigawatt hour

## Capacity augmentation leads to increasing demand ... (2/2)

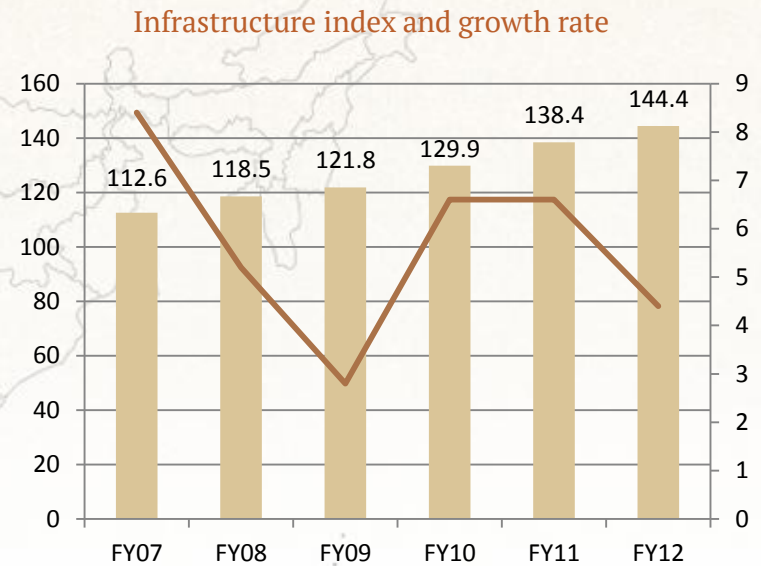
- Increasing investments in capacity has resulted in rising demand for power generation and transmission equipment
- The increase in capacity was 32.9 thousand MW during FY11
  - The figure was more than four times the corresponding one in 1990 (8.1 MW)



Source: Ministry of Power, Annual report 2011-12, Aranca Research  
Note : MW- Mega watt

## Infrastructure is one of the key factors driving demand for machinery

- The Infrastructure Index (part of the wider Index of Industrial Production) is made up of eight core industries; they are coal, crude oil, natural gas, petroleum refinery products, fertilizers, steel, cement, and electricity
- The index rose to 144.4 in FY12, thereby marking a CAGR of 5.1 per cent since FY07

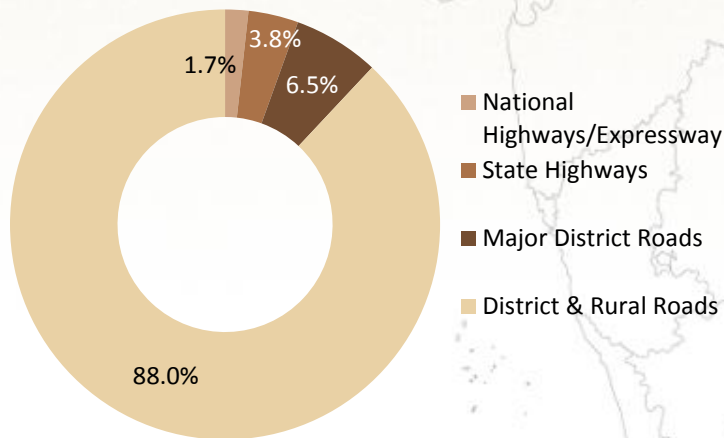


*Source:* Reserve Bank of India, Aranca Research  
Notes: The base year for Infrastructure index has been changed from 1993-94 to 2004-05

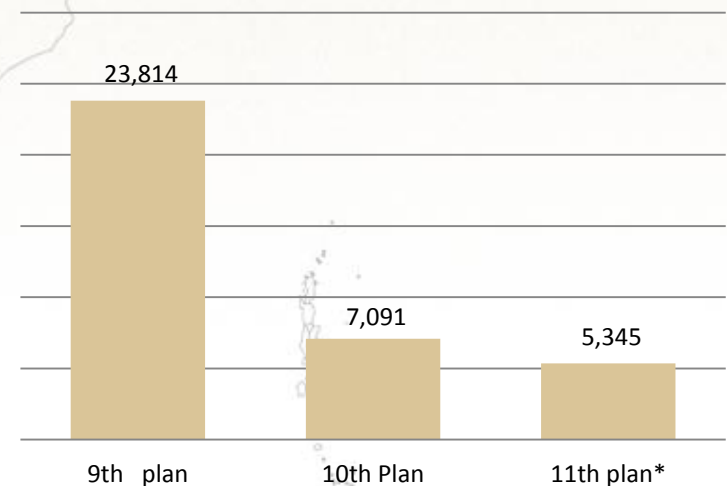
## Infrastructure growth is driving demand for machinery

- India has one of largest road networks (4.1 million kilometers), consisting of national highways, expressways, state highways, districts and village roads
- The length of highways added during the 11<sup>th</sup> Five Year Plan is 5,345 kilometers (as of 2011)
- Owing to large-scale public and private investment in roads, demand for related machinery has gone up significantly

Shares in roads network (FY12)



Total highway length added during Five Year Plans (km)



Source: National Highway Authority of India, Ministry Of Road Transport and Highways, Aranca Research

Notes: \* - 11th five year plan is currently going on, and the figure provided is the current estimate



## Strong policy support has been crucial for the sector

### Delicensing

- The engineering industry has been delicensed; 100 per cent FDI is allowed in the sector
- Foreign technology agreements are also permitted under the automatic route for this sector

### Tariffs and custom duties

- Government has removed tariff protection on capital goods
- It has reduced custom duties on a range of engineering equipment

### Initiatives focussed on power generation and infrastructure development

- The government has an ambitious mission of 'Power for all by 2012' and has planned capacity addition of 120 GW in the Twelfth Five-Year Plan
- Government infrastructure projects such as Golden Quadrilateral and the North-South and East-West corridors fuelled growth in the engineering sector

### Special Economic Zones (SEZs)

- Government has granted significant number of SEZs for the engineering sector across the country
- Delhi Mumbai Industrial Corridor (DMIC) being developed across seven states could boost engineering sector

*Source:* DHI Annual report 2010-11, Ministry of Power annual report, Aranca Research  
Notes: GW – Giga Watt

## Special Economic Zones (SEZs) will promote exports ... (1/2)

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

Source: SEZ India, Aranca research

## Special Economic Zones (SEZs) will promote exports ... (2/2)

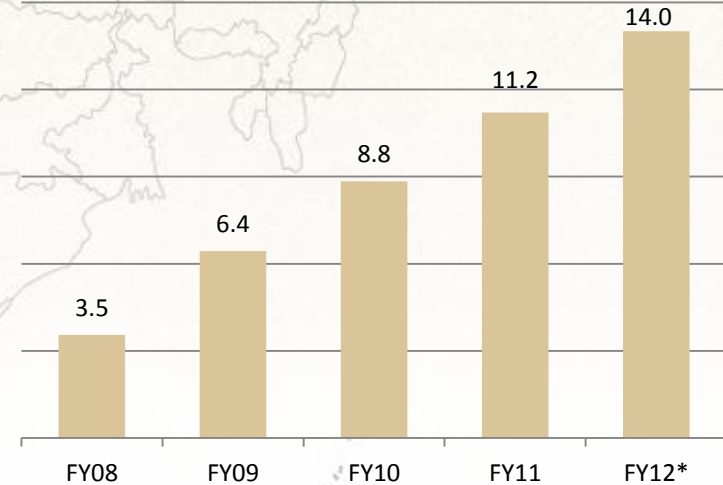
Developer	Location	Product
Quest Machining and Manufacturing Pvt Ltd	Belgaum, Karnataka	Auto, aerospace and industrial engineering
Viraj Profiles Ltd	Thane, Maharashtra	Stainless steel engineering products
Navi Mumbai SEZ Pvt Ltd	Navi Mumbai, Maharashtra	Light engineering
Maharashtra Industrial Development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

Source: SEZ India, Aranca research

## Foreign investments flowing in; rise in M&A activity ... (1/2)

- Cumulative FDI inflows over FY00-12 stood at USD14.0 billion
- The figure for FY12 is almost four times the corresponding amount in FY08

Cumulative FDI inflows (USD billion)



Source: Department of Industrial Policy & Promotion, Aranca Research  
Note: FY08: Cumulative from April 2000 to March 2008 and so on  
FY12\* shows cumulative figures from April 2000 to February 2012



## Foreign investments flowing in; rise in M&A activity ... (2/2)

M&A deals			
Acquirer	Target	Type	Year
Simplex Infrastructures Ltd	Joy Mining Services India Pvt Ltd	Acquisition	2012
Larsen & Toubro Ltd	Thalest Ltd	Acquisition	2012
Titagarh Wagons Ltd	Titagarh Marine Ltd	Acquisition	2012
JBM Cadmium Pvt Ltd	Tesco GO	Acquisition	2012
Diamond Power Infrastructure Ltd	Utkal Galvanizers Ltd	Acquisition	2011
Yash Birla Group	Aircon Engineering Services	Majority stake	2011
Gaji Mercantile	Bharat wire ropes Ltd	Acquisition	2010
HBL power systems	Igarashi group-Agile Electric Drives Technologies and Holdings	Majority stake	2010

Source: Grant Thornton, Aranca Research

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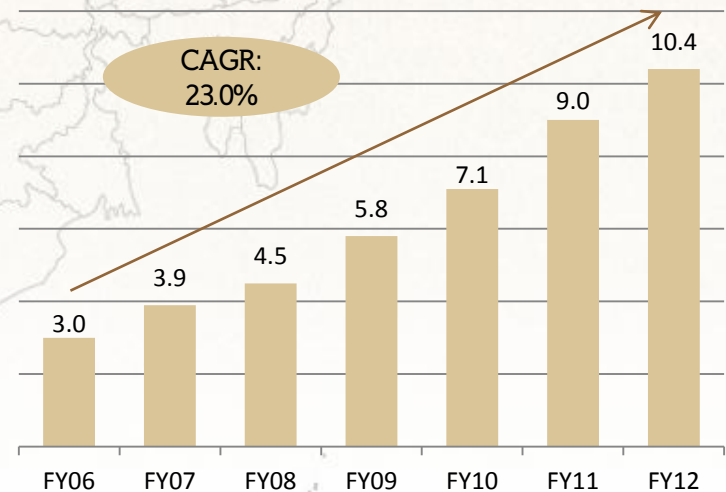
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## BHEL – Mainstay of the electrical machinery industry ... (1/2)

### Salient features

- One of largest engineering and manufacturing companies with 'Navratna' status
- One of the major integrated power plant equipment (IPPE) manufacturers in the world
- Profit-making company since 1971–72
- Installed base of more than 115,000 MW
- 15 manufacturing units, two subsidiaries and seven joint ventures
- Accounted for over 59 per cent of India's total generating capacity in FY12

### Net sales (USD billion)



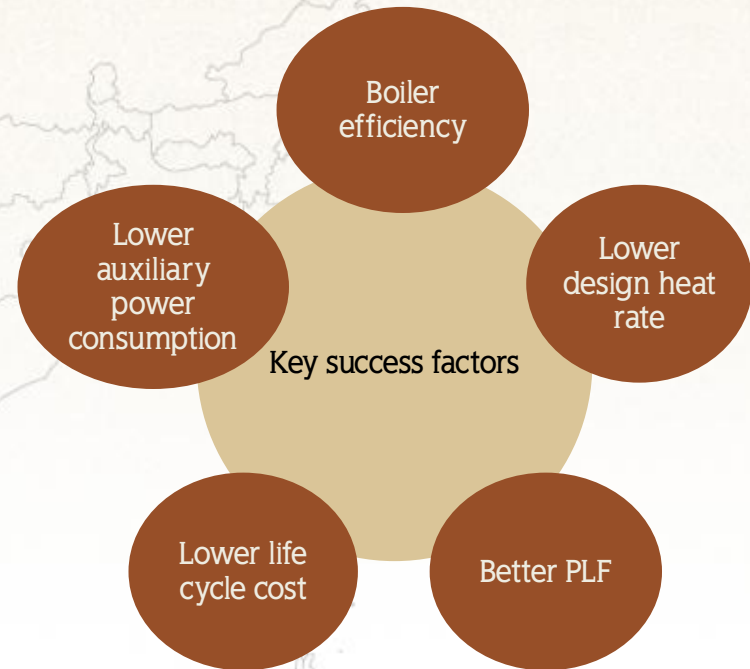
*Source:* Company reports, Aranca Research

Note: 'Navratna' is the title given to nine Public Sector Enterprises (by the Government of India) having distinct comparative advantages

## BHEL – Mainstay of the electrical machinery industry ... (2/2)

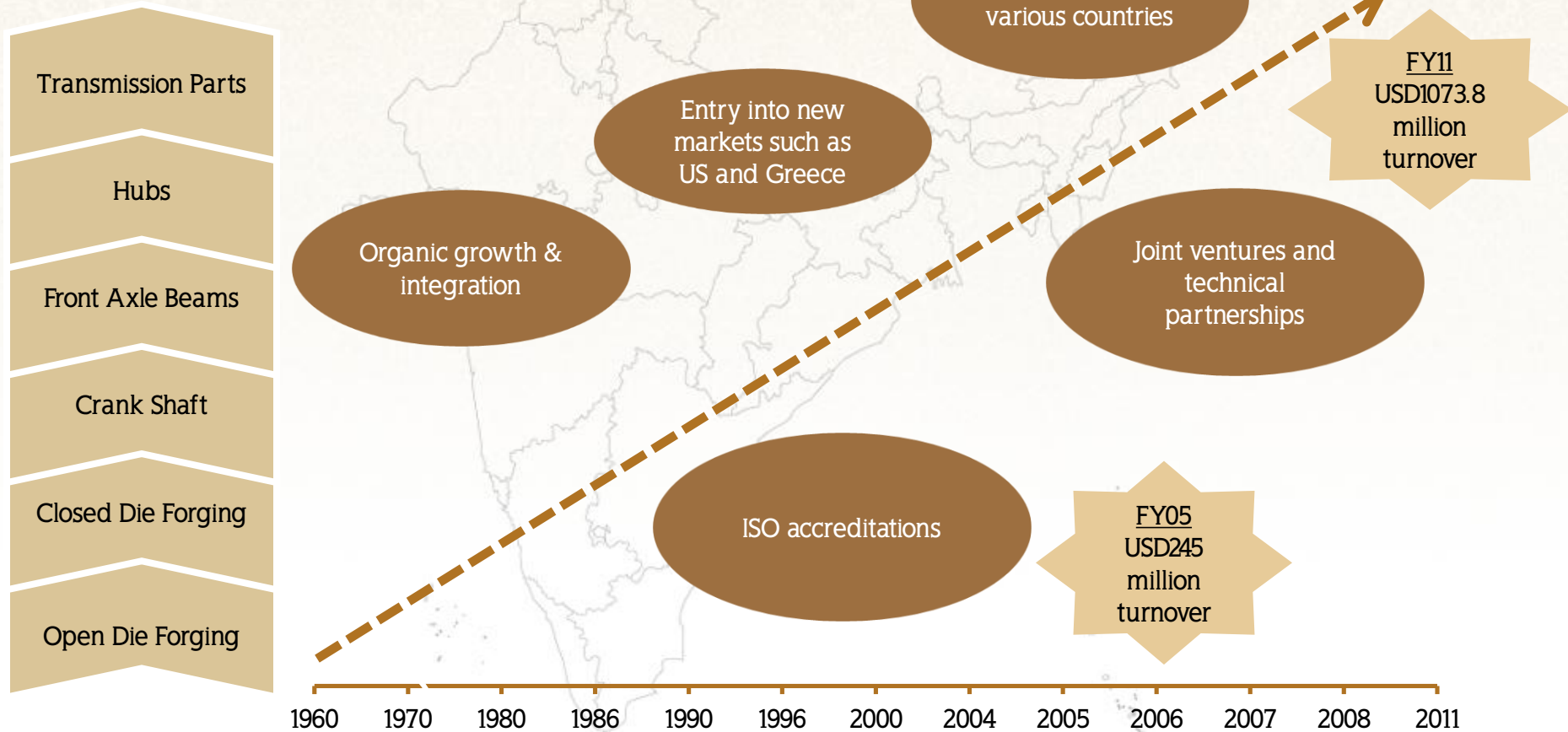
### Recent Awards and Recognitions

- Golden Peacock Award 2011 for Occupational Health and Safety (2011)
- SCOPE Meritorious Award 2010-11 for Best Practices in Human Resource Management
- Intellectual Property Award from the Government of India (2011)
- Essar Steel Infrastructure Excellence Award (2011)
- DSIJ Gentle Giant Award from the Government of India (2011)
- CII-Thompson Reuters Innovation Award (2010)





## Bharat Forge: India's largest auto components exporter



Source: Company reports, Aranca Research

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## Growth opportunities in the engineering sector ... (1/2)

### Defence

- Budget for the defence sector is expected to grow at the rate of 8 per cent till 2014; 54 per cent of the budget share would be spent on procuring manufactured items, which is likely to translate to a market opportunity of approximately USD91 billion over 2010–2014
- Government initiatives such as allowing private sector participation have been reinforced by opening up the sector to 26 per cent FDI inflows, and its offset policy is expected to enhance private sector (including SME) participation

### Civil nuclear sector

- India's nuclear capacity is expected to be strengthened by 3.8 GW by 2012; an addition of 12,000 MW is being planned for the twelfth Five Year Plan (2012–17)
- This presents a total business opportunity worth about USD312 million for the manufacturing industry; of this, a significant 61 per cent can be captured by the domestic 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

*Source:* Aranca 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 as a result of growth in power generation and privatisation of distribution
- By end-2012, the transmission network is expected to be about 60,000 circuit km, with a potential demand for 630,000 transformers

### Material handling equipment

- The material handling equipment sector is expected to gain from the robust demand from steel, power, mineral and other infrastructure industries
- Market demand for material handling equipment is estimated at USD30 billion over 2007–14

### Machine tools

- With the projected demand for the capital goods sector being high (especially the automobile and textile industry), there is going to be significant demand for machine tools
- 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: Aranca Research*



## ESO is a huge opportunity for India over the next few years

By 2020, the ESO market in India is expected to reach USD40–50 billion, propelled by the increasing onshore to offshore movement of services

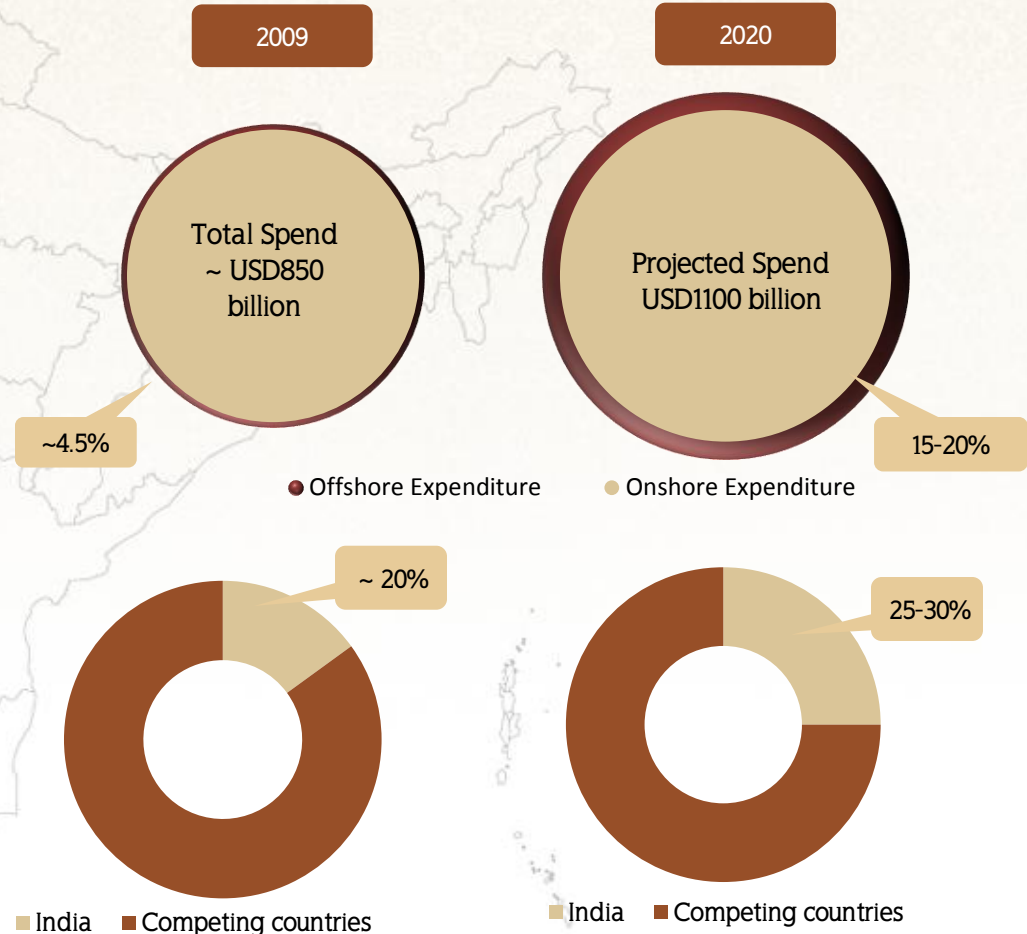
### 2009

- The global engineering services spend is estimated to be around USD850 billion
- About USD40 billion flows through the outsourcing channel into vendor countries
- India accounts for about 20 per cent of this outsourced market

### 2020

- The global engineering services spend is projected to reach USD1100 billion
- About USD180 billion is expected to flow through the outsourcing channel into vendor countries
- India can bring home about 25–30 per cent of this outsourced revenue

Source: Booz Allen Hamilton, Nasscom, Aranca Research



Notes: ESO is Engineering Services Outsourcing

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## Industry Associations ... (1/2)

### **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

## Industry Associations ... (2/2)

### **Fluid Control Research Institute**

Kanjikode West,  
Palakkad - 678623.  
Phone : 91-491-2566120/2566206  
Fax : 0491-2566326  
E-mail : [fcricriindia.com](mailto:fcricriindia.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: [eepec@eepecindia.org](mailto:eepec@eepecindia.org)



## Glossary

- **BTG** : Boilers, Turbines, Generators
- **BHEL** : Bharat Heavy Electricals Limited
- **MHI**: Mitsubishi heavy industries
- **DHI** : Department of Heavy industries
- **BHEL** : Bharat Heavy Electricals Ltd
- **EEPC** : 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; Conversion rate used: USD1= INR48
- **FY**: Indian Financial Year (April to March)
- **Wherever** applicable, numbers have been rounded off to one decimal

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