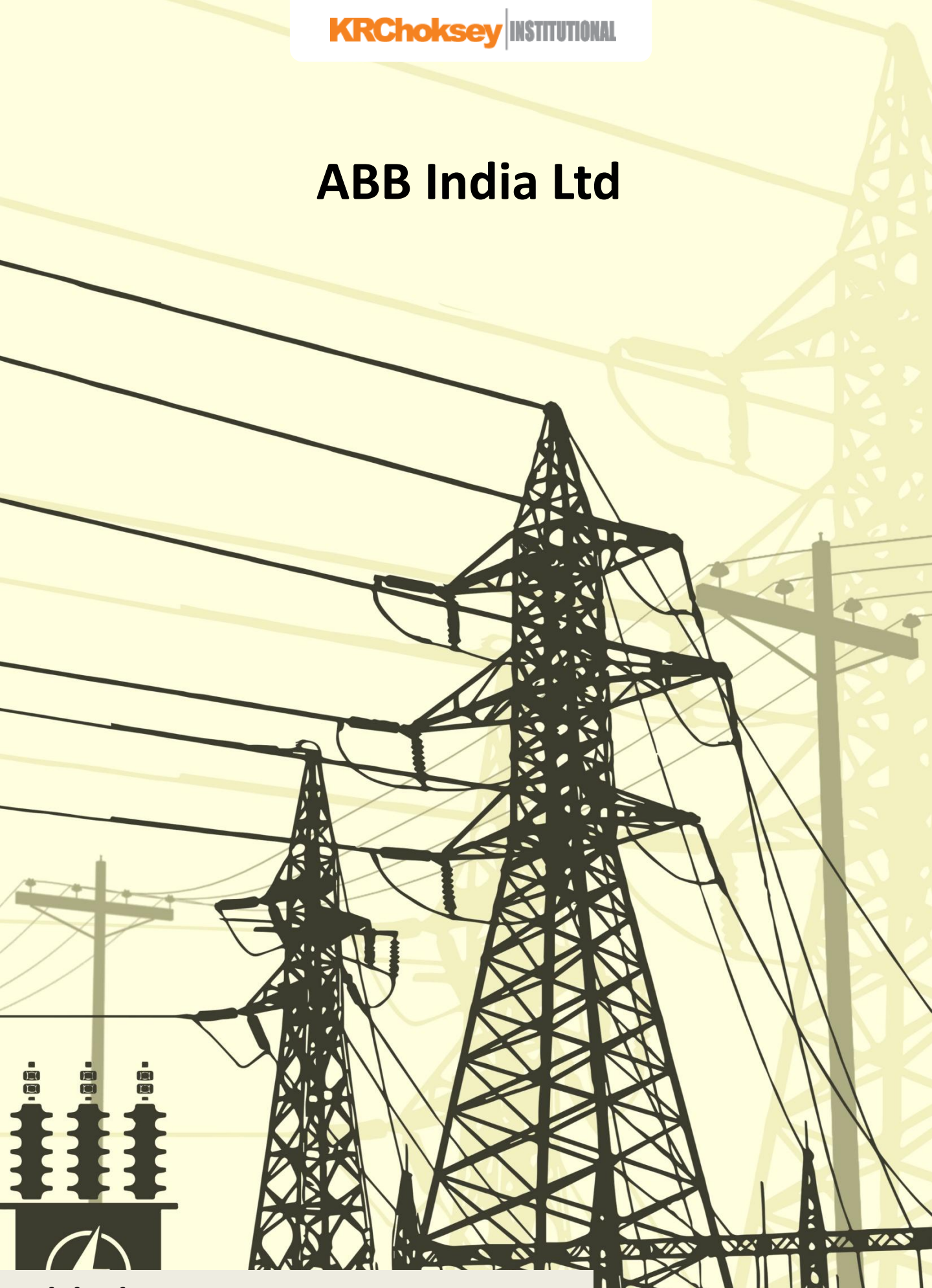
KRChoksey INSTITUTIONAL

ABB India Ltd



Initiating Coverage

16th January, 2018

ABB India Ltd

India's next generation electrification begins here

CMP	Target	Potential Upside	Market Cap (INR Mn)	Recommendation	Sector
INR 1512	**INR 1823**	**21%**	**320,363**	**Buy**	**Capital Goods**

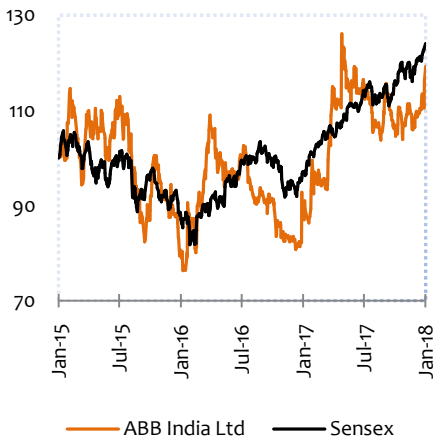
Company Overview

Incorporated in 1988 through the merger of ASEA (1883) of Sweden and Brown Boveri & Cie (1891) of Switzerland, ABB is a pioneering technology leader in electrification products, robotics and motion, industrial automation and power grids. The company serves customers in utilities, industry and transport & infrastructure globally while being at the forefront of industrial digitsation, energy and fourth industrial revolutions. The company boasts of a prestigious clientele including PGCIL, ONGC, SAIL, IOCL, NTPC, Biocon, Kansai Nerolac and so on. ABB has 40 factories, 10 manufacturing locations and 22 sales & marketing offices in India with exports to over 100 countries. ABB's order book stands at INR 121.30 bn (as of Sep 29, 2017) translating into a book-to-bill ratio of ~1.3x ttm.

MARKET DATA

Shares outs (Mn)	211
EquityCap (INR Mn)	424
Mkt Cap (INR Mn)	320363
52 Wk H/L (INR)	1619/1073
Volume Avg (3m K)	107.9
Face Value (INR)	2
Bloomberg Code	ABB IN

SHARE PRICE PERFORMANCE



MARKET INFO

SENSEX	34844
NIFTY	10742

Investment Rationale

Power packed growth prospects:

Indian power sector has evolved in the last couple of years with the major capacity addition in thermal in the last decade. In terms of the installed capacity, the country had a capacity of 331 GW at the end of Dec'17 from which Thermal capacity stood at ~66% of the overall installation followed by Renewable (~18%), Hydro (~14%) and Nuclear (2%). In terms of the overall demand, the per capita electricity consumption in India is around 1075 kWh at the end of 2016 against the world average of 3024 kWh. Going ahead, the demand is expected to grow to 1,490 kWh by 2022 and 2,121 kWh by 2027, which will be largely driven by government's initiatives such as rural electrification, housing for all, smart cities and so on. In terms of the transmission line network, the country has 384,087 CKM (circuit kilometers) of transmission lines of which 400 kV and 220 kV constitute more than 85% of the country's transmission network followed by 765 kV and HVDC poles. In terms of the transformers, the installed capacity at the end of Dec'17 stood at 804,530 MVA, of which around 75% is dispersed between 400 kV and 220 kV.

Going ahead, it is expected that the government will be more focused on higher kV voltage primarily on account of inter-regional network. It is expected that under 13th plan, inter-regional capacity would grow from 40 GW to 127 GW. In terms of the transmission line, the government has envisaged an additional 62,800 CKM of transmission line under 13th plan with 15000 MW of HVDC terminal capacity and 128,000 MVA of transformer capacity. The capex is pegged at around INR 2.6 trillion of which around 1.6 trillion will be spent by state and the rest from PGCIL. Considering that few players such as ABB and Siemens are present in the higher voltage system, the growth potential for companies like ABB should not be ruled out in the years to come. Further, ABB normally receives ~10-20% of PGCIL order flows every year and given the capital expenditure plans of INR 1 trillion by PGCIL, it is likely that ABB's Power Grids segment could likely support the overall financial performance of the company in medium to long term.

Next Generation growth opportunities:

ABB, being the pioneering technology leader both locally and globally, is at the forefront of opportunities arising from the economic evolution of India as well as the world. We believe ABB will continue to reap benefits of this evolution through the pillars that we have identified and listed as follows:

SHARE HOLDING PATTERN (%)

Particulars	Sep 17	Jun 17	Mar 17
Promoters	75	75	75
FIIs	3.15	3.66	4.37
DIIs	13.8	13.28	12.54
Others	8.04	8.05	8.09
Total	100	100	100

22.3%

Revenue CAGR between CY17E-19E

42.2%

PAT CAGR between CY17E-19E

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National Solar Mission:
According to a World Bank report, India's electricity usage is approximately 1000 kWh per person per year. This is much lower than US and China at 12000 kWh per person per year and 4300 kWh per person per year, respectively. It is estimated that India's per capita energy consumption is set to double in the next 6-7 years. This has compelled India to explore energy options beyond conventional sources such as fossil fuel/thermal power and look at renewables such as Solar, Wind and so on. Currently, the total installed capacity stands at ~330 GW from which, Coal capacity leads with nearly 60% of total capacity, followed by RES at ~18% with the balance split among Hydro, Gas and Nuclear capacities. From this, the top 10 states constitute a combined capacity of 243.70 GW or 73% of all India installed capacity. India receives nearly 300 days of sun and is making great strides towards a solar future with the potential of becoming a global solar superpower in the medium to long term.

The National Solar Mission (NSM), aimed at achieving 100 GW of solar power by 2022, is a step in this direction. The government aims at increasing the total RES-based capacity from the current 60 GW up to 175 GW by 2022 from which solar capacity will make up to 100 GW. In keeping in line with this goal, the government, with the National Solar Mission, is displaying ambition and is set to go in for solar capacity overhaul from 14.77 GW (Oct '17) to 100 GW by 2022. The 100 GW will be derived from – Rooftop Solar (40GW or 40% of total Solar Capacity) and Ground-Mounted Solar (60 GW or 60% of total Solar Capacity). **ABB is among the market leaders and offers the most extensive range of products for the renewables segment with key products including solar inverters, energy storage systems and so on. To further gain a stronghold within the Indian market, ABB doubled its solar inverter capacity in 2016. We believe ABB has set all its cards right and is poised to come out as a potential winner owing to a wide and growing product portfolio in this space.**

National Electric Mobility Mission Plan (NEMMP) & Faster Adoption & Manufacturing of (Hybrid) & Electric Vehicles in India (FAME India):
The government's ambitions are also rested in the shift from internal combustion engine (ICE) based vehicles to 100% electric vehicles (EVs) by 2030 and are expected to be realised through the National Electric Mobility Mission Plan (NEMMP 2013) & Faster Adoption & Manufacturing of (Hybrid) & Electric Vehicles in India (FAME India 2015). The cumulative outlay for NEMMP is estimated to be around INR 140 bn, including industry contribution.

Signaling at the government's intent to stay course with NEMMP and FAME, state run enterprise – Energy Efficiency Services Ltd (EESL) – awarded contract to Tata Motors to supply 10,000 EVs. ABB had placed a bid in 2017 for setting up 4500 EV charging stations in response to the EESL order. Domestic and international auto majors in India have announced plans for shifting to all-electric portfolios as early as 2020. However, this will be possible only with an equally deeper penetration of EV charging infrastructure because the charging infrastructure is what will make or break the government's vision. **ABB is one of the world's leading suppliers of EV charging stations with a range of products from flash chargers to standard chargers. ABB is already experiencing steady and growing numbers of order inflows from US, Europe and Asia for its EV charging infrastructure with aggressive plans to penetrate into the Indian market. As the government prepares for the shift to EVs from conventional vehicles and pushes for a conducive EV charging infrastructure policy environment, we believe ABB will enjoy the first mover advantage.**

Railways Modernisation & Electrification:
The Indian Railways (IR) is one of the world's largest and the busiest rail networks, carrying over 8 billion passengers and transporting over 1 billion tons of freight in FY16 covering over 1,19,630 kms of total tracks across India. Given the sheer scale of operations at Indian Railways, the fuel bill is enormous. During FY16-17, the operating ratio stood at an all-time high of 96.96% indicating exponentially high expenses for the state carrier but is expected to go down considerably with a much needed electric overhaul of railways resulting in significant fuel cost savings. Currently, only about 42% of the total track network is electrified while the rest is diesel based. With the introduction of Mission Electrification, the Ministry of Railways, aims to electrify almost 90% of railway tracks at an estimated cost of around INR 350 bn. As per latest data, the pace of electrification has increased to 4,000 kms in FY17-18 from 1,700 kms in FY16-17. The Ministry further aims to ramp up electrification to 22,000 kms by 2021 to meet the goals set under Mission Electrification. In 2016, Indian Railways awarded various contracts for electric locomotives including the one with Alstom to supply 800 electric locomotives over the next few years at an estimated cost of USD 3.1 bn. Concurrently, ABB has received an order to supply 1600 traction transformers which will be installed in Alstom's 800 electric locomotives. Moreover, India has seen a steady rise in the number of Metro Rail projects across major cities. Operational and ongoing projects are estimated to cost around INR 2.5 trillion with additional projects coming up with an estimated cost of INR 2 trillion over the next 2-3 years. Indian Railways is targeting to triple its freight traffic to 3 billion tonnes by 2030 as against 1.1 billion tonnes currently. Assuming that this target will require additions in route kms as well as new rolling stock, it will also mean growth in demand for signaling systems, power transmission and electrical equipments for railways. **ABB is a leading supplier of power transmission and electrification products such as traction transformers, turbochargers, low and medium voltage products, to name a few. Currently, ABB derives between 5-6% of its revenues from railways and we believe these revenues can drive up to double digits in the near future owing to ABB's strong position in the market.**

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Valuation & Recommendation

ABB is clearly one of the top technology leaders in India as well as globally with a strong focus on providing technology for power and electricals. However, with the ever evolving global and domestic economic landscape, the company has successfully forayed into new areas over time and strengthened presence in digitalization & automation. We believe that given the government push for railways modernization & electrification along with thrust on renewables and continued momentum in power T&D, it is evident that companies like ABB, Siemens and GE T&D are most likely to be among key beneficiaries in the medium to long term. Apart from this, robotics division has presence in automobiles and paint industries, while the new areas such as food & beverage and packaging sectors in recent times seem to offer incremental opportunity to the overall order flows for ABB given its sizable in the market for robotics. On the other hand, ABB India has been repositioned as a local manufacturing hub for exports to various regions such as MENA and SEA (South East Asia) by the parent organisation as part of its global strategy. We expect that incremental opportunity could arise largely from the Power Grids segment, further enhancing the share of exports to the overall revenue *(presently ~15%)* medium to long term. **We expect order flows to grow at a CAGR of ~25% over CY17-19E primarily led by Electrification Products & Power Grids segment. Given that ABB's order book is mainly inclined towards base order (*short term contract with execution period of less than 12 months and faster cash conversion*), the robust execution could support strong top-line growth over CY17-19E. We expect revenues to grow at a CAGR of ~23% over CY17-19E. In terms of operational performance, we expect that increase in localization/indigenization of manufacturing projects in India could curb ABB's operational cost and thereby, assist in improving the overall operational performance going ahead. OPM could expand by ~190bps over CY17-19E, which could lead EBITDA to grow at a CAGR of ~37% over the same period. The bottom-line growth could be largely supported by strong operational performance with PAT expected to grow by ~42% CAGR over the same period.**

In terms of competitive landscape, we have compared ABB with companies such as Siemens, CG Power & Industrial and GE T&D *(Note: Each of these companies is present in one or more but not all segments catered by ABB)*. Among these, Siemens (SIEM) is the closest competitor in terms of scale, business divisions and geographical presence. Thus, we have compared ABB with SIEM. In terms of the financial performance, the revenue for ABB grew at a CAGR of ~4% over CY13-16 as against Siemens revenue growth of ~-7% CAGR. Further, post exiting the rural electrification business from the portfolio, ABB's operational performance improved to a certain extent with OPM expanded by ~250bps over CY13-16, which led EBITDA to register growth of ~17% CAGR against ~6% for SIEM. Further, average ROE & ROCE have also been higher for ABB (ROE: 9.3%, ROCE: 15.4%) as compared to SIEM (ROE: 8.9%, ROCE: 11.9%) over CY13-16. Going ahead, less capital employed on account of localization and increasing share towards higher margins product to improve overall business profile of ABB. **We expect ROE & ROCE to reach ~17.2% & ~25.2% by CY19E as against ~10.7% & ~15.4% at the end of CY17P. This in turn could help company to demand higher valuations in the years to come.**

In terms of valuations, we have valued the company on P/E basis. At CMP of INR 1,512, the stock is trading at 59.6x on CY18E and 41.5x on CY19E of our earnings estimates. The stock has been historically trading at medium multiple of ~58x on 2 yr fwd P/E band. Further, looking at the PEG, it has been traded in the band of 2-2.5x. Assuming the ABB's focused areas such as Railways, Powergrid, Electrification to get incessant focus by the govt resulting into better order flows and thereby the revenues in the coming time. This in turn could help company to get higher valuations and hence valuing the company at 50x (*~20% premium to current valuations, although still lower than historical highs of 60-70x*) on CY19E earnings estimates of INR 36.5, we have arrived a target price of INR 1,823, an upside potential of 21%. We have 'BUY' rating on the stock.

Exhibit 1: Key Financials

Particulars (INR bn)	CY13	CY14	CY15	CY16	CY17E	CY18E	CY19E
Net Revenue	77.21	77.33	81.40	86.48	88.64	107.71	132.49
EBITDA	4.69	5.55	7.12	7.46	6.64	9.53	12.47
Adj.PAT	1.76	2.28	2.99	3.76	3.82	5.37	7.72
OPM	6.09%	7.19%	8.75%	8.63%	7.50%	8.85%	9.42%
NPM	2.29%	2.95%	3.68%	4.35%	4.31%	4.99%	5.83%
EPS	8.3	10.8	14.2	17.8	18.0	25.4	36.5
EV/EBITDA (x)	68.8	57.9	45.0	42.1	46.7	32.4	24.5
PE (x)	181.1	140.2	106.8	85.2	83.9	59.6	41.5

Source: Company, KRChoksey Research

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Exhibit 2: EV/EBITDA Band – 2 Year forward

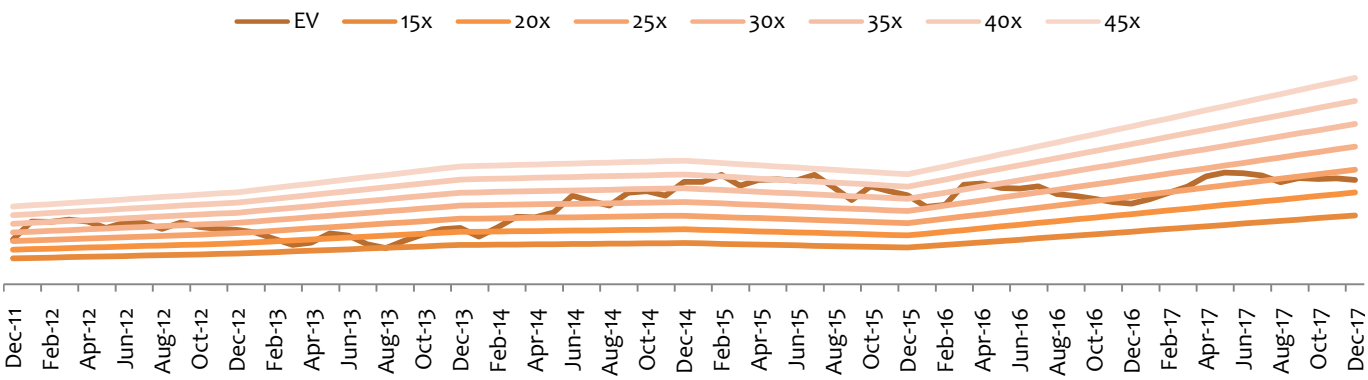

Exhibit 3: PE Band – 2 Year forward

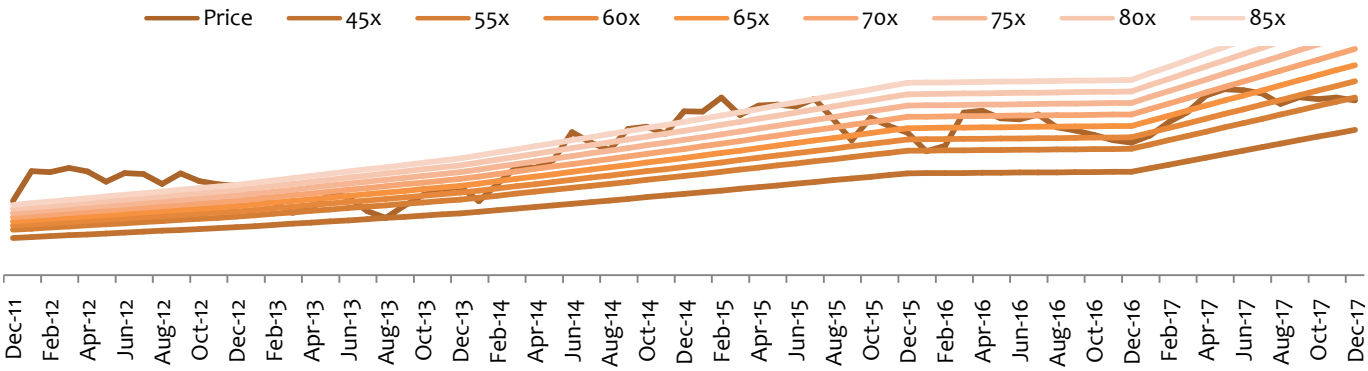

Exhibit 4: PEG Band – 2 Year forward

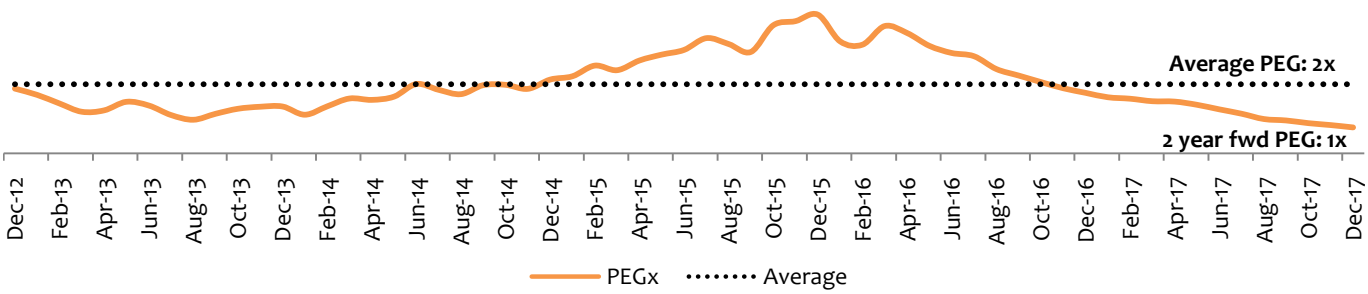

Exhibit 5: Peer Comparison – Key Financials

Particulars (INR bn)	ABB (CY16)	Siemens (FY17)	CG Power (FY17)	GE T&D (FY17)
Net Revenue (CAGR)*	3.8%	-6.6%	-24.2%	1.6%
EBITDA (CAGR)	16.7%	6.2%	NM	-5.5%
Adj.PAT (CAGR)	28.6%	13.2%	-36.6%	-21.5%
Average OPM**	7.7%	7.2%	3.3%	9.1%
Average NPM	3.3%	3.3%	-2.3%	2.5%
Average ROCE	15.4%	11.9%	13.7%	13.9%
Average ROE	9.3%	8.9%	9.8%	7.8%

**CAGR – over the last 3 accounting years, ** Average – over the last 3 accounting years*
Source: Company, KRChoksey Research

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Quick Business Snapshot

Business Model

Incorporated in 1988 through the merger of ASEA (1883) of Sweden and Brown Boveri & Cie (1891) of Switzerland, ABB is a pioneering technology leader in electrification products, robotics and motion, industrial automation and power grids. The company serves customers in utilities, industry and transport & infrastructure globally while being at the forefront of industrial digitsation, energy and fourth industrial revolutions. Key growth drivers include next generation growth arising from Railways Modernisation, technological shifts in power transmission and industrial automation sectors

Strategic Positioning

- The company has initiated various localisation and indigenization efforts in manufacturing and internal processes to drive cost efficiencies which enhance the competitive edge.
- With a base of 40 factories, 10 manufacturing locations and 22 sales/marketing offices across India, ABB is also a regional manufacturing hub serving customers in Middle East and Asia, putting ABB in a beneficial position.

Competitive Edge

- With over 125 years in business, ABB is one of the world's leading technology providers with a wide and ever evolving product portfolio for utilities, industry and transport & infrastructure sectors. This technology leadership enables ABB to stay ahead of the curve whereas its peers cater to fewer industries and product applications.

Financial Structure

- Revenues grew at a CAGR of ~4% over CY13-16, owing to subdued order inflows resulting into poor top-line performance.
- EBITDA increased at a CAGR of ~17% over FY13-17 with average OPM of ~7.7%.
- PAT was up by ~29% CAGR over FY13-17 with average NPM of ~3.3%.

Key Competitors

- Siemens, CG Power & Industrial Solutions, GE T&D, Hyundai Heavy Industries, Yokogawa Electric Corp, Eaton Corp, Schneider Electric to name a few.

Entry Barriers

- A large chunk of the overall business is derived from Power Sector and ABB being among the pioneers both locally and globally along with a wide product portfolio in such capital intensive industries creates an entry barrier for any new players

Client Base

- Prestigious clientele including the likes of Power Grid Corporation, SAIL, UltraTech Cement, IOCL, NTPC, Kansai Nerolac, Biocon, Adani Group, Indian Railways and so on.

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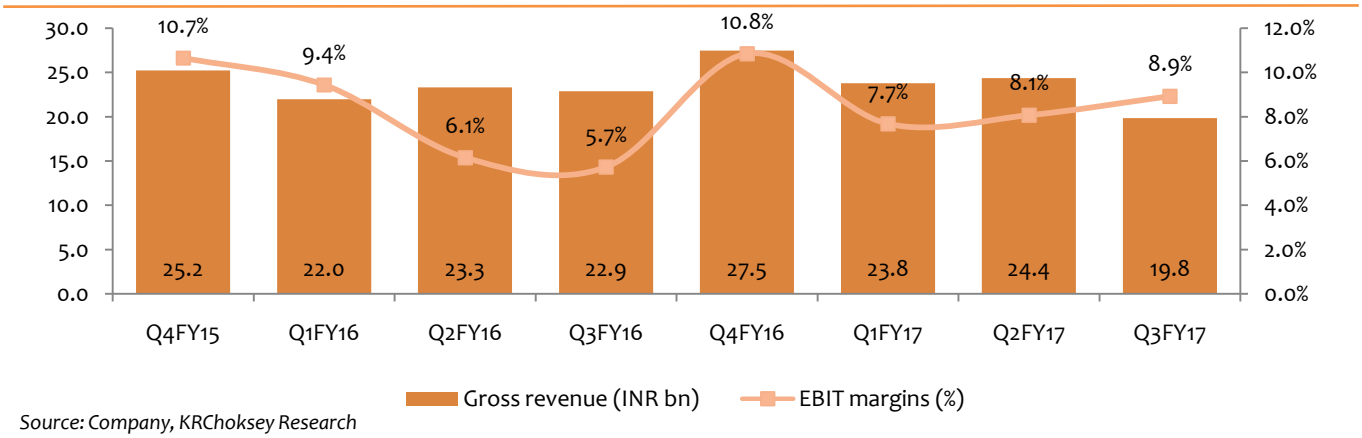
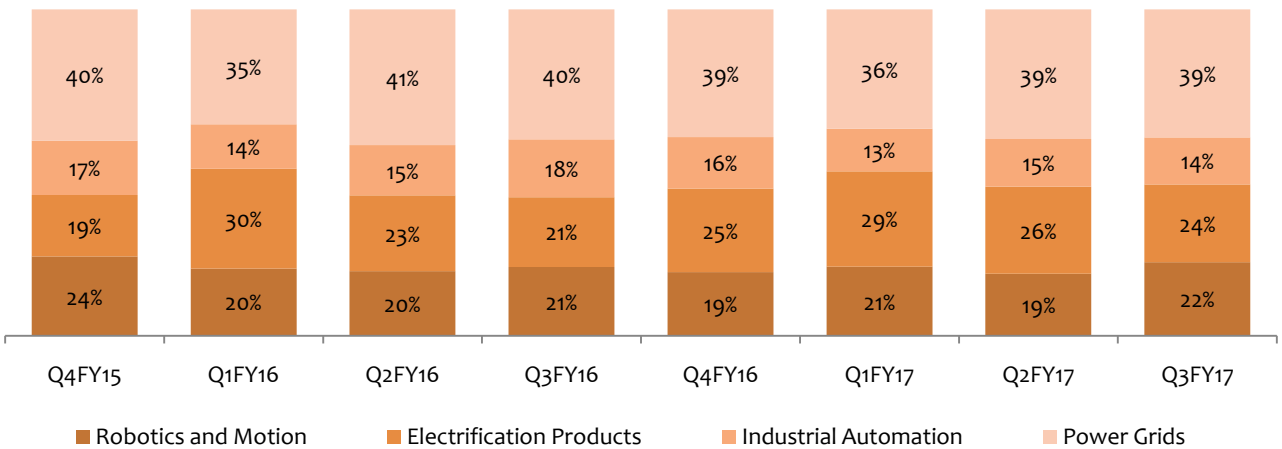
The company repositioned and realigned some of its local and existing business units. Post this, the reportable segments are (i) Power Grids (ii) Electrification Products (iii) Robotics and Motion and (iv) Industrial Automation. The Power Grids segment leads with ~39% revenue contribution followed by Robotics and Motion (~26%), Electrification Products (~20%) and Industrial Automation (~15%). During CY12-16, the revenue grew at a CAGR of ~3% with OPM expansion of over 400 bps during the same period (4.5% in CY12 to 8.6% in CY16). ABB's order book stands at INR 121.3 bn (as of Sep 29, 2017) translating into a book-to-bill ratio of ~1.3x ttm.

Exhibit 6: Consolidated gross revenue (INR Bn) & EBIT Margins (%)



Source: Company, KRChoksey Research

Exhibit 7: Consolidated Segmental Revenue Share (%)



Source: Company, KRChoksey Research

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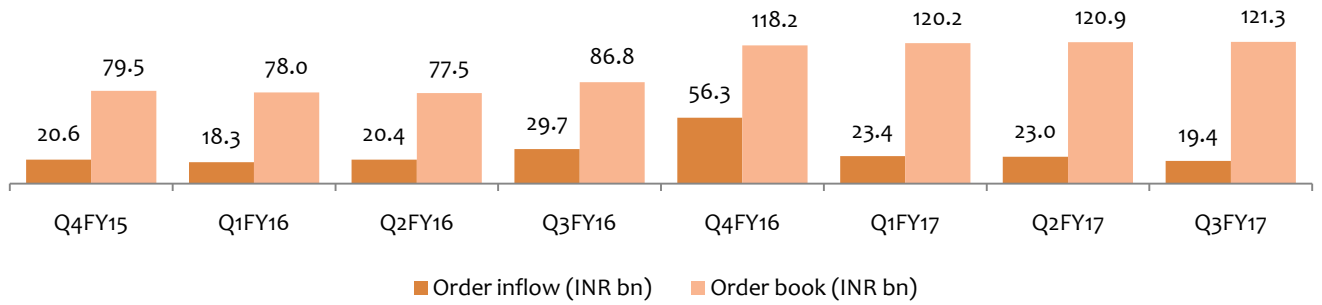
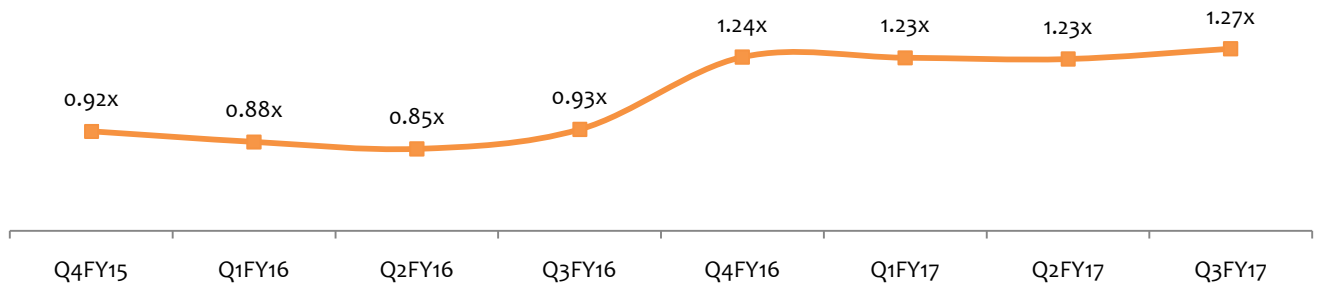
Exhibit 8: Consolidated Order Book Inflows & Order Backlog (INR Bn)



Source: Company, KRChoksey Research

Exhibit 9: Consolidated Book-to-Bill Ratio(x)



Source: Company, KRChoksey Research

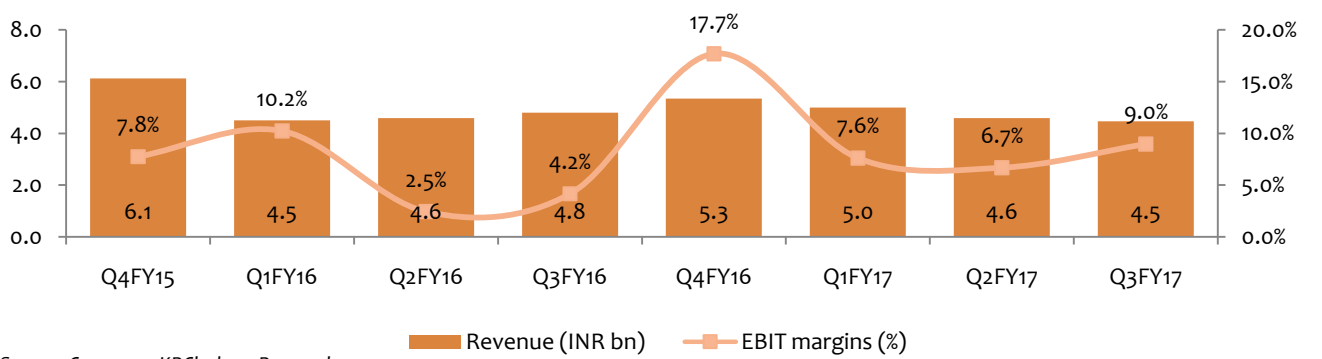
Business Segments:

I. Robotics and Motion (RM):

This segment provides products, with related services, that are used as components in machinery and automation systems. The segment covers a wide range of products and services including power electronics systems, motors and generators, drives, robots and so on.

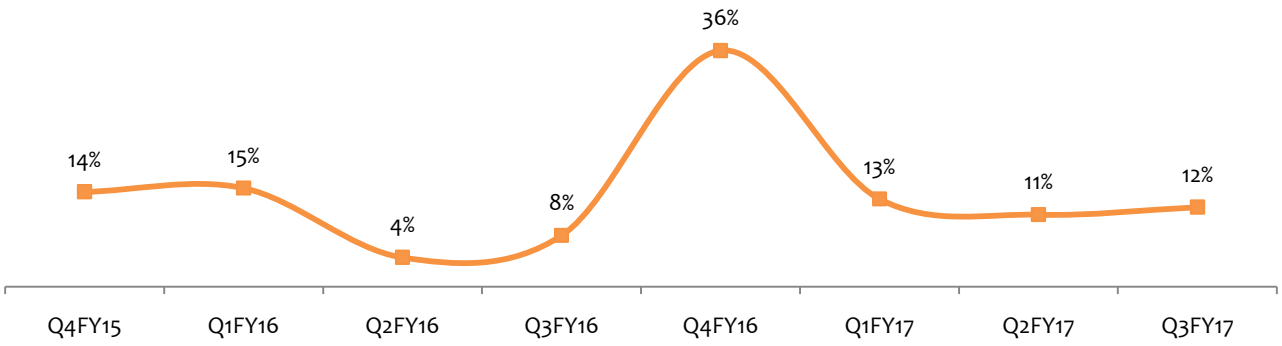
During CY16, the company received significant orders such as Wind generators for Gamesa Renewables Pvt. Ltd. and Inox Wind Ltd.; Solar inverters for Azure Power, Jakson Engineering; Propulsion converters for Chittaranjan Locomotive Works; Medium voltage drives for lift irrigation projects of Megha Engineering and Infrastructure and Navayuga Engineering Co. Ltd. and Robotics for Ford India Pvt. Ltd., Royal Enfield, Suzuki Motors Gujarat Pvt. Ltd., Gestamp Automotive Chennai Pvt. Ltd.

Exhibit 10: Robotics & Motion – Revenue (INR Bn) & EBIT Margins (%)



Source: Company, KRChoksey Research

Exhibit 11: Robotics & Motion – ROCE (%)



Source: Company, KRChoksey Research

Exhibit 12: Robotics & Motion – Offerings

Drives
- Low Voltage AC
- Medium Voltage AC
- Drive Services
- Software Tools
- Connectivity
- Mobile Tools
- Harmonics

Motors & Generators
- Generators
- High voltage induction motors
- Synchronous condensers & motors
- Traction motors & generators
- Motors & generators for explosive atmospheres

Robotics
- Industrial Robots (Articulated, Paint & Collaborative Robots)
- Controllers
- Application equipment & accessories
- Manufacturing solutions

Source: Company, KRChoksey Research

II. Electrification Products (EP):

This segment offers products ranging from low and medium voltage circuit breakers, switches, control products, wiring accessories, and so on. Additionally, the segment also makes KNX systems that integrate and automate a building's electrical installations, ventilation systems, and security and data communication networks (for instance ABB installed KNX systems for the Indira Gandhi International Airport at New Delhi). This segment further incorporates an Electrification Solutions unit which manufactures low voltage switchgear and motor control centres. The segment serves customers in various industry and utility operations as well as commercial and residential buildings.

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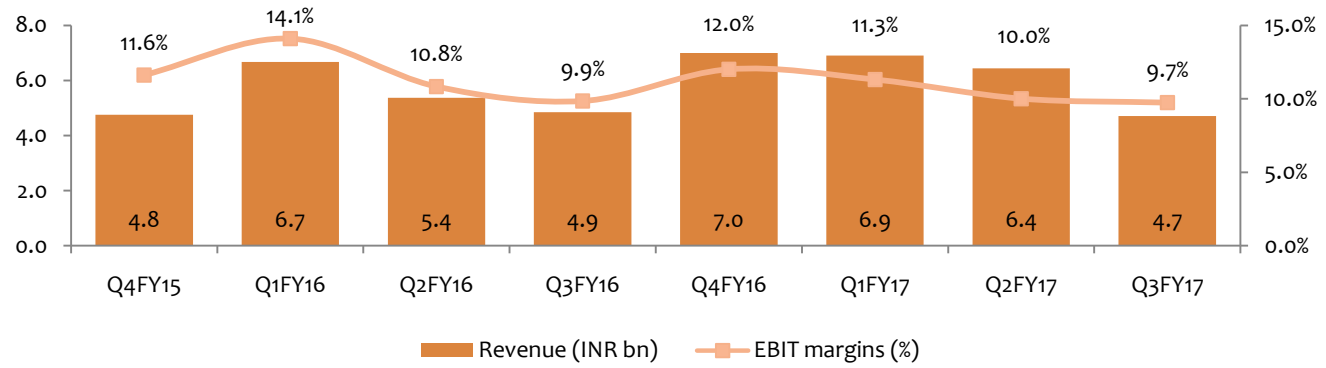
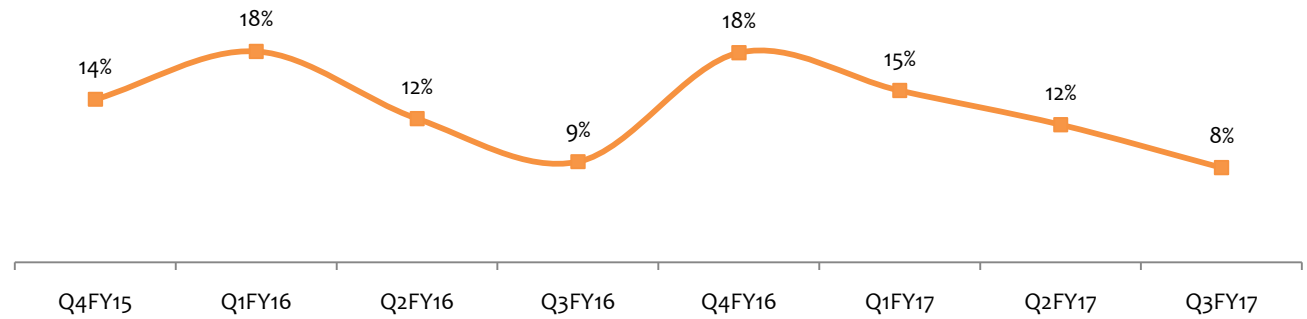
Exhibit 13: Electrification Products – Revenue (INR Bn) & EBIT Margins (%)



Source: Company, KRChoksey Research

Exhibit 14: Electrification Products – ROCE (%)



Source: Company, KRChoksey Research

Exhibit 15: Electrification Products – Offerings





Medium Voltage Products
- Modular Systems
- Switchgears
- Apparatus
- Distribution automation & protection
- Services

Low Voltage Products & Systems
- Electrical Installation
- Electrical Distribution
- Automation Control & Protection
- Building Technologies

Solar Inverters
- String Inverters
- Turnkey Stations
- Software Tools
- Central Inverters
- Energy Storage Solutions
- Microgrid Solutions
- Legacy Inverters
- Monitoring & Communication

UPS & Power Conditioning
- UPS Systems
- Power & Voltage Conditioners
- Static Switches
- Power Distribution
- DC Chargers

EV Charging Infrastructure
- Multi-standard fast chargers
- Single-standard fast chargers
- Highway & en route fast chargers
- Chargers for EV dealers & commercial locations

Source: Company, KRChoksey Research

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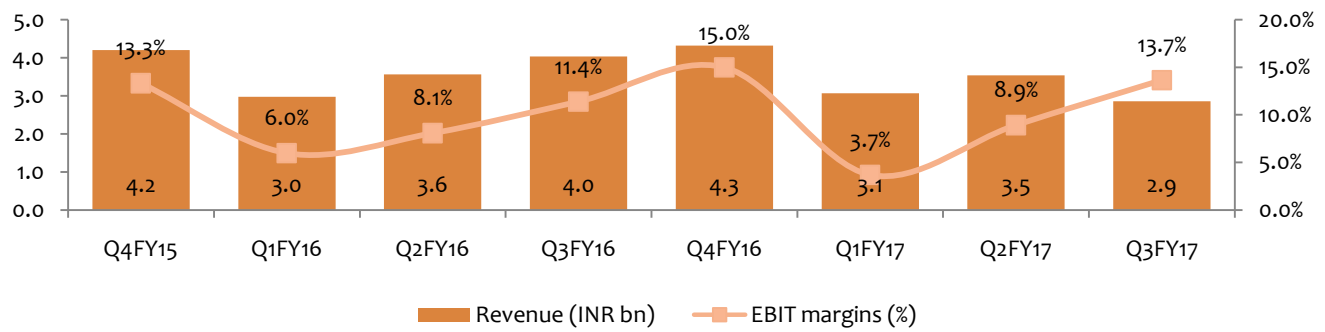
III. Industrial Automation (IA):

Industrial Automation segment provides customers with integrated solutions for control, plant optimization and industry specific application knowledge. The industries served include oil and gas, power, chemicals and pharmaceuticals, pulps and paper, metals and minerals, marine and turbo charging.

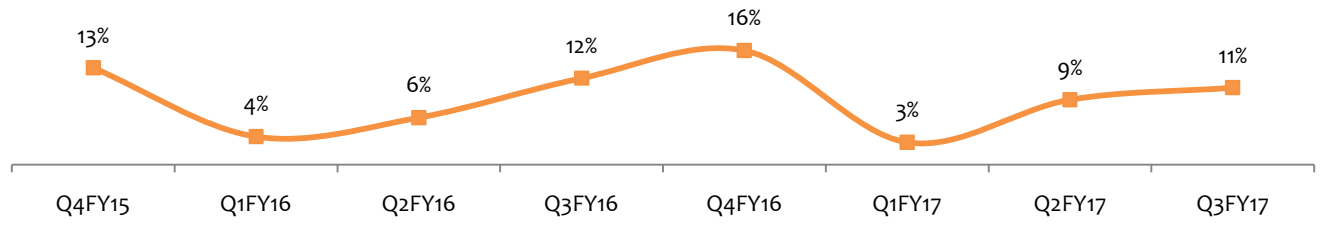
During CY 16, key orders included major multi-site win for an upgrade of complete control system across nine locations for Ultratech Cement; 173 new Turbochargers supplied to Indian Railways taking the total installed base of 3000+ turbochargers in the company; Smart Factory solutions for Britannia Industries Ltd. with single point real-time monitoring and control and a composite order for DCS and Instrumentation from Berger Paints (Assam Project).

Exhibit 16 : Industrial Automation – Revenue (INR Bn) & EBIT Margins (%)



Source: Company, KRChoksey Research

Exhibit 17: Industrial Automation – ROCE (%)



Source: Company, KRChoksey Research

Exhibit 18: Industrial Automation – Offerings

Control Systems

- Control Room Consolidation
- Safety Systems
- Compact Product Suite
- ABB Ability Symphony Plus
- ABB Ability System 800xA

Measurement Products

- Actuators
- Diesel Engine Monitoring
- Web Tension Measurement
- Thickness Gauging
- Positioners
- Level Measurement Products
- Roll Force Measurement

Turbocharging

- Turbochargers for low, medium & high speed engines in marine, oil & gas, power generation, earthmoving & mining equipment & rail
- Efficiency enhancement technologies such as high-pressure tuning, valve control management, variable turbine geometry & waste heat recovery systems

Programmable Logic Controllers

- PLCs
- Automation Builder
- Zenon IoT Software
- Control Panels
- Legacy Products

Source: Company, KRChoksey Research

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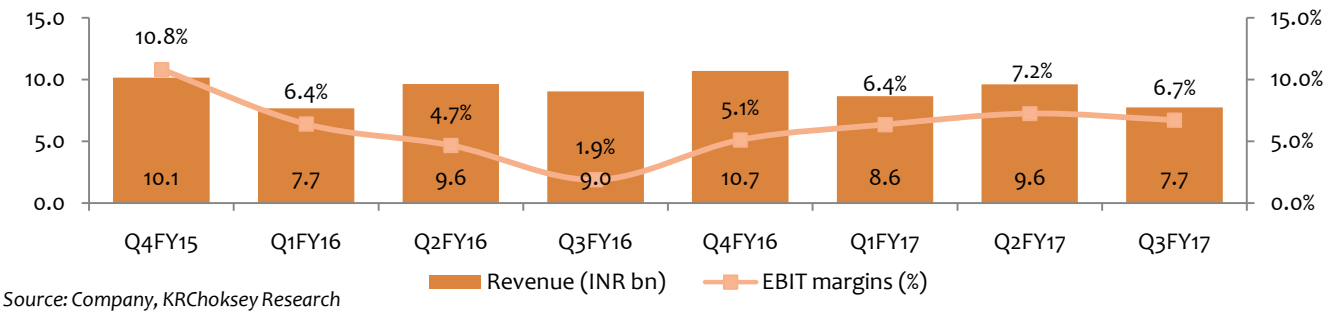
IV. Power Grids (PG):

Power Grids segment offers key components for power transmission and distribution. The division also offers turnkey systems and service for power transmission and distribution grids, and for power plants. Electrical substations and substation automation systems are key areas. Additional highlights include flexible AC transmission systems (FACTS), high-voltage direct current (HVDC) systems and network management systems.

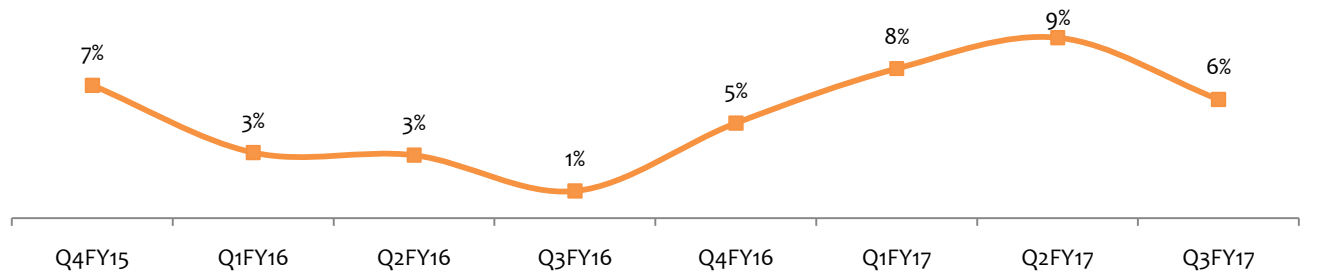
During CY16, major orders included Raigarh-Pugalur (RP800) 6,000 MW 800kV Multi Terminal UHVDC project; Order to supply 1,600 traction transformers from Alstom Transport; First digital substation order from Technopark, Kerala; 765kV & 400kV Air Insulated Substation extensions at Vindhyachal, Dharamjaygarh, Champa, Raipur, Raigarh (Kotra) and Bilaspur: PGCIL; 400kV Gas Insulated Substation extensions – Silchar and Misa projects for PGCIL; Order for Reactors and Transformers from PGCIL for Parli and Bikaner transmission projects.

Exhibit 19: Power Grids – Revenue (INR Bn) & EBIT Margins (%)



Source: Company, KRChoksey Research

Exhibit 20: Power Grids – ROCE (%)



Source: Company, KRChoksey Research

Exhibit 21: Power Grids – Offerings

Power Grids

- Control Systems
- Power Converters & Inverters
- Power Plant Automation & Optimisation
- Turbine Control
- Turnkey Power Plant Solutions
- FACTS
- HVDC
- Microgrids
- Transformers

Semiconductors

- IGBT & Diode Modules
- Press-pack IGBT Modules
- Insulated gate-commutated thyristors (IGCT)
- Thyristors
- Diodes
- Gate turn-off thyristors (GTO)
- Silicon surge voltage suppressors

Substations & Electrification

- AIS Substations
- GIS Substations
- Hybrid Substations
- Mobile Substations
- Containerised & Prefabricated Substations
- Energy Storage Solutions

Substations Automation Protection & Control

- Substation Automation Systems
- Substation Automation Products
- Distribution Automation Systems
- Distribution Automation Products

Source: Company, KRChoksey Research

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High Voltage Products

- Air-insulated Switchgear
- Gas-insulated Switchgear
- Hybrid Switchgear
- Generator Circuit Breakers
- Disconnectors
- Instrument Transformers
- Surge Arresters
- Capacitors & Filters
- Monitoring & Controlled Switching

HVDC

- HVDC Classic (LCC)
- HVDC Light (VSC)
- MACH Control & Protection
- HVDC Converter Stations

Microgrid Solutions

- Distributed generation enabled PowerStore
- Microgrid Plus control system
- Renewable Energy Conversion (Solar & Wind Inverters)
- Power Distribution & Electrification Products (Medium Voltage Products, Low Voltage Products, Transformers)

Transformers

- Power Transformers
- Distribution Transformers
- Dry-type Transformers
- Special Application Transformers
- Reactors & Inductors
- Insulation & Components

Communication Networks

- Optical Networks
- Power Line Carrier
- Teleprotection
- Voice Systems
- Wireless Networks
- Network Management Suite

Enterprise Software

- Asset Optimisation & Management
- Workforce Management
- Network Control
- Energy Portfolio Management
- Connected Asset Cycle Management (CALM)
- Distributed Energy Resource Management System (DERMS)
- Intelligent Mining Solutions

FACTS (Flexible Alternating Current Transmission Systems)

- Fixed Series Compensation
- Thyristor Controlled Series Compensation (TCSC)
- STATCOM
- Static Var Compensator (SVC)
- Static Frequency Compensator (SFC)

Source: Company, KRChoksey Research

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Exhibit 22: Divisional Snapshot (CY16):

Division	% of Revenue	EBIT Margin	Offerings	Industry Served	Top 3 Competitors
Power Grids	39%	4.9%	Control Systems FACTS HVDC Microgrids Semiconductors Substations & Electrification Transformers Power plant automation & optimisation Turnkey Power Plant solutions	Power Generation, Transmission & Distribution Aluminium Automotive Ports Railways Buildings Life Sciences Oil & Gas Printing Solar & Wind Power Microgrids Cement Chemicals	Siemens GE Hyundai
Robotics and Motion	26%	9.5%	Industrial Robots (Paint Robots, Collaborative Robots) Controllers Railway Traction Generators Conveyors Press Automation Equipment Track Motions	Automotive Electricals & Electronics Food & Beverages Foundry & Forging Metal Fabrication Packaging & Palletizing Plastics Wood Industries Solar	Siemens Fanuc Kuka
Electrification Products	20%	13.8%	Low & Medium Voltage Products Solar Inverters UPS & Power Conditioning EV Charging Infrastructure Microgrid Solutions	Power Transmission & Distribution Minerals & Mining Solar & Wind Marine & Ports Oil, Gas & Petrochemicals Building, Infrastructure & Residential	Schneider Legrand Eaton
Industrial Automation	15%	11.6%	Distributed Control Systems (Process Control & Automation) Measurement Products Turbocharging products & solutions	Power Generation Metals & Mining Marine & Ports Oil & Gas Aluminium Cement Pulp & Paper Pharmaceuticals & Life Sciences	Siemens Emerson Schneider

Source: Company, KRChoksey Research

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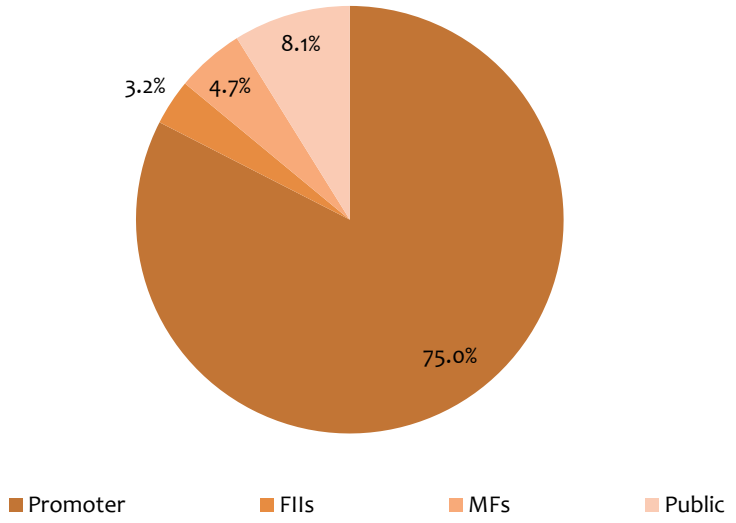
Exhibit 23: Shareholding Structure (as of Sep 2017)



Source: Company, KRChoksey Research

Exhibit 24: Top 5 Fund Holdings:

Fund Name (As of Nov 2017)	Market Value (INR Mn)	No of Shares
Reliance MF	6732	4858153
HDFC MF	4674	3373200
Sundaram MF	1388	1001669
IDBI MF	526	379696
Motilal Oswal MF	442	316321

Source: Company, KRChoksey Research

Exhibit 25: Management Details

Name	Designation	Executive / Non-Executive
Frank Duggan	Chairman	Non-Executive
Sanjeev Sharma	Managing Director	Executive
Nasser Munjee	Independent Director	Non-Executive
Renu Sud Karnad	Independent Director	Non-Executive
Darius E Udwadia	Independent Director	Non-Executive
Tarak Mehta	Director	Non-Executive

Source: Company, KRChoksey Research

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Investment Rationale:

Power packed growth prospects:

Indian power sector has evolved in the last couple of years with the major capacity addition in thermal in last decade. In terms of the installed capacity, the country had a capacity of 331 GW at the end of Dec'17 from which Thermal constitutes ~66% of the overall installation followed by Renewable (~18%), Hydro (~14%) and Nuclear (2%). Further, in terms of the region wise distribution of installed capacity, North has around 28% of the installed capacity (majority in hydro power), while Western (leading in thermal power), Southern (higher share in nuclear and renewables) and Eastern markets contribute 33%, 29% and 10% respectively. The North-Eastern market constitutes mere to the overall installed capacity primarily on account of its geographic situations. Bifurcating the demand among different set of customers, Industrial and Domestic segments contribute more than 50% of the overall demand, while the rest has been dispersed between Agriculture, Commercial and others. It should be noted that power demand in key sectors such as Agriculture, Industrial and Domestic is highly co-related with the GDP growth. The subdued agriculture growth in past decade had resulted in a fall in the power consumption pattern in agriculture sector, which fell to 21% from 25% for the same period. The same for industrial and domestic has increased to 35% and 27% respectively, largely on account of better industrial growth and increase in per capita income resulting into higher consumption. In terms of the overall demand, the per capita electricity consumption in India is around 1075 kWh at the end of 2016 (grew at a CAGR of 5.5% over 2010-16) against the world average of 3024 kWh. Going ahead, the demand is expected to grow to 1,490 kWh by 2022 and 2,121 kWh by 2027, which will be largely driven by government's initiatives such as village electrification, housing for all, smart cities and so on.

Indian Power story in charts:

Exhibit 26: Plan-wise installed capacity mix in India (MW)

	Thermal	Nuclear	Hydro	Renewables	Total
6th Plan	27,030	1,095	14,460	0	**42,585**
7th Plan	43,746	1,565	18,308	18	**63,636**
8th Plan	61,010	2,225	21,658	902	**85,795**
9th Plan	74,429	2,720	26,269	1,628	**105,046**
10th Plan	86,015	3,900	34,654	7,761	**132,329**
11th Plan	131,603	4,780	38,990	24,503	**199,877**
12th Plan	218,330	6,780	44,478	57,260	**326,849**
13th Plan*	218,960	6,780	44,963	60,158	**330,861**

Exhibit 27: Latest installed capacity mix in India (%)

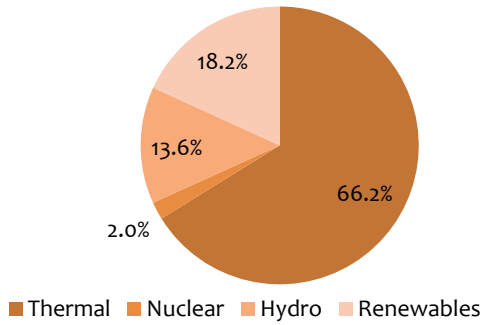

Exhibit 28: Region-wise installed capacity (MW)

	Thermal	Nuclear	Hydro	Renewables	Total
Northern	58,270	1,620	19,424	12,279	**91,593**
Western	79,968	1,840	7,448	18,825	**108,081**
Southern	51,617	3,320	11,808	27,728	**94,474**
Eastern	26,772	0	4,942	1,027	**32,741**
North-East	2,292	0	1,342	285	**3,919**
Islands	40	0	0	12	**52**
All India	**218,960**	**6,780**	**44,963**	**60,158**	**330,861**

Exhibit 29: Region-wise installed capacity (%)

	Thermal	Nuclear	Hydro	Renewables
Northern	26.6%	23.9%	43.2%	20.4%
Western	36.5%	27.1%	16.6%	31.3%
Southern	23.6%	49.0%	26.3%	46.1%
Eastern	12.2%	0.0%	11.0%	1.7%
North-East	1.0%	0.0%	3.0%	0.5%
Islands	0.0%	0.0%	0.0%	0.0%
All India	**100%**	**100%**	**100%**	**100%**

Source: CEA, National Electricity Plan, KRChoksey Research

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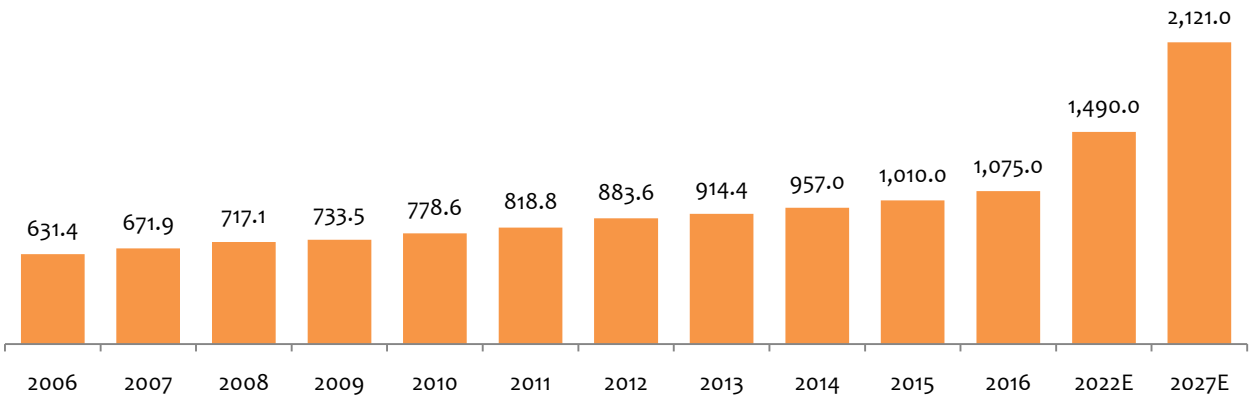
Exhibit 30: Per capita consumption in India (kWh)



In terms of the transmission line network, the country has 384,087 CKM (circuit kilometers) of transmission lines of which 400 kV and 220 kV constitute more than 85% of the country's transmission network followed by 765 kV and HVDC poles. In terms of the transformers, the installed capacity at the end of Dec'17 stood at 804,530 MVA, of which around 75% is dispersed between 400 kV and 220 kV.

Exhibit 31: Capacity addition – Transmission Line (CKM)

	± 800 kV HVDC	± 500 kV HVDC	765 kV	400 kV	220 kV	Total	Cumulative Total
7th Plan	0	0	0	13,795	13,626	**27,421**	**79,455**
8th Plan	0	1,634	0	16,318	19,969	**37,921**	**117,376**
9th Plan	0	3,104	1,160	13,236	17,393	**34,893**	**152,269**
10th Plan	0	1,134	1,024	26,344	17,636	**46,138**	**198,407**
11th Plan	0	3,560	3,066	31,097	21,351	**59,074**	**257,481**
12th Plan	6,124	0	25,990	50,968	27,288	**110,370**	**367,851**
13th Plan (upto Dec'17)	0	0	3,038	10,019	3,179	**16,236**	**384,087**

Exhibit 32: Capacity addition – Transformer (MVA)

	± 800 kV HVDC	± 500 kV HVDC	765 kV	400 kV	220 kV	Total	Cumulative Total
7th Plan	0	0	0	12,250	16,451	**28,701**	**75,322**
8th Plan	0	0	0	19,285	30,435	**49,720**	**125,042**
9th Plan	0	5,200	0	19,515	32,186	**56,901**	**181,943**
10th Plan	0	3,000	0	32,562	40,134	**75,696**	**257,639**
11th Plan	0	1,550	25,000	58,085	67,277	**151,912**	**409,551**
12th Plan	6,000	3,750	142,500	89,780	89,184	**331,214**	**740,765**
13th Plan (upto Dec'17)	3,000	0	19,000	30,345	11,420	**63,765**	**804,530**

Source: CEA, National Electricity Plan, KRChoksey Research

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Going ahead, it is expected that the govt will be more focused on higher kV voltage primarily on account of inter-regional network. It is expected that under 13th plan, inter-regional capacity would grow from 40 GW to 127 GW. In terms of the transmission line, the govt has envisaged to add around 62,800 CKM of transmission line under 13th plan, 15000 MW of HVDC terminal capacity and 128,000 MVA of transformer capacity. **The capex is pegged at around INR 2.6 trillion of which around 1.6 trillion will be spent by state and the rest from PGCIL. Considering that few players such as ABB and Siemens are present in the higher voltage system, the growth potential for companies like ABB should not be ruled out in the years to come. Further, ABB normally receives ~10-20% of PGCIL order flows every year and given the capital expenditure plans of INR 1 trillion by PGCIL, it is very likely that ABB's Power Grids segment could support the overall financial performance of the company in medium to long term.**

Exhibit 33: Inter-Regional Links

Source: CEA, National Electricity Plan, KRChoksey Research

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Exhibit 34: Transmission Lines – 400 kV and above (CKM)

	Expected addition in 13th Plan	Expected by end of 13th plan
HVDC Biopoles	10,600	27,472
765 kV	22,200	54,450
400 kV	30,000	174,819
Total	62,800	256,741

Exhibit 35: Substations – 400 kV and above (MVA)

	Expected addition in 13th Plan	Expected by end of 13th plan
HVDC Terminals		
HVDC b-to-b	0	3,000
HVDC biopoles	15,000	34,500
Total HVDC - MW	**15,000**	**37,500**
AC Substations		
765 kV	79,000	253,000
400 kV	49,000	245,027
Total MVA	**128,000**	**498,027**

Source: CEA, National Electricity Plan, KRChoksey Research

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Next generation growth:

ABB, being the pioneering technology leader both locally and globally, is at the forefront of opportunities arising from the economic evolution of India as well as the world. We believe ABB will continue to reap benefits of this evolution through the pillars that we have identified and listed below:

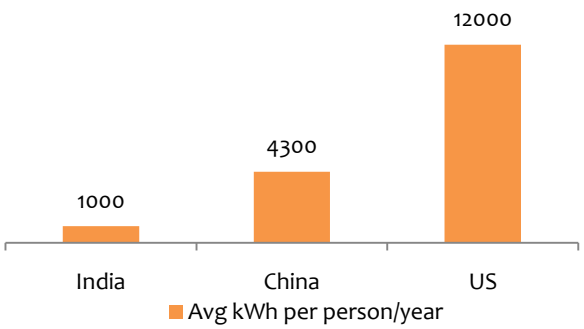
a. National Solar Mission
b. National Electric Mobility Mission Plan
c. Railway Modernisation & Electrification

National Solar Mission:

India is one of the fastest growing economies in the world today but to sustain this growth, massive energy requirements have to be met while ensuring that India fulfils its commitments to the Paris Climate Agreement. According to a World Bank report, India's electricity usage is approximately 1000 kWh per person per year. This is much lower than US and China at 12000 kWh per person per year and 4300 kWh per person per year, respectively. It is estimated that India's per capita energy consumption is set to double in the next 6-7 years. This has compelled India to explore energy options beyond conventional sources such as fossil fuel/thermal power and look at renewables such as Solar, Wind and so on. To offer a perspective, it is of great help to look at the current power capacity composition in India. Currently, the total installed capacity stands at ~330 GW from which, Coal capacity leads with nearly 60% of total capacity, followed by RES at ~18% with the balance split among Hydro, Gas and Nuclear capacities. From this, the top 10 states constitute a combined capacity of 243.70 GW or 73% of all India installed capacity.

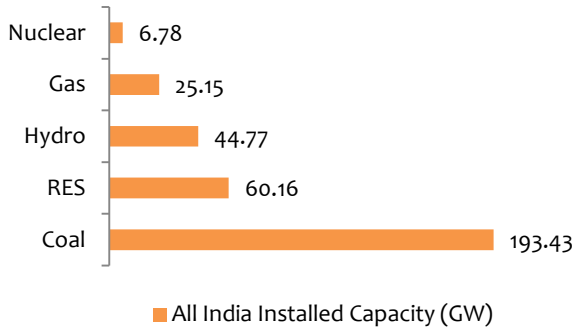
India receives nearly 300 days of sun and is making great strides towards a solar future with the potential of becoming a global solar superpower in the medium to long term. The National Solar Mission (NSM), aimed at achieving 100 GW of solar power by 2022, is a step in this direction.

Exhibit 36: Electricity Usage Comparative Stats



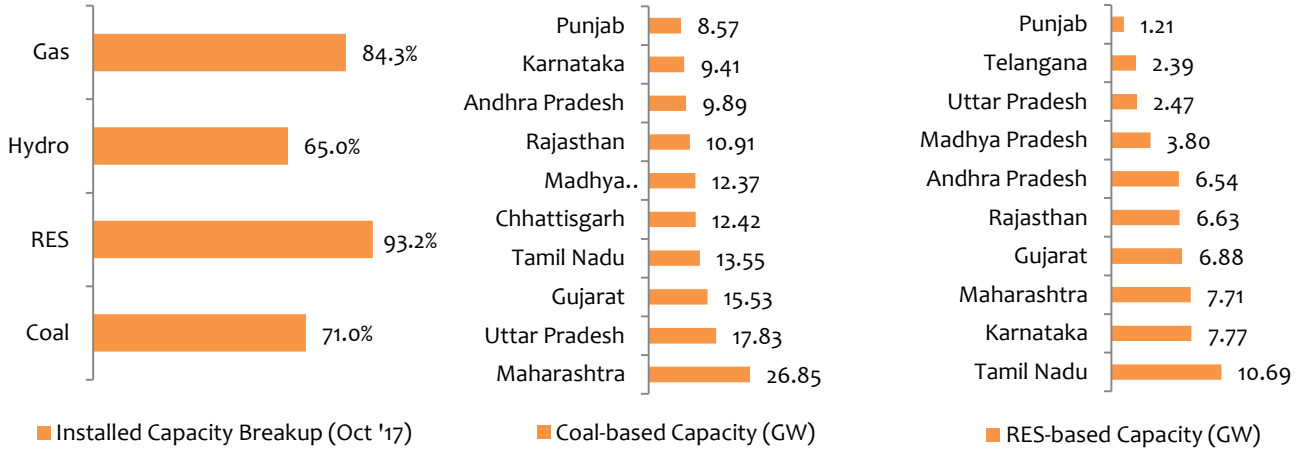
Source: World Bank, KRChoksey Research

Exhibit 37: All India Installed Capacity (Oct '17)



Source: MNRE, KRChoksey Research

Exhibit 38: Top 10 States – Installed Capacity Composition (Oct '17)



Source: MNRE, KRChoksey Research

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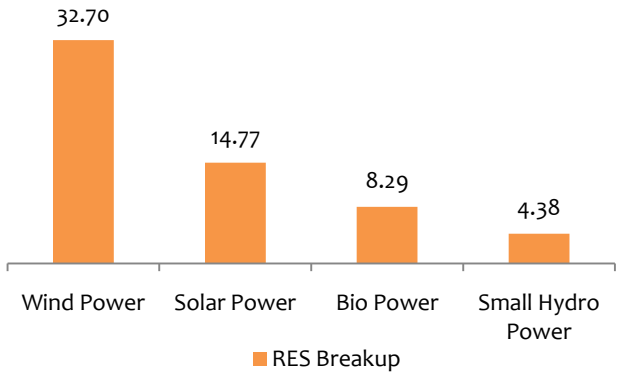
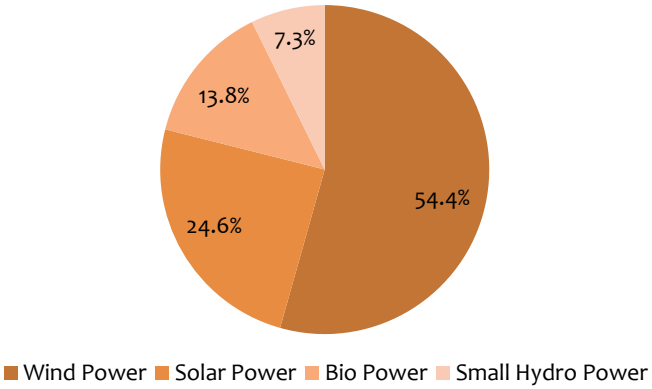
Exhibit 39: Breakup – Renewable Energy Sources (GW)



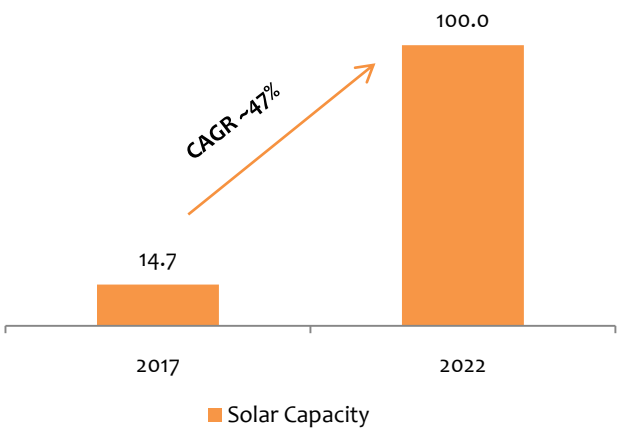
Source: MNRE, KRChoksey Research

Exhibit 40: Breakup – Renewable Energy Sources (%)



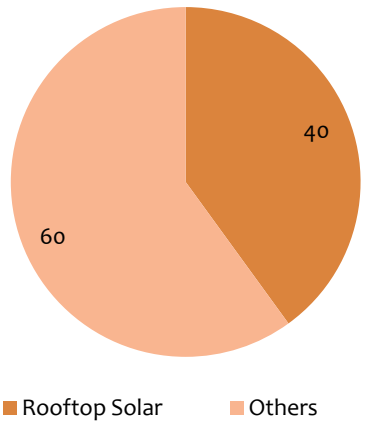
Source: MNRE, KRChoksey Research

Exhibit 41: Target Solar Capacity (GW)



Source: Central Electricity Authority, KRChoksey Research

Exhibit 42: Solar Capacity Breakup for 2022 (GW)



Source: Central Electricity Authority, KRChoksey Research

As highlighted previously, RES constitutes almost 60 GW or 18% of the All India installed power capacity of ~330 GW. Furthermore, the RES capacity comprises – Wind Power (32.7 GW or 54.4% of total RES), Solar Power (14.77 GW or 24.6% of total RES), Bio Power (8.29 GW or 13.8% of total RES) and Small Hydro Power (4.38 GW or 7.3% of total RES). The government aims at increasing the total RES-based capacity up to 175 GW by 2022 from which solar capacity will make up to 100 GW. In keeping in line with this goal, the government, with the National Solar Mission, is displaying ambition and is set to go in for solar capacity overhaul from 14.77 GW (Oct '17) to 100 GW by 2022. The 100 GW will be derived from – Rooftop Solar (40GW or 40% of total Solar Capacity) and Ground-Mounted Solar (60 GW or 60% of total Solar Capacity). Rooftop Solar capacity stands at 1.4 GW (March '17) and is growing at 81% Y-o-Y, as per reports. ABB is among the market leaders and offers the most extensive range of products for the renewables segment with key products including solar inverters, energy storage systems and so on.

Indian Railways also aims to develop as much as 1 GW of solar power at over 7000 stations across India and to install rooftop solar panels on passenger coaches to supply electricity inside the coaches. ABB has partnered with Azure Power to provide solar inverters for rooftop solar systems at 750 railways in North India. Azure Power has won bids for developing. Recently, ABB also doubled its solar inverter manufacturing capacity in India in order to meet the growing demand.

As far as increasing the overall RES-based power capacity is concerned, the single most important policy driving and supporting this growth is the Renewable Purchase Obligations which essentially necessitates State Electricity Boards to purchase a certain percentage of the total energy requirements through renewable energy sources. RPOs are set state-wise.

Additionally, the government is aggressively pursuing Microgrids as a solution for providing 24/7 electricity to remote locations across the country. As per a March 2017 report, about 300 million people lack access to electricity and about 100 million others with less than 4 hours of electricity per day.

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Exhibit 43: Year-wise Targets for achieving the target of 100 GW Solar Capacity

Category	2015-16	2016-17	2017-18E	2018-19E	2019-20E	2020-21E	2021-22E	Total (GW)
Rooftop Solar (GW)	0.2	4.8	5.0	6.0	7.0	8.0	9.0	40.0
Ground-mounted Solar (GW)	1.8	7.2	10.0	10.0	10.0	9.5	8.5	57.0
Total (GW)	2.0	12.0	15.0	16.0	17.0	17.5	17.5	97.0*

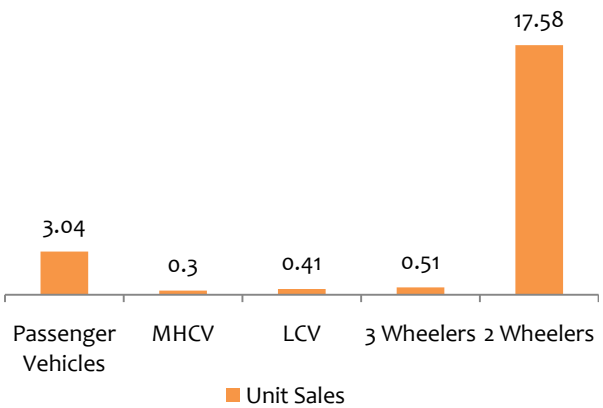
**3.7 GW commissioned upto 2014-15*
Source: MNRE, KRChoksey Research

In 2016, the Ministry of New and Renewable Energy (MNRE) introduced the draft national policy on renewables-based microgrids aimed at developing around 500 MW of generation capacity by the private sector through 10,000 renewables-based micro and mini grid projects across India. Clearly, microgrids are being viewed as a potential solution to India's electricity woes. To this end, we believe ABB has set all its cards right and is poised to come out as a potential winner owing to a wide and growing product portfolio.

National Electric Mobility Mission Plan (NEMMP) & Faster Adoption & Manufacturing of (Hybrid) and Electric Vehicles in India (FAME India):
The government's ambitions are also rested the shift from internal combustion engine (ICE) based vehicles to 100% electric vehicles (EVs) by 2030. The government has taken major strides for this vision to come to fruition. This includes the National Electric Mobility Mission Plan (NEMMP 2013) and Faster Adoption & Manufacturing of (Hybrid) and Electric Vehicles in India (FAME India 2015). The cumulative outlay for NEMMP is estimated to be around Rs 14,000 cr including industry contribution. Under NEMMP, the FAME India programme was launched with the aim to promote clean energy, eco-friendly vehicles in the country with the objective of providing fiscal and monetary incentives for faster adoption for such vehicles. As per the NEMMP, the government expects to have between 6-7 million electric vehicles by 2030.

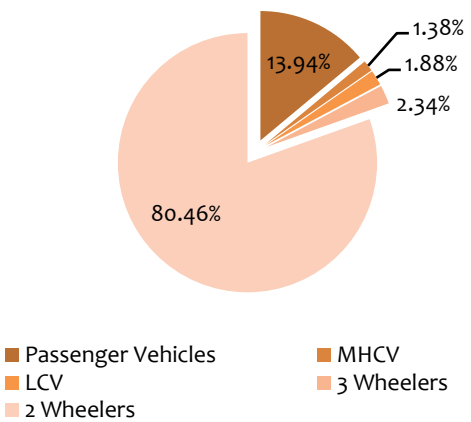
To build the case for the opportunity size, let us take a look at the key figures for the auto industry. During FY17, of total domestic auto sales, 2 wheeler sales constituted the biggest share at 17.58 mn units or 80.46%. This was followed by passenger vehicles sales which stood at 3.04 mn units or 13.94% of the total domestic unit sales. MHCVs, LCVs and 3 wheelers represent 1.38%, 1.88% and 2.34%, respectively. Signaling at the government's intent to stay course with NEMMP and FAME, state run enterprise – Energy Efficiency Services Ltd (EESL) – awarded contract to Tata Motors to supply 10,000 EVs. ABB had placed a bid in 2017 for setting up 4500 EV charging stations in response to the EESL order. Apart from this, the Ministry of Heavy Industries approved electric-vehicle based public transport for 11 Indian cities including Delhi, Mumbai, Ahmedabad, Bengaluru and Jaipur, under the FAME phase 1 with relevant fiscal support and incentives.

Exhibit 44: Segment-wise Breakup (Mn units)



Source: Industry Data, KRChoksey Research

Exhibit 45: Segment-wise Breakup (% of total unit sales in 2017)



Source: Industry Data, KRChoksey Research

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According to reports, the government is also keen on rolling out EVs for 2 wheelers, 3 wheelers and other commercial vehicles to reach its 2030 targets of 6-7 million EVs on Indian roads. We believe the government targets are very ambitious and could possibly be realised with certain policy efforts. For instance, if a internal combustion engine (ICE) based vehicle has not rusted out, it is possible to convert it into an electric vehicle. If the government brings out a policy that pushes conversion of such ICE based vehicles into EVs, this can give a significant boost to EV penetration and help achieve government targets by 2030.

Exhibit 46: EV Penetration and Target Penetration

EV Penetration (Vehicle Units)	
FY 16	22,000
FY 30E	6-7 million

Source: SMEV, KRChoksey Research

Domestic and international auto majors in India have announced plans for shifting to all-electric portfolios as early as 2020. Among the domestic manufacturers, Mahindra & Mahindra is a leader in EVs along with Tata Motors which bagged the EESL order for supplying 10,000 EVs. Among the international manufacturers, Volvo has announced that it will phase out ICE based vehicles as early as 2019 and only sell EVs and hybrids. However, this will be possible only with an equally deeper penetration of EV charging infrastructure because the charging infrastructure is what will make or break the government's vision. It is estimated that the cost of one EV charging station is anywhere between Rs 1-2 lakhs. Assuming that at least one EV charger is sold per EV, this would mean that by 2030 the demand for EV chargers would be equivalent to EV penetration at 6-7 million vehicles. In addition to this, the government also plans to push the charging infrastructure through public spaces such as shopping malls.

ABB is one of the world's leading supplier of EV charging stations with aggressive plans to penetrate into the Indian EV charging stations market. ABB has also pioneered in manufacturing of a range of chargers including flash chargers and standard chargers. Flash chargers, according to company's claims, can recharge up to 600 kW in as little as 15 seconds while the standard chargers can take up to 8 hours for a full recharge. ABB is already experiencing steady and growing numbers of order inflows from US, Europe and Asia for its EV charging infrastructure with aggressive plans to penetrate into the Indian market. As the government prepares for the shift to EVs from conventional vehicles and pushes for a conducive EV charging infrastructure policy environment, we believe ABB will enjoy the first mover advantage.

In November 2017, Nagpur became the first city in India to get an EV charging station. The station was set up by Ola in partnership with Indian Oil Corporation at one of IOC's fuelling stations in Nagpur.

Nagpur was also the first city to introduce a fleet of 200 EVs which included taxis, buses, e-rickshaws and so on for public transportation. Major suppliers included Mahindra, Tata Motors, Kinetic Engineering, and so on.

In November 2017, ABB installed solar powered charging stations for E-Rickshaws in Jabalpur, Madhya Pradesh. The solar inverters are a key component for the solar powered EV charging stations.

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Railways Modernisation & Electrification:

The Indian Railways (IR) is among the world's largest and the busiest networks, carrying over 8 billion passengers and transporting over 1 billion tons of freight in FY16 covering over 1,19,630 kms of total tracks across India. An average of 13,313 passenger trains ran through 7,216 stations criss-crossing India during FY16. Over 254,006 freight wagons, 70,241 passenger coaches and 11,122 locomotives (39 steam engines, 5,869 diesel engines and 5,214 electric locomotives) plied on Indian tracks during the same period. Given the sheer scale of operations at Indian Railways, the fuel bill is enormous. During FY16-17, the operating ratio stood at an all-time high of 96.96% indicating exponentially high expenses for the state carrier but is expected to go down considerably with a much needed electric overhaul of railways resulting in significant fuel cost savings.

Exhibit 47: Indian Railways' Rolling Stock Composition (FY16)

Indian Railways' Rolling Stock Composition	No. of Units
Freight Wagons	254,006
Passenger Coaches	70,241
Locomotives	11,122

Source: Ministry of Railways, KRChoksey Research

Exhibit 48: Breakup of Locomotives (FY16)

Composition of Locomotives	No. of Units
Steam Powered	39
Diesel Fuel	5,869
Electric Locomotives	5,214

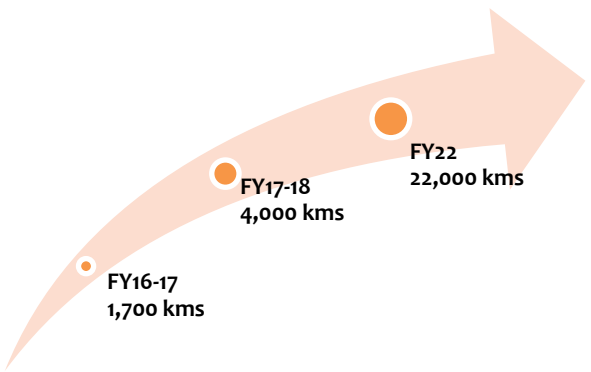
Source: Ministry of Railways, KRChoksey Research

Currently, only about 42% of the total track network is electrified while the rest is diesel based. With the introduction of Mission Electrification, the Ministry of Railways, aims to electrify almost 90% of railway tracks at an estimated cost of around INR 350 bn. Mission Electrification is aimed at reducing dependence on diesel and helping the government meet its target of cutting carbon emissions by 33-35% by 2030. The government expects to save as much as INR 110 bn each year once the railways achieve 100% electrification. As per latest data, the pace of electrification has increased to 4,000 kms in FY17-18 from 1,700 kms in FY16-17. The Ministry further aims to ramp up electrification to 22,000 kms by 2021 to meet the goals set under Mission Electrification. To further expedite this programme, the government has introduced a slew of measures including awarding turn-key contracts as well as increasing the number of executing agencies from 3 previously to 6 now including PGCIL, Indian Railway Construction Company and so on. Given ABB's long standing business relationship with PGCIL, we believe ABB could experience increased order inflows arising from railway electrification. In keeping with the progress, Indian Railways currently has over 5200 electric locomotives and nearly 5900 diesel locomotives, which will be shifted to electric locomotives by 2022.

Executing Agencies for Railway Electrification:
Central Organisation for Railway Electrification (CORE), Allahabad
Zonal Railways
Rail Vikas Nigam Limited (RVNL)
Indian Railway Construction Company (IRCON)
Rail India Technical and Economic Services (RITES)
Power Grid Corporation of India Limited (PGCIL)

Source: Ministry of Railways, KRChoksey Research

Exhibit 49: Growth in rail track electrification (Kms)



Source: Ministry of Railways, Industry Data, KRChoksey Research

In 2016, Indian Railways awarded various contracts for electric locomotives including the one with Alstom to supply 800 electric locomotives over the next few years at an estimated cost of USD 3.1 bn. Concurrently, ABB has received an order to supply 1600 traction transformers which will be installed in Alstom's 800 electric locomotives. Assuming the traction transformers constitute 20-30% of the total cost of electric locomotive, ABB is looking at an opportunity of as much as Rs 4000-6000 cr by 2022.

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In the recent past, the Indian Railways has faced flak due to rising incidents of rail accidents, derailments and so on, questioning the quality of rail safety. One of the main causes of this has been the deterioration of existing tracks due to excessive operational load of freight trains and passenger trains simultaneously. This has afforded little time for repair and maintenance works for the Indian Railways. The age old computer/microprocessor-based signaling systems are being switched to European Train Control System (ETCS) technology to mitigate risks of accidents and/or collision due to human error in passing signals for over-speeding. We expect Siemens to be a key beneficiary with its broad signaling and controlling systems portfolio.

In terms of modernisation plans, Metro Rail projects have seen a considerable pick up in the recent years. The government has laid out plans to develop Metro Rail projects in over 30 Indian cities which have populations of 2 million and above. As of July 2017, 9 cities have an operational/partly operational metro rail network while 5 cities have projects in progress. According to industry estimates, the overall cost of metro rail projects both operational and ongoing, is approximately INR 2.5 trillion. More such projects with an estimated cost of INR 2 trillion are on the anvil over the next 2-3 years giving a boost to order books for construction companies and allied sectors. Additionally, India is increasingly becoming a preferred destination for global players such as Alstom SA and Bombardier Inc for manufacturing urban rail systems owing to both domestic and overseas demand. Alstom SA will be supplying railway coaches to Australia from India. Similarly, Bombardier Inc has invested nearly EUR 33 mn in India to export 450 metro rail coaches to Australia and components to Brazil, Australia and Saudi Arabia.

India has seen a steady rise in the number of Metro Rail projects across major cities with populations of 2 million and above. Operational and ongoing projects are estimated to cost around INR 2.5 trillion with additional projects coming up with an estimated cost of INR 2 trillion over the next 2-3 years.

Delays in logistics transportation due to freight congestion has marred the reputation of Indian Railways while significantly pushing up the cost of railway logistics in India. To ease out the freight congestion, Indian Railways came up with the Dedicated Freight Corridor (DFC), aimed at making freight transport cheaper, faster and more reliable since these are 'freight only'. A special purpose vehicle – Dedicated Freight Corridor Corporation of India Ltd (DFCCIL) – was set up under the Ministry of Railways. These corridors are planned to span across a total of 10,122 kms connecting four major metropolitan cities of New Delhi, Mumbai, Chennai and Kolkata at an estimated cost of around USD12 bn. The initial development will include Eastern DFC (1,856 kms) and Western DFC (1,504 kms). The Ministry of Railways has plans to develop 4 more DFCs – East-West Corridor (2,330 kms), North-South Corridor (2,343 kms), East Coast Corridor (1,100 kms) and Southern Corridor (899 kms).

Dedicated Freight Corridor	Length (Kms)
Ongoing:	
Eastern Dedicated Freight Corridor	1,856
Western Dedicated Freight Corridor	1,504
Upcoming:	
East-West Dedicated Freight Corridor	2,330
North-South Dedicated Freight Corridor	2,343
East Coast Corridor	1,100
Southern Corridor	899

Source: DFCCIL, Industry Data, KRChoksey Research

According to the Railway Minister, Mr Piyush Goyal, Indian Railways is targeting to triple its freight traffic to 3 billion tonnes by 2030 as against 1.1 billion tonnes currently. Assuming that this target will require additions in route kms as well as new rolling stock, it will also mean growth in demand for signaling systems, power transmission and electrical equipments for railways. Siemens is a leading supplier of signaling systems for railways while ABB is a leading provider of power transmission and electrification products such as traction transformers, turbochargers, low and medium voltage products, to name a few. Currently, ABB derives between 5-6% of its revenues from railways and given its long history of orders from PGCIL for transmission resources, we believe these revenues can drive up to double digits in the near future putting ABB in a position to thrive with these opportunities.

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Risks & Concerns

Lower order inflows for power segment:
Although the company has diversified its presence into other segments, the power segment still constitutes more than 50% to the overall order book and thereby the revenues. Hence, any fall in the order announcements could hamper the order book of the company and thereby the revenue of the company.

Increase in competitive intensity to hurt margins:
Despite there has been increased in the competitive environment in small-medium voltage of transformer, ABB's presence into higher range of transformers have provided cushion to the overall operational performance of power segment in past. However, increase in the competitive environment in the concentrated areas of ABB can put pressure on the profitability of the company.

Higher RMAT cost and inability to pass on to spoil operational performance:
Given the ABB's major revenue comes from powergrid and electrification segments, any upsurge in the commodity prices could negatively impact the operational performance of the company. The company has been able to pass on the RMAT increase in past, however we expect increase in the competition could limit the incremental pass-on and thereby could hit the blended OPM. The key raw material items include the name such as electrical motors, wires, cable, conductors, sheet metal components to name a few.

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Income Statement (INR Millions)	CY13	CY14	CY15	CY16	CY17E	CY18E	CY19E
Net Revenues	77220	77333	81403	86484	88640	107712	132499
Cost Of Revenues (incl Stock Adj)	49303	48371	48336	51096	51234	61935	76187
Gross Profit	**27917**	**28962**	**33067**	**35388**	**37406**	**45778**	**56312**
Employee Cost	6771	7052	7499	7678	8199	8617	9010
Other Operating Expenses	4682	4059	4664	5077	5274	6355	7817
EBITDA	4699	5557	7125	7466	6645	9535	12475
Other Income	70	173	130	653	1379	617	720
EBITDA, including OI	**4769**	**5730**	**7255**	**8119**	**8024**	**10153**	**13195**
Depreciation	1033	1128	1598	1510	1542	1609	1666
Net Interest Exp.	1011	1050	912	849	780	520	0
Forex (gain)/ loss	0	0	0	0	0	0	0
Other exceptional items	0	0	0	0	0	0	0
EBT	**2725**	**3552**	**4746**	**5760**	**5702**	**8023**	**11529**
Taxes	956	1267	1747	1998	1882	2648	3805
Tax Rate	35.1%	35.7%	36.8%	34.7%	33.0%	33.0%	33.0%
Net Income	**1769**	**2285**	**2999**	**3762**	**3821**	**5376**	**7725**
Adj. NI after Minority interest	1769	2285	2999	3762	3821	5376	7725
Adj. EPS (INR)	8.3	10.8	14.2	17.8	18.0	25.4	36.5
Shares Outstanding	211.9	211.9	211.9	211.9	211.9	211.9	211.9

Source: Company, KRChoksey Research

Balance sheet (INR Millions)	CY13	CY14	CY15	CY16	CY17E	CY18E	CY19E
SOURCES OF FUNDS							
Share Capital	424	424	424	424	424	424	424
Reserves	26352	27696	29662	32404	35204	39050	44607
Minority Interest	0	0	0	0	0	0	0
Total Shareholders Funds	26776	28120	30086	32828	35628	39474	45030
Long Term Borrowings	0	0	6000	6000	6000	0	0
Net Deferred Tax liability	0	0	0	0	0	0	0
Other long term liabilities	42	45	43	39	36	44	54
Long term provisions	181	374	479	521	479	583	718
Current Liabilities and Provisions							
Short term borrowings	6201	3711	0	0	0	0	0
Trade Payables	20826	19840	21020	21573	21057	27679	33046
Other Current Liabilities	13960	12977	12677	12372	15075	16025	18678
Short Term Provisions	2511	3149	3784	3956	2871	4370	5388
Total Current Liabilities	43497	39677	37481	37901	39003	48074	57111
Total Liabilities	**70495**	**68217**	**74088**	**77289**	**81146**	**88174**	**102914**
APPLICATION OF FUNDS :							
Net Block	13915	13995	12984	12549	12007	11576	10910
Capital Work in Progress	475	319	443	678	678	500	500
Non-current investments	165	164	163	162	162	162	162
Deferred tax assets	279	152	490	784	784	784	784
Long term loans and advances	3509	4015	4222	3806	3904	4753	5860
Other Non Current Assets	83	75	67	72	74	90	111
Current Assets, Loans & Advances							
Current Investments	1	1	1	1	1	1	1
Inventories	9889	8938	9396	9403	10528	12237	14368
Sundry Debtors	32357	31575	33909	30633	29910	37877	44899
Cash and Bank	3166	2260	5736	11892	16158	11745	15263
Loans and Advances	2568	2775	2781	3308	3350	3788	4669
Other Current assets	4089	3947	3897	4002	3589	4662	5388
Total Current Assets	**52069**	**49496**	**55720**	**59238**	**63537**	**70309**	**84587**
Total Assets	**70495**	**68217**	**74088**	**77289**	**81146**	**88174**	**102914**

Source: Company, KRChoksey Research

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Cash Flow Statement (INR Millions)	CY13	CY14	CY15	CY16	FY17P	CY18E	CY19E
PBT & Extraordinary	2725	3552	4746	5760	5702	8023	11529
Depreciation	1033	1128	1598	1510	1542	1609	1666
(Inc) / Dec in Working Capital	261	(90)	(2170)	2821	925	(2868)	(2705)
Taxes	(2091)	(1213)	(1968)	(2172)	(1882)	(2648)	(3805)
Others	1373	1413	1611	707	780	520	0
Cash from Ops.	**3301**	**4790**	**3817**	**8626**	**7067**	**4637**	**6685**
Purchase of Fixed Assets	(2225)	(1105)	(1096)	(1387)	(1000)	(1000)	(1000)
Others	27	(380)	324	711	0	0	0
Cash from Investing	**(2198)**	**(1485)**	**(772)**	**(676)**	**(1000)**	**(1000)**	**(1000)**
Proceeds from issue of shares	0	0	0	0	0	0	0
Borrowings (Net)	0	0	6000	0	0	(6000)	0
Others	(1733)	(1731)	(1868)	(1789)	(1800)	(2050)	(2168)
Cash from Financing	**(1733)**	**(1731)**	**4132**	**(1789)**	**(1801)**	**(8050)**	**(2168)**
Net Change in Cash	(630)	1574	7177	6161	4267	(4413)	3517
BF Cash & Bank	868	3166	2260	5736	11892	16158	11745
END Cash & Bank	3166	2260	5736	11892	16158	11745	15263

Source: Company, KRChoksey Research

Ratio Analysis	CY13	CY14	CY15	CY16	CY17E	CY18E	CY19E
Profitability							
Return on Assets (%)	2.5	3.3	4.0	4.9	4.7	6.1	7.5
Return on Capital (%)	13.8	16.1	15.5	16.8	15.4	21.3	25.2
Return on Equity (%)	6.6	8.1	10.0	11.5	10.7	13.6	17.2
Margin Trend							
Gross Margin (%)	36.2	37.5	40.6	40.9	42.2	42.5	42.5
EBITDA Margin (%)	6.1	7.2	8.8	8.6	7.5	8.9	9.4
Net Margin (%)	2.3	3.0	3.7	4.4	4.3	5.0	5.8
Liquidity							
Current Ratio	1.2	1.2	1.5	1.6	1.6	1.5	1.5
Quick Ratio	1.0	1.0	1.2	1.3	1.4	1.2	1.2
Debtor Days	155	151	154	131	125	130	125
Inventory Days	47	43	43	40	44	42	40
Creditor Days	100	95	96	92	88	95	92
Cash Conversion Cycle	102	99	101	79	81	77	73
Solvency							
Total Debt / Equity	0.2	0.1	0.2	0.2	0.2	-	-
Interest Coverage	3.7	4.4	6.2	7.8	8.3	16.4	NM
Valuation Ratios							
EV/EBITDA	68.8	57.9	45.0	42.1	46.7	32.4	24.5
P/E	181.1	140.2	106.8	85.2	83.9	59.6	41.5
P/B	12.0	11.4	10.6	9.8	9.0	8.1	7.1

Source: Company, KRChoksey Research

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