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DEPARTMENT OF HEAVY INDUSTRY
PE - XI Section

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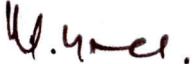
Subject: Indian Electrical Equipment Industry Mission Plan 2012-2022:
Base Document

In order to achieve the desired level of growth within 10 years, this Department proposes to prepare a Mission Plan 2012-2022 for Indian Electrical Equipment Industry Sector. In this regard this Department in consultation with Indian Electrical and Electronics Manufacturers' Association (IEEMA) has prepared a Base Document on Indian Electrical Equipment Industry for Mission Plan 2012-2022. The vision 2022 for Indian Electrical Equipment Industry is "To make India the country of Choice for the production of Electrical Equipment and reach an output of US \$ 100 billion by balancing exports and imports".

2. The Mission Plan Document could be discussed and finalised in the next meeting of Development Council which is likely to be held in near future. Therefore, all the stakeholders are requested to provide their valuable suggestions/ inputs for finalising the Mission Plan Document. The suggestions/inputs may be provided on email on the following addresses preferably within 15 days:

- i) Shri R.P Goyal - rp.goyal@nic.in
- ii) Shri R.K Jha - rajnish.jha@nic.in

3. A copy of Base Document is attached with this note.


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Indian Electrical Equipment Industry Mission Plan 2012-2022: Base Document

September 2011

***Vision 2022 for Indian Electrical
Equipment Industry***

To make India the country of choice for the production of electrical equipment and reach an output of US\$ 100 billion by balancing exports and imports

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Abbreviations

BEE	Bureau of Energy Efficiency
BTG	Boiler Turbine Generator
CAGR	Compounded Annual Growth Rate
CFD	Container Freight Depot
CRGO	Cold Rolled Grain Oriented
CRNGO	Cold Rolled Non-Grain Oriented
CVD	Countervailing Duty
DHI	Department of Heavy Industry
ECA	Export Credit Agency
ECGC	Export Credit Guarantee Corporation of India Limited
EE	Electrical Equipment
EHV	Extra High Voltage
FTA	Free Trade Agreement
GoI	Government of India
GST	Goods and Services Tax
GW	Gigawatt
HV	High Voltage
ICD	Inland Container Depot
IEEMA	Indian Electrical & Electronics Manufacturers' Association
IPP	Independent Power Producer
ITI	Industrial Training Institute
KWh	Kilowatt hour
L1	Lowest One
MVA	Mega Volt Ampere
MW	Megawatt
NEP	National Electricity Policy
NHPTL	National High Power Testing Lab
OECD	Organisation for Economic Cooperation and Development
R-APDRP	Restructured - Accelerated Power Development & Reforms Programme
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
RoW	Right of Way
SEB	State Electricity Board
SME	Small and Medium Enterprises
T&D	Transmission and Distribution
TG	Turbine Generator
TLT	Transmission Line Tower
TWh	Terrawatt hour

Preface

Preface

An efficient power supply system is a key requirement for a nation's economic growth and good quality life of its citizens. Assured availability of quality power at a reasonable cost will not only act as a catalyst in the socio-economic development of the country, but also enhance the global competitiveness of the industrial sector. It will also lead to enhanced employment generation and per capita income levels.

Rapid development of a robust and healthy domestic electrical equipment (EE) industry, supporting the complete value chain in power generation, transmission and distribution, is not only crucial for the economy, but is also of strategic importance for India. The Indian EE industry, which comprises around 90% SMEs, has grown close to ₹ 110,000 Cr in 2010-11. The industry has a diversified, mature, and established manufacturing base, which has the potential to meet the current as well as future domestic and export demands.

Based on the power sector's growth projections in the prior Five Year Plans, the Indian electrical equipment industry has been making investments in capacity enhancements. But increasing challenges from the supply and demand side and international competition has started to impact the health of this important industry. The current scenario has necessitated that the government develop a well-defined, robust plan to support the long-term growth of this industry. As a result, the Department of Heavy Industry (DHI) has decided to develop a 10-year Mission Plan (2012-22) for the Indian electrical equipment industry. The Mission Plan will have recommended interventions aimed at enhancing the competitiveness of the Indian electrical equipment industry. Its objective is to develop a strategic plan of action, with full participation of the stakeholders, to remove obstacles in the growth path of the industry. The DHI also wants to drive a level playing field for all domestic and international players in this industry through the Mission Plan.

This document "Indian Electrical Equipment Industry Mission Plan 2012-2022: Base Document" identifies various strategic initiatives required to be undertaken in order to meet the challenges for achieving Vision 2022. This document provides inputs for Mission 2022, and also defines the approach to drive strategic initiatives. This base document is an outcome of dialogues with many stakeholders including EE manufacturers, users (power generation and T&D companies), investor community and various departments of Government of India. These discussions were focused on understanding the issues, mapping challenges and identifying strategic initiatives. Various teams and committees will be formulated to take this forward.

The department invites all stakeholders to participate in the process of finalisation of Mission Plan 2012 - 22, which is planned to be finalised before the start of the Twelfth Five Year Plan period. The Ministry would like to place on record its appreciation of the support being provided by the Indian Electrical & Electronics Manufacturers' Association (IEEMA) in their help in development of the base document. The Ministry also acknowledges the valuable contributions being made by all the stakeholders, including manufacturers, investor community, industry experts and the various ministries and departments of the Government of India.

Executive summary

Executive summary

Global electricity consumption is expected to reach ~29000 TWh by 2030, growing at an average rate of 2.4% per annum. To fulfil this demand, US\$ 13.7 trillion worth of investments are required in the power sector – US\$ 7.2 trillion in generation, US\$ 2 trillion in transmission and US\$ 4.5 trillion in distribution. Driven by this increasing demand for electricity, the global electrical equipment market is expected to reach US\$ 6,600 bn during the period 2016-30, growing at a long term average rate of 2% during the period 2008-2030.

India is not far behind with significant impetus being given to the power sector. In the Twelfth Five Year Plan, around 78 GW of power generation capacity is expected to be added, while another 100 GW is expected in the Thirteenth Five Year Plan.

The demand for electrical equipment in India is expected to witness significant growth against the backdrop of growth in the power sector. During the Twelfth Five Year Plan, investments are expected to be worth around US\$ 85 bn in generation, US\$ 45 bn in transmission and US\$ 70 bn in distribution.

Based on investment estimates and capacity-addition targets, it is estimated that the size of the domestic market in generation equipment is expected to reach US\$ 25-30 bn by 2022 (from US\$ 5.7 bn in 2011), while that of the T&D equipment industry is estimated to grow to US\$ 70-75 bn (from US\$ 18.5 bn in 2011). This translates into a CAGR of around 14%.

Although the market is expected to grow at a healthy rate, the domestic electrical equipment industry is facing challenges in leveraging this growth due to competitive pressures and low focus on technology development and upgradation. Furthermore, India's share in global export of electrical equipment is less than 1%.

Vision 2022 set for Indian EE industry is **To make India the country of choice for the production of electrical equipment and reach an output of US\$ 100 bn by balancing exports and imports.** To achieve the vision, concerted efforts by all stakeholders including government, industry and industry association, needs to be deployed. As a final step, the mission plan needs to be aligned to the Five Year Plans in order to avoid duplication and to channelize the efforts in the right direction.

The following themes have been identified to enhance and sustain growth and improve competitiveness of the Indian electrical equipment industry:

▶ **Enhance EE industry competitiveness**

Enhancing competitiveness of the domestic industry is vital to achieving the Mission Plan. The Indian EE industry should be so equipped that it is naturally able to thwart any competition in the domestic as well as export markets. The following are the strategic initiatives that are part of this theme:

- ▶ Upgrade technology levels to bring it at par with global benchmarks
- ▶ Develop manpower skills to support industry's future requirements
- ▶ Secure supplies of critical input materials
- ▶ Enhance customer centricity
- ▶ Introduce policy changes to provide a level-playing field to Indian EE manufacturers
- ▶ Develop and strengthen support infrastructure

▶ **Increase market share in export markets**

India currently accounts for less than 1% of global trade in EE exports. With the demand from developed countries stagnating and that from developing nations seeing significant increase, there exists significant potential for India to tap the export markets. To increase the share of exports, specific actions need to be taken by the Indian government and EE manufacturers. The following are the strategic initiatives that are part of this theme:

- ▶ Identify target markets and develop country-specific export strategies
- ▶ Introduce policy changes to support EE exporters
- ▶ Use the support of Indian embassies and IEEMA to promote EE exports and Brand India

▶ **Convert latent demand for EE products into real demand**

Significant latent demand for EE products exists in India, but the same is not getting converted into real demand. Specific initiatives are suggested, which needs to be undertaken to create demand in a wholesome manner, which would play an important role in the development of the industry. The following are the strategic initiatives that are part of this theme:

- ▶ Improve fund availability to power sector

- ▶ Provide fuel linkages and faster regulatory clearance for timely power projects set ups
- ▶ Accelerate Renovation & Modernization activities
- ▶ Accelerate deployment of rural electrification schemes
- ▶ Implement best-in-class procurement policies

Over the next few months, specific recommendations need to be developed for each strategic initiative that has been identified across the three themes. Working groups need to be formed and these will need to drive each strategic initiative.

Indian EE industry is on a critical path of growth. It is imperative that the all stakeholders work towards development of this industry, which serves the strategic power sector. Right policy initiatives and actions by all stakeholders will give the industry the momentum to achieve the desired vision.

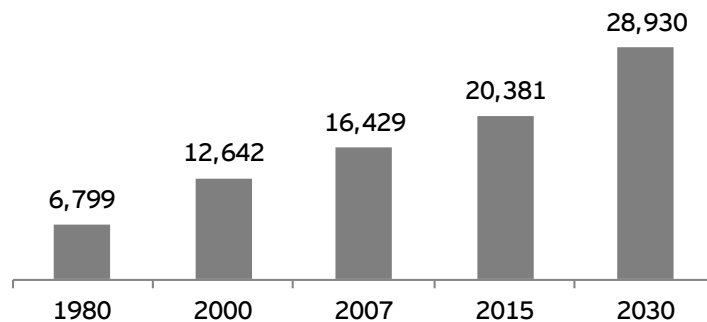
Global electrical equipment industry

1. Global electrical equipment industry

Global electricity market

The demand for electricity worldwide is projected to grow at an annual rate of 2.7% for the period 2007-2015, slowing down to 2.4% per year during the period 2015-2030 as economies mature, and the generation and supply of electricity becomes more efficient.

Figure 1.1: World electricity consumption (TWh)



Source: International Energy Agency's World Energy Outlook 2009 report

Over 80% of the growth between 2007 and 2030 is expected to be in non-OECD countries. The demand in these countries is expected to grow by 5% per year upto 2015, slowing down to 3.3% per year in 2015-2030.

New capacity and investment in Power infrastructure

The world's installed power generation capacity is projected to rise from 4,509 GW in 2007 to about 10,000 GW in 2030. Total gross capacity addition is expected to amount to 4,800 GW over the period, with 30% of this addition planned for installation by 2015. On an average, capacity additions are projected to amount to 190 GW per year during 2008-2015, rising to almost 220 GW per year during 2016-2030. The largest capacity additions are forecasted in China and would comprise nearly 30% of total global capacity addition¹.

The cumulative investment during 2008-2030 is expected to amount to US\$ 13.7 trillion, with US\$ 7.2 trillion needed in generation, US\$ 2 trillion in transmission and US\$ 4.5 trillion in distribution.²

The share of coal in total electricity generation is expected to rise marginally from 42% in 2009 to 44% in 2030³. Non-hydro renewable energy sources - biomass, wind, solar, geothermal, wave and tidal energy - are expected to continue gaining share of the market, accounting for almost 9% of generation in 2030, up from 2.5% in 2009. The share of nuclear

¹ International Energy Agency's World Energy Outlook 2009 report

² International Energy Agency's World Energy Outlook 2009 report

³ Datamonitor

power is expected to decline from 14% in 2007 to 11% in 2030⁴. There are significant efforts, largely from developed nations, to increase generation from non-renewable sources of energy. But, overall the global power sector is expected to continue its reliance on thermal energy sources.

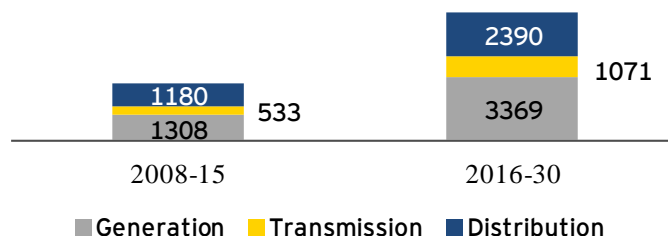
Global electrical equipment industry

The global electrical equipment industry consists of the following two segments:

- a. Global heavy electrical equipment market – power generating equipment, including wind turbines, and other heavy electrical equipments such as power turbines, heavy electrical machinery intended for fixed-use and large electrical systems.
- b. Global electrical components and equipment market – electric power cables, Transformers and electrical switchgear, Transmission Line Towers, etc.

The global EE market is expected to increase from more than US\$ 3 trillion (2008-15) to US\$ 6.8 trillion (2016-30). This translates into ~2% CAGR over the long term.

Figure 1.2: Global electrical equipment cumulative demand (US\$ billions)

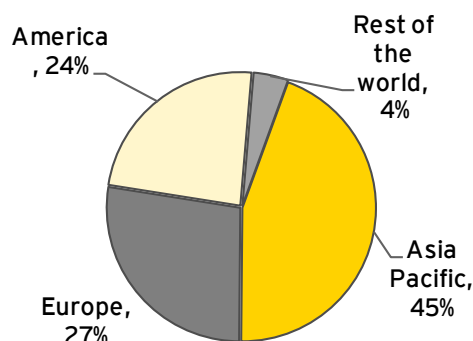


Source: International Energy Agency's World Energy Outlook 2009 report

Asia-Pacific and Europe together account for more than 70% of the global market, with Asia-Pacific's share being 45%. This region is expected to see the strongest demand in future due to the region's strong expected economic growth rates.

⁴ Datamonitor

Figure 1.3: Global electrical equipment market share by region, 2010



Source: Datamonitor

Globally, growth rates have been less-than-impressive in recent years in the electrical equipment market, but there is scope for expansion in certain geographical areas, such as the emerging markets in the Asia-Pacific region. Robust economic growth in emerging countries such as China and India, combined with rapid urbanization and strong growth in fixed investment spending in these countries, is expected to boost the demand for electrical equipment in these countries.

A period of deregulation is being witnessed in the power sectors of most countries, with an increase in the number of independent power distributors and operators who are capable of supplying services at different points in the power sector value chain.

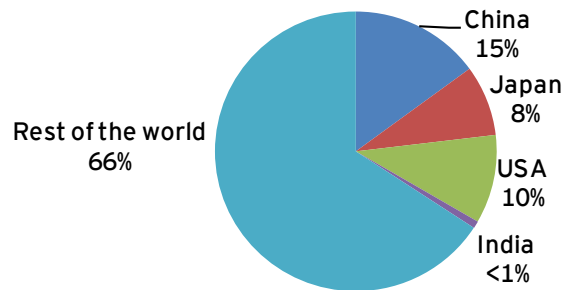
In developed countries, rising ecological concerns and investment in alternative sources of power generation should benefit the heavy electric power equipment segment such as the wind turbines.

Global trade in Electrical equipment

Global trade in EE products accounts for 3% of the overall trade. While global trade has grown at 5.2% CAGR (2006-10), while trade in EE has grown by 5.8% over the same period, thus increasing its share in the global trade.

Global trade in EE has reached US\$ 453 bn in 2010, with China being the leading exporter of electrical equipment with over 15 percent share. India accounts for less than 1% of the total share of exports.

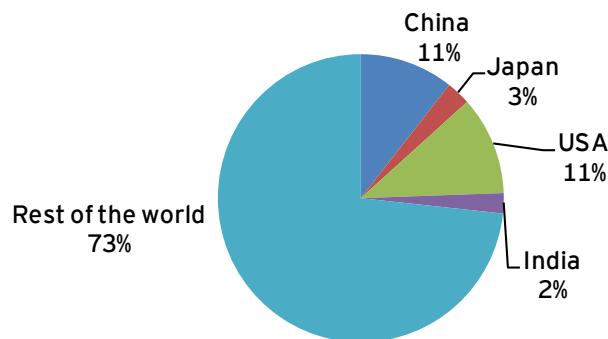
Figure 1.4: Global electrical equipment export share by region, 2010



Source: ITC

US and China are the largest import markets in the world for EE. India imports 2% of total EE trade of the world. India has a trade deficit in EE trade, with imports higher than exports, consistently for the last many years.

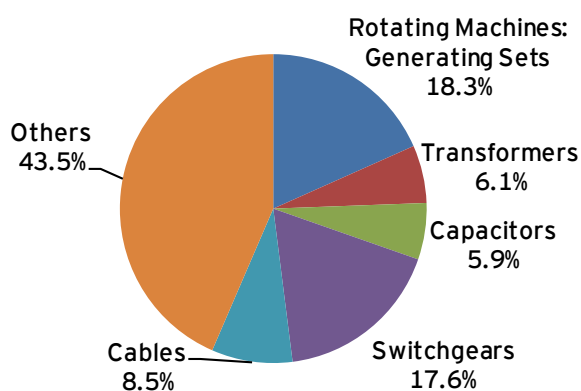
Figure 1.5: Global electrical equipment import share by region, 2010



Source: ITC

Switchgears and rotating machines together cover ~36% of the trade market. China is the leading exporter in rotating machines as well as transformers with more than 16% share, while India has less than 2% share in global trade of these products. US is the largest importer of rotating machines as well as transformers.

Figure 1.6: Product wise break up of traded EE in FY10



Source: ITC

China dominates trade in most of these product segments. Segments such as rotating machines, transformers, lamps, cables are dominated by China with double digit shares in global trade. Countries like Japan, US and Germany dominate trade in a few segments like switchgears, insulators, capacitors etc.

Equipment and Manufacturing Technology

The average gross efficiency (excluding combined heat and power) of coal-fired power plants is projected to increase slightly from 35% in 2007 to 40% in 2030⁵. New power plants being planned are based on advanced technologies. Supercritical technology is expected to be more widely used in the medium term, with advanced ultra-supercritical technology and integrated gasification combined-cycle plants becoming more widespread after 2020.

To improve the efficiency of power systems, equipment and equipment manufacturing technology is witnessing significant modernisation while new technology is also being adopted in the manufacturing processes. Technological advancements, such as smart grids, and policies on emission reduction will influence the future direction taken by the power sectors in various countries and their dependent electrical equipment industries.

Developed economies are witnessing a trend of slowing growth in electricity demand. Emerging economies such as China and India are expected to continue augmenting their existing power capacities and infrastructures, to meet their ever increasing demand for power. While thermal sources of power generation will continue to account for a major share of the global capacity addition, there is a visible shift towards renewable sources of energy in developed nations. Technological advancement in both power generation and T&D equipment remains a key focus area in global markets and is expected to drive the next phase of growth in the sector.

⁵ World Energy Outlook 2009

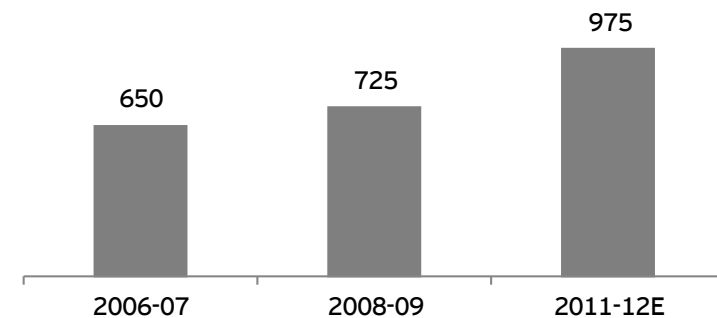
Indian power sector

2. Indian power sector

Power is a necessary fuel for a growing economy. Indian economy is on a high growth path targeting GDP growth rate of 8-8.5%. To achieve this growth it is imperative that the power infrastructure is in place.

India has the fifth-largest generation capacity in the world with an installed capacity of over 180 GW, as on 31 July 2011⁶. The country is also the sixth-largest energy consumer, accounting for 3.4% of total global energy consumption. As the sixth largest energy consumer in the world, the total consumption in 2008-09 was estimated at 725 bn kWh. This is expected to increase to 975 bn kWh by 2011-12.

Figure 2.1: India electricity consumption (bn kWh).



Source: Ministry of Power

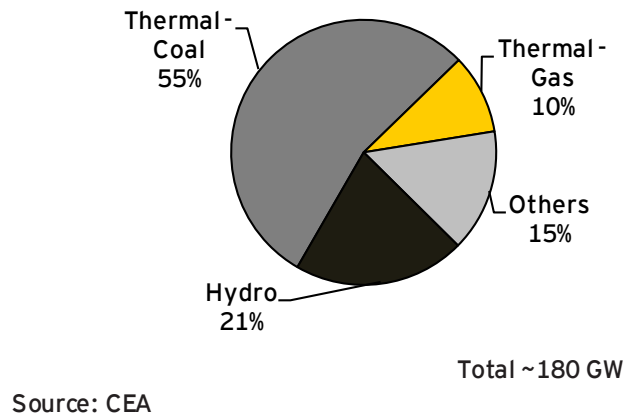
The industrial sector, due to increasing capacity additions, has the highest demand for electricity, as compared to others sectors (domestic, commercial and agriculture). Going forward its share is expected to remain high due to increasing industrial activity in the country. The domestic and commercial sectors are likely to experience a steady demand for electricity, but the share of agriculture is expected to see a decline in the coming years.

Generation

Thermal energy accounts for the major share of generation in India. Thermal power is obtained from coal, oil and gas. Share of wind and other renewable forms of energy currently stands at 11% of the total installed capacity. Government plans to increase the share of power generated from renewable sources in the coming plans.

⁶ Ministry of Power

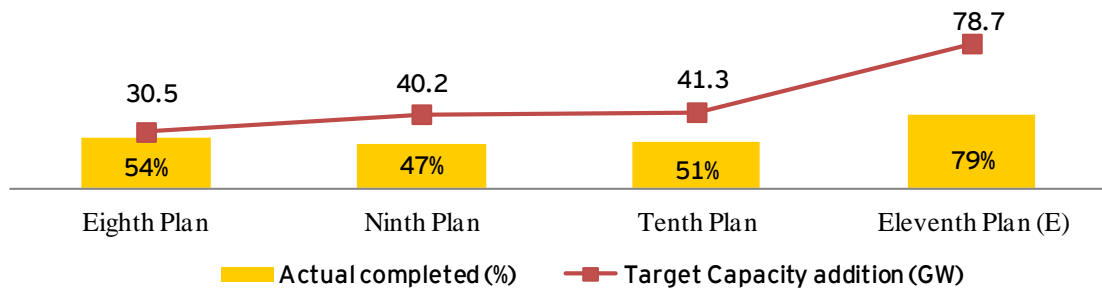
Figure 2.2: Installed total capacity (as on July 2011)



With envisioned capacity additions, India is expected to reach an installed capacity of 350 GW by 2022. This increase will be in line with the country's GDP growth plans of 8-8.5% per year.

Although India has ambitious plans to increase its generation capacity, actual additions in the past have been unable to match up to the targets set in the prior Five Year Plans. Average additions in the past have been 65% of the target. However, this percentage is expected to improve in future.

Figure 2.3: Plan wise capacity additions envisaged and percentage achieved



Source: CEA

The Indian power sector is facing some key challenges which are restricting it from growing to its full potential and meet the Five Year Plan targets. These challenges include -

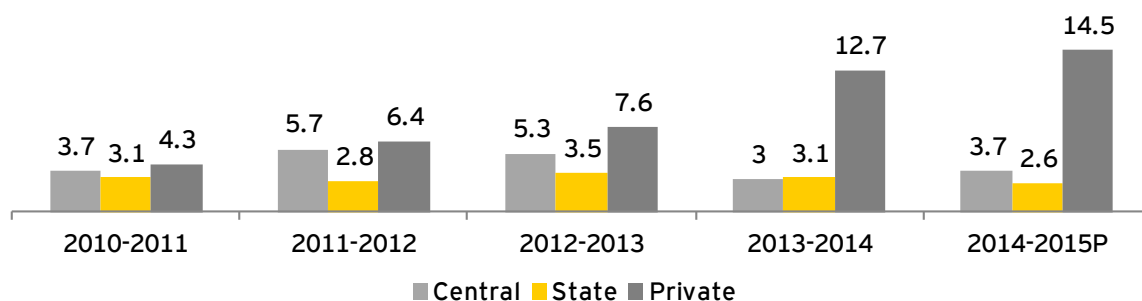
- ▶ **Timely delivery of equipment:** Lack of manufacturing capacity for BTG equipment has impacted equipment delivery timelines which has subsequently affected project execution timelines.
- ▶ **Fuel linkages:** 65% of India's power capacity is thermal-based. In such a case fuel linkages (coal, gas, etc.) become very critical. Obtaining secure fuel linkages is a major challenge due to stringent government policies related to environmental

and mining clearances. The requirement of coal in power plant in the year 2017 and 2022 is expected to be 900 million MT and 1,180 million MT⁷ respectively. Currently close to 140 million MT out of the total 460 MT is imported. Share of domestic supply is expected to dwindle further with more than 150 mining projects of Coal India awaiting clearance from the environment ministry.

- ▶ *Land acquisition:* Availability of land for setting up power projects is a major challenge for the sector. Land acquisition is strife with legal and environmental complications which make matters worse.
- ▶ *Power project funding:* To meet the investment needs, Indian players will need to search globally for inexpensive sources of funds. Rising inflation is resulting in rising cost of funds in India. Consequently, many players in the power sector intend to secure investments from other countries.

To meet the targeted additions, the Indian government is encouraging private participation in power projects. Capacity additions by private sector players are expected to grow at an increasing rate. During 2010-11 to 2014-15, private players are expected to add nearly 45 GW of power. This will result in a 55% share of private players in the total additions in the power sector during this period. Central and State additions are expected to be 21.4 GW and 15.2 GW respectively during the same period.

Figure 2.4: Expected capacity additions



Source: Crisil Research

India is also aiming at moving towards cleaner energy sources as it tries to reduce its energy demand-supply gap. It initiated a US\$ 19 bn plan in July 2009 to produce 20,000 MW of solar power by 2022⁸.

⁷ CEA

⁸ Energy Sector Management Assistance Programme

Transmission & Distribution

Transmission segment plays a key role in transmitting power to various distribution entities across India. However, the investment in transmission infrastructure has been half of that on generation, leading to major inadequacies in the transmission system. As on March 2009, inter-regional capacity stood at 20,750 MW and is estimated to be 37,150 by March 2012⁹. During the Twelfth Plan, total transmission substation capacity addition is expected to be 301,000 MVA, while 120,000 ckt of transmission lines are expected to be added.

The Ministry of Power has implemented the following initiatives to improve the overall performance of the transmission sector:

- ▶ Private sector participation in transmission: This is accomplished through the Independent Power Transmission Company (IPTC) route under the Central and state sectors.
- ▶ Development of National Power Grid: The national power grid will have 37 GW¹⁰ of inter-regional power transfer capacity by the end of the Eleventh Plan. The National Grid is expected to facilitate the optimal utilization of electricity from surplus regions to deficit ones in the country and also make scheduled/ unscheduled exchange of power between such regions possible.

Investment in new technology and modernization, such as the smart grids, is expected to pave way for energy efficient transmission and distribution in the coming years. BEE is planning to set up the first smart grid project in India. Establishment of the national grid by the Power Grid is another major step towards optimum and efficient utilization of energy by evacuating electricity from power surplus regions to meet demand in power deficit regions.

Distribution of electricity in India is largely operated by states, with only 5-7% being distributed by private players. One of the major problems in this segment is high AT&C losses, which continue to be around at 27%¹¹. This is substantially higher than the global average of 10-15%. The total loss incurred by distribution companies is estimated at around ₹ 70,000 Crs. in 2010-11¹².

The following are key initiatives that the Indian government has taken to improve distribution:

- ▶ Restructured Accelerated Power Development Reform Programme (R-APDRP): This programme focuses on actual, demonstrable performance in terms of sustained loss reduction. It aims to establish reliable and automated systems for sustained collection of accurate base line data. It also adopts IT in areas of energy accounting before implementing distribution-strengthening projects, consumer attitude surveys, etc.
- ▶ Franchise model: This model offers public and private partnership (PPP) opportunities, in which the franchisee does not need to have a separate distribution license. The licensee

⁹ CEA

¹⁰ Crisil Research

¹¹ Crisil Research

¹² IEEMA

supplies electricity to the franchisee at a predetermined price according to the franchisee agreement. The franchisee retains a pre-defined portion of the revenue as "charge."

Lack of adequate T&D infrastructure and the need to modernise the existing infrastructure calls for significant funding in this sub-sector. Financial Institutions such as PFC and REC have been instrumental in providing funds for T&D projects.

Augmentation of generation capacity and the resultant T&D infrastructure is vital to maintain GDP growth rate of 8-8.5% in the coming years. In the last few Five Year Plans, there has been less-than-planned capacity additions due to issues related to equipment delivery timelines, fuel linkages, land acquisition and project funding. Private sector participation in power projects has significantly increased during the last few years. This trend is expected to help India achieve its power capacity addition targets. Going forward, upgradation and modernisation of the existing infrastructure would be key to efficient utilisation of resources for which the government has developed strong plans that include initiatives such as the Smart grid and, R-APDRP scheme.

Indian electrical equipment industry

3. Indian electrical equipment industry

India's electrical equipment industry is highly diverse and manufactures a wide range of high and low technology products. The industry size is estimated at ₹ 1,10,000 Crore (US\$ 25bn) in 2010-11. The industry directly employs around five lakh persons and provides indirect employment to another ten lakh people. Most sub-sectors of the industry also make a large number of products in varied price and quality ranges. Some subsectors comprise a sizeable unorganised segment as well. The industry can be broadly classified into two sectors - generation equipment and T&D equipment. Generation equipment segment consists of boilers, turbines and generators while the T&D equipment segment consists of transformers, cables, transmission lines, switchgear, capacitor, etc.

3.1 Domestic demand for the electrical equipment

The demand for electrical equipment in India is expected to witness significant expansion on the back of the growth of the power sector. The government is likely to add around 78 GW and 100 GW, respectively, under its Twelfth and Thirteenth Five Year Plans.

Investment required for the Twelfth Five Year Plan period in the generation and T&D segment is expected to be US\$ 85 bn in generation, US\$ 45 bn in transmission and US\$ 70 bn in distribution¹³.

Based on investment estimates and capacity addition targets, it is expected that the domestic demand for generation equipment (BTG) will be in the range of US\$ 25-30 bn by 2022, while that of the T&D equipment industry will be US\$ 70-75 bn¹⁴.

Table 3.1: Plan-wise equipment demand (cumulative)

Equipment	Twelfth Plan (2012-2017)	Thirteenth Plan (2017-2022)
Generation equipment (BTG)	US\$ 60-70 bn	US\$ 110-120 bn
T&D equipment	US\$ 140-150 bn	US\$ 200-230 bn

Table 3.2: Equipment wise demand projection

	Size in FY11 (US\$ bn)	Size in FY17 (US\$ bn)	Size in FY22 (US\$ bn)
Generation Equipment			
Boiler	3.8	5.8	11.7
Turbine	1.6	3.3	6.7
Generator	0.6	3.3	6.7
T&D Equipment			
Cables	3.4	7.4	13.9

¹³ CEA, Note: Scaled down investment figures for 78 GW of capacity addition

¹⁴ IEEMA

	Size in FY11 (US\$ bn)	Size in FY17 (US\$ bn)	Size in FY22 (US\$ bn)
Transmission Lines and Conductors	3.1	6.7	12.7
Transformers	2.7	5.9	11.1
Switchgear	2.0	4.4	8.2
Rotating Machines	1.4	3.0	5.7
Energy Meters	0.5	1.1	2.0
Capacitors	0.1	0.2	0.5
Others	5.2	11.2	20.9

Source: CEA, EY Analysis

There has been an overall growth in most segments of the electrical equipment industry – in boilers, turbines, generators, transformers, switchgears, and wires and cables due to the high demand from Central and State power utilities.

India's electrical equipment industry is expected to grow steadily and witness growth opportunities as a result of government's focus on capacity augmentation across generation, transmission and distribution. The government has stipulated "Power to all by 2012" under its National Electricity Policy (NEP), with a target of achieving 1,000 KWh per capita consumption of electricity by 2012. Significant infrastructure investments have been planned across the generation, transmission and distribution segments to realize this target by 2012.

3.2 Generation equipment

Generation equipment such as boilers and turbines are being produced at full capacity utilization to meet the growing demand in the country. Many companies have set up new capacities, while the existing ones are augmenting their existing capacities. Generation equipment (boilers, turbines and generators) production in India is estimated at around ₹ 26,600 crore¹⁵ (around US\$ 5.7 bn). The BTG equipment segment has witnessed significant investment from foreign players who have set up their manufacturing facilities in India. The large demand for BTG equipment makes India an attractive market for these companies. There is significant import of BTG equipment (at ~13%) in the boiler segment, which constitutes a major share of the sector. Imports are predominantly from countries such as China and Korea. Due to the emergence of new technologies such as supercritical technology, the market share of foreign BTG players is significant in the total orders placed.

BTG market in India

Around two-thirds of the BTG requirement for the Twelfth Plan has already been ordered. A large part of the BTG demand from private sector players for the Twelfth Plan period has also been bid for, making the government sector (largely NTPC) an important customer for the BTG equipment industry segment. As a result, most of the new BTG equipment players do not have a healthy order book. This scenario would lead to intensified competition for upcoming tenders.

¹⁵ IEEMA

More than 83 GW of thermal plants are being developed at present, where foreign players (with Chinese accounting for a major share) have captured close to 45% market share.

Supercritical technology is gaining prominence in the Indian market. During the Eleventh Plan, the share of supercritical technology was 14%, while in the Twelfth Plan the share of supercritical technology will be more than 60%. Indian players, as well as the global players focusing on the Indian market, have put in place facilities to manufacture products based on supercritical technology.

Overcapacity in the Chinese BTG segment has resulted in Chinese companies targeting growth markets such as that in India. Chinese companies have received huge bulk orders, primarily from Indian private players for power plants to be commissioned during the Twelfth and Thirteenth Five Year Plans.

More than 80 GW of supercritical sets have been awarded by India till date. Foreign players have been the recipients of the major share of such orders. More than 68 GW have been awarded to foreign players, with Chinese players capturing more than 80%¹⁶ of the orders placed on foreign companies. Domestic players lag behind in adding BTG capacity in the supercritical boiler and turbine segments.

A large share of India's current installed thermal capacity is more than 20 years old. Renovation and maintenance activities in existing power plants would become a major source of demand in the coming years.

Domestic capacity and utilization

The annual capacity in the domestic BTG equipment industry segment is currently at 19 GW and is expected to rise to 36 GW by 2013¹⁷. Many Indian companies have entered partnerships with global players and there are significant capacity addition plans in the next few years.

As noted earlier, two-thirds of the BTG requirement from the Twelfth Plan has already been ordered. Close to 26 GW of capacity is yet to be ordered (from Twelfth Plan, at a capacity addition of 78 GW). If the present scenario continues, where close to 45% of the demand is catered by international players, less than 15 GW worth of order for the domestic industry would be left. This would create significant overcapacity in the Indian industry in the coming years. The move by NTPC in enforcing an offset mechanism (where the supplier of major equipment needs to set up local manufacturing in Indian as qualifying criteria for the bid) is a welcome move to promote the domestic equipment industry.

To address the issue of impending low capacity utilisation levels, Indian manufacturers need to explore international markets. Some large Indian electrical equipment manufacturers are already expanding their global presence. Indian companies are aggressively targeting exports,

¹⁶ Edelweiss Research

¹⁷ Edelweiss Research

mainly to developing countries in Africa and Latin America. Going forward, it is expected that JV partners for new capacities will outsource a part of their global demand to India.

As noted earlier also, funding is a major issue plaguing the Indian power sector. Due to high cost of funds in India, private players are seeking low cost funds in international financial markets. Indian private power producers are sourcing funds from foreign banks which mandate that a part of the equipment supply needs to be sourced from the bank's country of origin.

With the Government of India increasingly focussing on leveraging renewable sources of electricity generation, power utilities are also investing in renewable initiatives such as wind and solar farms. Consequently, the industry players are also expanding their product offerings in India. Many companies are trying to be future-ready by setting up the requisite infrastructure to manufacture renewable energy generation equipment.

3.3 Transmission and distribution equipment

India's T&D equipment industry is heterogeneous and manufactures a wide variety of equipment from transmission line towers and transformers to energy meters. The industry is also characterised by its large unorganized segment and the presence of a large number of SMEs. The size of this industry is estimated to be ₹ 84,000 crore¹⁸ (around US\$ 18.5 bn) and exports constitute about ₹ 18,000 crore (around US\$ 4 bn)¹⁹.

T&D equipment market in India

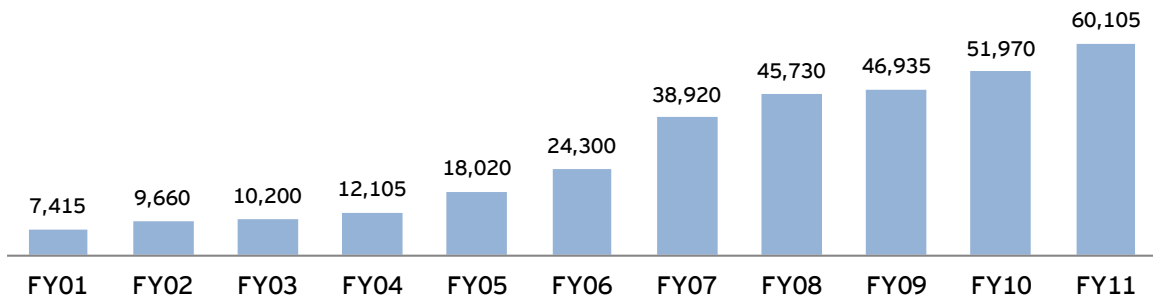
India's electrical equipment industry has witnessed significant growth in the last few years. The major electrical equipments have grown at a CAGR of 23% from a small base of ₹ 7,415 Crore in 2000-01 to ₹ 60,105 Crore in 2010-11²⁰. The major electrical equipment manufactured include capacitors, energy meters, rotating machines, transformers, cables, switchgears, transmission line towers and conductors. Other Electrical Equipment includes instrument transformers, surge arrestors, stamping & lamination, insulators, insulating material, industrial electronics, indicating instruments, winding wires, etc. Growth in the industry has been led by the rise in demand from power grids, independent power producers (IPPs) and utilities for high voltage (HV) and extra high voltage (EHV) equipment.

¹⁸ IEEMA

¹⁹ IEEMA

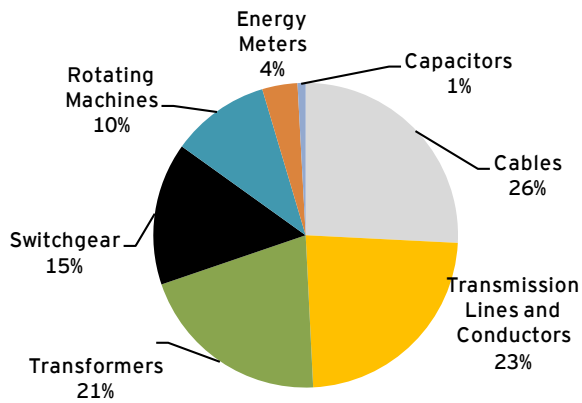
²⁰ IEEMA

Figure 3.1: Growth in industry size of major electrical equipments (₹ crore)



Source: IEEMA

Figure 3.2: Market size (2010-11)



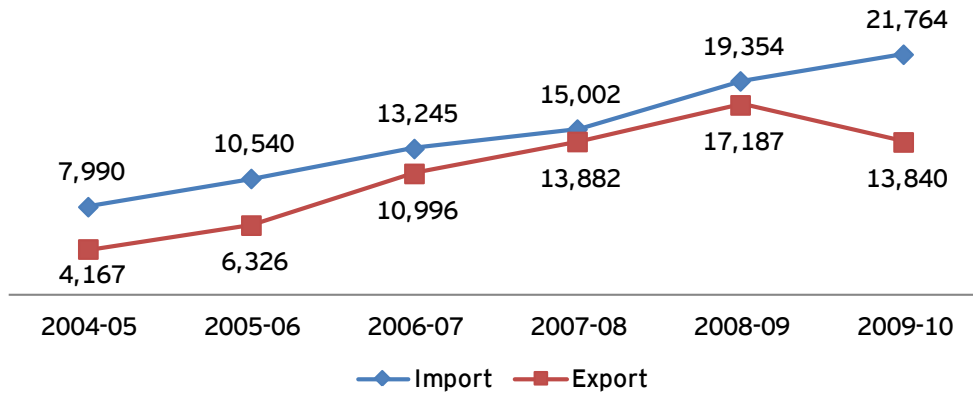
Source: IEEMA

T&D equipment trade

Although Indian manufacturers have capacities, imports have grown faster than exports in the recent past, significantly affecting the domestic manufacturing industry. Over the past six years, from 2004 to 2010, India's trade deficit has almost doubled, increasing from ₹ 3,823 crore to ₹ 7,923 crore. Imports increased from ₹ 7,990 crore to ₹ 21,764 crore, while exports have grown from ₹ 4,167 crore to ₹ 13,840 crore²¹.

²¹ITC

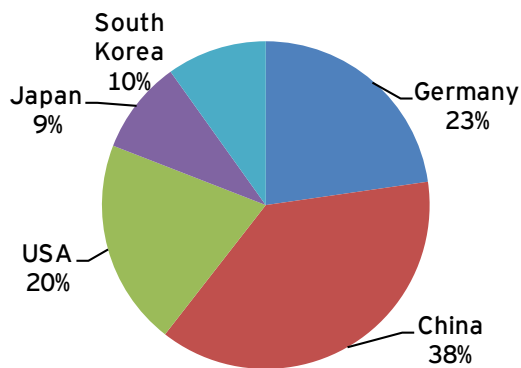
Figure 3.3: India – imports and exports (₹ crore)



Source: ITC

Five countries account for more than 60% of imports into India. Germany, China, US, Japan and Korea together accounted for 64% of imports, with China accounting for 24% of total imports.

Figure 3.4: Indian imports - Top five countries and their share (%), last 5 years



Source: ITC

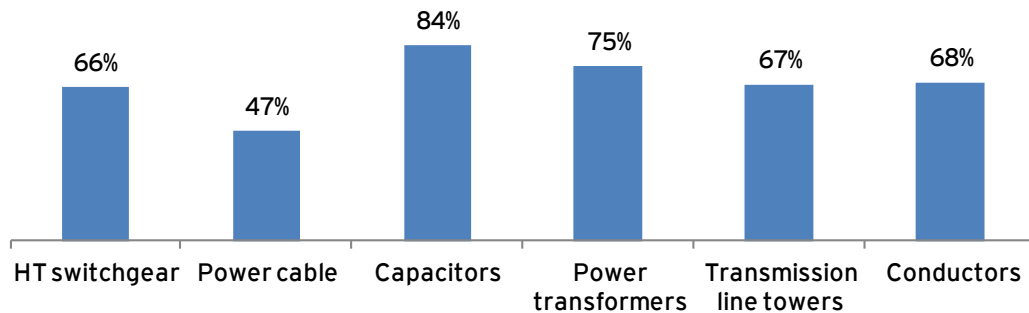
In 2010-11, there was more than 15% decline in exports, whereas imports increased by more than 12%²² from the previous year, thereby widening the trade deficit gap. Import threat is looming large, especially from China, Korea and Germany. Equipment categories that have been impacted include power transformers, HV switchgear, EHV cables, HV insulators, motors, generating sets, and turbines.

²² ITC

Domestic T&D capacities and utilization

There is significant capacity in India's T&D equipment segment. The bulk of T&D equipment industry segment is operating at capacity utilization between 50%-80%. The domestic T&D segment is geared to cater to the expected growth in the demand for T&D equipment.

Figure 3.5: Domestic T&D capacity utilization (2011)



Source: IEEMA

India has come a long way in electrical equipment manufacturing. Today, the country manufactures a large variety of electrical equipment. In the generation segment, it manufactures boilers, turbines, generators, balance plants, etc. In the T&D segment, it makes and exports a wide array of equipment from transformers to cables. New technologies that are being introduced have been brought into the domestic manufacturing domain by foreign players. These players have come into India either independently and set up their own manufacturing facilities or through the JV route.

The domestic electrical equipment industry is expected to witness excess manufacturing capacities across generation, transmission and distribution segments. With a large share of generation equipment demand for the Twelfth Plan already ordered, there are lesser new orders for the generation equipment industry segment. Rising imports, in generation as well as in T&D segments, will add to the challenge of utilizing existing capacities.

Vision 2022 for Indian electrical equipment industry

4. Vision 2022 for Indian electrical equipment industry

4.1 Vision statement: **“To make India the country of choice for production of electrical equipment and reach an output of US\$ 100 bn by balancing exports and imports”**

The generation equipment (BTG) segment is targeted to reach a size of US\$ 25 bn and the T&D equipment segment is targeted to reach a size of US\$ 75 bn by 2022. The electrical equipment industry, comprising these two segments, is targeted to reach a size of US\$ 100 bn by 2022. Today, import of electrical equipment is much higher than that of exports, more so in the BTG equipment. Lack of adequate capacity in the BTG equipment industry segment is one of the major reasons for the higher share of imports. With most Indian players putting in place new capacities in coming years, it is imperative that the share of imports comes down. Furthermore, with capacity additions, the industry is likely to witness overcapacity in the medium term as far as domestic demand is concerned. Exports would therefore need to play an increasingly important role in helping combat this issue. India's T&D equipment segment is currently operating below its optimal capacity levels. It is well geared to meet the growing demand for T&D equipment.

The vision for the country's electrical equipment industry takes into account the import-export scenario and what the industry can achieve, based on its current position and future plans. Balancing exports and imports would help the industry achieve its vision. The focus should be on ensuring that any market share ceded to foreign players is offset by capturing additional market share in the global markets.

The vision is based on the expected capacity additions and investments in the power sector as per the CEA's plans. Based on the expected capacity and the investments, the domestic demand for EE is targeted to become US\$ 100 bn in 2022. Indian exports in EE currently account for 0.8% of the global EE trade. EE imports into India are significant with a total EE import of US\$ 10 bn in 2010. Going forward, global trade in EE is expected to increase at ~2%, similar to the equipment demand, which would make global EE trade reach US\$ 575 bn in 2022.

Imports of EE in India have been significant in the last few years. With increasing domestic industry competitiveness and levelling of the playing field, the rate of growth of imports would reduce to 7-8% in the long term. To balance exports and imports, India needs to target 4% share in global EE trade by 2022. This would balance the imports, which is estimated to reach US\$ 23 bn in 2022.

The Indian EE industry faces significant challenges in achieving its vision. These challenges are related to the demand and supply of electrical equipment, manufacturing competitiveness

of domestic industry, competition from foreign companies and the support infrastructure available within the country.

4.2 Challenges faced by electrical equipment industry

Conversion of latent demand into actual demand

All Five Year Plans have fallen short of the planned power infrastructure addition targets, primarily due to the following issues:

- i. Land acquisition is a time-consuming process, since approvals need to be obtained at various levels. Delay on account of this process disrupts the entire planned completion time of a project and creates uncertainties for industry players.
- ii. Obtaining fuel linkages has become a major challenge for setting up power plants. Getting mining and environmental clearances for fuel linkage is a major issue faced by the project owner.
- iii. T&D losses in India currently stand at 27%. The losses are largely due to overloading of lines and substation equipment, absence of upgradation of systems, thefts and pilferage etc. These losses cause significant financial impact to the utilities.
- iv. Poor financial health of state distribution companies is leading to lowered investments in the distribution segment and also lack of payment security for industry players.
- v. Funds availability is a major issue plaguing the power sector. Lack of funds delays the projects and puts modernisation plans on hold.
- vi. Need for improvement in design of procurement process and policies of central and state utilities
 - a) There is a need for improvement in procurement design and policies and qualifying criteria (which operate on outdated tendering procedures) and system for awarding contracts, based on L1 criterion.
 - b) Utilities are not awarding projects regularly and are bunching them, leading to sub-optimal capacity utilization.
 - c) Delays by utilities in taking decisions on projects, reviews, etc., is leading to delays in execution.
 - d) Sub optimal quality products are getting approved in the absence of standard procurement policies and product specifications not defined in time.
 - e) There is a lack of standardization of product specifications, design parameters and ratings for transmission and distribution (T&D) equipment across different utilities.
 - f) There is need for enforcing and monitoring of regulations on power plants (e.g., related to emissions, heat rate) to ensure that good quality equipment gets installed that meets specifications. Currently, power plants look at the capital cost of procurement and do not consider other costs including societal and environmental costs.
 - g) Absence of price variation clauses in certain transmission contracts or projects is leading to imbalance in pricing, which affects the margins of companies in the event of an increase in the price of raw materials and lead to delay in supply.

Domestic market competitiveness

Overcapacity is expected in the generation equipment segment, which would lead to low levels of utilisation. T&D equipment segment is already suffering from capacity under utilisation. Indian EE manufacturers need to improve their competitiveness significantly to be able to compete in domestic as well as the global markets.

Issues in availability of critical input material - Raw material, manpower and technology

- i. Critical raw material (such as CRGO for transformers and generators) is being imported, as there is no domestic supplier. These results in issues related to the availability and price volatility of raw materials. India consumes 250,000 MT of CRGO sheets, of which only 80,000 MT is prime material, while the others are of second grade quality.
- ii. Shortage of skilled technical manpower is major issue faced by the EE industry. The industry is expected to require more than 5 million of direct manpower and another 10 million of indirect manpower by 2022.
- iii. Absorption of new technology by domestic manufacturers and user industries happens at a very slow pace. Utilities' procurement policies based on the L1 criterion do not encourage technology development. R&D investments are low in most segments and there is significant lack of dedicated funds for R&D.
- iv. Lack of strong quality control mechanisms at some Indian manufacturers to test their sub-vendors' product quality leads to the final product being of poor quality.
- v. Rising interest rates have increased the cost of funds, which is a major challenge in running operations profitably.
- vi. Most EE manufacturers continue to focus on being equipment or component suppliers and have not graduated to offering complete solutions.

Increasing global competition

- i. Chinese and Korean imports have increased their share over the past few years. Generation and transmission are two sub-sectors that are witnessing significant influx of imports.
- ii. With Indian electrical equipment manufacturers having significant capacity to meet the domestic demand for transmission equipment, rising Chinese imports are causing concern to the domestic industry. Chinese companies have brought down prices significantly, but the quality and reliability of their products is not yet assured.

Export market competitiveness

- i. The export promotion schemes of the government are not easily available for project exports.
- ii. Interest Rate Subvention of 2/4 PP on Pre-shipment and Post-shipment credit, earlier provided by the government for various sectors (including engineering) from 1st April 2007 has been discontinued with effect from 30th September 2008. Government of India had introduced a fresh scheme of Interest Rate Subvention of 2

PP for Pre-shipment and Post-shipment credit with effect from 1st December 2008 till 31st March 2010 for various sectors but engineering sector was excluded from this scheme.

- iii. Lack of competitive long term export financing options.

Lack of adequate support Infrastructure

- i. Domestic testing and calibrating facilities for electrical equipment in India are inadequate and expensive. The country does not have testing facilities for equipment such as high capacity transformers, which manufacturers need to send to countries such as the Netherlands and South Korea for testing, which is time-consuming and expensive.
- ii. Congested ports and poor quality roads are some infrastructure impediments that constitute a major issue for all industries in the country.
- iii. Transportation of OCDs is a major challenge with lack of proper infrastructure and clarity on regulations.

To achieve its vision, the government and the industry need to work in sync. The industry faces a significant challenge in achieving the vision. Therefore, a strong and focussed Mission Plan is the need of the hour to enable the industry to achieve this vision. Strategic initiatives have been identified to achieve the vision. Going forward, specific recommendations need to be developed as part of each strategic initiative. Working groups will need to be constituted for each strategic initiative and they will be responsible for driving these initiatives.

Strategic Initiatives

5. Strategic initiatives

To achieve the desired objectives set in the vision, the government and the EE industry need to work in tandem. Strategic initiatives have been identified to achieve the vision and have been grouped under the following themes:

1. **Enhance EE industry competitiveness**
2. **Increase market share in export markets**
3. **Convert latent demand for EE products into real demand**

Working groups are required to be set up for each strategic initiative. These groups will identify solutions and develop the action plan. Subsequently, the development council will review the solutions and the action plan and draft the Mission Plan for further approval.

5.1 Enhance EE industry competitiveness

Enhancing competitiveness of the domestic industry is vital to achieving the Mission Plan. The Indian EE industry should be so equipped that it is naturally able to thwart any competition in the domestic as well as export markets.

To enhance the EE industry's competitiveness, six strategic initiatives have been identified:

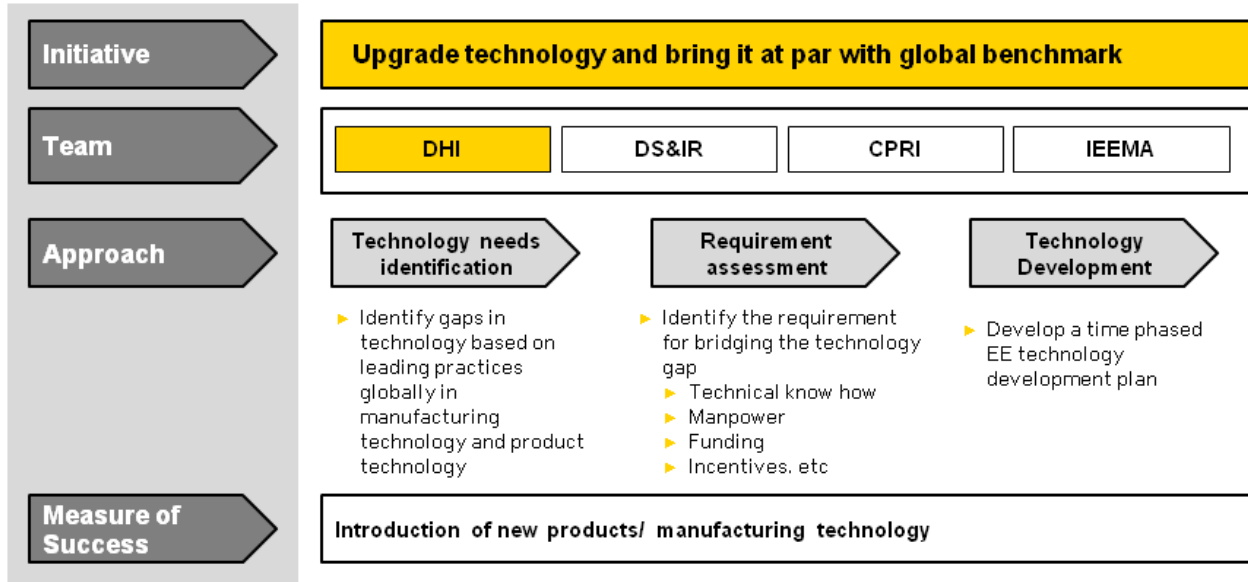
5.1.1 Upgrade technology and bring it at par with global benchmark

The domestic EE industry, comprising of a large number of SMEs, spends about 0.5% of sales on R&D. This is very low as compared to international leaders which spend as much as 5-6% of their sales on R&D. Hence, there needs to be a sustained focus to develop R&D in the EE industry. There is also a need to upgrade the existing manufacturing technology, as many Indian companies use outdated manufacturing technology.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Promote R&D in the EE industry by promoting pre-competitive research and providing incentives to industry players for R&D spending
- ▶ Utilize existing basic R&D for application R&D relevant for the EE industry
- ▶ Set up a technology fund to help EE manufacturers in developing product technologies and modernizing manufacturing infrastructure
- ▶ Provide incentives for R&D spending and incentivize large foreign MNCs to bring product technology into India

Approach Note



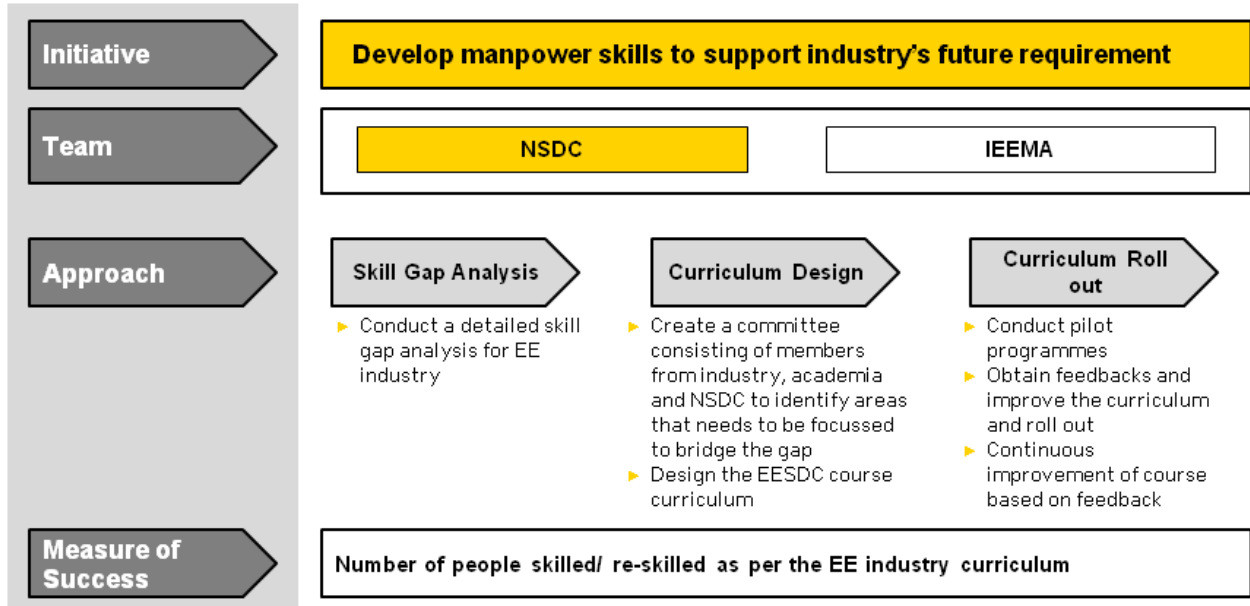
5.1.2 Develop manpower skills to support industry's future requirement

The requirement for skilled workforce is estimated to increase to 5 million direct labour and another 10 million indirect labour to achieve the vision. Apart from manpower additions, it also needs to be ensured that the supply of manpower meets the skill requirement of the EE industry.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Set up Electrical Equipment Skill Development Council (EESDC) that can focus on identifying critical manufacturing skills that are unique to the EE industry and subsequently launch programmes to impart these skills to prospective EE industry employees.
- ▶ Revise and modernize the existing labour policies that dis-incentivize manufacturers from hiring large number of permanent workmen

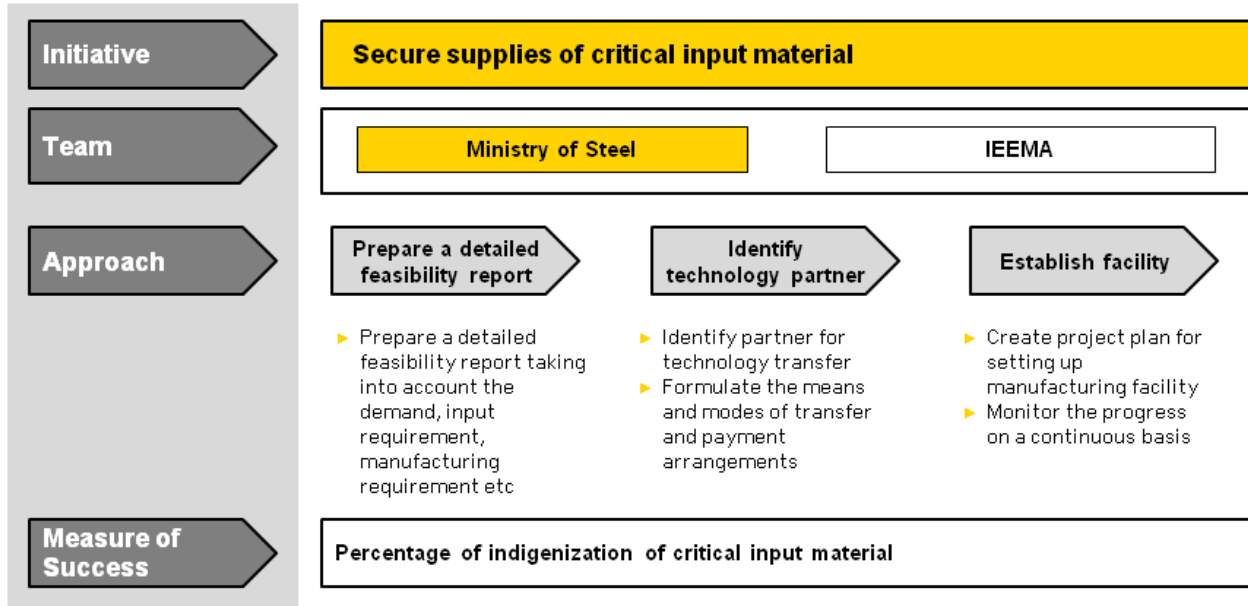
Approach Note



5.1.3 Secure supplies of critical input material

CRGO and CRNGO electrical steel, the main input material for manufacturing transformers and generators are currently being imported into India by industry players. However, to insulate from the supply vagaries in international markets, there is a need to secure their supplies. Currently CRGO demand in India is 250,000 MT. This is expected to grow at around 12% per annum till 2022 to reach 0.7-0.8 million MT by 2022.

Approach Note



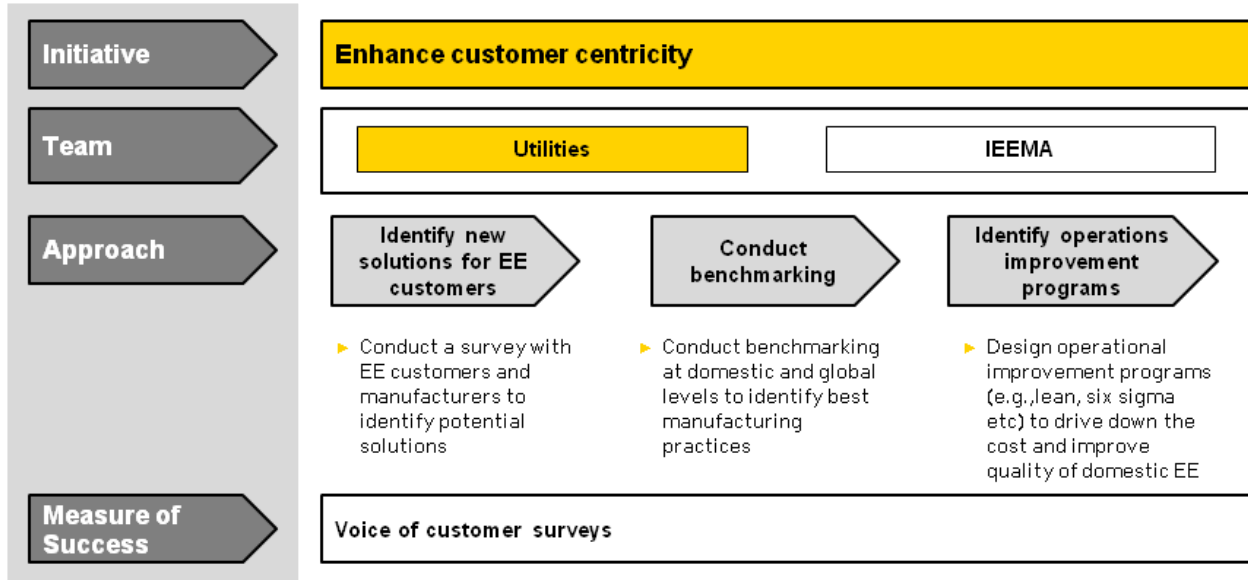
5.1.4 Enhance customer centricity

The domestic EE industry needs to undertake certain initiatives to improve its competitiveness and be customer centric. This requires a concerted effort by the industry, taking continuous feedback from the user industries.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Provide solutions and value added services instead of just products to customers
- ▶ Conduct periodic benchmarking of domestic players to help them identify and implement best-in-class practices

Approach Note



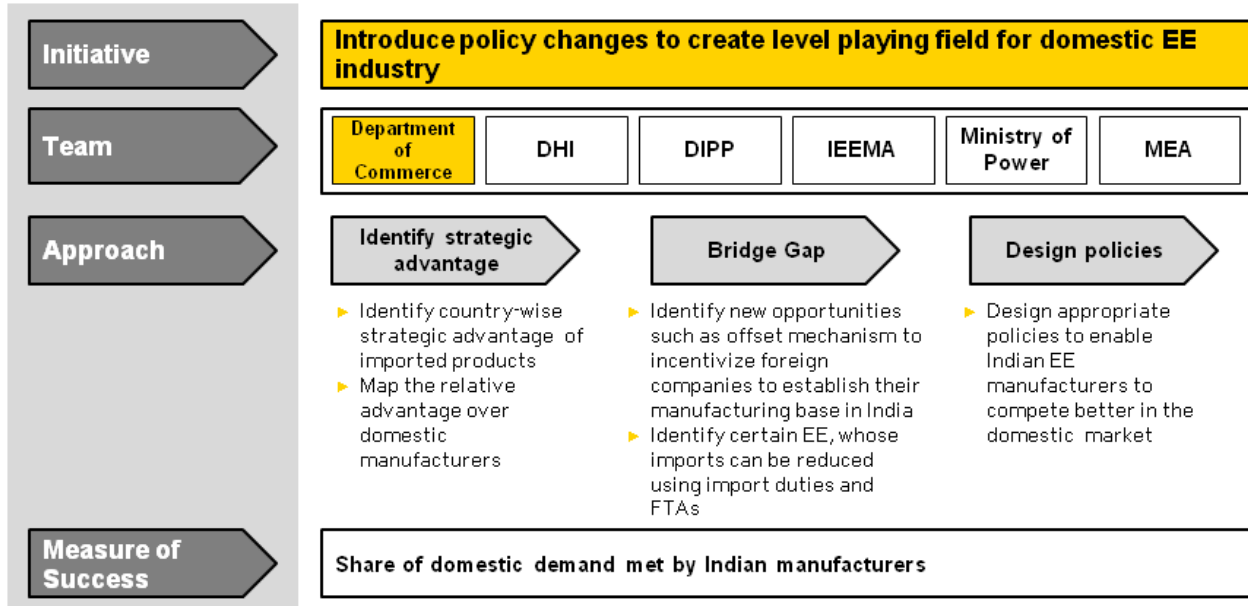
5.1.5 Introduce policy changes to create level playing field for domestic EE industry

EE manufacturers in the T&D segment are currently operating at low capacity utilization levels. Additional capacities were set up in last few years in anticipation of expected new demand from EE customers. Since the new expected demand did not materialize, the industry became saddled with excess capacities. Optimal capacity utilization is necessary for industry cost competitiveness. As a result, the government needs to support the industry in reaching the optimal capacity utilization levels.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Develop offset policies for import orders that are funded by Indian financial institutions
- ▶ Increase import duties on certain EE
- ▶ Keep certain EE in the negative list while signing Free Trade Agreements (FTAs)

Approach Note



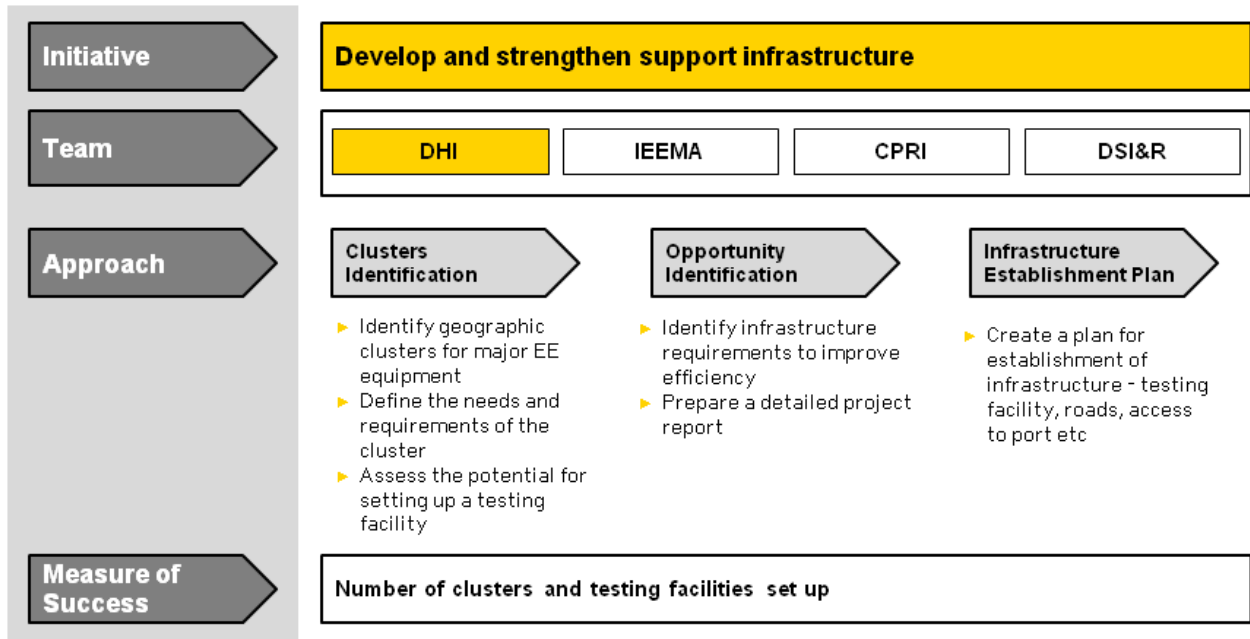
5.1.6 Develop and strengthen support infrastructure

Support infrastructure is vital to make the industry competitive. In the absence of a strong support system and infrastructure, industry is devoid of a level playing field to compete. Hence, it is imperative that gaps in support infrastructure are identified and bridged.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Enhance product testing infrastructure
- ▶ Identify specific geographic areas and establish them as EE industry clusters
- ▶ Resolve issues related to transportation of heavy power equipment and enhance road infrastructure and port connectivity

Approach Note



5.2 Increase market share in export market

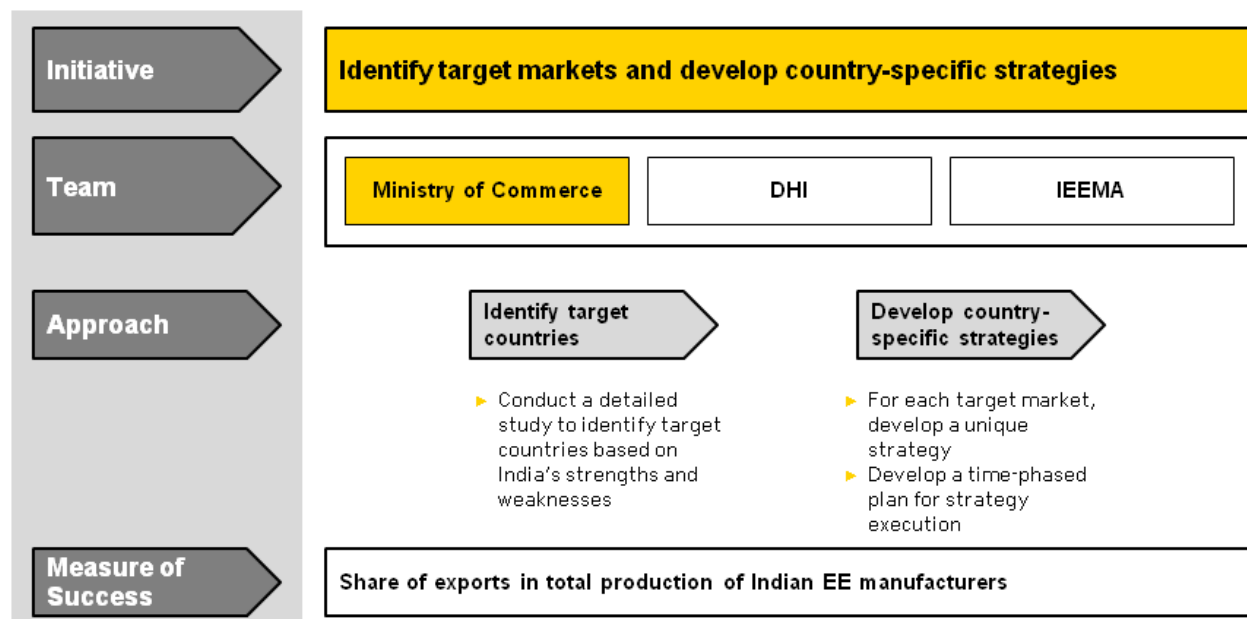
India currently accounts for less than 1% of global trade in EE exports. With the demand from developed countries stagnating and those from developing nations seeing significant increase, there exists significant potential for India to tap export markets. To increase the share of exports, specific actions need to be taken by government and EE manufacturers.

To increase market share in export market, three strategic initiatives have been identified:

5.2.1 Identify target markets and develop country-specific strategies

Target export markets need to be identified and a strategic plan needs to be formulated to tap the identified target markets. Strategies should to be developed to compete against other countries, especially China.

Approach Note



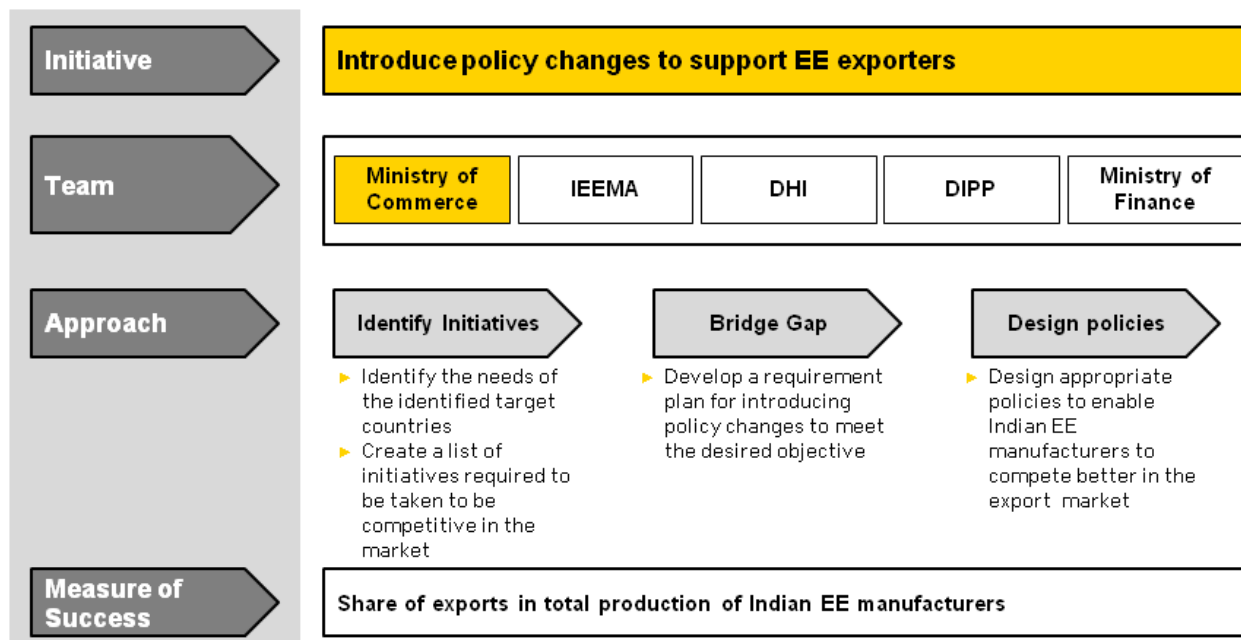
5.2.2 Introduce policy changes to support EE exports

Focussed policy initiatives are necessary for the promotion of EE exports. Export promotion policies related to export financing, taxation, marketing etc would immensely help the Indian exporters compete better in global trade.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Provide credit support to economically less developed export markets
- ▶ Create a dedicated fund for EXIM bank to support exporters
- ▶ Subsidize Buyer's credit premium charges of ECGC to make these competitive.
- ▶ Make pre- and post-shipment credit available for EE exports

Approach Note



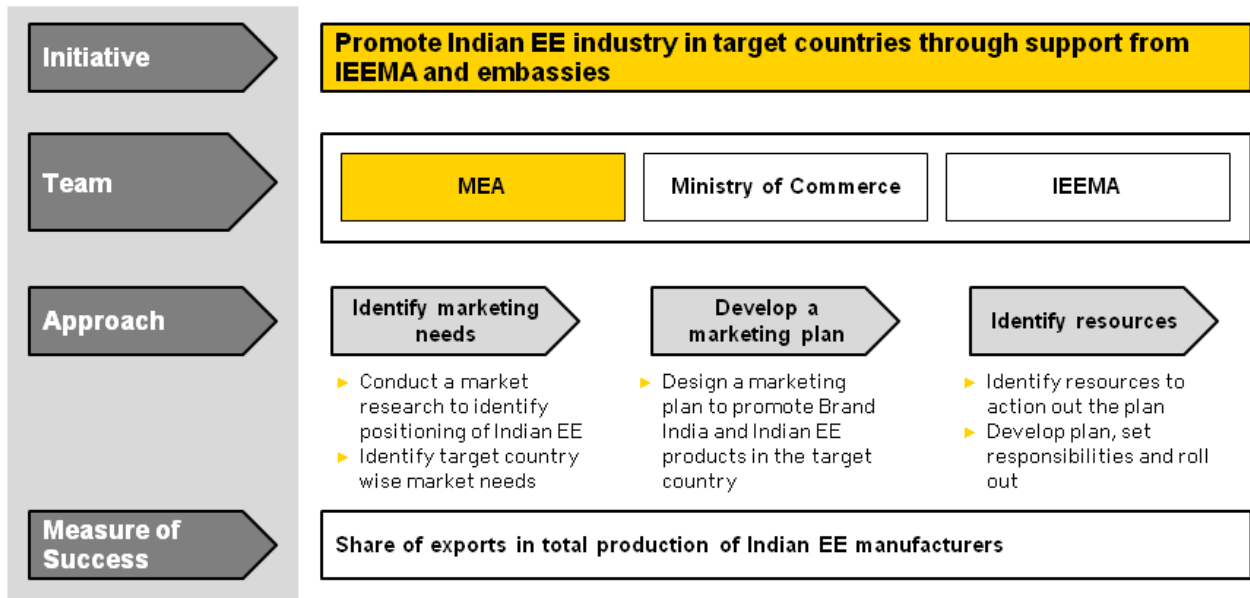
5.2.3 Promote Indian EE industry in target countries through support from IEEMA and embassies

Post identification of target countries for export of EE it is important that a well-defined and effective marketing strategy is followed. The Indian EE industry needs to be well recognised and carry a positive Brand India image in the target country.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Leverage the role of embassy in trade facilitation
- ▶ IEEMA to collaborate with other global EE associations, such as BEAMA (British Electro-technical and Allied Manufacturers' Association) in expanding its presence in other countries.

Approach Note



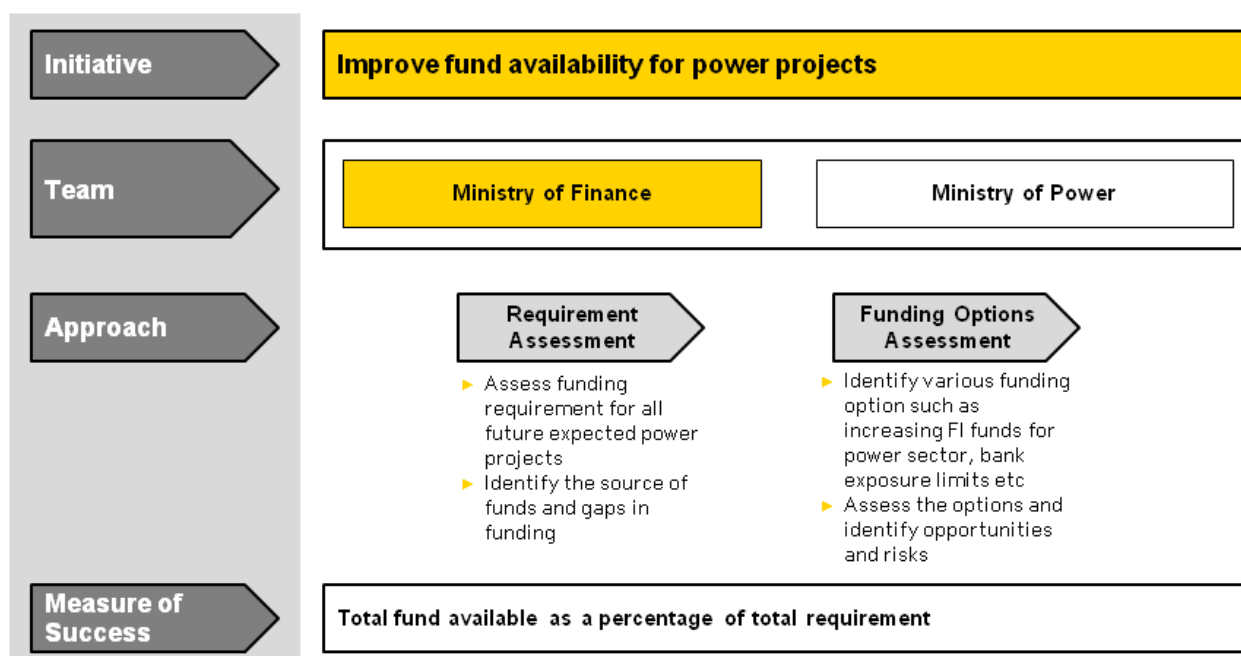
5.3 Convert latent demand for EE products into real demand

Significant latent demand for EE products exists in India, but the same is not getting converted into real demand. Specific initiatives are suggested which need to be undertaken to create demand in a wholesome manner.

5.3.1 Improve fund availability to power sector

Power sector projects are facing funding constraints and that directly impacts the demand for EE products. There needs to be a focussed effort to ease the funding situation in the country.

Approach Note

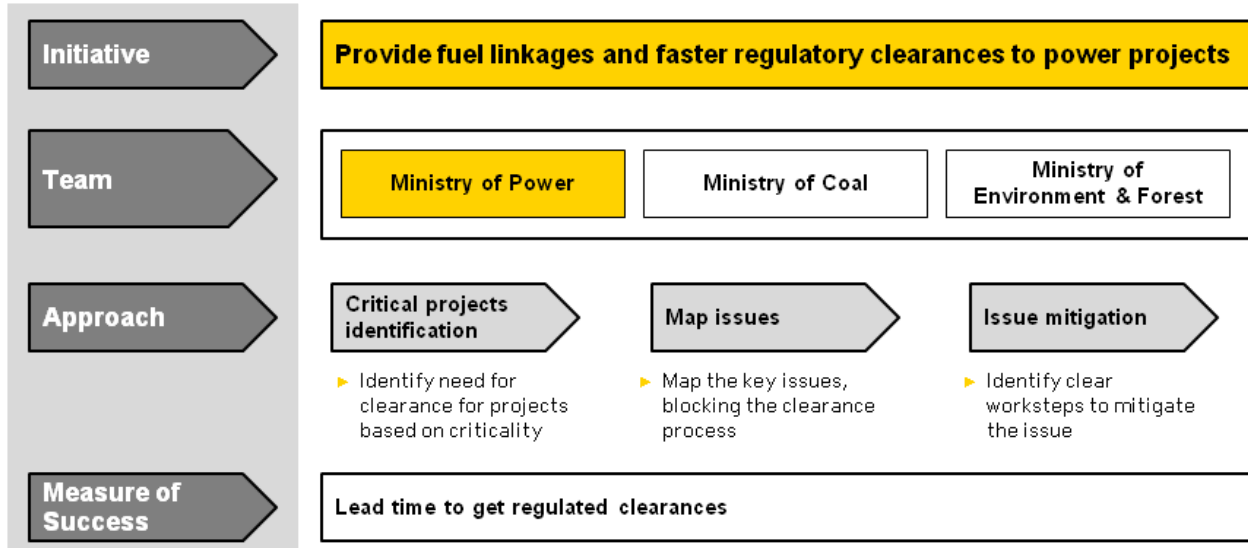


5.3.2 Provide fuel linkages and faster regulatory clearances to power projects

Power projects are getting delayed due to lack of fuel linkages and slow regulatory clearance. Demand for coal is expected to reach 1180 million MT in 2022²³ and the situation would get further aggravated if the present bottlenecks continue to exist. A faster clearance process will ensure that the project is awarded clearance within a stipulated timeframe and hence does not lead to any delays due to clearance process.

²³ CEA

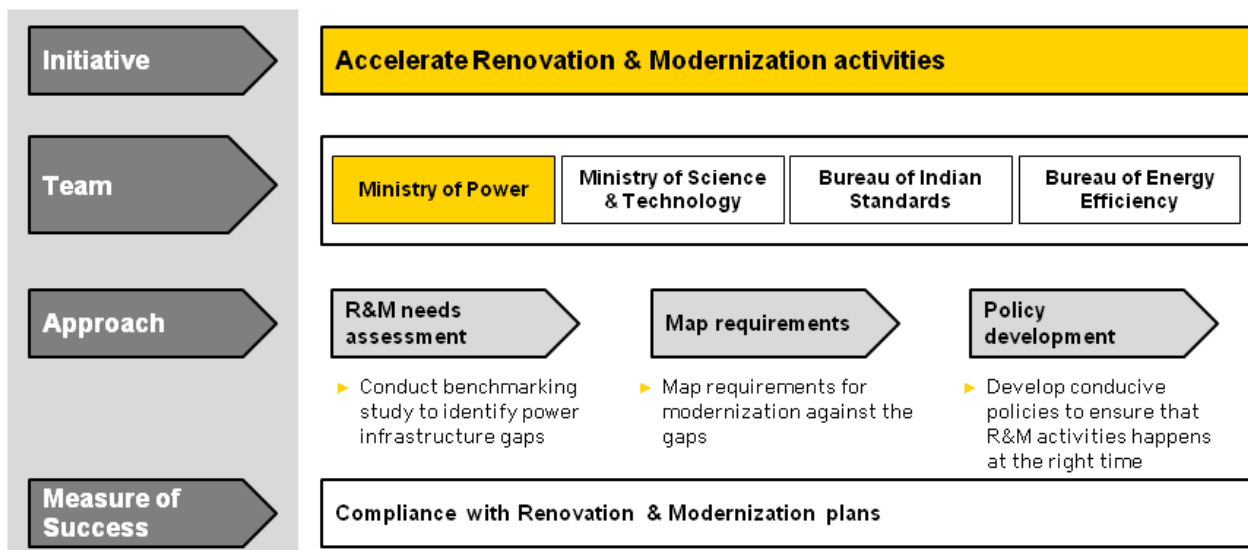
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5.3.3 Accelerate Renovation & Modernization activities

Power sector, especially the generation segment, needs to upgrade and modernize its infrastructure so that it becomes more efficient in terms of environmental emissions and usage of fossil fuels. There is a need to identify the existing infrastructure that is in need of renovation and maintenance activities. Periodic upgrades of generation, transmission and distribution equipment reduces the total economic and environmental costs.

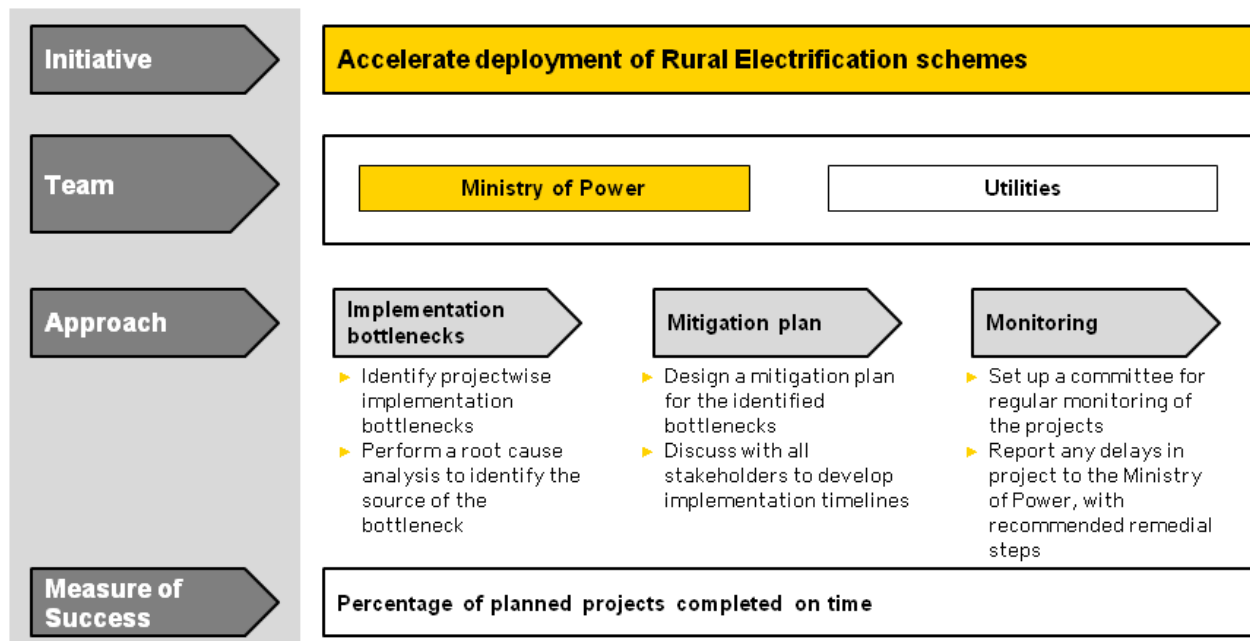
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5.3.4 Accelerate deployment of Rural Electrification schemes

Rural Electrification schemes such as RGGVY is a right step in achieving the target of “Power for All” and inclusive development. Though the intent has been in the right direction, there are implementation challenges that have constrained the progress of the schemes. It is necessary in the interest of the nation that deployment of Rural Electrification schemes is accelerated. This would also help in improving demand for EE.

Approach Note



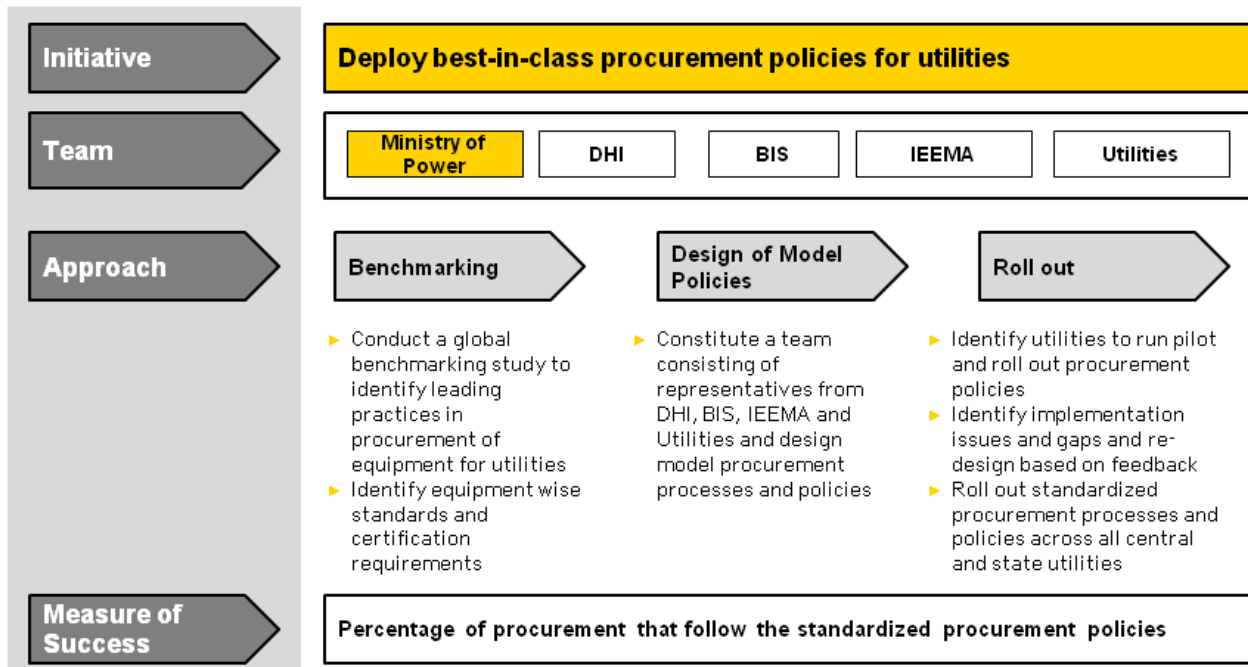
5.3.5 Deploy best-in-class procurement policies for utilities

The existing procurement policies of utilities need to be improved. By deploying standardised procurement practices, the efficiency and effectiveness of the utilities as well as the equipment industry will improve.

Some of the proposed ideas for evaluation by the working group are as follows:

- ▶ Improve procurement policies of central and state utilities by standardizing product specifications, tightening quality norms and modernizing the tendering process
- ▶ Establish stringent product quality norms and make certifications mandatory
- ▶ Introduce fair pricing mechanism
- ▶ Modernise tendering process

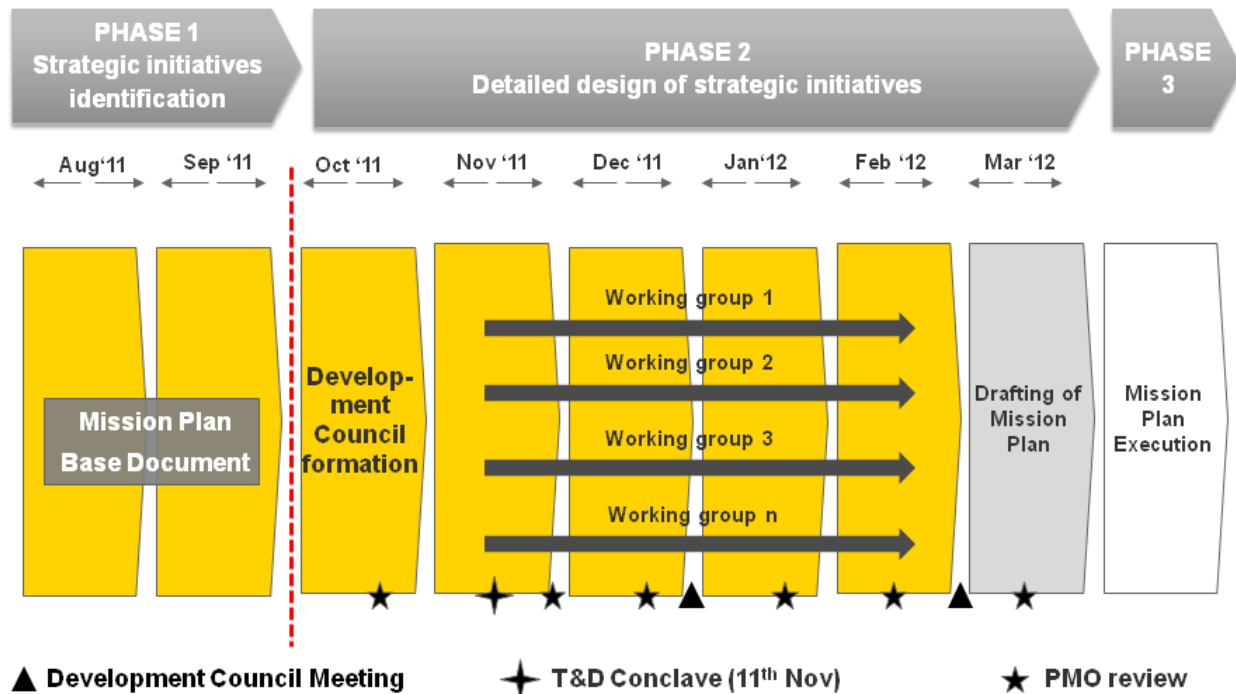
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Way Forward

6. Way Forward

The next few months, which lead to the start of the Twelfth Five Year Plan, are critical to the development of Indian Electrical Equipment Industry Mission Plan 2022. To develop a robust mission plan it is imperative that the combined efforts of all the stakeholders are channelized in the right direction. With this objective the following roadmap is suggested for development of the Mission Plan.



Phase I - Strategic initiatives identification

Mission Plan base document has been prepared in this phase. Fourteen strategic initiatives have been identified under three themes. This phase was conducted during August - September 2011.

Phase II - Detailed design of Strategic initiatives

The detailed design of strategic initiatives involves identifying solutions and developing action plans. This phase needs to commence immediately and requires the formation of the Development Council. The Development Council will consist of multiple working groups, which will be responsible for the execution of each strategic initiative. This phase will be critical for the launch and execution of the Mission plan. It should commence in October 2011 with the formation of the Development Council.

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