ESCOs to drive energy efficiency in India

Summary

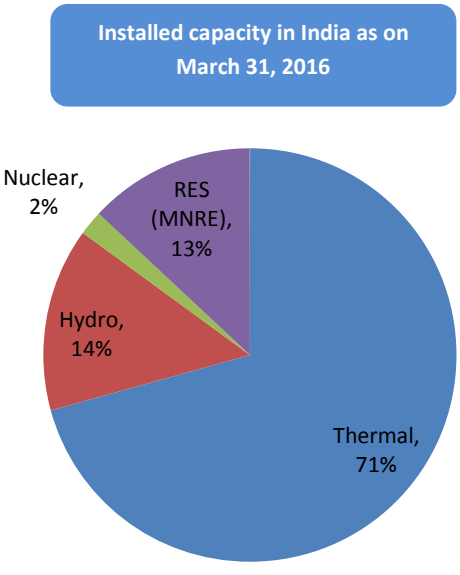
An Energy Service Company (ESCO) is "a company that provides energy-efficiency related services". ESCO enters into a performance contract with a client, guaranteeing a certain amount of energy saving which will pay back for the project cost and ESCO service. ESCO is expected to play crucial role in delivering improved energy efficiency and contributing to potentially substantial energy savings in all sectors including Industrial, Commercial, Agricultural, Residential, etc. This would result in reduction of Greenhouse gas emission, promote clean energy and foster economic growth by reducing the power demand supply gaps. The ESCO market, in India is, however, still at a very nascent stage.

Due to increase in the demand for electricity and persisting existence of demand supply gap, there is vast opportunity for ESCOs to grow in India. Although in the recent past, demand supply gap has been brought down with addition of electricity generation capacity, the ever increasing demand can derive immense benefits from ESCOs which can work on Demand side Management by providing Energy Efficiency services resulting in considerable savings.

Overview of Indian Power Industry

India has an installed capacity of 298.06 GW as on March 31, 2016. Of India's total generation capacity, thermal capacity was 71% as on March 31, 2016, followed by Hydel power contributing with 14%.

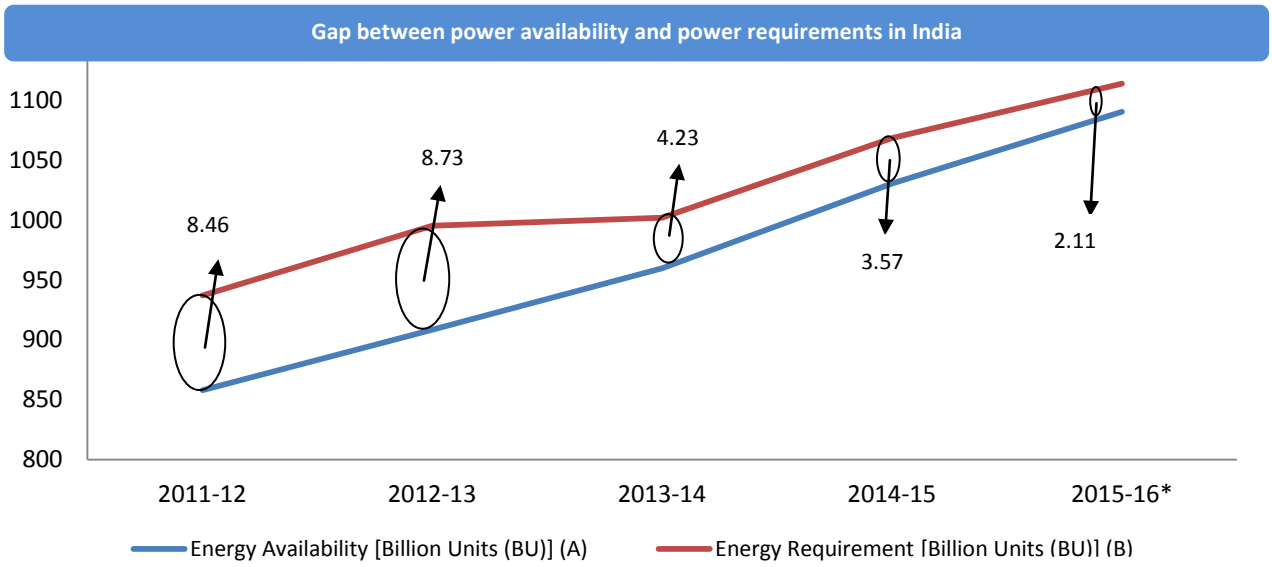
During 12th five year plan (FY12~FY17), additional power generation capacity target was 88,537 MW (according to CEA) of which India has already achieved about 96% of the target till March 2016. The majority of power generation capacity addition took place in thermal sector which contributed about 94.34% against proposed contribution of 81.71%.



Source: Central Electricity Authority

Persisting power deficit and a solution to converge it

The demand for power has increased at CAGR of about 4.42% during FY12-FY16 (prov.) with y-o-y growth of 4.24% in FY16 (prov.) and same is expected to increase more going forward considering the economic growth, increasing urbanization, increase in income level and improvement in life style. The per capita power consumption has increased from 879 kWh in FY12 to 1010 KWh in FY15. In order to meet increasing levels of demand for power India has been making capacity additions primarily through thermal sources. As a result, power availability increased at CAGR of about 6.19% during FY12-FY16 (prov.) with y-o-y growth of about 5.81% in FY16 (prov.), thus reducing to a certain extent the demand supply gap.



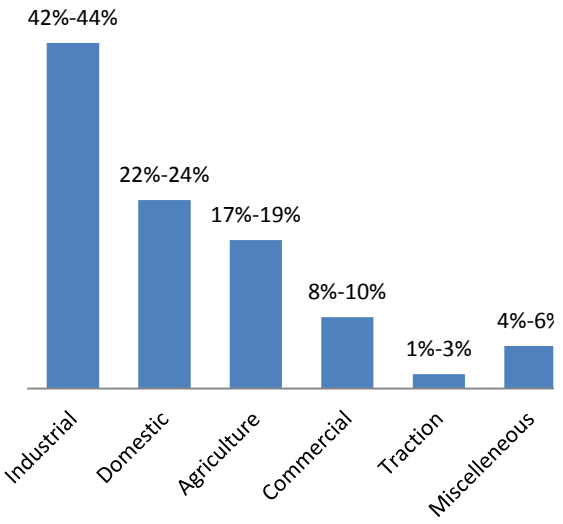
*Provisional, Source: Ministry of Power

As mentioned earlier India has been generating majority of its power from Thermal sources whose sustenance is dependent on the limited availability of fossil fuels. Although the government is taking various initiatives to propagate Renewable energy segment, its pie in the entire power generating sector remains meager. During this impassable situation the energy demands can be fulfilled through application of solutions provided by ESCOs and utilizing the products recommended by Bureau of Energy Efficiency.

Scope and opportunities available for ESCOs

India's total energy availability during FY16 was about 1091 BU and post to AT&C losses of about 20%, the energy availability reduced to ~800 BU. According to World Resource Institute, India has an estimated energy savings potential of about 20 GW. Considering the amount of energy savings which can take place vis-à-vis the herculean task of capacity addition in renewable and non-renewable segment the country can save at least Rs.160,000 crore (considering on an average Rs.8 crore/MW to set up a renewable power plant), which on contrary can be deployed gainfully for improving the country's economy. Furthermore, increasing energy efficiency can offer a cheaper and cleaner alternative to meet India's growing energy demands.

Segment wise power consumption in India



Provisional, Source: Compiled by CARE

As per the analysis made by CARE, Industrial segment consumes maximum amount of power produced at about 43% followed by domestic and commercial segment contributing to about 32%. On a conservative basis even if the energy efficient solutions are applied only on Domestic and commercial segments, the expected savings would be enormous. Following analysis focuses on minimum amount of savings which can take place in domestic and commercial segments by using the energy savings products.

In Domestic and commercial segments prime usage comprise lighting and fans which contribute about 60-90% of their power consumption levels followed by refrigerators, ACs, electric water heaters and television. The ESCOs can be a potential vehicle to realize these savings as illustrated in following table:

Particular	Branded products	ESCO products	Net Savings	Savings % wise
	Wattage (Approximately)			
LED Lightings	20	16	4	20.00%
Fan	75	35	40	53.33%
Average				**46.32%**

Source: Compiled by CARE

Even on most conservative basis considering 30% of savings upon implementing energy-efficient products only on domestic and commercial segment can benefit the country an aggregate savings of approximately 42 BU. According to Ministry of MSME, there are 36 million MSME units operating in India with majority

of them energy intensive where energy forms a major part of production cost. By implementing the energy savings products and solutions at mass level can bring about seamless transformation in improving operational efficiency.

Barriers and growth driver for ESCOs in India

Barriers	Growth Drivers
ESCO being nascent in India lacks awareness about the importance of energy efficiency.	Demonstration projects organized by the public sector can be essential growth driver in order to increase awareness and trust in ESCOs among other potential clients.
Small ESCOs have difficulties in meeting the cost of audits, which is increasing the transaction cost.	Launch of new project with energy-efficient products.
Potential savings offered by ESCOs are subtle in nature, thus clients are yet to gain confidence that ESCO would be able to meet guaranteed savings.	Promotion of loan programs, subsidies, and low and tax free interest rate to pay for energy efficiency.
Low energy price can decrease the economic potential for energy savings.	Bundling of energy-efficiency projects can result in lower transaction cost for EPC projects.
As most of the ESCO players are small with a turnover of less than Rs.5 crore and low networth, they find difficulties in meeting the eligibility criteria in bagging tenders.	Government initiatives to set Energy-Efficiency targets to reduce Energy Intensity.
Lack of accepted standards and protocols for energy savings measurement and verification.	Most of the ESCOs are driven by technocrats with innovative solutions which when recognized can be outsourced at a compensatory cost.
Lack of information and experience by financial institutions about Energy-Efficiency projects, thus ESCOs find difficulty in meeting funding gaps for the projects.	
Lack of regulation and enforcement from the government to promote the ESCOs.	
Some of the ESCO who have innovative solutions are unable to promote them due lack of support and framework from government.	
Although The National Mission for Enhanced Energy Efficiency*(NMEEE) has initiated Perform, Achieve and Trade Scheme (PAT) the enforcement and fructification of the same was meager.	

*The NMEEE is one of the eight mission under the National Action Plan on Climate Change (NAPCC) and PAT is one of the four initiatives of NMEEE to enhance energy efficiency in energy intensive industries. Under PAT Scheme, energy intensive sector have been mandated to reduce their specific energy consumption (SEC) and can receive energy savings certificates (ESCerts) for excess savings which can be traded on online platform.

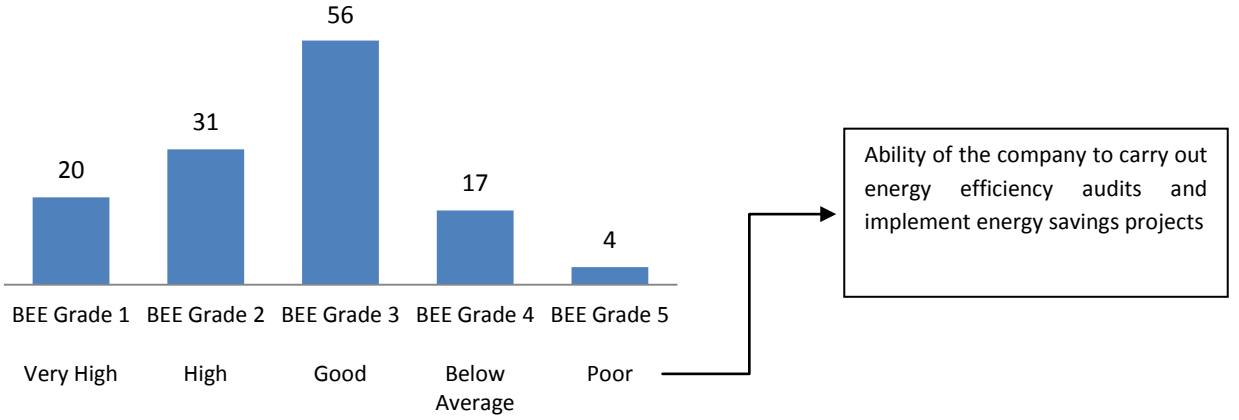
Conclusion

Energy efficiency can offer vast and low-cost energy resources for the Indian economy. Significant and persistent barriers need to be addressed at multiple levels to stimulate demand for energy efficiency and to manage its delivery across many sectors. The ESCO industry in India has so far not been able to succeed in developing a vibrant market for energy saving performance contract projects. Amidst the not so optimistic energy services market situation in India, the increased growth in ESCO revenues, though not significant, successful introduction of deemed savings concept by Energy efficiency service Limited (EESL) and launch of new financial products such as Partial Risk Guarantee Fund (PRGF) by Bureau of Energy Efficiency (BEE) and Partial Risk Sharing Facility (PRSF) by Small Industrial Development Bank of India

(SIDBI) have addressed financials barrier faced by ESCOs and are fostering the market. It can be concluded that this is an opportune time for revisiting the barriers to the development of ESCO market in India and identify the tipping points in improving the persisting demand supply power gap situation.

Grading Dispersion:

CARE undertakes a grading exercise based on information provided by the company, in-house databases, data from other sources that CARE considers reliable and grading model specifically designed for ESCOs. The primary focus of the grading exercise is to calibrate the ability of the ESCOs to carry out energy-efficiency audits and implement energy savings projects. As depicted below, of the total 128 ESCOs empannelled with BEE, it is observed that the grading of about 84% of them have Very high, High and Good ability to carry out energy-efficiency audits and implement energy savings projects, ie, BEE Grade 1, 2 & 3, respectively.



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