




EPIC ENERGY LIMITED

An: ISO9001:2008 Company
A BEE Short Listed ESCO Company
www.epicenergy.biz

ANNUAL REPORT 2015-2016



**'The practice of
conservation must spring from
a conviction of what is ethically
and aesthetically right, as well as
what is economically expedient.**

**A thing is right only when it tends to
preserve the integrity, stability and
beauty of the community, and the
community includes the soil, water,
fauna and flora, as well as people '**

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Chairman's Message

LEaDing the Way

As the World prepares to battle the effects of global warming and the resultant climate change impact, India is doing its bit to ensure the promotion of renewables and energy efficiency programs.

One of the major steps being taken by Government Agencies in India is to replace all traditional Light Fixtures with Light Emitting Diodes (LEDs). The target is to replace 770 million conventional Light Fixtures with LEDs. Alongside, there are plans to introduce less power consuming 50w Fans and energy efficient air conditioners. The target is to save 20-25 percent energy usage, translating into a saving of Rs 40,000 crs annually and a reduction in peak energy demand to the tune of 20,000 MW. This could virtually wipe out the power deficit of our country.

Your company hopes to partner with the Central and State Governments to help in this gigantic task. Towards this end, we have tie-ups with various manufacturers, both domestic and foreign, to supply high quality LEDs at affordable prices. With our experience in handling large scale government projects, the time is opportune to create a niche for our company in this segment of Energy Efficiency.

I strongly recommend that all you dear shareholders must also participate in this ambitious program by retrofitting all your lights to LED.

I wish you all the very best for the upcoming Ganpati Festival, Id-ul-Adha, Navratri and Diwali festivals.

Yours in Energy Efficiency,

Nikhil Morsawala
Chairman

MANAGEMENT DISCUSSION AND ANALYSIS

INDUSTRY STRUCTURE AND DEVELOPMENTS

Energy Overview

India has an installed power generating capacity of 3,04,760.75 MW (as on 31.7.2016) of which the total thermal power stations share is 211855.40 MW (69.52%). Total installed power generating capacity is increased by 29942.81 MW than last year and also thermal power stations share is increased by 20591.84 MW.

Total Installed Capacity¹

Sector	MW	%age
State Sector	101905.93	33.44
Central Sector	76246.76	25.01
Private Sector	126608.06	41.54
Total	304760.75	

Fuel		MW	%age
Total Thermal	Coal	186292.88	61.13
	Gas	24643.63	8.09
	Diesel	918.89	0.30
	Total Thermal	211855.40	
Hydro (Renewable)		42888.43	14.07
Nuclear		5780	1.90
RES**(MNRE)		44236.92	14.52
Total		304760.75	100

**Renewable Energy Sources(RES) include SHP, BG, BP, U&I and Wind Energy

SHP= Small Hydro Project ,BG= Biomass Gasifier ,BP= Biomass Power,

U & I=Urban & Industrial Waste Power, RES=Renewable Energy Sources

¹ http://www.cea.nic.in/reports/monthly/installedcapacity/2016/installed_capacity-07.pdf

Energy Efficiency in India

India is at an important inflexion in its journey towards sustainable and inclusive development that ensures a resource efficient future along with environmentally benign business growth. Unlike most developed economies, India faces the formidable challenge of achieving economic development while fulfilling significant commitments toward climate action. India will cut intensity of carbon emissions by 33-35 % by 2030 from 2005 levels; switch to using 40% non-fossil fuel in energy mix also by 2030; and make its economy significantly more efficient. Energy efficiency is expected to play a critical role in driving towards a resource efficient business environment. In fact, under Prime Minister Modi's leadership, India is already taking rapid strides towards paving the path for energy security in the future. India's Intended Nationally Determined Contribution (INDC) lists policies to promote actions that address climate concerns and also include fiscal instruments like coal cess, cuts in subsidies, increase in taxes on petrol and diesel, market mechanisms including Perform Achieve and Trade (PAT), Renewable Energy Certificates (REC) and a regulatory regime of Renewable Purchase Obligation (RPO). The institutional arrangement for renewable power will be further strengthened with the Government announcing plans to quadruple its renewable energy capacity to 175 GW by 2022². Additionally, it has also set an ambitious goal of bridging the energy supply and demand gap by 2022.

Company responses to CDP in 2015 demonstrate that energy efficiency has increasingly been deployed by companies as a means of reducing emissions and thus their impact on climate. Higher energy productivity (more production per unit of energy), will also ensure a better balance sheet and act as hedge against wildly fluctuating energy prices and availability.

CDP's climate change program data for the year 2015 shows that of all the emission reduction activities reported by Indian companies, over 70% are energy efficiency activities and out of the total 2 million metric tons of carbon dioxide equivalent emission reduction achieved, about 1.5 million tons of reduction result from energy efficiency activities.

Initiatives to drive energy efficiency in India³

The Government of India has adopted a two pronged approach to meet the increasing energy demand of the population while ensuring minimum growth in greenhouse gas emissions to control climate change: On the demand side, efforts are being made to reduce energy demand through various innovative policy measures; and On the supply side, the government is promoting use of renewable energy and shifting towards efficient technologies for coal based plants.

Demand side energy efficiency policies

The Government has introduced a number of noteworthy policies and schemes to drive energy efficiency. For instance, the National Mission on Enhanced Energy Efficiency (NMEEE) is one of the missions that aims to strengthen the market for energy efficiency in India by creating a conducive regulatory and policy regime and fostering innovative and sustainable business models in the energy efficiency sector. Last year, a total outlay of 75 crore (US\$125 million) was approved by the

² <http://www.ndtv.com/indianews/pm-narendra-modiaddresses-indian-diaspora-intoronto-highlights-755326>

³ <http://www.gita.org.in/Attachments/Reports/CDP-India-Energy-Efficiency-Report-2015.pdf>

Government for NMEEE efforts. Under NMEEE, four key initiatives were launched to enhance energy efficiency in energy intensive industries. These include: Perform Achieve and Trade Scheme (PAT); Market Transformation for Energy Efficiency (MTEE); Energy Efficiency Financing Platform (EEFP); and Framework for Energy Efficient Economic Development (FEED).

Perform Achieve and Trade Scheme (PAT) :

An innovative market based mechanism to enhance energy efficiency of energy intensive industries through trading of energy saving certificates (ESCerts). All identified industrial units are mandated to reduce their Specific Energy Consumption. The reduction targets are based on their current energy efficiency (average plant reduction target is ~4.8%) Industrial units that are able to achieve their targets can receive energy savings certificates, which can be traded on the power exchanges and bought by non-compliant units to meet their compliance requirements. Industrial units that are unable to meet the targets (through their own actions or through the purchase of ESCerts) are liable to financial penalty.

Market Transformation for Energy Efficiency (MTEE):

It aims at accelerating the shift to energy efficient appliances through measures to make the products more affordable. Two key programs:

- a) Bachat Lamp Yojna (BLY) for energy efficient lighting. Over 29 million incandescent bulbs have been replaced by Compact fluorescent lamps (CFLs) under this scheme. In the next phase, the Bureau of Energy Efficiency (BEE) will promote the use of LED lights using the institutional structure of BLY Program⁴;
- b) Bachat Super Efficient Equipment Program (SEEP)

Energy Efficiency Financing Platform (EEFP):

It ensures availability of finance at reasonable rates for energy efficiency project implementation. The scheme also involves creating demand for energy efficient products and services through the preparation of bankable projects and markets. Additionally, the scheme aims to build credible monitoring and verification protocols to capture energy savings; and building capacity of banks and FIs (Financial Institutions).

Framework for Energy Efficient Economic Development (FEED):

It involves development of fiscal instruments to promote energy efficiency. For instance, the following funds have been created:

- (i) Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE): a risk sharing mechanism for partial risk coverage for banks extending loans for energy efficiency projects; and
- (ii) Venture Capital Fund for Energy Efficiency (VCEE): provides equity capital for energy efficiency projects (limited to government buildings and municipalities).

Renewable Energy potential and growth in India

Renewable energy in India comes under the purview of the Ministry of New and Renewable Energy (MNRE). Newer renewable electricity sources are targeted to grow massively to 2022, including a more than doubling of India's large wind power capacity and an almost 15 fold increase in solar power from April 2016 levels. Such ambitious targets would place India amongst the top world leader's in renewable energy use and place India at the centre of it's International Solar Alliance

⁴ <http://powermin.nic.in/Energy-Efficiency> Note: 1 lakh= 100,000; 1 crore= 10,000,000; \$ refers to USD, refers to INR

project promoting the growth and development of solar power internationally to over 120 countries.

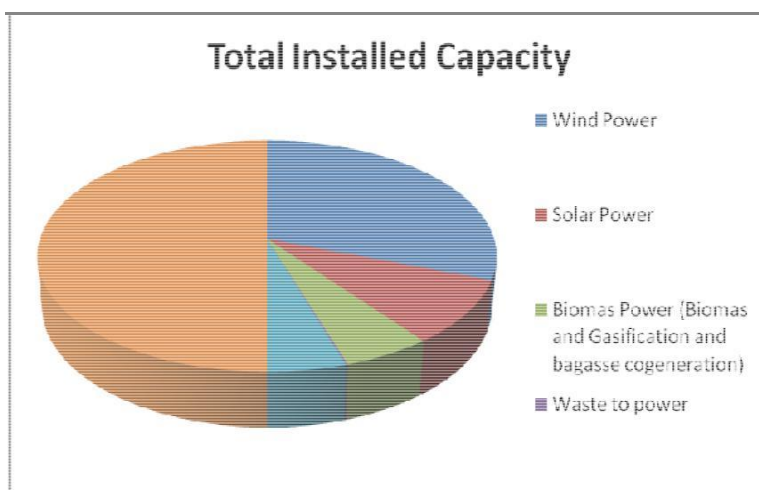
India was the first country in the world to set up a ministry of non-conventional energy resources, in early 1980s. As of 30th April 2016 India's cumulative grid interactive or grid tied renewable energy capacity (excluding large hydro) reached about 42.85 GW,⁵ surpassing the installed capacity of large scale hydroelectric power in India for the first time in Indian history. 63% of the renewable power came from wind, while solar contributed nearly 16%. Large hydro installed capacity was 42.78 GW as of 30 April 2016 and is administered separately by the Ministry of Power and not included in MNRE targets.

From 2015 onwards the MNRE began laying down actionable plans for the renewable energy sector under its ambit to make a quantum jump, building on strong foundations already established in the country. MNRE⁶ renewable electricity targets have been upscaled to grow from just under 43 GW in April 2016 to 175 GW by the year 2022, including 100 GW from solar power, 60 GW from wind power, 10 GW from bio power and 5 GW from small hydro power. The ambitious targets would see India quickly becoming one of the leading green energy producers in the world and surpassing numerous developed countries. The government intends to achieve 40% cumulative electric power capacity from non fossil fuel sources by 2030.

Installed Grid Interactive Renewable Power Capacity in India as of July 31, 2016 (MNRE)

Source	Total Installed Capacity	2022 target (MW)
Wind Power	27,441.15	60000.00
Solar Power	8,062.00	100000.00
Biomass Power (Biomass and Gasification and bagasse cogeneration)	4860.83	10000.00
Waste to power	115.08	
Small Hydro power	4304.27	5000.00
Total	44,783.33	175000.00

(source: MNRE)



⁵ http://www.cea.nic.in/reports/monthly/executivesummary/2016/exe_summary-04.pdf

⁶ http://mnre.gov.in/file-manager/annual-report/2015-2016/EN/Chapter%201/chapter_1.htm

India LED Lighting Market

India's LED market is forecast to reach \$1,457.8 million by 2019⁷, at a CAGR of 35.9%, during 2014-19. Government initiatives to replace incandescent bulbs with LED bulbs, increasing energy demand supply gap, declining prices are the factors driving the growth of LED lighting in India. Street lighting application accounts for majority of the market revenues in Indian LED lighting market. India's LED lighting market is currently at a nascent stage. Though the LED market is already growing at a robust pace over the last 2-3 years, the country offers huge growth potential, especially over the next 5-10 years. Increasing adoption of LED lighting is being witnessed across commercial and residential sectors, government projects, upcoming smart building projects, etc. the country's LED lighting market is projected to register a growth of over 32% during 2015-20⁸. Key factors that are expected to boost the market include declining LED prices coupled with favorable government initiatives to provide LED lights at subsidized cost and LED installation projects for streetlights. In addition, growing awareness among consumers on account of awareness programs by manufacturers and regulatory bodies is expected to play a vital role in shaping the country's LED market over the next five years.

With manufacturing cost witnessing a decline every year and various government initiatives backing LED adoption, the LED lighting market in country is anticipated to grow robustly through 2020. Moreover, rising consumer awareness about cost-effectiveness and eco-friendliness of LED lights would continue to drive volume sales from the residential and well as commercial sectors.

The scale of the LED lighting market is growing steadily, according to *2016 Global LED Lighting Market Trends Report* by LEDinside, a division of TrendForce. LEDinside estimates that the scale of the LED lighting market will reach US\$25.7 billion in 2015 and expand to US\$30.5 billion in 2016. The penetration rate of LED lighting is also projected to climb from 31% in 2015 to 36% in 2016⁹.

Lighting companies have focused on professional lighting solutions in developed markets such as the U.S., Europe and Japan. They seek to capture certain market segments via product diversification and differentiation. In the emerging markets, rapid economic growth, favorable government policies, and mega urban projects are constantly generating new opportunities. The main growth centers in the global lighting market next year will be the U.S. and India.

Developments in the emerging markets such as India, Africa and Southeast Asia will be heavily influenced by government policies and the volume of project tenders in the market. The Indian government, for example, plans to purchase 200 million LED light bulbs by the end of 2016 and has issued tenders on LED streetlights retrofit projects. To meet bid requirements related to revenue, production capacity and manufacturing capability, international bidders are encouraged to enter joint ventures with local lighting companies. The Indian LED lighting market therefore is expected to remain hot through 2016.

LED Streetlights

⁷ http://www.researchandmarkets.com/reports/2760420/india_led_lighting_market_20142019_market

⁸ <https://www.techsciresearch.com/news/307-india-led-market-to-grow-at-more-than-30-until-2020.html>

⁹ <http://www.ledinside.com/node/24054>



India has 35 million street lights which generate a total demand of 3,400 MW¹⁰. With LED, this can be brought down to 1,400 MW, saving 9000 million kWh of electricity annually, worth over \$850 million in the process. To put this into perspective, the electricity deficit in India during 2014-15 was 38,138 million kWh and 7,006 MW.

The National Programme for LED-based Home and Street Lighting was launched by Prime Minister Modi in January this year.

At its inception, the plan was to cover 100 cities by March next year, and the remaining ones by March 2019, targeting 770 million bulbs and 35 million street lights. However, it seems street lights will be upgraded to LED ahead of schedule.

The task of operating and maintaining the street lights falls under the jurisdiction of Urban Local Bodies (ULB), or municipalities. Under the service model chosen, the ULBs do not have to make any upfront investments for installing the LED street lights, as ESCO does it for them. The investment is also recovered from a portion of the savings accrued by the ULBs (on account of lower electricity bills) over a period of seven years, which means the ULBs start saving money right from the get-go.

Lighting demands 18% of the electricity consumed in India. This is against a global average of just 13%. A large-scale LED adoption will bring the figure for India down to the global average, significantly cutting down the need to build more energy plants. If one also accounts for installing LED bulbs in domestic and commercial sectors, the opportunity at hand is to save a mammoth 100 billion kWh per annum (\$7 billion a year).

COMPANY STRATEGY, BUSINESS FOCUS and ACQUISITIONS

Demand Side Management - Energy Efficiency

Your company/has clearly defined Energy Efficiency, or Demand Side Management, as one of its main business segments.

Energy Saving Equipment

Over the last few years, your company has developed core competencies in the Technology Development, technology assimilation and commercial exploitation of Energy Saving Equipment. The company's products have consistently shown an Energy Savings performance of more than thirty percent in lighting loads and between ten and eighteen percent in mixed loads, which is considered to be very satisfactory. Pictorial depictions and technical specifications are available on your company's website www.epicenergy.biz.