



ENERGY EFFICIENCY SERVICES LIMITED
A JV of PSUs under Ministry of Power, Government of India

INNOVATING ENERGY

Tracing the contours of
India's Energy Sector



Contents

- 1** Editor's Note – by Mr Nitin Bhatt, Deputy General Manager, Sales & PR, EESL
- 2** Empowering women in the energy efficiency sector – by Savitri Singh, General Manager (Tech), EESL
- 3** Decentralized solar power has great potential to support India's energy transition and catalyze socioeconomic development – by Kishor Chawan, General Manager(Technical)Cluster Head, South West Regional Cluster, EESL
- 4** Adopting energy efficient appliances can usher in considerable energy and ecological benefits – by Alok Mishra, Cluster Head -NCRC/ Additional General Manager (Tech), EESL
- 5** The need for institutional adoption of energy efficiency – by Shashi Kant, Cluster Head- NRC, EESL
- 6** Top Energy Trends
- 7** Key EESL highlights for the month



Editor's note

By
Mr Nitin Bhatt,
Deputy General Manager,
Sales & PR, EESL



Dear Reader,

As India continues to grow, ensuring reliable, affordable, and sustainable energy remains a critical priority. It has made significant strides in reshaping its energy development and use, including expanding renewable sources like solar power, increased adoption of energy efficiency and proliferation of solutions such as electric mobility. India's efforts in energy conservation have been commended globally and the world is acknowledging the leadership India is demonstrating in energy efficiency through its simple, transformative and cost-effective climate change solutions.

However, as our nation embarks on the journey towards a low-carbon future, it is crucial to delve deep into the various facets of India's dynamic and ever-evolving energy landscape. The diversity of energy consumption profiles across India's vast landscape and the imperative for equity in the sector necessitates agile, adaptable and scalable approaches that can navigate the complexities of our complex energy ecosystem.

Our thematic focus this month, "Tracing the contours of India's energy sector," invites readers to explore key articles shedding light on pivotal aspects of our energy landscape. We explore various facets that shape our energy roadmap, acknowledging the diverse energy consumption patterns stemming from the varied geographical and socio-economic landscape across our nation.

"Decentralised solar power has great potential to support India's energy transition and catalyse socioeconomic development" underscores the transformative power of decentralised solar solutions, urging for heightened investments to fortify our energy infrastructure for the future. Additionally, "Empowering women in the energy efficiency sector" emphasises the crucial role of gender equality in fostering sustainable development and innovation within the energy efficiency domain, advocating for inclusive participation.

Moreover, our discussion on "Adopting energy-efficient appliances can usher in considerable energy and ecological benefits" highlights the significant role that energy-efficient appliances play in steering us towards a more sustainable trajectory, presenting a promising avenue for energy conservation. Lastly, "The need for institutional adoption of energy efficiency" underscores the importance of optimising energy consumption and embracing energy-efficient technologies, particularly within the public sector, utilities, MSMEs, rural communities, agriculture, and affordable housing sectors.

As we navigate through the complexities of our energy landscape, let us remain committed to fostering innovation, inclusivity, and sustainability in all our endeavours.

Empowering women in the energy efficiency sector

By
Savitri Singh,
General Manager (Tech), EESL



The energy sector stands at the forefront of global transformation, with a pivotal role in shaping sustainable development and addressing climate change. However, despite its significance, the sector grapples with a glaring gender gap. Women remain vastly underrepresented, facing systemic barriers and disparities that hinder their participation and advancement in this critical sector.

Statistics paint a stark picture of gender imbalances within the energy sector. While women constitute 39% of the global labor force, they represent a mere 16% of the traditional energy sector workforce. At management levels, their presence dwindles even further. The energy sector mirrors broader societal challenges, but its ongoing transformation exacerbates these disparities. Clean energy transitions demand diverse perspectives and innovative solutions, necessitating the active participation of women.

The gender wage gap remains pronounced within the energy sector, with female employees earning nearly 20% less than their male counterparts. This gap persists even after accounting for factors such as education and experience, highlighting systemic biases. In leadership roles, women are significantly underrepresented, comprising less than 14% of senior managers and a mere 12% of leadership positions, excluding utilities.

Efforts to achieve gender equality in the energy

efficiency sector are not only imperative for social justice but also for driving sustainable development and innovation. Initiatives aimed at supporting women's advancement, increasing representation, and fostering inclusive workplace cultures are crucial steps toward bridging the gender gap.

To address the underlying barriers hindering women's participation in the energy efficiency sector, concerted action is required. Increasing visibility and representation of women in leadership roles can serve as powerful catalysts for change. By showcasing female role models and leaders, and implementing targeted recruitment and outreach efforts, the sector can inspire more women to pursue careers in energy efficiency.

Moreover, creating supportive workplace cultures that value diversity and offer opportunities for career development is essential. Initiatives such as mentoring programmes, flexible work arrangements, and diversity training can help attract and retain women in the sector. Investment in education and training programmes tailored to women is critical for building a more diverse and skilled workforce. Scholarships, internships, and apprenticeships aimed at women in the energy efficiency sector can nurture talent and cultivate leadership skills, paving the way for their advancement.

At Energy Efficiency Services Limited, we recognise the importance of empowering women in the

energy efficiency sector. Through initiatives such as internship opportunities for young women and training programmes at technical institutes, we strive to foster awareness and provide pathways for women to excel in this vital industry.

The gender gap in the energy efficiency sector demands proactive measures and sustained

commitment to overcome. By increasing visibility, creating inclusive workplace cultures, and investing in education and training, we can unlock the full potential of women in driving innovation and sustainability in the energy sector. Together, let us work towards a future where women are equal partners in shaping a cleaner, more resilient world.



Decentralized solar power has great potential to support India's energy transition and catalyze socioeconomic development

By
Kishor Chawan, General Manager(Technical)Cluster
Head, South West Regional Cluster, EESL

The central-government-led push for rooftop solar installations over the past couple of years, reinforced in recent months, underlines the importance of decentralized solar power in meeting India's renewable energy targets. Decentralized solar can not only complement centralized generation but also spur socioeconomic development in rural areas of the country by meeting the energy and livelihood needs of local communities.

The Sustainable Development Goals outlined by the United Nations call, among other things, for ensuring access to affordable, reliable, and sustainable energy for all. Indeed, energy access is a recurring motif in many SDGs that pertain to health, education, gender equality, economic growth, and climate action. Energy poverty adversely impacts health, food, and jobs, while unequal access to electricity can create disparities in economic development and quality of life. Decentralized solar power offers a logical and viable answer to these challenges.

The World Bank estimates that decentralized off-grid solutions are the most economical option for over 70 percent of unelectrified rural populations. Decentralized solar projects are cost-effective, can be deployed very rapidly, and are very effective in creating local jobs. Their small size and localized nature make them resilient to natural disasters. Moreover, they offer significant environmental and sustainability benefits such as reducing the carbon intensity of energy use; improving resource efficiency; and strengthening energy security.

The case for decentralized solar solutions is especially strong in rural areas, as they can enable access to education and healthcare, and catalyze entrepreneurship and employment opportunities, thus promoting socioeconomic development and overall well-being. Decentralized solar power systems, in conjunction with battery storage, can power agricultural pumps, street lighting, household lighting, and cooking appliances for farmers and underserved communities.



Decentralized solar is beneficial even from the standpoint of India's discoms, many of which are financially stressed. Presently, almost a fifth of the electricity generated in India by conventional means is wasted or stolen, which worsens the problem for discoms. As decentralized solar installations generate electricity close to the point of consumption, they entail very low T&D losses. And if these projects can be developed in vacant, unused, or excess

lands near or within discom substation premises, it will not only generate additional revenue for discoms but also spare them the cost of network augmentation.

The great value of decentralized solar lies in making power generation and consumption accessible and inclusive for all. Today, we have solar freezers that are used to increase the shelf-life of dairy products; solar-powered computer labs for children in schools; and mini grids that power entire rural communities. These solutions demonstrate the transformational potential of decentralized solar power. We must scale up investments in this segment as we build new energy systems for the future; it will benefit our nation in more ways than one.

Adopting energy efficient appliances can usher in considerable energy and ecological benefits

By
Alok Mishra, Cluster Head -NCRC/ Additional
General Manager (Tech), EESL



As we navigate the landscape of energy efficiency in India, it becomes imperative to shed light on the transformative potential of energy-efficient appliances. The journey towards energy efficiency in India has been paved with initiatives from the Bureau of Energy Efficiency (BEE), dating back to 2006, aimed at reducing the energy intensity of our economy. Over the years, these policies have evolved to keep pace with the changing energy landscape, with a strong emphasis on collaboration with industries to curtail energy consumption.

In alignment with the government's focus on enhancing energy efficiency across sectors, the adoption of energy-efficient appliances in buildings emerges as a key proposition. Such appliances not only alleviate India's peak power demand but also contribute significantly to our climate action efforts by reducing emissions. Energy Efficiency Services Limited (EESL) continues to support the government's objectives by enabling substantial efficiency improvements across various sectors.

Ceiling fans, a staple in almost 90% of Indian households, represent a crucial frontier in energy efficiency efforts. These fans alone consumed approximately 40% of residential electricity in 2021, a figure projected to remain substantial by 2030. Moreover, heating and cooling systems constitute a substantial portion of energy consumption in households, accounting for a significant 40% globally. Recognising this, the BEE has mandated

the Standards and Labeling (S&L) programme, aimed at enhancing the energy efficiency of ceiling fans. EESL's ambitious programme to deploy 10 million energy-efficient fans underscores its commitment to catalysing market transformation and realising significant energy savings.

Moreover, the cooking landscape is undergoing a revolution with the rapid adoption of induction cooktops, heralding a cleaner and more sustainable approach to cooking. Traditional cooking methods, prevalent in many households, contribute substantially to indoor air pollution and environmental degradation. EESL's National Efficient Cooking Programme (NECP), championing the adoption of induction-based cook-stoves, presents a viable solution that not only reduces indoor air pollution but also offers cost advantages over traditional methods.

The promotion of energy-efficient appliances, spanning fans, air conditioners, and cookstoves, holds the promise of substantial energy savings and a more sustainable future. As we embark on this journey towards energy efficiency, collaboration between government agencies, civil society organisations, and industry stakeholders becomes paramount. Through concerted efforts and strategic initiatives, we can realise the vision of a cleaner, greener India, where energy-efficient appliances play a pivotal role in shaping a sustainable and environmentally conscious society.

The need for institutional adoption of energy efficiency

By **Shashi Kant**, Cluster Head- NRC, EESL

Buildings account for almost a tenth of India's annual energy consumption. Today, as we seek ways to meet the country's ever-increasing energy needs, it is clear that our efforts in this direction need to encompass existing, under-construction, and future buildings and spaces. There is, in short, a need to drive institutional adoption of energy efficiency.

The simplest way of improving the energy efficiency of buildings and public spaces is perhaps also the most effective – replacing conventional fans, air conditioners, bulbs, and tube lights with energy-efficient variants. Today, EESL has brushless Direct Current (BLDC) fans which deliver performance comparable to conventional fans but consume only half as much power. Similarly, EESL's super-efficient air conditioners are available at prices similar to the most energy-efficient ACs in the market but reduce energy consumption by almost 50% in comparison.

We need to promote the optimization of energy consumption and the adoption of energy-efficient technologies, especially among public sector entities, utilities, MSMEs, rural areas, agriculture, and affordable housing. These segments present a huge potential market for super-efficient cooling and heating appliances and central cooling systems. In view of the financial constraints that could impede adoption among MSMEs, we could explore innovative business models of ESCO-based financing wherein MSMEs can repay the amount from their monetized energy saving over time.

A government-led push for energy efficiency began as early as August 2017, when the Centre instructed all Departments and Ministries to make all their buildings energy-efficient. The Building Energy



Efficiency Program (BEEP) thus came into play for enhancing the energy efficiency of commercial and public buildings in India.

The programme includes conducting energy audits and assessments, identifying areas of inefficiency, and providing tailored solutions to optimize energy utilization. It also establishes stringent energy efficiency standards and benchmarks and champions best practices across building design, construction, and day-to-day operations. Under BEEP, EESL is transforming commercial as well as government buildings in India into energy efficient complexes by retrofitting conventional appliances – mainly lighting and air-conditioning systems – with energy efficient alternatives. BEEP has proved very effective, yielding energy savings in the range of 21-51 percent, depending on various operational factors.

Energy efficiency – in the areas of street lighting, retrofitting, and smart metering – is already a key element of the development of smart cities and urban development projects. The benefits of energy efficiency should, of course, not be limited to cities but should reach even the remotest regions in the country. True to this thought, EESL has undertaken a program to improve carbon neutrality in Ladakh by providing heat-pump-based energy-efficient space heating solutions for small and medium-sized public buildings.



The impacts of our wide-scale energy efficiency programmes are well-documented. The LED bulbs, LED tube lights, and energy-efficient fans distributed under the UJALA scheme have resulted in estimated energy savings of 48.42 billion kWh per year with avoided peak demand of 9,789 MW, GHG emission reduction of 39.30 million t CO₂ per year and estimated annual monetary savings of INR 19,334 crore in consumer electricity bills. Replacing 1.3 crore conventional streetlights with LED lights under the Street Light National Programme has yielded energy savings of 8.76 billion kWh per year, avoided peak demand of 1,460 MW, reduced greenhouse gas emissions by 6.03 million t CO₂ per year, and saved INR 6,135 crore in the electricity bills of municipalities. The BEE 5-star energy-efficient agricultural pumps implemented under the Agriculture Demand Side Management (AgDSM) Programme ensure a minimum of 30 percent

reduction in energy consumption. EESL has replaced more than 1 Lakh Agriculture pumps in PAN India. These are impressive numbers, and they make a strong case for promoting energy efficiency in sectors and segments that have been hitherto untouched by it.

In the years ahead, we shall see energy efficiency permeate all domains – personal, commercial, and industrial – in many forms. We are no longer new or averse to the idea of integrating new technologies into our daily lives. Let us similarly embrace the energy efficiency movement with open arms and contribute, in our own capacity, to addressing one of the most pressing needs of our time.



Energy Updates – March 2024

Govt Approves India-Bhutan Pact On Energy Efficiency, Conservation

The Union Cabinet, led by Prime Minister Narendra Modi, granted ex post facto approval to an initial agreement between India and Bhutan regarding collaboration on energy efficiency and conservation measures. The memorandum of understanding (MoU) was signed between India's Bureau of Energy Efficiency under the Ministry of Power and Bhutan's Department of Energy under the Ministry of Energy and Natural Resources. This MoU aims to extend cooperation between the two nations in the realm of energy efficiency and conservation measures, as outlined in an official statement.

Potential For India And UAE To Collaborate In Renewable Energy Sector

A recent report by the UAE-India Business Council (UIBC) and Nangia Andersen underscores the potential for enhanced collaboration between India and the United Arab Emirates (UAE) in the renewable energy domain. Highlighting robust policy frameworks in both nations, such as India's National Solar Mission and the UAE's Energy Strategy 2050, the report emphasizes opportunities for joint efforts in scaling up solar and wind power capabilities, deploying advanced energy storage technologies, and advancing grid solutions. The report also recommends bilateral collaboration in areas such as hybrid renewable energy systems, exploring new frontiers of ocean and geothermal energy, and skilling the necessary manpower.

India's Renewable Energy Transition Key to Balancing Growth and Emissions

India's burgeoning economic growth is accompanied by a surge in industrial, construction, and transportation activities, driving up per capita power consumption and primary energy demand. However, the nation faces the challenge of balancing energy security with climate change concerns, given

its heavy reliance on energy imports and high carbon emissions. With renewable energy at the forefront of its strategy, India aims to increase its share of electricity generation from renewables to 50–70% by 2040, primarily focusing on solar and wind energy due to their vast potential and lower emissions. Efforts to promote clean energy alternatives like hydrogen and electric vehicles, coupled with incentives for energy conservation in agriculture and other sectors, are vital for India's sustainable energy transition and economic growth.

Government Finalizes Viability Gap Funding Scheme to Boost Battery Energy Storage Systems

The Union Minister for Power and New & Renewable Energy, Shri R. K. Singh recently led a meeting in New Delhi to finalize the operational structure for a Viability Gap Funding (VGF) scheme aimed at developing Battery Energy Storage Systems (BESS) with a capacity of 4,000 MegawattHours (MWh). Hon'ble Minister emphasized the decreasing cost of BESS and the necessity of leveraging them to meet the burgeoning power demand and facilitate energy transition. Highlighting the imperative of storing surplus solar and wind energy for future utilization, he underscored the government's role in creating conducive frameworks for investment.

Government Launches Electric-Mobility Promotion Scheme 2024 With Rs 500 Crore Outlay

On Wednesday, the central government unveiled the Electric-Mobility Promotion Scheme 2024 (EMPS 2024) with a budget of Rs 500 crore for a four-month period starting April 2024, aimed at promoting e-mobility in the country. Heavy Industries Minister Mahendra Nath Pandey affirmed the government's commitment to advancing e-mobility, particularly targeting two-wheelers and three-wheelers. With the conclusion of the second phase of the Faster Adoption and Manufacturing of Electric Vehicles (FAME-II) program on March 31, 2024, EMPS 2024 will span until July 2024, offering financial incentives of



up to Rs 10,000 for two-wheelers and Rs 25,000 for small three-wheelers to support the purchase of

approximately 3.3 lakh two-wheelers and aid in the adoption of electric mobility solutions.

Key EESL event highlights

EESL wins accolades at 10th Governance Now PSU Awards



EESL

Empowered women,
Empower the world.

:Invest in Women
:Accelerate progress

Strong Women,
Strong World



WOMEN'S DAY
2024



Address: **Energy Efficiency Services Limited (EESL)**
5th, 6th & 7th Floor, Core -III, Scope Complex,
7 - Lodhi Road, New Delhi - 110003

Phone: **011-45801260**

Website: **www.eeslindia.org**

FOR EDITORIAL DETAILS AND ADVERTISEMENT ENQUIRIES

✉ amishra@eesl.co.in

☎ 011- 45801260