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INNOVATING ENERGY

"Women in Energy Sector"

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IN FOCUS

Top energy trends from India & across the globe

Editor's Note

Ritu Singh
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Dear Reader,

Adoption of clean energy solutions as one of the pathways to sustainability has gained considerable attention in the past few years. One of the imperatives now is to enhance the inclusivity in the clean energy space by promoting women participation, especially in sectors such as construction, renewable energy, manufacturing and public transportation that are crucial to clean energy.

The factors governing the low representation are women's inadequate access to technical and skills training, safety and security concerns at the project sites and misperception of women capabilities in some roles. Further, the Covid-19 pandemic has disproportionately affected the women across the world. The gender gap in employment opportunities and remuneration has widened. The Global Gender Gap Report of 2021 shows India at 140 th rank (out of total 156 countries) in gender gap with a score of 62.5% in 2020. The gap has widened by more than 4%, with India falling almost 28 ranks from the previous year. One of the most pressing areas for advancement is the economic participation and opportunity. There are only 29.2% of technical roles held by women and the presence of women in senior roles is even more rare at just 14.6%.

India is home to 0.65 billion women and empowering them to participate in nation's economy is crucial. Thus, entrepreneurial and employment opportunities for women in the energy sector can play a vital role. The government's commitment to installing 175 GW of renewable energy by 2022 has ample potential to create sustainable job opportunities for women in the wind and solar energy sector.

Persistent awareness drive by stakeholders and government policies on promotion of gender equality has ensued significant and visible shift in people's mindset. The so called male dominant industries are breaking stereotypes and challenging the status quo. Companies of automobile sector, such as Tata Motors, M&M, TVS Motors, Bajaj Auto, Hero and MG Motors have taken steps to increase the number of women employees. These companies have realised that gender has nothing to do with a person's capabilities; potential and skills are all that matter.

This newsletter edition covers the trailblazing women executives and their contributions in energy value chain. The edition features the entrepreneurial journey of a woman led startup, focusing on disruptive technology to power India's EV journey; showcases the significant contribution of a woman executive who has worked in various capacities towards green habitat building and making them resilient to the mutable power and electrical systems; underpins the effort of a woman executive in unlocking the potential of the U.S.-India relationship to enable Indian states have access to international expertise, tools, and resources to accelerate their decarbonization, and the final article showcases the gamut of initiatives taken by EESL to keep its employees motivated, while also moving forward in a structured way to include more women in the organization.

The clean energy sector offers an ocean of opportunities for empowerment of women through employment. The imperative now is to create inclusive workplaces, foster opportunities to enable women to rise to leadership positions and facilitate sector specific upskilling and reskilling opportunities for women.

Developing solutions to power India's EV future

Srujana Raghupatruni
Founder and CEO
Cellerite Systems Pvt. Ltd.

For most part of my career, I have been involved in the research and development of power systems, battery energy storage systems, electric vehicles, and power quality. Post completion of Masters from IIT Delhi, the transition to R & D has been natural however, venturing into manufacturing sector is challenge filled. Some felt another service sector startup would be very easy to run and grow. I chose to take the road less travelled.

My entrepreneurial journey began in 2017, when I saw the pollution and the traffic congestion in my hometown, Visakhapatnam. I believed that transitioning to electric vehicles (EVs) could reduce pollution to a great extent. I soon realized that people were hesitant of switching to EVs owing to difficulties in charging. It was with the idea of addressing this problem that I established Cellerite Systems in April 2018.

Cellerite Systems (founded by IIT and IISc Alumni) is a deep tech company focusing on developing disruptive technologies for battery charging. We are fostering innovative charging solutions in electric vehicles, UAVs, industrial equipment, robotics, etc..

The core of the product development is based on the design of chargers to revolutionize charging for electric two-wheelers and three-wheelers. We are currently developing a range of products to reduce charging time, increase availability of public charging points, contactless charging and to make portable chargers more handy.

Our fast charging products are based on AI/ML driven intelligent charging with enhanced parameters monitoring for optimal charging experience. We are continuously innovating in power conversion and charging algorithms to accommodate parameters like temperature rise.

To increase availability of charging points for 2W and 3W we are rolling out two products –charzbox and charpost. Charzbox is a peer-to-peer charging product that can be installed at the premises of individuals/ organizations. These entities earn income from the installed charzboxes and EV users can pay on the go for charging. This product is being currently piloted and we plan to roll out around 5000 units in the next quarter.

Charpost is retrofitting electric poles/lamp posts to provide for charging points. Post approvals and regulatory clearances, we are looking to launch it in first quarter next year.

Our contactless charging solution, WiChar is based on inductive power transfer technology to charge EVs upto 700W power range. We are looking to collaborate with vehicle OEMs to co-create this solution.

Our another product - Recharze is renewable energy integrated charging solution for residential charging. Currently we are developing chargers integrated with solar panels for off-grid/remote charging requirements.

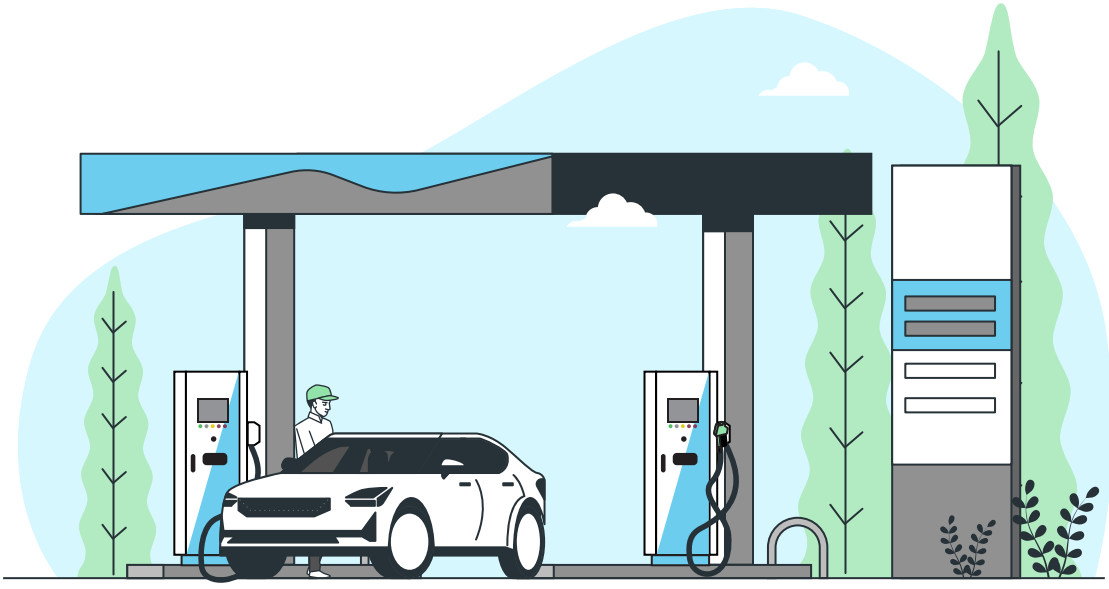
Our portable residential chargers are being further enhanced with state-of-art improvements in power conversion to reduce size making them handy and lighter to carry along.

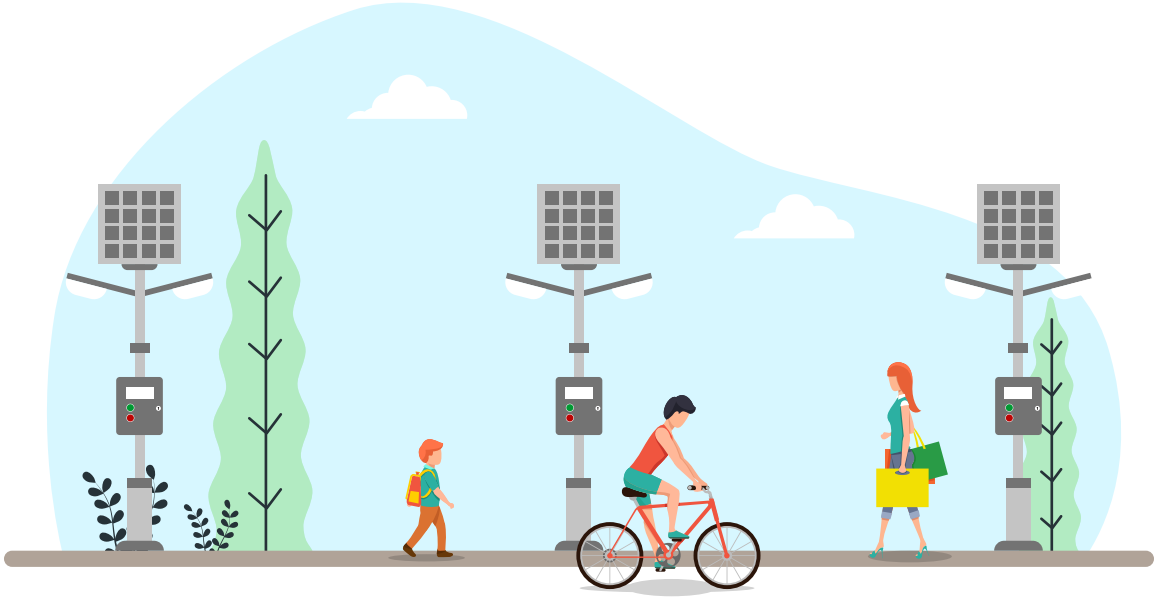
As a startup, we faced challenges with finding skilled talent and procuring specific components in low volumes. However, we overcome those by imparting trainings to students and faculty members to bridge the skill gaps, and by working with a few, trusted vendors for our component procurement needs, with a Plan B for contingencies.

The government's FAME II scheme mandates EV carmakers to have at least 50 percent of the components manufactured in India. By offering our portable charger to Indian OEMs, Cellerite Systems is taking India a step closer to becoming self-reliant. As a for-profit social enterprise, we are committed to reinvesting most of our profits for furthering our social mission.

Cellerite Systems is recognized by GOI under the Startup India scheme. We have been accepted into the 2019 Climate Launchpad Programme. Cellerite Systems is part of the first cohort of Community Slate (supported by We-HUB and Australian Consulate). We received a seed grant from POWERED Accelerator supported by Shell Foundation, DST and DFID.

We are working to fueling EVs and aspirations of better tomorrow!! As a for-profit social enterprise, we commit to reinvesting most of our profits to further our social mission.





My professional journey in the space of greener habitats

Mili Majumdar

Senior Vice President, U.S Green Building Council and Managing Director, Green Business Certification Institute, India

Together, the global Covid pandemic and the rapidly increasing and proliferating climate change have renewed consumer interest in buildings and spaces that promote health, wellness, resiliency, and sustainability. Green buildings, cities, and communities express holistic strategies and principles promote economic, human, and environmental health and wellness. As the last two years have shown, these are the need of the hour.

My work at the US Green Building Council (US-GBC) and the Green Business Certification Institute (GBCI) is aimed at bringing the benefits of green habitats to the entire range of Urban Development work, starting from buildings up to communities and cities. The next generation of green building will operate a wide range of distributed energy resources and microgrids that will make buildings valuable resources to our power grids. The two leading programs – LEED (Leadership and Environmental Design) and PEER (Performance Excellence in Electricity Renewal) focusses on advancing reliability and resilience strategies in power and electrical system.

LEED is the most widely used green building rating system in the world. LEED certification ensures electricity cost savings, lower carbon emissions and healthier environments for the places we live, work, learn, and play. As of today, more than 200 cities and communities spread across USA, Latin America, China, UAE and Europe are part of the certification programme. PEER is a leadership standard that focuses on improving power system performance and electricity infrastructure. PEER has successfully been completed by DMRC (Delhi Metro Rail Corporation), Delhi airport, Bangalore airport, Tata Power Distribution Ltd, Electric Plant Board of the city of Glasgow, University of Texas at Austin to name a few.

At USGBC, I lead several programs at a global level, which have enabled major market transformation in the implementation of energy efficiency and renewable energy integration. Our work is also responding to a tectonic shift towards greening the grid and moving to cleaner and greener fuels. In particular, electrification is gaining momentum in nations that currently depend on natural gas for heating or cooking. I am also helping design and construct resilient infrastructure for a variety of use cases, including urban heat island management, green infrastructure, stormwater management, power system hardening and resiliency, and climate-resilient housing in vulnerable regions.

This work is supplemented by my on-ground research which informs our future projects. One such research project that I am leading has demonstrated that several well-designed, well-constructed buildings lack proper systems maintenance, which can cause poor indoor environmental quality, thereby triggering health issues.

Strengthening India's Subnational Climate Action

Neelima Jain

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Indian states will play a pivotal role in delivering India's ambitious decarbonization targets. Given their execution capacity and control over local governance and legislation over key sectors, states are well-positioned to serve a leadership role in advancing India's clean energy objectives. And yet, even the most ambitious states must work through various commercial, technical, and policy challenges associated with implementing their plans. In these instances, learning from global peers that share similar ambitions can help build capacity and accelerate sustainable solutions. Thus, the need for mobilizing global resources and partnerships across public, non-profit, and commercial sectors at the state level is now more important than ever.

The Wadhwani Chair at the Center for Strategic and International Studies (CSIS), a non-profit organization founded in 1962 and located in Washington, D.C., aims to unlock the full potential of the U.S.-India relationship. In the United States and India, states remain crucial platforms for mobilizing ideas and offering opportunities for direct connections to learn from one another. However, my work at CSIS has generated insights on a range of barriers that prevent these opportunities from being fully realized. First, Indian states lack equal access to international expertise, tools, and resources to accelerate their decarbonization goals. Second, key global stakeholders are not aware of or aligned with state decarbonization priorities. Finally, in practice, there remains an absence of an institutional channel to cultivate meaningful sub-national collaborations that endure beyond a bilateral dialogue.

Addressing these barriers requires acknowledging the distinct dynamics that operate at sub-national levels and accordingly engaging global peers through an institutional mechanism. In addition, a coherent and sustained strategy can play a vital supportive role in helping both countries and the world meet climate change targets and trigger strategic commercial and academic ties.

CSIS has organized several activities to directly engage U.S. and India's states, including organizing dialogues at multiple public and private forums, hosting peer-learning discussions, and facilitating technical workshops and panels. This process has generated opportunities for subnational collaboration to accelerate and scale up both local and global emission reductions. For instance, the CSIS facilitated several subnational dialogues between GERMI and Colorado Energy Office and provided the initial impetus to the electric vehicle policy making in Gujarat. Similarly, the CSIS facilitated an MoU between the National Association of State Energy Officials representing the 56 governor-designated State and Territory Energy Officials in the United States, and AREAS, representing State Nodal Agencies in India. The MoU establishes a framework for U.S. and Indian states to share priorities, best practices, and strategies to promote clean energy and climate solutions.

Translating these bilateral dialogues into tangible outcomes will require us to continue to nurture an environment conducive for states to institutionalize peer engagements proactively. These institutional relationships will strengthen the systemic abilities of the states to manage information, take new actions, improve efficiencies, form new relationships, and ultimately pursue transformational change at the subnational level.

EESL's commitment to create a more inclusive & equitable energy sector

Harleen Sachdeva
General Manager (HR)
Energy Efficiency Services Limited

As an organisation, EESL has taken several initiatives to motivate its employees, while also investing in creating pathways to include more women into the energy sector. Towards increasing STEM learning among women, EESL has funded opening of five mini science centres in the Delhi-based Girls Govt Schools in Delhi with the support of Samabhavana Society.

EESL has also been regularly providing internship opportunities to young women in the energy efficiency sector thereby providing them exposure on live projects. The organisation has also held multiple trainings at technical institutes to foster awareness about professional opportunities in the Energy Conservation and Energy Efficiency space.

A quiz and painting competition on Energy Conservation Day held by EESL saw healthy response from school students. On the occasion of Women's Day 2021, a webinar by Dr. Sarika Gupta, Senior Consultant- Gynecologic Oncology was organized for female employees focusing on the issues of cancer in women, obesity, and lifestyle management.

A gender report to capture the current status and way forward for the female workforce in the organization was also prepared by HR team. Further, a survey was conducted to understand and capture information related to physical and mental health of EESL's female employees during the pandemic's work-from-home phase, and formulate the policies accordingly.

EESL has conducted regular special programmes for gender sensitization for all its employees. It also tied up with Apollo and Kailash Hospital for providing cashless annual health check-up for all its employees in NCR and all the major cities across India. On the occasion of International Yoga Day (21st June 2021) an online yoga session was conducted for EESL employees and their family members. The session emphasized on importance of lifestyle changes and Pranic breathing for better immunity in current pandemic situation.

EESL's 182-day maternity leave and access to a maximum of two years of Child Care leave till the child reaches the age of 18, underscore the value it places on the health and well-being of its women employees.

EESL also has a medical policy in place, wherein a cover of 10 lakhs has been given as family floater to an individual employee family and the premium is borne by EESL.

During the Covid outbreak, The HR along with the support of other departments took measures on a war footing scale to control the spread and maintain safe environment in office. Proactive measures to contain the Covid spread like touchless sanitiser dispensing, thermal scanning machines, sanitisation on a daily basis etc. were taken by EESL on a fast pace. At the peak of Covid, when the cases were on the rise, 100% work from home was enforced for all its employees. Slowly and gradually, when the situation normalised, roster wise working was started in the office. The HR department along with support of our CMO also arranged and distributed masks to its employees and their families during the shortage Public of supply of masks in the market. A policy of reimbursement of masks, sanitisers and other Covid essentials was formed to ease the financial burden on its employees being incurred in wake of Covid. A special task force was formed to assist the employees and its family members in admission to hospitals, arrangement of beds and oxygen cylinders at the time of scarcity.

Additionally, 3 oxygen concentrators were purchased for our employees and their family members to manage the scarcity of oxygen in the market. A doctor having MD in Pulmonary Medicine, was engaged by EESL for tele-consultation of its employees related to Covid and other issues related to Lung/pulmonary ailments. Two vaccination drives were organised, wherein more than 500+ people in each drive were vaccinated including personnel from the Ministry of Power, NTPC, PFC, REC, Power Grid, SCOPE, Indian Oil etc. With these vaccination camps, EESL ensured that all its front-line workers, which include fleet drivers, streetlight maintenance staff and cleaners, among others were vaccinated swiftly and on priority. A Special Casual Leave Policy was designed for employees who test positive for Covid-19 to take care of their absence due to Covid treatment/home isolation/quarantine. Employees were encouraged to carry out meetings through Video Conferences and avoid physical meetings and travel as far as possible. Furthermore, the entire interview for 70 recruitment positions is being conducted through Video Conferencing and physical interview process is avoided.

Top energy trends from India & across the globe

Global Energy Crunch Leaves China Facing More Power Shortages

China is staring down another winter of power shortages that threaten to upend its economic recovery as a global energy supply crunch sends the price of fuels skyrocketing. The world's second biggest economy is at risk of not having enough coal and natural gas -- used to heat households and power factories -- despite efforts over the past year to stockpile fuel as rivals in North Asia and Europe compete for a finite supply. Demand for heating will jump when temperatures turn colder over the next few months, which could trigger power rationing similar to those seen last winter and over the summer.

https://www.bloombergquint.com/china/global-energy-crunch-leaves-china-facing-more-power-shortages

Adoption of hybrid energy sources key to meet 2050 carbon emission goals

Adoption of hybrid energy sources worldwide can help meet the goal of reaching net zero emissions by 2050, an industry executive said on Friday. Hybrid energy systems are defined as the integration of several types of energy generation equipment such as electrical energy generators, electrical energy storage systems, and renewable energy sources.

https://energy.economictimes.indiatimes.com/news/renewable/adoption-of-hybrid-energy-sources-key-to-meet-2050-carbon-emission-goals/86288747

A More Integrative Approach Needed to Realise Global Energy Access Goals

Despite these successes and promises of the 11 off-grid appliances assessed by Efficiency for Access in their Solar Appliance Technology Briefs, none are close to market saturation. Cross- cutting barriers identified include affordability, availability and the broader enabling environment. Without inclusive finance options, the gap between sales and market potential will persist.

https://www.altenergymag.com/news/2021/09/16/a-more-integrative-approach-needed-to-realise-global-energy-access-goals-/35910

2021 renewable energy industry outlook

In 2020 states, cities, utilities, and businesses continued to announce or pursue decarbonization plans, despite the onset of a global pandemic and an economic recession. Even without a direct incentive for green infrastructure development in the economic stimulus measures passed in response to COVID-19, clean energy demand in the United States proved resilient as renewables and storage recorded declining costs and rising capacity and usage factors. What's more, renewables edged out other electricity generation sources when electric demand fell this year. As of early December, the share of renewables had exceeded that of coal in generation for 153 days compared with 39 days in 2019. According to the US Energy Information Administration (EIA), electricity consumption will likely fall by 3.9% year over year in 2020 and increase 1.3% in 2021.

https://www2.deloitte.com/us/en/pages/energy-and-resources/articles/renewable-energy-outlook.html