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INNOVATING ENERGY

Innovation: Key to fuel energy transition in India

INSIDE STORIES

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EDITOR'S NOTE

Dear Reader,

The rapid rise in urbanisation and population growth is making the old energy system increasingly stressed. In India, the energy ecosystem is undergoing an evolution of its own, in terms of energy use, sources, business models and operations. The advent of digital solutions such as smart metering and the rise of inventive financial models has begun a transformation in the sector. This shift is vital for keeping India on the path of sustainable development. What we need now, is an injection of fresh ideas and pioneering energy solutions.

This newsletter touches upon the very critical aspect of innovation. In 'InnovateToINSPIRE - Ushering the next wave of Innovation' we try and understand the importance of nurturing new ideas from upcoming innovators, through platforms like InnovateToINSPIRE. It is a part of EESL's annual conference INSPIRE, which is aimed at showcasing innovation and implementation of best practices in energy efficiency technologies, policies and financing.

We then move to highly relevant topic of domestic manufacturing in "Importance of Innovation in accelerating the Make in India drive', where we discuss how its growth is rooted in innovation, especially in the areas of R&D. In 'Transforming Indian energy market with a bespoke approach' we discuss the need for innovation in business models and approach. We talk about how a one size fits all approach is not appropriate and that solutions have to be tailored carefully and reinforced in the understanding of local challenges.

The article, 'Accelerating clean energy innovation to curb climate crisis' looks beyond the realms of technological innovation, and builds a case for innovation in business models, investment and regulations. Meanwhile, in 'Importance of innovation in EE industry in post Covid19 era', we trace the correlation between innovation and post-Covid recovery of the energy sector. And finally, in 'Operational Innovation transforming organisations', we take a look at how organisations can be transformed through innovation at a granular level, by overhauling processes, organizational structure and talent.

Thus, as India's climate action and energy transition efforts gather steam, the role of innovation becomes increasingly pivotal. New and innovative solutions that can tackle future roadblocks and usher in a cleaner, greener tomorrow have to be cultivated and provided the right stimulus to succeed.

Steven Fawkes
Managing Partner, EnergyPro Ltd &
Director, EESL Energy Pro Assets Ltd

Accelerating clean energy innovation to curb climate crisis

The magnitude of the climate crisis is now clear, and governments, corporates and investors around the world have set targets for reducing emissions by scaling up renewables and energy efficiency, and switching investment from fossil fuels to clean energy. The new reality, one that has not yet been totally recognised, is that clean energy is a sound investment that produces real financial returns. New PV plants are under-cutting even existing coal fired plants in some markets – we will soon see 'coal for solar swaps' where investors build solar plant specifically to make coal plants uneconomic. As well as the financial benefits that can come from investing in clean energy there are massive social benefits ranging from cleaner air and improved quality of life that come from making modern energy systems available to more people at lower cost.

The direction of the energy transition is clear; increasing use of renewables, increasing decentralisation, increasing efficiency, increasing digitisation, increasing flexibility and increasing electrification. The challenge is to accelerate the rate of change. Although technical innovation is important, we know that technologies – particularly in the energy field - take decades to progress from idea through to commercialisation. To accelerate change quickly we need innovation in business models, investment and regulations.

The new realities demand new service based business models. Customers don't want energy, they want the services it delivers like mobility or comfort. Combining decentralised renewables, batteries and efficient demand side technologies such as LED lighting and induction cooking into a financed service business model can provide those services cheaper than conventional models which use separate and very different organisations and systems. These models can also produce layers of benefits including ancillary service to the grid. EESL is on the cutting edge of developing these models in India.

To meet the climate challenge we need to massively scale-up these new models. To do so also requires two other types of innovation. In investment, we need to combine public funds in smart ways with the much larger flows of private capital through focused investment platforms. In regulation we need to innovate to design a regulatory environment that is fit for the new world of energy rather than the old world.

Innovating business models, investment and regulations together is a major challenge. However the prize of curbing the climate crisis makes it one worth taking on in the way that India and EESL is doing.

Venkatesh Dwivedi
Director (Projects)
EESL

InnovateToINSPIRE - Ushering the next wave of Innovation

We are at a crucial juncture in our efforts to mitigate climate change and curb the emission levels. There has been a rise in global advocacy around sustainability and clean energy solutions. We have seen a marked uptick in adoption of renewable energy sources and energy efficiency, across the globe. India is one of the front runners in this regard, and has pledged to reduce its emissions intensity of its GDP by 33-35% by 2030 from 2005 levels, and achieve 40% of its cumulative electric power of around 350GW installed capacity from non-fossil fuel-based energy resources, mainly renewable power.

To achieve these ambitious goals, we need agile, innovative and scalable solutions that can effectively navigate the highly mutable energy ecosystem. India has been leading the charge in both innovation and climate action. At COP25, it was the only major economy to be 'two degrees compatible and it has also surged up the innovation ladder, landing in the 48th place in Global Innovation Index. It has jumped almost 12 positions, in a span of just three years.

New and innovative energy solutions are winds behind the sail for the increase in the universal access to sustainable energy, paving a pathway to a low carbon future. Innovation can fuel the scaling and rapid implementation of clean energy solutions, with technological innovation being the driving force.

In fact, the International Renewable Energy Agency states that technological advances are needed to reduce carbon emissions in the energy sector. Despite the advent of affordable and scalable energy solutions, more has to be done. This is because the explosive population growth can still potentially outpace our clean energy efforts. Thus, perpetual innovation is not just valuable, but imperative.

What we need are platforms that can act as incubators for future initiatives and policies. This is where platforms like InnovateToINSPIRE gain immense significance. It is a part of EESL's annual conference - 'International Symposium to Promote Innovation & Research in Energy Efficiency (INSPIRE), which is aimed at showcasing innovation and implementation of best practices in energy efficiency technologies, policies and financing. The InnovateToINSPIRE challenge seeks to identify and support innovative technologies and business models that address specific challenges in energy transition and invites participants to submit sustainable and scalable solutions.

The challenge acts as a conduit between fledgling innovators with innovative ideas and relevant stakeholders. These ideas, with the right support can be the herald of the next wave of energy solutions and foundation for future policy interventions. In its previous iterations, InnovateToINSPIRE has witnessed path breaking ideas, with remarkable potential for growth and impact. It has brought together, under one roof global sectoral experts, innovators, investors and policymakers, helping drive insightful discourse on energy transition.

We are at the precipice of our climate action, wherein the collaborative efforts of the government and other stakeholders have borne fruit. However, new and innovative solutions are still vital for overcoming future barriers and keeping pace with population growth. The key to a sustainable future lies with innovation.

Starlene Sharma
Co-Founder & Managing Partner
Green Artha

Importance of innovation in EE industry in post Covid19 era

Energy efficiency, or the use of less energy to obtain the same or better result, is one of the most environmentally impactful climate interventions. While simplistic at the surface, human behavior is hard to change at scale unless the alternative is dramatically better. In a (post) covid world, the role of energy efficiency is amplified: beyond climate change and public health, energy efficiency has a direct impact on economic recovery, economic opportunity and long-term economic competitiveness.

As households, small businesses, corporates and government look to recover, energy efficiency is an obvious solution to save costs and add jobs, especially when paired with access to financing through models like EESL. However, products and services that were unpopular before the pandemic will remain so. In times of scarcity, innovation is more important than ever to provide the products, services and financing that will enable people to get more for less (energy).

Already accounting for the largest proportion of energy consumption in commercial and residential scenarios, the opportunity in cooling is particularly relevant. Centralized systems require modification to combat the spread of covid and other airborne disease. Energy efficiency is a way to pay for these retrofits overtime and through savings.

India's heavy industries like cement, iron and steel are leaders in adopting innovations that increase energy efficiency; however the largest opportunities are in the less energy intensive industries where energy intensity could more than halve. India excels in developing innovative energy efficient solutions for business and industry and could leverage these capabilities to amplify energy and cost savings while creating more jobs.

Covid and geopolitical uncertainties have resulted in new opportunities for India as economies and companies from around the world look to diversify supply chains. Many consider India an obvious alternative to manufacturing in China but the price of energy is a concern. Despite having one of the lowest costs of electricity generation globally, grid energy in India is amongst the most expensive for commercial and industrial users.

Innovations in energy efficient building paired with newer energy efficient systems and processes can offset some costs. Distributed solar with storage and other hybrid minigrids offer an immediate solution while innovation in smart meters and demand side management can reduce AT&C losses and increase energy efficiency at the grid level.

To benefit from the challenge that Covid has presented, it is imperative to invest in and support innovations that will increase energy efficiency and the adoption of energy efficient technologies – for the economy, for jobs and for the planet.

Suvojoy Sengupta
McKinsey & Company, India

Bhuvan Sharma
McKinsey & Company, India

Ketav Mehta
McKinsey & Company, India

Operational Innovation transforming organizations

The global energy industry is witnessing an unprecedented rate of change, driven by rapidly evolving technology, regulatory/policy changes, and convergence of traditionally separate value chains.

Traditional energy and utility companies are asset focused and are usually designed to maximize scale and efficiency. In face of rapidly changing business imperatives and competition from startup challenger models, they are forced to re-think their organization, capabilities and business models. McKinsey's work with energy companies across multiple countries points to three types of operational innovation pursued by energy companies.

Innovation in organizational structure

New business models require agile and streamlined decision making. To enable this, several energy companies create different BUs or subsidiaries to house the new businesses. For instance, Enel has two businesses - EnelX (with business units such as smart homes, B2B services like energy efficiency, smart cities and e-mobility) and Enel Green Power (solar, wind, hydro, etc.).

A separate entity also helps unlock higher valuation/ multiples when listed. For example, Adani Green Energy Limited commands a significantly valuation higher multiple than Adani Power and other India-listed power sector companies.

Innovation in capabilities and talent

Capability building strategies are grounded in how an organization creates value. Organizations focus on individuals and cohorts with highest impact on value. Also, the focus is on the skills (e.g., leadership, functional, technical) that have greatest impact on performance objectives.

After role identification, the incumbent's learning journey is tailored to skills and knowledge needed for a specific "job". Microlearning and mobile learning can be used to deliver short and personalized content. For example, a retail bank transformed its branch-level service operations using a customized blended learning approach (instructor-led, digitally-enabled roll-out and in-person sessions).

The learning improvements are measured frequently using diagnostic instruments and learning analytics that help establish baselines and reinforce continuous learning.

Recent trends show that organizations are taking a partnership approach to capability building. Some examples include:

- Partnering with leading Massive Open Online Courses (MOOC): ITC, GE and Tech Mahindra are using them for their executives
- Partnering with research institutions: More and more companies are partnering for R&D with research institutions e.g. Pfizer and Philips Healthcare.

Innovation in processes

Traditional energy companies are increasingly adopting Agile concepts in simplifying processes and accelerating decision making and responsiveness. Such companies have made strides in removing internal silos and embracing cross functional teams with shared targets and goals. Agile organizations have been able to accelerate adoption of new technologies and changes to business models - as we have seen during the COVID lockdown period. McKinsey's experience indicates that organizations with agile teams were able to respond and adapt faster to rapidly changing conditions, reach out to customers and employees in innovative ways and adjust their operating model more efficiently.

The above innovations are fundamentally different from traditional asset centric view of energy businesses. As every part of the energy value chain undergo unprecedented change, and new disruptive competitors emerge, energy companies will need to constantly innovate, adapt their structure, capabilities and processes to succeed.

S.P Garnaik
Executive Director
EESL

Transforming Indian energy market with a bespoke approach

The global energy landscape has been in a state of flux for the past few years. With a rising awareness around climate change and inevitable exhaustion of finite resources such as fossil fuels, we have gradually begun moving towards alternate energy avenues. India has also been undergoing an energy transition of its own. In a Climatescope report, India ranked second among the emerging economies to lead to transition to clean energy. As of February 2020, the installed renewable energy capacity in India was 86.75 GW, as it moves swiftly towards its target of 175 GW of renewable energy capacity by 2022. Energy efficiency too has been a pivotal instrument of achieving India's climate and economic goals. A recent BEE report on the Impact of Energy Efficiency Measures in India for 2018-19, places the quantum of electricity savings at 136 Billion Units. Energy efficiency has permeated a host of sectors in India, such as transport, building, power and lighting amongst others.

India is fast tracking the creation of a robust energy sector, with the understanding that it is perhaps the first requisite for any country, which is looking to prosper economically, albeit in ecologically viable manner. Thus, India is rapidly transforming its energy sector, in terms of energy efficiency and renewable power injection. New and innovative energy solutions have been responsible for increase in the universal access to sustainable energy solutions that are enabling a low carbon future, with significant economic and social impact.

However, these solutions have to keep in mind the vast diversity in India's topography, use cases and localised challenges. They have to be curated and steeped in the understanding of the roadblocks such as financial constraints and a lack of awareness around new technologies, among others. Taking the example of smart metering, Indian DISCOMs have traditionally been plagued with losses and the adoption of a new technology such as Advanced Metering Infrastructure (AMI) might have seemed risky at the first glance. There might also be trepidation around adopting an untested solution. For this, EESL, who is responsible for the implementation of AMI in India adopted a unique model of Pay-As-You- Save (PAYS). This model eliminated upfront payments for DISCOMs, allowing them to pay EESL from the savings over the years. This led to a considerable reduction in risk for DISCOMs, making smart metering a lucrative proposition.

Similarly, the implementation of decentralised solar in rural areas had to take in consideration a myriad of challenges. The electricity had to be low cost, supplied during the daytime and still make financial sense for both, the DISCOMs as well as the farmers. This barrier was surmounted using a unique business model by EESL. For this, all capex and opex was funded by EESL up-front and recovered from the DISCOMs over the course of the project period. The power generated was purchased by the DISCOMs by entering into a long term Power Purchase Agreement (PPA). EESL then installed the power plants and maintains them, with the energy generated from the projects being sold back to DISCOM at affordable rates. This greatly reduced the cost of electricity and the lack of dependence on traditional power sources helped provide reliable daytime electricity to farmers.

Thus, it is imperative for India to continue devising innovative solutions to cater to the varied energy use cases in the country. There, however cannot be a one size fits all approach to intricate challenges like climate change. Having a wider spectrum of bespoke solutions is the way forward.

Rahul Gonsalves
CEO
Darwyn Ventures

Innovation: A key accelerator for "Make In India" drive

Since the onset of the COVID-19 pandemic, most economies of the world have gone into "self-preservation mode", making it extremely important to focus on recovery and sustained growth. A market as large as India offers the advantage of self-consumption and, hence, self-creation. The "Make In India" drive, which seemed liked it wasn't going as per plan, has been fast-tracked in 2020. After the pharma industry, the industries for electric vehicles and renewable energy are the largest ones to benefit from this change catalyzed by COVID-19. The reliance of these industries on the Red Dragon had been debated for years, anyway.

The need of the hour, however, is not just the domestic creation of value but also the creation of domestic value. In simple terms, if India wishes to vie for first place in becoming "the factory of the world" with strong domestic and export markets, then focus on innovation will hold the key – innovation in creating and protecting intellectual property; innovation in the way we build brands; and innovation in the way we communicate.

The ideal roadmap to creating domestic value will come from first capturing research, which is the source of true innovation. India has historically lagged its closest competitors when it comes to investing in research; it has loosely been regarded as the importer of soft-skill jobs. However, with the Atmanirbhar Bharat initiative announced by Prime Minister Shri Narendra Modi, small and large companies are being nudged in the direction of research and owning intellectual property. The next decade might even see a global brand coming out of India.

Policy, taxation, and a progressive business environment might just be the chink in the armour of India's growth story. Companies have been trying to solve the riddle of navigating the complex – and rather primitive – tax and business code in the country. Many have been tempted to pack their bags and leave, putting a big question mark on jobs and market expansion. The innovators and the Davids in the startup space, with their relentless focus on innovation, might just be the answer to dethroning the Goliaths in the Indian market.

The "Make In India" initiative is all set to revolutionize the way Indian brands are built. I am very excited to see what is in store. Aren't you?

Rajat Sud joins as EESL's Managing Director

Mr Rajat Sud has joined as the Managing Director at Energy Efficiency Services Limited (EESL), a joint venture of PSUs under the Ministry of Power, Government of India.

Mr Sud has around three decades of experience in the energy sector and has led restructuring programmes that have led to structural changes and marked performance improvement. Mr Sud has previously served as the EVP at Sterlite Power Pvt Ltd, where he was responsible for the growth of the services business, with a focus on providing solutions for enhancing power delivery through congested transmission lines and corridors. He has also held leadership positions at Siemens IT solutions and PWC.

Mr Sud has vast experience in the realms of energy sector restructuring, performance improvement and acquisitions. He has also been a driving force in securing international consulting engagements and ushering in reforms in the Indian power sector, where he played a pivotal role in the unbundling of state-owned utilities. His expertise, exhaustive domain knowledge and rich experience in driving large scale energy solutions will enable EESL in setting new benchmarks in the energy efficiency space.

About EESL: Energy Efficiency Services Limited (EESL), under the administration of Ministry of Power, Government of India, is working towards mainstreaming energy efficiency and is implementing the world's largest energy efficiency portfolio in the country. Driven by the mission of Enabling More – more transparency, more transformation, and more innovation, EESL aims to create market access for efficient and future-ready transformative solutions that create a win-win situation for every stakeholder. EESL has pioneered innovative business approaches to successfully roll-out large-scale programs that allow for incentive alignment across the value chain and rapidly drive transformative impact. EESL aims to leverage this implementation experience and explore new overseas market opportunities for diversification of its portfolio. As on date, EESL has begun its operations in UK, South Asia and South-East Asia.

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