

ENERGY EFFICIENCY SERVICES LIMITED A JV of PSUs under the Ministry of Power

INNOVATING ENERGY AUGUST 2020 | EDITION 20

"Building an energy secure & resilient rural India"

INSIDE STORIES



Editor's Note S. P. Garnaik, Business Unit Head (Lighting), Energy Efficiency Services Limited (EESL)



Atal Jyoti Yojana (AJAY): Roshan gramin bharat

Prince Raj, Member of Parliament (Lok Sabha), Samastipur, Bihar



Manufacturing in India – Path towards AtmaNirbharta

Braj Kishor Mohanka, CMD, Gautam Solar Private Limited



Brightening India's hinterlands with Rural LED Street Lighting Programme



Gram Swaraj Abhiyan: Reaching grassroots



Lighting up lives in rural India with AJAY – An Impact Assessment Study



EESL raises the bar with two pioneering initiatives - RAISE & India's first public EV charging Plaza

Editor's Note S. P. Garnaik, Business Unit Head (Lighting), Energy Efficiency Services Limited (EESL)

Dear Reader,

India has been spearheading the global charge towards sustainable development and decarbonisation. Over the past decade, its energy efficiency and renewable power programmes have been highly successful, culminating into India becoming the only major country to be '2 degrees compatible' at COP 25. This bodes well for the nation, and provides stimulus for more investment, growth and scale in green projects. The success though, hasn't been limited to just the major urban centres. India's hinterlands too have benefited immensely, thanks to some carefully developed bespoke schemes, which address the various pain-points of the rural populace.

The traditionally energy dark rural areas of India have been electrified, while the dark streets are now brightly lit. Impactful rural schemes such as Atal Jyoti Yojana (AJAY), Solar Study Lamps Scheme, Rural Street Lighting Programme and Gram Swaraj Abhiyan (both I & II) have led to a rise in economic activity, employment and safety for the rural denizens. In this newsletter, we seek to explore the incredible impact of these schemes and delve deep into their current execution and future roadmap. We take in depth insights into the 'Gram Swaraj Abhiyan' campaign, which was aimed at promoting social harmony and spreading awareness about pro-poor initiatives of the government. 'AJAY: Illuminating rural India' shines the spotlight on the Atal Jyoti Yojana and how it brightened the traditionally energy dark regions, with better public illumination and civic infrastructure. The article 'Manufacturing in India – Path towards AtmaNirbharta' takes a look at the AJAY initiative, from the lens of Atma Nirbharta and indigenous manufacturing. We also dwell briefly upon the impact of the AJAY initiative, in a short summary of EESL's recently unveiled "IMPACT ASSESSMENT REPORT." We also take a broader view of the impact and potential of the EESL's Rural Street Lighting Programme and how it can bring about a mass-scale transformation in rural India, by utilising innovative business models.

The aforementioned novel schemes are helping rural India in becoming an integral part of the nation's energy revolution. The coming years will witness more such projects, making India's hinterlands increasingly energy secure, economically stable and prosperous.

In addition, this edition of our monthly newsletter also highlights the two recent initiatives by EESL, namely the RAISE programme and development and launch of India's first and one of its kind public EV charging plaza.

Atal Jyoti Yojana (AJAY): Roshan gramin bharat

Prince Raj, Member of Parliament (Lok Sabha), Samastipur, Bihar

सदस्य :-



प्रिंस राज संसद सदस्य (लोक सभा)

सलाहाकार समिति - युवा एवं खेल मंत्रालय

संसदीय समिति, लोक सभा - अ. जा./

अ. ज. ज. कल्याण समिति

स्थाई समिति - सामाजिक एवं सश्क्तिकरण मंत्रालय

पत्रांक नं. : MP/LS/PR/064/

अटल ज्योति योजना (अजय) ः रोशन ग्रमीण भारत

ऊर्जा दक्षता और नवीकरणीय ऊर्जा ने भारत को स्वच्छ और सतत भविष्य की दिशा में आगे बढ़ाने का काम किया है। धीरे-धीरे इन क्षेत्रो में भारत के ठोस प्रयासों का प्रभाव हमारे देश के दूर-दराज़ के इलाकों तक पहुंच गया है। सरकार के लक्षित ऊर्जा कार्यक्रमों की व्यवस्थित श्रंखला ने शहरी आवादी से परे जाकर दुसरे इलाकों तक फायदा पहुंचाया है। भारत के ग्रमीण और अर्थ -शहरी क्षेत्रों को अधिक ऊर्जा सुरक्षा और निरंतर बिजली आपूर्ति से लाम हुआ है। रोशनी की बेहतर सार्वजनिक व्यवस्था और नागरिक बुनियादी ढाँचे के जरिए लंबे समय से अंधेरे में रह रहे इलाकों को रोशन करने पर भी ध्यान दिया गया है।

नवीन और नवीकरणीय ऊर्जा गंत्रालय (एम एन आर ई) द्वारा लाई गई अटल ज्योति योजना (अजय) ऐसी ही अनुठी पहल है, जिसे एनर्जी एफिशिएंसी सर्वि सेज लिमिटेड (ई ई एस एल) लागू कर रहा है। उत्तर प्रदेश, असम, विहार, उत्तराखंड, ओडिशा, झारखंड, राजस्थान, गुजरात, मध्य प्रदेश, मणिपुर, त्रिपुरा, आंध्र प्रदेश, कर्नाटक, और लक्षद्वीप (द्वीप) राज्यों के ग्रामीण और अर्ध- शहरी क्षेत्रों को रोशन करने में इस योजना ने महत्वपूर्ण मूमिका निमाई है।

सदस्य :-संसदीय समिति, लोक समा - अ. जा./ अ. ज. ज. कल्याण समिति स्थाई समिति - सामाजिक एवं सश्वित्तकरण मंत्रालय सलाहाकार समिति - युवा एवं खेल मंत्रालय



प्रिंस राज संसद सदस्य (लोक सभा)

दिनांक :

पत्रांक नं. : MP/LS/PR/064/

* 2 *

इस कार्यक्रम के अंतंगत सौर ऊर्जा चलित एल ई डी स्ट्रीट लाइदस लगाकर पूरे देश में सड़कों को रोशन किया और नागरिकों के जीवन की गुणवत्ता को बेहतर बनाया गया। इन बेहतरीन लाइदस को प्रमुख सड़कों, बाजारों और सार्व जनिक स्थानों पर लगाया गया है, जिससे निवासियों को बहुत से फायदे गिले है। इन फायदों में शामिल है। रोशनी की बेहतर व्यवस्था के कारण संचार और आर्थिक गतिविधियों में वृद्धि, स्थानीय आबादी के लिए रोजगार के अवसरों और कौशल विकास में वृद्धि, गहिला सुरक्षा में उल्लेखनीय सुधार, केरोसीन/डीजल से चलने वाली लाइदस के उपयोग में कमी और उत्सर्जन में कमी के कारण हवा की स्वच्छता में बढ़ोतरी, ग्रिड कनेक्टिविटी सुनिक्षिचत करने के लिए खर्च में कगी, प्रसारण तथा वितरण घाटे में कमी और मीटरिंग से डिस्कॉम की स्थिति में सुधार।

अजय-1 और अजय- 1 1 के अंतेगत लगभग 2.8 लाख सोलर स्ट्रीट लाइटों की स्थापना से लगभग 16 मेगावाट की अतिरिक्त क्षमता बढ़ जाएगी। इसके अलावा, इस योजना में पारंपरिक ग्रिड इलेक्ट्रिसिटी के बजाए नवीकरणीय-ऊर्जा प्रणाली के उपयोग से उत्सर्जन में 100 (CO2 की कमी होगी। इसके साथ ही पीक डिमांड में लगभग 2.5 मेगावाट की कमी आएगी।

ई ई एस एल के ठोस और मेहनती प्रयासों के साथ अग्रणी पहल ने मेरे निर्वा चन क्षेत्र में बेहतर सुरक्षा और आर्थिक समृद्धि का मार्ग प्रशस्त किया है। हमारे देश को बेहतर बनाने के लिए उनके द्वारा किए जा रहे समर्पित प्रयासों के लिए मैं उनको धन्यवाद देता हूँ।

(Den tis)

Manufacturing in India – Path towards AtmaNirbharta Braj Kishor Mohanka, CMD, Gautam Solar Private Limited

The global economy is undergoing a massive change. The immediate trigger for this shift is obviously the ongoing COVID-19 pandemic, but there has been inklings earlier as well, in the form of BREXIT and the speeches of President Trump. Globalisation has helped many economies in a multitude of ways but has also failed to deliver on many other fronts. It has allowed economies to sharpen their focus on things they were really good at, with the exclusion of others. This, however, has led to huge job migrations to "lower cost" countries. And in some cases, like Indian manufacturing, globalisation has also led to the erosion of talent and learning base, which if allowed to nurture could have led to a strong Industrial base.

India has a huge talent and engineering base, however the same lacks exposure and the right direction. Combined with the fact that India is a huge consumer market, it makes for a fiery mixture. On one hand, we have the market potential of a billion plus population and on the other hand we have the raw engineering talent. Put this together, combine it with the right entrepreneurial attitude and environment and Voila! You can create a huge manufacturing base for catering to the said billion plus population.

We saw this firsthand in the case of Atal Jyoti Yojana that was initiated by the Ministry of New and Renewable Energy (MNRE) and executed by Energy Efficiency Services Limited (EESL). While the quantity was good, the tender called for a Lithium Ferrous Battery Pack. Our initial reaction was that we would have to import Battery Management System (BMS), which is essential for protection and balancing of lithium cells. Just to give a better picture, unlike Lead Acid battery cells, a number of lithium cells combined in series cannot balance by themselves. It requires a Power Electronics circuitry to do that. Since this BMS was not being made in India and most of the people were importing the circuitry, we thought we would have to do the same. Even our cell suppliers were urging us to take BMS from known names in the industry there. However, looking at the circuit and understanding its role, our engineering team came to the conclusion that not only can it be made in-house by us, but it can also be made more better cost effectively. Once we had achieved this small feat, we went onto produce a number of such BMS for higher and more complex Lithium Battery packs. In fact, looking at the success of this venture, we have been inclined towards developing and manufacturing most of things ourselves, with the result that today, we manufacture, all major sub components of Solar Lighting and systems – like Solar Panels, Batteries – both lithium & lead acid, Electronics – Drivers, protections, controls, and Steel Structures and Poles in one of our four manufacturing plants.

This direction is especially important in the light of recent aggression by our neighboring country China and the fact that we annually import electronics worth billions of dollars, much of which can be made indigenously. The government's vision of Atma Nirbharta could not have come at a better time, when India needs to create more and more jobs for its people. Now it is up to the entrepreneurs of India to make this dream a reality.

Brightening India's hinterlands with Rural LED Street Lighting Programme

India's streetlights form a crucial component of the nation's investment on lighting and road safety. Launched by the Hon'ble Prime Minister, Shri Narendra Modi in 2015, EESL's Street Light National Programme (SNLP) began with the installation of 91,000 energy efficient LED Streetlights in the state of Andhra Pradesh. Over a span of 5 years, this programme has now surpassed the milestone of installation of more than one crore streetlights across India. Till date, EESL had replaced 1.09 crore LED streetlights across India. This has resulted in estimated energy savings of 7.32 billion kWh per year with avoided peak demand of 1,219 MW and estimated GHG emission reduction of 5.04 million t CO₂ per year.

There is considerable potential for large scale installation of streetlights in rural areas of the country. To bring in mass-scale transformation, unique innovative business models can install almost 3.5 crore streetlights across India's hinterlands. This would lead to a significant infrastructure upgrade for the villages, enabling better illumination, safety and economic activities

In July 2017, EESL has started its journey towards Rural Street Lighting Programme under Street Light National Programme (SNLP) in the state of Andhra Pradesh, with a target to install 10 Lakhs LED street lights in first phase, which eventually rose up to 21.9 lakhs basis the outstanding performance by EESL. Till date, EESL has installed approx. 25 lakh LED streetlights in Andhra Pradesh and Jharkhand and states like Telangana and Uttarakhand are set to implement the rural streetlight programme.

Andhra Pradesh has been the first state to implement the LED Street Lighting project in all of its Gram Panchayats, which contributes to 23% of the entire LED streetlights installed in India and 75% of the entire LED streetlights installed in Andhra Pradesh. The programme has also created employment opportunities for more than 1100 people in the state.

Under the Rural Street Lighting Programme, EESL has been instrumental in retrofitting 25 lakh streetlights across India as of now. This has resulted in estimated energy savings of 277 MUs per year, with avoided peak demand of 70 MW and estimated GHG emission reduction of 0.2 million tCO₂.

It is evident that we can rapidly strengthen the rural infrastructure in a clean and sustainable manner, which can then create a resilient and sustainable rural community. A clear and coherent roadmap, along with synergies between the government, private sector and financial institutions will pave the way for a clean, green and energy secure future for India's rural areas.

र्भा छ सरकार इन अभियान से रौशन होगा अब हर घर बार ला आग, धर-धर मुस्कुगया.

Gram Swaraj Abhiyan: Reaching grassroots

The Gram Swaraj Abhiyan campaign, undertaken under the theme of 'Sabka Sath, Sabka Gaon, Sabka Vikas' (inclusive development of all villages), was initiated to promote social harmony and spread awareness about pro-poor initiatives of the government. It also reached out to poor households to enroll them in development initiatives, and to obtain their feedback on various welfare programmes.

Initiatives

The two-phase programme (April 14 to May 5, 2018) and 'Extended Gram Swaraj Abhiyan' (June 1-August 15, 2018) sought to deliver benefits to rural households under seven flagship welfare programmes. These schemes are, namely: Pradhan Mantri Ujjwala Yojana (providing LPG connections to women from Below Poverty Line households); Unnat Jyoti by Affordable LEDs for All (UJALA) (LED bulbs to domestic consumers); Saubhagya (for pan-India household electrification); Pradhan Mantri Jan Dhan Yojana (National Mission for Financial Inclusion to ensure access to financial services); Pradhan Mantri Jeevan Jyoti Bima Yojana (life insurance); Pradhan Mantri Suraksha Bima Yojana (insurance for accidental death or disability); and Mission Indradhanush (immunisation against seven vaccine-preventable diseases for pregnant mothers and children under the age of two).

This consolidated, inter-ministerial approach was designed to accelerate rural progress and establish villages as development benchmarks for rural India.

UJALA

To achieve this impressive feat, EESL did the following:

- Engaged with locals in nearby towns and engaged their service to ensure positive reception to the initiative
- Used a flexible delivery system (across bikes and vans) to ensure intractable areas were covered
- Tied up with the state-based Utility offices in nearby towns to ensure replacement of faulty bulbs, thereby earning local confidence

All UJALA vans travelled across target villages spreading awareness about energy efficiency, energy conservation, and distributing the LED bulbs.

Lighting up lives in rural India with AJAY – An Impact Assessment Study

The Ministry of New and Renewable Energy (MNRE), Govt. of India launched the Atal Jyoti Yojana (AJAY) in September 2016 to illuminate regions with insufficient lighting via high mast LED solar streetlights. Carried out in states where household Grid Power coverage is less than 50% (as per 2011 Census), the initiative is working to illuminate roads, streets, bus stops, markets, and intersections.

Phase I

In the first phase (18 September 2016 to 31 March 2018), sanctions for installation of 1.45 lakh 7W solar streetlights were received from 96 parliamentary constituencies from 5 states. Each installation comprised a 7W LED light, a 40Wp solar photo-voltaic module, a 160 Wh battery, and a pole. In terms of allocated quantities, the participation percentage was led by Uttar Pradesh (54%), followed by Bihar (39%), Jharkhand (39%), Assam (26%) and Odisha (22%).

Phase II

With the success of AJAY Phase-1 scheme, requests were received from Hon'ble Members of Parliament for the expansion of the scheme, along with suggestions to increase the illumination intensity. This led to the launch of AJAY Phase-II scheme, which aimed to install 3.045 lakh solar streetlights in FY 2018-19 and FY 2019-20. In the second phase, the higher lumen output streetlights were of 12 W, each powered by a 75Wp solar photo-voltaic module, and a 360Wh battery.

Sanctions for around 1.4 lakh solar streetlights have already been received from various states, led by Uttarakhand (with a participated percentage of 100%) followed by J&K (58%), Bihar (57%), Assam (50%), among others.

Funding

AJAY is funded by a central funding assistance of 75% of the cost of Solar Street Lighting System through the MNRE budget. The remaining 25% of the cost is via Members of Parliament Local Area Development Scheme (MPLADS) funds. Lok Sabha MPs issues a recommendation to the District Authority to sanction the contribution of this 25% to EESL for installation in identified areas.

Cumulative impact

Energy and sustainability

Installation of around 2.8 lakh solar streetlights will result in avoided capacity addition of around 16 MW and a reduction in peak demand by around 2.5 MW. By using renewable energy, AJAY will reduce over 100 tCO₂ emissions during the project period (including a five-year maintenance period). Further, it will reduce dependence on kerosene/diesel for evening lighting.

• Skilling and job creation

Supporting the initiative is the setup of service centres, a mobile app for monitoring, etc. Creating direct and indirect employment for around 40,000 people in urban and rural areas, AJAY is also creating skilling opportunities in the field of solar lighting.

Cost benefits

AJAY has reduced the cost of ensuring grid connectivity, laying of T&D systems, T&D losses, metering, and other costs associated with energy generation, transmission, and distribution. AJAY is also helping India's poor have a better and safer quality of life.

For more details, an impact assessment study on Atal Jyoti Yojana (AJAY) Phase I and II can be accessed at link below.

IMPACT ASSESSMENT REPORT FOR ATAL JYOTI YOJANA (AJAY)

EESL raises the bar with two pioneering initiatives -RAISE & India's first public EV charging Plaza

With a focus on improving indoor air quality, enhancing energy efficiency and promoting e-mobility, Hon'ble Minister for Power, New & Renewable Energy - R.K. Singh inaugurated "Retrofit of Air-conditioning to improve Indoor Air Quality for Safety and Efficiency" (RAISE) national programme - a joint initiative of EESL and U.S. Agency for International Development's (USAID) MAITREE programme and India's first public EV charging plaza at Chelmsford Club in New Delhi - an initiative of EESL in collaboration with New Delhi Municipal Council (NDMC).

viaise

Poor air quality has been a concern in India for quite some time and has become more important in light of the COVID pandemic. As people return to their offices and public spaces, maintaining good indoor air quality is essential for occupant comfort, well-being, productivity and the overall public health.

In that context, EESL has undertaken a retrofit of its office air-conditioning and ventilation system. This is a part of the larger initiative to "Retrofit of Air-conditioning to improve Indoor air quality for Safety and Efficiency" developed for healthy and energy efficient buildings, in partnership with U.S. Agency for International Development's (USAID) MAITREE programme. EESL's corporate office in Scope Complex has been taken up as a pilot for this initiative. The pilot focuses on improving indoor air quality (IAQ), thermal comfort, and energy efficiency (EE) in EESL office's air conditioning system.

The pilot project has shown very impressive results – about 80% improvement in Air Quality parameters with almost no implementation hassles. Considering employee's occupational health and safety is paramount in any workplace amidst the COVID-19 scenario, EESL is keen to provide such solutions across the country with standardisation and demand aggregation approach.

EESL is also spearheading the EV ecosystem development in India by undertaking demand aggregation for procuring EVs and identifying innovative business models for implementation of Public Charging Station (PCS). So far, EESL has deployed more than 1500 EVs and 560 captive chargers across the country. EESL in collaboration with NDMC has established India's first of its kind public EV Charging Plaza in Central Delhi. This plaza will host 5 Electric Vehicle Chargers of different specifications.

Considering that the employee occupational health and safety is paramount in any workplace amidst the COVID-19 scenario, EESL is keen to provide such solutions across the country with standardisation and demand aggregation approach. The pollution level in cities across the country drastically slowed down due to the forced restrictions, it is now imperative that this is maintained even after the resumption of normalcy.