



From Darkness to Light



 **UJALA**



“ The country needed something that consumed less electricity, was brighter and less costly. This need gave birth to the UJALA scheme. Necessary steps were taken to promote LED manufacturing. Policies were changed. This reduced the price of the bulb and once people experienced its benefits, the demand also increased. The UJALA Scheme has completed 5 years yesterday itself. It is a matter of immense satisfaction for all of us that more than 36 crore LED bulbs have been distributed throughout the country. ”

- Prime Minister Narendra Modi

A | UJALA - The revolutionary story of household lighting in India

Unnat Jyoti by Affordable LEDs for All (UJALA), a path-breaking initiative by the Government of India, aimed at bringing light in darkness, has ushered in a new technology, namely Light Emitting Diode (LED) to crores of homes in India leading to a LED revolution in the country. A 7W LED bulb provides same amount of light as a 14W Compact Fluorescent Lamp (CFL) and a 60W Incandescent Lamp (ICL) and thereby saves almost 90% energy as compared to ICLs and 50% in case of CFLs. LED bulb consumes 1 unit of electricity when it is used for 140 hours as compared to 2 units by CFL and 9 units by ICL.

The cost of operating LEDs is the lowest as it costs INR 4 for 140 hours in comparison to INR 8 for CFL and INR 36 for ICLs over the same period. The cost of ownership for an LED bulb is around INR 12 per year, lowest as compared with CFL at INR 40 and INR 108. The cost of ownership per year of LEDs is less than one-third of a CFL and one-tenth of ICL.

Despite these significant benefits and efforts to promote efficient lighting in the past, there were barriers and challenges that prevented large scale adoption of LEDs. Some of the key barriers and challenges were:

- High first cost of LEDs as compared to ICLs and CFLs to enable households make purchase decisions to buy LEDs
- Lack of awareness amongst stakeholders and households about the reduction of electricity bills by use of LEDs
- Low appreciation of policy makers at state and DISCOM level about the benefit of incentivizing efficient lighting to reduce peak demand and thereby improving their financial position.

B | Numerous barriers, one solution - a unique business model

In 2014, Ministry of Power, Government of India directed Energy Efficiency Services Limited (EESL), a Joint Venture of Public Sector Undertakings (PSUs) under its administrative control, to take steps to scale up the use of LEDs in India. The retail price of LEDs at that time was about INR 450-500 each in comparison with CFL (at INR 100-150) and ICLs (at INR 10-15) that was limiting its use. The share of LEDs in the lighting market was less than 1% in the year 2013-14 and 77 crore ICLs and about 30 crore CFLs were sold. EESL, taking note of the previous measures taken by Bureau of Energy Efficiency (BEE) and critically analysing the barriers and challenges, designed a new business model called **PAY-AS-YOU- SAVE (PAYS)** that:

- (a) Provided LED bulbs to households at INR 10 each, which is the same cost as ICLs, thereby over came the high cost barrier.
- (b) The balance amount was included in consumer's electricity bill as Equated Monthly Instalment (EMI) over a 5-10 years period based on the cost of LED procured. INR 10 per month was added to the bills which is less than the monthly energy savings by use of LEDs as compared to CFLs/ ICLs
- (c) During the period of EMI, all failures of LEDs was warrantied and defective LEDs were replaced
- (d) An information and outreach programme was launched to spread awareness amongst consumers and other stakeholders. The first project was implemented in 2014 in UT of Puducherry covering 2 lakh households by selling 6 lakh LEDs. The procured price of LEDs was INR 310 each and consumers paid it in monthly installment of Rs. 10 for 8 years

From pilot project in Puducherry to the World's largest LED programme

1. The success of the first programme in Puducherry brought to the core the fact that Distribution Companies (DISCOMs) were able to reduce their peak demand without having capital to invest. The PAYS model provided an innovative solution to consumers as well as attracted other DISCOMs and states to join the programme.
2. Andhra Pradesh became the next state to implement in 4 Districts initially with an overall coverage of 60 lakh LEDs. The procurement of 60 lakh LEDs reduced the cost to INR 204 and the PAYS model was implemented with EMI spread over 5 years. The success of the programme and the simplicity of the PAYS model attracted other states like Delhi & Rajasthan while Andhra Pradesh decided to implement it in all 11 districts.
3. This led to Ministry of Power requesting the Hon'ble Prime Minister to launch the National LED programme on 5th of January, 2015.
4. The encouragement by the Hon'ble Prime Minister took UJALA to the **second stage** where EESL, with the support of Ministry of Power, initiated efforts to:





- (a) Engage with more states and DISCOMs to join as there was no financial implications over them. The policy makers in states were informed about the benefits of the programme to consumers as well as management of peak load.

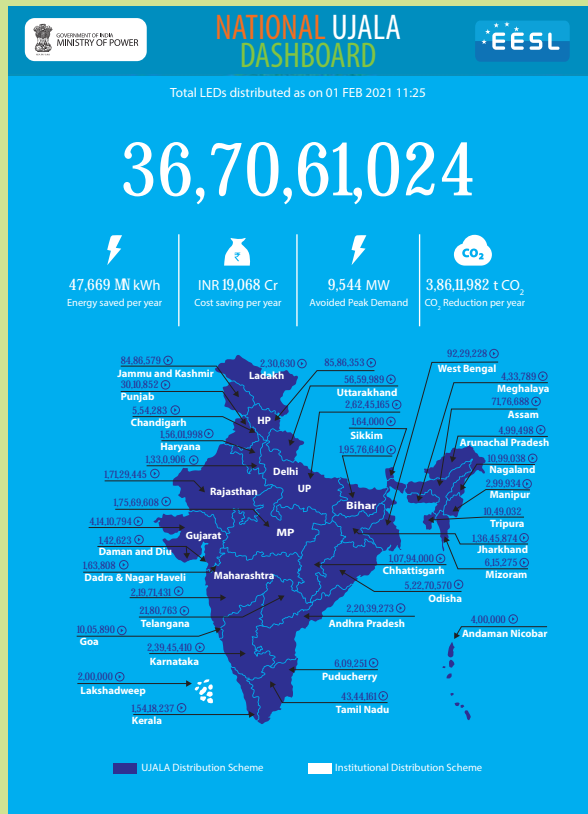
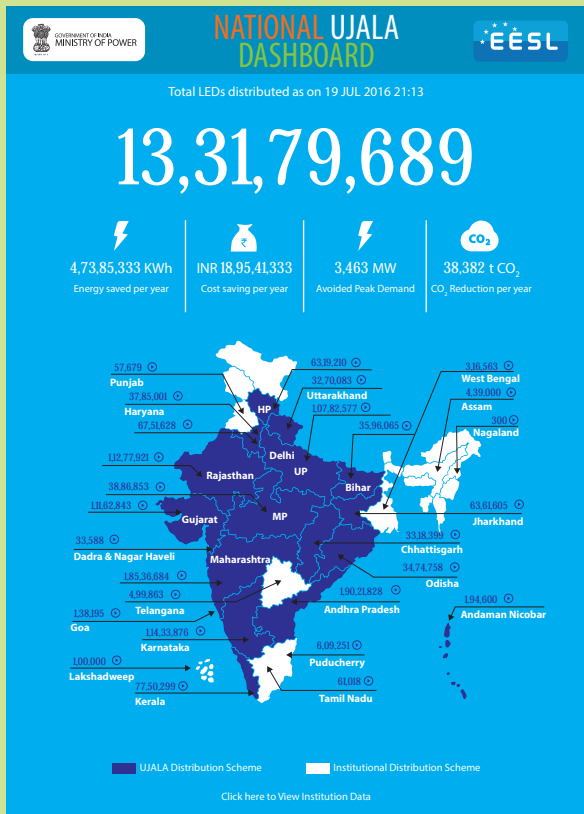


PM launches scheme for LED bulb distribution under Domestic Efficient Lighting Programme in Delhi

- (b) EESL started to aggregate demand and issue bulk procurement. It also ramped up distribution in all states
- (c) The selling counters were set up where the consumer footfalls were high, like the billing centres of DISCOMs, other areas that were close to consumers door steps.
- (d) Local level awareness programmes were launched informing consumers of the benefits of LEDs and telling them the place in their neighbourhood where the bulbs were being sold.
- (e) A public UJALA dashboard was created that captured the sale of every bulbs at each counter and provided exact location of the counter using Google maps.

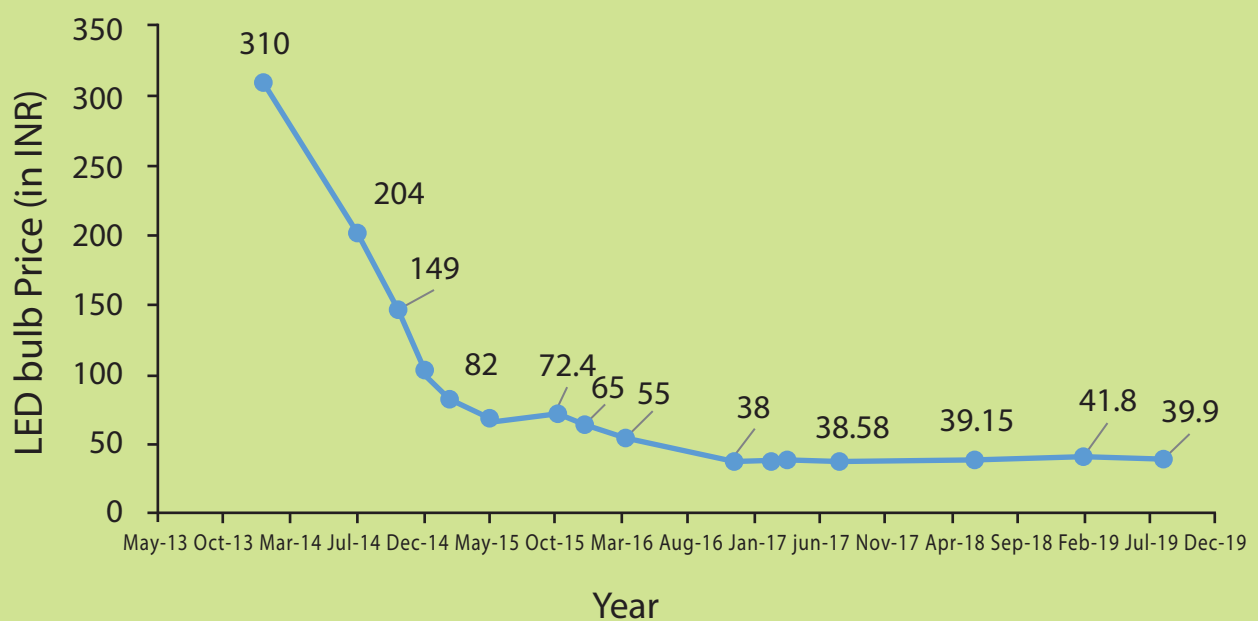
(f) The dashboard used a colour code where states that have joined the programme were coloured blue the others being white. This also increased the pressure on the policy makers to join the programme.

Screenshots from the the live UJALA dashboard (www.ujala.gov.in)



5. The combination of aggregation, bulk procurement and scaling up of sale of UJALA bulbs resulted in dramatic drop in prices of LEDs as indicated below.

Procurement Price Per LED Bulb (in INR)



The procured price reduced by almost 90% between 2014 and 2017; from Rs. 310 to Rs. 38 and this took UJALA to the **third stage** where LEDs were priced at Rs. 70 each and consumers, knowing the benefits of energy and costs savings and with the prices becoming lower than CFLs, started to buy LEDs paying upfront instead of EMIs. The sale of bulbs increased and EESL ramped up the selling counters in the country and was achieving sale of 6 lakh bulbs every day as compared to 6 lakh sale in Puducherry a couple of years ago in 4 months.



Telangana | Self-Help Groups (SHGs) were formed for awareness and distribution of LED bulbs

C | **A win-win for all - social, economic and environmental benefits**



Andhra Pradesh | More hope and a brighter future study hours increased with new LED lights

Mercy Susan, 15, is a multifaceted girl. She enjoys playing the piano as much as she practises yoga and karate. Not that she is lacking in academic curiosity either. Now in her Tenth grade, she enjoys Mathematics and science. "I like maths since I enjoy solving problems," says Mercy with a gentle smile. The answer resonates at a deeper level; Mercy is an orphan. She came to Chaitanya Mahila Mandali, an orphanage in Secunderabad, Andhra Pradesh, around four years back.

"With the other bulb I used to study 2-3 hours. With the new ones, I put in 3-4 hours." The brighter light has a larger impact. "It gives me hope. I can do what I want to," says Mercy gleefully.



Sonepat, Haryana | Well- lit dhabas now attract more consumers

"We used to pay Rs. 45,000 on electricity" said Devdutt Sharma, co-owner of A1 Dhaba on the stretch of the highway that passes through Sonepat in Haryana. He referred to the expense in the past tense because the dhaba's bill has come down to Rs 15,000 in the six months since replacing the multitude of tubelights and incandescent bulbs with LED lighting.

As co-owner of A1 Dhaba Vijay Rana pointed out, "If the dhaba is ill-lit or dark, people will not risk stopping to eat there." Rana and his partner Sharma are not only happy about the slashed power bill, but have also overcome the problem of a stalling generator. Their 25kVa generator wasn't able to take the load of illuminating the chains of lights and they ended up regularly paying penalties to the government for overloading their power lines. After the switch to LEDs, the total load has come down to a mere 5kWh that the generator handles easily handles.

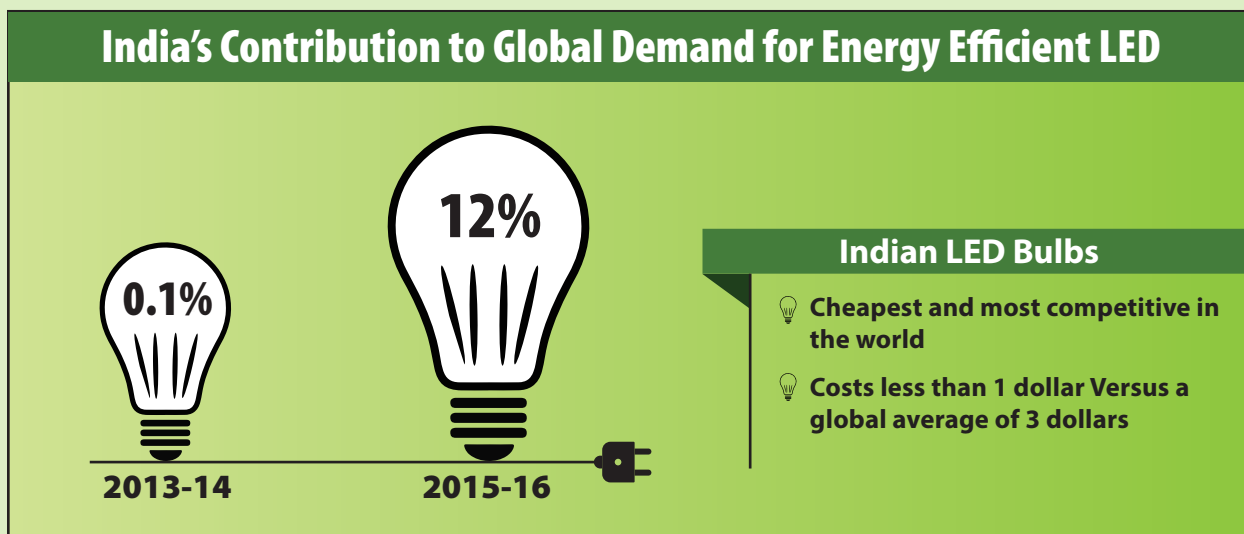


Ajmer, Rajasthan | LED bulbs available at E- Mitra centres are both, affordable & accessible

Amit Kumar, Resident of Sarwar, Ajmer, says that EESL's LED bulbs are very good. They consume less electricity and come with a 3-year guarantee. These bulbs can also be replaced easily in case of any problem. Since the E-mitra centers are government owned, the replacement process is easy.

EESL has partnered with the E-mitra network to deliver its wide range of energy efficient products in Rajasthan, which is the largest state of the country in terms of area.

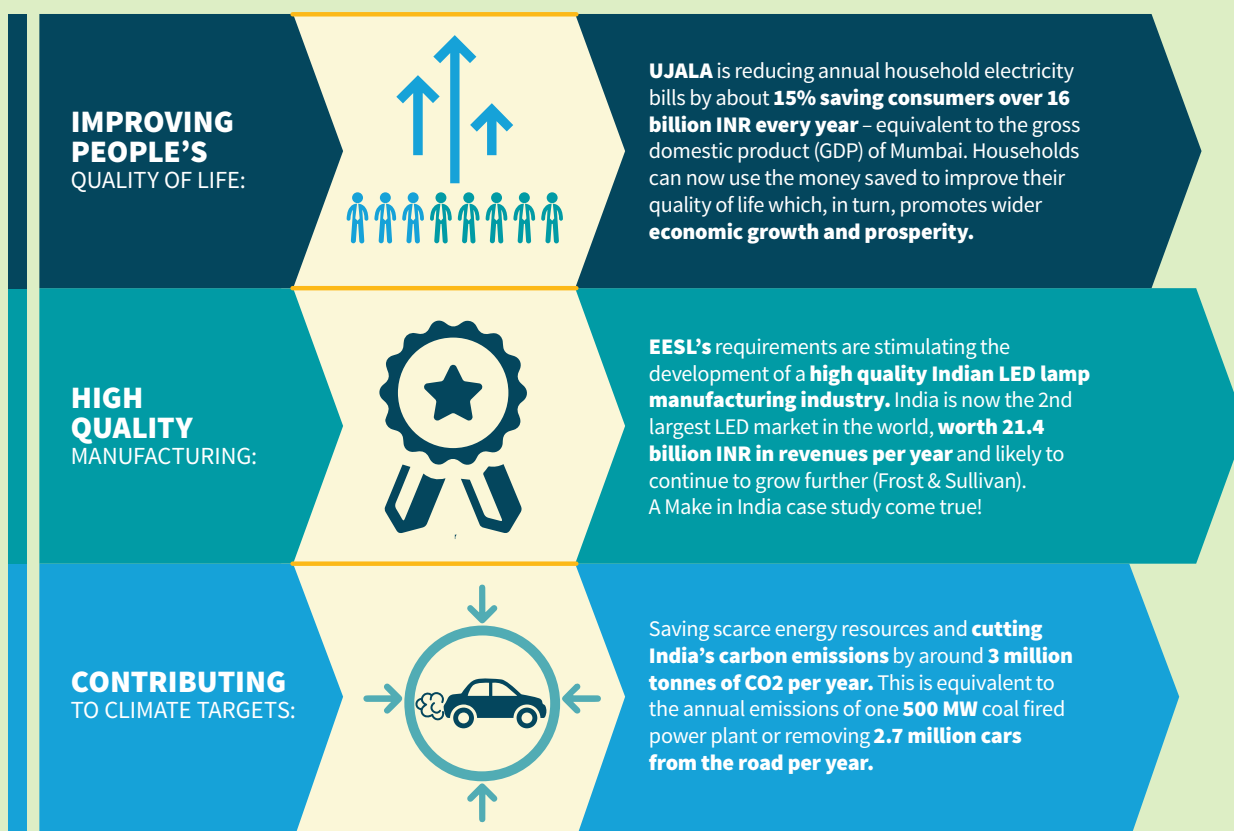
The LED revolution was raging in the country and it helped significantly increase demand for LEDs. India became the largest driver of global LED demand.



As on date, a total of 200.12 crore LED bulbs have been sold in the country since the launch of UJALA; 36.7 crore by EESL and 163.4 crore by the private sector. This has led to enormous energy savings to the country as well as emission reductions. This LED revolution has not just resulted in savings of energy, peak demand and GHG emissions, but has, simply put, reduced the cost of LEDs to one-tenth in a short period of time and had made high technology LED lighting affordable to the poor.

D | Global Recognition

The UJALA programme has also caught the attention globally and the International Energy Agency (IEA) published a case study on the same (Ujala Case study). The key highlights of the IEA case study are:



The UJALA programme has also attracted the attention of Management schools and the entire programme is now a Leadership case study in Indian Institute of Management (IIM), Ahmedabad and is under consideration of being included in Harvard Business School. The IIMA case study - EESL: Shaping the Industry - can be purchased here <https://cases.iima.ac.in>

The key highlights from IIMA case study are:

1. UJALA and Street Lighting National Programme – SLNP), are now an IIM-Ahmedabad case study. The case study gives the future leaders a chance to wear the hat of the Ministry of Power and EESL and encourages them to chart out the future course of action for the company.
2. It gives a detailed overview of EESL and as well as the history of demand side management initiatives in India leading to implementation of UJALA and SLNP.
3. The classroom case study takes the reader through all the important milestones along with anecdotes (eg: Hon'ble Minister's vision to the MD about UJALA; the devastation caused by Hud Hud cyclone and how an unknown company turned around the entire street lighting in a span of 6 weeks, etc.) that led to the establishment of current day's EESL and it is laid out in a way the person reading it is living the journey of the programme along with EESL
4. The case study talks in detail about the business model of EESL that led to the success of UJALA and SLNP. It as well captures efficiently the role of Marketing, Procurement, distribution, HR, Manufacturing and networking that made it possible for these programmes to be the top demand side management initiatives
5. The case study very efficiently brings out how a start-up with a right vision and team can soar to great heights in few years. How each and every team and function is critical to the success and how a mass programme in India can work without any government subsidy



Smart and efficient public lighting - Street Lighting National Programme

The business model was used to scale up street light replacement in the country. As on date, 1.1 crore street lights have been replaced. The value proposition is

- Pay As You Save (**PAYS**) business model
- **No upfront investment- Re-payment from savings – performance guaranteed and failures warrantied**
- **Barriers of high first cost and comparative end use overcome**
- **Incentives for all stakeholders –aggregation of demand to leverage economies to scale**
- EESL has enrolled **1500 ULBs** and work is completed in **506 Urban Local Bodies**
- Entire upfront investment by EESL and repayment through deemed savings model
- **7 year contracts with municipalities** guaranteeing minimum energy saving (of-typically 50%) and free maintenance of lights.



New Delhi | Hon'ble Prime Minister replaces conventional Street light with Smart LED light



F | Transforming Indian Power Sector with UJALA

“ The distribution of 28 crore LED Bulbs by the government not only saved more than \$2 billion in the last three years but it also saved 4 giga watts of electricity. ”

- Prime Minister Narendra Modi



GOVERNMENT OF INDIA
MINISTRY OF POWER

सत्यमेव जयते