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INDIA'S UJALA STORY

Energy Efficient Prosperity



Executive Summary

Global energy demand and specifically those of developing nations are increasing by the year. However, global energy intensity – the amount of energy used per unit of gross domestic product – improved by 1.8% in 2015. While this is positive news for sustainable growth and development, a greater effort is needed to move to a more efficient use of energy in order to meet climate goals.

India has kick-started a revolution in energy efficiency by introducing scalable demand side management initiatives. The country has not only established a comprehensive policy for energy efficiency – National Mission for Enhanced Energy Efficiency – but also executed successful demand side management programmes for consumers, industries and municipal corporations.

“India's UJALA Story – Energy Efficient Prosperity” – by Energy Efficiency Services Limited (EESL) and the International Energy Agency (IEA) is a case study of the Indian Government's domestic efficient lighting programme – the Unnat Jyoti by Affordable LEDs for All (UJALA - meaning light in Hindi).

The programme is implemented by EESL, a super Energy Service Company (ESCO) under the Ministry of Power, Government of India. UJALA, the world's largest zero-subsidy LED bulb programme for domestic consumers, is an extraordinary example of successful energy efficiency programmes.

UJALA is a market driven initiative, with strong policy support from the government. It is an example of a self-sustaining government initiative that has not only surpassed traditional benefits, like energy savings and reduced carbon emissions, but has also triggered large scale investment in the manufacturing of LED bulbs, generated employment and other macro benefits.

The success of the UJALA programme has demonstrated that such initiatives can not only be executed but successfully replicated for other appliances and equipment as already demonstrated for street lighting and water pumps. UJALA's tangible benefits have resulted in healthy competition among all states governments in India to devise customized energy efficiency programmes and execute them independently, emulating the scalable models demonstrated by EESL.

Energy efficiency is the “first fuel” of economic development. This case study is an endeavor to showcase the multiple benefits of energy efficiency of successful large scale transformational programmes such as UJALA. The IEA, with its global perspective, is leading this knowledge exchange so that energy efficiency can deliver its full potential in support of globally shared energy and environmental policy goals.

Who are Energy Efficiency Services Limited (EESL)?

EESL is a publicly owned energy services company with the mission of delivering energy efficiency across India. It was established in 2010 and is under the administrative control of the Ministry of Power as part of the National Mission on Enhanced Energy Efficiency of Power. It is a joint venture of four major government-owned companies: **Power Grid, NTPC, Rural Electrification Corporation Limited and the Power Finance Corporation Limited.**

This ground-breaking enterprise, together with strong government support, has completely transformed the energy efficiency market in India within just a couple of years, stimulating the economy, generating new jobs and businesses, benefiting public budgets and providing considerable benefits to households throughout the country.



How has EESL transformed the energy efficiency market in India?

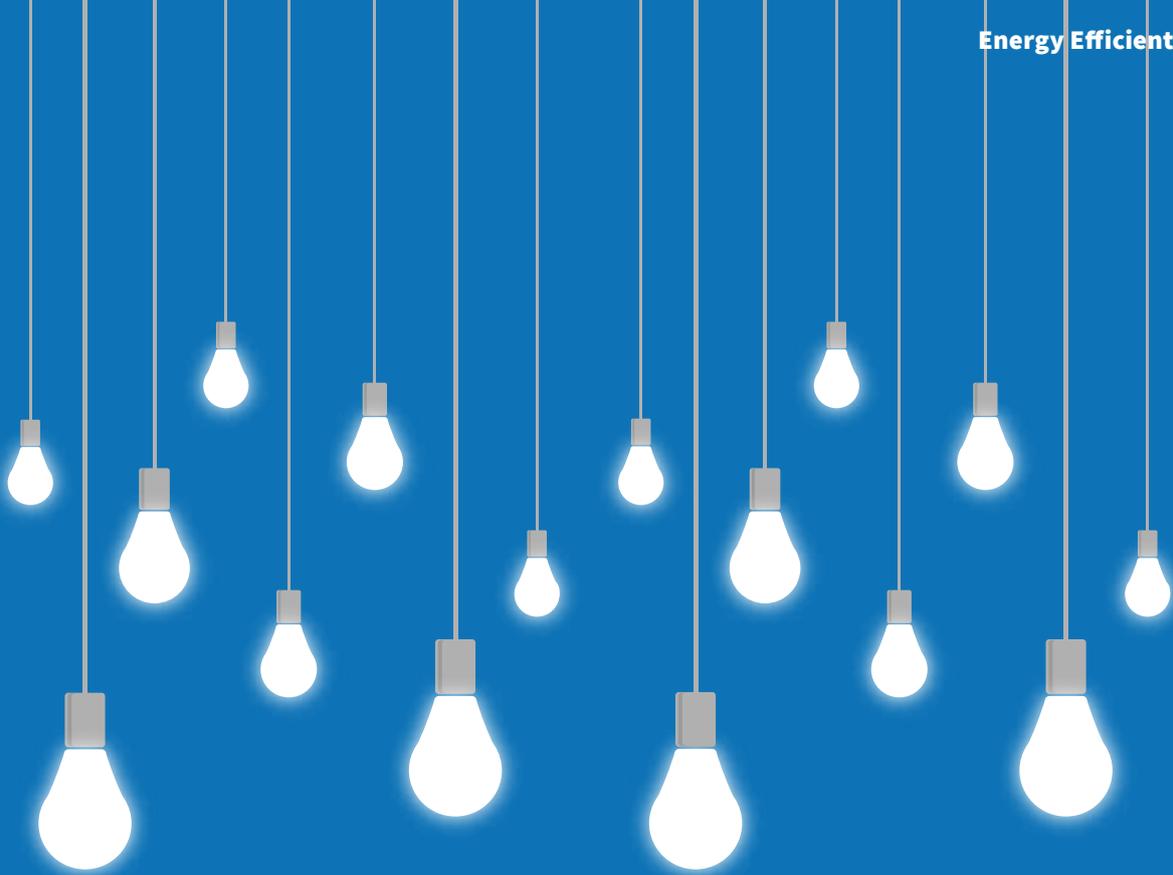
The **EESL's Unnat Jyoti by Affordable LEDs for All** (UJALA, meaning Light in Hindi), is the world's largest lighting replacement programme. By 2019, **UJALA aims to replace 770 million old wasteful lamps** with modern, efficient and longer lasting LED lamps, without the need for any government subsidies.

To date more than **100 million LED bulbs** have been delivered across the country, completely transforming the way people look at LED bulbs and energy efficiency.

UJALA's LED bulbs cost only 50 INR and UJALA allows the consumers to buy them for an **initial payment of 10 INR**, and the balance is paid through the consumer's electricity bills in equal monthly instalments of 10 INR.

This booklet shares the stories of how UJALA and energy efficiency have delivered multiple benefits to manufacturers, households, state utilities as well as state and central governments in India.

**A MAKE IN INDIA
SUCCESS STORY**



“I urge you all to use LED bulbs, save money, save energy and take part in helping our nation”

Prime Minister Narendra Modi

EESL and UJALA have paved the way for large scale energy efficiency implementation in India. It has shown government stakeholders that energy efficiency can deliver multiple benefits within a short time period to all sectors, and importantly, with limited or no costs to the government. The potential for replication with other high efficient appliances and equipment is considerable and can continue to trigger investment, innovation and best-in class manufacturing, all of which are at the heart of the Make in India campaign led by Prime Minister Narendra Modi.

UJALA has successfully distributed more than **100 million LED lamps** across **120 cities** in India resulting in a wide range of multiple benefits, such as:

**IMPROVING
PEOPLE'S
QUALITY OF LIFE:**



UJALA is reducing annual household electricity bills by about **15% saving consumers over 16 billion INR every year** – equivalent to the gross domestic product (GDP) of Mumbai. Households can now use the money saved to improve their quality of life which, in turn, promotes wider **economic growth and prosperity.**

**HIGH
QUALITY
MANUFACTURING:**

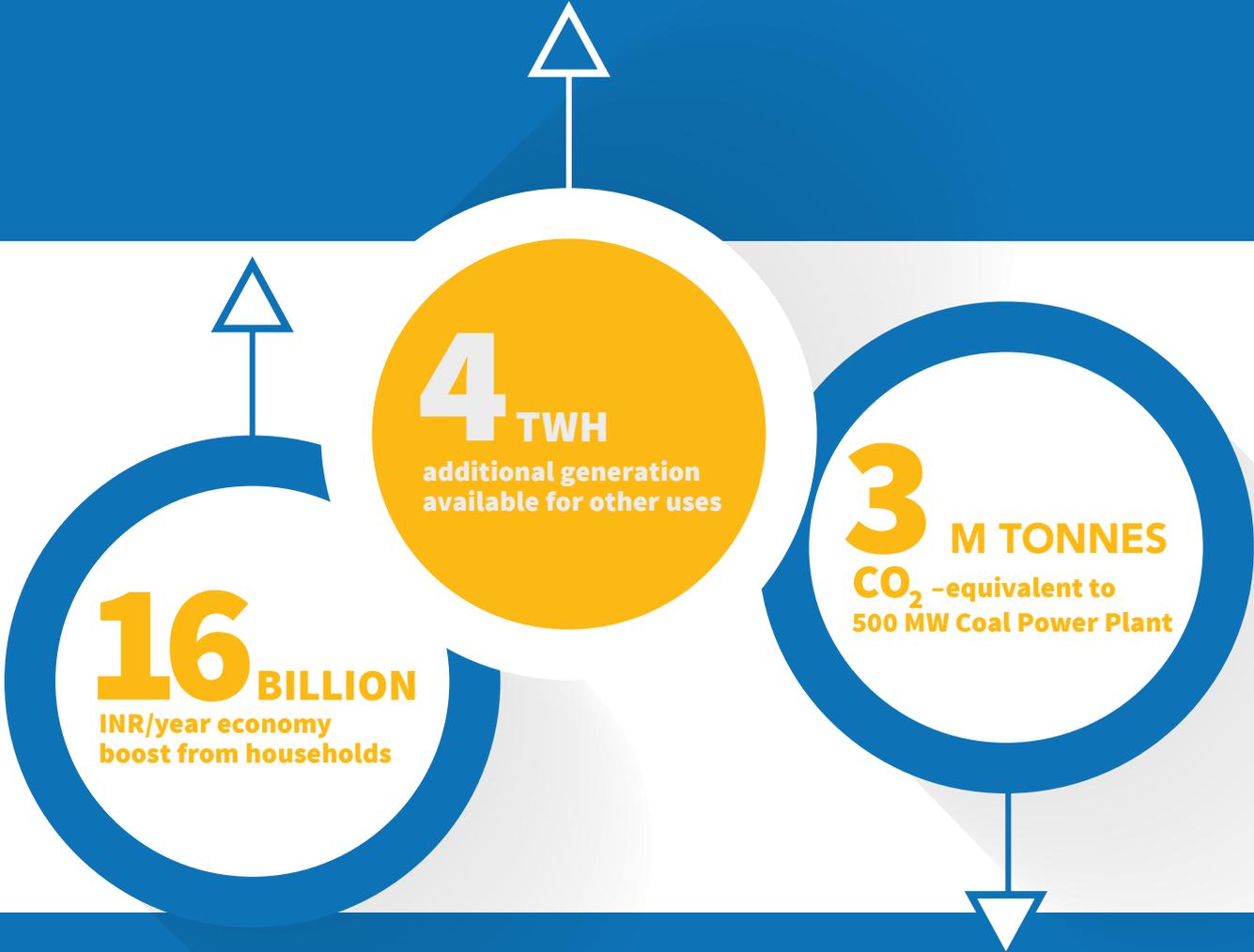


EESL's requirements are stimulating the development of a **high quality Indian LED lamp manufacturing industry.** India is now the 2nd largest LED market in the world, **worth 21.4 billion INR in revenues per year** and likely to continue to grow further (Frost & Sullivan). A Make in India case study come true!

**CONTRIBUTING
TO CLIMATE TARGETS:**



Saving scarce energy resources and **cutting India's carbon emissions** by around **3 million tonnes of CO2 per year.** This is equivalent to the annual emissions of one **500 MW** coal fired power plant or removing **2.7 million cars from the road per year.**



**TRANSFORMING THE LIGHTING
MARKET IN INDIA**

UJALA is an extraordinary story of the realisation of the Make in India leading to a technological leapfrog from incandescent bulbs to LEDs within only half a decade. It is causing a full supply-demand chain reaction which is quickly delivering favourable economies of scale to a range of manufacturers, helping grow and strengthen the domestic **LED market with**

high quality products, and enabling the LED manufacturers to build a business that will potentially be able to compete at international level and meet the growing demand for affordable LEDs worldwide.

“The LED industry is projected to grow dramatically on the back of the initiatives being taken by the government. It is expected to be **approximately 60%** of the overall lighting industry **by 2020.**”

-Electric Lamp and Component Manufacturers' Association of India (ELCOMA)

UJALA has successfully distributed more than **100 million LED lamps across 120 cities** which has greatly impacted the LED market in India, for example:

FASTEST GROWING LED MARKET IN THE WORLD:

The Indian LED market value grew by 10 times in just five years and annual domestic production increased from approximately **3 million LED bulbs** in 2013 to **62 million** in 2015 (Elcoma). It is now the **second largest LED market in the world worth 21.4 billion INR in revenues in 2015** (equivalent to the GDP of the metropolitan area of Miami, US) (Frost & Sullivan). UJALA has played an important role in this rapid growth.

01



DOMESTIC LED MARKET ON THE RISE:

In 2014, LEDs had only a share of 0.1% of the annual residential lighting market in India. In 2015, the LED share of **the market jumped to a remarkable 15% and is forecast to reach 25% in 2016** (Elcoma).

02



ECONOMIES OF SCALE AT WORK:

EESL's LED bulk procurement has also contributed to the reduction in LED retail market prices from **approximately 800 INR per LED bulb in 2012 to 200 INR per LED bulb in 2016** – leading to one of the **fastest LED price reductions in the world**. This has helped improve acceptance and availability of LEDs in the Indian market.

03



HIGH QUALITY IS PRIORITY:

EESL's specifications, including the **three year warranty** requirement, have ensured that the LED bulbs procured **meet high quality standards with current failures at only 0.3%**. This is helping build market confidence in the product.

04



In the future, **EESL** plans to continue to deliver these and more **multiple benefits** to other Indian manufacturers with the introduction of **new energy efficiency initiatives** to transform the markets for **residential fans, street lighting and agricultural pumps**.

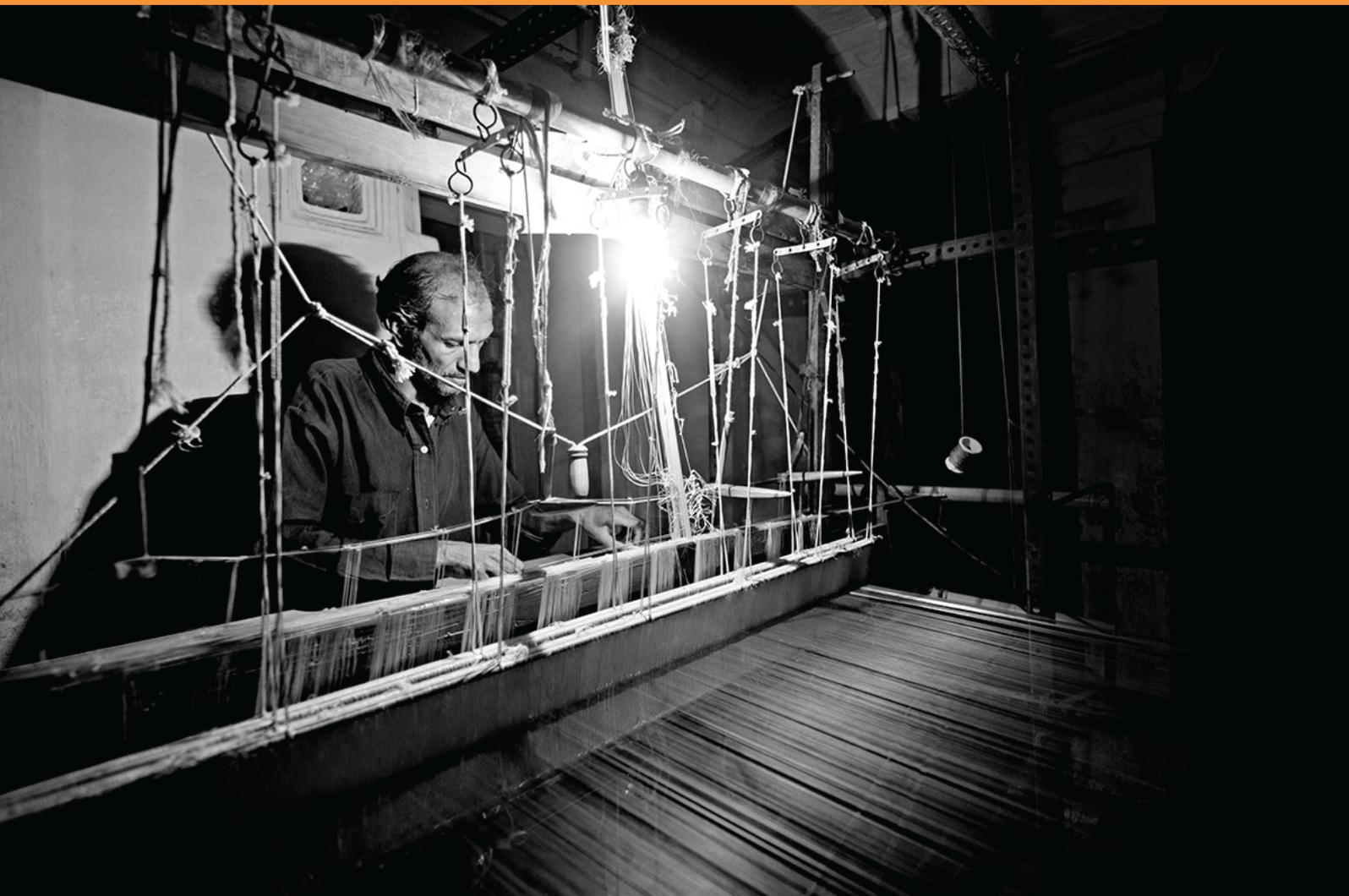
Second largest market created within five years



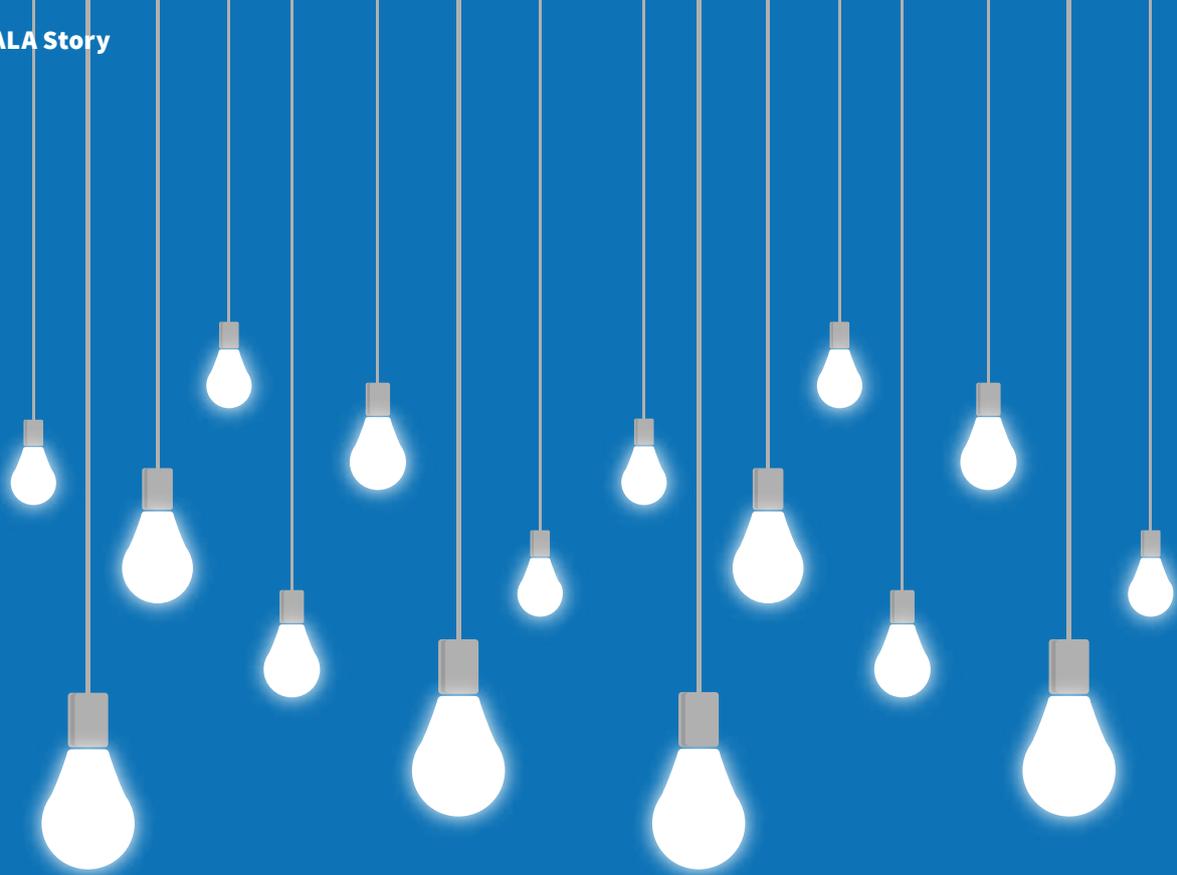
LED retail prices dropped by 75% in four years



Setting an industry with high quality products



EMPOWERING & CHANGING
PEOPLE'S LIVES



“Every person who switches to LED bulbs will help lighting up someone’s home through the energy savings”

Piyush Goyal, Minister of State with Independent Charge for Power, Coal, New & Renewable Energy and Mines, Government of India

UJALA is empowering people to make a difference.

Switching from inefficient incandescent bulbs to LEDs is helping families reduce their electricity bills and enabling them to spend more time studying, reading and even working at night – a driver for increased productivity in family businesses. The money saved adds to household’s disposable income improving their quality of life, generating prosperity in local communities and in expanding energy access to all.

UJALA has distributed more than **100 million LED lamps in 120 cities** resulting in a wide range of **multiple benefits for households**, such as:



Affordable LEDs for everyone:

Families can pay for their UJALA LED bulbs through their utility bill at 10 INR per month making energy efficiency affordable to everyone. While in the retail market, LED prices have dropped from approximately 800 INR per LED bulb in 2012 to 200 INR per LED bulb in 2016.



Reducing electricity bill costs:

Reducing average household electricity bills by 15%, one year's savings is equivalent to a week's average earnings.



Reducing bulb purchases:

Typically one LED lamp can last as long as 20 incandescent bulbs saving family's money on bulb purchase.



Reducing air pollution:

UJALA is equivalent to the CO₂ emissions absorbed by 200,000 trees.

In the future, **EESL** plans to continue to deliver these and more multiple benefits to Indian households with the **introduction of new energy efficiency initiatives** to transform the markets for **residential fans and air conditioners**

AVERAGE
15% reduction
in electricity bill

LIFETIME OF
ONE LED
is equivalent to **20 IBS**

7 DAYS of salary
SAVED
PER YEAR!

Retail prices
HAVE DROPPED TO
ONLY 200 INR
PER LED BULB

**DELIVERING AFFORDABLE AND
ACCESSIBLE ENERGY EFFICIENCY**

With **EESL and UJALA**, energy efficiency has delivered tangible benefits for state governments allowing them to do more with more energy. It is a win-win solution by reducing household electricity bills and providing new job opportunities – ultimately delivering energy efficient prosperity. The state utilities are able to slow down the relative growth of electricity demand, enabling the existing

capacity to meet a greater number of households and businesses and, potentially, reducing the chance of blackouts. Realising the benefits of **UJALA**, state governments are now interested in establishing their own energy efficiency replacement programmes to deliver these benefits to an even greater number of people in their state.

“UJALA scheme will bring UJALA¹ in the lives of everyone (...) LED bulbs will not only reduce electricity bills but also help in environment protection”

Shivraj Singh Chouhan, Chief Minister of Madhya Pradesh

(1 – “light” in Hindi)

1 Affordable:

The cost of the **LED bulb** is paid through the utility bill at **10 INR** per month making energy efficiency **affordable to everyone**.

2 Employment:

UJALA provides temporary employment to more than **35,000 people** in the distribution of the LED bulbs across the country. A total of about **700 million INR is paid in wages per month**, providing significant benefits to local economies and families.

3 Help families save money:

UJALA has cut annual household **electricity bills by about 15%**, equivalent to saving one week's average wages per year. Total **savings** are over **16 billion INR** every year - equivalent to the GDP of Mumbai - which families can then spend on **goods and services** to improve their standard of living.

4 UJALA is cheaper than electricity:

EESL's investment in **UJALA** is **approximately 2.3 INR per kWh** saved while the cost of electricity generation from a coal power plant in India is about **5.2 INR per kWh** generated.

5 Reducing air pollution:

Cutting **CO₂ emissions** by **3 million tonnes a year** equivalent to **removing 2.7 million cars** from the road.

6 Helps manage growing energy demand:

The **electricity savings** achieved under **UJALA** are equivalent to the generation of a **500 MW coal fired power plant**, which would cost **40 billion INR** to build at current prices. In addition, these savings could help power at least an additional **1 million households**.

In the future, **EESL** will continue to collaborate and build capacity of state governments to deliver these and more **multiple benefits** through the introduction of new energy efficiency initiatives to **transform the markets for residential fans, street lighting, air conditioning and agricultural pumps.**



MORE THAN
35,000
people
employed temporarily



ANNUAL
EMISSION
savings equivalent
to removing
2.7 million
cars from the roads



Electricity
savings from
UJALA
could power
an additional
1 million
households



REDUCING
HOUSEHOLD
electricity bills by
15% on
average
– money
reinvested
in the economy

India's UJALA Story – Energy Efficient Prosperity

India is one of the fastest growing nations in the world. The country is one of the largest energy markets globally representing the aspirations of one billion plus people. India is projected to see its energy demand more than double by 2040. With this projected growth comes the responsibility of sustainably producing power, reducing carbon emissions and mitigating climate change. Even before the Paris Agreement was debated and ratified by several countries, India had rolled out large scale energy efficiency and renewable energy programmes, which are the need of the hour. India is running one of the largest renewable capacity expansion programmes in the world. On the demand side, efforts are being made to efficiently use energy through innovative policy measures.

This is a case study of the world's largest zero-subsidy domestic LED bulb programme – Unnat Jyoti by Affordable LEDs for All (UJALA). The scheme, executed by Energy Efficiency Services Limited (EESL), a super-ESCO under the Ministry of Power, Government of India, which distributes energy efficient LED lamps at one-third the market price through an innovative business model. To date, EESL has distributed over 100 million affordable LED lamps across 14 states and 120 cities in India. UJALA has delivered tangible multiple benefits like energy savings, avoided carbon emissions, reduced consumer bills and stimulated the LED bulb manufacturing in India. This case study provides insights to policy makers and private sector on India's efforts in the area of demand side management through distribution of LED bulbs to domestic consumers.



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