

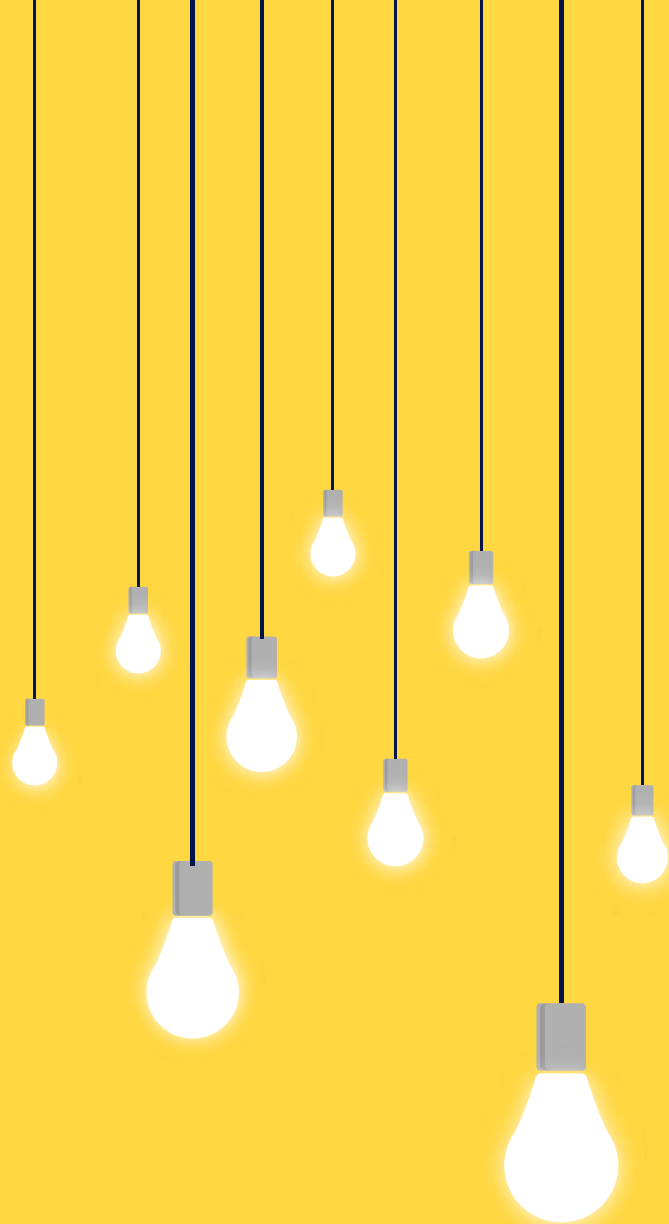
Ujala

AN ASSESSMENT FROM
INCLUSION PERSPECTIVE

Supporting Structural Reforms in the Indian Power Sector

October 2018





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Last but not least, we would also like to thank the respondents who shared their views, experiences and stories.

We hope that this report is informative for policy makers, governmental agencies, donor organizations and NGOs working in energy sector across India and the region.

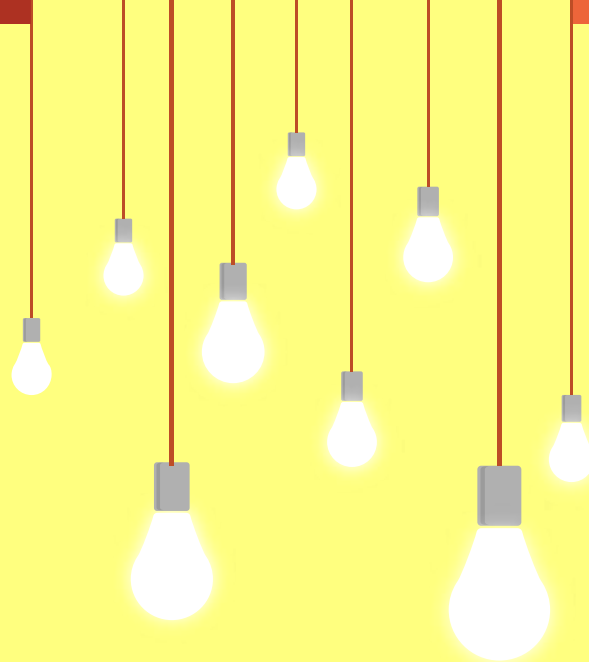
Project Team:

KPMG, AIREC, Sambodhi Research & Communications and subject matter experts—Soma Dutta and Rekha Krishnan

List of Abbreviations

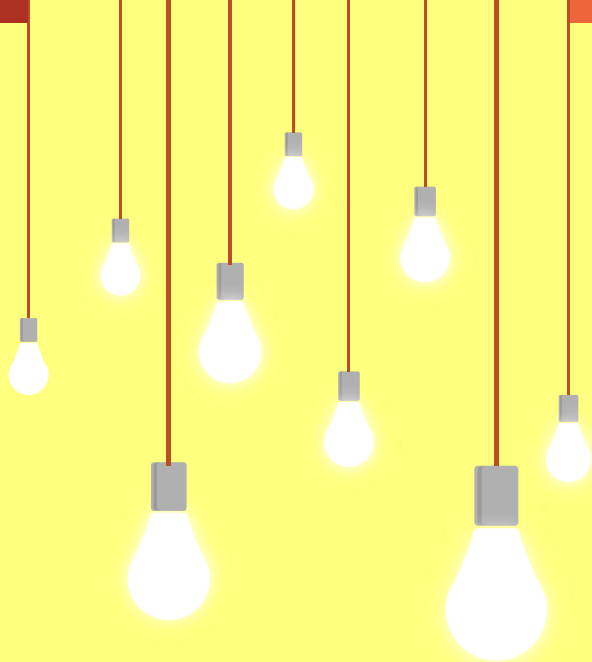
BPL	Below Poverty Line
CFLs	Compact Florescent Lamps
CSC	Common Service Centres
DA	Distribution Agency
DELP	Domestic Efficient Lighting Programme
DSM	Demand Side Management
EESL	Energy Efficiency Services Limited
ESCO	Energy Service Company
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GoI	Government of India
HHs	Households
ICBs	Incandescent Bulbs
LED	Light Emitting Diode
MoP	Ministry of Power
MoU	Memorandum of Understanding
NAPCC	National Action Plan on Climate Change
NMEEE	National Mission for Enhanced Energy Efficiency
NTPC	National Thermal Power Corporation
OMC	Oil Marketing Company
PMA	Project Management Agency
PRI	Panchayati Raj Institution
PWD	Persons with disability
Saubhagya	Pradhan Mantri Sahaj Bijli Har Ghar Yojana
SC	Scheduled Castes
ST	Scheduled Tribes
TV	Television
UJALA	Unnat Jyoti by Affordable LEDs for All
UNFCCC	United Nations Framework Convention on Climate Change
UP	Uttar Pradesh
VLE	Village Level Entrepreneur

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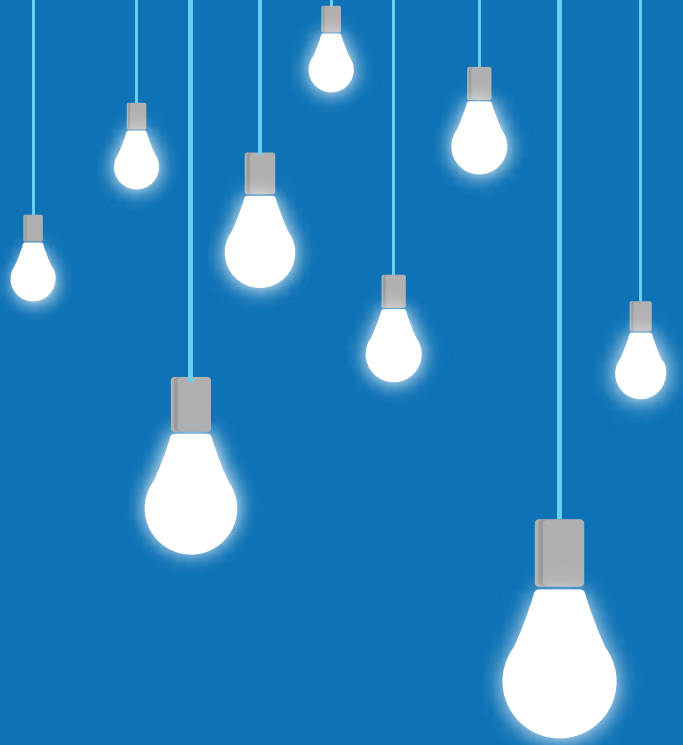


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Executive summary

Developing an efficient, resilient and financially sustainable power sector is one the important pre-requisite to fuel India's economic growth. Multiple initiatives have been taken-up by Ministry of Power (MoP), Government of India (GoI) to ensure long term sustainability of the sector. At the same time, balancing the economic growth aspirations and mitigating impacts of climate change has also been at the core of various policy initiatives. As a vital step towards enhancement of energy efficient usage of electricity, Unnat Jyoti by Affordable LEDs for All (UJALA) scheme was launched in year 2015, with an objective of providing people with affordable energy efficient appliances at prices lesser than the market price.

UJALA scheme is the world's largest zero-subsidy LED lamp distribution scheme. It is being implemented by Energy Efficiency Services Limited (EESL). A 'bulk-procurement model' was adopted, under which EESL procured LED lamps in bulk quantities through competitive bidding and distributed the same to the end consumers. This has resulted in reduction in prices of LED lamps –prices have reduced from about INR 310 to 38 per LED lamp in 3 years (EESL 2016). The benefit of this cost reduction is passed on to the consumers making LED lamps affordable for all. Multiple channels have been adopted for distribution of LED lamps (which varies from state to state) – distribution through special kiosks set-up in strategic locations including at DISCOMS offices, through post offices, petrol pumps, etc. EESL has distributed about 307 million LED lamps in rural and urban areas (as on 24th August, 2018) (EESL 2018), which has resulted in estimated saving of about 40 billion kWh of electricity and 32 million tonnes equivalent of CO₂ reduction (EESL 2018).

There is enormous potential for improving energy efficiency performance at household level by introducing programmes similar to UJALA in terms of scale, reach and approach. A beginning has also been made to expand the focus of UJALA beyond LED bulbs to energy-efficient appliances like fans and tube lights. Given the expected further expansion in magnitude/scale of implementation, it becomes important to analyze/undertake a ground level assessment of the factors which have led to such large scale adoption of this scheme. It is also essential to understand if and how the benefits from such schemes in terms of both energy savings and reach to the most needy can be further improved.

The UJALA scheme is focused on improving end use energy efficiency by providing LED lamps at affordable prices to urban as well as rural households. To ensure that benefits of such schemes reach all intended beneficiaries, it is essential to address all challenges/barriers which restrict ability of some to avail benefits of such scheme. These include challenges/barriers related to lack of information, financial or physical capacity/ability, geographic location and socio-economic factors, especially in rural areas. Keeping this in view, a study on "UJALA: An Assessment from Inclusion Perspective" was conducted. The objectives of the study were to:

- Assess key factors affecting outreach of the UJALA scheme from a gender and social inclusion perspective
- Understand key issues and challenges faced during the implementation, and
- Identify interventions required to enhance effectiveness of energy efficiency programmes

Approach

A sample survey was conducted in 18 districts across four states — Bihar, Odisha, Uttar Pradesh and Rajasthan (during Nov 2017 to Jan 2018). This included survey of 2,364 households and focus group discussions (~30).

Interactions were also undertaken with key stakeholders such as officials of EESL and DISCOMs, representatives of distribution agencies, Gram Panchayats and school teachers. Survey instruments (structured questionnaires, interview and FGD guidebook) for each respondent group were designed to capture information on key parameters of the three dimensions central to the objectives of this study: (i) Demographic profile of beneficiary and non-beneficiary households; (ii) Key factors affecting outreach of the scheme and (iii) User's experience.

The key findings of this study and related interventions are summarized below:

Key findings

Demographic profile of beneficiary and non-beneficiary households

A comparative assessment of the income group, caste and gender profile of the household heads among the beneficiary and non-beneficiary households was carried out to understand who has been able to avail the benefits of UJALA scheme. No significant differential was observed on the key socio-economic indicators among the beneficiary and the non-beneficiary households, suggesting an even distribution of scheme among people in rural areas.

Key factors affecting outreach of the scheme:

- Distribution channels – 22 percent respondents stated inconvenience in accessing the distribution centers mainly, due to the distance they have to travel. It was mentioned by villagers and officials of distribution centers that mostly people living close to the distribution centers visits to purchase LED lamps. In the case of sparsely populated areas/hamlets/villages, it is not practically viable to set-up dedicated distribution kiosks.
- Consumer awareness – 84 percent non-beneficiary households reported that they were not aware about the UJALA scheme. Among those who were aware about the scheme, most common source was information provided by neighbors/friends/relatives *i.e.* “word of mouth” (or informal sources), indicating the absence of any effective channel for communicating to potential beneficiaries
- Motivation for participation – Among beneficiary households, most common reason for purchasing LED lamps was reduction in electricity bills (40 percent), followed by consumer's perception/belief that reducing energy consumption is good for the environment (20 percent).

User's experience:

- Replacement of old lighting appliances – About 52 percent respondents reported to have replaced Incandescent Bulbs (ICBs), while 41 percent reported to replace Compact Florescent Lamps (CFLs) with the LED lamps purchased under the UJALA scheme. Remaining were either first time users or replaced tube lights.
- Reduction in electricity bills – About 58 percent respondents stated that they have perceived reduction in electricity bills. Some also mentioned that they started using new appliances/light points due to savings in electricity bills after using LED lamps.
- Improved lighting – About 85 percent respondents stated that they were satisfied with the performance of LED lamps and appreciated quality of luminance.
- Market transformation – About 24 percent of beneficiary households expressed their willingness to purchase LED lamps and other energy appliances from the open market. This suggests that UJALA scheme has been able to generate a self-sustaining demand for energy efficient appliances.

- Aspirations for purchasing new electrical appliances - About 3 percent stated that they are planning to purchase electric fan and television sets. Similarly, about 10 percent stated that they planning to purchase air conditioners.
- Major issues reported by villagers were: (i) unavailability of stock at distribution centers; (ii) inability to replace LED lamps under warranty period due to change in location of the kiosk, inconvenience to reach out again to the distribution centers, etc. and (iii) sub-standard LED lamps available in local market, which are less expensive than the lamps available under UJALA scheme.

Based on the analysis of information collected from consumer surveys and stakeholder consultation, a set of interventions has been identified. A summary of these interventions is shown in the graphic below and further details are provided in subsequent sections of this report.



Implementation mechanism

Focus on strengthening distribution mechanism-involve local people/ entrepreneurs: Though multiple channels of distribution have been adopted, availability of stock was one of the major issues faced by users (beneficiary households). It acts as barrier to increase of penetration of such schemes. Continuous strengthening of distribution network and improving availability of stocks at distribution centers in rural areas is necessary for large-scale uptake of the scheme. Expansion of LED distribution through established networks like post-offices, petrol pumps, fertilizer depots, LPG distributors etc. will strengthen rural reach without having to invest in new distribution infrastructure. A network of mobile distribution units may also be considered, which can provide LED lamps/energy efficient appliances to willing consumers at the doorstep. Local entrepreneurs/SHGs may be engaged to set-up those mobile distribution units for continuous interface.

Improve consumer grievance redressal process: Though there were multiple channels for registering complaints, many consumers reported inconvenience while replacing the faulty lamps. This was mainly due to (i) unavailability of stocks at the distribution centers, (ii) inconvenience to visit the distribution centers again for replacement and (iii) lack of knowledge about

replacement policy and warranty period. Strong grievance redressal mechanism is necessary to sustain the scale of programme. Local institutions like rural banks, post offices, Gram Panchayats, state agriculture marketing boards/departments (agriculture 'mandis'), etc. may be engaged to spread awareness about replacement procedures and also to register consumer grievances regarding technical faults. Onsite replacement of LED lamps may also be considered and network of mobile distribution units may be engaged to provide doorstep replacement services.

Coverage and outreach

Develop cohort of rural people as energy efficient champions/ ambassadors: Awareness plays an important role for a scheme like UJALA that requires upfront cost, while benefits accrue over a period of time. It also helps in creating trust. About 84 percent of non-beneficiary household reported that they were not aware about the scheme and hence did not participate. This indicates that concerted efforts are required to create awareness in rural areas. In some states, local institutions like healthcare centers, Gram Panchayats, schools, etc. were engaged to spread awareness about the scheme. Such practices should be replicated in other states as well. Additionally, developing cohort of rural people as champions or ambassadors for energy efficiency may also be considered. Local entrepreneurs or women self-help groups may be engaged to spread awareness about energy efficiency related schemes/initiatives.

Create inter scheme leverages: Multiple schemes focusing on rural development and welfare are being implemented. Creating inter-scheme leverage can reduce the transaction cost and also accelerate the pace of development. Gram Swaraj Abhiyaan is a welcome initiative and may be organized at regular intervals to spread awareness about rural development programmes. Further, package of inter-linked services can also be provided to rural consumers, i.e. electricity connections (provided under Saubhagya or directly by the DISCOMs) with package of energy efficient appliances (LED bulbs, fans, tube lights, etc.).

Replicate similar initiatives for other electric appliances: As people climb up the energy ladder, penetration of electric appliances is also expected to increase. About 27 percent stated that they are planning to purchase electric fan and television sets. Similarly, about 8 percent stated that they planning to purchase air conditioners. This provides opportunity to embed energy efficiency into the foundation of the emerging energy market and ensure that consumption efficiency is a focus right from the beginning. EESL or similar institutions should be encouraged to launch energy efficiency programmes for distribution of energy efficient appliances in rural areas. Innovative models in which consumers do not have to bear the upfront cost for energy efficient appliances like insurance backed equipment leasing model, pay-as-you-go or service based contracts, may also be considered. Payment through Kisan Credit cards or engaging Micro Finance Institutions operating in rural areas may also be considered.

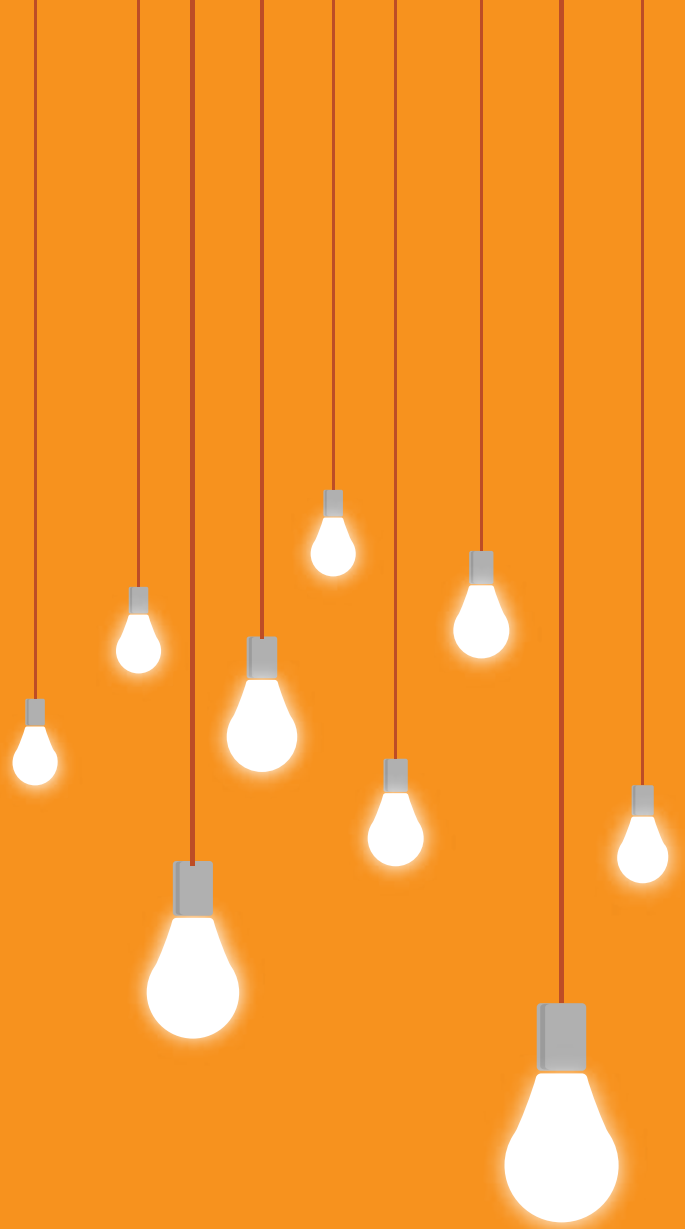
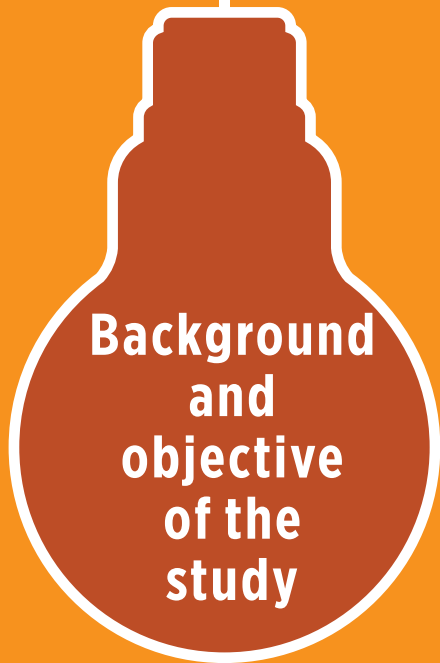
Accountability and sustainability

Continuous monitoring and evaluation: An efficient monitoring system is needed to provide evidence-based feedback to policy makers and implementing agencies. UJALA dashboard set-up as part of the scheme, provides vital information on number of LED lamps sold in different geographies across the country, amount of electricity saved, avoided carbon emission, etc. Information on other key parameters like usage hours, number of appliances sold to households & commercial consumers, number of appliances replaced under warranty, number of complaints received and resolved, number of women entrepreneurs/local people engaged, employment generated etc. may also be monitored on periodic basis. Such information should also be made available in public domain which can be feed into designing more effective rural development programmes/schemes.

Recycling and safe disposal of old inefficient appliances: About 41% respondents reported to replace CFLs with LED lamps under UJALA scheme. These CFLs were are either stored for future use or thrown away. Given the mercury content of CFLs, it is imperative to ensure that it is disposed in an environment friendly manner. Further, going ahead, when similar schemes for energy

intensive appliances are being implemented, a framework for recycling of old inefficient appliances is needed. Bureau of Energy Efficiency may issue standard guidelines or framework for recycling of old inefficient appliances replaced as part of energy efficiency programme. To start with EESL may take the lead by defining and implementing framework for recycling of CFLs replaced under the UJALA scheme.

Study of rebound effect - by analyzing usage: Many villagers stated that their electricity consumption has reduced after replacing old lighting appliances with LED lamps and hence they have started using other electric appliances. This phenomenon is commonly known as rebound effect. This may have adverse impact of actual energy savings likely to be achieved due to implementation of UJALA like energy efficiency schemes, especially in rural areas. A behavioral study on assessing the impact of rebound effect on implementation energy efficiency scheme in rural areas may be conducted. This would provide useful insights on consumer's behavior and for future planning.



1



Background and objective of the study

Developing an efficient, resilient and financially sustainable power sector is one the important pre-requisite to fuel India's economic growth. Multiple initiatives have been taken-up by Ministry of Power (MoP), Government of India (GoI) to ensure long term sustainability of the sector. At the same time, balancing the economic growth aspirations and mitigating impacts of climate change has also been at the core of various policy initiatives. In its pledge to UNFCCC in the Conference of Parties' 21st meeting, India has undertaken an ambitious goal of reducing emissions intensity of GDP by 33-35% compared to 2005 level by 2030.

In order to meet the targets, the GoI launched the National Action Plan for Climate Change (NAPCC) in 2008 (MoEF). Energy efficiency is recognized as one of most effective measures to achieve targets of NAPCC (Pandve 2009). In light of the same, the National Mission for Enhanced Energy Efficiency (NMEEE) was launched to strengthen the market for energy efficiency by creating a conducive regulatory and policy regime. As a vital step towards enhancement of energy efficient usage of power, Unnat Jyoti by Affordable LEDs for All (UJALA) scheme was launched in year 2015, with an objective of providing people with affordable energy efficient appliances at prices lesser than the market price.

About UJALA scheme

UJALA scheme is the world's largest zero-subsidy LED lamp distribution scheme. It is being implemented by Energy Efficiency Services Limited (EESL), which is a joint venture of four National Public Sector Undertakings – NTPC Limited, Power Finance Corporation Limited, Rural Electrification Corporation Limited and POWERGRID Corporation of India Limited, set up under the Ministry of Power, Government of India.

A 'bulk-procurement model' was adopted, under which EESL procures LED lamps in bulk quantities through competitive bidding and distributes the same to the end consumers. This has resulted in reduction in prices of LED lamps – procurement prices have reduced from about INR 310 to 38 per LED lamp in 3 years (EESL 2016). The benefit of this cost reduction is passed on to the consumers, increasing the affordability of LED lamps.

Multiple channels have been adopted for distribution of LED lamps (which varies from state to state) – distribution through special kiosks set-up in strategic locations including at DISCOMs offices, through post offices, petrol pumps, etc. EESL has distributed about 307 million LED lamps in rural and urban areas (as on 24th August, 2018) (EESL 2018), which has resulted in estimated saving of about 40 billion kWh of electricity and 32 million tonnes equivalent of CO₂ reduction (EESL 2018). EESL plans to distribute about 770 million LED lamps by March, 2019. Further, it is imperative to note that after implementation of UJALA scheme, share of LED lights in overall lighting industry has increased from 21 percent in 2014 to 68 percent in 2017. (ELCOMA 2018).

1.1 Rationale

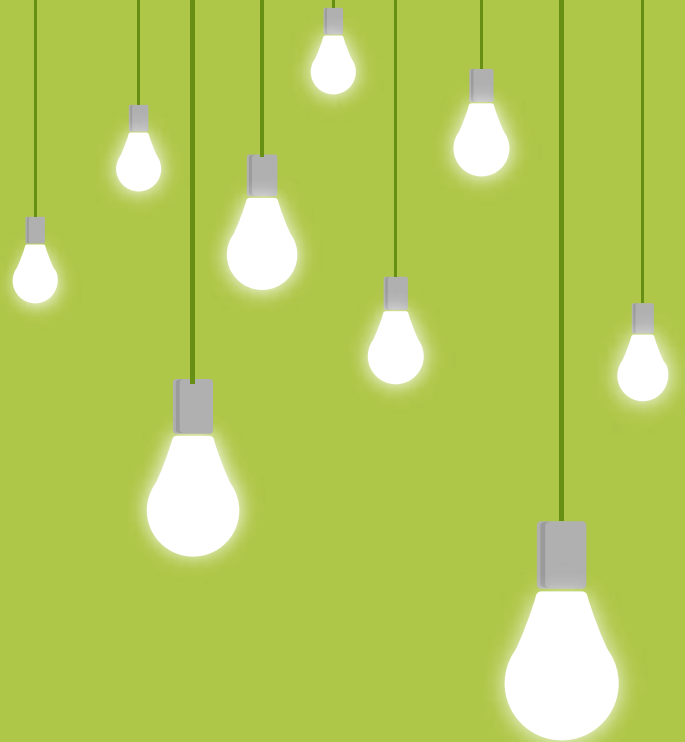
There is enormous potential for improving energy efficiency performance at household level by introducing programmes similar to UJALA in terms of scale, reach and approach. A beginning has also been made to expand the focus of UJALA beyond LED bulbs to energy-efficient appliances like fans and tube lights. Given the expected further expansion in magnitude/scale of implementation, it becomes important to analyze/undertake a ground level assessment of the factors which have led to such large scale adoption of this scheme. It is also essential to understand if and how the benefits from such schemes in terms of both energy savings and reach to the most needy can be further improved.

The UJALA scheme is focused on improving end use energy efficiency by providing LED lamps at affordable prices to urban as well as rural households. To ensure that benefits of such schemes reaches to all intended beneficiaries, challenges/barriers which restricts ability of some to avail benefits of such scheme needs to be addressed. This includes challenge/barriers related to lack of information, financial or physical capacity/ability, geographic location and socio-economic factors, especially in rural areas. Keeping this in view, a study on “UJALA: An Assessment from Inclusion Perspective” was conducted. The objectives of the study were to:

1.2 Objectives

The objectives of the study were to:

- Assess key factors affecting the outreach of UJALA scheme in rural areas from a gender and social inclusion perspective
- Understand key issues and challenges faced during the implementation, and
- Identify interventions required to enhance effectiveness of UJALA scheme in rural areas.



2





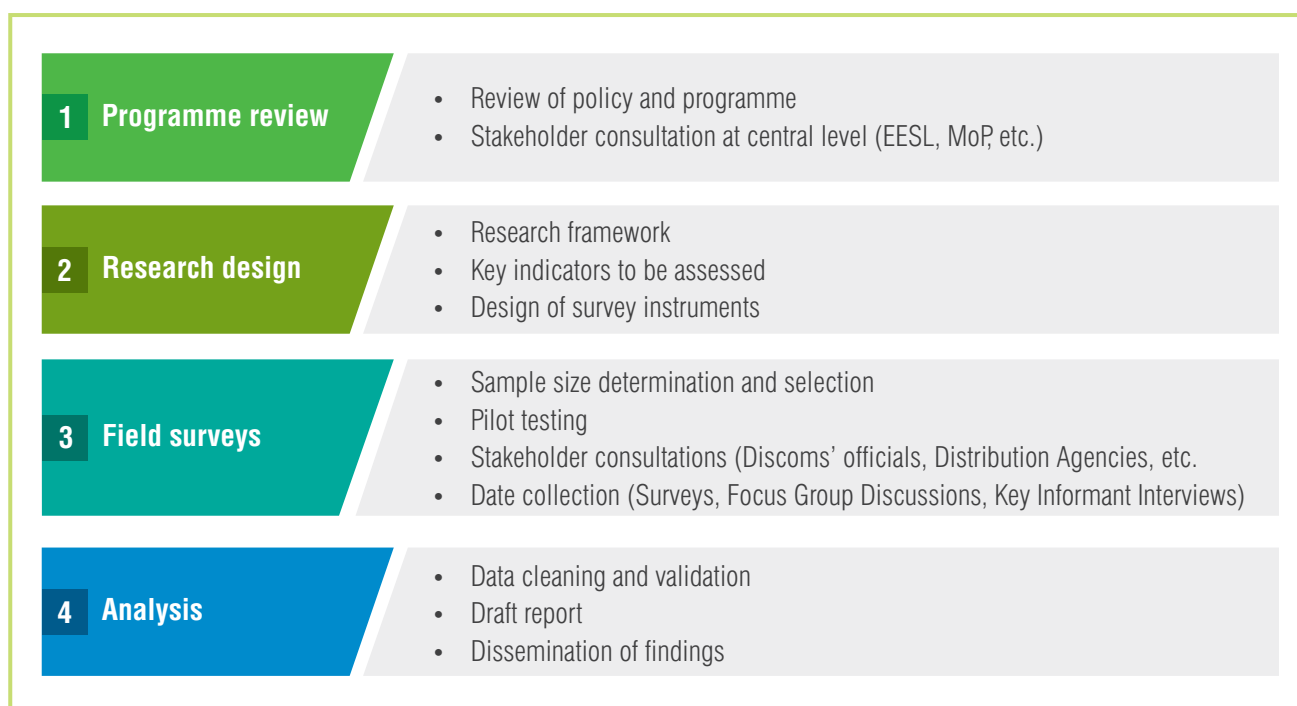
Approach and methodology

Energy efficiency enhancement programmes can have multiple benefits, energy saving being the most prominent. For developing countries, energy efficiency can be leveraged for expanding the access to modern energy services effectively enabling DISCOMs to supply power to more people through existing energy infrastructure.

Considering the objectives of the present study, a research framework was developed to assess key factors for large scale adoption of UJALA scheme in rural areas, understand user's experience and identify key issues and challenges faced during implementation.

The overall approach followed for the study is presented in Figure 1

Figure 1 Approach adopted for conducting the study



2.1 Programme review

This includes review of the UJALA scheme to understand the implementation modalities at the central level and across different states. The objective was to identify key indicators for further assessment of the programme. This include:

- Detailed study of the programme documents to understand its intent, objectives and implementation modalities.
- Consultations with key stakeholders including the MoP and EESL for identification of target states for future analysis and understanding the key issues and challenges faced during the implementation, future plans, etc.
- Meetings with the Project Management Agency (PMA) as well as government and non-governmental agencies involved in the states to gather perspectives on the programme's delivery model, areas / groups that are likely to be marginalised, related concerns, methods / practices being adopted for improved delivery and suggestions to improve inclusion.

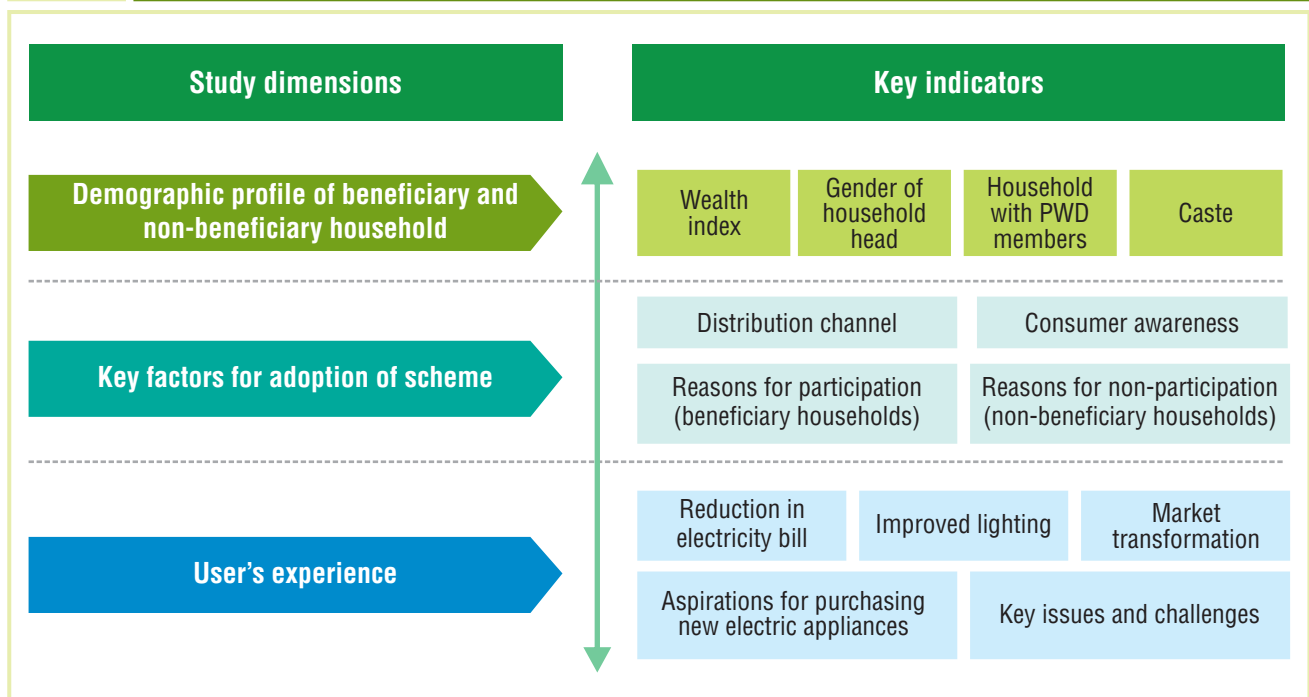
Box 1 Key documents reviewed

- Monitoring and Verification Report - Street Lighting and DELP projects (September 2015)
- EESL Toolkit for DSM based Energy Efficient Lighting Programme (DELP)
- UJALA Programme Details available with EESL
- Case studies available at EESL website
- Best Practices followed in UJALA available at EESL website

2.2 Research design

A snapshot of the research framework developed for conducting this study is presented in Figure 2. Consumer responses with respect to the key indicators of each of the three dimensions mentioned below were captured.

Figure 2 Research framework



PWD: People with disability

- **Demographic profile:** A comparative assessment of the income group, caste and gender profile of the household heads among the beneficiary and non-beneficiary households was carried out to understand who has been able to avail the benefits of UJALA scheme.
- **Key factors for adoption of the scheme:** An assessment of distribution model adopted in study states, major source of awareness among consumers and reasons for participating in the scheme was carried out. Additionally, survey of non-beneficiary households¹ was also conducted to understand the reasons for behind households not availing benefits of the scheme.
- **User's experience:** Consumer experience on the following key parameters was captured:
 - o Replacement behaviour: Lighting appliances e.g. Incandescent Bulbs (ICBs), Compact Florescent Lamps (CFLs), etc. replaced with LED lamps purchased under UJALA scheme
 - o Reduction in electricity bills: Consumer's perception of reduction in electricity bills after using LED lamps
 - o Lighting quality: Consumer's perception about improvement in quality of lighting by using LED lamps
 - o Aspirations: Future aspirations of purchasing new electrical appliances
 - o Key issues and challenges: Issues related to technical faults in LED lamps purchased under the scheme, warranty and replacement, availability of stock, etc.

The respondent group included beneficiary and non-beneficiary households, UJALA distribution centers and community institutions (schools, Gram Panchayats). The list of survey instruments used to collect information from these respondents groups is provided in Table-1.

Table 1 Survey instruments

Instruments	Target Group
Consumer survey using structured questionnaires	Households (beneficiaries and non-beneficiaries) - The primary respondent preferably, the head of the household (man or woman). If not available, then the available adult was interviewed.
Key informant interviews	School teachers, UJALA Distribution Centers and Gram Panchayats.
FGDs	Men and women from user communities
Stakeholder discussions	Officials of EESL and DISCOMs

2.3 Field surveys

Selection of states

The study focused on assessment of UJALA scheme in rural areas of four selected states — Bihar, Odisha, Rajasthan and Uttar Pradesh (UP). These were selected on the basis of consultations with the key stakeholders – MoP and EESL.

¹ Beneficiary households – those who were using UJALA LED lamps; Non-beneficiary households – those who were not using UJALA LED lamps

Table 2 Key statistics of selected states

States	% HH Electrified (as on 24 th Aug, 18)	Total LED distributed (as on 24 th Aug, 18) (in million)	% of BPL population	% Female headed HHs	% SC/ST HHs
Bihar	93%	18	34%	7%	12%
Odisha	81%	13	33%	10%	37%
UP	66%	25	29%	8%	19%
Rajasthan	90%	15	15%	7%	28%

Source: UJALA dashboard, Saubhagya Dashboard, Census of India 2011 (last accessed on 24th Aug, 18)

Sample size and sample distribution

The sample size for the household survey was estimated with a reasonable error of +/- 5 percent in the sample design (details provided in Annexure 1). The total sample size of at least 405 beneficiary households (75 percent of sample) and 135 non-beneficiary households (25 percent of the sample) was considered for each state. The number of respondents across different categories in the 4 states are provided Table 3.

Table 3 Number of respondents across different categories

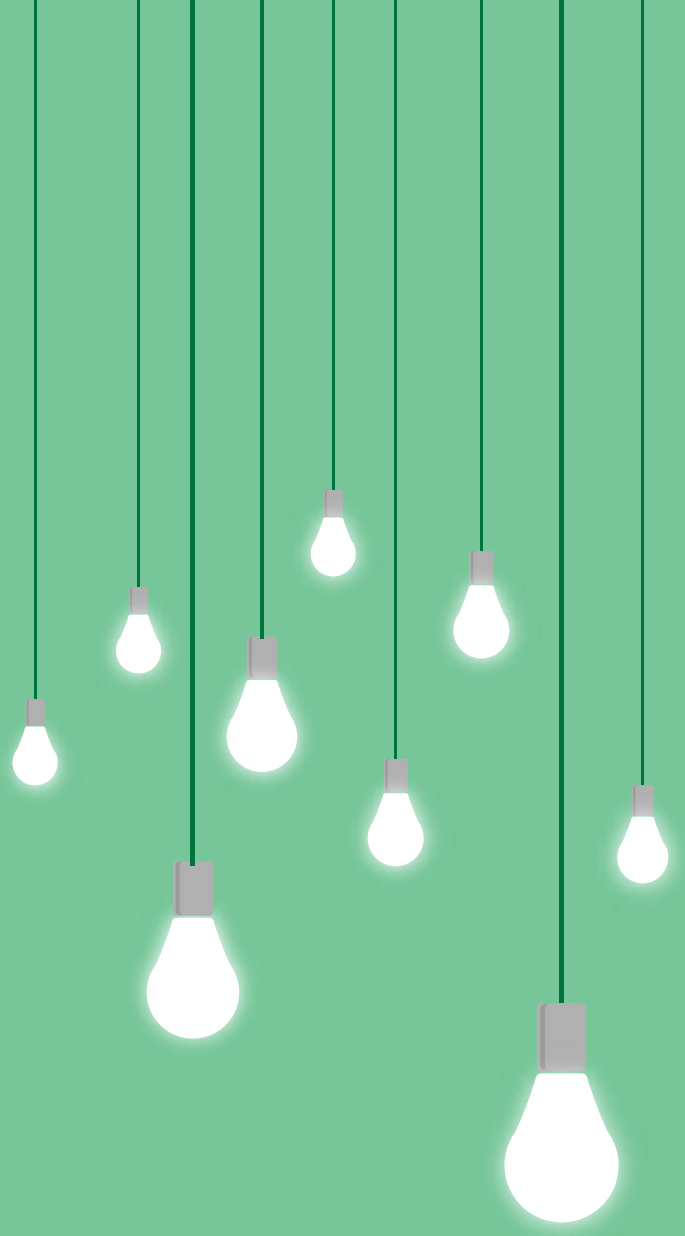
States	No. of districts	Household sample size		Total sample size (HH)
		Beneficiary households	Non-beneficiary households	
Bihar	3	453	153	606
Odisha	3	416	146	562
UP	3	447	151	598
Rajasthan	3	437	161	598
Total	12	1,753	611	2,364

Interactions were also undertaken with key stakeholders such as officials of EESL and DISCOMs, school teachers, representatives of local healthcare centres and Gram Panchayats.

The districts in each state were selected to ensure adequate representation on key parameters central to the objective of this study (LED penetration rate, percentage of poor households, SC/ST households and percentage of female headed households).

2.4 Analysis and way forward

The data analysis process included four stages — (i) preliminary assessment; (ii) verification and validation (iii) data cleaning and (iv) analysis of information on key parameters of the three dimensions identified in research framework. Based on these, an assessment key factors affecting outreach of the UJALA scheme from a gender and social inclusion perspective was carried out. Lessons and interventions required to enhance effectiveness of similar energy efficiency programmes in rural areas were also identified. The key findings and insights emerging from the field studies are presented in the subsequent sections of this report.



3



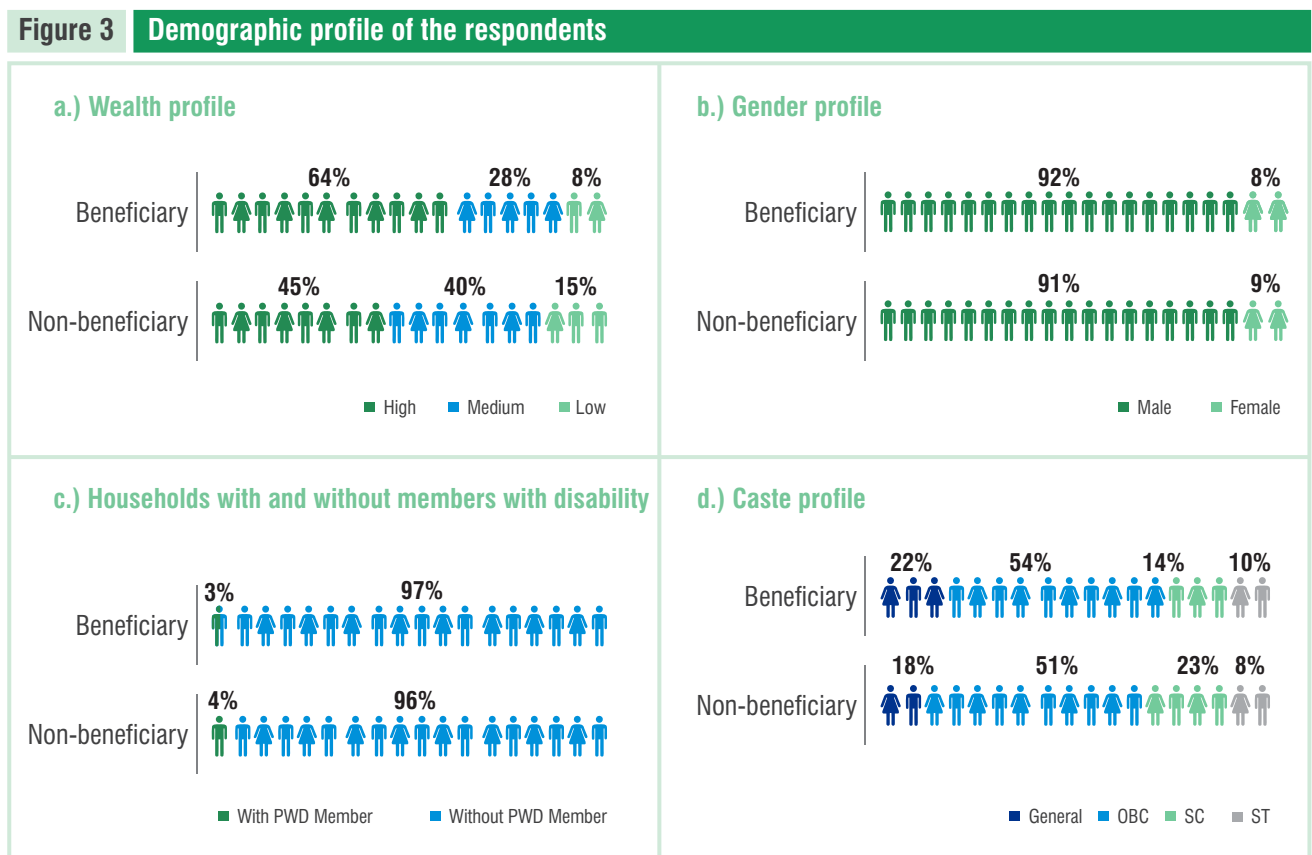


Study findings

This chapter presents the key findings of the household survey on the basis of the research framework mentioned above. The survey results have been analyzed across the three pillars of research framework – demographic profile of beneficiary and non-beneficiary households, key factors for large scale adoption of the scheme and user's experiences.

3.1 Demographic profile

The demographic profile of beneficiary and non-beneficiary households on the basis of key parameters — (i) Wealth category² (ii) caste (iii) gender of the respondent and (iv) household with and without members with disability — is showcased in Figure 3.



Since the sample households were chosen based on the catchment area identified from the distribution Centre, segregation based on wealth category do not necessarily mean exclusion based on wealth.

² **Wealth category (index)** has been defined by using the same approach as adopted by National Family Health Survey (NFHS). Information on 27 household assets and housing characteristics, such as ownership of consumer items, type of dwelling, source of water, etc. was collected and combined into a single index, using weights assigned to individual components by NFHS. (International Institute for Population Sciences, 2017)

Responses were skewed towards male headed households. A reasonable percentage of female headed households were also observed. The sample also covered population with disability and different castes.

3.2 Key factors for adoption of the scheme

This section provides insights on key factors like distribution model, consumer awareness, and key factors that influenced purchased decisions of households.

3.2.1 Distribution channels

The EESL has instituted a number of channels to expand the reach of UJALA scheme and has continuously been adding new elements to its existing distribution network. Major elements of distribution network are:

- **Dedicated kiosks at DISCOM's offices-** Distribution Agencies (DA) appointed by EESL set-up dedicated kiosks for distribution of LED lamps at the DISCOMs offices in all four states.
- **Petrol Pumps-** In 2017, EESL signed a MoU with the major Oil Marketing Companies (OMCs) in the country for distribution of energy efficient appliances under UJALA scheme. As per the MoU, OMCs are distributing LED lamps through select retail outlets (PIB 2017).
- **Common Service Centers-** Village Level Entrepreneurs (VLEs) operating under the Common Service Centres (CSC) have also been engaged for distribution of LED lamps. They can procure LED lamps in lot size of minimum 350 units through Digital Seva Portals and distribute the same thereby earning a margin of Rs 4 for each LED lamp (MietY 2018).
- **Post offices-** EESL has also engaged with the Department of Post for distribution of LED lamps through the network of post offices in few states. Among the four study states (Bihar, Rajasthan, Odisha and Uttar Pradesh) post offices were engaged in Bihar only. Other states in which LED lamps are distributed through Post Offices includes Punjab, Madhya Pradesh, Karnataka, etc.
- **Temporary kiosks -** LED lamps are also being distributed through periodic camps/kiosks set-up by the DA at strategic locations.

An overview of the distribution network in the study states is presented in Table-4:

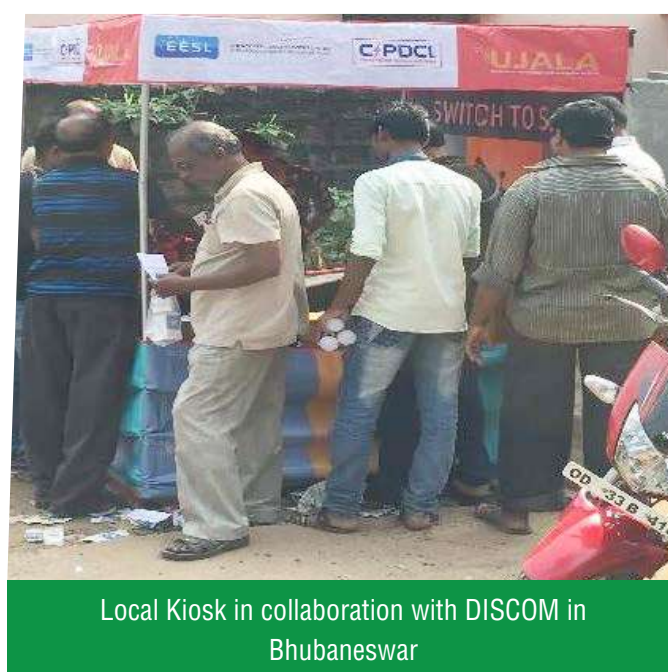
Table 4 Distribution networks in the states selected for the study			
Bihar			
Post offices	Distribution Agency	Oil Marketing Companies	Common Service Centres
700-800 Functional Plan to reach 1200 Sub Post Office	Total 76 kiosks within Distribution Company's Premise	25 Operational	Centres for services such as AADHAAR 13 operational
UP			
E-Suvida	Distribution Agency	Oil Marketing Companies	Common Service Centres
60 across Lucknow	Total 450 Kiosks within Distribution Company's Premise	350 operational	60 operational

Rajasthan			
E-mitra centres	Distribution Agency	Oil Marketing Companies	Common Service Centres
Around 10,000 across state	Around 150 Kiosks within Distribution Company's Premise	130 Operational	Around 10,000 across state
Odisha			
Post Office	Distribution Agency	Oil Marketing Companies	Community Service Centres
Adding up soon to the network	300 distribution centres across 3 agencies	62 operational	36 Centres

Source: Stakeholder discussions with DISCOM & EESL officials, held during Nov 2017-Jan 2018



Petrol Pump selling UJALA appliances in Bhubaneswar

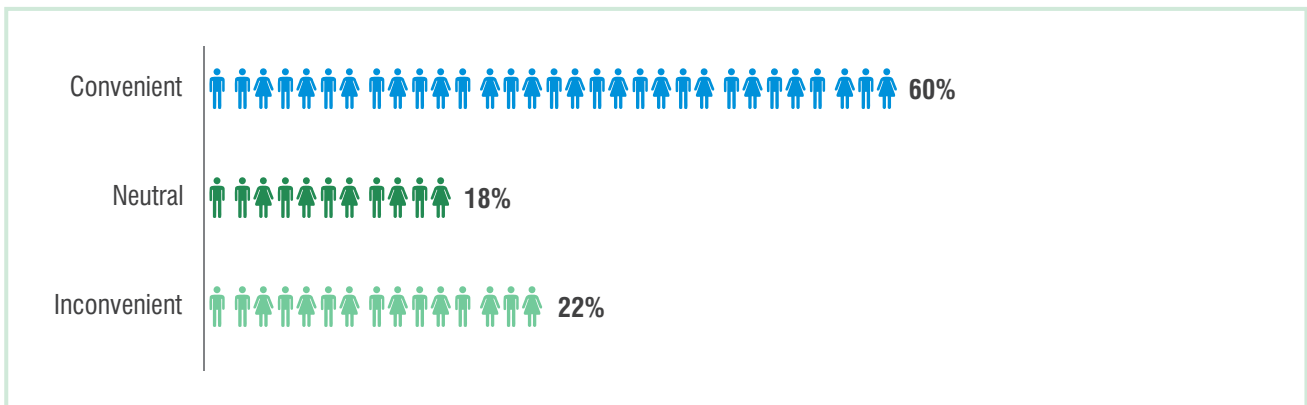


Local Kiosk in collaboration with DISCOM in Bhubaneswar

While majority of respondents (60 percent) stated that it was convenient to access distribution centers, about 22 percent reported inconvenience in reaching out to the distribution centers for purchasing LED lamps under the scheme. Major reason for the same was the distance they have to travel. It was mentioned during FGDs and stakeholder interviews that:

- Mostly people living close to the distribution centers visit to purchase LED lamps;
- In case of sparsely populated areas/hamlets/villages, it is not practically feasible³ to set-up dedicated distribution kiosks. In such cases, though special camps are organized, not all people participate/visit to purchase LED lamps in such camps.

³ The sales volume remains low, due to which set-up and operational costs cannot be recovered

Figure 4 Convenience in accessing distribution centres

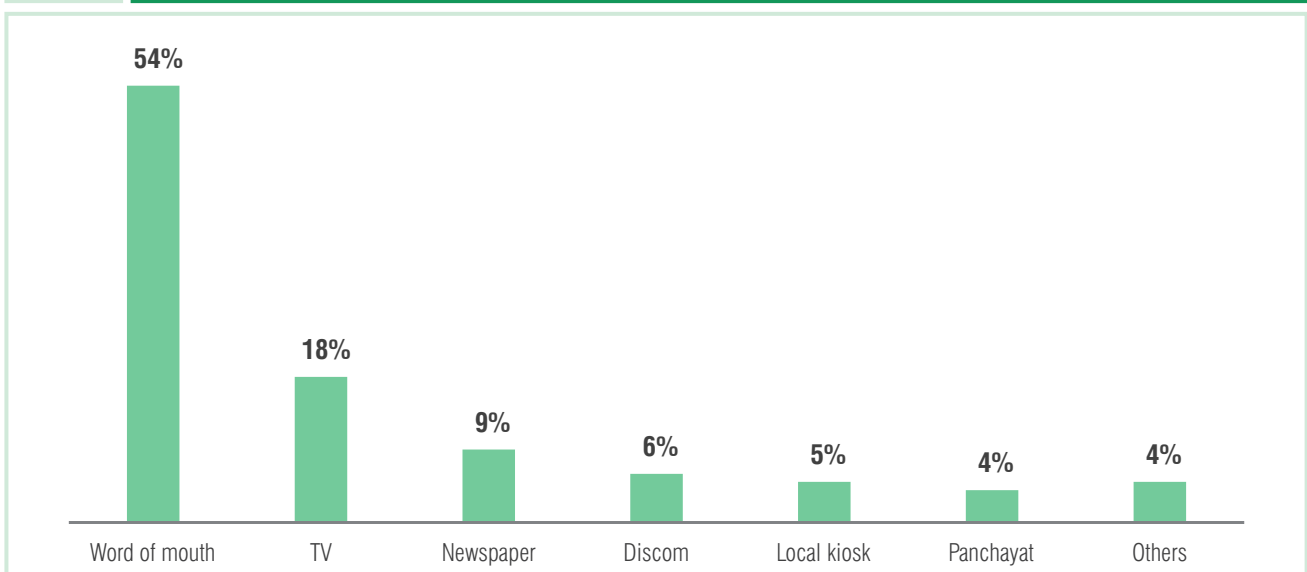
3.2.2 Consumer awareness

All the key stakeholders consulted during field surveys were united in their appreciation of the widespread awareness regarding LED lamps and the need for energy efficiency in general that the UJALA scheme had succeeded in bringing about. Right from its launch, multiple awareness campaigns are organized using different modes of communication e.g. advertisement in televisions, newspaper, through DISCOMs, periodic camps and others.

However, there are several other aspects to awareness that came to light during the field survey:

- Many people do not visit the UJALA distribution centers themselves for purchasing LED lamps, as they receive it from their neighbors/relatives/friends who went to the distribution centers. In these cases, people who go to purchase the lamps are aware about the scheme, however, the ultimate beneficiary is not. This is especially true for women, who are using LED lamps, but are not aware of the scheme.
- In some cases, people were not aware about some of the key aspects of UJALA scheme i.e. warranty period, procedure for replacement etc.

Most common source of information was 'word of mouth' messages spread by neighbors/friends/family members/community members. Among others, important sources of information were TV advertisements, newspaper advertisements and DISCOMs (Figure-5).

Figure 5 Source of information among the beneficiary households

“

Even before implementation of UJALA scheme, I used to suggest customers to purchase LED lamps as they are cost effective in the long-run. With launch of UJALA scheme, I have assisted many villagers in purchasing LED lamps through local kiosks.

- Local electrician from village 7a, Ganganagar district, Rajasthan

How are we supposed to know about these things, if we are not informed? I am an uneducated man and I can't read the newspaper, even if government have given these information in them

- Shop Owner from village 6a, Rajasthan

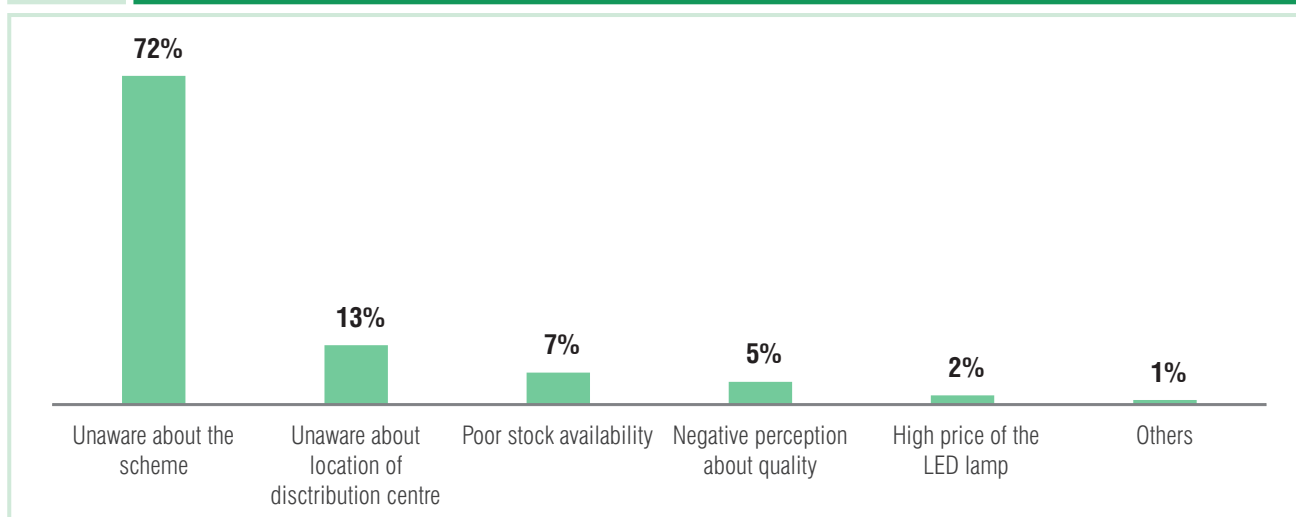
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3.2.3 Reasons for non-participation

As mentioned earlier, a survey of non-beneficiary households was also conducted to understand the specific reasons for non-participation. They are:

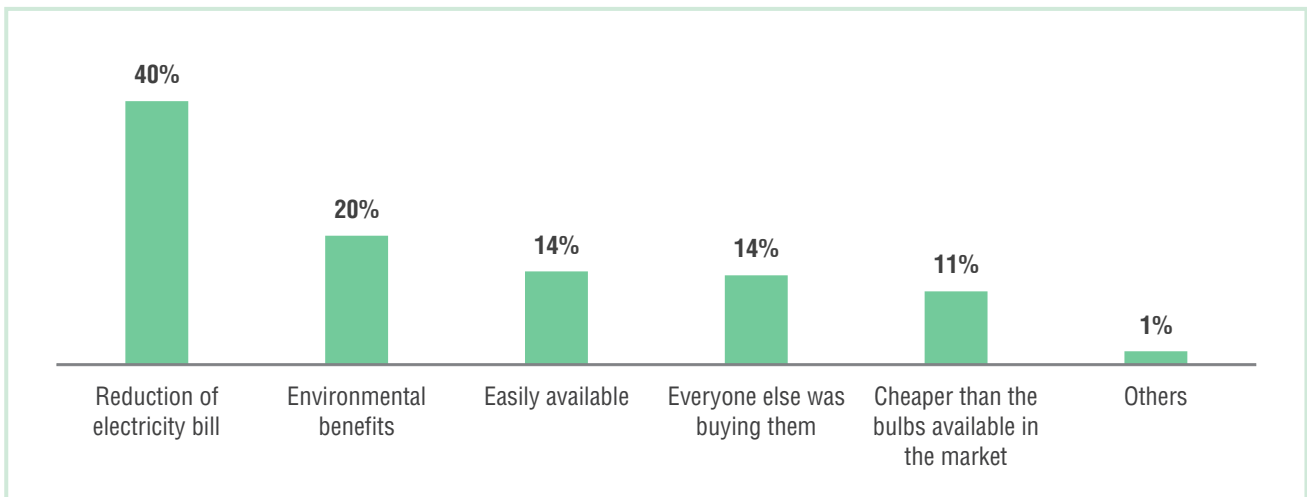
- Major reason for non-participation was lack of awareness about the scheme (reported by 72 percent respondents). Among those who were not aware about the scheme majority of them were found to have education below 10th standard. This implies there is a need of increasing the awareness level through propagating the benefits of adoption of LEDs at primary level of education. This will further entail word of mouth propagation to the extended family of a particular student.
- Other common reasons were lack of awareness about nearest distribution center and unavailability of stock at the distribution centers.

Figure 6 Reasons for non-participation — non-beneficiary households



3.2.4 Reasons for participation

It imperative to increase awareness about benefits of using LED lamp to ensure adoption. Among the beneficiary households, most common reason for purchasing LED lamps was reduction in electricity bills, followed by consumer's perception/belief that reducing energy consumption is good for the environment (Figure-7).

Figure 7 Reasons for purchase among the beneficiaries

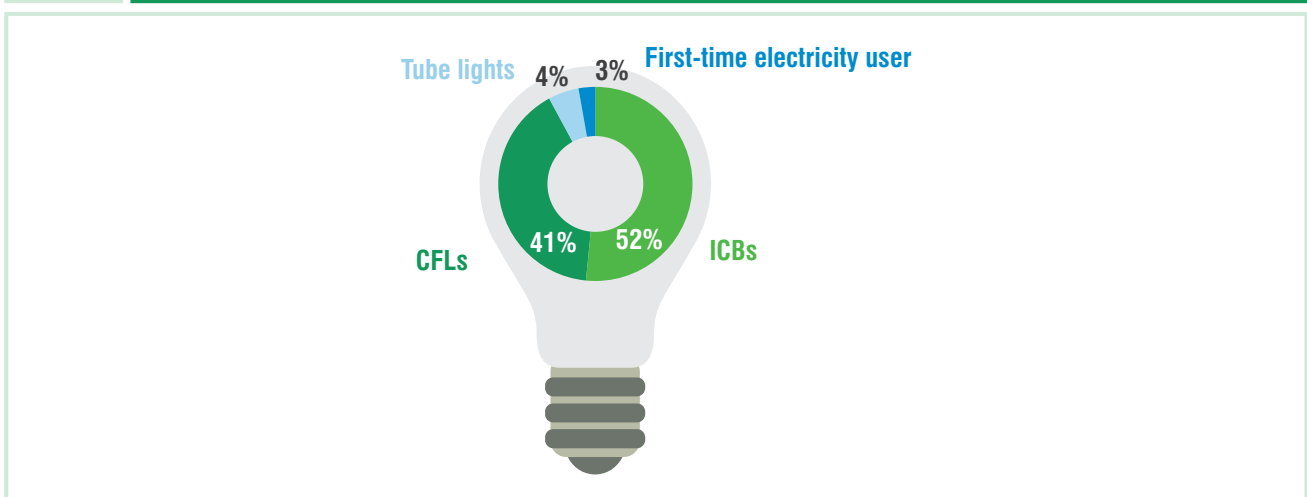
3.3 User's experience

The following section present the analysis of consumer responses regarding their experiences related to usage of LED lamps purchased under the scheme, e.g. reduction in electricity bills, appliances which were replaced with LED lamps and improvement in quality of lighting. It also explores their future aspirations related to purchasing other electrical appliances and identifies key issues and challenges faced.

3.3.1 Replacement of old lighting appliances

With the adoption of the LED lamps, households replace the conventional lighting appliances such as ICBs and CFLs. About 52 percent respondents reported to have replaced ICBs, while 41 percent reported to replace CFLs with the LED lamps purchased under the UJALA scheme.

LED lamps available under the UJALA scheme are expensive as compared to ICBs, which are easily available, especially in rural markets. On contrary, CFLs available in market are expensive than the LED lamps available under the UJALA scheme. This implies that ICBs are more likely to be used in lower wealth category households. Thus, targeting lower wealth category or poor households will help in replacement of more ICBs in the market.

Figure 8 Type of lighting appliances replaced with LED lamps

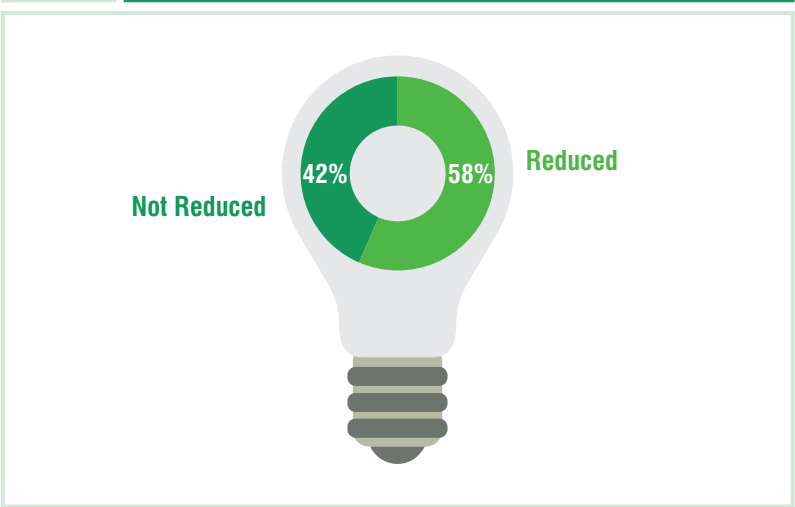
“ A study conducted by Prayas, states out that about 60 percent of LED lamps under UJALA scheme were used to replace CFLs, while only 25 percent were used to replace ICBs. Additionally, the study points out that due to higher usage of incandescent bulb among the low income households, they observe more energy savings (2.5 times) as compared to high income households. (Prayas 2017) ”

3.3.2 Reduction in electricity bills

One of the direct benefits of replacing ICBs and CFLs with LED lamps, is relative reduction in electricity consumption leading to lower electricity bills. About 58 percent of the beneficiary households surveyed reported a reduction in electricity bills. Such reduction in electricity bills are higher where ICBs have been replaced as compared to households who replaced CFLs with LED lamps.

The identification of such benefits by the consumers leads to positive attitude towards adoption of energy efficient appliances in future.

Figure 9 Consumer's perception about reduction in electricity bills

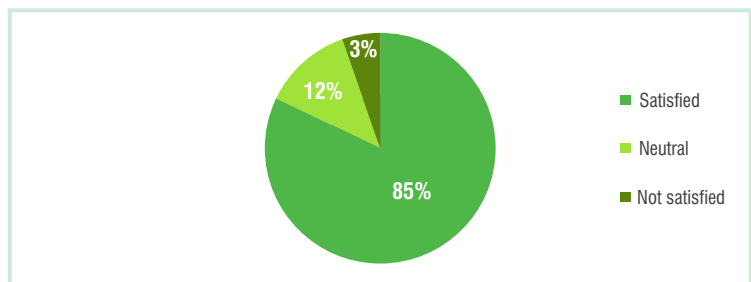


“ **Rebound effect**
Earlier we used to have just one lighting point in the household. We used an incandescent bulb for lighting the living room as well as kitchen. When we realized that using LED lamps results in lesser electricity bills, we installed lights in all the rooms and kitchen. The bill amount has remained almost same when we were using one incandescent bulb. Use of LEDs have definitely eased our life.
 -Respondent from UP
We are planning to purchase electric fan as our electricity consumption has reduced and now we can afford one.
 - Respondent from Bihar ”

3.3.3 Improved lighting

About 85 percent of the beneficiary households find the performance of the LED lamps to be satisfactory and appreciated the quality of luminance and better life span of LEDs lamps as compared to other alternatives. People not satisfied with the performance cited reasons such as high failure rate, shorter life and no visible reduction in electricity bills.

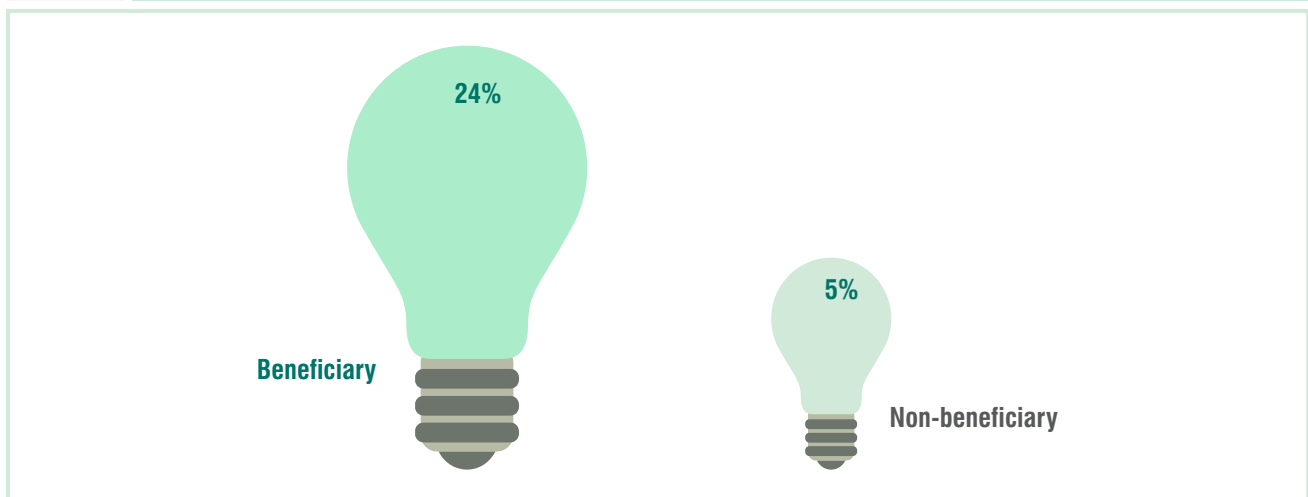
Figure 10 Experience with performance of LED lamps



3.3.4 Market transformation

About 24 percent of the beneficiary households expressed their willingness to purchase LED lamps and other energy efficient appliances from the open market. While only 5 percent of non-beneficiary households indicated the same. This indicates a slow but positive trend of beneficiary households getting aware about benefits of energy efficiency, and desiring to purchase energy efficient appliances.

Figure 11 Percentage of consumers willing to purchase LED lamps outside the scheme



3.3.5 Aspirations for purchasing new electric appliances

Number of rural households mentioned about their plans/willingness to purchase other electric appliances. About 30 percent stated that they are planning to purchase electric fan and television sets. Similarly, about 10 percent stated that they planning to purchase air conditioners. This highlights that as people move up in the energy ladder, the propensity to purchase energy-intensive appliances to meet their needs and aspirations increases.

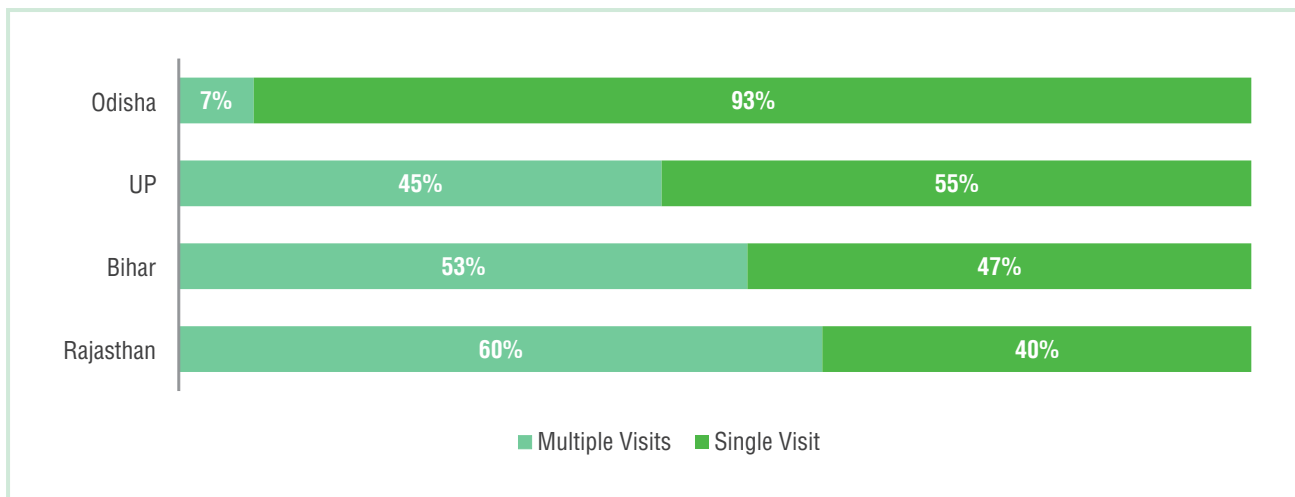
3.3.6 Key issues and challenges faced by beneficiary households

Major issues reported by villagers were– (i) availability of stock at distribution centre; (ii) replacement of LED lamps in case of technical faults and (iii) proliferation of sub-standard LED lamps in the market. These are further discussed below:

Stock availability

Frequent visits to the distribution centers for purchasing LED lamps due to un-availability of stock was one of the major issues reported by beneficiary households (Figure 12), especially in Rajasthan, Bihar and Uttar Pradesh. Non availability of LED lamps in the distribution centers often restricts participation, especially for those who have to travel long distance to purchase lamps. About 7 percent of non-beneficiary households also stated that they were not able to participate in the scheme due to unavailability of stock at the distribution center.

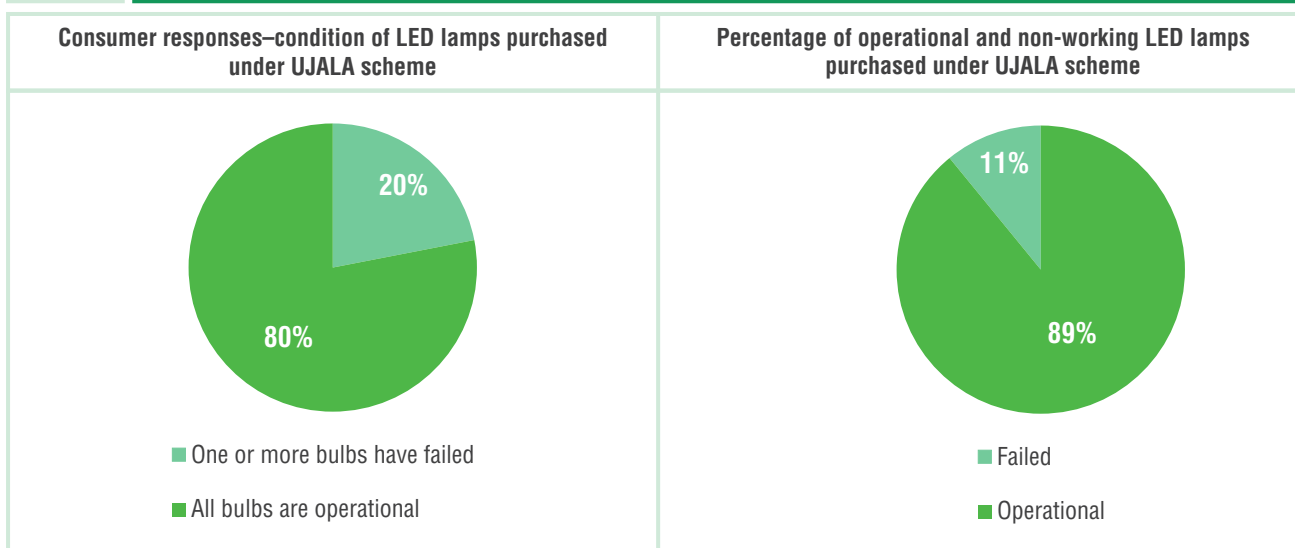
Figure 12 Visits required to buy new LED lamps



Replacement of LED lamps in case of technical faults

While majority (80 percent) of respondents stated that LED lamps purchased under the scheme are working satisfactorily, about 20 percent stated that one or more LED lamps were not working. In terms of number of LED lamps, about 11 percent were reported to be non-working due to technical faults.

Figure 13 Performance of LED lamps



Among the households who faced technical issues with one or more LED lamps purchased under the scheme, about half of the respondents (58 percent) did not attempt to replace it under the LED lamps. This can be attributed to multiple reasons such as unawareness about replacement mechanism, use of next available option (ICBs/CFLs which were replaced with LED lamps) due to urgency, etc.

Among those who attempted to replace, mere 39 percent were able to replace it, while many were not able to do so (at the time of survey) due to following reasons:

- a) Change in location of the kiosk from which lamps were purchased
- b) Unavailability of stock at the distribution center
- c) Inconvenience to reach out again to the distribution centers
- d) Lack of knowledge about replacement policy and warranty period

There is a risk that in absence of adequate replacement mechanism in place, the consumers may revert to using ICBs considering the higher cost of LED lamps procured outside the scheme.

“

I brought 5 LED lamps under the scheme from a local kiosk set up at bill collection center and have been using them for 3-5 months. One of the five bulb has failed recently. When I tried to get it replaced, I was told that currently there is no stock available. So I started using ICB that was earlier replaced by LED lamp.

- Respondent in Bihar

”

Proliferation of sub-standard products

An issue that was highlighted by few household and mentioned during FGDs as well, was sale of sub-standard LED lamps at a price lesser than that of LED lamps under UJALA scheme. Though these LED lamps are not sold with any warranty, sometimes people prefer to purchase them due to cost advantage. This also led to increased perception that LED lamps available under UJALA scheme are expensive.

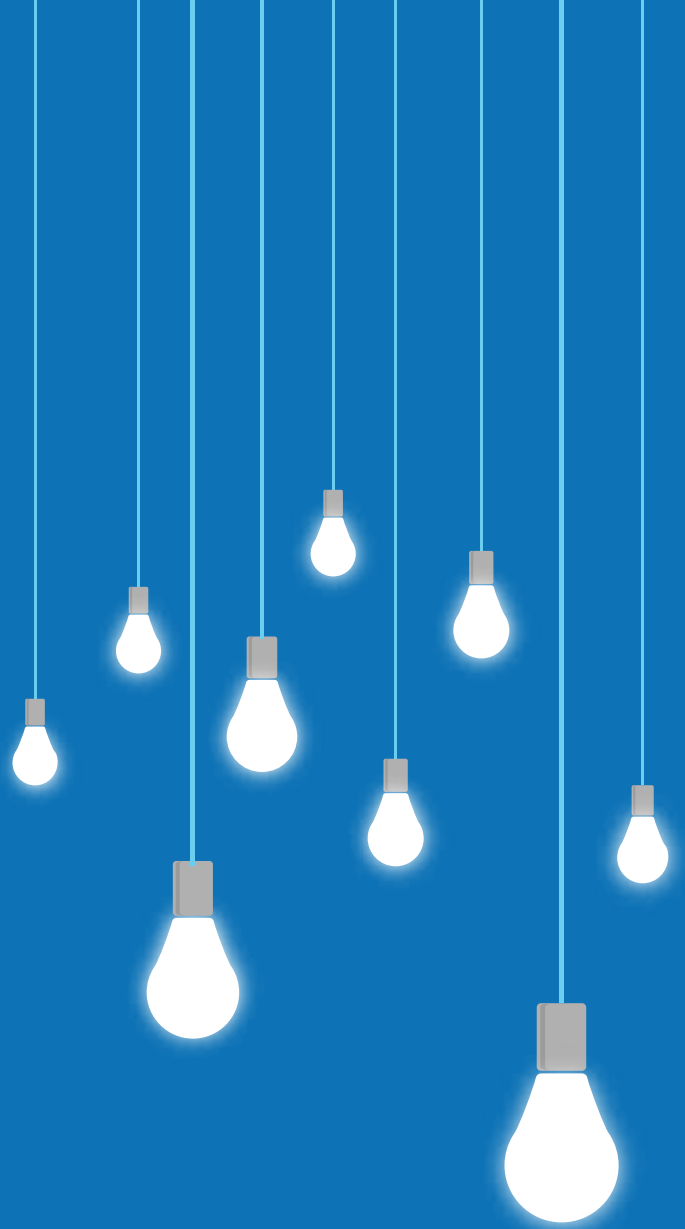


“

There are other kiosks set up very close to UJALA kiosks and are selling similar LED lamps at a lesser price. While lamps under UJALA scheme are available at Rs. 70 per lamp, other kiosks/local shop keepers are selling 3 LED lamps at Rs. 100. Unaware of the sub-standard quality many people bought such lamps and most of them failed within a month.

- FGD in Bihar

”



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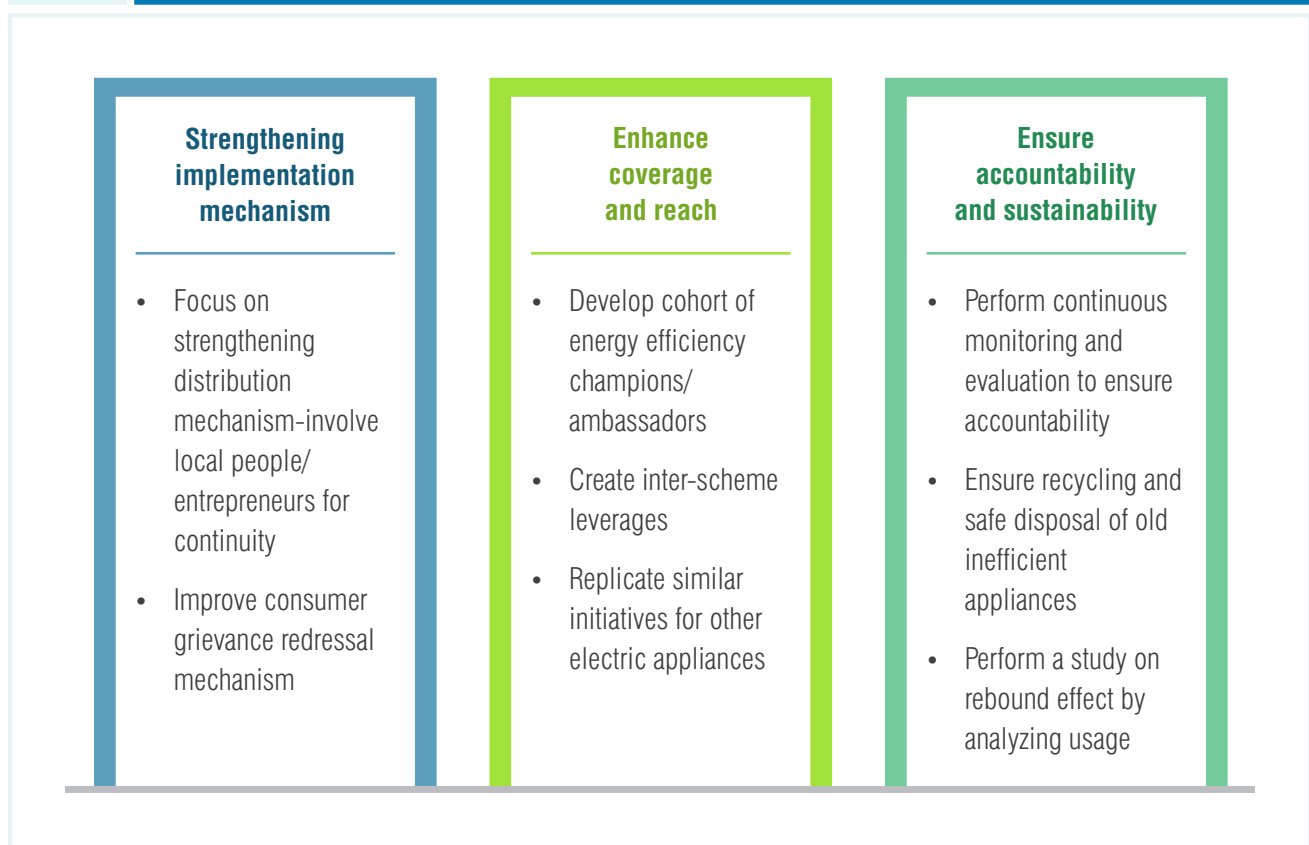




Lessons learnt and way forward

Based on the analysis of information collected from consumer surveys and stakeholder consultation, a set of interventions has been identified. These have been categorized into three sections: The first section provides key interventions required to strengthen the supply chain, involve local people for distribution and improve effectiveness of consumer grievance redressal mechanism. The second section focuses on interventions required to enhance coverage & outreach of energy efficiency programmes especially in rural areas. The last section dwells on the interventions required to ensure sustainability of energy efficiency measures (Figure 14).

Figure 14 Suggested interventions



4.1 Implementation mechanism

4.1.1 Focus on strengthening distribution mechanism — involve local people/entrepreneurs

Though multiple channels of distribution have been adopted, availability of stock was one of the major issues faced by users (beneficiary households). About 52% of beneficiaries in UP, Bihar and Rajasthan reported to have visited the distribution centers more than once to purchase LED lamps. Further, about 7% of non-beneficiary respondents stated that non availability of stock at the distribution center was the main reason for not purchasing LED lamp under the scheme.

Learnings:

- Multiple channels of distribution e.g. setting-up kiosks at DISCOM's office, engaging with petrol pumps, post offices, CSCs etc. is welcome initiative and should be replicated in all states.
- Limited availability of stocks act as barrier to increasing penetration of such schemes. A robust and agile distribution network is necessary to drive adoption of the scheme.

Actions: Continuous strengthening of distribution network and improving availability of stocks at distribution centers in rural areas is necessary for large scale uptake of the scheme. A network of mobile distribution units may be considered, which can provide LED lamps/energy efficient appliances to willing consumers at the doorstep. This would also help in reaching out to the people with disability and also to households in the remotest areas where it is not commercially viable to set-up distribution centers. Local entrepreneurs/SHGs may be engaged to set-up those mobile distribution units to continuous interface. LPG distribution centers operating in rural may also be engaged for distribution of LED lamps/energy efficient appliances.

“

Mahila Housing Trust is not-for-profit organization working across eight states in India. As part of their energy programme, Mahila Housing Trust (MHT) organizes community workshops to disseminate information on energy efficiency and renewable energy. The platform is used to identify women leaders who, when trained, can work as energy auditors. These women energy auditors educate households on nuances of energy usage (such as bill calculation, wattage consumption, energy wastage) and encourage them to switch to more efficient products. They also act as a grassroots level, women-led distribution network of green energy and building products (MHT 2018).

”

4.1.2 Improve consumer grievance redressal process

One of key features of UJALA scheme was three years warranty period under which faulty LED lamps were replaced with new ones within the warranty period. Consumers can register their grievances about technical faults through multiple channels: (i) at the distribution centers; (ii) toll-free helpline number; (iii) through social media; (iv) email and (v) grievance redressal tab on the UJALA website. Though there were multiple channels for registering complaints, many consumers reported inconvenience while replacing the faulty lamps. This was mainly due to (i) unavailability of stocks at the distribution centers, (ii) inconvenience to visit the distribution centers again for replacement because of distances involved and (iii) lack of knowledge about replacement policy and warranty period.

Learnings:

- Strong grievance redressal mechanism is necessary to sustain the scale of the programme.
- The mechanism also creates positive perceptions and helps build customer's confidence in the services.

Actions: Local institutions like rural banks, post offices, Gram Panchayats, state agriculture marketing boards/departments (agriculture 'mandis'), etc. may be engaged to spread awareness about replacement procedures and replacement of faulty LED lamps. In addition to this, onsite replacement of LED lamps may also be considered and network of mobile distribution units (as mentioned above) may be engaged to provide doorstep replacement services. Additional costs for providing such services can be added or considered as management cost for implementing the scheme.

4.2 Coverage and outreach

4.2.1 Develop cohort of rural people as energy efficiency champions/ ambassadors

Generating awareness about benefits of using energy efficient appliances is the first step towards successful implementation of energy efficiency programmes. Under UJALA scheme, multiple communication channels were used to spread awareness, however, about 72 percent of non-beneficiary household reported that they were not aware about the scheme and hence did not participate. This indicates that concerted efforts are required to create awareness in rural areas.

Further, it was observed that most common source of information among those who participated in the scheme, was information provided by neighbors/friends/family members/community members i.e. "word of mouth". Rural people may be engaged to spread the message which will help in reaching out to masses.

Learnings:

- Awareness plays an important role for a scheme like UJALA that requires an upfront cost in lieu of accrual of benefits over a period of time. It also helps in creating trust.
- Reaching rural areas may require targeted approach with different communication message and channels

Actions: Local institutions like healthcare centers, Gram Panchayats, schools, etc. have wider reach and ability to convince rural people. In some states they were also engaged to spread awareness about the scheme (e.g. local schools and colleges were engaged in Odisha, elected representatives worked with the EESL team in Gujarat). Such practices should be replicated in other states as well.

Developing cohort of rural people as champions or ambassadors for energy efficiency may also be considered. Rural entrepreneurs or women self-help groups may be engaged to spread awareness about energy efficiency related schemes/initiatives.

4.2.2 Create inter scheme leverages

The Government of India (GoI) has been implementing a number of programmes/schemes for rural development, which include schemes for electrification of households, distribution of LED lamps, opening of bank accounts, provision of life and medical insurance, etc. Dovetailing of these initiatives provides immense opportunities for creating inter-scheme linkages.

Learnings:

- As part of 'Gram Swaraj Abhiyaan,' the GoI organized a massive campaign to spread awareness about rural development schemes across the country. About 3.3 million elected representatives of Panchayati Raj Institutions (PRIs), 50 million women self-help groups and many public leaders were engaged in the programme.
- Collaboration with DISCOMs has helped in increasing the penetration

Actions: Gram Swaraj Abhiyaan is a welcome initiative and may be organized at regular intervals to spread awareness about rural development programmes.

A package of inter-linked services can also be provided to rural consumers, i.e. electricity connections (provided under Saubhagya or directly by the DISCOMs) with package of energy efficient appliances (Fans, tube lights and other appliances.).

4.2.3 Replicate similar initiatives for other electricity appliances

As people climb up the energy ladder, penetration of electric appliances is also expected to increase. About 30 percent stated that they are planning to purchase electric fan and television sets. Similarly, about 10 percent stated that they planning to purchase air conditioners.

This provides opportunity to embed energy efficiency into the foundation of the emerging energy market and ensure that consumption efficiency is a focus right from the beginning. UJALA like schemes covering other energy intensive appliances such as space conditioning appliances, refrigerators, televisions, etc. may also be initiated in rural areas.

Actions: EESL or similar institutions should be encouraged to launch energy efficiency programmes for distribution of energy efficient appliances in rural areas. Innovative models in which consumers do not have to bear the upfront cost for energy efficient appliances may also be considered. This includes (i) Insurance backed equipment leasing model — consumers do not pay upfront cost of the appliances, instead they pay a rent on a periodic basis. The appliances are owned by a service provider (i.e. ESCO) and its risk is covered through insurance and (ii) Pay-as-you-go or service based contracts — the consumers pay as per the usage of appliance or service. Payment through Kisan Credit cards or engaging Micro Finance Institutions operating in rural areas may also be considered.

4.3 Accountability and sustainability

4.3.1 Continuous monitoring and evaluation

An efficient monitoring system is needed to provide evidence-based feedback for policy makers and implementing agencies of energy efficiency programmes. A reliable data on key parameters defining the programme success such as number of appliances purchased, usage hours, number of appliances replaced, number of complaints received, etc. will help in increasing the accountability of implementing organizations/manufacturers and monitoring the compliance of set standards.

Learnings:

- Continuous monitoring of implementation of such large scale initiatives is required. UJALA dashboard set-up as part of the scheme, provides vital information on number of LED lamps sold in different geographies across the country, amount of electricity saved, avoided carbon emission, etc.
- Such availability of data on public portal results in increased accountability and is necessary to sustain the programme.

Actions: Information on other key parameters like usage hours, number of appliances sold to households & commercial consumers, number of appliances replaced under warranty, number of complaints received and resolved, number of women entrepreneurs/local people engaged, employment generated etc. may also be monitored on periodic basis. Such information should also be made available in public domain which can be feed into designing more effective rural development programmes/schemes.

4.3.2 Recycling and safe disposal of old inefficient appliances

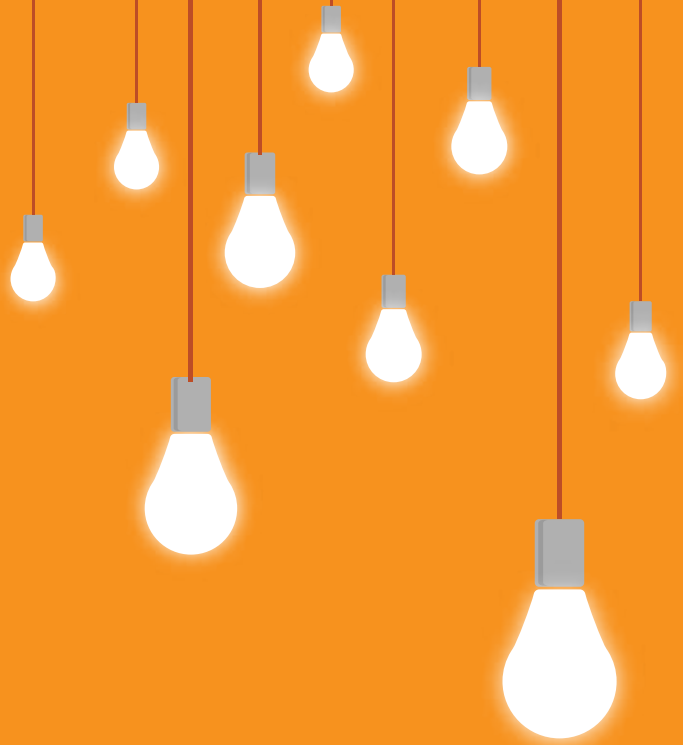
About 41% respondents reported to replace CFLs with LED lamps under UJALA scheme. These CFLs were are either stored for future use or thrown away. Given the mercury content of CFLs, it is imperative to ensure that it is disposed in an environment friendly manner. Further, going ahead, when similar schemes for energy intensive appliances are being implemented, a framework for recycling of old inefficient appliances is needed.

Actions: Bureau of Energy Efficiency may consider issuing standard guidelines or framework for recycling of old inefficient appliances replaced as part of energy efficiency programme. This would include defining process of collection of old inefficient appliances, guidelines for safe disposal as per set standards, monitoring and verification protocols, etc. To start with EESL may take the lead by defining and implementing framework for recycling of CFLs replaced under the UJALA scheme.

4.3.3 Study of rebound effect

Many villagers stated that their electricity consumption has reduced after replacing old lighting appliances with LED lamps and hence they have started using other electric appliances. This phenomenon is commonly known as rebound effect. In rural areas, this effect could be more pronounced as people tends to move up in the energy ladder and purchase more electric appliances.

Actions: A behavioral study on assessing impact of rebound effect on implementation energy efficiency scheme may be conducted. This would provide useful insights on consumer's behavior and for future planning.





Annexures

Annexure 1: Sample size calculation for household surveys

The sample size is determined with an acceptable error of +/- 5 percent in the sample design and based on the two-sample formula:

$$n = \frac{[D[Z_{1-\alpha}\sqrt{2P(1-P)} + Z_{1-\beta}\sqrt{P_1(1-P_1) + P_2(1-P_2)}]^2]}{(P_2 - P_1)^2}$$

Where,

Design effect, $D = 1.1$

Estimated proportion at first time period, $P_1 = 0.5$

Estimated proportion expected, $P_2 = 0.625$ (the proportion of electrified households expected is 62.5, i.e. an increase of 12.5 percent)

Z-score corresponding to 95 percent level of significance, $Z_{1-\alpha} = 1.96$

Z-score corresponding to 80 percent power, $Z_{1-\beta} = 0.84$

The z-score is the number of standard deviations a given value is away from the mean in a standard normal curve.

The total sample size of at least 405 beneficiary households (75 percent of sample) and 135 non-beneficiary households (25 percent of the sample) was considered for each state.

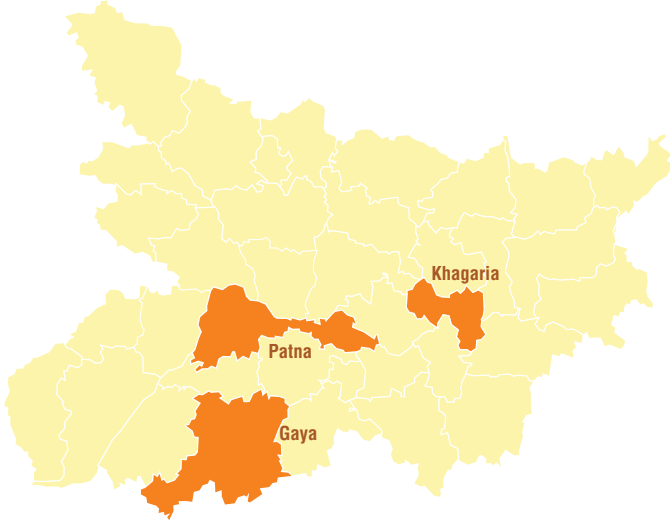
Sample Size

States	No. of districts	Household sample size		Total sample size (Hh)
		Beneficiary households	Non-beneficiary households	
Bihar	3	453	153	606
Odisha	3	416	146	562
Rajasthan	3	447	151	598
UP	3	437	161	598
Total	12	1,753	611	2,364

Annexure 2: State's district covered

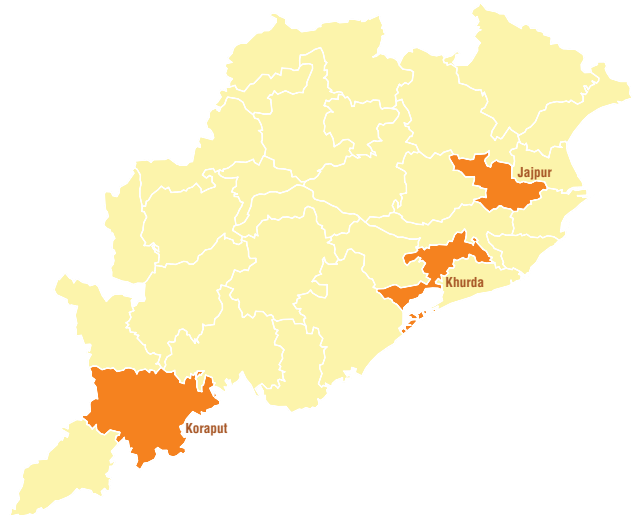
Bihar

Gaya, Khagaria, Patna



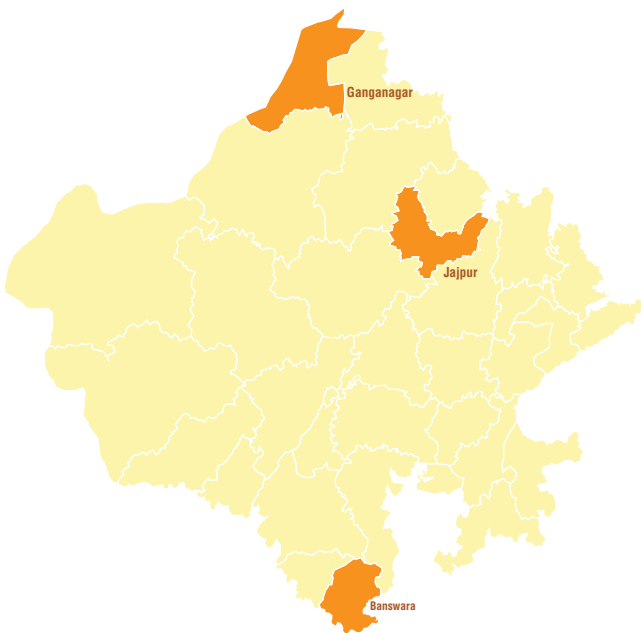
Odisha

Jajpur, Khurda, Koraput



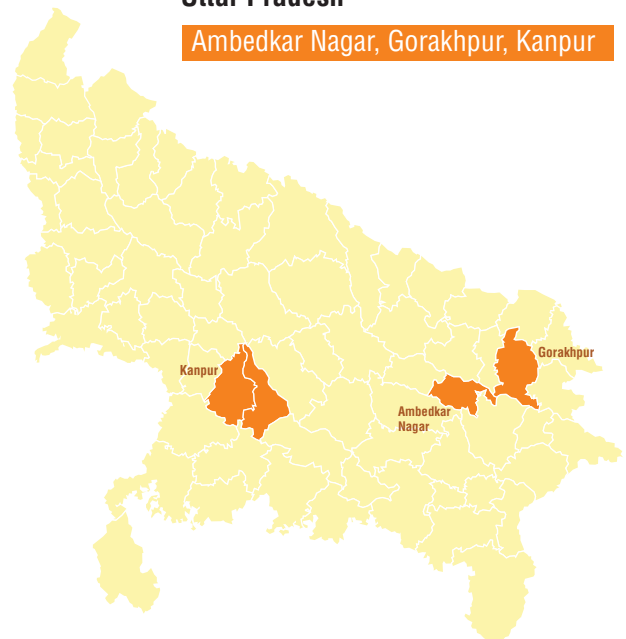
Rajasthan

Banswara, Ganganagar, Jaipur



Uttar Pradesh

Ambedkar Nagar, Gorakhpur, Kanpur



Annexure 3: State and district wise list of primary sampling unit

Bihar	Uttar Pradesh	Rajasthan	Odisha
Patna	Gorakhpur	Ganganagar	Jajpur
Sherpur	Pipariyapur Ward No 15	6 LNP	Sasan Prusottam
Dosh Nagar	Domingarh	7A	Khera
Lodhipur	Bahrampur	5G	Chanditala
Shahpur	Mahuatand	1 ML	Badchana
Nargadha	Balapar	6A	Devalpur
Daudpur	Maheshra	Sampat Basti	Nua Sasan
Vyapur	Siktaur	1 E	Kharimunda
Darveshpur	Jagdishpur	1 RM	Kalyanpur
Chhitnawan	Gaura	Jaipur	Salapada
Sikandarpur	Belakanta	Manbag	Deulkur
Khaspur	Maniram	Naradpura	Kanjia
Gaya	Jitpur	Amber Ward 91	Santrithapatna
Surajpura	Kanpur	Kunda	Balpal
Amwan	Daheli Sujanpur	Sadwa	Koraput
Sikhar	Savitry Nagar	Kukas	Umuri
Baradeeh	Pipargawan	Baksha Kund	Mastiput
Rasalpur	Gadiyawan	Nagla Susawat	Mahadei Put
Lakhanpur	Sanigawan	Shyam Dongri	Omp
Kendui	Sarai	Saipura	Sunapur
Budhgeree	Koriyawan	Banswara	Chhapar
Khiriawan	Maqsoodabad	Bortalab	Badamput
Ganjas	Tikra	Fatehpura	Dalaiput
Paroriya	Naramau	Padala	Banbharti Caloniy
Sohaipur	Bagdaudhi	Kundla	Bhawani Nagar
Iguna	Barasirohi	Kadeliya	Daliyaambo

Bihar	Uttar Pradesh	Rajasthan	Odisha
Khagaria	Naurangabad	Upli Mordi	Goutamnagar
Rahimpur	Ambedkar Nagar	Chidiyawasa	Pujariput
Mehsauri	Akbarpur ward-19	Sundani	Goudaguda
Alauli	Lorpur	Badgaon	Khurda
Gourashakti	Akbarpur ward-16	Mordi Nichli	Bajpayeenagar
Rohari	Makhdumpur		BDA Colony
Madarpur	Sijhauriya		OSAP Colony
Parmanpur	Lorpur Tajan		Gajpati Nagar
Sansarpur	Sinjhauli		Tarninagar
Jamalpur	Barwan		PNT Colony
Ratan	Kaserua		Bishwanath Pur

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