Understanding the Impacts of India’s LED Bulb Programme, “UJALA”

Results of Consumer and Retailer Surveys
Consumer Survey Results
## Overview

<table>
<thead>
<tr>
<th></th>
<th>No. of Households Surveyed</th>
<th>No. of Bulbs Bought by Respondents</th>
<th>Average no. of bulbs bought per household</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pune</td>
<td>451</td>
<td>1798</td>
<td>4</td>
</tr>
<tr>
<td>Lucknow</td>
<td>200</td>
<td>1295</td>
<td>6</td>
</tr>
<tr>
<td>Puducherry</td>
<td>378</td>
<td>1134</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total/Average</strong></td>
<td><strong>1029</strong></td>
<td><strong>4227</strong></td>
<td><strong>4</strong></td>
</tr>
<tr>
<td>Location</td>
<td>Type of survey</td>
<td>Sample selected from</td>
<td>Survey methodology</td>
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</tbody>
</table>
| Pune         | In-person            | Wards/localities in the urban and rural areas of Pune district.                      | **Urban sample (402 households):** Random selection of administrative wards. Snowballing used to obtain the sample. Households from the low, medium and high income groups surveyed.  
**Rural Sample (49 households):** Identification of the area that recorded the highest number of UJALA bulb sales in rural Pune. Snowballing used to obtain the sample. |
| Puducherry   | In-person            | List of UJALA customers provided by EESL.                                           | Selection of ten areas in Puducherry district that recorded the maximum number of bulb sales. Random selection of proportionate number of households from each area, from data set. |
| Lucknow      | In-person, telephonic| List of 695 UJALA customers who had bought bulbs through on-bill financing provided by Madhyanchal Vidyut Vitaran Nigam (MVVNL) | Sample divided equally for in-person survey and telephonic survey. Separate questionnaires prepared for the two surveys. Random selection of households from data set for both surveys. |
Were you familiar with LED bulbs before this programme was launched?

**PUNE**
- Yes: 50%
- No: 50%

**LUCKNOW**
- Yes: 59%
- No: 39%
- Answer not provided: 2%

**PUDUCHERRY**
- Yes: 43%
- No: 57%
How did you get to know about UJALA?

**PUNE**

- Local kiosk: 37%
- Newspaper: 22%
- Flex boards: 20%
- Kiosk at DISCOM office: 6%
- Other: 15%

**LUCKNOW**

- Newspaper: 58%
- TV: 20%
- Kiosk at DISCOM office: 11%
- Local kiosk: 5%
- Other: 6%

This question was not asked for the Puducherry survey as the pilot programme covered all the households.
Why did you buy bulbs under UJALA?

**PUNE**
- Reduction in electricity bill: 52%
- Cheaper than the bulbs available in the market: 24%
- Good for the environment: 14%
- Other: 10%

**LUCKNOW**
- Reduction in electricity bill: 85%
- Cheaper than the bulbs available in the market: 12%
- Good for the environment: 1%
- Other: 2%

**PUDUCHERRY**
- Reduction in electricity bill: 48%
- Cheaper than the bulbs available in the market: 31%
- Good for the environment: 16%
- Other: 6%
Would you have bought LED bulbs if the programme were not launched?

- PUNE:
  - Yes: 40%
  - No: 60%

- LUCKNOW:
  - Yes: 52%
  - No: 47%
  - Answer not provided: 1%

- PUDUCHERRY:
  - Yes: 27%
  - No: 73%
Current status of LED bulbs bought under UJALA

- **PUNE**
  - In use: 70%
  - In reserve: 1%
  - Defective: 7%
  - Other: 22%

- **LUCKNOW**
  - In use: 81%
  - In reserve: 6%
  - Defective: 4%
  - Other: 1%

- **PUDUCHERRY**
  - In use: 72%
  - In reserve: 13%
  - Defective: 13%
  - Other: 1%

‘Other’ includes: Not using due to bad quality, gave to others/disposed
Which type of lamp did the UJALA bulb replace?

PUNE
- CFL: 4%
- Tube light: 16%
- Incandescent bulb: 26%
- Other: 54%

LUCKNOW
- CFL: 11%
- Tube light: 2%
- Incandescent bulb: 6%
- Other: 80%

PUDUCHERRY
- CFL: 2%
- Tube light: 5%
- Incandescent bulb: 46%
- Other: 46%

‘Other’ includes: New socket, LED bulb, LED tube light
In which rooms did you install the bulbs?

‘Other’ includes: Balcony, porch, toilet, dining room, store room, worship room, gate, stairs, garage, garden
What did you do with your old lamps?

This question was not asked for the Puducherry survey as provision for the disposal of bulbs was made by the implementing agency.
Types of lamps in use

- **PUNE**
  - LED bulbs (including UJALA bulbs): 49%
  - CFLs: 18%
  - Tube-lights: 25%
  - Incandescent bulbs: 7%
  - Other LED lighting: 1%

- **LUCKNOW**
  - LED bulbs (including UJALA bulbs): 54%
  - CFLs: 21%
  - Tube-lights: 13%
  - Incandescent bulbs: 9%
  - Other LED lighting: 3%

- **PUDUCHERRY**
  - LED bulbs (including UJALA bulbs): 37%
  - CFLs: 37%
  - Tube-lights: 20%
  - Incandescent bulbs: 5%
  - Other LED lighting: 37%
Types of lamps in use, by income group - Pune

LOW INCOME HOUSEHOLDS
- LED bulbs (including UJALA bulbs): 58%
- CFLs: 19%
- Tube-lights: 8%
- Other LED lighting: 10%
- Incandescent bulbs: 25%

MEDIUM INCOME HOUSEHOLDS
- LED bulbs (including UJALA bulbs): 47%
- CFLs: 7%
- Tube-lights: 25%
- Other LED lighting: 19%
- Incandescent bulbs: 1%

HIGH INCOME HOUSEHOLDS
- LED bulbs (including UJALA bulbs): 45%
- CFLs: 25%
- Tube-lights: 7%
- Other LED lighting: 21%
- Incandescent bulbs: 1%
<table>
<thead>
<tr>
<th></th>
<th>Pune</th>
<th>Lucknow</th>
<th>Puducherry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average daily usage hours (hrs/bulb)</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Estimated annual savings per LED bulb (kWh)</td>
<td>34</td>
<td>31</td>
<td>47</td>
</tr>
<tr>
<td>Estimated load reduction per LED bulb (W)</td>
<td>20</td>
<td>16</td>
<td>29</td>
</tr>
</tbody>
</table>
Annual energy savings per bulb (kWh)
= Sum of [{Wattage of replaced lamp (W) – Wattage of LED bulb (W)} × Daily usage of LED bulb (hrs) × 320 (days)]
Number of LED bulbs in use

Reduced peak demand (W) (for LED bulbs in use during the peak period [6 p.m. to 10 p.m.])
= Sum of {Wattage of replaced lamp (W) – Wattage of LED bulb (W)}
Number of LED bulbs in use

Income wise use and savings for UJALA bulbs in surveyed households - Pune

<table>
<thead>
<tr>
<th>Income group</th>
<th>Incandescent bulbs replaced(%)</th>
<th>Average Usage (hrs)</th>
<th>Annual Savings (kWh/LED bulb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>45%</td>
<td>5.5</td>
<td>56</td>
</tr>
<tr>
<td>Medium</td>
<td>18%</td>
<td>3.6</td>
<td>27</td>
</tr>
<tr>
<td>High</td>
<td>18%</td>
<td>3.2</td>
<td>22</td>
</tr>
</tbody>
</table>

Income
- Incandescent bulbs replaced(%)
- Average Usage (hrs)
- Annual Savings (kWh/LED bulb)
Do you think that your electricity bill has reduced with the use of the bulbs?

**PUNE**
- Yes: 61%
- No: 20%
- Can’t say: 18%
- Answer not provided: 2%

**LUCKNOW**
- Yes: 77%
- No: 8%
- Can’t Say: 15%

**PUDUCHERRY**
- Yes: 40%
- No: 16%
- Can’t say: 44%
Are you satisfied with the quality and performance of the bulbs?

*In Lucknow, this question was only asked for the in-person survey*
Why are you not satisfied with the bulbs?

- Question asked to respondents who had replied 'No' when asked whether they were satisfied with the quality and performance of the bulbs.
- 'Other' includes: Bulb breaks easily, bulb did not last long enough, problem with exchanging bulbs under warranty, fusing of bulb.
Were you told about the warranty on the bulbs?

*In Lucknow, this question was only asked for the in-person survey.

Questions related to certain processes were not asked for the Puducherry survey. This is because the clarity with which the respondents would be able to recall details was uncertain, as the programme had been implemented three years ago.
Why didn’t you get the defective bulbs exchanged?

- **PUNE**: 82% Did not know about the warranty, 18% It was not that important to me
- **LUCKNOW**: 78% Did not know about the warranty, 22% It was not that important to me
- **PUDUCHERRY**: 68% Did not know about the warranty, 21% It was not that important to me, 11% Tried to, but was unsuccessful
Do you keep the bulbs on for longer than usual because they are LEDs?

*In Lucknow, this question was only asked for the in-person survey*
After having used the UJALA bulb to the end of its useful life, what will you replace it with?

- **PUNE**
  - 81% LED bulb
  - 9% CFL
  - 7% Can't say
  - 2% Tube light
  - 1% Incandescent bulb

- **LUCKNOW**
  - 87% LED bulb
  - 6% CFL
  - 2% Can't say
  - 5% Tube light

- **PUDUCHERRY**
  - 38% LED bulb
  - 37% CFL
  - 16% Can't say
  - 8% Tube light
  - 2% Incandescent bulb

*In Lucknow, this question was only asked for the in-person survey*
Action taken after buying UJALA bulbs

*In Lucknow, this question was only asked for the in-person survey

Other includes: "Replaced an old appliance with an energy efficient appliance", as well as consumers who have taken more than one action for e.g. "Recommended LED bulbs to others and bought LED bulbs and LED tube-lights from the market".
OTHER PROCESSES

Documents submitted for purchase of bulbs

*In Lucknow, this question was only asked for the in-person survey*
Did you receive a bill for your purchase?

**PUNE**
- **Yes**: 58%
- **No**: 20%
- **Don't remember**: 21%

**LUCKNOW**
- **Yes**: 80%
- **No**: 9%
- **Don't remember**: 11%

*In Lucknow, this question was only asked for the in-person survey*
Retailer Survey Results
Overview

<table>
<thead>
<tr>
<th>Location</th>
<th>No. of shops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucknow</td>
<td>100</td>
</tr>
<tr>
<td>Puducherry</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>150</strong></td>
</tr>
</tbody>
</table>

Methodology

The central areas of each city were identified and electrical goods shops were chosen in those areas.
Change in the number of customers buying LED bulbs in the last year

- **LUCKNOW**: Significantly increased: 86%, Somewhat increased: 13%, No change: 1%
- **PUDUCHERRY**: Significantly increased: 56%, Somewhat increased: 32%, Somewhat decreased: 8%

Change in the number of customers buying LED tube lights in the last year

- **LUCKNOW**: Significantly increased: 41%, Somewhat increased: 37%, Somewhat decreased: 2%, No change: 2%
- **PUDUCHERRY**: Significantly increased: 42%, Somewhat increased: 32%, Somewhat decreased: 22%, No change: 2%
Change in the number of customers buying incandescent bulbs in the last year

LUCKNOW
- Significantly increased: 65%
- Somewhat increased: 14%
- No change: 11%
- Somewhat decreased: 5%
- Significantly decreased: 5%

PUDUCHERRY
- Significantly increased: 42%
- Somewhat increased: 12%
- No change: 10%
- Somewhat decreased: 8%
- Significantly decreased: 28%

Change in the number of customers buying CFL bulbs in the last year

LUCKNOW
- Significantly increased: 41%
- Somewhat increased: 15%
- No change: 13%
- Somewhat decreased: 6%
- Significantly decreased: 25%

PUDUCHERRY
- Significantly increased: 24%
- Somewhat increased: 22%
- No change: 12%
- Somewhat decreased: 42%
## Price range and warranty of 7 Watt and 9 Watt LED bulbs

<table>
<thead>
<tr>
<th></th>
<th>Watts</th>
<th>Minimum price (Rs.)</th>
<th>Maximum price (Rs.)</th>
<th>Average minimum price (Rs.)</th>
<th>Average maximum price (Rs.)</th>
<th>Modal warranty (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LUCKNOW</strong></td>
<td>7W</td>
<td>90</td>
<td>220</td>
<td>103</td>
<td>112</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9W</td>
<td>90</td>
<td>200</td>
<td>120</td>
<td>137</td>
<td>2</td>
</tr>
<tr>
<td><strong>PUDUCHERRY</strong></td>
<td>7W</td>
<td>40</td>
<td>250</td>
<td>108</td>
<td>139</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9W</td>
<td>50</td>
<td>270</td>
<td>126</td>
<td>162</td>
<td>2</td>
</tr>
<tr>
<td><strong>OVERALL</strong></td>
<td>7W</td>
<td>40</td>
<td>250</td>
<td>108</td>
<td>125</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9W</td>
<td>50</td>
<td>270</td>
<td>131</td>
<td>140</td>
<td>2</td>
</tr>
</tbody>
</table>
Should the UJALA programme be continued?

LUCKNOW
- Yes: 91%
- No: 6%
- Makes no difference: 3%

PUDUCHERRY
- Yes: 42%
- No: 12%
- Makes no difference: 46%

If the government were to discontinue the UJALA programme, by how much do you think the prices of LED bulbs would increase?

LUCKNOW
- No change: 3%
- Rs.10-30: 13%
- Rs.30-60: 40%
- Rs.60-100: 8%
- Response not provided: 36%

PUDUCHERRY
- No change: 4%
- Rs.10-30: 20%
- Rs.30-60: 20%
- Rs.60-100: 56%
- Response not provided: 4%