Lighting Africa Market Assessment Results

Quantitative Assessment - ETHIOPIA
Background

The World Bank Group (WBG) required information to aid manufacturers to develop, fine tune or simply launch as they are, low cost lighting products to off-grid urban and rural consumers within a variety of African countries.

As such, the main objective of the research was to provide information in terms of the suitability of different types of lighting products in the African market, as well as quantifying the approximate size of the potential market in volume and value terms for appropriate lighting products, and providing other information of use to manufacturers.
Research Objectives

Interviews focused on answering these questions:

**Who is the consumer?**
- Consumer Demographics and Characteristics

**How does the consumer use light?**
- Current Lighting Habits, Attitudes, Preferences, and Needs

**What does the consumer need?**
- Assessment of Need for Modern Lighting

**Which modern lighting products does the consumer prefer?** Lighting Product Preferences (e.g. product performance, specific design)

**How much is the consumer willing to pay?**
- Consumer Economics (e.g. optimum price and capacity to pay for lighting)
**Method**

**Household**
- 1006 households, representative sample conducted in Addis Ababa, Oromya, Tigray, SNNP region and Amhara
- Interviewed Main (or Joint) decision maker regarding household and purchases – Head of household
- Face to face interview using structured questionnaire

**Retail Businesses**
- 400 retail businesses, representative sample conducted in Addis Ababa, Oromya, Tigray, SNNP region and Amhara
- Covered retail businesses in informal settlements in urban and rural trading centres
- Interviewed the business owner or manager
- Face to face interview using structured questionnaire

Study conducted by: Research International Social & Public Research Africa, based in Nairobi, Kenya
Contributors to Household Income

Q. D8 and D9 “How many people in and outside the household contribute to this monthly household income?”

The majority of households are supported single handedly with the household head as the main income earner. There are very few cases (11%) in which the household income is supplemented by people who are not part of the household.

Sample size on which the chart is based

Mean score or average of a specific measure

Figures in the graph are percentages of the base indicated

Comment on slide content

Legend detailing what the different chart colors mean

Slide Title Question which was asked of the respondent
Ethiopia is one of the poorest, heavily populated and least developed countries in Africa.

Like many other nations in Africa and the 3rd World, it relies greatly on the trade of primary goods. Coffee is its largest export which generates 60% of its total export earnings. The coffee business employs about one out of every four people in the country.

An average farmer of Ethiopian coffee is struggling to get by. The money they earn from the coffee beans buys clothes, food, and schooling and pays government taxes. After paying for that, they have little or no money for the rest of the month. Annually, the average pay of an Ethiopian coffee farmer is about $900 dollars year, which is very low.
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CONSUMERS
The urban vs. rural sample was split in line with the national distribution of the Ethiopian population.

- Rural: 79%
- Urban: 21%

Base: Total sample = 1006
## Respondent Demographic Profile

<table>
<thead>
<tr>
<th>Location</th>
<th>Male</th>
<th>Female</th>
<th>LSM 1-2</th>
<th>LSM 3-4</th>
<th>LSM 5-6</th>
<th>LSM 7-8</th>
<th>LSM 9-10</th>
<th>Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addis ababa</td>
<td>74</td>
<td>26</td>
<td>77</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Oromiya</td>
<td>20</td>
<td>10</td>
<td>17</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Tigray</td>
<td>26</td>
<td>26</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>SNNP region</td>
<td>20</td>
<td>17</td>
<td>8</td>
<td>27</td>
<td>39</td>
<td>20</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Amhara</td>
<td>26</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Living Standard Measure

Base: Total Sample = 1006
### Observations about Consumer Households

**Colour of the room in the main dwelling**

<table>
<thead>
<tr>
<th>Colour</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>White or Bright colour</td>
<td>13</td>
</tr>
<tr>
<td>Brown/natural clay/dark clay</td>
<td>48</td>
</tr>
<tr>
<td>Other clay</td>
<td>26</td>
</tr>
<tr>
<td>Not observed</td>
<td>13</td>
</tr>
</tbody>
</table>

**Wall Material of Dwelling**

<table>
<thead>
<tr>
<th>Material</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mud/mud bricks</td>
<td>94</td>
</tr>
<tr>
<td>Wood planks</td>
<td>2</td>
</tr>
<tr>
<td>Bricks or stone</td>
<td>4</td>
</tr>
<tr>
<td>Corrugated Iron</td>
<td>n</td>
</tr>
</tbody>
</table>

**Dwelling environment**

<table>
<thead>
<tr>
<th>Environment</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned urban centre</td>
<td>3</td>
</tr>
<tr>
<td>Unplanned/informal settlement</td>
<td>19</td>
</tr>
<tr>
<td>Rural –planned settlement</td>
<td>4</td>
</tr>
<tr>
<td>Rural - other</td>
<td>75</td>
</tr>
</tbody>
</table>

**Type of road near dwelling**

<table>
<thead>
<tr>
<th>Road Type</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarmac</td>
<td>36</td>
</tr>
<tr>
<td>Murram or rough road</td>
<td>43</td>
</tr>
<tr>
<td>Pathway (no vehicle access)</td>
<td>21</td>
</tr>
</tbody>
</table>

**Size of the main room**

<table>
<thead>
<tr>
<th>Size</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Square meters or less</td>
<td>11</td>
</tr>
<tr>
<td>3.1 – 8 Square meters</td>
<td>31</td>
</tr>
<tr>
<td>More than 8 Square meters</td>
<td>58</td>
</tr>
</tbody>
</table>

**Roof Material of the dwelling**

<table>
<thead>
<tr>
<th>Material</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass or other thatch</td>
<td>41</td>
</tr>
<tr>
<td>Corrugated iron</td>
<td>58</td>
</tr>
<tr>
<td>Tiles</td>
<td>1</td>
</tr>
</tbody>
</table>
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Catalyzing Markets for Modern Lighting

TRADERS
The urban vs. rural sample was split in line with the national distribution of Ethiopian small business.

Base: Total sample = 400
Respondent Demographic Profile: Traders

Living Standard Measure

- Addis Ababa: 6
- Oromiya: 27
- Tigray: 8
- SNNP Region: 18
- Amhara: 43
- Male: 77
- Female: 23
- LSM 1-2: 18
- LSM 3-4: 73
- LSM 5-6: 5
- LSM 7-8: 3
- LSM 9-10: 1
- 18-24: 8
- 25-34: 43
- 35-44: 35
- 45-55: 12
- 56+: 2

Base: Total Sample = 400
### Observations about Business Premises

<table>
<thead>
<tr>
<th>Colour of the walls in the main business room</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>White or Bright colour</td>
<td>12</td>
</tr>
<tr>
<td>Brown/ natural clay/dark clay</td>
<td>41</td>
</tr>
<tr>
<td>Other colour</td>
<td>30</td>
</tr>
<tr>
<td>Not observed</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business environment</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned urban centre</td>
<td>6</td>
</tr>
<tr>
<td>Unplanned/informal settlement</td>
<td>17</td>
</tr>
<tr>
<td>Rural – planned settlement</td>
<td>5</td>
</tr>
<tr>
<td>Rural - other</td>
<td>72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wall Material of business structure</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mud/mud bricks</td>
<td>69</td>
</tr>
<tr>
<td>Wood planks</td>
<td>16</td>
</tr>
<tr>
<td>Bricks or stone</td>
<td>5</td>
</tr>
<tr>
<td>Corrugated Iron</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of the main business structure</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Square meters or less</td>
<td>26</td>
</tr>
<tr>
<td>3.1 – 8 Square meters</td>
<td>45</td>
</tr>
<tr>
<td>More than 8 Square meters</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roof Material of the business structure</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td>36</td>
</tr>
<tr>
<td>Corrugated iron</td>
<td>63</td>
</tr>
<tr>
<td>Tiles</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of road near business structure</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarmac</td>
<td>39</td>
</tr>
<tr>
<td>Murram or rough road</td>
<td>46</td>
</tr>
<tr>
<td>Pathway (no vehicle access)</td>
<td>15</td>
</tr>
</tbody>
</table>
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CONSUMERS
Consumer house/dwelling sizes, both in urban and rural settings, are small: typically families will occupy anything from a single room - partitioned into a living and sleeping area with a curtain – to a 4 room structure.

The majority of dwellings are constructed from mud and only very few homes are built from other materials.
Home Ownership
Q. 3b “Do you own the home/residence where you live?”

Yes, I own it outright 97%
No, I am renting 3%

A large majority of 97% of respondents own the homes in which they live

Base: Total Sample = 1006
The majority of Ethiopian consumers interviewed are farmers by trade (81%).
Average Ethiopian Household Income

Q. D7 “What is the average monthly income of your family”?

Mean: US $115.70

On average household respondents earn an income of US $115.70 which is substantially lower than in the other Lighting Africa research countries, e.g. Kenyan average consumer income falls at US % 153.60
In majority of households, only 1 person contributes to this household income while very few cases are there people outside the household who contribute. The bread winner is the sole contributor to the HH income.
Number of People in the Household

Majority of households have an average of 4-5 people living together on a permanent basis while most households consist of 2 to 3 children under age 16

Q.1b “How many children (under 16 years) live in your HH in total on a permanent basis?”

Q.1a “How many people live in your HH in total on a permanent basis?”

Q.1b: Mean: 2.23
Q.1a: Mean: 4.17
Nearly half of the business owners have a small Permanent Shop or Duka, these mainly sell goods such as food stuffs and other essential day to day items.
Q. D6 “What are the weekly sales of your business (Q. D7) approximately what kind of profit does your business make per month?"

<table>
<thead>
<tr>
<th>Weekly Sales</th>
<th>Monthly Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean: US$45.50</td>
<td>Mean: US$54.60</td>
</tr>
<tr>
<td>Don't know</td>
<td>Refused to disclose</td>
</tr>
<tr>
<td>Above $230.5+</td>
<td>Between $230.5+</td>
</tr>
<tr>
<td>Between $153.50 - 230.50</td>
<td>Between $153.60 - 230.50</td>
</tr>
<tr>
<td>Between $138.50 - 153.50</td>
<td>Between $138.60 -153.50</td>
</tr>
<tr>
<td>Between $107.50 - 138.50</td>
<td>Between $107.60 - 138.50</td>
</tr>
<tr>
<td>Between $76.50 - 107.50</td>
<td>Between $76.60 - 107.50</td>
</tr>
<tr>
<td>Between $46.50 - 76.50</td>
<td>Between $46.60 - 76.50</td>
</tr>
<tr>
<td>Between $30.50 - 46.50</td>
<td>Between $30.60 - 46.50</td>
</tr>
<tr>
<td>Between $15.50 - 30.50</td>
<td>Between $15.60 - 30.50</td>
</tr>
<tr>
<td>Between $7.50 - 15.50</td>
<td>Between $7.60 -15.50</td>
</tr>
<tr>
<td>Below $7.50</td>
<td>Below $7.50</td>
</tr>
</tbody>
</table>

Average weekly sales are US $45.50, while the average monthly profit is US $54.60, again indicating the state of the Ethiopian economy as very poor. As a comparison, on average, Kenyan monthly profits lie around US $83.90.
Q. 1 “How many people work here either on casual or permanent basis?”

1 Employee 67%

2 Employees 18%

3 employees 11%

>4 Employees 4%

Two thirds of businesses are run as sole proprietary's. In only 33% of cases are there second or third people involved in running the business

Base: Total Sample = 400
On average Ethiopian Traders earn a household income of US $ 130.30. With a monthly profit of only US $54.60 in many cases business earning are either supplemented by a second person in the household or by an additional job.
Q.6 “Is your household currently connected to the main power grid?”

Q.7 “Is the electricity currently working?”

- **Currently connected to main power grid**
  - Yes: 89
  - No: 11

Base: Total Sample = 1006

Percentage of consumers connected to the electricity grid was quota’d on for research purposes. Of those 9%, 89% of consumers had electricity which was functional.
Power cuts are very frequent, with over two thirds of respondents connected to the grid (82%) experiencing power cuts at least once a week.
Time Power Cuts Occur

Q. 11 “Do power cuts hours fall in peak or off-peak hours, and (Q. 12) is that the time when electricity is needed most?”

- 36% Don't know
- 23% Entire day
- 41% Off peak times (19:00 to 7:00)
- 72% Peak times (7:00 to 19:00)

For households connected to the power grid power is needed during off peak hours, yet power cuts occur during those very times.

Base: Currently connected to main power grid n=90
## Monthly Expenditure on Electricity

**Q. 15 “On average, how much do you pay for electricity per month?”**

**Conversion rate**

1 US $ = ETB 9.95

<table>
<thead>
<tr>
<th>Category</th>
<th>Total n=90</th>
<th>Addis Ababa n=41</th>
<th>Oromya n=19</th>
<th>Amhara n=28</th>
</tr>
</thead>
<tbody>
<tr>
<td>US $ . 1.5 - 3 (ETB 15-30)</td>
<td>32</td>
<td>21</td>
<td>26</td>
<td>52</td>
</tr>
<tr>
<td>US $ . 3.5 - 4.5 (ETB 35-45)</td>
<td>20</td>
<td>15</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>US $ . 5 - 7.5 (ETB 50-75)</td>
<td>27</td>
<td>25</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>US $ . 8 – 10.1 (ETB 80-100)</td>
<td>13</td>
<td>21</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>US $ . 12.1 - 20.1 (ETB 120-200)</td>
<td>7</td>
<td>17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>US $ . 40 (ETB 400 &amp; above)</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**MEAN**

- US $ 6.00 (ETB 59.70)
- US $ 6.25 (ETB 62.19)
- US $ 7.00 (ETB 69.65)
- US $ 2.75 (ETB 27.36)

Caution – small base sizes
78% of households connected to electricity state that it is intermittent but when connected it’s reliable.
VOLTAGE SUFFICIENCY FOR HOUSEHOLD APPLIANCES

Q. 17 “Is the voltage level you are supplied with enough to use for the desired household appliances?”

In 61% of cases the voltage level is enough to support household appliances.

Base: All currently connected to main power grid

**Always: 61%**

**Sometimes: 34%**

**Hardly ever: 1%**

**No, never: 4%**
A considerable number of respondents (33%) aren’t aware if they share an electricity source with other households. However, for those aware only 9% state they have a single source of connection to the grid.

**Q.13 “How many households are sharing electricity from the same source”**

<table>
<thead>
<tr>
<th>Number of Households</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>One household</td>
<td>24</td>
</tr>
<tr>
<td>Two households</td>
<td>11</td>
</tr>
<tr>
<td>Three households</td>
<td>7</td>
</tr>
<tr>
<td>Four households</td>
<td>33</td>
</tr>
<tr>
<td>Five households</td>
<td>13</td>
</tr>
<tr>
<td>Don’t know</td>
<td>9</td>
</tr>
<tr>
<td>Refused to answer</td>
<td>2</td>
</tr>
</tbody>
</table>

**Base:** Currently connected to main power grid = 90
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TRADERS
Q. 6 “Is your business currently connected to the main power grid?”

Not connected 89%
Currently connected 11%

Q. 7 “Is the electricity currently working?”

Base: All
Currently connected to main power grid = 45

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>89%</td>
</tr>
<tr>
<td>No</td>
<td>11%</td>
</tr>
</tbody>
</table>

Of those connected to the grid 89% had working electricity at the time of interview.
Q. 9 “How often, if ever, do you experience power cuts?”

- 7% experience power cuts daily or nearly every day.
- 4% experience power cuts less often.
- 2% experience power cuts at least once a week.
- 69% experience power cuts at least once a month.
- 4% experience power cuts never.

Q. 11 “Do the hours in which you receive electricity mainly fall in peak or off peak times?”

- 80% of respondents receive electricity during peak times (7:00 - 19:00).
- 16% receive electricity during off-peak times (19:00 - 7:00).
- 4% do not know.
- 29% of respondents receive electricity throughout the day.

For those traders connected to the mains, about two thirds (87%) experience power cuts once a week or more often. 33% feel that electricity is needed most during peak and off-peak times.

*Q. 10 Could not be analysed due to small base sizes*

Base: Currently connected to main power grid = 43
Q. 16 “How would you rate the quality of your electricity?”

- Very inconsistent and not at all reliable: 2
- Fluctuates and not reliable: 16
- Intermittent but when connected it's reliable: 69
- Continuous and reliable: 13

Retailers who are connected experience intermittent power but most of the times when connected, the voltage is sufficient.

Q. 17 “When electricity is available is the voltage level supplied enough to use as desired for appliances?”

- Sometimes: 36
- Yes, always: 64

Base (45) = All currently connected
Q. 13 “How many businesses/households are sharing the electricity from the same source?....?

For businesses connected to the power grid, about 75% have more than one business connected to the same source. 20% of business owners do not know whether their source is shared – this is more prolific in busy urban areas where tapping of electricity is common.

Base: All currently connected to main power grid = 45
Proximity to Power Line

Q 18 “How close is your nearest mains power line?”

65% of consumers are relatively close to power lines thus proximity is not the main inhibiting factor for consumers – not being connected to the grid is more likely to be a cost issue.
Connection of Unconnected Household to Grid

Q. 19 “You mentioned that the nearest mains power line was close to your household. Do you know of any immediate extension plans to include your household to the grid?”

- No, I don't know of any extension plans: 30
- Yes, but don't know when: 55
- Yes, within the next 6 months: 7
- Yes, within the next 3 months: 8

85% of consumers are not clear on extension plans of the grid.

Base: All those close to the main power line = 240
26% of consumers state better lighting would be the main improvement they would make to their household if possible. Access to water is also a major concern. An additional 14% state they would connect to the power grid or an other power source like a generator…
Reasons for Wanting to Improve Power Source

Q. 5 “You mentioned you would like to connect to a power grid or improve your power source by purchasing a generator. Please can you tell me the main reason why you would want to do this?”

- To improve my overall standard of living: 28%
- Not Mentioned: 1%
- To be able to use household appliances throughout the day and night: 26%
- To be able to listen to the radio/watch TV whenever I want: 6%
- To improve access to lighting: 39%

...of those consumers who state they would like to connect to the power grid, 39% state they would use the power to improve access to lighting.

Base: All would connect to power Grid or purchase a generator = 139
In-home Lighting

Q. 38 “How would you rate the lighting in your home nowadays?”

Q. 40 “How would you improve the lighting situation in your home?”

72% of households rate their lighting at home as poor. To counter this displeasure, they would introduce or add more lights.

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Base: Households whose light can be improved n = 696
Q. 42 “Is there anything you or other members of your household would do differently at night if you had better light?”

<table>
<thead>
<tr>
<th>Yes</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>74</td>
</tr>
</tbody>
</table>

Base = 1006

Q. 43 “What would you or other members of your household do differently if there was better light at night?”

- **My children will be able to do their homework/studies**: 43
- **Chatting / Socializing with other members of the household**: 11
- **Tending to livestock would be convenient e.g. Milking**: 11
- **Weaving**: 8
- **Doing household chores like washing utensils, clothes etc**: 6

Base: All those who could do things differently = 263

Base total sample n = 1006

Personal development of children would be the main thing that would improve with better access to lighting.
Kerosene is the main energy source used to provide light and power appliances in many households, firewood/charcoal is the second most prolific but used to a much lower extent as main power source.
Energy Sources

Q. 20 “Do you have any of the following power sources, apart from the mains connection, in this HH providing power generally to the HH?”

An overwhelming majority of Ethiopian households (96%) do not have an alternative source of power besides what they use on a regular basis (kerosene).
Q.23 “On average, what time does it get dark indoors?”
Q.24 “When do you begin using lighting products/devices each night?”

It gets dark between 18.00 and 19.00 with majority of respondents beginning to use lighting devices mostly between 18.30 to 19.00. It appears that a considerable number start using the gadgets after it’s already dark perhaps due to fuel saving considerations.

Base: Total sample = 1006
The average time lighting products are switched off is between 22:00 and 22:30, therefore the average number of hours lights are on is approximately 3 – 4 hours. This does not take into account whether consumers use products in the morning before sun rise, however lighting devise manufacturers should ideally allow for products with a charge of around 6 hours at a time.
**Use of Light in the Rooms**

<table>
<thead>
<tr>
<th>Q. 27 “How many rooms in this dwelling were used after dark yesterday evening?”</th>
<th>Q. 28 “How many rooms in this dwelling were lit at all yesterday evening?”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 room</td>
<td>38</td>
</tr>
<tr>
<td>2 rooms</td>
<td>40</td>
</tr>
<tr>
<td>3 rooms</td>
<td>15</td>
</tr>
<tr>
<td>4 rooms</td>
<td>4</td>
</tr>
<tr>
<td>5 rooms</td>
<td>1</td>
</tr>
<tr>
<td>Mean</td>
<td>2</td>
</tr>
</tbody>
</table>

**Q. 30 “Which one room/area did the HH residents use for the longest time after dark last night?”**

- Main living area: 95%
- Bed room (if separate from main living area): 3%
- Outside area (patio/yard area): 2%

**Ethiopian households, on average, light 2 rooms after dark. More than one lighting device is therefore required. The longest used and lit room is the main living area as this is where most household activities are carried out after dark.**

*Base: Total sample = 1006*
Almost two thirds of households had some areas not lit. Areas not lit were patio/yard 52%, bedroom 44% and toilet 27% - these are areas which are generally used only on an intermittent basis and therefore the need to light them continuously is not high.
Chatting/socialising (78%) was the most common activity done the previous night followed by preparing food and listening to the radio – generally radio’s will be battery powered rather than mains connected.

Base: Total sample =1006
Q. 33 “Which activities could not be done well or comfortably due to lack of lighting?”

- Homework / studying
- Prepare and cooking food
- Reading
- Chatting/socialising
- Household cleaning
- Listening to the radio
- Resting
- Washing clothes
- Changing/going to bed

---

**Amhara n=112**
- Homework: 38
- Preparing and cooking food: 62
- Reading: 36
- Chatting/socialising: 32
- Households cleaning: 18
- Listening to the radio: 16
- Resting: 9
- Washing clothes: 5
- Changing/going to bed: 4
- Other: 8

**SNNP region n=103**
- Homework: 30
- Preparing and cooking food: 19
- Reading: 43
- Chatting/socialising: 20
- Households cleaning: 3
- Listening to the radio: 9
- Resting: 6
- Washing clothes: 3
- Changing/going to bed: 3
- Other: 4

**Tigray n=37**
- Homework: 38
- Preparing and cooking food: 14
- Reading: 38
- Chatting/socialising: 19
- Households cleaning: 8
- Listening to the radio: 14
- Resting: 8

**Oromiya n=214**
- Homework: 50
- Preparing and cooking food: 46
- Reading: 28
- Chatting/socialising: 34
- Households cleaning: 21
- Listening to the radio: 9
- Resting: 11
- Washing clothes: 8
- Changing/going to bed: 6
- Other: 3

**Total n=470**
- Homework: 41
- Preparing and cooking food: 41
- Reading: 34
- Chatting/socialising: 30
- Households cleaning: 16
- Listening to the radio: 11
- Resting: 9
- Washing clothes: 6
- Changing/going to bed: 4
- Other: 4
52% of consumers state that their main problem faced when lighting their home is that they were unable to light certain areas at all, this may be due to lack of fuel as well as lack of lighting devices to light all areas of the house.
Outdoor Activities Unable to do Due to Lack of Lighting

Q. 37a “Are you currently inhibited to performing certain types of outdoor activity due to lack of lighting?”

Yes 39%
No 61%

Base: Total sample =1006

Q. 37b “Which types of outdoor activities can you currently not perform due to lack of lighting?”

- Tending to livestock: 71%
- Visiting a neighbour's/friend's house: 34%
- Getting water: 26%
- Using a communal toilet: 12%
- Going to a shebeen/bar: 12%
- Washing clothes at night: 3%
- Going to a meeting: 1%
- Weaving: 1%

Those hampered in their outdoor activities mentioned tending to livestock as the biggest challenge to perform at 71% followed by visiting neighbors 34%.
Q. 41 “What kind of problems/inconveniences does the current lack of lighting cause?”

- It's difficult for my children to do their homework/study for a long time
- Insecurity as one tries to perform outdoor activities
- Poor lighting methods are then used
- Difficult to socialize/chat with family members/neighbours
- Smoke produced affects people
- My business is not doing well due to lack of enough lighting
- Other household chores are skipped for daytime e.g. cleaning
- Can't access other rooms
- One cannot extend till late due to fear of paraffin cost
- Education of the children is hampered since they cannot complete their homework in the dark. Insecurity is mentioned as the second greatest problem caused by lack of lighting making outdoor activities impossible/limited

Base: All households whose light can be improved = 696
Decision and Control in Household

Q. 54a “Who in the house decides on replacing a lighting device? Q. 54b Who in the house decides on what to buy? Q. 54c Who in the house controls the money?”

The head of the household is primarily in charge of replacing, buying lighting devices and controlling money with assistance from the spouse. Siblings, mother and father play no part.

The chart shows the distribution of decision-making roles within the household for replacing, buying, and controlling expenditure. The chart indicates that the head of the household is the primary decision-maker in all three areas, with the spouse and siblings playing supporting roles. The base for the sample is 1006 individuals.
Q. 19 “You mentioned that the nearest mains power line was close to your business. Do you know of any immediate extension plans to include your business to the grid?”

- Yes, within the next 3 months
- Yes, but don’t know when
- Yes, within the next 6 months
- No, I don’t know of any extension plans

<table>
<thead>
<tr>
<th>Region</th>
<th>Total n=79</th>
<th>Oromiya n=20</th>
<th>Tigray n=12</th>
<th>Amhara n=40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, within the next 3 months</td>
<td>22</td>
<td>40</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Yes, but don’t know when</td>
<td>47</td>
<td>50</td>
<td>33</td>
<td>45</td>
</tr>
<tr>
<td>Yes, within the next 6 months</td>
<td>10</td>
<td>10</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>No, I don’t know of any extension plans</td>
<td>10</td>
<td></td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

47% of traders are aware of extension plans but are not sure when these are likely to take place.
Most traders operate daily throughout the week with 45% opening on Sunday and a majority 62% opening between 7:00am and 9:00am daily.

Base: Total Sample = 400
Many businesses close at between 18:00 – 19:00 pm. At this time it’s already dark and hence lighting devices are thus required.
Q. 4 “If there was one thing you could do to improve your business or its facilities...?”

- **To improve access to lighting**: 23%
- **To be able to listen to the radio**: 6%
- **To be able to use appliances and tools necessary for the business**: 31%
- **To improve the overall level of productivity within my business**: 40%

**Improved lighting is top priority for most business facilities.** The 12% who mentioned they would like to have an improved power source cited increase in business productivity as the main reason. Additionally 23% would like to improve access to lighting.
Kerosene is the main source of energy and lighting for most traders. 1 in 5 do not have any power or lighting source for their business at all.

Base: Total business sample =400
Other Energy Sources

Q. 20 “Do you have any of the following power sources in this business providing power generally to the business?”

- None of the above
- Diesel or petrol powered generator
- Kerosene /paraffin
- Solar power
- Car battery

Q. 22 “Is the power source adequate to power all the lighting you need in the business?”

| Base: All who use other power sources as main source of power =21 |
|------------------|-----------------|-----------------|
| Yes              | 76%             |
| No               | 24%             |

95% of traders state that besides their main energy/power source there are no back up sources. Very few traders (2% and less) dabble with alternative sources such as generators or solar power.
Q. 39 “How satisfied are you with the lighting in your business?”

Mean Score: 3.58

- Very satisfied: 42%
- Fairly satisfied: 13%
- Fairly dissatisfied: 9%
- Very dissatisfied: 4%
- Not sure: 20%

Base: Those who light business = 178

Limitations of current lighting:

- The light is not strong enough to see properly: 58%
- Lighting is not cost effective: 17%
- I am unable to serve customers well: 16%
- There is a lot of insecurity: 4%

Base: Those traders dissatisfied with lighting = 24

Satisfaction levels with light by the traders is at 56%, this relatively high level is likely to be due to the fact that most traders do not operate during the dark. The strength of the light is the major contributing factor for dissatisfaction with lighting.
Q. 31 “Are any lights used at the premises during the day time?”

- Yes 5%
- No 95%

Base: Total sample = 400

Q. 32 “Do you use these same lights after dark or during the day time or both?”

- Both 50
- During day time 22
- After dark 28

Base = all those who use lights during day and after work = 18

Only 5% of traders use lights in their premises during the day time with half 50% of them using the same lights at night.
Q. 25 “Does this business ever operate after dark?”

Q. 26 “Why do you currently not operate regularly after dark?”

- Lack of light makes it impossible to operate
- Increased security risk
- Lack of customers after dark hours

55% of traders never open their business after dark and lack of customers after dark hours is identified by 70% of those who do not open at night as the main cause for their failure to operate then.
I would be able to attract more customers later in the evening

I would be able to provide a more convenient service to customers so that we are always open when they need something

I would be able to work for longer and produce items/services more / faster

It won't be better

More customers will be gained for those who want to open after dark, if there were improved or adequate lights. This would yield more profits

Base: All would want to open after dark = 81
Q. 40b “How would you rate the level of lighting outside your business?”

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well lit</td>
<td>5%</td>
</tr>
<tr>
<td>Poorly lit</td>
<td>95%</td>
</tr>
</tbody>
</table>

Q. 40c “How does the available lighting outside of your business limit you in terms of running your business, if at all?”

- There is no security, hence cannot operate the business after dark: 41%
- Customers don’t see the shop clearly, so they don’t shop after dark: 41%
- Sometimes customers tend to think that the Business has closed down due to lack of enough light: 9%
- It’s very expensive: 9%

Base (178) = all those who light their business

95% of traders who light their business, categorise lighting outside their businesses as poor. This limits their operation after dark with 41% mentioning insecurity and another 41% mentioning customers are unable to see the shop clearly.
Those traders who light their businesses cite unavailability of better lights (34%) and money problems (27%) as the barriers to improving their current lighting situation. The ‘better lighting types available’ is a problem which the Lighting Africa program can solve quite easily.

Base: All those who light their business = 178
Paraffin lamp with simple wick and no cover is the mostly used type of lighting device amongst consumers. This can be attributed to the fact that kerosene is the mostly used power source.

Base: Total sample = 1006
**Back-Up Lighting**

Q. 49d “Generally do you use …… as a main source or a back-up when main lighting not available?”

<table>
<thead>
<tr>
<th>Lighting Source</th>
<th>Main Source</th>
<th>Backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firelight n=99</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>Paraffin lamp with glass cover n=69</td>
<td>59</td>
<td>41</td>
</tr>
<tr>
<td>Candles n=129</td>
<td>87</td>
<td>13</td>
</tr>
<tr>
<td>Paraffin lamp with simple wick - no cover n=69</td>
<td>41</td>
<td>59</td>
</tr>
<tr>
<td>Flashlight or torch n=163</td>
<td>89</td>
<td>11</td>
</tr>
</tbody>
</table>

Paraffin lamp with simple wick and no cover is mostly used as main source of lighting, while Candles and flashlights are used as backup lighting device in most households.

*Light bulb in socket and Lantern have been removed due to small base sizes*

Base: All with …. in working order
Q. 58 "What is your preferred type of light excluding mains powered light bulbs?"

Paraffin lamps with glass cover are the most preferred type of lights

Base: Total sample = 1006
Other Lighting Devices Available

Q. 49a “Apart from all the lighting methods and devices which you used last night, what other lighting devices are available to this HH in working order?”

Very few Ethiopian consumers have backup lighting devices available to them – only 40% of our sample
### Number Of Each Lighting Device Used

**Q. 35 “How many of each lighting device were used?”**

<table>
<thead>
<tr>
<th>Device</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashlight n=103</td>
<td>62</td>
<td>16</td>
<td>19</td>
<td>1.6</td>
</tr>
<tr>
<td>Light bulb in socket or lamp</td>
<td>53</td>
<td>24</td>
<td>18</td>
<td>1.8</td>
</tr>
<tr>
<td>n=83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamp connected to gas bottle</td>
<td>84</td>
<td>5</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>n=19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin lamp with simple</td>
<td>65</td>
<td>31</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>wick - no cover n=693</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin lamp with glass cover</td>
<td>82</td>
<td>17</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>n=142</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candles n=38</td>
<td>87</td>
<td>11</td>
<td></td>
<td>1.3</td>
</tr>
<tr>
<td>Firelight n=108</td>
<td>82</td>
<td>5</td>
<td></td>
<td>1.9</td>
</tr>
</tbody>
</table>

**On average between 1 and 2 lighting devices are used to light a room or household at a time**
**Frequency of Using Lighting Devices**

Q. 49c “How often do you use each type of lighting owned?”

**Base: All with gadgets in working order**

- **Paraffin lamp with simple wick - no cover n=69**
  - Every day: 61
  - 2 to 3 times a week: 22
  - Once a week: 12
  - Less often than once a month: 4

- **Paraffin lamp with glass cover n=69**
  - Every other week: 30
  - Once a month: 33
  - Once a week: 14
  - Less often than once a month: 7

- **Flashlight or torch n=163**
  - Every day: 28
  - 2 to 3 times a week: 54
  - Once a week: 13
  - Less often than once a month: 3

- **Firelight n=99**
  - Every day: 24
  - 2 to 3 times a week: 42
  - Once a month: 13
  - Once a week: 11

- **Candles n=129**
  - Every other week: 8
  - Once a month: 32
  - Once a week: 28
  - Less often than once a month: 15

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ETHIOPIA
### Strengths of Types of Lighting

**Q. 36b “What would you say are the strengths of this type of lighting?”**

<table>
<thead>
<tr>
<th>Base: Total Sample</th>
<th>Total</th>
<th>Firelight</th>
<th>Paraffin lamp with glass cover</th>
<th>Candles</th>
<th>Paraffin lamp with simple Wick - no cover</th>
<th>Light bulb in socket or lamp</th>
<th>Flashlight / torch</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1006</td>
<td>108</td>
<td>142</td>
<td>38</td>
<td>693</td>
<td>83</td>
<td>103</td>
</tr>
<tr>
<td>It has very clear lighting</td>
<td>37</td>
<td>56</td>
<td>68</td>
<td>24</td>
<td>30</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>It is portable from one Place to another</td>
<td>13</td>
<td>0</td>
<td>4</td>
<td>37</td>
<td>14</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>It is easy to operate</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>It does not produce smoke / does not pollute the air</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>It is easily available</td>
<td>0</td>
<td>-</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The device is cheap</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin lamp glass is Affordable</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>It is economical to use</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>The light is not too bright but enough for the room</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Easy to maintain the lamp</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>The device is reliable Since it doesn't go off easily</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
### Weaknesses of Types of Lighting

**Q. 36c “What would you say are the weaknesses of this type of lighting?”**

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Total</th>
<th>Firelight</th>
<th>Paraffin lamp (glass cover)</th>
<th>Candles</th>
<th>Paraffin lamp (wick – no cover)</th>
<th>Light bulb in socket or lamp</th>
<th>Flashlight or torch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not provide adequate lighting.</td>
<td>25</td>
<td>17</td>
<td>25</td>
<td>39</td>
<td>25</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>It is expensive</td>
<td>0</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>It is too smoky, hence pollutes the air</td>
<td>27</td>
<td>31</td>
<td>26</td>
<td>24</td>
<td>34</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>It's delicate hence must be handled with care</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Go off easily when blown by wind</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>It is a health hazard</td>
<td>10</td>
<td>13</td>
<td>0</td>
<td>16</td>
<td>12</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>It can easily burn the house</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stresses the eyes during use</td>
<td>8</td>
<td>17</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>It has some inconveniences like kerosene drying in the middle of the night</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>It's not long lasting</td>
<td>2</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Power cuts are so frequent</td>
<td>0</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
</tbody>
</table>
Q. 56 “For each of the devices that I read, how would you generally rate the quality?”

- Light bulb in socket: Mean 4.24
- Pressure lamp: Mean 4.21
- Solar powered lantern: Mean 4.18
- Flashlight: Mean 4.15
- Battery powered stand up lantern: Mean 4.00
- Paraffin lamp with glass cover: Mean 3.98
- Candles: Mean 3.40
- Paraffin lamp with simple wick - no cover: Mean 2.77
- Lamp connected to a gas bottle: Mean 2.39

Base (consumer): Total sample = 1006
### Rating on Ease of Operation
Q. 57 “For each of these devices how would you rate the ease of operation?”

<table>
<thead>
<tr>
<th>Device</th>
<th>Very easy</th>
<th>Easy</th>
<th>Average</th>
<th>Difficult</th>
<th>Very difficult</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashlight</td>
<td>49</td>
<td>17</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4.62</td>
</tr>
<tr>
<td>Light bulb in socket or a lamp</td>
<td>14</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td></td>
<td>4.57</td>
</tr>
<tr>
<td>connected to a car battery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraffin lamp with glass cover</td>
<td>24</td>
<td>18</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>4.23</td>
</tr>
<tr>
<td>Pressure lamp</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>4.22</td>
</tr>
<tr>
<td>Battery powered stand up lantern</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>4.03</td>
</tr>
<tr>
<td>Candles</td>
<td>27</td>
<td>23</td>
<td>11</td>
<td>6</td>
<td>2</td>
<td>3.98</td>
</tr>
<tr>
<td>Solar powered lantern</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>3.78</td>
</tr>
<tr>
<td>Paraffin lamp with simple wick</td>
<td>25</td>
<td>20</td>
<td>14</td>
<td>11</td>
<td>8</td>
<td>3.55</td>
</tr>
<tr>
<td>- no cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamp connected to a gas bottle</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Base: Total sample = 1006
Lighting devices are hung from a hook on the wall 47% with 27% moving around with them and 24% placed on the table – generally lighting devices are placed in such a way that they have maximum light impact on the room they are in.

Base: Total sample = 1006
The most common place of purchase for lighting devices is large permanent structure shops

Base: Total Sample = 1006
Besides lighting, kerosene is also used for cooking. It is mainly obtained from the pump and bottles and Gallon containers are also used to carry kerosene bought in litres from pumps.
Majority (96%) of households using paraffin do not worry about the health effects brought about by its usage. The few who worry about it mention eye itching as their main worry followed by coughing.
A majority of the people who use paraffin (99%) do not feel that there is any environmental effect in using it, however, of those who say it has health effect on environment feel the smoke produced is hazardous to the environment.
LIGHTING AFRICA
Catalyzing Markets for Modern Lighting
TRADERS

IFC
International Finance Corporation
World Bank Group

THE WORLD BANK
Q. 33 “What if anything is used to light the business?”

- Paraffin lamp with glass cover: 47
- Simple paraffin lamp with wick and no cover: 43
- Candles: 20
- Flash-light / torch: 15
- Light bulb in socket: 7

Base: All who use lights in their business = 178

Q. 38 “Whether the lights are carried home or only used at the business premises”

- Used at the business and then carried home: 15%
- Used at the business premises only: 84%
- Not mentioned: 1%

Base (310) = All those who light their business
**Preferred Type of Light (Apart from Mains) and Preferred Positioning**

**Q. 43 “What is your preferred type of light …?”**

- **Flash-light / torch**: 7
- **Battery powered stand up lantern**: 9
- **Pressure lamp**: 12
- **Solar powered lantern**: 14
- **Paraffin lamp**: 22

**Q. 44a “What or where in the shop would you like to position lamps?”**

- **On the outside of the shop for security**: 10
- **To light up the faces of the customers**: 21
- **To light up the products**: 32
- **At the till / where the money is collected**: 37

Base: Total sample = 400

Base: Retail Shops = 370
Q. 34 “How many of each type of light do you use at the business currently?”

- **Flash-light** n=26: 1 (88), 2 (12)
- **Candles** n=35: 1 (51), 2 (26), 3 (9), 4 (15)
- **Light bulb in socket** n=13: 1 (31), 2 (46), 3 (8), 4 (16)
- **Simple paraffin lamp with wick and no cover** n=76: 1 (76), 2 (22)
- **Paraffin lamp with glass cover** n=84: 1 (67), 2 (21), 3 (8), 4 (12)

**Base = All who use lights in their business**
<table>
<thead>
<tr>
<th></th>
<th>Paraffin lamp with glass cover</th>
<th>Simple paraffin lamp with wick and no cover</th>
<th>Pressure lamp</th>
<th>Light bulb in socket or a lamp connected to a car battery</th>
<th>Flash-light / torch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base</strong></td>
<td>233</td>
<td>23</td>
<td>23</td>
<td>38</td>
<td>27</td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>15</td>
<td>26</td>
<td>13</td>
<td>53</td>
<td>26</td>
</tr>
<tr>
<td>1 to 1.5 years</td>
<td>11</td>
<td>30</td>
<td>22</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>1.6 to 2 years</td>
<td>15</td>
<td>22</td>
<td>9</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>2.1 to 2.5 years</td>
<td>9</td>
<td>4</td>
<td>9</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>2.6 to 3 years</td>
<td>9</td>
<td>4</td>
<td>-</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.1 to 3.5 years</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>3.6 to 4 years</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.1 to 4.5 years</td>
<td>3</td>
<td>-</td>
<td>13</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>4.6 to 5 years</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.1 to 5.5 years</td>
<td>2</td>
<td>-</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.6 to 6 years</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Over 6 years</td>
<td>3</td>
<td>-</td>
<td>9</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

**Base = Traders who light their business**
### Consumers: Costs of Lighting Devices

Q. 50a “How much does it cost you to buy___?”, Q. 50b What is the cost of buying one of this type of lights now? Q. 50c For how long do ___ last?”

<table>
<thead>
<tr>
<th>Type of power/lighting device</th>
<th>Base</th>
<th>Cost of running per month</th>
<th>Price of buying Lighting Device now</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Paraffin for) paraffin lamp with glass cover</td>
<td>183</td>
<td>US $3.3 (ETB 32.7)</td>
<td>US $2.3 (ETB 22.7)</td>
</tr>
<tr>
<td>(Paraffin for) paraffin lamp with no cover</td>
<td>707</td>
<td>US $0.9 (ETB 9.2)</td>
<td>US $1.2 (ETB 11.5)</td>
</tr>
<tr>
<td>(Gas for) Lamp bottle</td>
<td>74</td>
<td>US $0.8 (ETB 7.8)</td>
<td>US $1.2 (ETB 11.3)</td>
</tr>
<tr>
<td>Candles</td>
<td>81</td>
<td>US $0.3 (ETB 3.2)</td>
<td>US $0.6 (ETB 5.7)</td>
</tr>
<tr>
<td>(Batteries for) battery powered flashlight or torch</td>
<td>206</td>
<td>US $0.9 (ETB 9.4)</td>
<td>US $1.5 (ETB 14.7)</td>
</tr>
</tbody>
</table>

*Conversion rate 1US $ = ETB 9.95*
## Traders: Costs Of Lighting Devices

Q. 34 “How many of each type of light do you use at the business currently? Q. 35 How much does it cost you per month to run? Q. 36 What is the cost of buying one of this light now?”

<table>
<thead>
<tr>
<th>Lighting Device</th>
<th>Base</th>
<th>No. Owned</th>
<th>Cost of running per month</th>
<th>Cost of buying now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraffin lamp with glass cover</td>
<td>233</td>
<td>1</td>
<td>US $2.62 (ETB 26.07)</td>
<td>US $6.31 (ETB 62.82)</td>
</tr>
<tr>
<td>Simple paraffin lamp with wick and no cover</td>
<td>21</td>
<td>1</td>
<td>US $2.07 (ETB 20.60)</td>
<td>US $0.65 (ETB 6.50)</td>
</tr>
<tr>
<td>Pressure lamp</td>
<td>26</td>
<td>1</td>
<td>US $6.89 (ETB 68.57)</td>
<td>US $2.8 (ETB 27.40)</td>
</tr>
<tr>
<td>Light bulb in socket or a lamp connected to a car battery</td>
<td>30</td>
<td>2</td>
<td>US $3.06 (ETB 30.43)</td>
<td>US $1.86 (ETB 18.46)</td>
</tr>
<tr>
<td>Candles</td>
<td>46</td>
<td>2</td>
<td>US $1.29 (ETB 12.87)</td>
<td>US $0.8 (ETB 7.95)</td>
</tr>
</tbody>
</table>

Conversion rate
1 US $ = ETB 9.95

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ETHIOPIA
# Summary: Average Claimed Spend per Month on Current Lighting Devices

<table>
<thead>
<tr>
<th>Type of power / lighting device</th>
<th>Appliance running costs per month</th>
<th>Appliance running costs per month</th>
<th>Cost of buying actual item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HOUSEHOLD</td>
<td>BUSINESS</td>
<td></td>
</tr>
<tr>
<td>(Paraffin for) paraffin Lamp with glass cover</td>
<td>US $3.3 (ETB 32.7)</td>
<td>US $2.62 (ETB 26.07)</td>
<td>US $2.3 (ETB 22.7)</td>
</tr>
<tr>
<td>(Paraffin for) paraffin Lamp with wick and no cover</td>
<td>US $0.9 (ETB 9.2)</td>
<td>US $2.07 (ETB 20.60)</td>
<td>US $1.2 (ETB 11.5)</td>
</tr>
<tr>
<td>Candles</td>
<td>US $0.3 (ETB 3.2)</td>
<td>US $1.29 (ETB 12.87)</td>
<td>US $0.6 (ETB 5.7)</td>
</tr>
<tr>
<td>(Batteries for) battery powered flashlight / torch</td>
<td>US $0.9 (ETB 9.4)</td>
<td>US $1.93 (ETB 19.18)</td>
<td>US $1.5 (ETB 14.7)</td>
</tr>
</tbody>
</table>

Conversion rate: 1 US $ = ETB 9.95
Traders: Financial Services

Q.60a: Are you aware of any of the following financial services which could help you with improving your business and its facilities?

Q.60b: Do you have access to any of the following financial services?

- Depository bank account with interest
- Microfinance programmes
- Co-operative loans
- Short term loans with interest
- Depository bank account without interest
- Barter
- Short term loans against collateral
- Lease for equipment

Depository bank account with interest, microfinance programmes and Co-operative loans are the widely recognized source of financial services that can be used to improve businesses, while the most accessible are microfinance programmes.

Base: Total sample = 400
Terms Used

- PSM – Price sensitivity measure
- Cheap/Expensive – price at which consumers consider a device to be cheap/expensive – quality/affordability not an issue
- Too Cheap – price at which consumers consider a device to be so cheap to the extent of questioning the quality
- Too Expensive – price at which consumers consider a device to be too expensive – almost unaffordable
- Recommended price – Anticipated price point at which most consumers feel that the price is neither so cheap that quality is questioned, nor too expensive
- Range – this is between too cheap and too expensive
How the Price Sensitivity Measure works

- The Price Sensitivity Measure has been devised in order to ascertain what is the most acceptable price range for a particular product or service within a given market.

- In order to ascertain the range we ask each respondent 4 questions:
  - At which point would the product/service be considered cheap.
  - At which price would the product/service be considered expensive.
  - At which price point would the product/service be considered too cheap so that the quality would be in doubt.
  - At which price point would the product/service be considered too expensive so that there would no longer be consideration to purchasing it.

- The responses to these 4 questions are then plotted on a chart. Where the measures ‘too cheap’ and ‘too expensive’ cross each other is considered to be the low end of the range of acceptable price and where the measures ‘cheap’ and ‘too expensive’ cross each other is considered the high end of the acceptable price range.

- The ideal price point is where the measure ‘cheap’ and ‘expensive’ cross each other.
LIGHTING AFRICA
Catalyzing Markets for Modern Lighting

CONSUMERS
PSM: Rechargeable Task Light

Range
35 - 60 EB

Cheap
Too Cheap

Expensive
Too Expensive

Base: Total sample = 1006
CONSUMER

PSM: Rechargeable Torch

Base: Total sample = 1006

Range 24 - 40 EB

Cheap

Too Cheap

Expensive

Too Expensive

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PSM: Rechargeable Lantern

Base: Total sample = 400

Range 45 - 70 EB

Cheap

Expensive

Too Expensive

Too Cheap

62 EB

29 EB 30 EB 32 EB 35 EB 37 EB 39 EB 40 EB 42 EB 45 EB 46 EB 49 EB 50 EB 55 EB 60 EB 65 EB 70 EB 75 EB 80 EB 85 EB 86 EB 88 EB 90 EB 95 EB 100 EB 105 EB 110 EB 115 EB 120 EB 125 EB 130 EB 135 EB 140 EB 145 EB 150 EB 155 EB 160 EB 165 EB 170 EB 175 EB 180 EB

%
## Summary: Most Acceptable Price Point

*How much is Ethiopia willing to pay for the new products?*

<table>
<thead>
<tr>
<th></th>
<th><strong>Household</strong></th>
<th><strong>Trade</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lantern</strong></td>
<td>US $5.02</td>
<td>US $6.23</td>
</tr>
<tr>
<td></td>
<td>(ETB 50)</td>
<td>(ETB 62)</td>
</tr>
<tr>
<td><strong>Torch</strong></td>
<td>US $3.22</td>
<td>US $3.32</td>
</tr>
<tr>
<td></td>
<td>(ETB 32)</td>
<td>(ETB 33)</td>
</tr>
<tr>
<td><strong>Task Light</strong></td>
<td>US $4.82</td>
<td>US $5.02</td>
</tr>
<tr>
<td></td>
<td>(ETB 48)</td>
<td>(ETB 50)</td>
</tr>
<tr>
<td><strong>Flood Light</strong></td>
<td>N/A</td>
<td>US $7.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ETB 72)</td>
</tr>
</tbody>
</table>

**Conversion rate**
1 US $ = ETB 9.95
Consumers: Evaluation of Lighting Concept

Q. 64 “How interested would you be in having the following lighting solution for your household?”
Mean = 4.50

Q. 65 “Which of these phrases best describes how new and different you think this lighting solution is than other lighting solutions currently available in the market?”
Mean = 4.42

Q. 66 “What statement best describes how much you think you would like or dislike this lighting product?”
Mean = 5.21

Q. 67 “Do you think a product of this type would be adequate for your household lighting needs?”
Mean = 4.74

Base: Total sample = 1006
Q. 52 “How interested would you be in having the following lighting solution for your business?”

Mean = 4.46

Q. 53 “Which of these phrases best describes how new and different you think this lighting solution is than other lighting solutions currently available in the market?”

Mean = 4.42

Q. 55 “Do you think a product of this type would be adequate for your business lighting needs?”

Mean = 5.07

Base: Total sample = 400
Summary: Consumers

Respondent Profile and Behaviours
- A majority of consumer respondents are rural based (79%) and from lower LSMs
- Dwellings are made from mainly mud and mud bricks, with corrugated iron sheets and grass or other thatch for roofing.
- Most households have 4 to 5 people living together on a permanent basis, with 2-3 children aged under 16 years.
- The average household income is US $115.70 and the household head is the sole bread winner

Electricity Consumption Habits
- Power cuts mostly occur during off peak times (19:00 – 7:00) and are frequent, with over two thirds experiencing them at least once a week.
- Sharing of electricity from same source is common with an average of two consumers
- Majority receive electricity bills on a monthly basis
- Electricity is mostly intermittent but reliable when connected
- Need for better lighting is cited as the main reason for connecting to the main grid for those who are not yet connected
**Summary: Consumers**

**Power & Lighting Habits and Usage**
- Majority do not have power sources for the household
- Kerosene is the main energy source in most households
- A majority of respondents begin to use lighting devices between 18.30 to 19.00.
- The mean number of rooms used after dark is the same with that of lit rooms
- The patio/yard is the area mostly not lit in many households due to lack of outside lighting
- The main problems experienced due to lack of lighting are difficulty in reading; children not being able to do their homework and insecurity
- If there was enough lighting, majority feel that their children's education would improve since they would study and do their homework well

**Current Lighting Devices**
- Paraffin lamp with simple wick and no cover is the mostly commonly used type of lighting device though the most preferred is Paraffin Lamp with glass cover probably because it doesn't emit smoke
- About half of respondents hung their lighting devices from a hook on the wall
- Firelight, Candles and Torches are the most used daily source of energy
- Reading and Cooking are the main activities that are not performed as desired due to lack of lighting
Summary: Consumers

Health and Environmental Considerations and Effects

- Majority of consumers do not worry about the health effects of paraffin/kerosene. However, the few that do mentioned coughing as their main worry followed by eye itching and asthma.

- Most consumers do not feel that there is any environmental effect in using paraffin/kerosene: those who do mostly cite smoke produced as hazardous to the environment.
LIGHTING AFRICA
Catalyzing Markets for Modern Lighting
TRADERS
Respondents Profile And Behaviours

- A majority of trader respondents (85%) are from lower LSMs (1-3)
- Most are aged between 25 and 44 years
- 78% are rural based
- Average monthly income is US $130.30, with weekly sales being averagely US $45.50 and monthly profits, US $54.60
- Most business owners have small Duka / permanent shops and kiosks with one employee

Electricity Consumption Habits

- Power cuts are frequent, about two thirds experiencing them at least once a week
- Traders not connected to the power grid have a power line close by. The chief reason for not connecting is costs
- Most traders connected to main grid receive electricity bills every month
- Though electricity received is intermittent, most of the times when connected, the voltage is always enough
Summary: Traders

Power & Lighting Habits And Usage

- Kerosene is the main energy source used by most traders due to its constant availability.
- Lack of light hinders businesses operations after dark thereby minimising the number of customers and profits.
- Satisfaction levels of light for those that have lighting at their premises are average at 56%. The main reason for dissatisfaction is inadequate lighting intensity.
- Poor lighting outside the business is a cause of insecurity that hinders shopping at night.
- Unavailability of better lighting/devices is the main barrier to improving lighting at the business.

Current Lighting Devices

- Paraffin lamp with glass cover and simple paraffin lamp are the most used lighting gadgets.
- Traders prefer to place the lighting devices at the till where they can see customers’ faces and money.
“For the poorest of the poor Lighting Africa represents the opportunity to move from wicks to modern lighting.”