

# LIGHTING AFRICA

*Catalyzing Markets for Modern Lighting*

## ETHIOPIA

# Qualitative Off-Grid Lighting Market Assessment

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# 1. LIGHTING AFRICA OVERVIEW/ MARKET INTELLIGENCE PROGRAM

# What is Lighting Africa?



**Lighting Africa** is a World Bank – IFC initiative aimed at supporting the global lighting industry to catalyze a robust market for off-grid lighting products tailored to the needs of African consumers.

The Program's mission is to make affordable, environmentally sustainable, durable, and safe lighting available to the masses, who currently depend on kerosene lanterns and candles to satisfy their lighting needs.

# How does Lighting Africa support the development the lighting market?



The Lighting Africa program is a **market-based** approach, grounded in the recognition that:

- There is a considerable **commercial market opportunity** and willingness to pay for off-grid lighting, substantiated by annual expenditures on kerosene amounting to \$38 billion and \$17 billion, globally and in Sub-Saharan Africa, respectively
- Recent **technological advancements in lighting**, particularly in the area of Light-Emitting Diodes (LEDs), demonstrate increased promise to deliver affordable technological solutions tailored to the African marketplace and beyond
- The most expedient and sustainable way to bring affordable, reliable lighting to Africa is by **supporting the industry** to design and deliver an array of products tailored to the needs of African consumers

# How do we ensure Lighting Africa program activities respond to industry need?



All Lighting Africa program activities are designed *with* and *for* the industry and other stakeholders

Through *ongoing consultation* with a wide array of stakeholders (including private companies, NGOs, financiers, governments and other key players along the supply chain) opportunities are identified where Lighting Africa can play an appropriate role in accelerating the off-grid lighting market in Africa



# Lighting Africa: Program Areas

- **Policy:** Addressing policy and regulatory barriers
- **Financing:** Improving access to finance along the distribution chain- for example through partnership with financial institutions
- **Product Quality Assurance:** Addressing issues of quality with lighting products to help consumers make informed purchase decisions and prevent market spoilage
- **Business-to-Business Linkages:** Creating opportunities for different players along international supply chain to meet, exchange information and create business partnerships
- **Market Intelligence:** Collecting & disseminating key market information to support successful market penetration
- **Business Environment:** Facilitating market entry through the provision of relevant information, such as country-specific policy and regulatory information



# What will the market research provide?

**Key Market Information on consumer needs, preferences and finances. The information will:**

- Inform on the desired functionality and design attributes of different types of lighting products within several different product classes (Torch, Floodlight, Task Light, Lantern, Spot Light)
- Enable the industry to overcome potential challenges that are likely to accompany market entry in the African off-grid lighting market
- Create a baseline to quantify the size of potential market segments in volume and value terms



# Structure of Market Research Work



- Currently the Lighting Africa market research program covers:
  - 5 countries: Ghana, Kenya, Zambia, Ethiopia and Tanzania
  - 2 key market segments: households & micro-businesses in rural and urban areas
- The research is divided into two phases:
  - **Surveys** on consumer lighting uses, preferences, and expenditures
  - In-depth **product testing** by focus groups

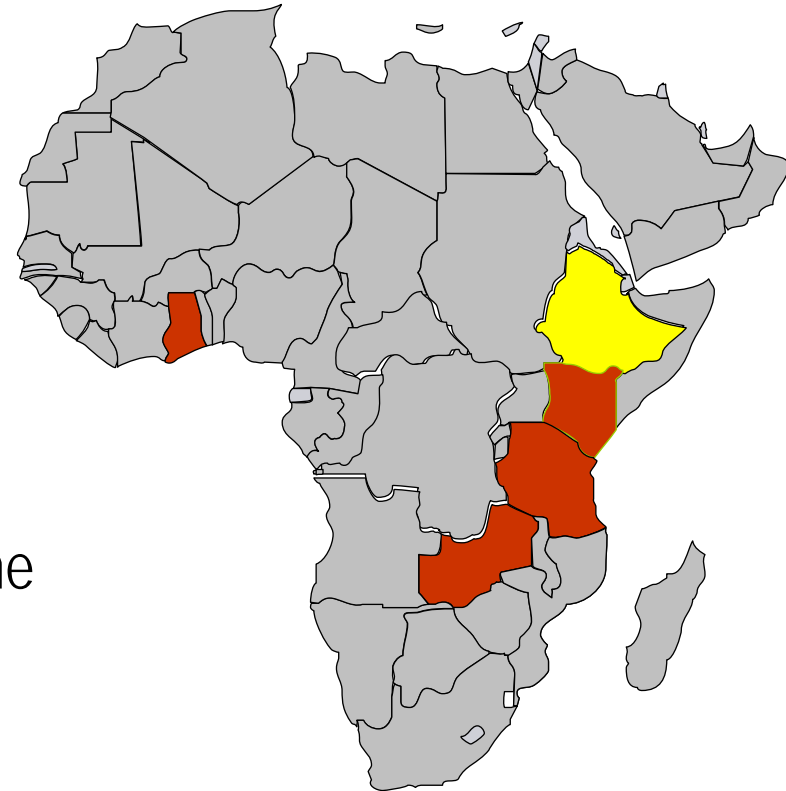


# Lighting Africa: Why Market Research?

- While anecdotal evidence shows a substantial opportunity in the off-grid lighting market in Africa, much of the industry lacks the information needed to develop and market products appropriate to meet the needs of African consumers
- This is the result of a premature and undeveloped market, but one with demonstrable potential – **the fuel-based lighting market in Africa is currently worth more than \$17 billion per year** – yet is still largely undefined, untapped, and unrealized
- In response to the industry's call to provide greater comprehension to the scope of this emergent market opportunity, Lighting Africa developed a **Market Research** program

# Qualitative Research Phase: Stage 1

- This report summarizes the **qualitative** findings of the first research phase for **ETHIOPIA**.
- Analogous studies are available at [www.lightingafrica.org](http://www.lightingafrica.org) for the other 4 countries.
- Lighting Africa will soon issue the following complementary reports
  1. **Quantitative** analyses for each of the 5 countries
  2. A **cross-country summary** report
  3. Results of the in-depth **focus group product tests**





## 2. MARKET RESEARCH APPROACH

# Research International: Background and Related Experience



The research was conducted by the Research International Africa, a subsidiary of the global market research firm, Research International, the world's largest custom market research agency, with offices in 50 countries worldwide and 30 years of expertise.



- The market study involves studies of the market in Africa to provide insights that form the basis for innovative product ideas; and is comprised of two primary research methods:
  - An **Exploratory phase** involving a desk study of existing data on the market and a Habits and Attitudes survey of the population
  - **Concept testing, using the proprietary eValue** methodology, to quantify the acceptance and likely uptake of existing, new and revised product ideas for the market in Africa

- The test sample included 2 key market segments: (i) urban and rural households and (ii) urban and rural micro-businesses
- Interview respondents in each segment were selected at random in the following representative locations: Addis Ababa, Butajira, Debre Birhan and Nazareth



- Researchers conducted **55 in-depth, structured interviews** to gather information on current lighting practices, attitudes toward current lighting products, and perceptions of modern lighting products, etc
- **2** different test products were left for **3** nights with each respondent so they could evaluate them in the context of their daily lighting needs
- Researchers returned after 3 nights and invited respondents to complete a callback questionnaire on their experience with the test products



# Key Types of Consumer Information Collected



The market research interviews generate the following country-specific consumer information:

- Who are the consumers?
- How do consumers presently utilize light?
- What do consumers want in terms of the amount and type of light needed to satisfy their lighting needs?
- Which products do consumers prefer?
- How much are consumers willing to pay for different kinds of lighting products?





# Products Tested

**LANTERN**  
Dynamo or mains power,  
rechargeable battery



**LIGHT SOURCE**  
White LED

**TORCH**  
Solar, rechargeable  
battery



**LIGHT SOURCE**  
White LED

# Products Tested

**TASK LIGHT**  
Lantern & Torch  
Solar, rechargeable  
battery



**LIGHT SOURCE**  
CFL and LED

**TASK LIGHT**  
Mains power or  
replaceable battery



**LIGHT SOURCE**  
White LED

# Products Tested

**TORCH**  
Replaceable battery



**LIGHT SOURCE**  
White LED

**FLOOD LIGHT**  
Solar, rechargeable  
battery



**LIGHT SOURCE**  
Linear fluorescent

**SPOT LIGHT**  
Solar, rechargeable  
battery



**LIGHT SOURCE**  
White LED



## 3. DEFINING THE ETHIOPIAN CONSUMER

# 3. Lighting Consumers: HOUSEHOLDS



*Roasting coffee beans in a rural household*

# How do typical consumers live?



## LSM 1-4

### Urban

- Dwellings in this sample population contain 1 to 3 rooms: sitting room, bedroom and sometimes a separate kitchen, though mostly the cooking is done in the sitting room
- Informal households are in densely populated neighborhoods. These households are occupied by about 4 family members

*“I have two rooms. One is guestroom, which is also used as a kitchen and the other is a bedroom.”*

*--Male, 25, Urban household, LSM 1-4, Addis Ababa*

### Rural

- Dwellings are small and contain 2 to 3 rooms, usually with the living room and kitchen area combined. The living room is at times also used as the sleeping area, with the kitchen being a separate room
- Rural households are usually occupied by about 4 family members

*“This is considered as sitting room, bed room and dining room, The other is my kitchen. All of us-- me, my children and my husband’s sister--sleep in here.”*

*----Female, 34, Rural household, LSM 1-4*



# Household Dwellings

## LSM 5-8

- Houses belonging to rural consumers in this group consist of about 4 rooms, including a sitting room, multiple bedrooms and a kitchen. In some houses, the cooking is done in the living room, and so the other rooms are used as bedrooms
- These households include about 4 family members

## LSM 9-12

- In this segment, houses are bigger than in the other groups, consisting of 4 to 6 rooms. They have a living room, a kitchen and bedrooms.
- These households also tend to have larger numbers of family members as compared to the other social groups.

*“The living room is the main room. We have 3 bed rooms, one master and two for the children and the other is the kitchen.”*

*--Female, 33, Rural household, LSM 10*

*“My home has one sitting room and three bedrooms.”*

*--Female, Rural household, LSM 6*



## Bathrooms and toilets

- Bathroom and toilet facilities in both the urban and rural households are mostly outside the main house and shared with neighbors
- In a few cases, toilets are in the main house, most often in rural households of higher social class (LSM 9-12)

*“We share toilet with our neighbors.”*

*--Female, 33, Urban household, LSM 1-4, Addis Ababa*

*“Toilet is common for those living in the same compound.”*

*--Male, 27, Urban household, LSM 3*

## LSM 1-4

- These consumers start their day at 6 a.m. They are mostly employed, spending most of the day away from the home until evening when they return. The women then prepare dinner for the family while children do their home work, and after some catching up with the family, they retire to bed around 10 p.m.

*“I go to work at 8:30 a.m., have a lunch break and then I go to my house at 5:00 p.m. I cook dinner... after that there isn’t much to do. I usually go to bed at 10 p.m.”*

*--Female, Urban household, LSM 1-4*

- A typical day for a rural consumer is similar to that of the urban consumer. Many wake up before daybreak, at 6 a.m. and spend the day working. They are mostly employed. They get back to their houses in the evenings, have dinner, relax with the family, and go to sleep at around 10 p.m.

*“Everyday I wake up very early, at 6 a.m., After [we feed the] children I drop them at school and go to work. I return home at 6 p.m. Afterward I usually play with my children, read some books and then I go to bed.”*

*--Male, Rural household, LSM 1-4*

## LSM 5-12

- These consumers are employed. They wake up at 6a.m. and go to work, mostly in offices or in their own businesses. They return to their homes in the evening after 5 p.m., prepare dinner, socialize with the family and then retire to bed

# Weekends and Days Off

- **Consumers normally have just one day off: Sunday. Ethiopians are very family oriented; their time off is usually spent at home with family members. The morning hours are mostly spent in church.**

*“I always spend Saturdays working, but on Sunday I stay at home with my husband and children.”*

--Female, 33, Rural household, LSM 10

*“I mostly spend my weekend by reading books and listening to the radio. On Sunday I go to church, but other than that I spend it with my children and my wife.”*

--Male, Rural household, LSM 5-8

*“I don’t usually do anything much. Sometime I will visit my families or I will hang out with my friends. That is how I pass the weekends.”*

--Male, Urban household, LSM 1-4

# Day-to-Day Challenges



## LSM 1-4

- The main challenge for these urban consumers is providing food for themselves and their families on a daily basis. Though most of them are employed, their salaries are low and therefore only essential items are purchased, like firewood with which to cook, vegetables and staple foods. Day to day life is difficult especially for those with families.
- For these rural consumers, getting food daily is also a major challenge. With their low income, their main priorities are cooking oil, vegetables and staple foods.

*“Life is not that joyful because everything is not fulfilled. So I can’t say I am that happy about my life. Even my salary is not that much so I can’t say I’m happy.”*

--Female, Urban household, LSM 1-4

*“What makes me sad in my life style is that I am the one that earns my living and runs my life. Sometimes I get short of work and money and as a result see my son starving. When he is hungry that really touches me from the inside and I feel really sad.”*

--Female, Rural household, LSM 1-4

*“What I really think is very necessary if I get money is wheat to make bread... I try to buy beans and things like that.”*

--Female, Rural household, LSM 1-4



# Day-to-Day Challenges

## LSM 5-12

- **Similar to the lower social segment, the most important commodity for this social group is food. Mostly they buy vegetables, cooking oil and traditional bread. Once in a while they buy clothes, but only when necessary**

*“The most important thing for the family is food, therefore, we buy that a lot.”*

*--Male, Rural household, LSM 5-8*



*Roadside shops in urban Ethiopia*

# Consumer Aspirations

## LSM 1-4

- These consumers in both the rural and urban areas have similar aspirations, involving the priority to provide their children and themselves with a good education. Education is seen by many as the gateway to a bright future and even those who are over the secondary school age aspire to further their education
- Many aspire to upgrade their living standard through getting a better job with better salary and owning or starting businesses, owning homes instead of renting, and acquiring household items to make life easier and more enjoyable, e.g. television sets, refrigerators or furniture

***“I’ll work hard to send my children to school, and for my self I wish to have a better job.”***

--Female, 33, Urban household, LSM 1-4, Addis Ababa

***“I want to be educated and change the life of my family. I am teaching my children in a good school and to see them successful in the future is my dream.”***

--Male, Rural household, LSM 1-4

***“First I’d like to have my own home, then there would be a lot of things to be fulfilled in the house like television or refrigerator and stove.”***

--Male, 27, Urban household, LSM 3

# Consumer Aspirations

## LSM 5-12

- Higher social classes in rural areas also aspire to provide their children and themselves with good education, believing this will guarantee them a future of opportunity. Other aspirations include getting married and starting a family, finding better jobs, and also moving to an urban area.
- To improve their households, this social class would like to acquire electronics like televisions sets, DVDs and better furniture.

*“I have to reside in the urban area with my children for a better education, while I am still running my business.”*

--Female, 33, Rural household, LSM 10

*“I want a TV in my home because I am very interested in media stuff.”*

--Male, Rural household, LSM 5-8

*“My plan is big. I plan to learn, get education, get married and have kids.”*

--Female, Rural household, LSM 5-8



# Lighting Consumers: MICRO-BUSINESSES



*Roadside kiosk*





# Defining Lighting Consumers: MICRO-BUSINESSES

## Urban

These businesses are usually run by their owners or family members. Common types in the urban areas are:

- Fixed hawkers
- Shops selling electronics, household commodities
- Self service shops
- Open air and closed market trade – dealing in food stuffs, fruits and vegetables
- Kiosks

## Rural

These are run by their owners. Family members will step in to assist when the owner is not available. Rural businesses include:

- Small shops
- Kiosks
- Open air and closed market trade



# Urban Microbusiness Premises

## Urban Trade

- Urban business premises occupy 1 to 3 rooms. These consist of a front room where customers are served, and stores. In very few cases there may be a toilet in the premises
- In some cases the shop is a room in the main dwelling house of the owner. So one room is converted into a shop and the back rooms are used as bedrooms and living space

*“I have only this shop and also a small store room at the back.”*

--Male, Urban trade, Small shop

*“The shop is only this one room but I do have 2 more rooms for living.”*

--Male, Urban trade, Small shop





# Rural Micro-business premises

## Rural Trade

- Business premises in the rural area mostly consist of a single room. This is where the products on sale are displayed and the customers are served

## Toilets

- In both rural and urban business premises, toilets are mostly shared with neighbors and owners of the property because many people rent



*Trading center*

*“I have only one room on my business premises”*  
--Female, Rural trade, Kiosk

*“I use a common toilet which is serving the neighborhood.”*  
--Female, 23, Urban trader, Small shop



# Urban Trade Operating Hours

- **Urban businesses mostly open between 6 a.m. and 8 a.m. and close at 9 p.m. They operate 7 days a week. Some traders open a half-day on Sundays so that they can attend church in the morning hours**
- **The most common reason given for closing at 9 p.m. is that customers are not available after that time. When asked whether they would like to extend their hours, most urban traders said they would not because they could not attract consumer traffic late at night. A few directly mentioned lack of good lighting as the reason why they did not opt to stay open late**

***“I open at 8am in the morning and I close around 9 p.m. in the evening.  
There are no consumers early in the morning or after 9 p.m.”***

***--Female, Urban trade, Shop, Nazareth***

***“...we don't have that many customers to visit us after 9 p.m.  
That is why we close around this time.”***

***--Male, 33, Urban trade, Small shop***



# Rural Trade Operating Hours

- Rural traders operate from 7 a.m. and close between 8 p.m. and 9 p.m., mostly 7 days a week. Some traders close on Sundays so that they can go to church. Rural traders would like to open late at night, but due to a lack of good lighting, they are forced to close earlier

*“Early in the morning I open around 7 a.m. and close around 9 p.m.”*

*--Male, 30, Rural trade, Shop, Nazareth*

# Understanding Lighting Consumers: Summary



- **Dwelling types in the urban areas tend to be cramped, with one room which is sometimes used for business. Cooking areas and living areas are normally in the same space, requiring (at minimal) a single light to provide ample lighting. In homes with separate kitchens, two devices would be required. Toilet/bathrooms are mostly outside and light is required to get to them in the dark**
- **Most consumers are at work during the day, so there is no need for lighting until evening. Weekends are spent at work, apart from Sundays when the family gets together at home**
- **Micro-business premises are usually small, containing only one room. They operate from early morning until night time when customers become scarce and the lighting is insufficient. Better lighting would encourage many traders to work until late**
- **The main challenge for Ethiopians is the provision of daily food for their families. The most often purchased commodities are food and paraffin for cooking and lighting**



## 4. CURRENT LIGHTING BEHAVIORS

# Current Lighting Behaviors/ Household Characteristics





# Typical Household Lighting Needs

- **Consumers start their day early in the morning before day break and need some form of lighting as they get ready for the day's activities. Lighting is used for about 1 hour in the morning when preparing breakfast in the kitchen or cooking area**
- **Light is then used again in the evening when it gets dark, from 6 p.m. to 7 p.m. In the evening, various activities are carried out in the household by members of the family. Typically women reside in the kitchen preparing dinner, children work on completing their homework and men reside in the living room. In one-room houses, one portable lighting device is used for all these activities**
- **In bigger houses, two lighting devices are used. The kitchen has one, while the living room has its own, bigger lamp. When it's time to go to bed, these same devices are carried over to the bedroom or to the sleeping area**



# Typical Household Lighting Needs

- The living room is given priority for lighting. Lamps are also carried to the toilet and bathrooms when required because these facilities are usually outside the main house

*“All family members use the same lighting system because we live in one room.”*  
--Female, Urban household, LSM 1-4

*“The rooms have no equal time lighting, it differs. The bedrooms are usually lit for the shortest time while we try to go to bed. The salon is the longest one starting from 6 p.m. to 11 p.m. in the night.”*

--Female, 41, Urban household, LSM 1-4, Addis Ababa

# Typical Micro-Business Lighting Needs



- **Light is used early in the morning for about 1 hour for those businesses that open early before day break. In the evening lighting is used for an average of 3 hours, from around 6:30 p.m. until 9 p.m.**
- **In premises with more than one room, lighting priority is given to the front room, which serves customers. When the traders need to get something from back rooms, they carry the portable light with them, thus leaving the customer room in darkness while they are gone**
- **Open air market traders rely on street lights. When these are not working they use a portable lighting device**

# Typical Micro-Business Lighting Needs

- A few traders keep another form of portable light which they use when going to the toilet outside the premises

*“Mostly I use the torch light when I get outside, for when I go to toilet.”*

*--Male, 37, Rural trade, Shop*

*“I use hand battery (torch) when I go the toilet at night.”*

*--Female, 23, Urban trade, Shop*

*“Sometimes if there is no street light I use paraffin lamp and torch.”*

*--Female, 42, Urban trade, Open air market, Nazareth*



## 5. CURRENT LIGHTING PRODUCTS & EXPENDITURES

# Current Lighting Products Utilized



Paraffin lamp



Mains Power:  
Electrical Power  
Corporation



Pressurized kerosene lamp



Tin lamp



Torch



Candle



# Currency Conversion Rate

▪ **Ethiopia 1USD = ETB 8.63**



# Paraffin and Tin Lamps



## Usage

- Paraffin lamps are popular with off-grid rural and urban households and businesses. They are widely available and inexpensive (at about 28 Birr each). Tin lamps are commonly and easily made at home. They are portable and consumers move them around within a business as well as within households

## Disadvantages

Though popular, they are only used because consumers lack other choices.

- Smoke blackens the ceiling.
- Paraffin is expensive (8 Birr per liter).
- Smoke irritates the eyes.
- Paraffin is dangerous; it can cause fire.
- The lamps do not give a lot of light.
- The smell of fuel emitted is strong.



# Mains Power (Electricity)



## Usage

- Electricity connections in both the rural and urban areas are common.
- Interviewees remarked that connections to the electrical grid through neighbors' properties are simple and inexpensive. Charges are calculated according to the number of bulbs operated.

## Disadvantages

- A downside to being connected via neighbors is that there are usually restrictions to the number of bulbs one can afford. The more bulbs, the higher the cost.
- In some instances, especially in the case of business premises, the times that power can be used is dictated by the property owners. This forces businesses to close earlier than they would otherwise.
- Dimness is also common due to connections through neighbors; it leads to power overloads.
- Power blackouts are a major and common occurrence in both rural and urban areas; they occur at least twice a week and last for 2 to 3 hours.



## Usage

Candles are mainly used as back up when paraffin has run out or when going to the outside toilet or bathroom. They are inexpensive (1 Birr) and widely available.

## Disadvantages

- They burn out too quickly. Consumers need many to get through one night.
- Candles leave behind wax, which is messy.

*“It’s not satisfying; we go to the toilet with a candle, so it’s sad.”*



## Usage

- **Torches are used for their portability. They are used when walking outside in the dark:**
  - **Going to the toilet.**
  - **Escorting a guest in the dark.**
  - **Walking home from work.**
- **Traders use them when fetching items from the shelves in their shops**

## Disadvantages

- **Torches are considered expensive and therefore not commonly used. Batteries cost about 6 Birr each**



# Kerosene Pressure Lamps

## Usage

- **Kerosene pressure lamps are mostly used by higher social groups (LSM 5-12). They are mainly used in homes. The light is very bright and usually adequate for a one-room house**

## Disadvantages

- **Expensive for most people.**
- **The light is too bright to the point where it hurts the eyes (glare).**



# Rechargeable Fluorescent Light

## Usage

- This light is charged using electricity and is therefore used by a few that have a electricity connection as a back up during power cut offs. It has a good lighting intensity. It is portable, used around the house and also when going to the bathroom/toilet

## Disadvantages

- Expensive for many at around 50 Birr.
- The charge does not last for long.

# Summary of Lighting Products Presently in Use

	Advantages	Disadvantages
<b>Paraffin &amp; Tin Lamps</b>	<ul style="list-style-type: none"> <li>- Can control the light intensity</li> <li>- Can buy paraffin according to available cash</li> </ul>	<ul style="list-style-type: none"> <li>- Paraffin is expensive</li> <li>- Dangerous</li> <li>- Irritates the eyes</li> <li>-Smoke blackens the ceiling</li> <li>-Does not give a lot of light</li> </ul>
<b>Electricity</b>	<ul style="list-style-type: none"> <li>-Widely available</li> <li>-Good lighting intensity</li> </ul>	<ul style="list-style-type: none"> <li>-Controlled by property owners</li> <li>-Frequent power black outs</li> </ul>
<b>Candle</b>	<ul style="list-style-type: none"> <li>- Easily available</li> <li>- Inexpensive</li> </ul>	<ul style="list-style-type: none"> <li>- Burns out quickly</li> </ul>
<b>Torch</b>	<ul style="list-style-type: none"> <li>- Portable, used for toilet visits and when moving between dwellings</li> </ul>	<ul style="list-style-type: none"> <li>-Expensive on batteries</li> </ul>
<b>Pressure Lamp</b>	<ul style="list-style-type: none"> <li>-Gives a lot of light</li> <li>- Expensive</li> </ul>	<ul style="list-style-type: none"> <li>- Light is too bright and hurts the eyes</li> </ul>
<b>Rechargeable Fluorescent Lamp</b>	<ul style="list-style-type: none"> <li>- Gives good light intensity</li> <li>- Portable</li> </ul>	<ul style="list-style-type: none"> <li>- The charge does not stay for long</li> </ul>



# Environmental Considerations

- **Most consumers seem unaware that the types of lighting devices they use may have a negative effect on the environment**
- **However, some have learned via the media that batteries are not good for the environment but they do not know their exact negative effects**

*“Batteries are products of manufacturers and I believe that they have impact on the environment ... we are not using them in bulk so the impact is not clearly shown.”*



# Health Beliefs and Reported Effects

- A majority of consumers have good eyesight and do not think the lighting devices they use have any negative effects on their eyes
- A few negative effects to the rest of their health were noted:
  - Itchy eyes from paraffin lamps.
  - Coughing caused by paraffin and tin lamps.
  - Difficulty breathing after using tin lamps and paraffin lamps.
  - Feeling of sickness caused by using candles
- Consumers continue to use paraffin and tin lamps and candles because they cannot afford better lighting products.

*“Every morning when I wash my face some sort of soot comes out of my nose and mouth because of the paraffin lamp. I’m worried about it.”*

*“Yes, when I use candle at night I get sick in the morning. I came to use lamp long after I used the candle.”*

*“It’s just because we don’t have much of a choice that we use the lamps, I always worry about its effects on my children’s health.”*





# Summary of Lighting Behaviors

- **Household consumers tend to use lighting in the morning for one hour, while getting ready for that day's activities, and again in the evening for about 4 hours, mostly in the living room.**
- **Traders use light early in the morning for those that open early, but only for about 1 hour. In the evening, lights are again used for about 3 hours until closing time.**
- **During the day, households and businesses rely on sun light.**
- **The most popular lighting device is the paraffin lamp. This is used in business premises and households. The lamp is inexpensive and paraffin is widely available. Paraffin has negative effects on health so consumers would prefer to use alternative lighting if it was affordable.**



## 6. Consumer response to Modern, Off-Grid Lighting Products



## 6. Lantern: Dynamo, LED

### Perceived Advantages

- One can adjust the light according to their eyesight
- Economical: mechanical charging does not require batteries
- Easy to use
- Good size: does not require a lot of space
- Can be hung up in a room allowing light to spread to a bigger area.
- Adequate lighting intensity, better than paraffin lantern
- Portable: would be ideal to go to the toilet/bathroom
- Can be used at any time even during power blackouts



***“The light is powerful; it is not dim, it has enough light.”***

--Female, 41, Urban household, LSM 1-4, Addis Ababa

***“It can hang so I can place it in higher place and it can cover the light demand of the room.”***

--Male, 25, Urban household, LSM 1-4, Addis Ababa

***“It can't be blown out by wind even if I put it in my open market business place.”***

--Male, 41, Rural trade, Open air market trader

***“We can use it by hand charging and if we have the electricity we can also charge it, so it's great.”***

--Female, 33, Rural household, Nazareth

# Lantern: Dynamo, LED



## Perceived Disadvantages

- Unfamiliar design: many thought it was a thermos
- Fragile winding element and fragile glass panel
- Tiring to charge, have to allocate resources to charge it (time, energy)
- Noisy when charging
- The light does not stay on for a long time
- Difficult to close and to open



*“This one is very hard to charge. It takes too much of my energy to charge: I was tired.”*  
--Female, 42, Urban trade, Open air market, Nazareth

*“There might not be a place to get service, in case it malfunctions.”*  
--Female, 34, Rural household, LSM 1-4

*“The manufacturers should consider that when poor people use it there might be a lot of use of it. I don’t think that it is durable for hard and frequent use.”*  
--Female, 41, Urban household, Addis Ababa

# Task Light: Solar, CFL

## Perceived Advantages

- Good size and color
- Easy to use: has a switch
- Powerful lighting intensity
- Portable: makes it ideal for a shop to use when getting items off the shelf
- Economical due to rechargeable battery and solar recharging
- Multipurpose: use as torch or as lantern
- Can be easily placed on any surface
- Useful: sunlight is plentiful in Ethiopia



***“It looks good. One can move it from place to place and from room to room.”***

***--Male, Rural trade, Kiosk***

***“The solar panel is easily moveable in the direction of the sun light.”***

***--Female, 41, Urban household, LSM 1-4, Addis Ababa***

***“Since it is rectangular, it makes it easy to put on a table. It is also easy to hold in the hand.”***

***--Male, 24, Urban household, LSM 3***

# Task Light: Solar, CFL

## Perceived Disadvantages

- Light emitted is directional: only lights a small area of a room
- Heavy
- Seems fragile: the front is made from glass
- Perceived to be expensive
- Can only be used during summer; Needs to be moved around so that sunlight can reach it
- Charging a concern because the product needs to be left outside where theft is very likely



*“Maybe the mirror and plastic part could easily be broken.. better if the device is made of something strong like metal.”*

--Male, 24, Urban household, LSM 3

*“The fluorescent [lamp] needs to be larger to make the light cover a larger area.”*

--Male, 24, Urban household, LSM 3

*“I am afraid that when I put it outside during the day, strangers or children will steal it from me.”*

--Female, 23, Urban trade, Shop

*“It might not work properly during the rainy seasons.”*

--Female, 33, Urban household, LSM 1-4, Addis Ababa

# Task Light: Replaceable battery, LED

## Perceived Advantages

- Attractive design
- Easy to use
- Good size that does not occupy much space
- Flat base makes it easy to place on surfaces around the house and in a shop
- Portable
- Good lighting intensity for a single small room
- The light can be bent into different directions
- Batteries are easily available



*“It has enough light and is much better than candle light.”*

*--Male, 24, Urban trade, Music shop, Addis Ababa*

*“I couldn’t say it can give enough light for my home, but I can use it for the toilet.”*

*--Female, Urban household, LSM 1-4*

*“Because I mostly use light for reading this product meets my needs. Its design is very nice. You can put it on the top of a table. It has a good stand and it gives very good light.”*

*--Male, 23, Urban household, LSM 2,*

# Task Light: Replaceable battery, LED

## Perceived Disadvantages

- It looks expensive, like a luxury product
- Expensive on batteries
- Fragile



*“Its consumption of batteries is too much. It will be difficult for me to buy batteries.”*

*--Male, 23, Urban household, LSM 2*

*“It doesn’t look strong.”*

*--Male, Urban trade, Kiosk, Addis Ababa*

*“The plastic around the fuse seems easily broken.”*

*--Female, 42, Urban trader, Open air market trader, Nazareth*



# Spot Light: Solar, LED

## Perceived Advantages

- Looks durable
- Uses solar making it cost effective: no bill or battery cost
- Adequate amount of light

## Perceived Disadvantages:

- Least popular product due to its design, which makes it difficult to use indoors.
- Perceived as being expensive
- Not functional during the rainy season
- Has no switch so not easy to control light
- Does not emit a lot of light
- Difficult to stand
- Chance of it being stolen when left outside to charge



*“When I first saw it, I felt that it is meant for the rich.”*

--Female, Urban trade, Shop

*“Its usage procedure is not complex, but for using it in my shop it is not comfortable.”*

--Female, 23, Urban trade, Shop

*“It doesn’t have a switch, it might disturb you at the time you want to sleep in dark.”*

--Female, 33, Urban household, LSM1-4, Addis Ababa



# Torch: Solar, LED

## Perceived Advantages

- **Familiar design:** recognized as a torch
- **Portable:** ideal to go outside when it's dark and to illuminate products in a shop
- **Easy to use**
- **Economical:** uses solar energy



***“Instead of buying batteries every time it is good product.”***

--Male, 30, Rural trade, Nazareth

***“ It’s not enough (light) for the whole room but useful to move from place to place within the shop.”***

--Male, 30, Rural trade, Nazareth



# Torch: Solar, LED

## Perceived Disadvantages

- Little product security during charging
- Not practical for trade premises: light is not adequate
- Cannot be used during cloudy weather
- Batteries not easily available
- Fragile: the panel would easily break if dropped
- Looks expensive from the material
- Not a good size or shape for the hand: too big and flat

*“I don’t think I will be buying the product because I imagine it like a luxury thing.”*

--Male, Urban rural trade, Cloth shop

*“There are too many people without any work just sitting outside. It has a great chance of being stolen. Somebody might pick it up; I can’t carry it around with me all the time.”*

--Female, Rural household, LSM 1-4

*“It should be reduce to a smaller size that is easier to use.”*

--Female, Rural household, LSM 9-10, Debre Birhan

*“You need to be careful, my children can break it. While exposed in the sun birds can break it.”*

--Female, Rural household, Nazareth

*“It might not function in the rainy season due to insufficient amount of light.”*

--Female, 33, Rural household, LSM 10



# Torch: Replaceable battery, LED



## Perceived Advantages

- Durable design and material
- Strong light intensity
- Portable
- Very easy to use and handle
- Easily recognized as a torch



***“It is good to go outside the house with it and to move from place to place.”***

***--Female, 44, Rural household, Nazareth***

***“When you touch it, it seems strong.”***

***--Male, Urban trade, Small shop***

***“It produces powerful light. My neighbors were even amazed and asked where to buy it.”***

***--Male, 41, Rural trade, Fruits & Vegetables seller in an open air market***

***“At night you can carry it in your pocket and it is simple and easy to carry.”***

***--Male, Urban trade, Small shop***

# Torch: Replaceable battery, LED



## Perceived Disadvantages

- It is heavy
- Perceived to be expensive
- Not multipurpose
- Batteries not easily available
- Expensive, for batteries



***“Battery availability is a big issue for me; they are not available in the market .”***

***--Male, 38, Rural trader, Wholesale shop, Nazareth***

***“It will be more portable if it is a smaller size.”***

***--Male, 31, Urban trade, Electric shop, Addis Ababa***

***“It uses four batteries, which is very expensive.”***

***--Female, 43, Rural household, Addis Ababa***

# Torch: Dynamo, rechargeable battery, LED



## Perceived Advantages

- Good size and light weight, can be folded and carried in the pocket: ideal for the kitchen and toilet
- Attractive and easy to handle; can be placed anywhere
- Made from durable material
- Manual charging so light available anytime
- No smoke
- Economical: no added costs after purchase

## Perceived Disadvantages

- Fragile winding handle
- Inadequate light intensity
- Takes too long to charge



*“It can hang in any place so you can perform the activity you want to do.”*

*--Male, 30, Rural trade, Shop, Nazareth*

*“It is dim because the cover obstructs the light.”*

*--Male, Urban household, LSM 1-4*

*“It’s made of plastic so I don’t think that it will last long.”*

*--Male, Rural trade, Shop*

# Flood Light: Solar, Linear Fluorescent

## Perceived Advantages

- Light-weight
- No recurring costs after purchase as uses solar power
- Adequate light intensity
- Easy to use
- Doesn't require a lot of space
- Has no negative impact on the environment

## Perceived Disadvantages

- May be stolen when put outside to charge
- Spare parts not easy to get
- May not work without sunlight
- The lead connecting the panel to the bulb is too short



*This light was tested in businesses premises only*

*“While I am working with my customers it can be stolen. It's not easy to move, you fix it in one place. I should [remove it] when going home and again hang it in the morning, otherwise it can be stolen.”*

*--Female, 28, Urban trade, Shop, Nazareth*

*“It might not be in use if there is not enough sunlight.”*

*--Female, 27, Urban trade, Shop*

# Lighting System Concept

## Perceived Advantages

- Uses solar energy
- Can be independently controlled without anyone interfering with the power.
- Costs less than electricity.
- Economical, with no additional costs

## Perceived Disadvantages

- Perceived to be expensive.
- Risk of the solar panels being stolen
- Insufficient light during rainy seasons
- Availability of spare parts may be a problem.



*“I think it is good. It collects sunlight and gives light.”*

*--Female, 33, Urban household, LSM 1-4, Addis Ababa*

*“I don't like the idea to place this materials outside the house, it might be stolen easily.”*

*--Male, 29, Rural trade, Shop, Nazareth*

*“It's nice to have a source of light that has no bill.”*

*--Female, 33, Rural household, LSM 10*

*“You can independently control it, no one can interfere and cut the power.”*

*--Male, Rural trade, Kiosk*

*“May be it won't give us enough light during the rainy seasons.”*

*--Female, 33, Urban household, LSM 1-4, Addis Ababa*



# Suggested Marketing Activities

- Respondents suggested that these activities could bring more lighting products to their communities.
  - Radio and TV advertising
  - Placing them in local markets where many people would see them.
  - Door-to-door advertising and promotions to give people experience in using the products and to encourage them to buy

*“If they are available in the market sufficiently the public would notice them and try them out.”*

*“Letting the public see and experience the products might be the best way to introduce them.”*



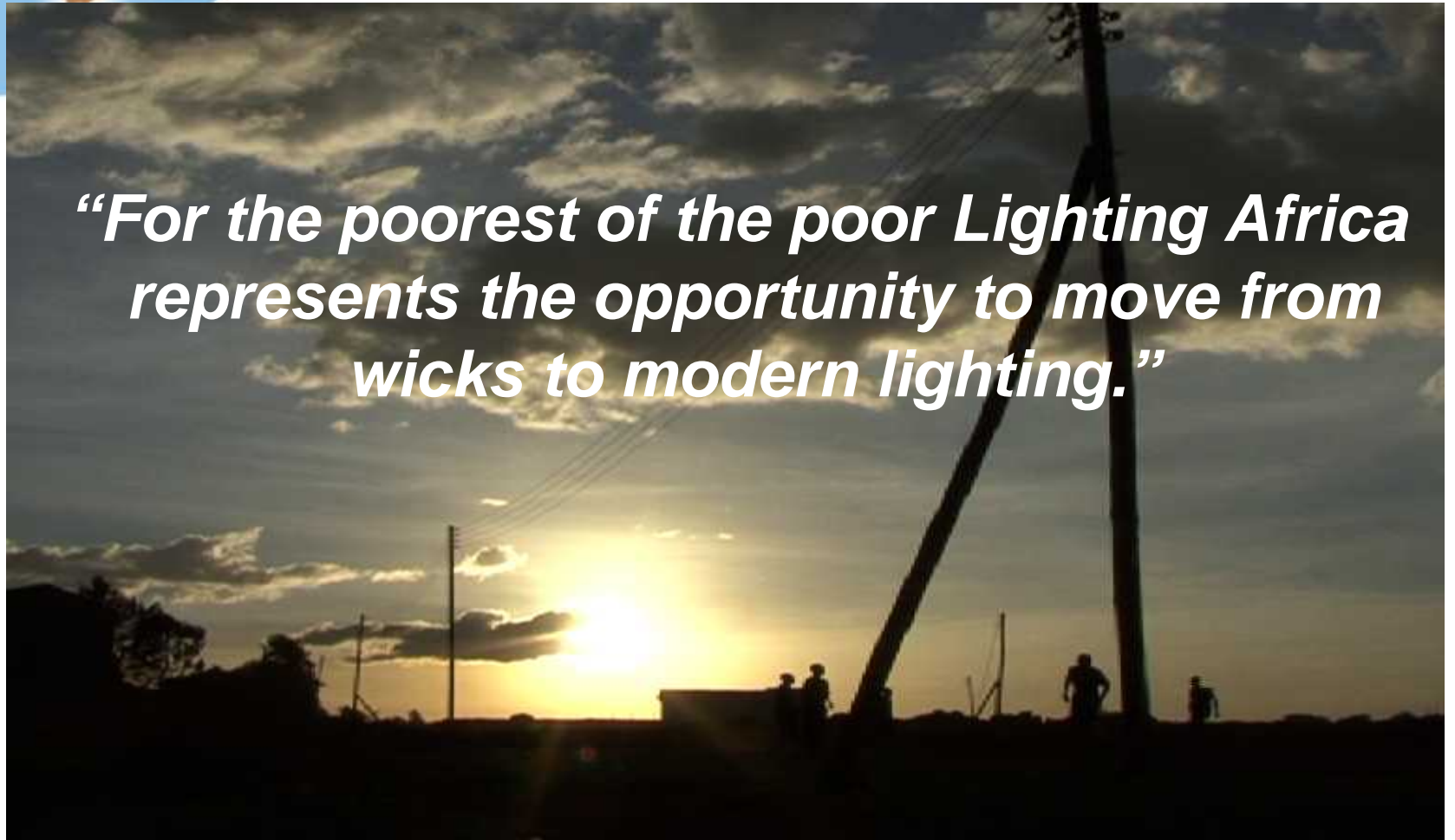
## 7. SUMMARY & CONCLUSIONS

# 7. Summary and Conclusions

- **The opportunity for modern lighting devices is greatest within the lower social strata (*LSM 1-4*) because getting an electricity connection in Ethiopia is not difficult.**
- **The priority for most homes is to provide food, so cost would be the main purchasing determinant for new lighting products.**
- **Battery operated lights are not popular due to the high cost of batteries.**
- **The flood light with the mountable solar panel was popular with businesses due to the amount of light it emits.**
- **Portable devices with a good handle, and that are bright are important in Ethiopia especially in densely populated urban areas where toilets are outside the main house. These would help users navigate through buildings and informal settlements to get to the toilet and bathroom facilities.**
- **Solar energy lighting products are seen as the best way forward for lighting by many, though the price must be affordable.**



***“For the poorest of the poor Lighting Africa represents the opportunity to move from wicks to modern lighting.”***



- For more information about LIGHTING AFRICA, please visit the Lighting Africa website at [www.lightingafrica.org](http://www.lightingafrica.org)
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## **DISCLAIMER**

**The opinions stated pro and con regarding products shown or used in this market research study are solely those of the interviewees and do not reflect the opinion or endorsement of the interviewers, the sponsors or their respective staff. Researchers procured a variety of products with typical features to stimulate feedback from interviewees about lighting in general. Quotations are translated to English from the original language; they are not attributable to the individuals shown in the photos.**

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