

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

Lighting Africa Market Assessment Results

Quantitative Assessment - ETHIOPIA



Report Content

- 1 Research Approach
- 2 Who is the Consumer?
- 3 Current Lighting Habits
- 4 Expenditure on Current Lighting Devices
- 5 Modern Lighting Devices – A brief Evaluation
- 6 Summary & Conclusions



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)





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

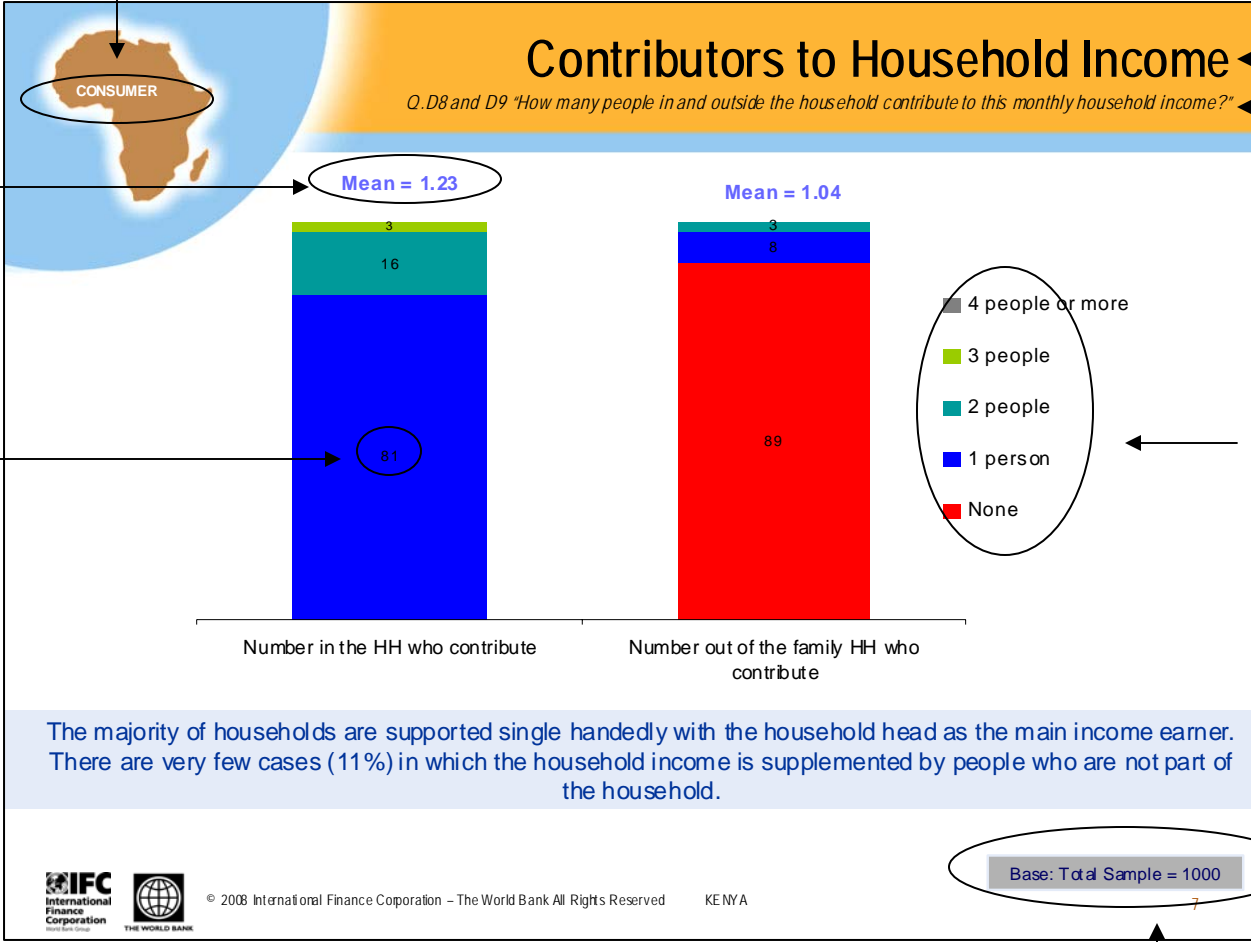
- 400 retail businesses, representative sample conducted in Addis Ababa, Oromya, Tigray, SNNP region and Amhara
- Covered retail businesses in informal settlements in urban and rural trading centres
- Interviewed the business owner or manager
- Face to face interview using structured questionnaire

Study conducted by: Research International Social & Public Research Africa, based in Nairobi, Kenya

How to Read the Slides



Sample on which this slide is based



Slide Title
 Question which was asked of the respondent

Legend detailing what the different chart colors mean

Mean score or average of a specific measure

Figures in the graph are percentages of the base indicated

Comment on slide content

Sample size on which the chart is based

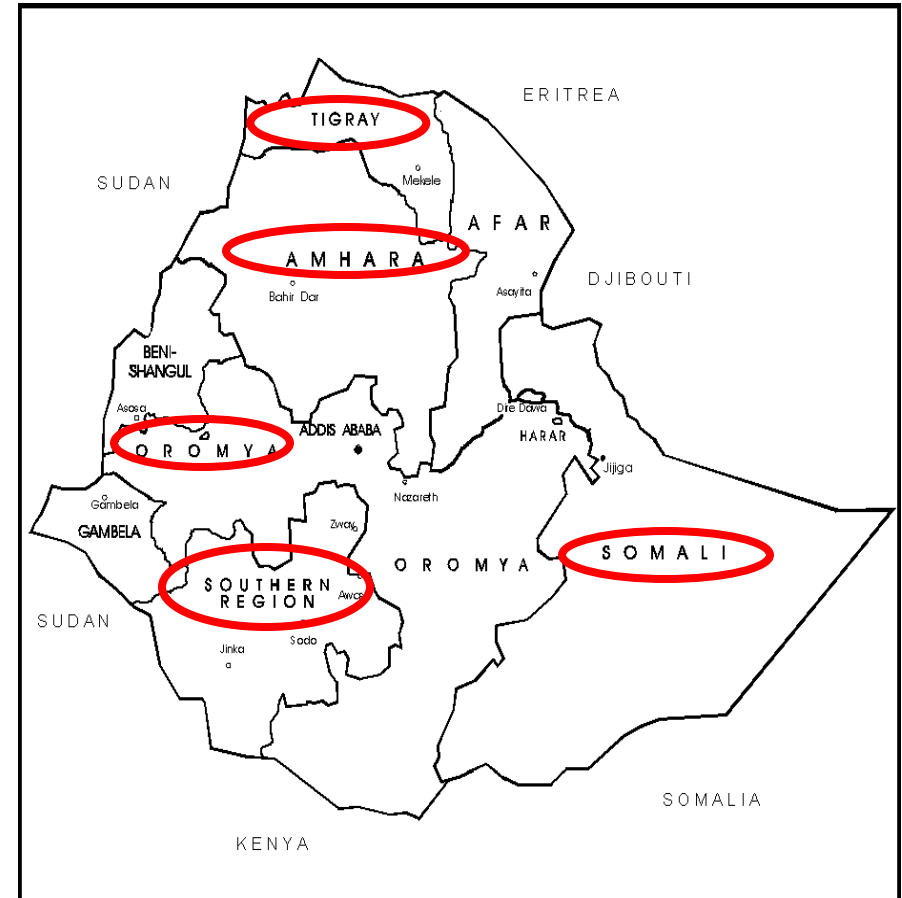


Ethiopia: Socio-Economic Environment

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



LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



RESPONDENT PROFILE



LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

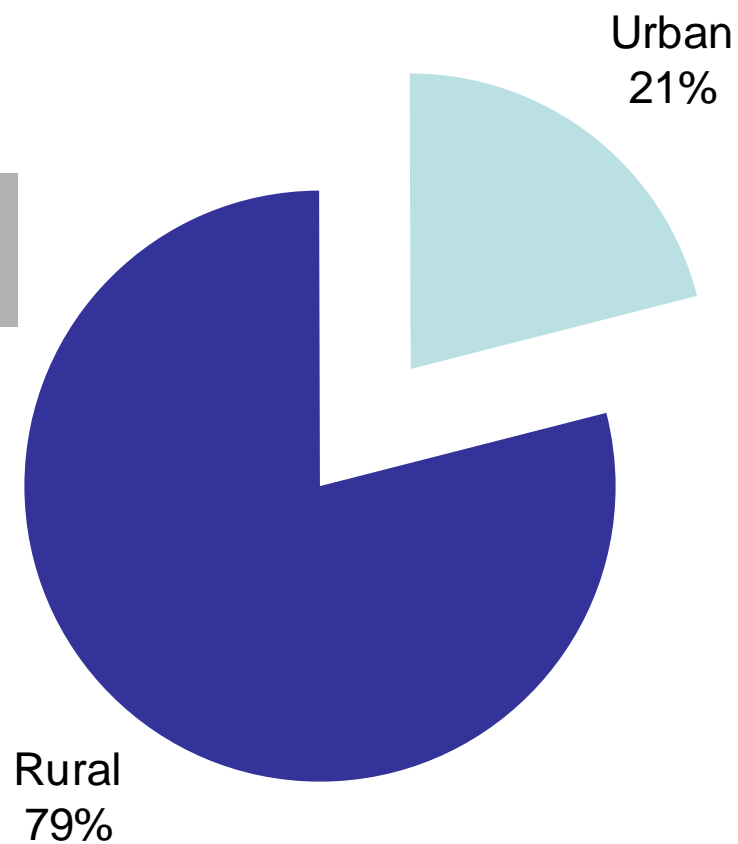
CONSUMERS



Rural vs. Urban Sample Distribution



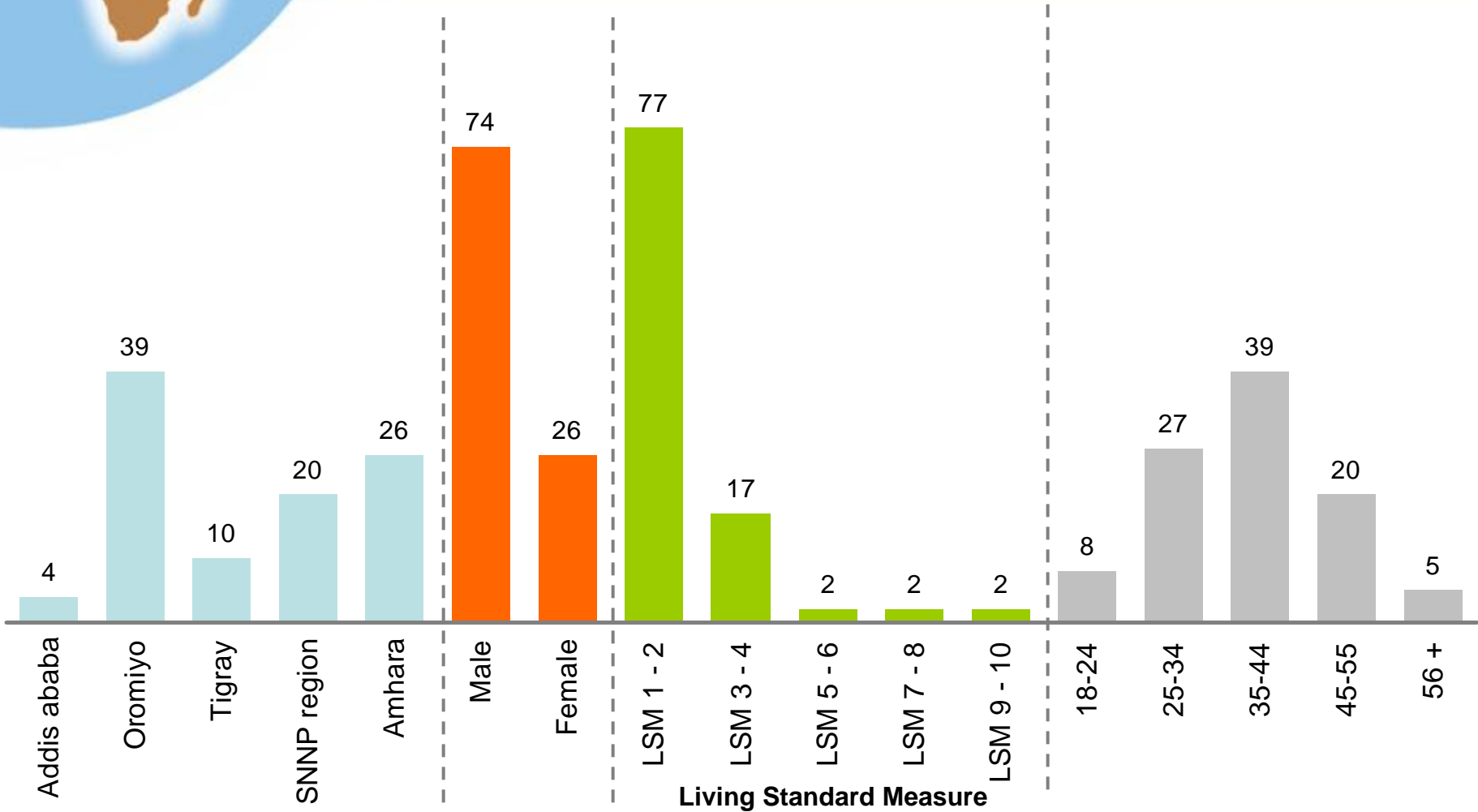
The urban vs. rural sample was split in line with the national distribution of the Ethiopian population



Base :Total sample = 1006



Respondent Demographic Profile



Base: Total Sample =1006



Observations about Consumer Households

Base: Total Sample =1006

Colour of the room in the main dwelling	%
White or Bright colour	13
Brown/ natural clay/dark clay	48
Other clay	26
Not observed	13

Dwelling environment	%
Planned urban centre	3
Unplanned/informal settlement	19
Rural –planned settlement	4
Rural - other	75

Wall Material of Dwelling	%
Mud/mud bricks	94
Wood planks	2
Bricks or stone	4
Corrugated Iron	n

Size of the main room	%
3 Square meters or less	11
3.1 – 8 Square meters	31
More than 8 Square meters	58

Roof Material of the dwelling	%
Grass or other thatch	41
Corrugated iron	58
Tiles	1

Type of road near dwelling	%
Tarmac	36
Murram or rough road	43
Pathway (no vehicle access)	21

LIGHTING AFRICA

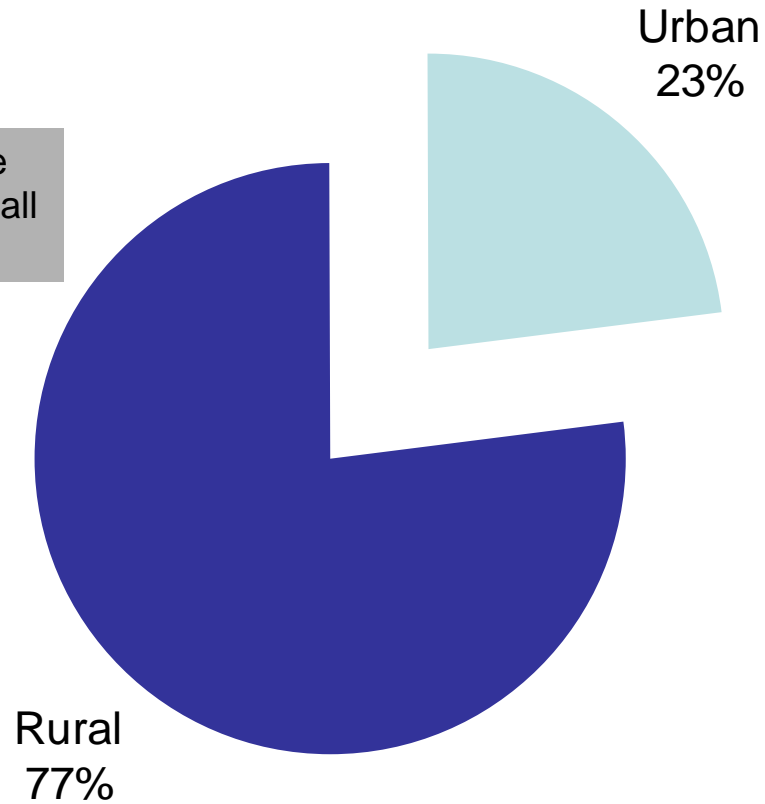
Catalyzing Markets for Modern Lighting

TRADERS



Rural vs. Urban Sample Distribution

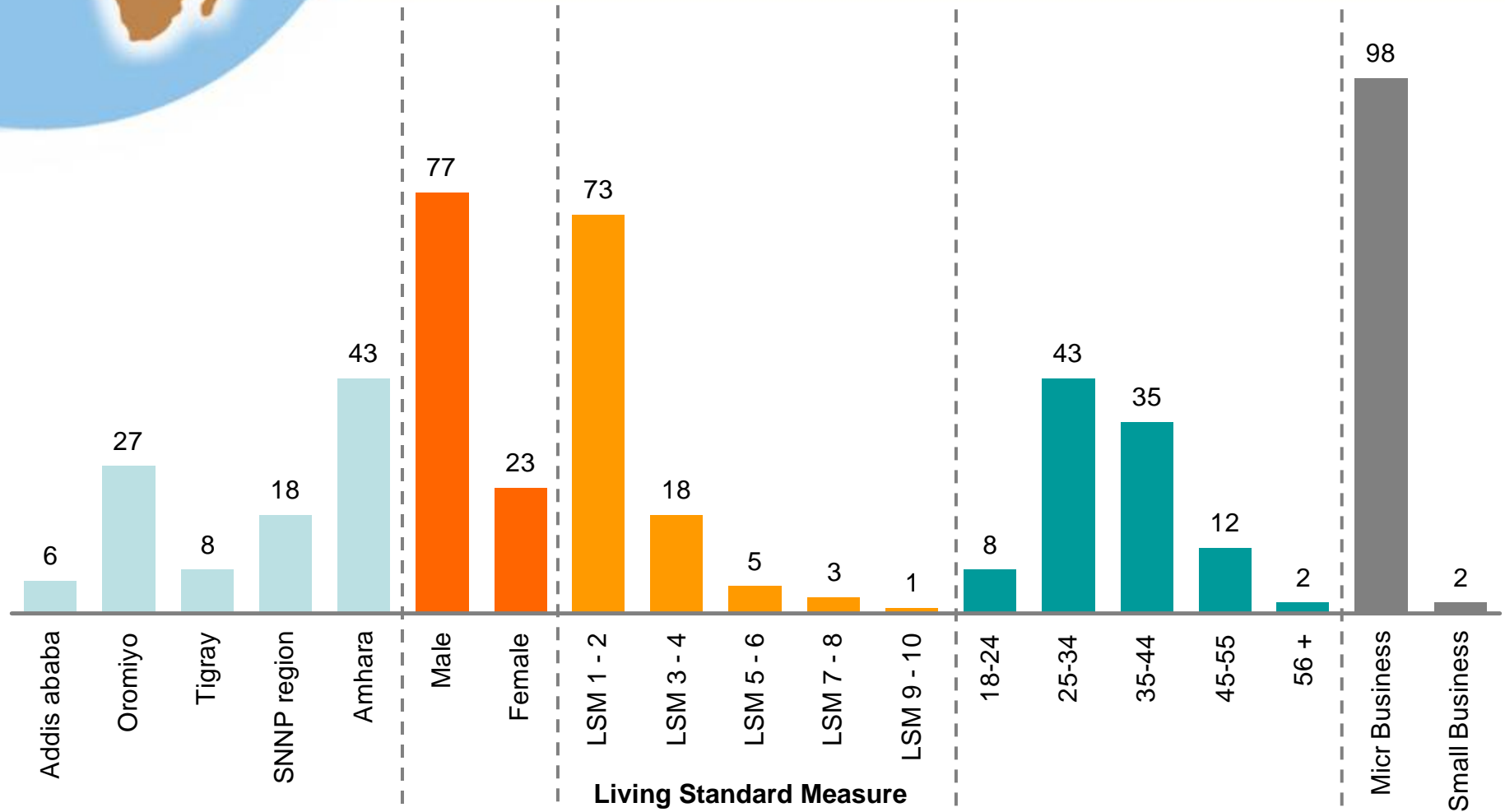
The urban vs. rural sample was split in line with the national distribution of Ethiopian small business'



Base :Total sample = 400



Respondent Demographic Profile: Traders



Base: Total Sample =400



Observations about Business Premises

Base: Total Sample =400

Colour of the walls in the main business room	%
White or Bright colour	12
Brown/ natural clay/dark clay	41
Other colour	30
Not observed	15

Business environment	%
Planned urban centre	6
Unplanned/informal settlement	17
Rural – planned settlement	5
Rural - other	72

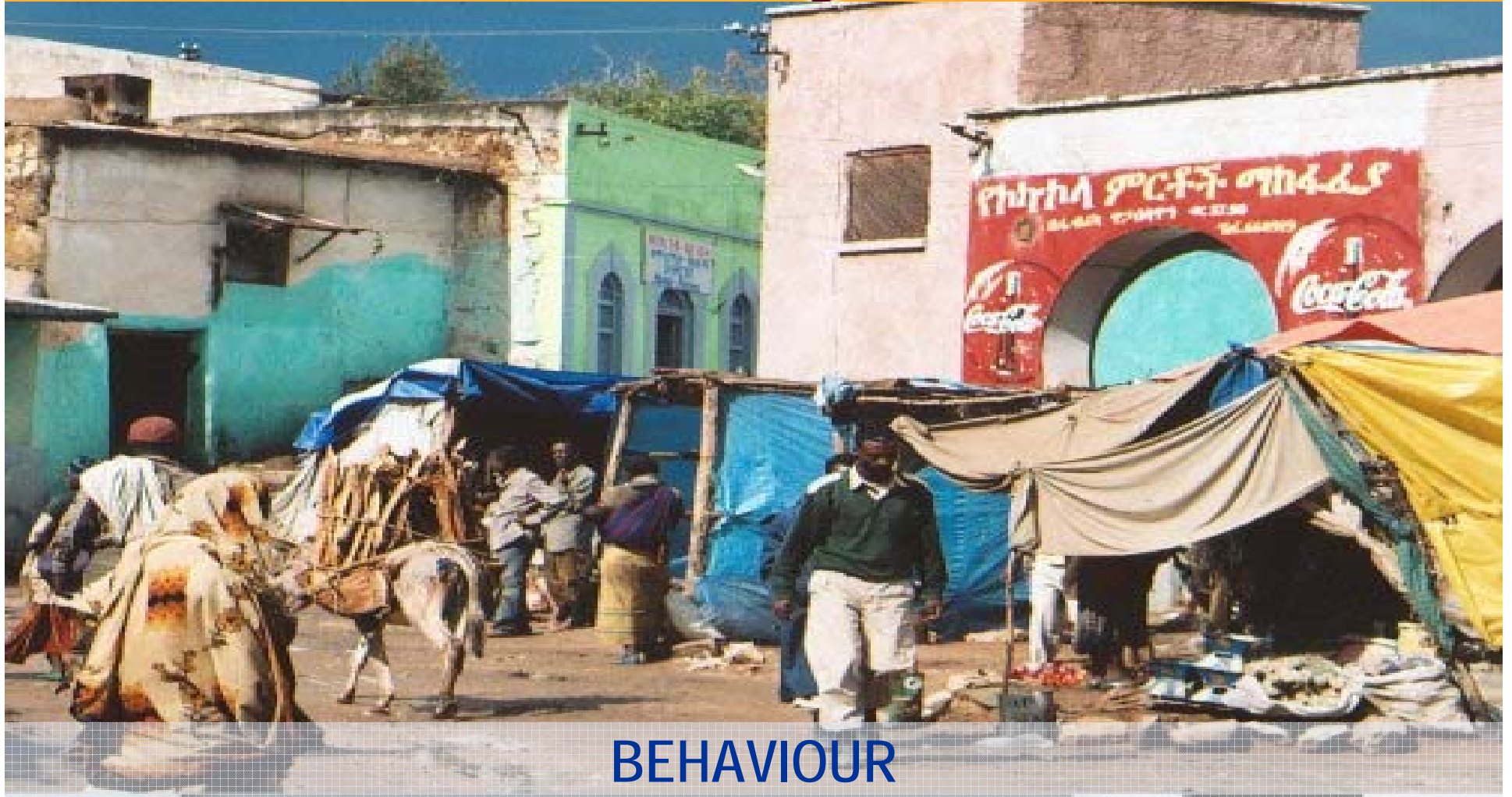
Wall Material of business structure	%
Mud/mud bricks	69
Wood planks	16
Bricks or stone	5
Corrugated Iron	3
Other	7

Size of the main business structure	%
3 Square meters or less	26
3.1 – 8 Square meters	45
More than 8 Square meters	29

Roof Material of the business structure	%
Grass or other thatch	36
Corrugated iron	63
Tiles	1

Type of road near business structure	%
Tarmac	39
Murram or rough road	46
Pathway (no vehicle access)	15

LIGHTING AFRICA



BEHAVIOUR



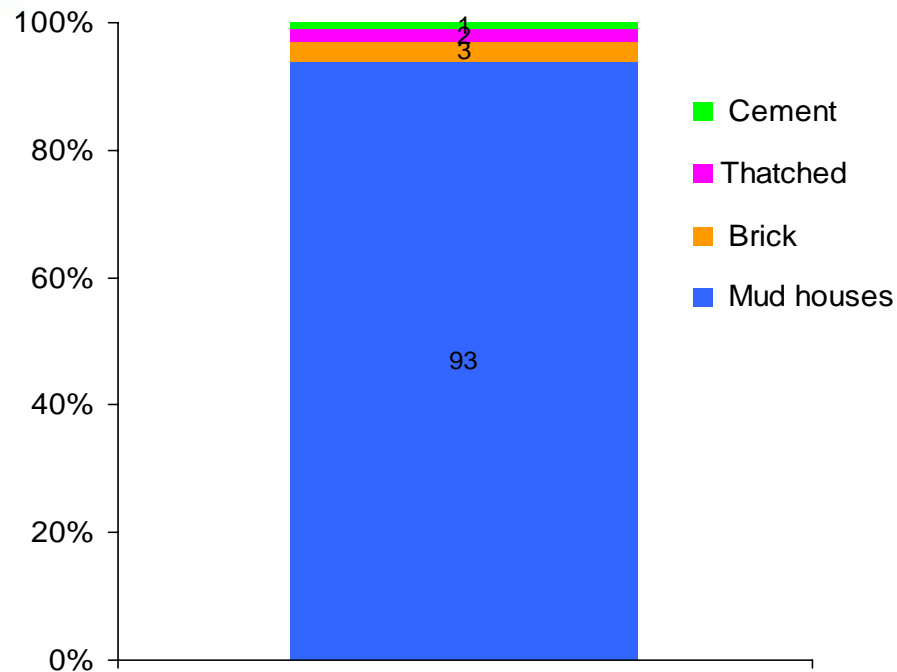
LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

CONSUMERS



Dwellings



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.

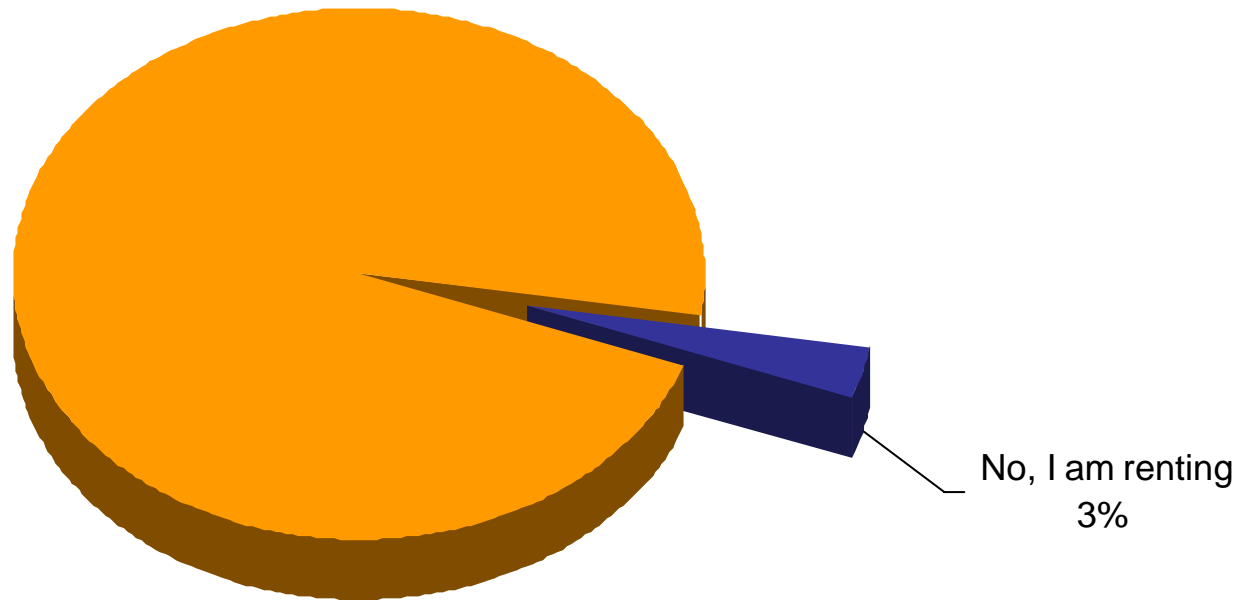
The majority of dwellings are constructed from mud and only very few homes are built from other materials



Home Ownership

Q. 3b "Do you own the home/residence where you live?"

Yes, I own it outright
97%

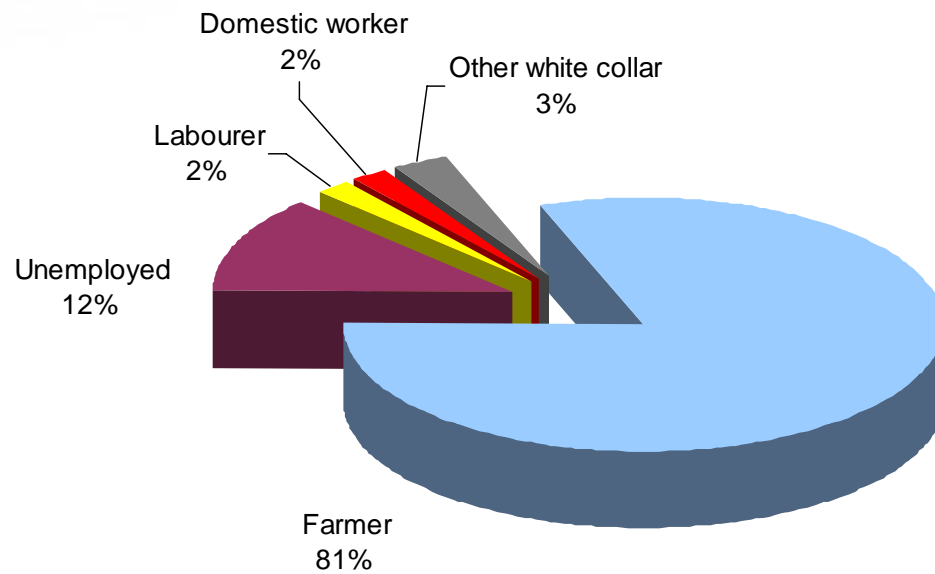


A large majority of 97% of respondents own the homes in which they live

Base: Total Sample =1006

Occupations

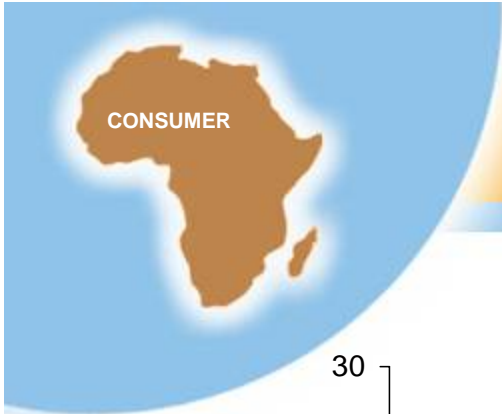
Q. D4 "Please can you tell me your occupation?"



Base: Total Sample =1006



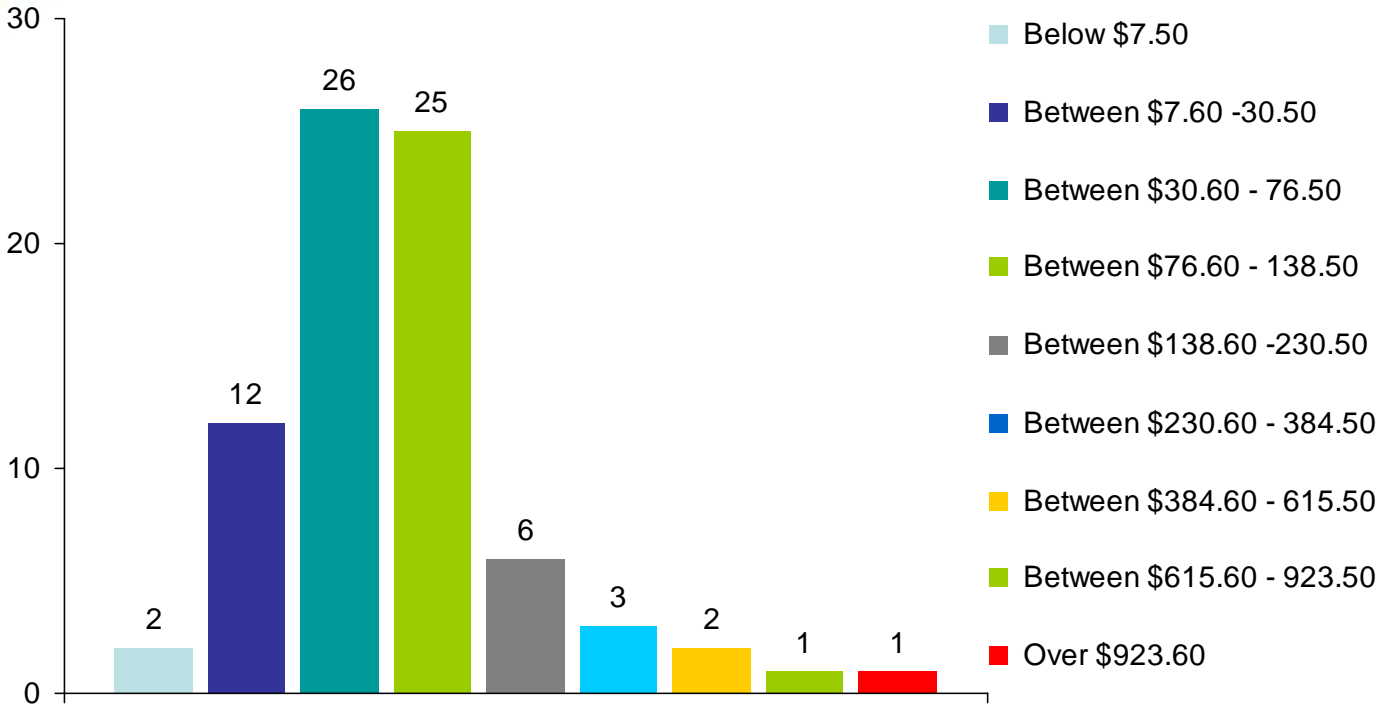
The majority of Ethiopian consumers interviewed are farmers by trade (81%).



Average Ethiopian Household Income

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

Mean: US \$115.70

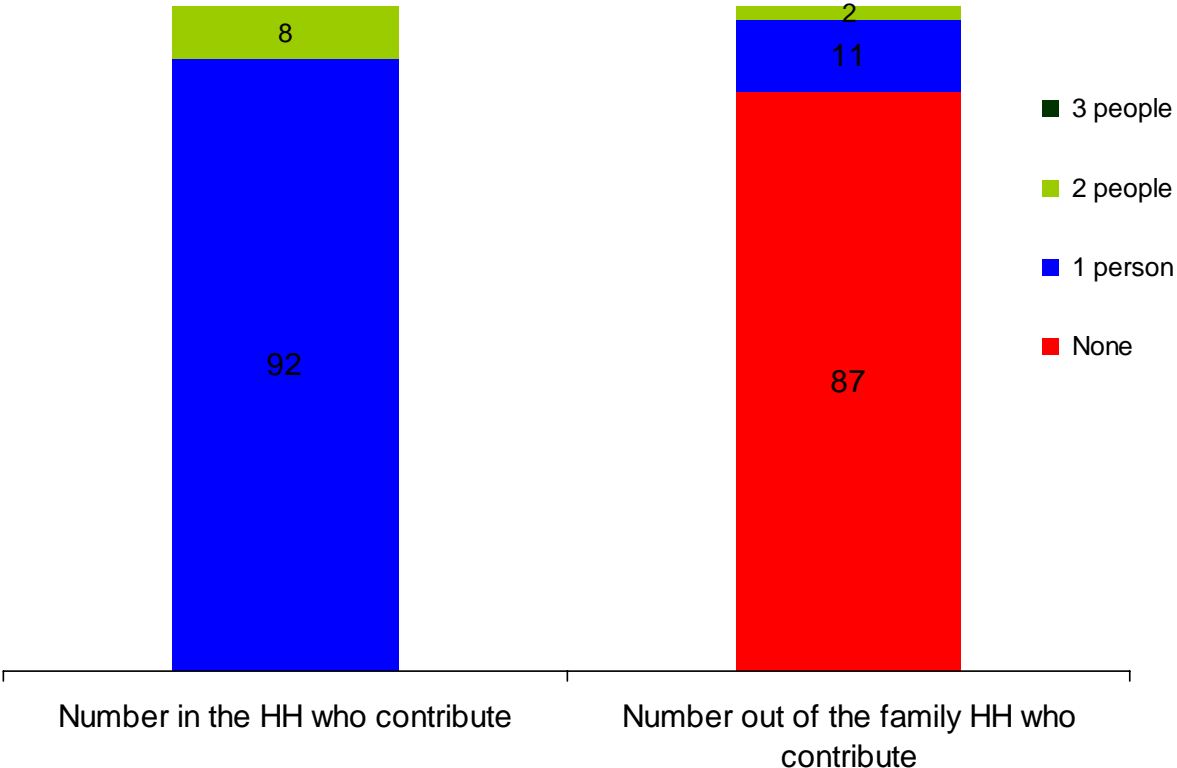


On average household respondents earn an income of US \$ 115.70 which is substantially lower than in the other Lighting Africa research countries, e.g. Kenyan average consumer income falls at US % 153.60



Contributors to Household Income

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



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

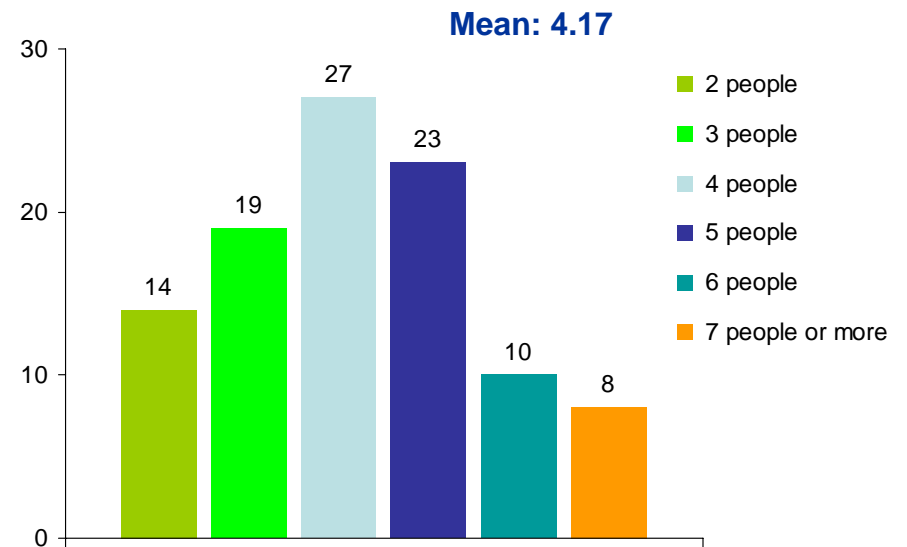
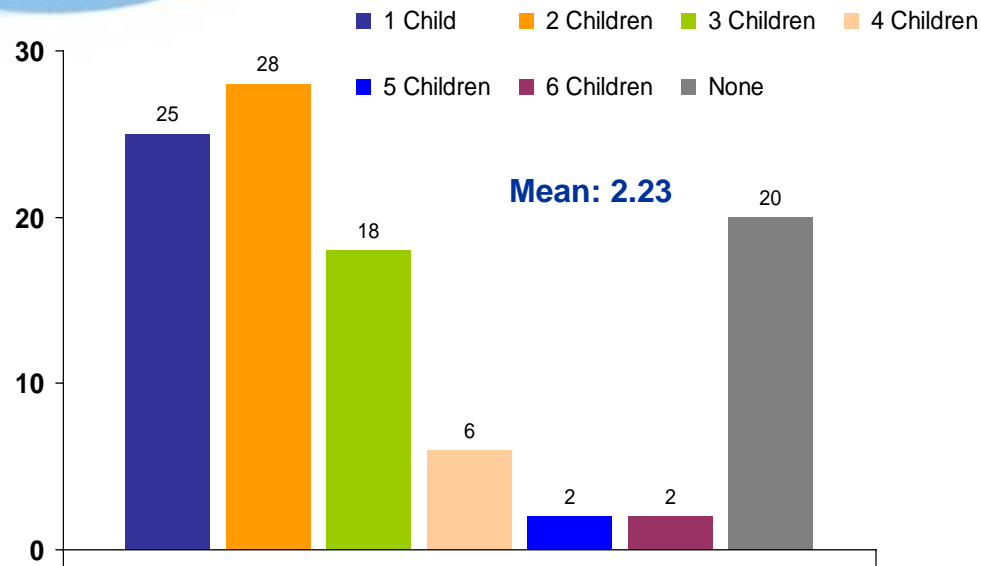
Base: Total Sample =1006



Number of People in the Household

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?”



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

Base: Total Sample =1006

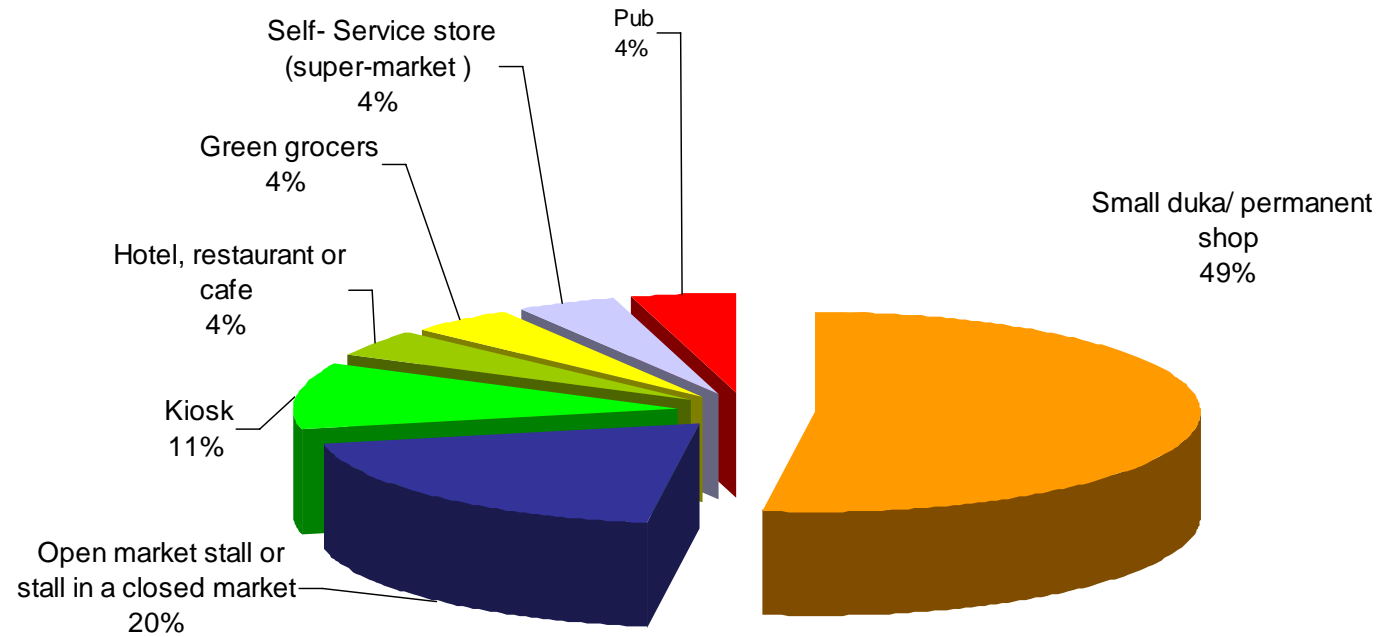
LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

TRADERS



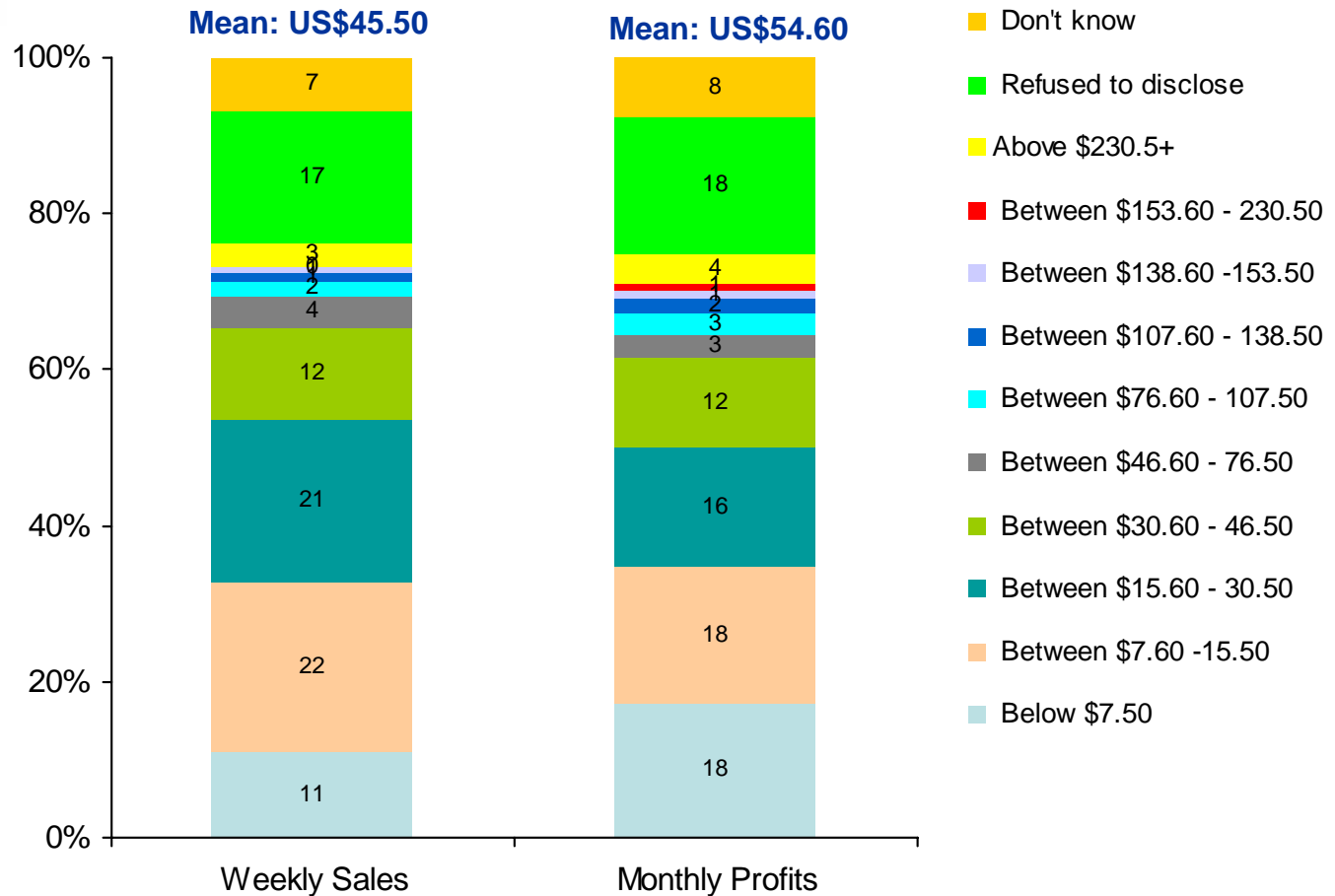
Types of Shop



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

Revenue

Q. D6 "What are the weekly sales of your business
(Q. D7) approximately what kind of profit does your business make per month?"

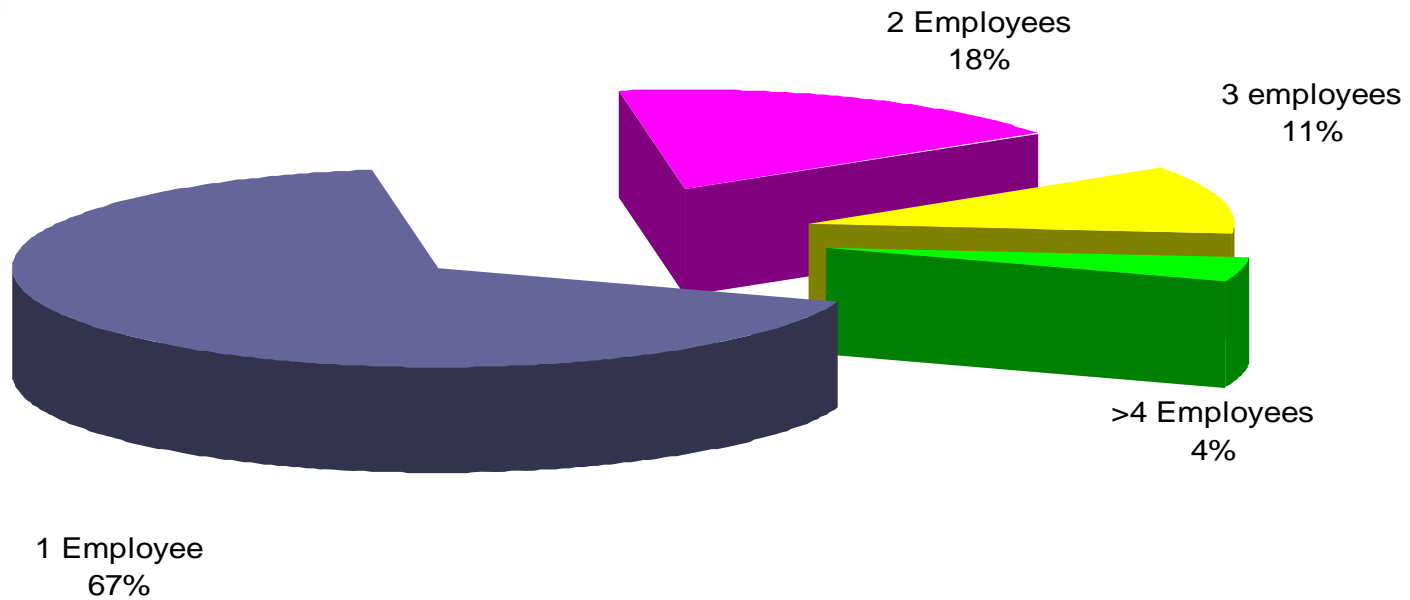


Average weekly sales are US \$45.50, while the average monthly profit is US \$54.60, again indicating the state of the Ethiopian economy as very poor. As a comparison, on average, Kenyan monthly profits lie around .US \$ 83.90



Number of Employees who Work in the Business

Q. 1 "How many people work here either on casual or permanent basis?"

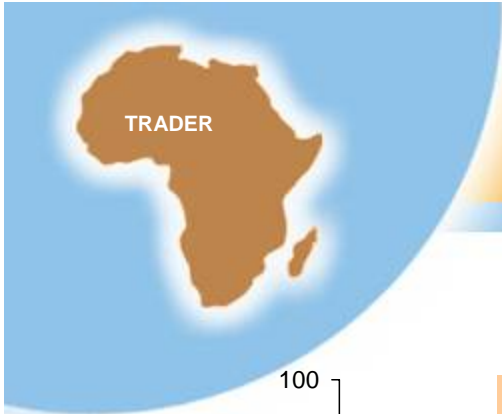


Two thirds of businesses are run as sole proprietary's. In only 33% of cases are there second or third people involved in running the business

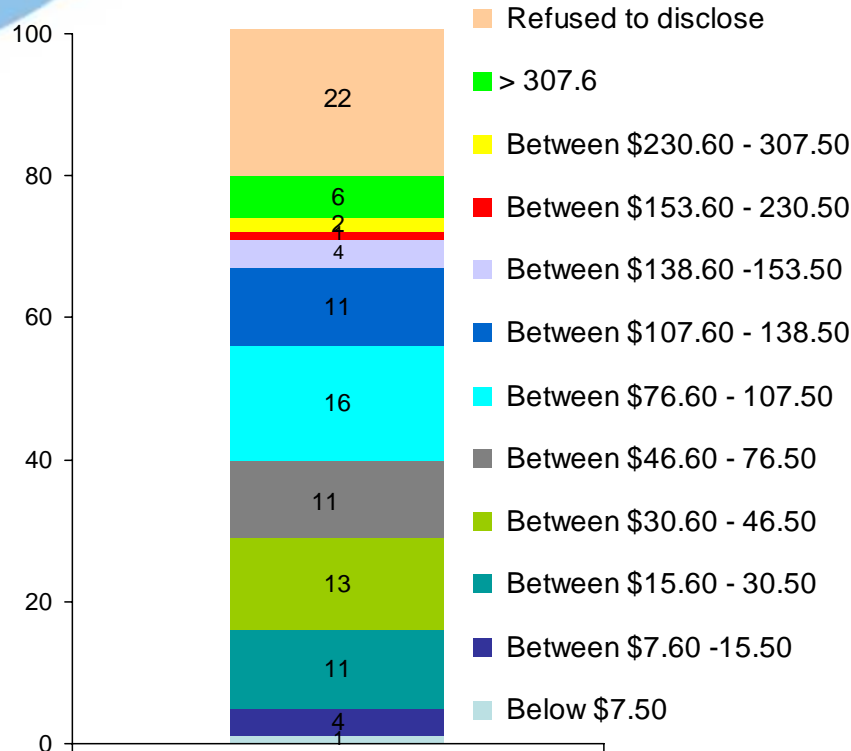
Base: Total Sample = 400

Monthly Income

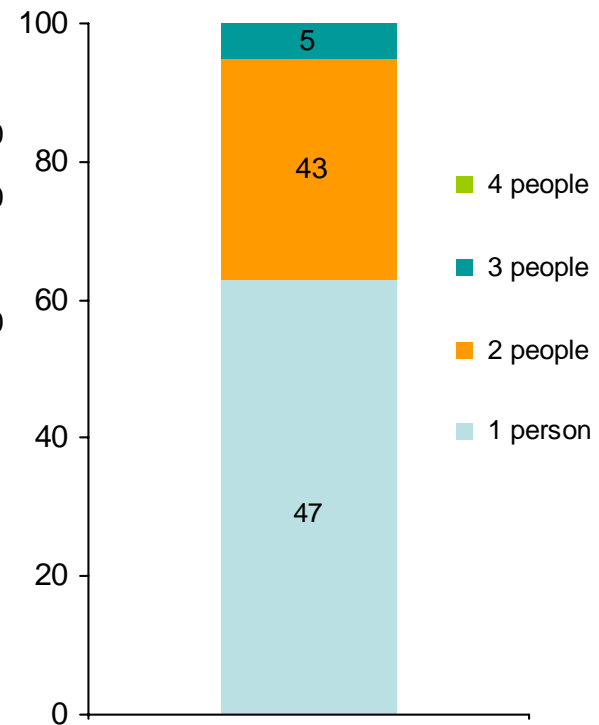
Q.D4 "What is the average monthly income of your family?" Q.D5 "How many people in the HH contribute to this monthly HH income?"



Mean : US \$130.30



Mean : 1.42



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.

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



ELECTRICITY CONSUMPTION HABITS



LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

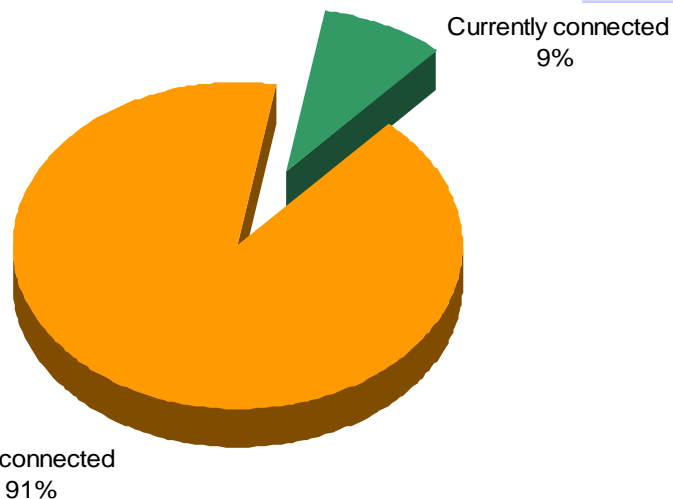
CONSUMERS



Connection to Main Power Grid

CONSUMER

Q.6 "Is your household currently connected to the main power grid?"



Q. 7 "Is the electricity currently working?"

Base = All
Currently
connected
to main power grid

Yes

89

No

11

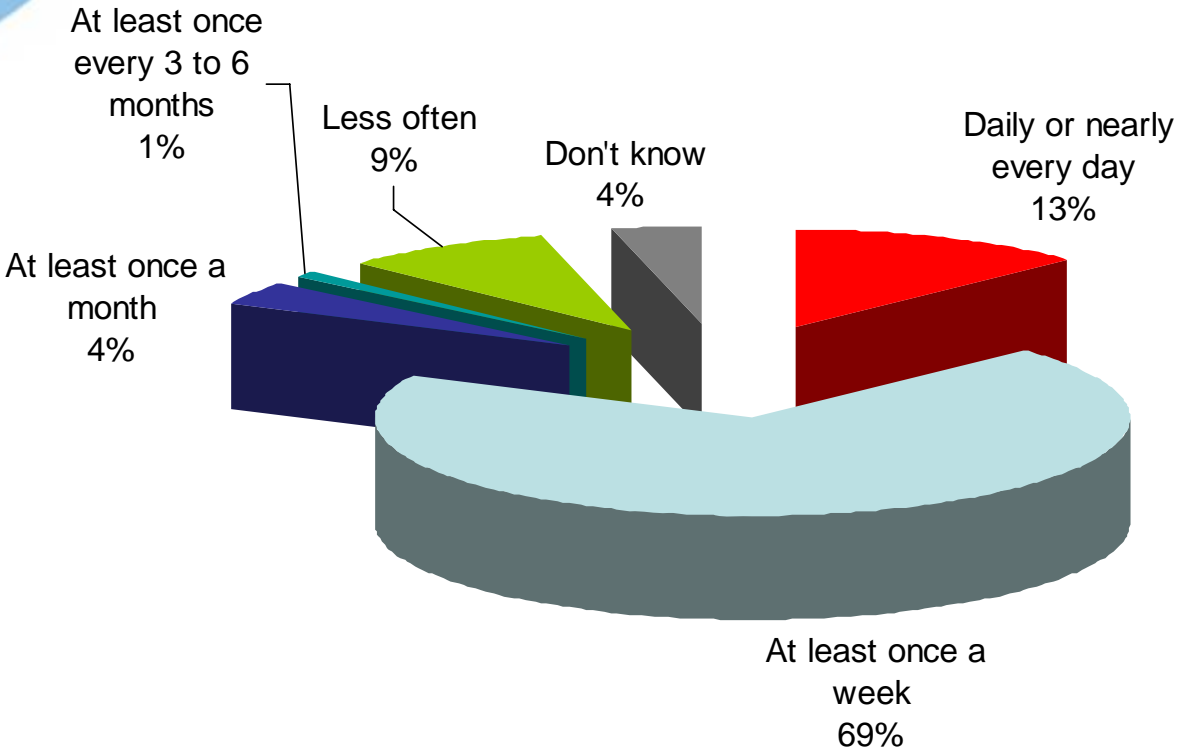
Base: Total Sample = 1006

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

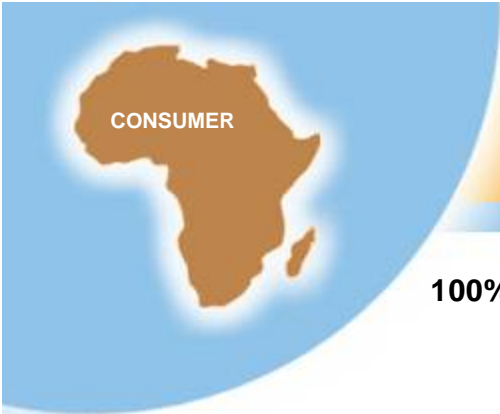


Power Cut Frequency

Q. 9 "How often if ever do you experience power cuts?"

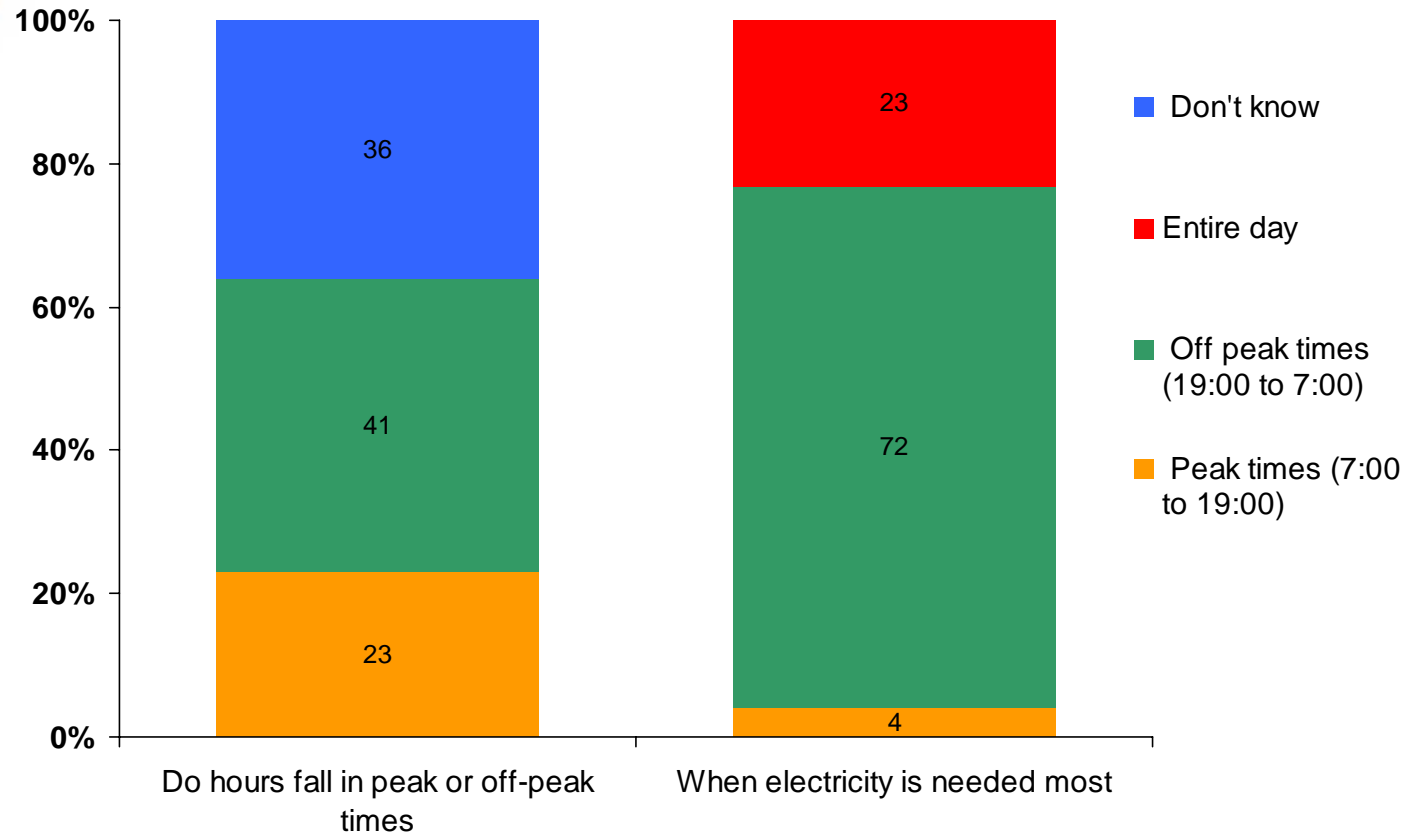


Power cuts are very frequent, with over two thirds of respondents connected to the grid (82%) experiencing power cuts at least once a week.



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?"



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
1US \$ = ETB 9.95

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

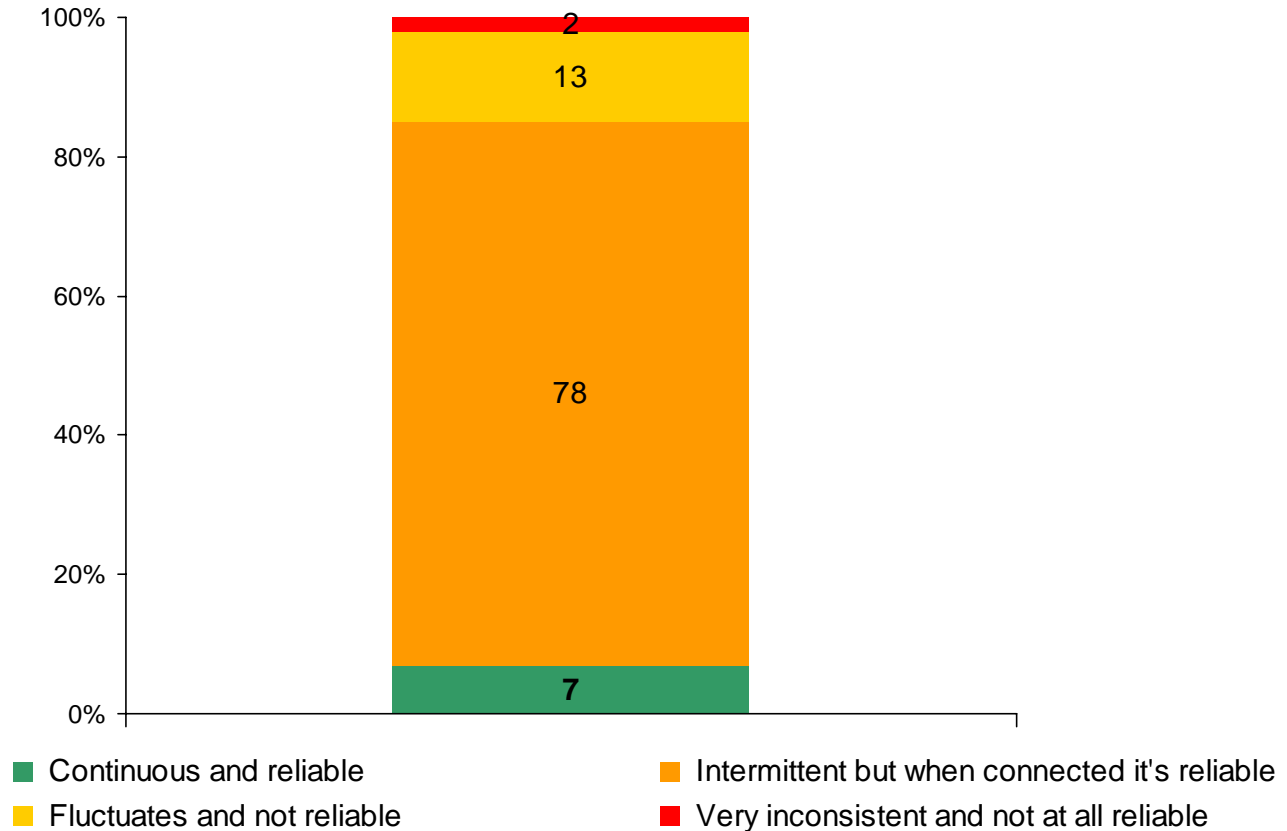
Caution – small base sizes



Quality of Electricity

Q. 16 "How would you rate the quality of electricity?"

Q. 16 "How would you rate the quality of your electricity?"

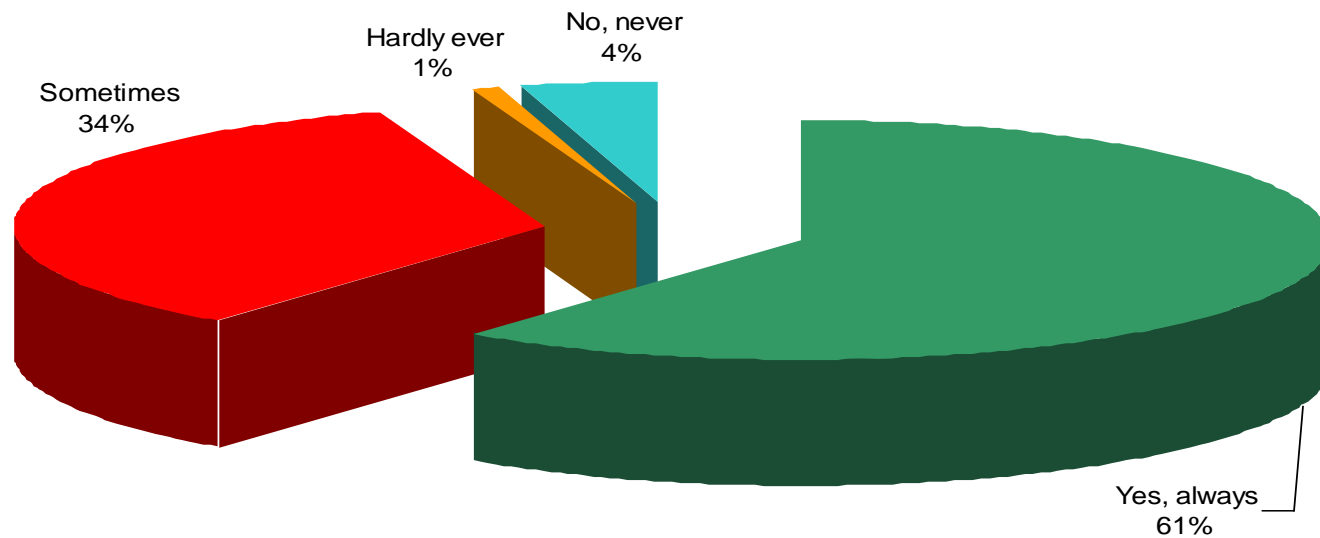


78% of households connected to electricity state that it is intermittent but when connected it's reliable.



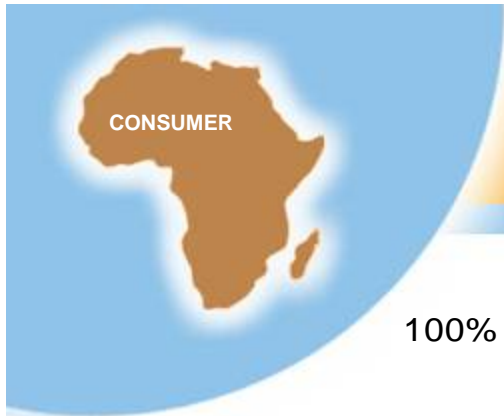
Voltage Sufficiency for Household Appliances

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



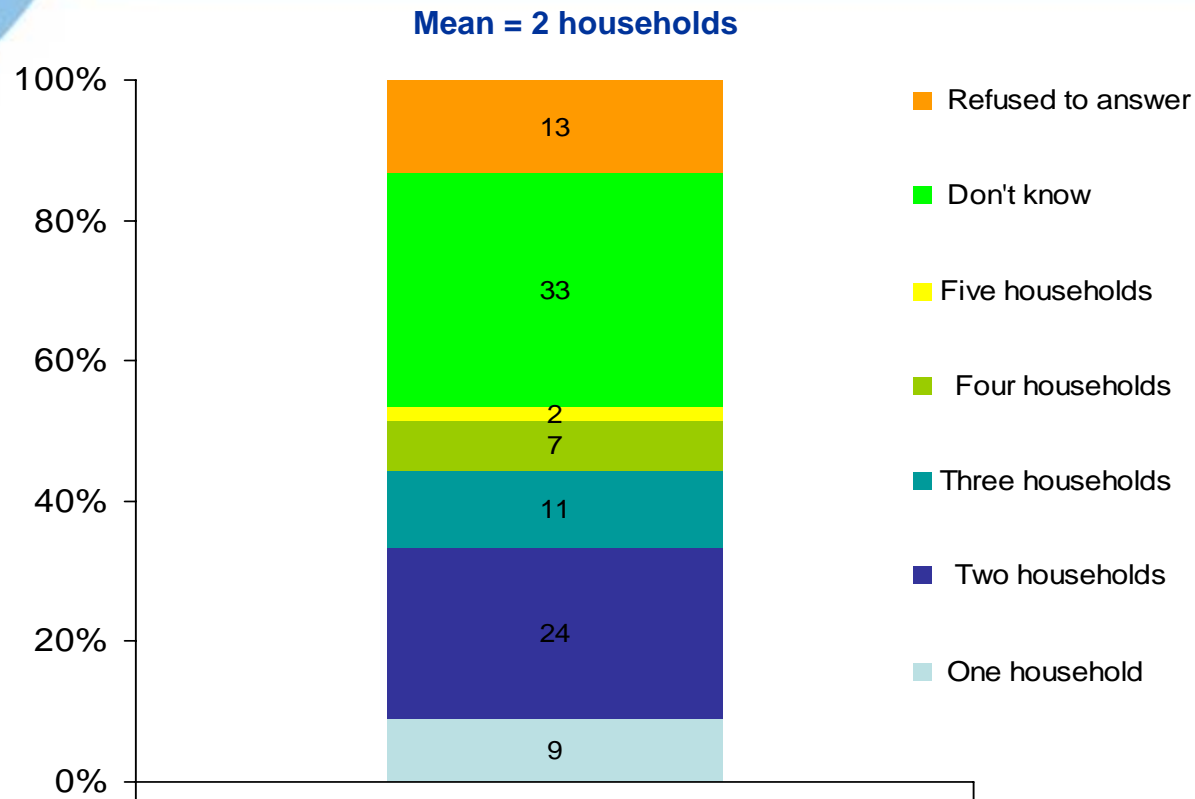
In 61% of cases the voltage level is enough to support household appliances.

Base: All currently connected to main power grid



No. of Households Sharing Electricity

Q. 13 "How many households are sharing electricity from the same source"



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.

Base: Currently connected to main power grid = 90

LIGHTING AFRICA

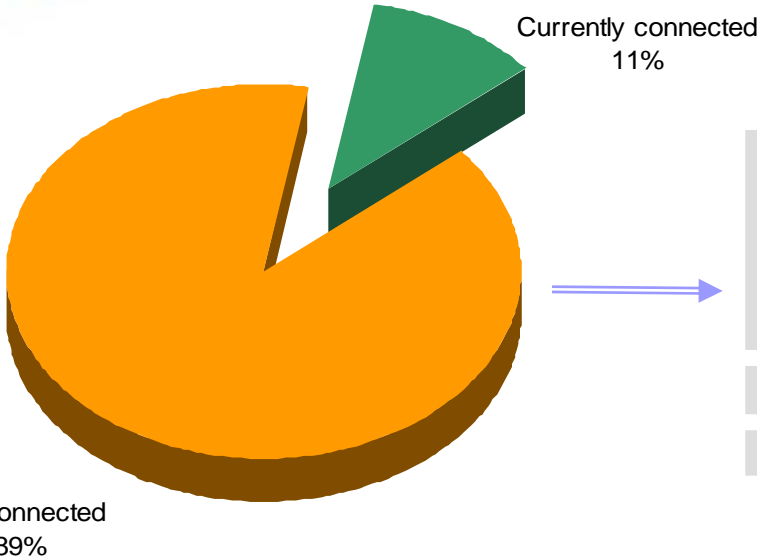
Catalyzing Markets for Modern Lighting

TRADERS

Connection to Main Power Grid



Q.6 “Is your business currently connected to the main power grid?”



Base = 400: Total Sample

Q. 7 “Is the electricity currently working?”		Base: All Currently connected to main power grid = 45
Yes	89%	
No	11%	

Of those connected to the grid 89% had working electricity at the time of interview.

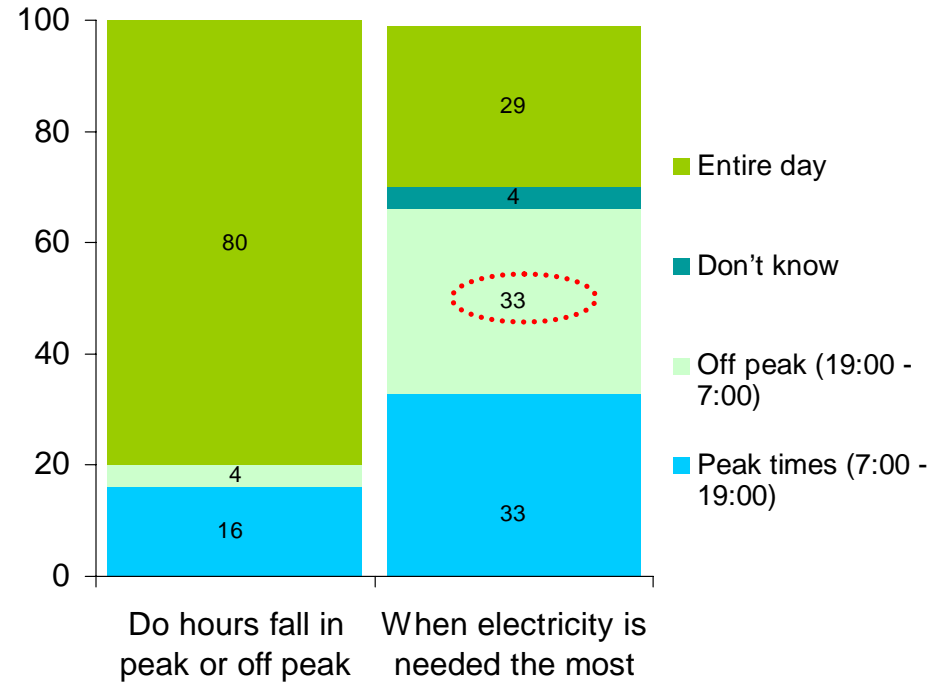
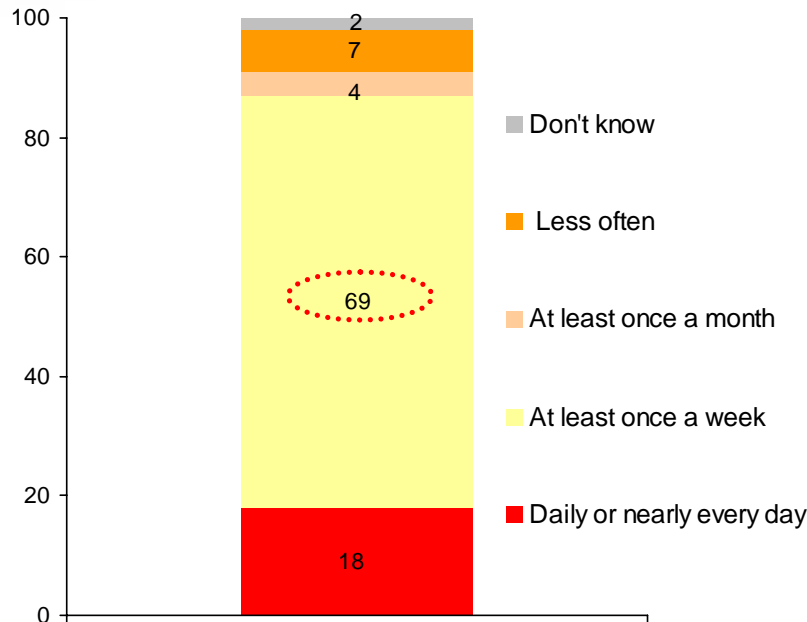


Power Cut Frequency

Q. 9 "How often, if ever, do you experience power cuts?"

Q. 9 "How often, if ever, do you experience power cuts?"

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



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

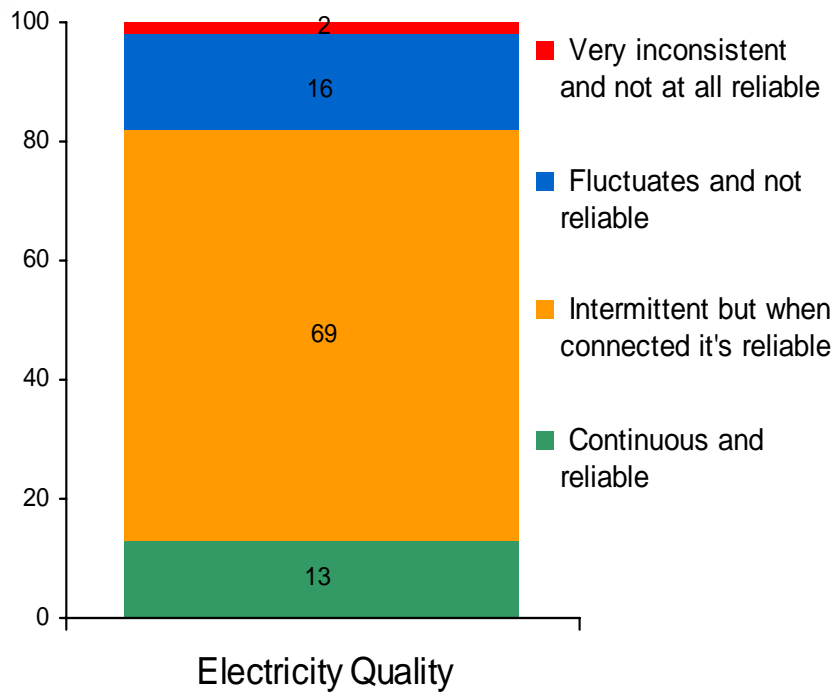
Base: Currently connected to main power grid = 43



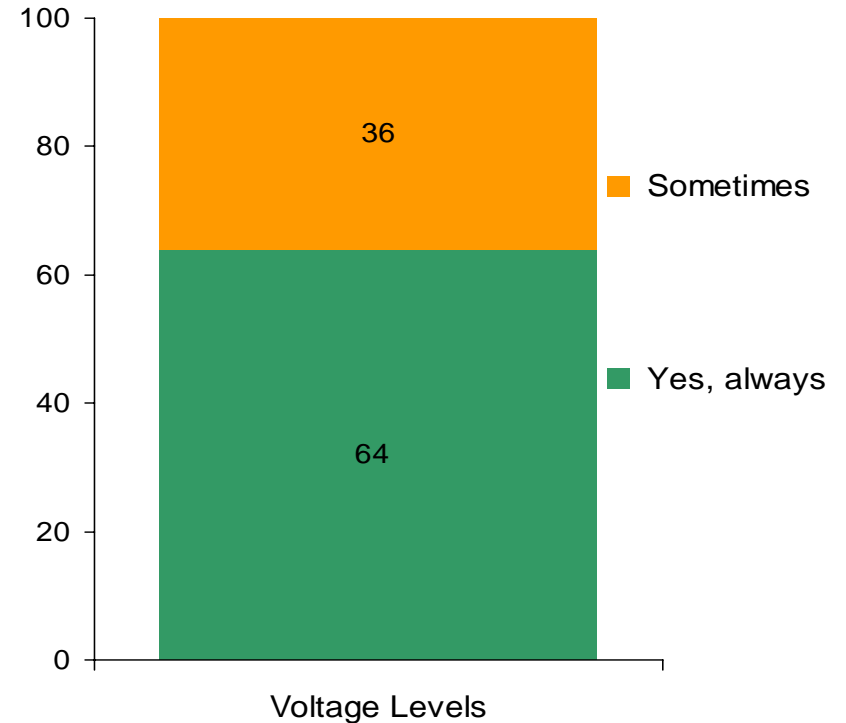


Quality of Electricity

Q. 16 "How would you rate the quality of your electricity?"



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

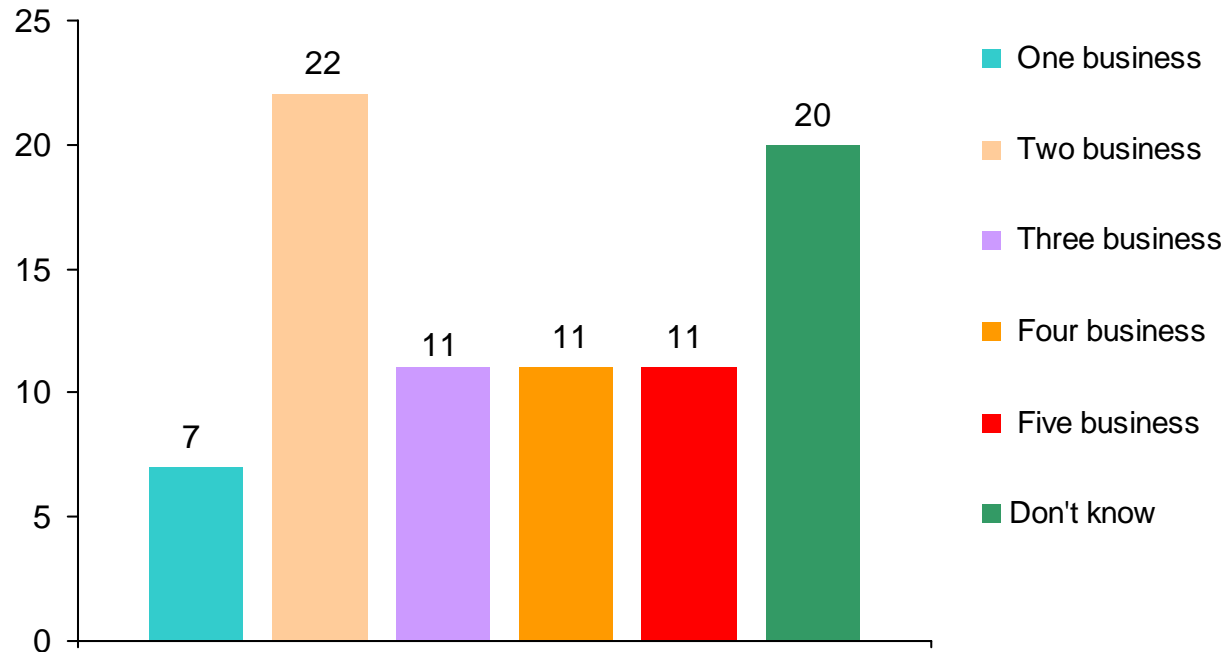


Retailers who are connected experience intermittent power but most of the times when connected, the voltage is sufficient



Sharing Electricity from Same Source

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

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



POWER & LIGHTING HABITS AND USAGE

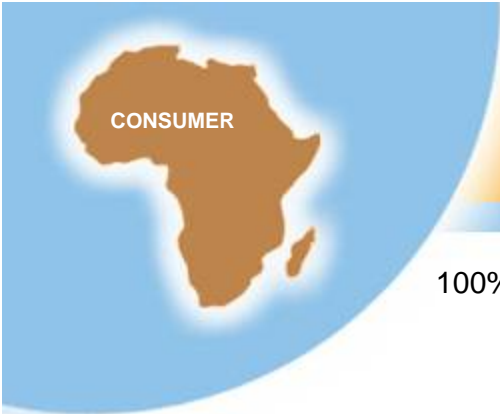


LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

CONSUMERS





Proximity to Power Line

Q 18 "How close is your nearest mains power line?"

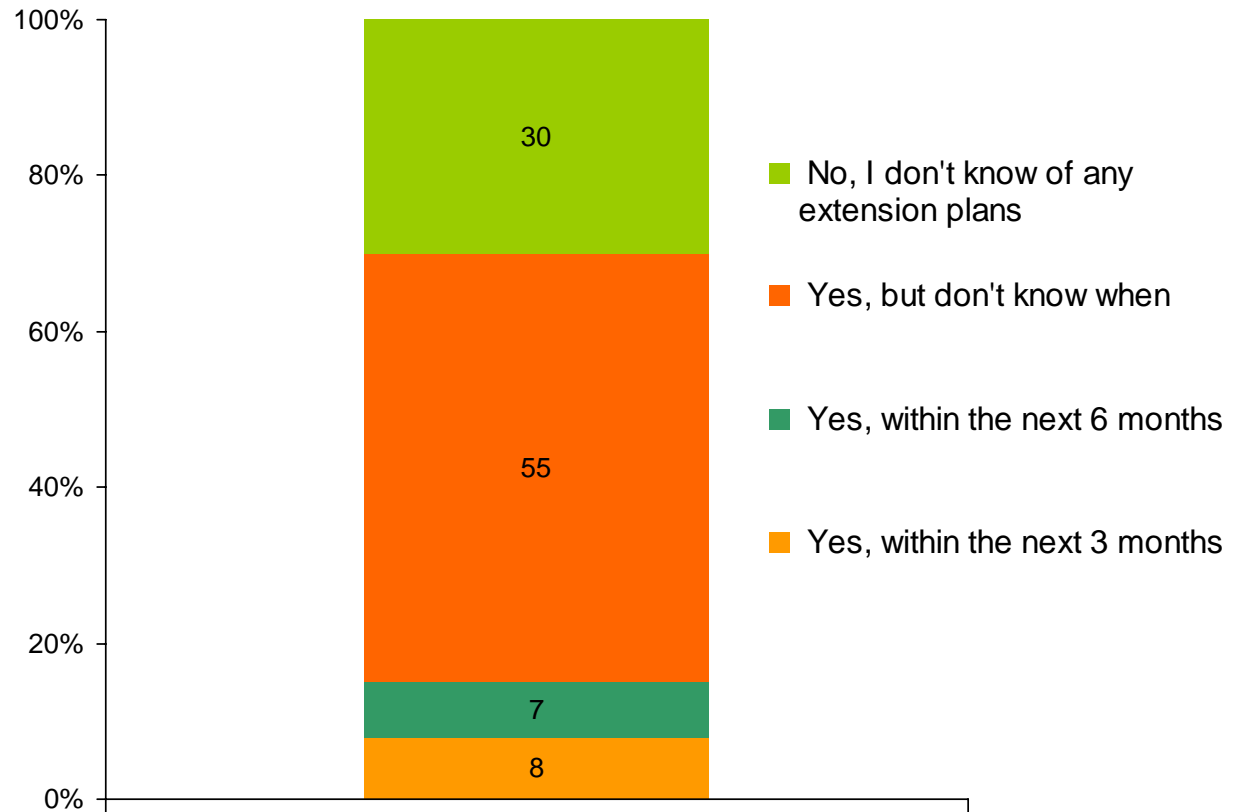


65% of consumers are relatively close to power lines thus proximity is not the main inhibiting factor for consumers – not being connected to the grid is more likely to be a cost issue.



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?"



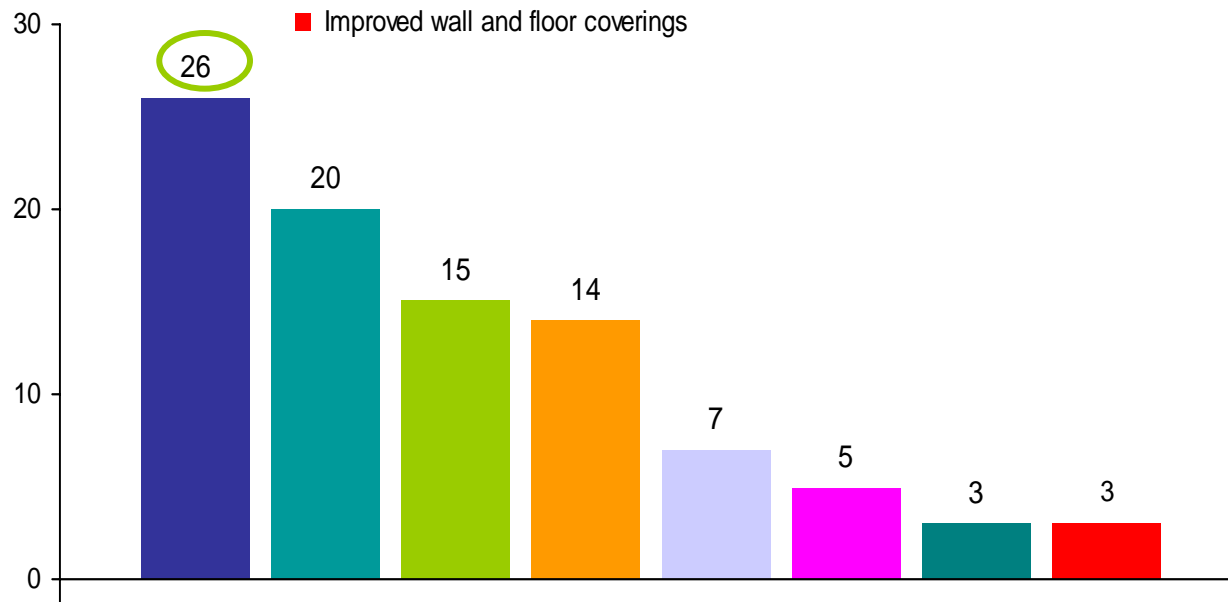
85% of consumers are not clear on extension plans of the grid.



Improvements to the Household

Q. 4 "If there was one thing you could do to improve your household or its facilities what would it be?"

- Better lighting
- Better access to water
- Increase size of dwelling/home
- Connect to power grid or improve power source like generator
- Improved structure itself (upgrading the structure materials, roof, walls, windows, doors)
- Improved furniture (chairs, tables, etc)
- Better toilet facilities
- Improved wall and floor coverings

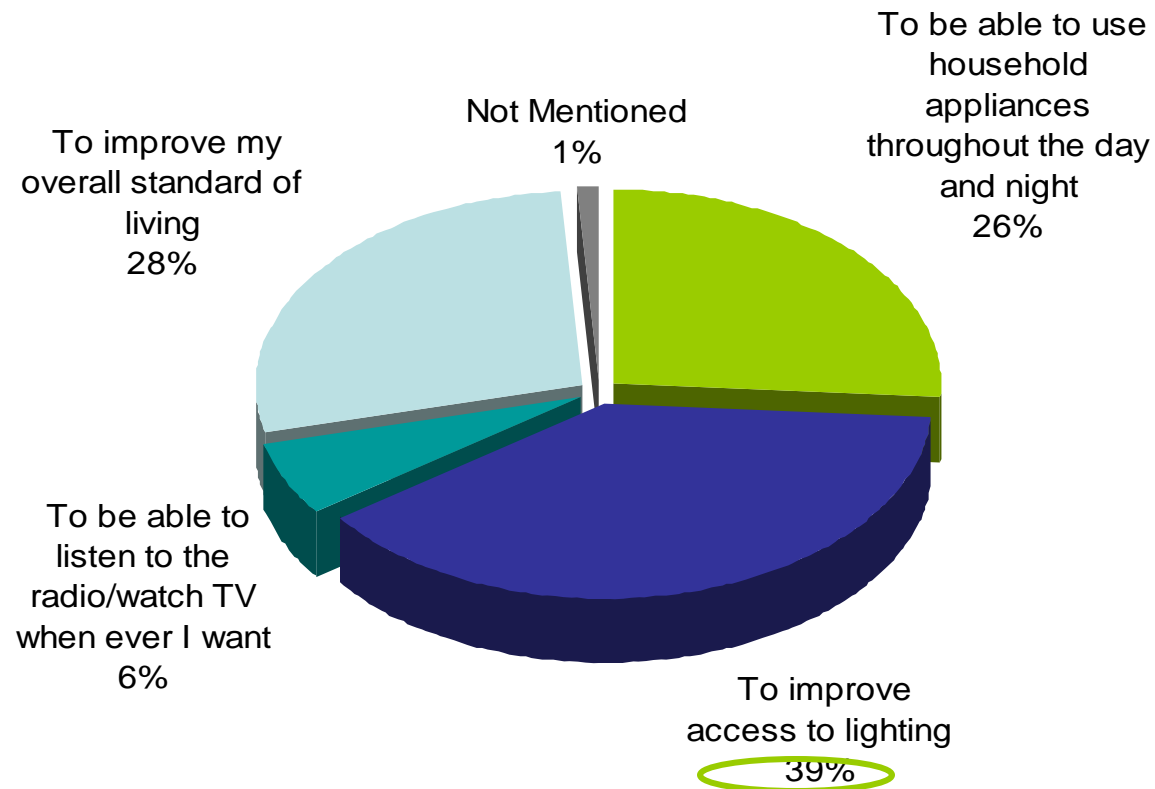


26% of consumers state better lighting would be the main improvement they would make to their household if possible. Access to water is also a major concern. An additional 14% state they would connect to the power grid or an other power source like a generator...



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?"



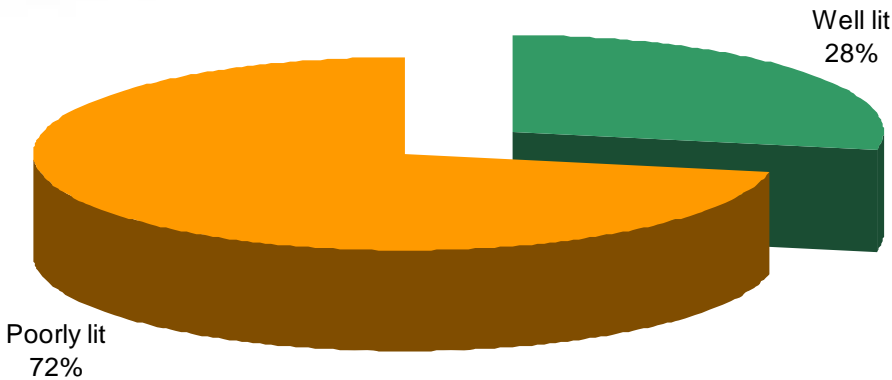
...of those consumers who state they would like to connect to the power grid, 39% state they would use the power to improve access to lighting.

Base: All would connect to power Grid or purchase a generator = 139

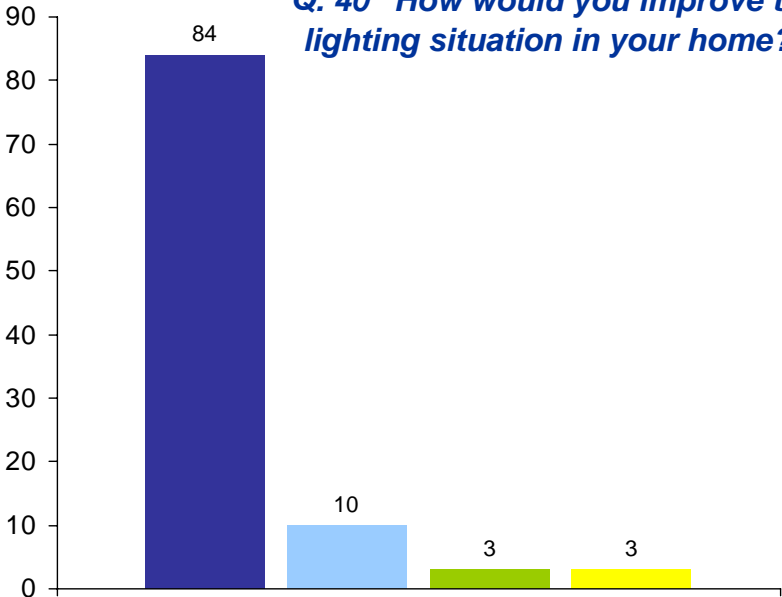


In-home Lighting

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.

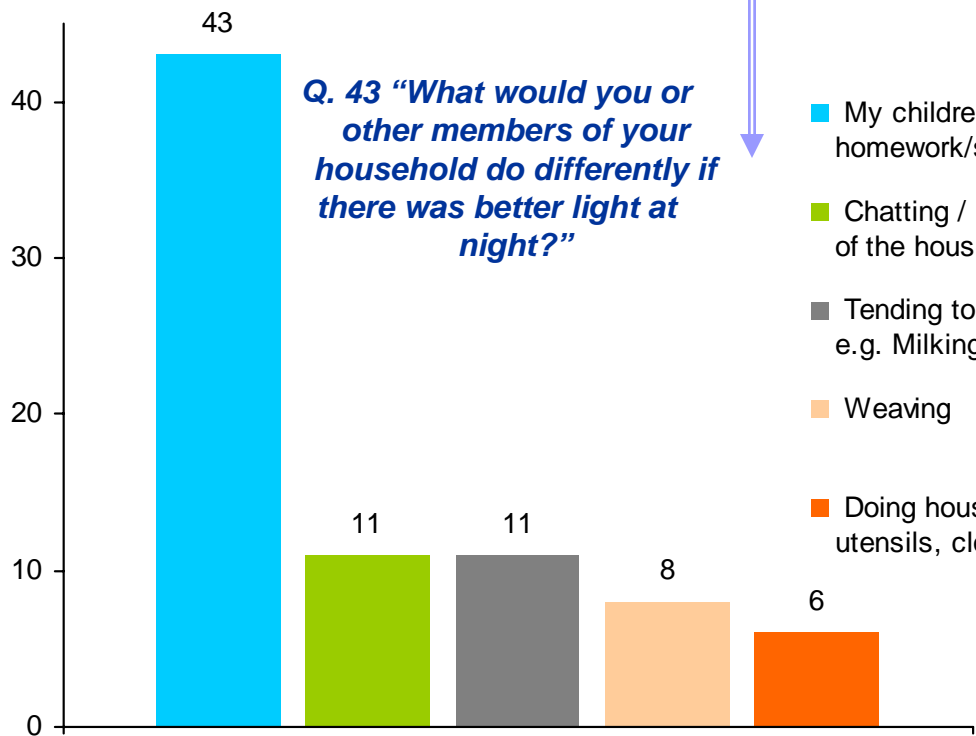
- Add more lights
- Use a light that can be placed in a different position
- Increase the amount of light from each device
- Operate the light for more hours

Base: Households whose light can be improved n = 696



Aspirations if there was Better Lighting

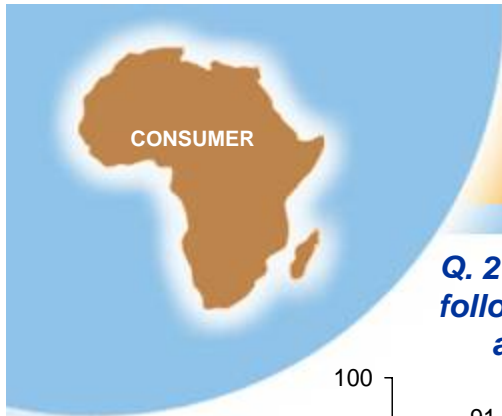
<i>Q. 42 "Is there anything you or other members of your household would do differently at night if you had better light?"</i>	Base = 1006
Yes	26
No	74



Base total sample n = 1006

Personal development of children would be the main thing that would improve with better access to lighting.

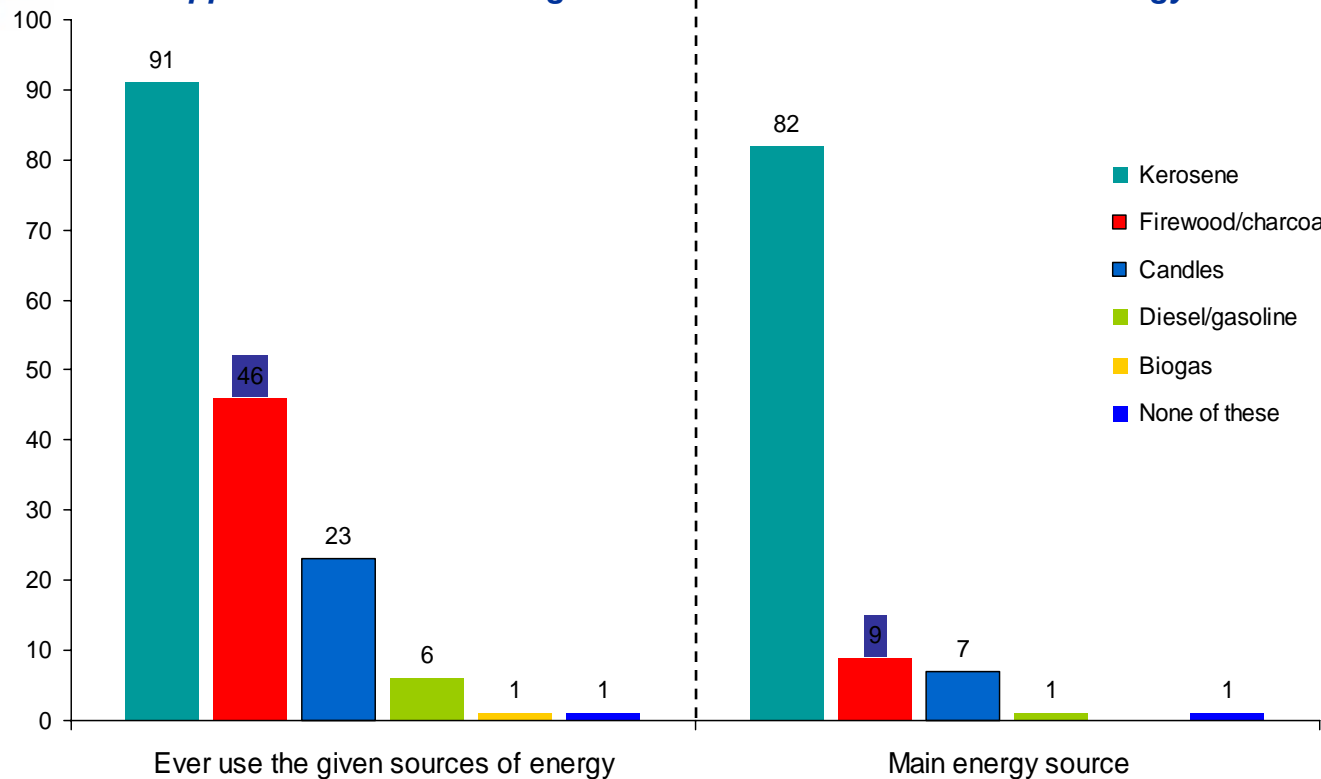
Base: All those who could do things differently = 263



Use of Energy Sources to Power Appliances / Provide Light

Q. 21a "Do you ever use any of the following sources of energy to power appliances or to create light?"

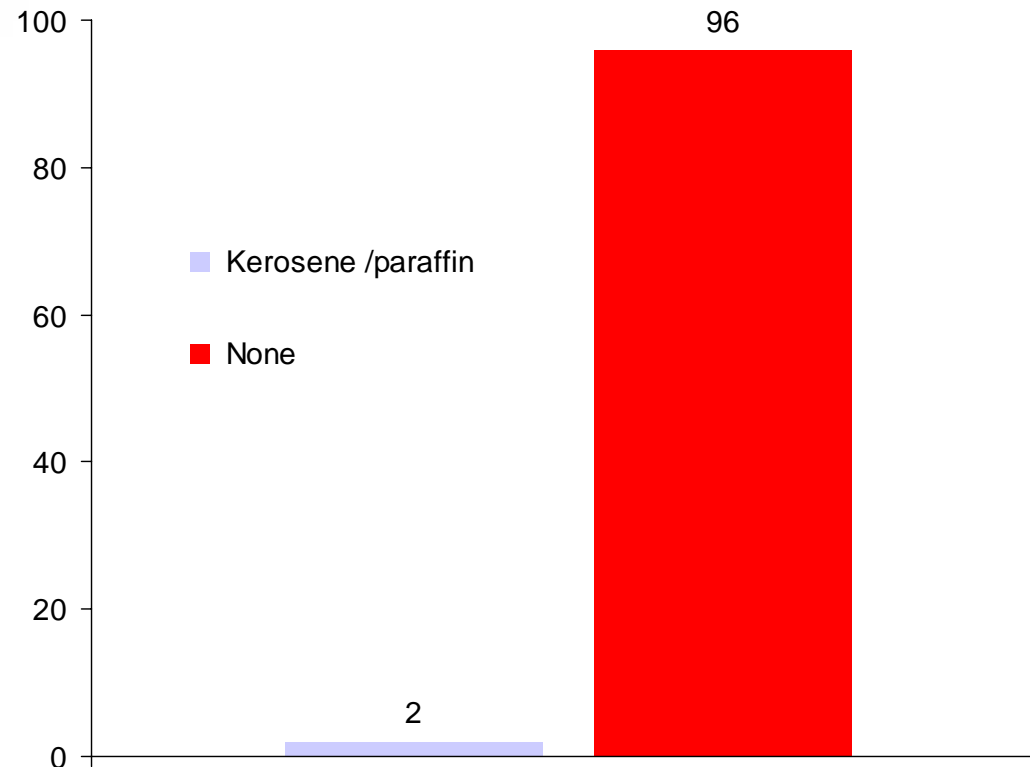
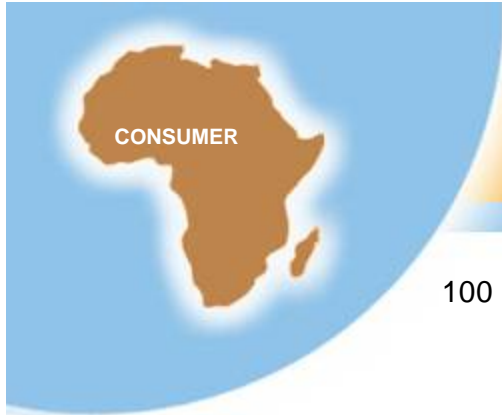
Q. 21b "Which of the power sources of energy would you say you use as your main energy source?"



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..

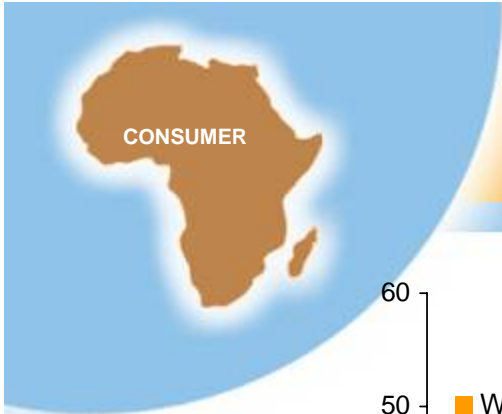
Energy Sources

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).

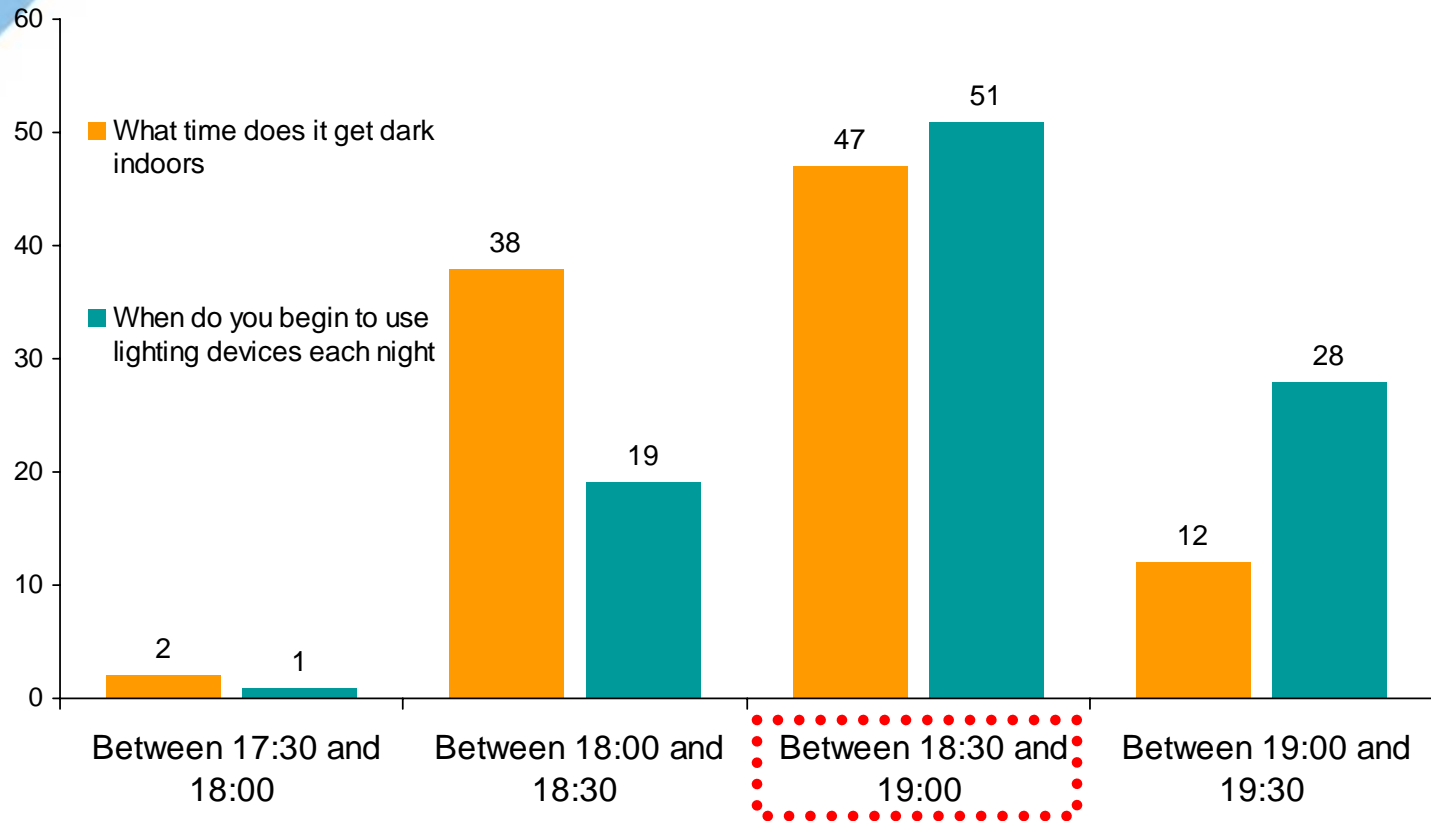
Base: Total sample = 1006



Time Lighting Products are Switched on

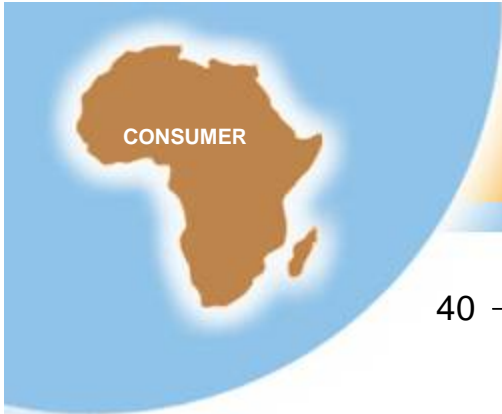
Q.23 "On average, what time does it get dark indoors?"

Q.24 "When do you begin using lighting products/devices each night?"



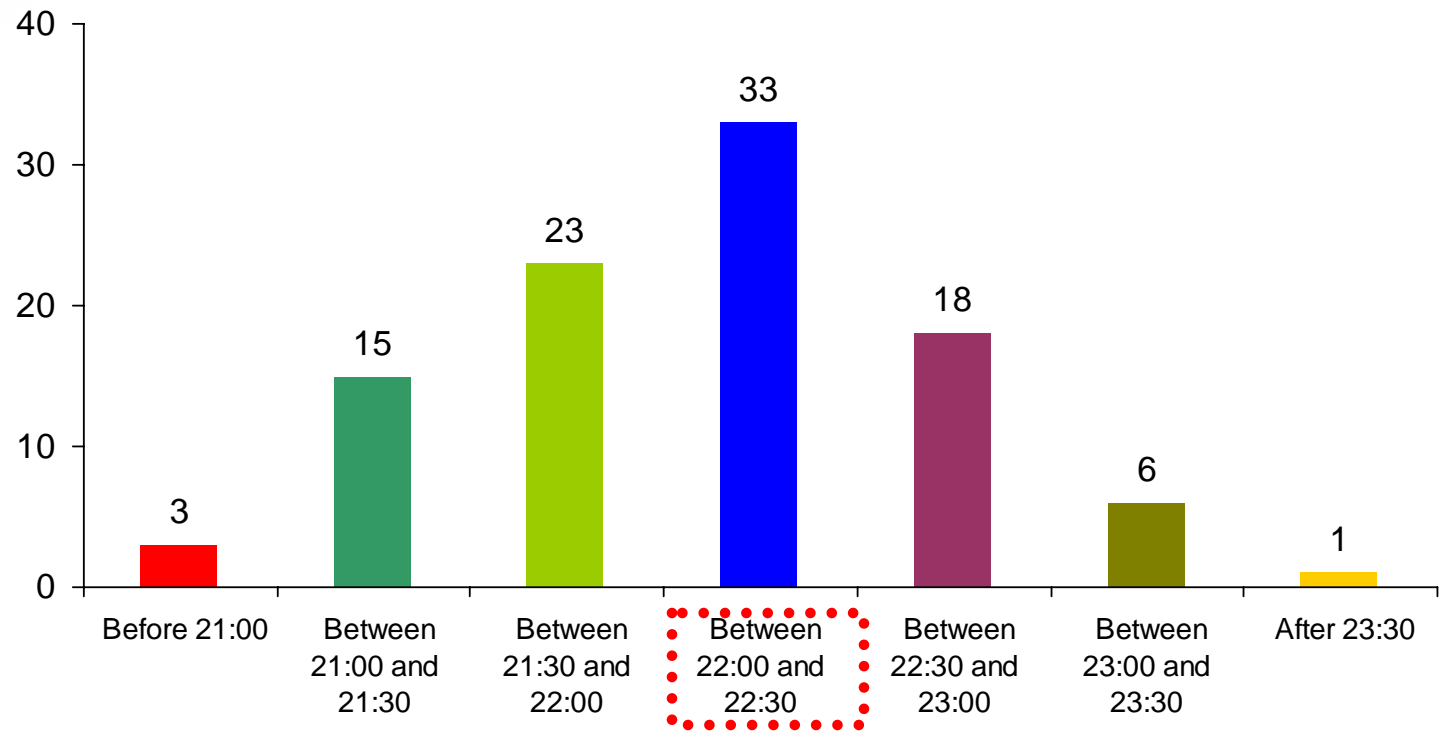
It gets dark between 18.00 and 19.00 with majority of respondents beginning to use lighting devices mostly between 18.30 to 19.00. it appears that a considerable number start using the gadgets after its already dark perhaps due to fuel saving considerations.

Base: Total sample = 1000



Time Lighting Products are Switched Off

Q. 25 "What time did the last light go off in the household last night?"



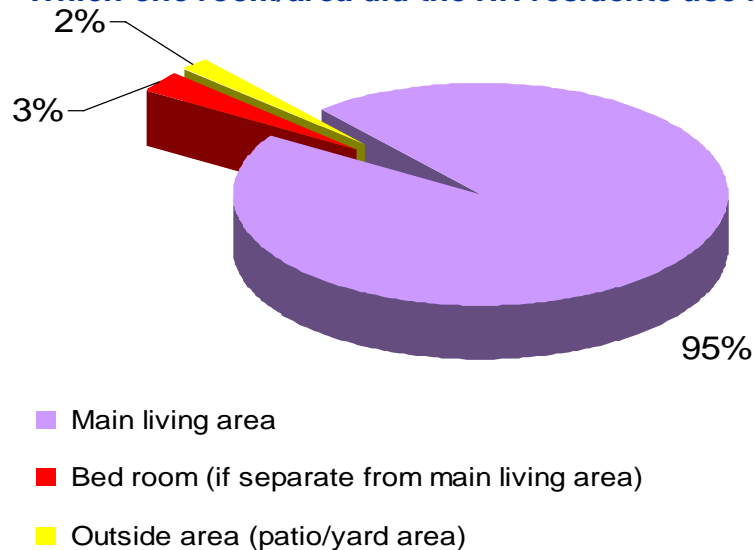
The average time lighting products are switched off is between 22.00 and 22.30, therefore the average number of hours lights are on is approximately 3 – 4 hours. This does not take into account whether consumers use products in the morning before sun rise, however lighting devise manufacturers should ideally allow for products with a charge of around 6 hours at a time.



Use of Light in the Rooms

	Q. 27 "How many rooms in this dwelling were used after dark yesterday evening?"	Q. 28 "How many rooms in this dwelling were lit at all yesterday evening?"
1 room	38	57
2 rooms	40	31
3 rooms	15	8
4 rooms	4	3
5 rooms	1	1
Mean	2	2

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



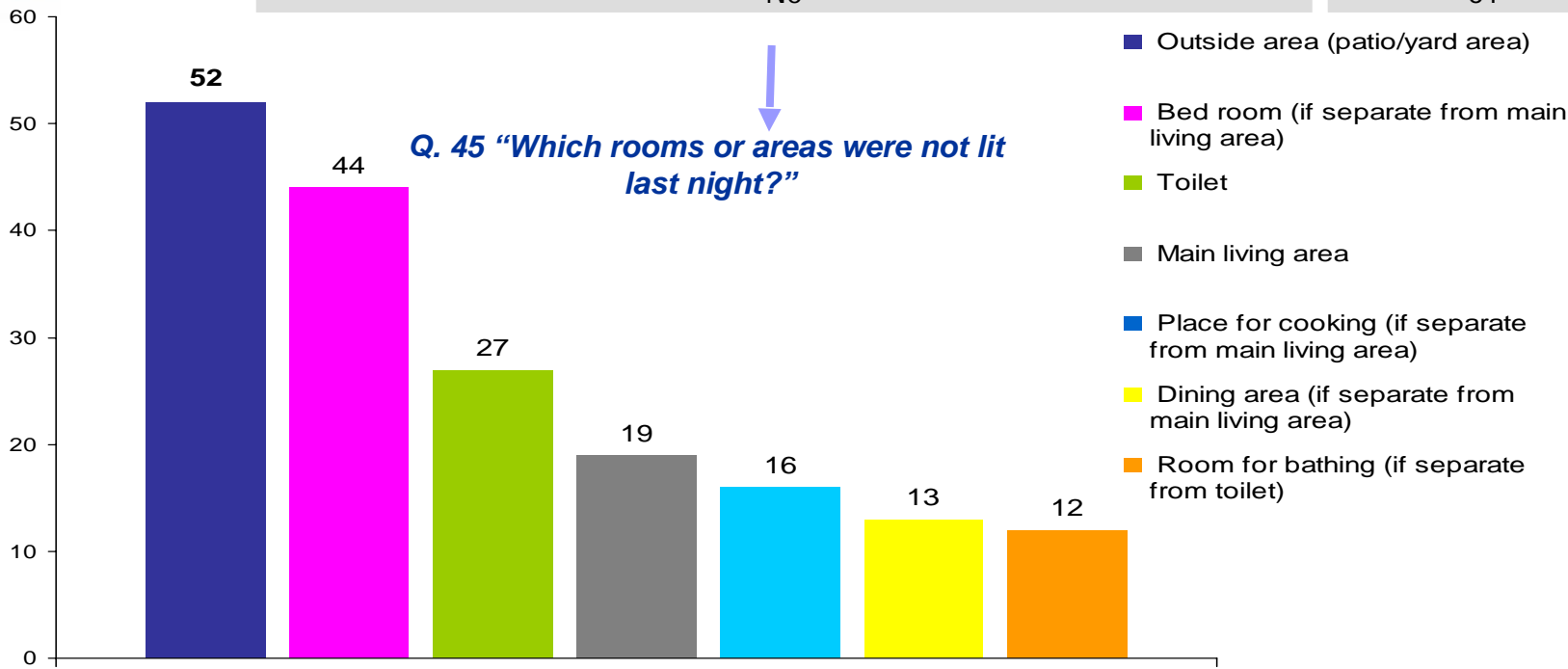
Ethiopian households, on average, light 2 rooms after dark. More than one lighting device is therefore required. The longest used and lit room is the main living area as this is where most household activities are carried out after dark

Base: Total sample =1006

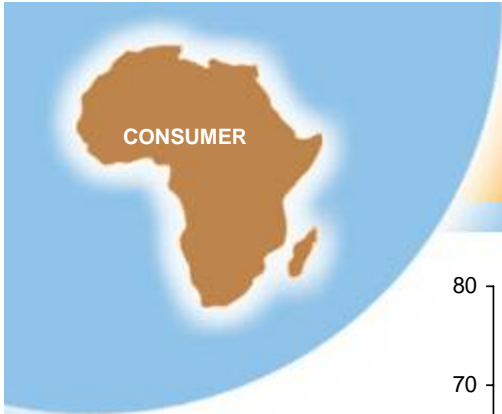


Rooms Not Lit Last Night

<i>Q. 44 "Was your home lit in all the areas that you needed it last night?"</i>		Base = 1006
Yes		39
No		61

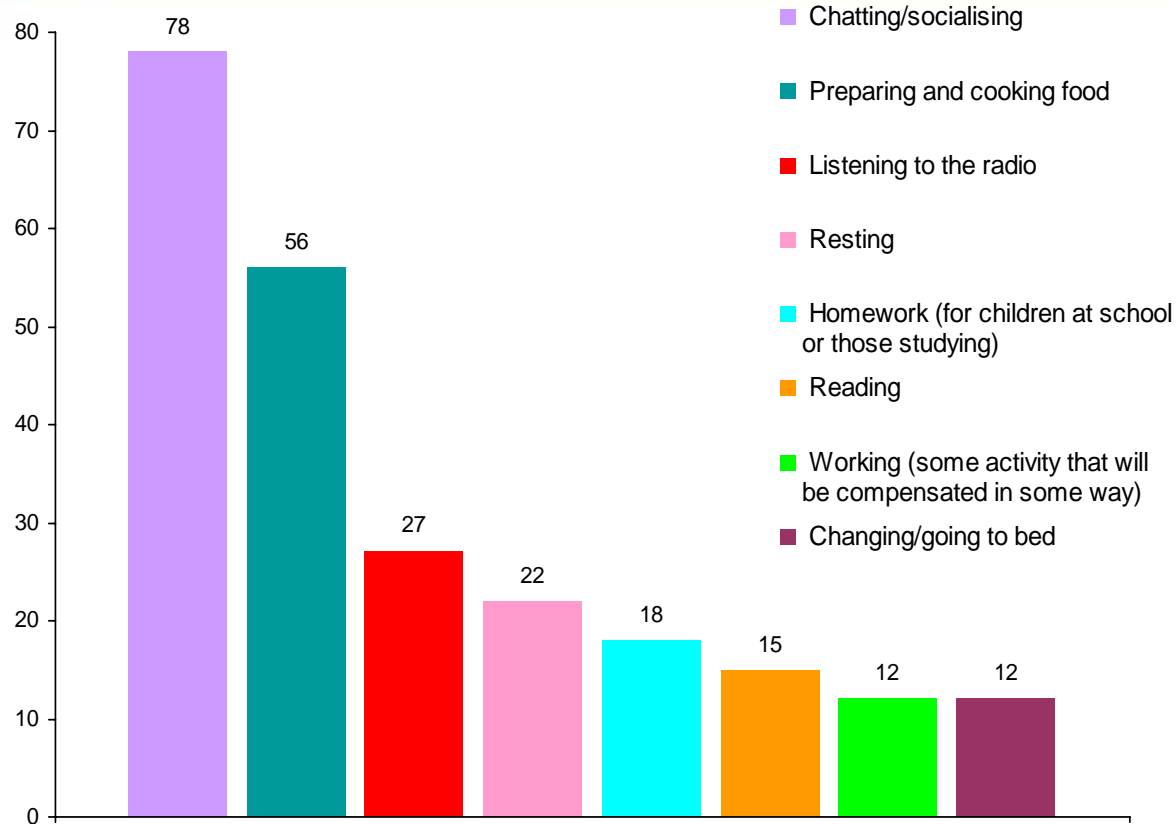


Almost two thirds of households had some areas not lit. Areas not lit were patio/yard 52%, bedroom 44% and toilet 27% - these are areas which are generally used only on an intermittent basis and therefore the need to light them continuously is not high



Night Time Activities

Q. 31 "Which activities were people doing last night?"



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

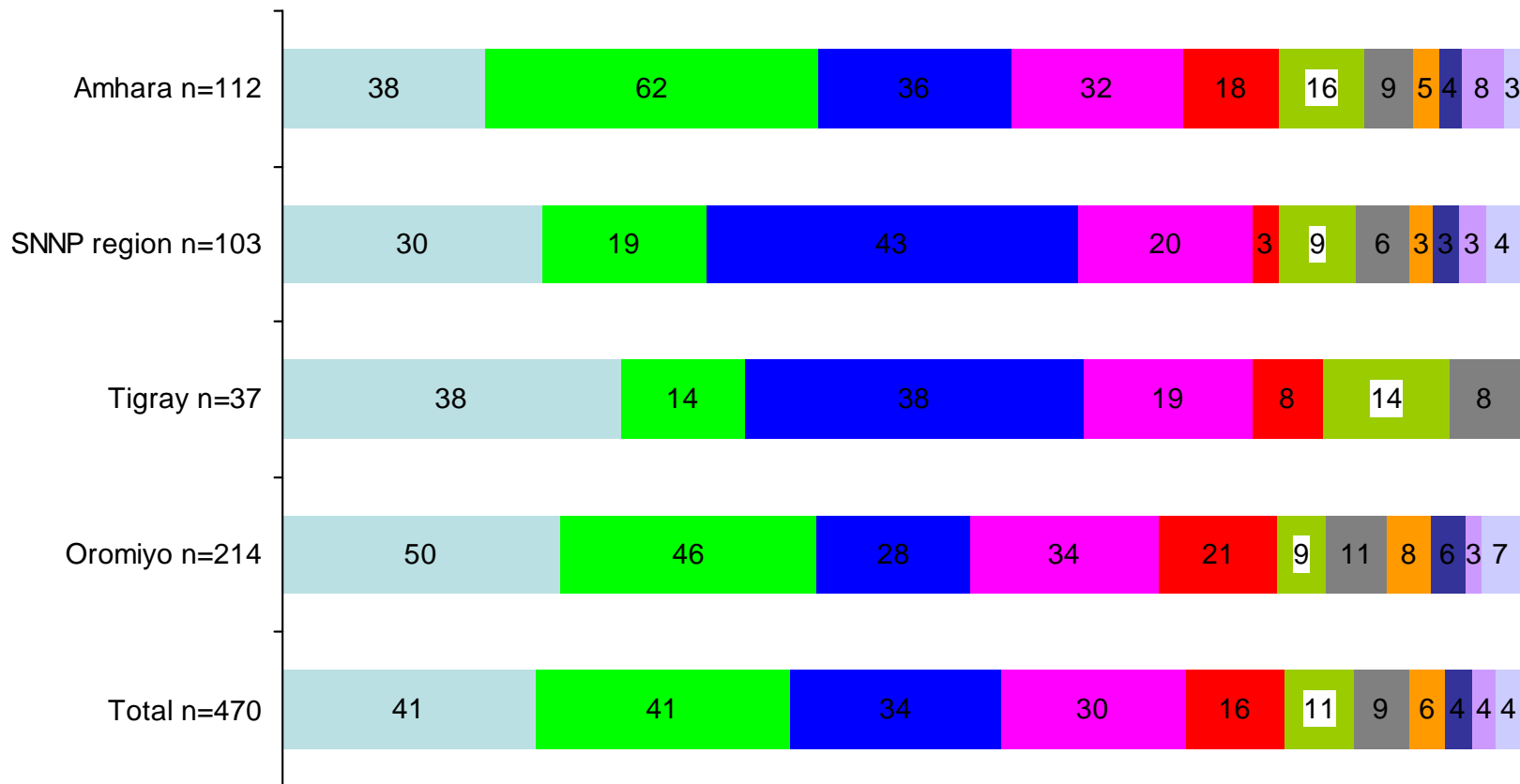
Base: Total sample =1006



Activities could not Perform Due to Lack of Lighting

Q. 33 "Which activities could not be done well or comfortably due to lack of lighting?"

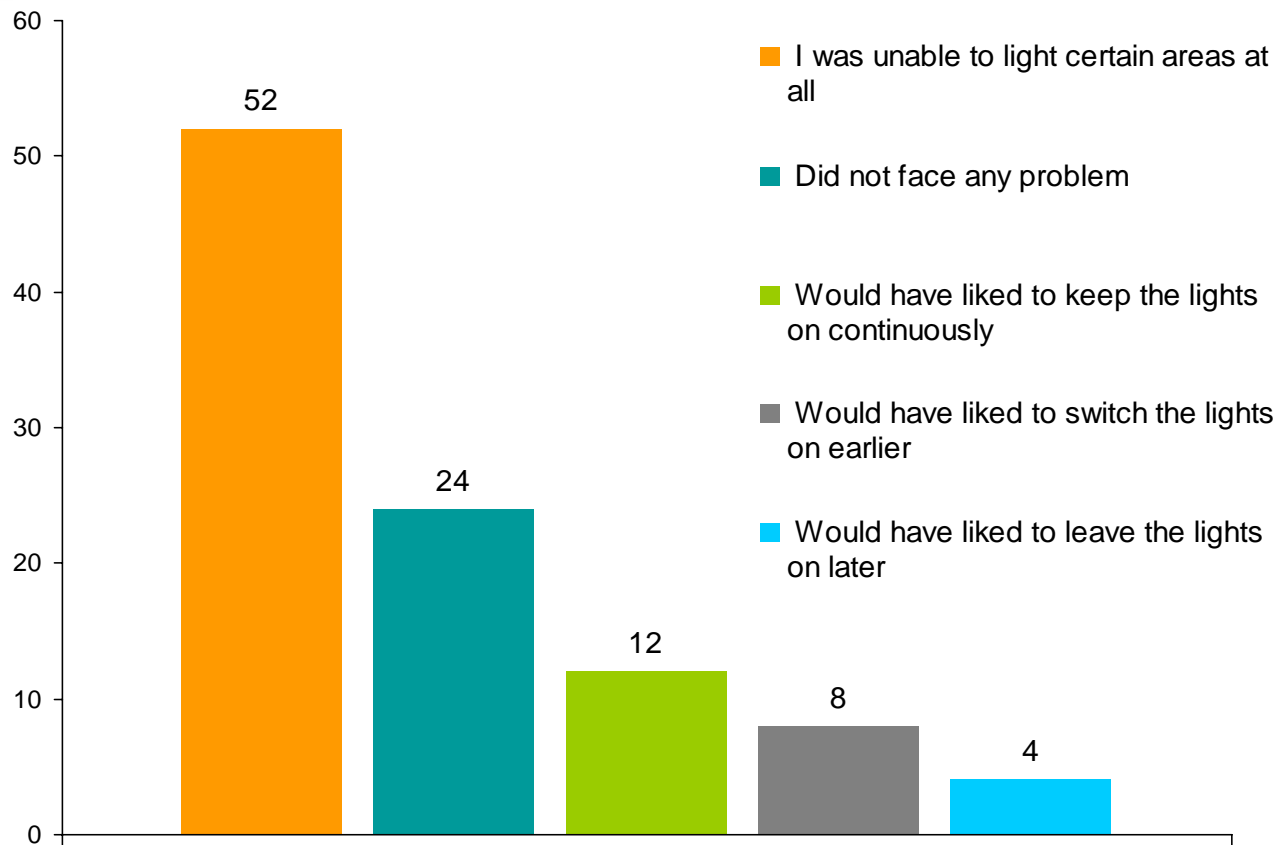
- Homework / studying
- Preparing and cooking food
- Working
- Reading
- Using the toilet
- Chatting/socialising
- Household cleaning
- Listening to the radio
- Resting
- Washing clothes
- Changing/going to bed





Problems Faced when Lighting Home

Q. 46 "What was the main problem you faced when trying to light your home last night?"

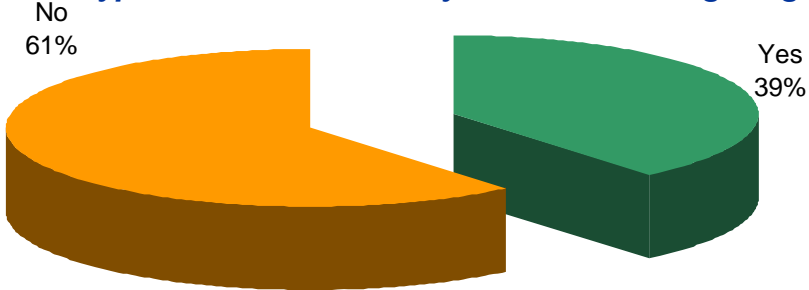


52% of consumers state that their main problem faced when lighting their home is that they were unable to light certain areas at all, this may be due to lack of fuel as well as lack of lighting devices to light all areas of the house



Outdoor Activities Unable to do Due to Lack of Lighting

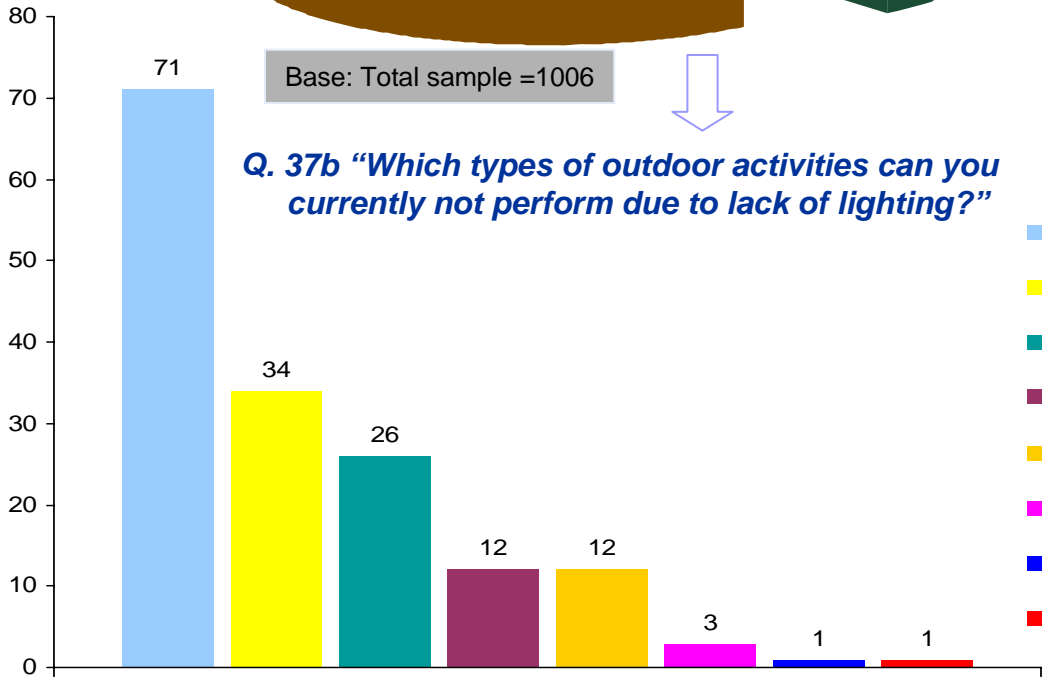
Q. 37a "Are you currently inhibited to performing certain types of outdoor activity due to lack of lighting?"



Those hampered in their outdoor activities mentioned tending to livestock as the biggest challenge to perform at 71% followed by visiting neighbors 34%.

Base: Total sample =1006

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



- Tending to livestock
- Visiting a neighbour's/friend's house
- Getting water
- Using a communal toilet
- Going to a shebeen/bar
- Washing clothes at night
- Going to a meeting
- Weaving

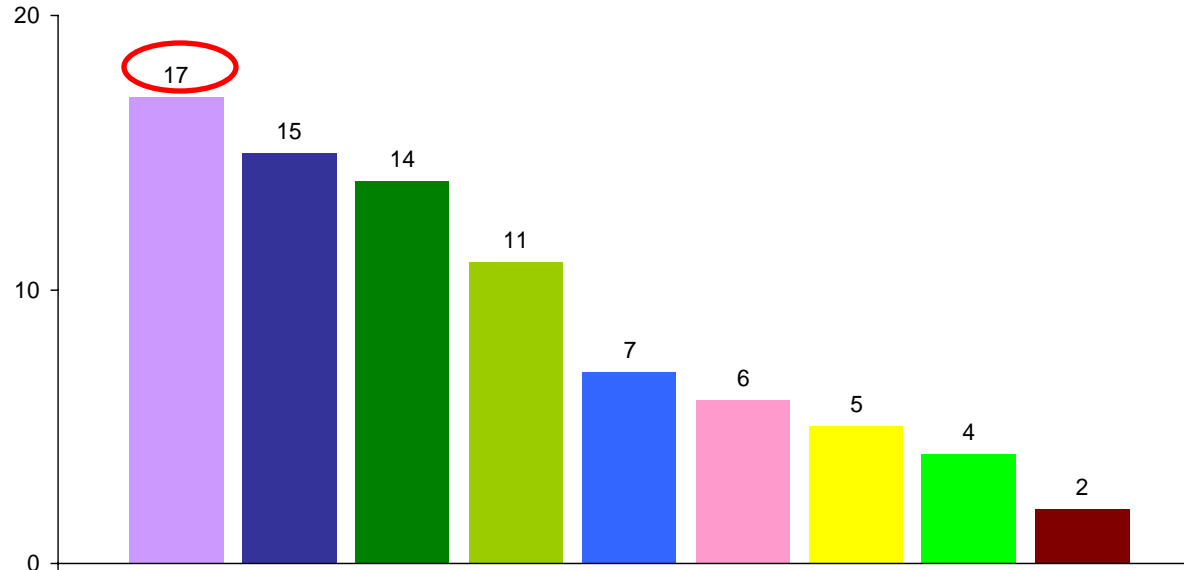
Base: All who could not perform certain types of outdoor activities due to lack of lighting =395



Problems Experienced Due to Lack of Lighting

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
- Smoke produced affects people
- Difficult to socialize/chat with family members/neighbours
- Other household chores are skipped for day time e.g. cleaning
- My business is not doing well due to lack of enough lighting
- Can't access other rooms
- One cannot extend till late due to fear of paraffin cost

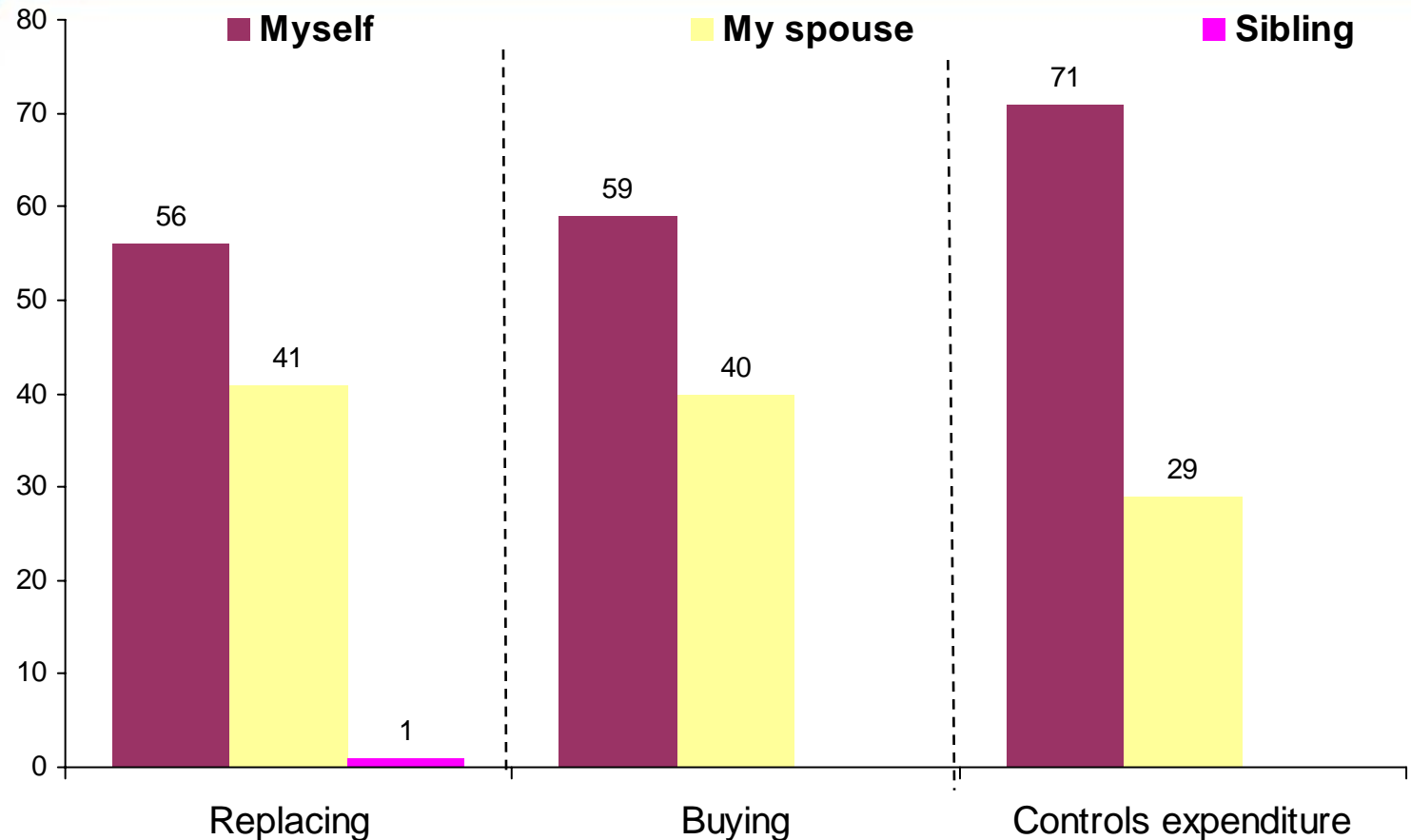
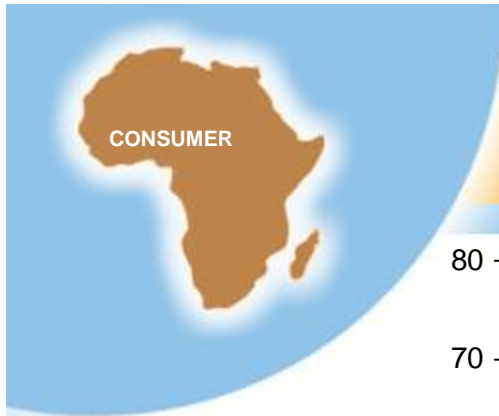


Education of the children is hampered since they cannot complete their homework in the dark. Insecurity is mentioned as the second greatest problem caused by lack of lighting making outdoor activities impossible/limited

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

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

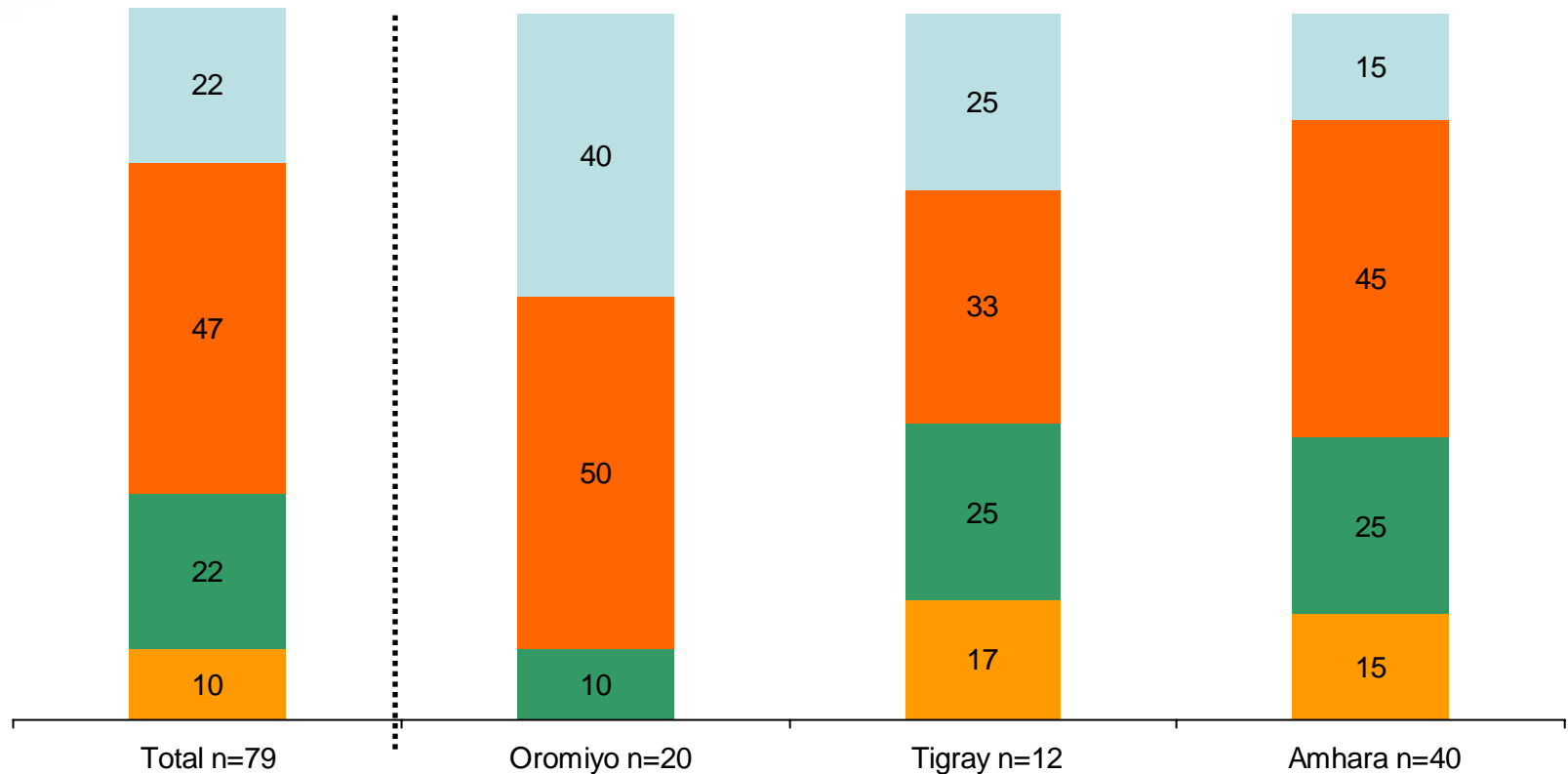
TRADERS



Connection Potential

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

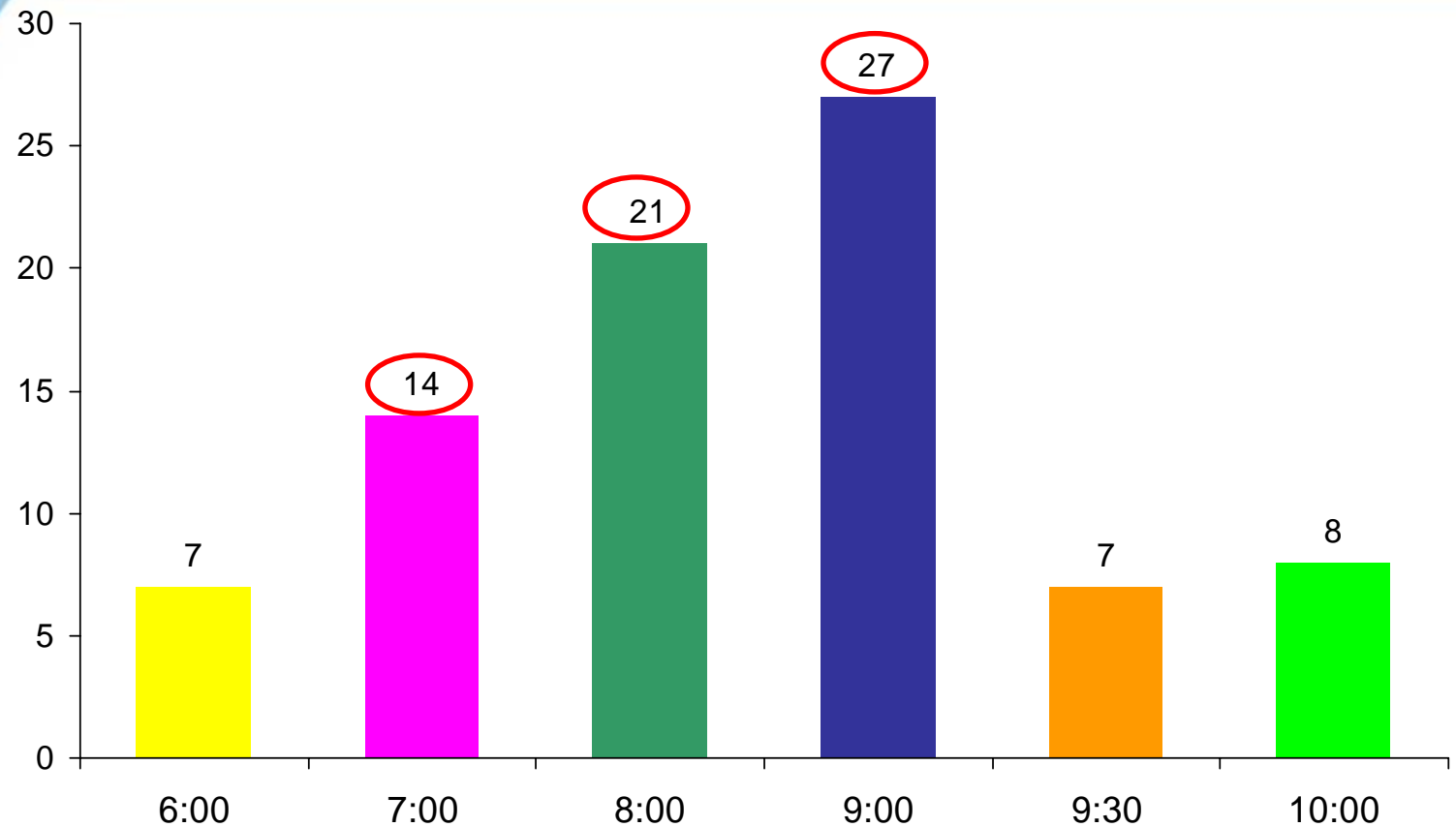


47% of traders are aware of extension plans but are not sure when these are likely to take place



Opening Time

Q. 24a "What time does your business usually open?"



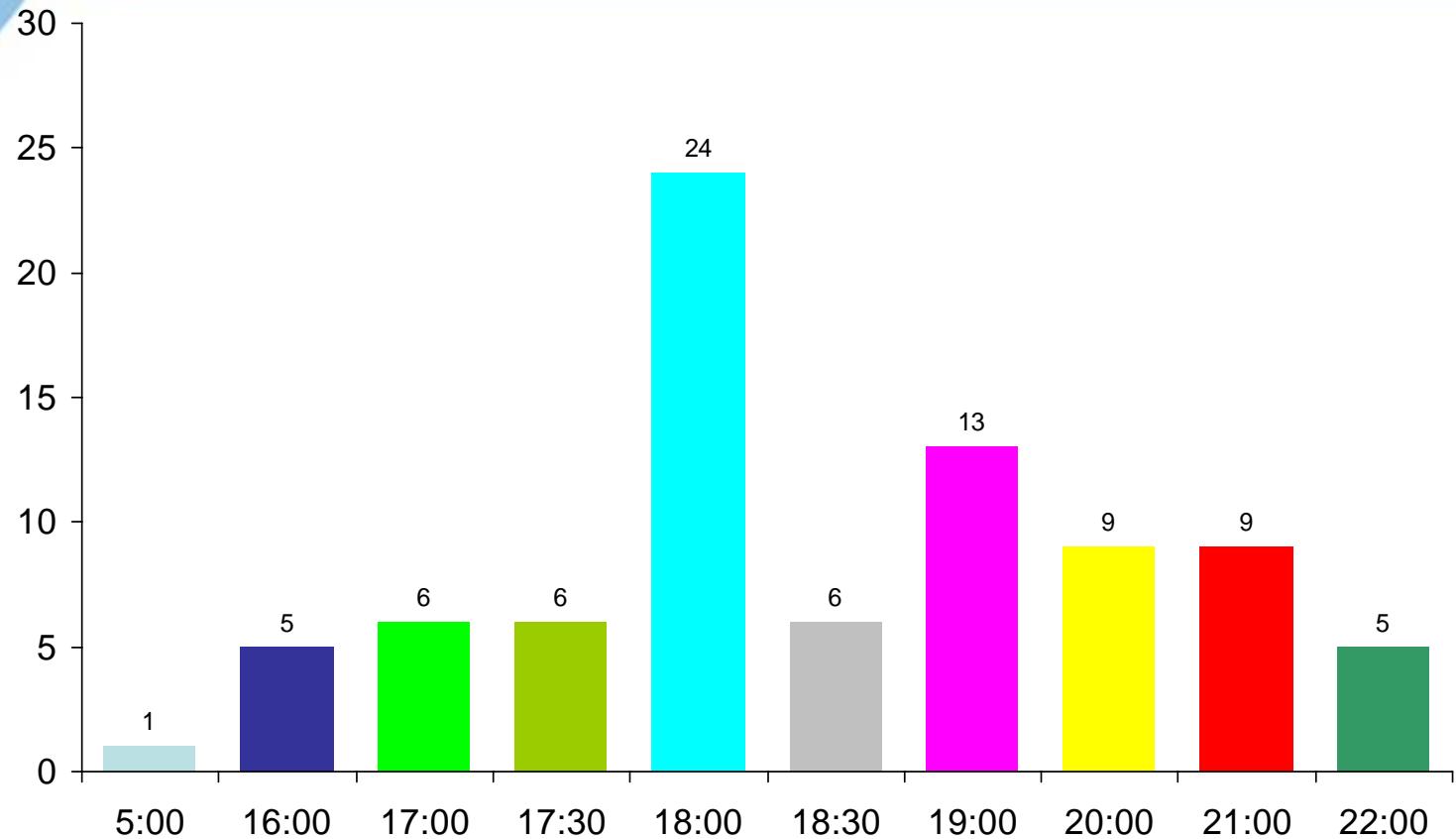
Most traders operate daily throughout the week with 45% opening on Sunday and a majority 62% opening between 7:00am and 9:00am daily

Base: Total Sample = 400



Closing Time

Q. 24b "What time does your business usually close?"

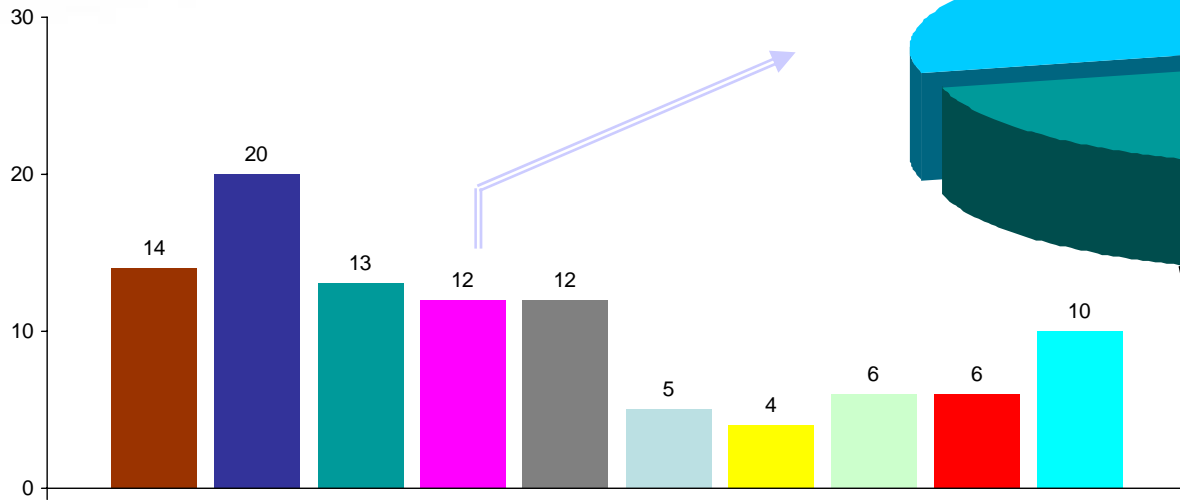


Many businesses close at between 18:00 – 19:00 pm. At this time its already dark and hence lighting devices are thus required



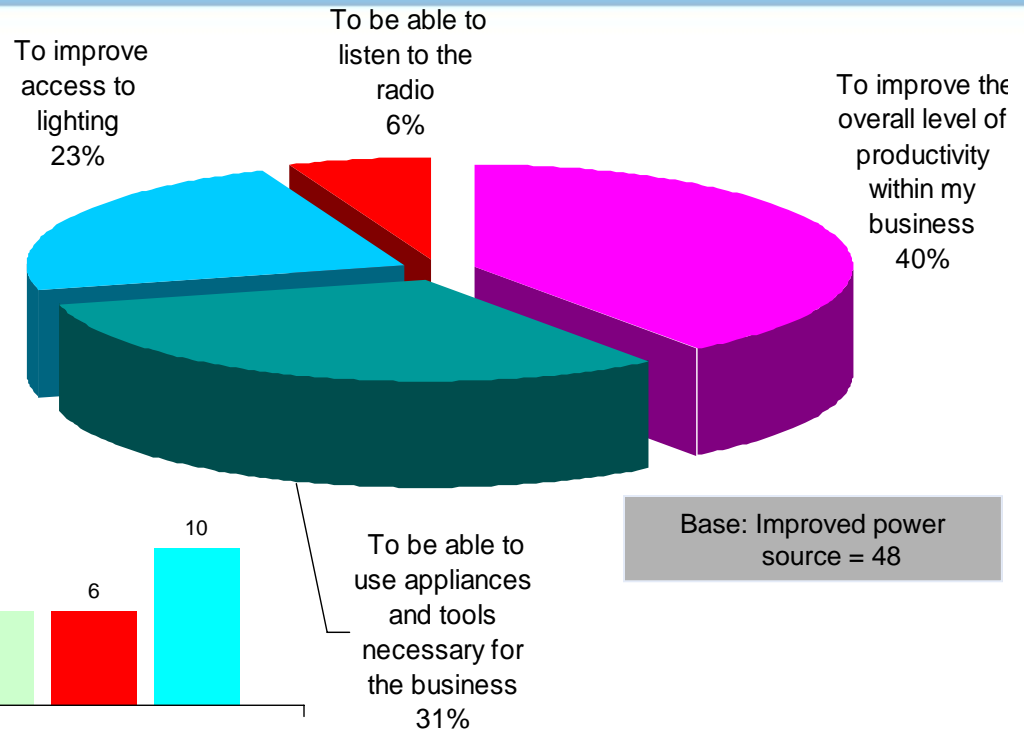
Improvements to Business

Q. 4 "If there was one thing you could do to improve your business or its facilities...?"

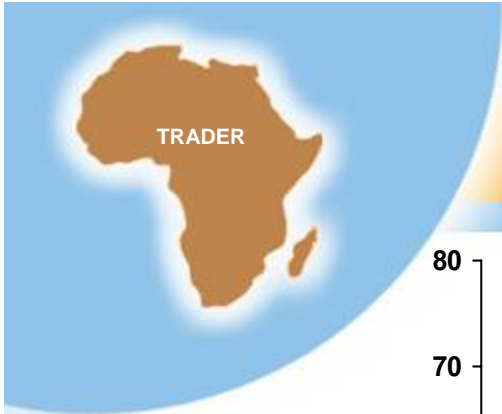


- Improved structure itself
- Improved lighting
- Better shelving / display
- Getting a power connection
- Tools and equipment
- Improved furniture
- Better decoration
- Upgrading to self service
- Others
- Nothing

Base: Total Sample = 400

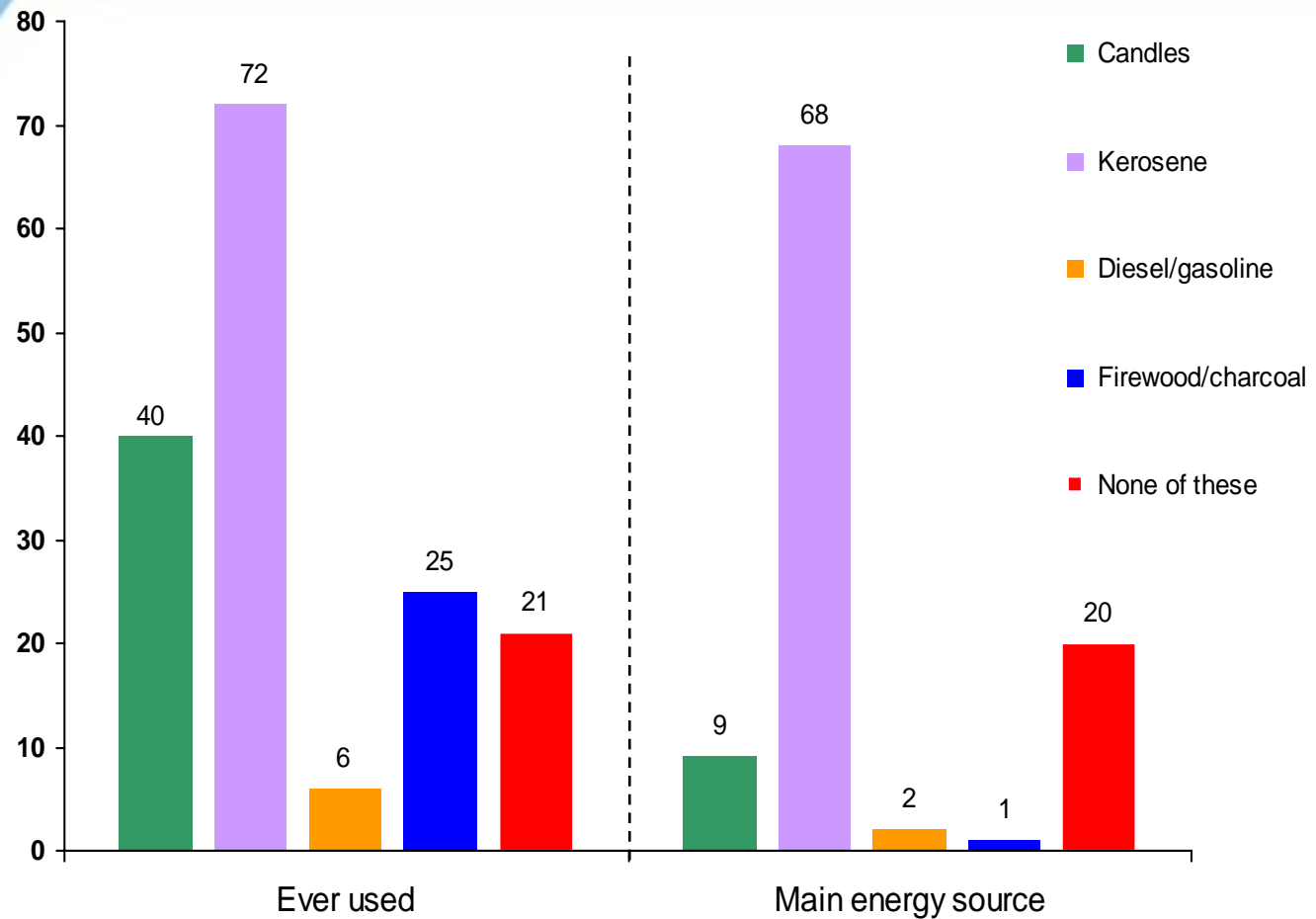


Improved lighting is top priority for most business facilities. The 12% who mentioned they would like to have an improved power source cited increase in business productivity as the main reason. Additionally 23% would like to improve access to lighting.



Use of Energy Sources to Power Appliances/ Provide Light

Q. 21a "Do you ever use any of the following sources of energy to power appliances or to create light?"
 Q. 21b "Which of the following sources of energy would you use as your main energy source?"



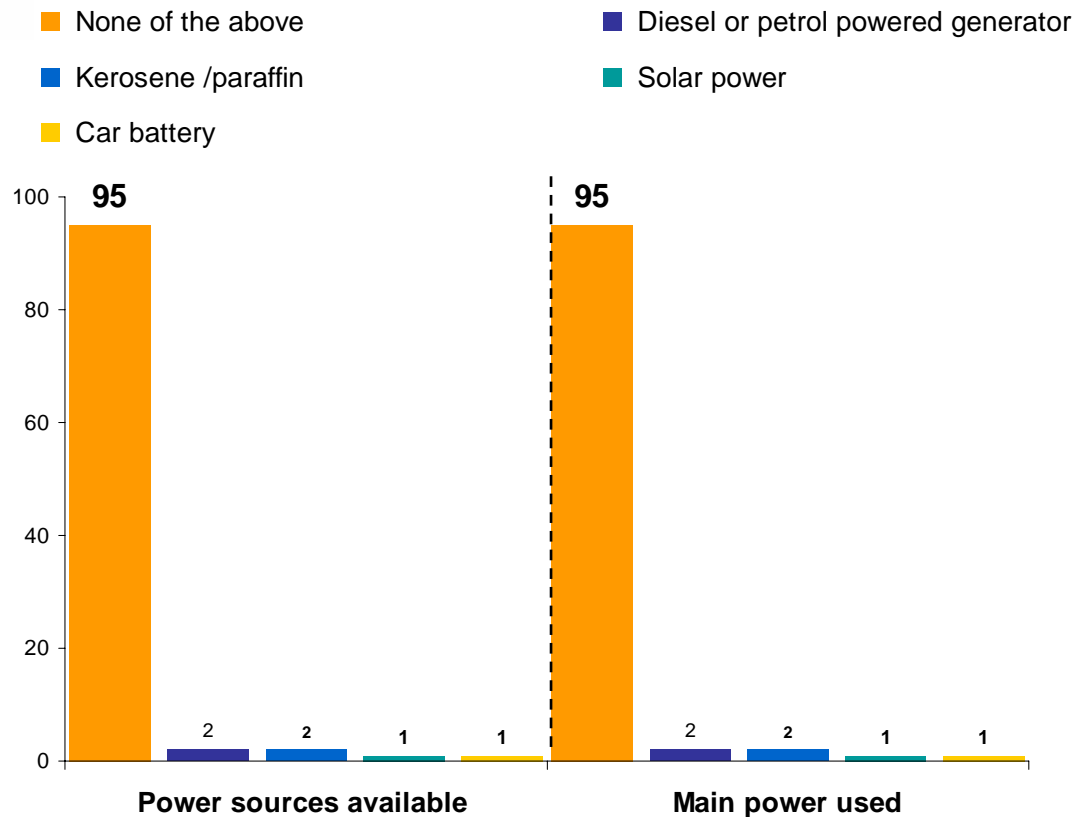
Kerosene is the main source of energy and lighting for most traders. 1 in 5 do not have any power or lighting source for their business at all.



Other Energy Sources

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

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%

Base: Total Sample=400

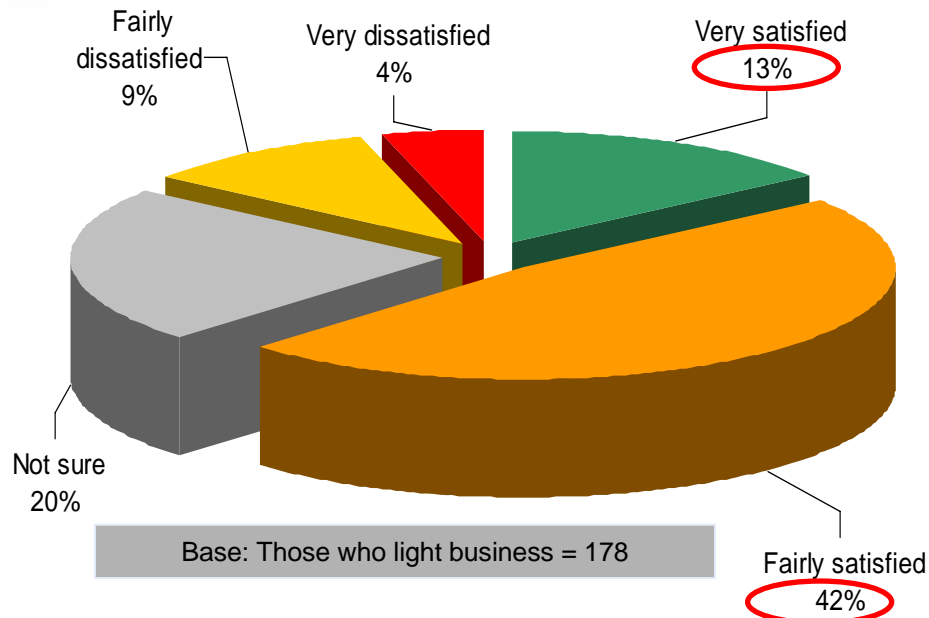
95% of traders state that besides their main energy/power source there are no back up sources. Very few traders (2% and less) dabble with alternative sources such as generators or solar power.



Satisfaction Level and Limitations with Current Lighting

Q. 39 "How satisfied are you with the lighting in your business?"

Mean Score: 3.58



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%

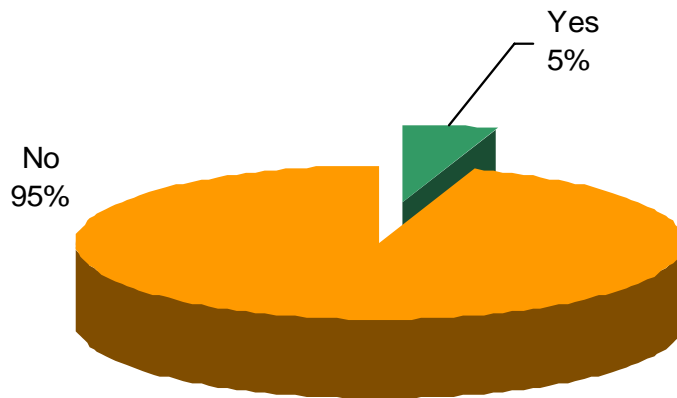
Base those traders dissatisfied with lighting = 24

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

Use of Light

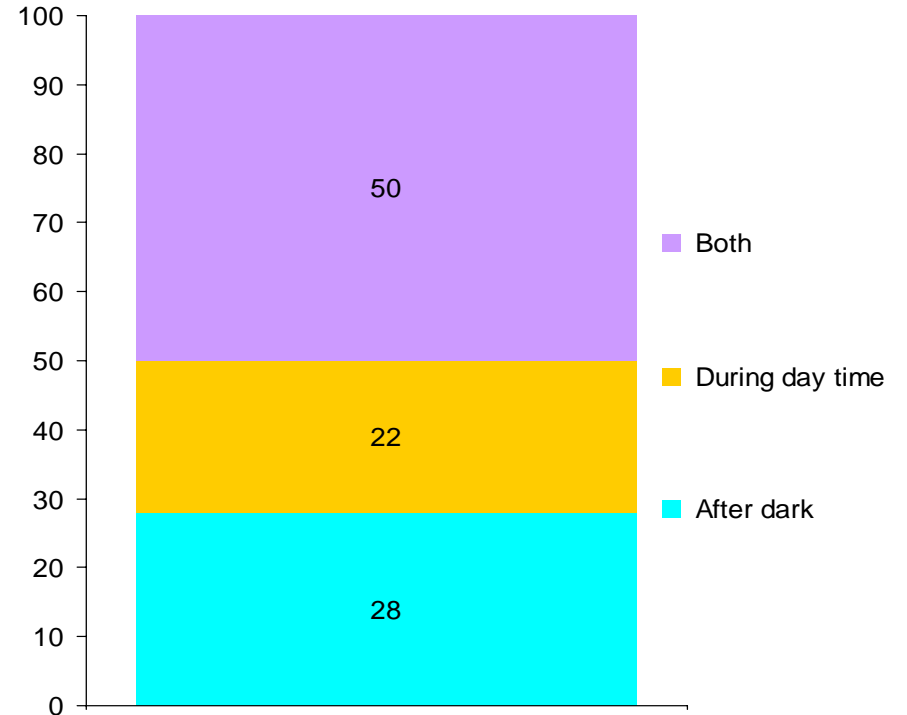


Q. 31 "Are any lights used at the premises during the day time?"



Base: Total sample =400

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



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

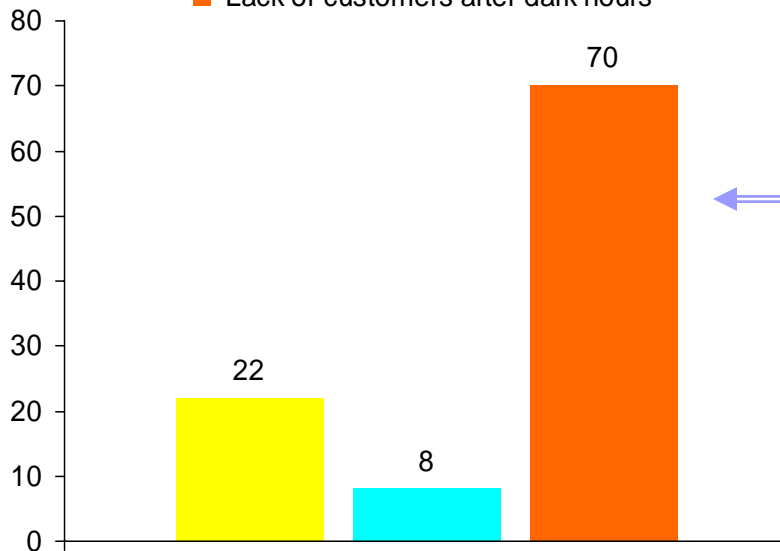
Only 5% of traders use lights in their premises during the day time with half 50% of them using the same lights at night



Operating the Business after Dark

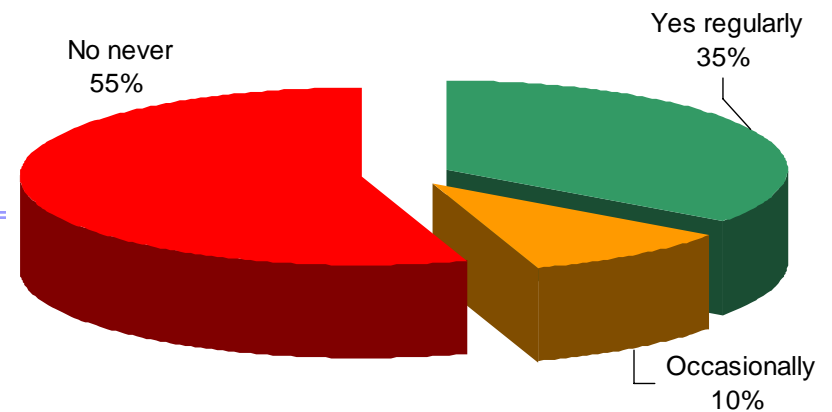
Q. 26 “Why do you currently not operate regularly after dark?”

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



Base: All who do not open regularly after dark

Q. 25 “Does this business ever operate after dark?”



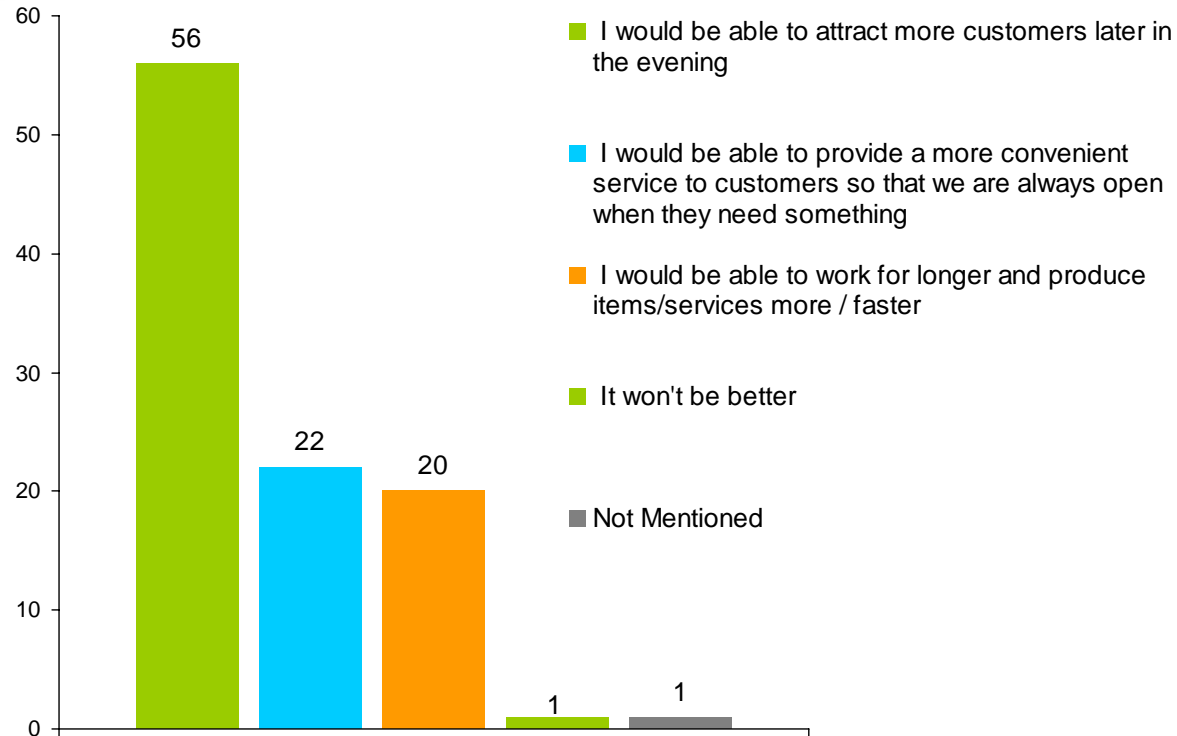
Base: n = 400

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.



Opening after Dark

Q. 29 "How would customers respond to you staying open at night?"



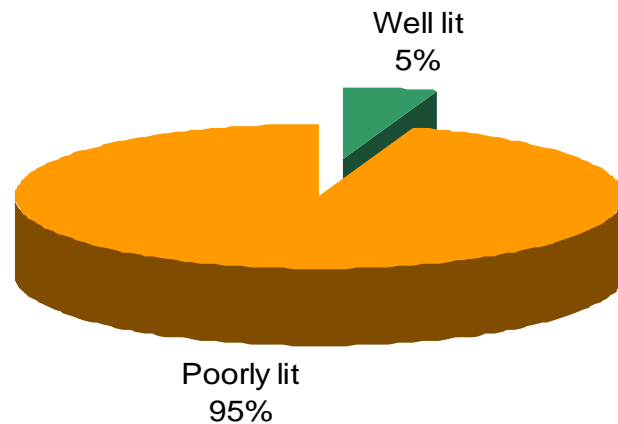
More customers will be gained for those who want to open after dark, if there were improved or adequate lights. This would yield more profits

Base: All would want to open after dark = 81



Rating for Lighting Outside the Business and its Limitations

Q. 40b “How would you rate the level of lighting outside your business?”



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

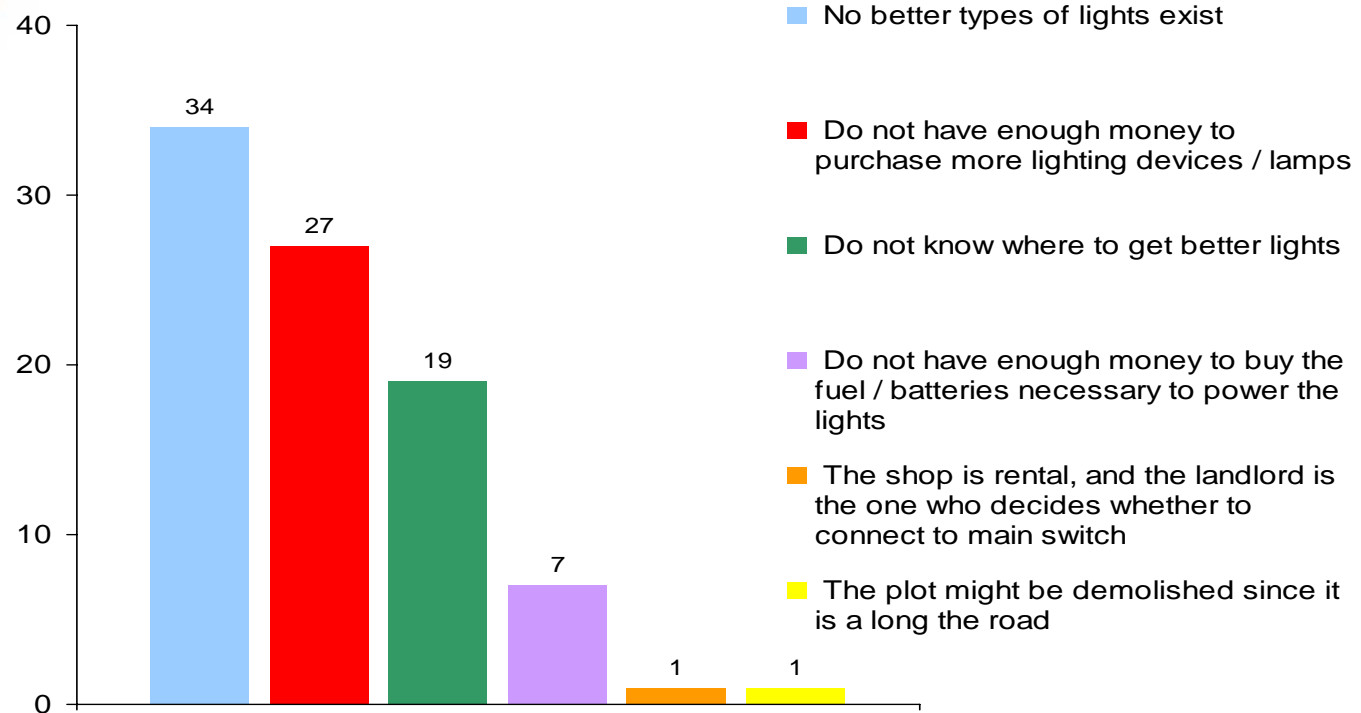
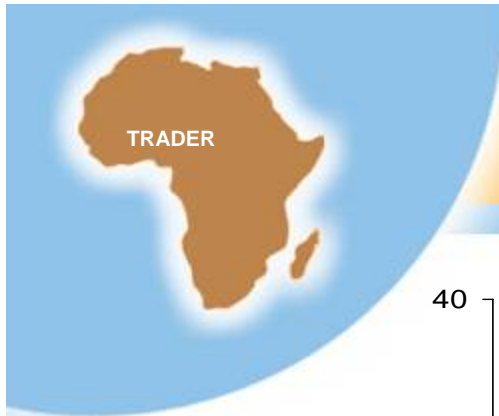
There is no security, hence cannot operate the business after dark	41%
Customers don't see the shop clearly, so they don't shop after dark	41%
Sometimes customers tend to think that the Business has closed down due to lack of enough light	9%
It's very expensive	9%

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

Barriers to Improving Lighting

Q. 41 "What are the barriers to improving the lighting for your business?"



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

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



CURRENT LIGHTING DEVICES



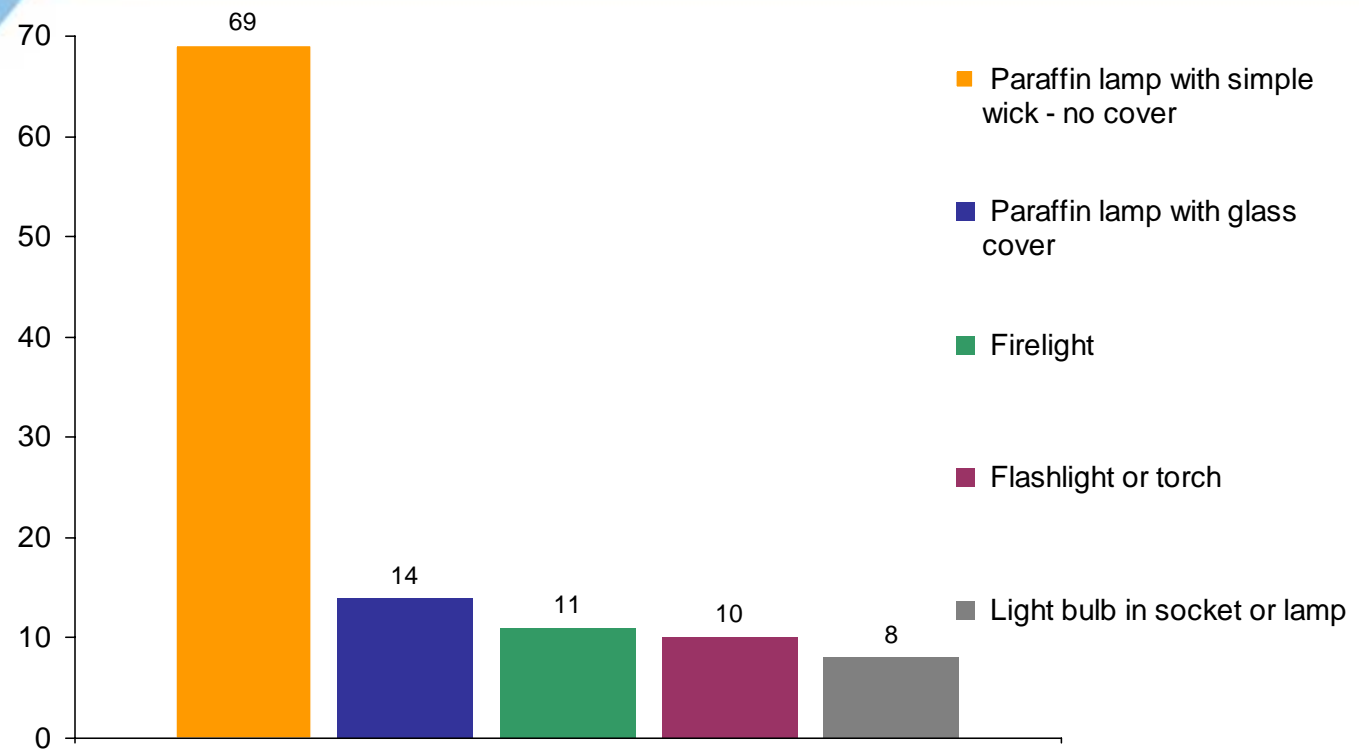
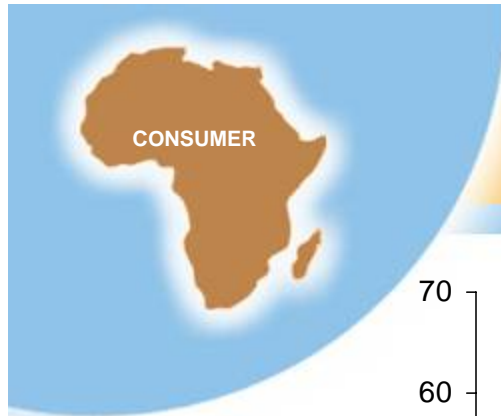
LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

CONSUMERS

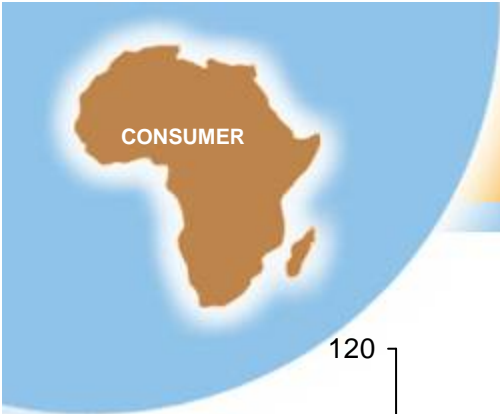
Types of Lighting Devices Used

Q. 34 "What, if anything, was used to light the main room last night?"



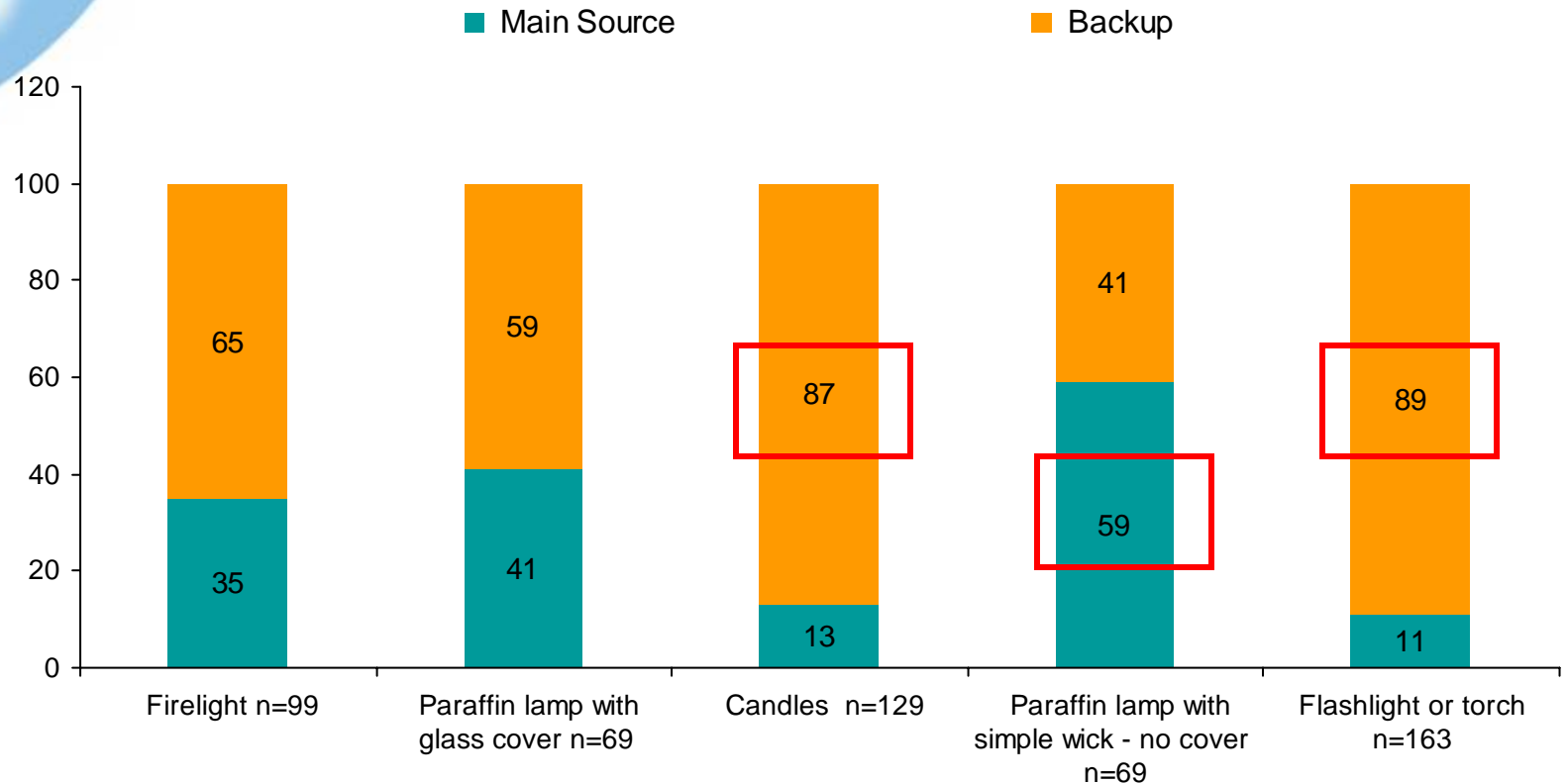
Paraffin lamp with simple wick and no cover is the mostly used type of lighting device amongst consumers. This can be attributed to the fact that kerosene is the mostly used power source

Base: Total sample =1006



Back-Up Lighting

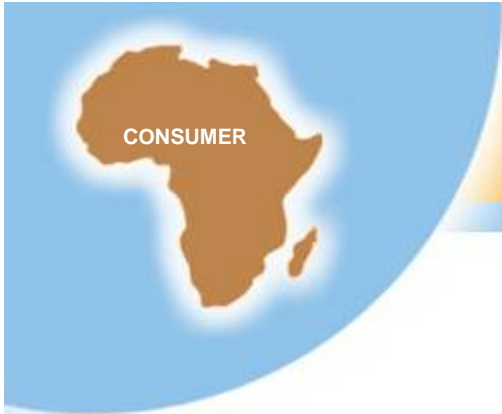
Q. 49d "Generally do you use as a main source or a back-up when main lighting not available?"



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

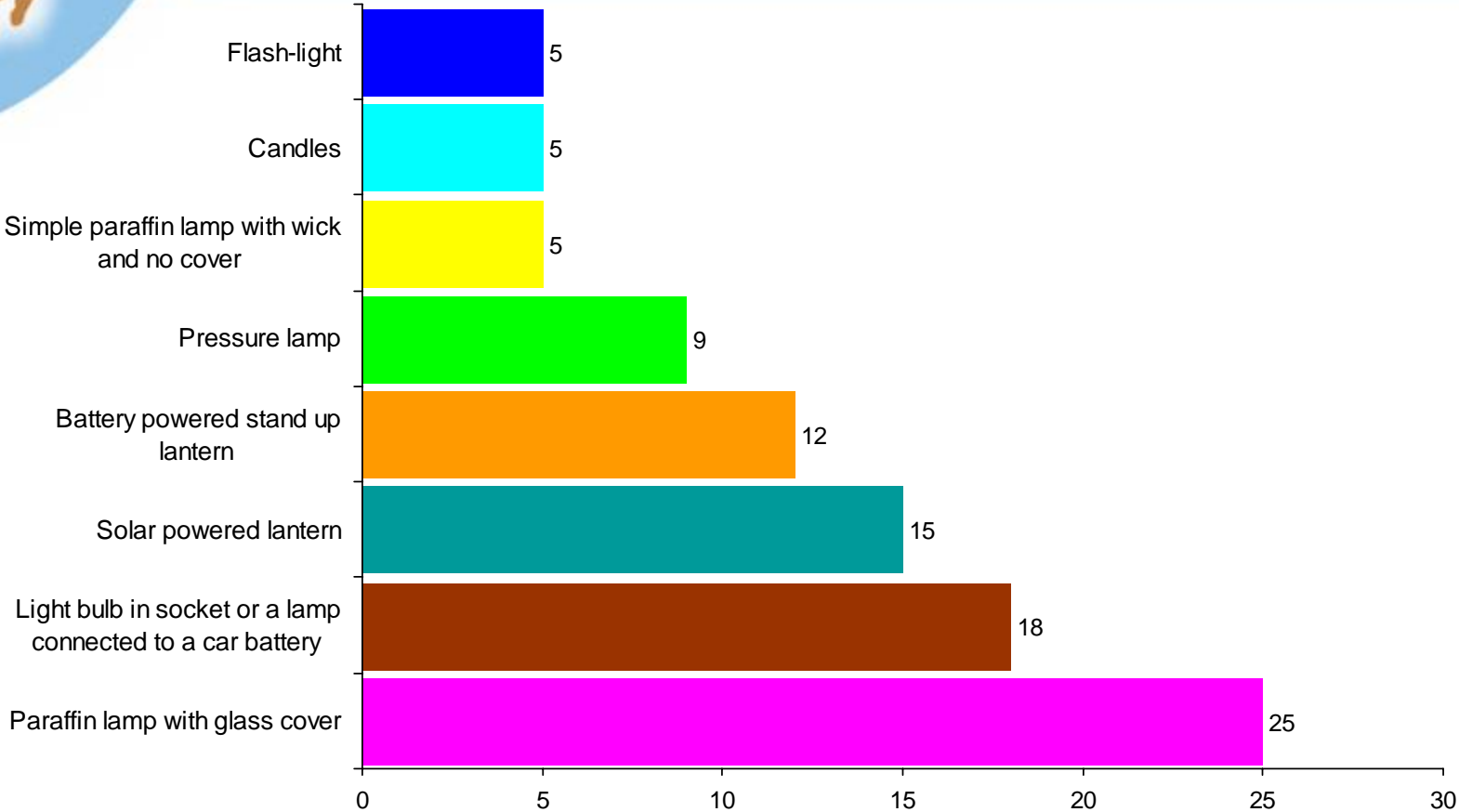
Light bulb in socket and Lantern have been removed due to small base sizes

Base: All with in working order



Preferred Type of Lighting Device

Q. 58 "What is your preferred type of light excluding mains powered light bulbs?"



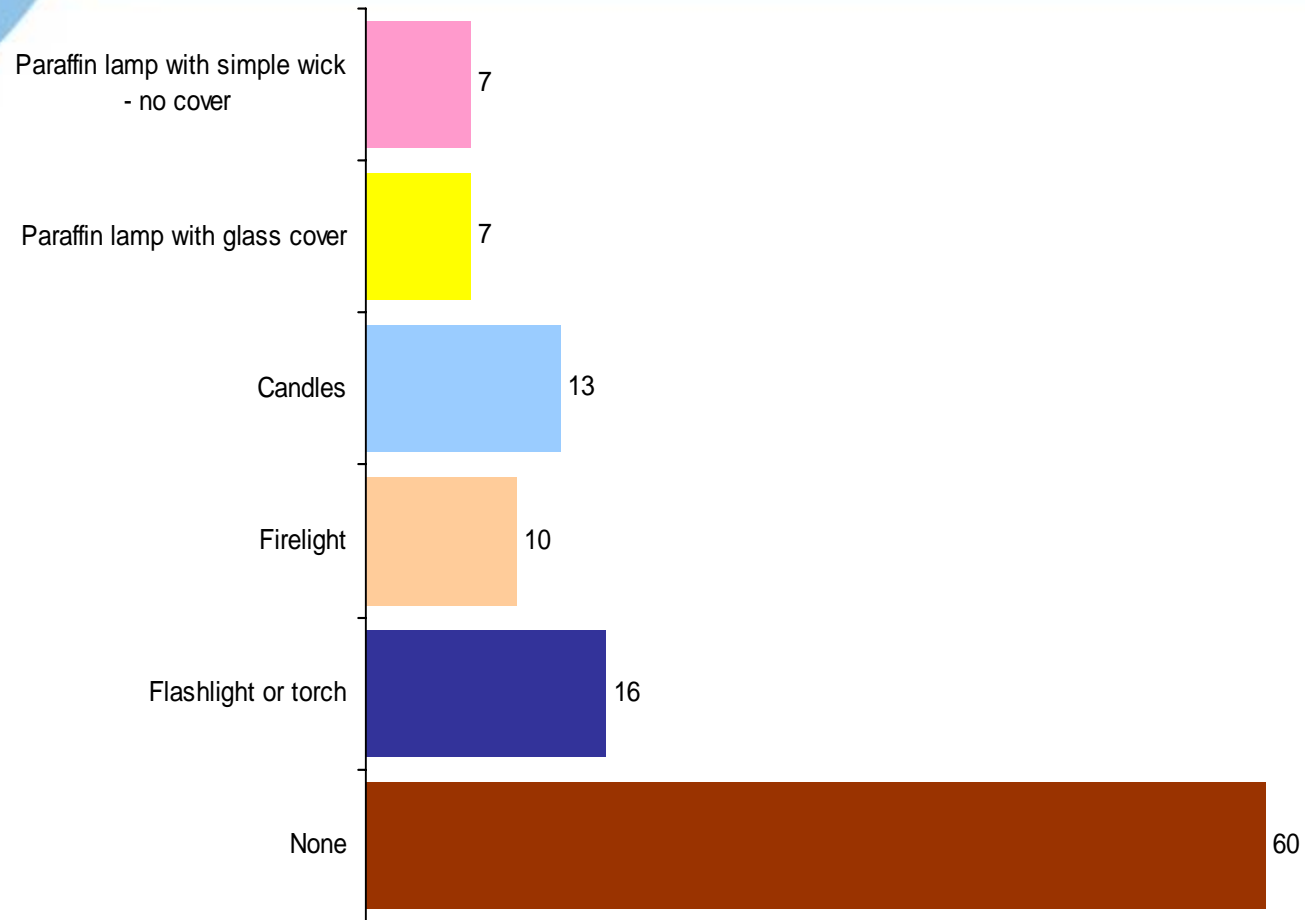
Paraffin lamps with glass cover are the most preferred type of lights

Base: Total sample = 1006

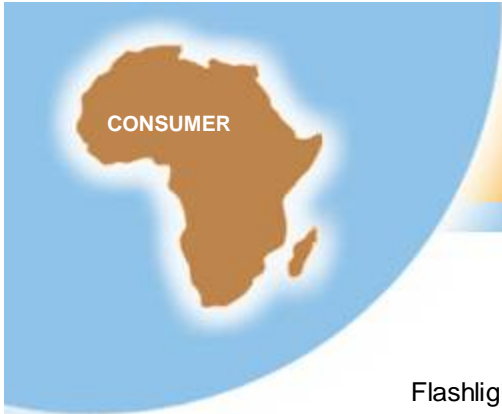


Other Lighting Devices Available

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?"

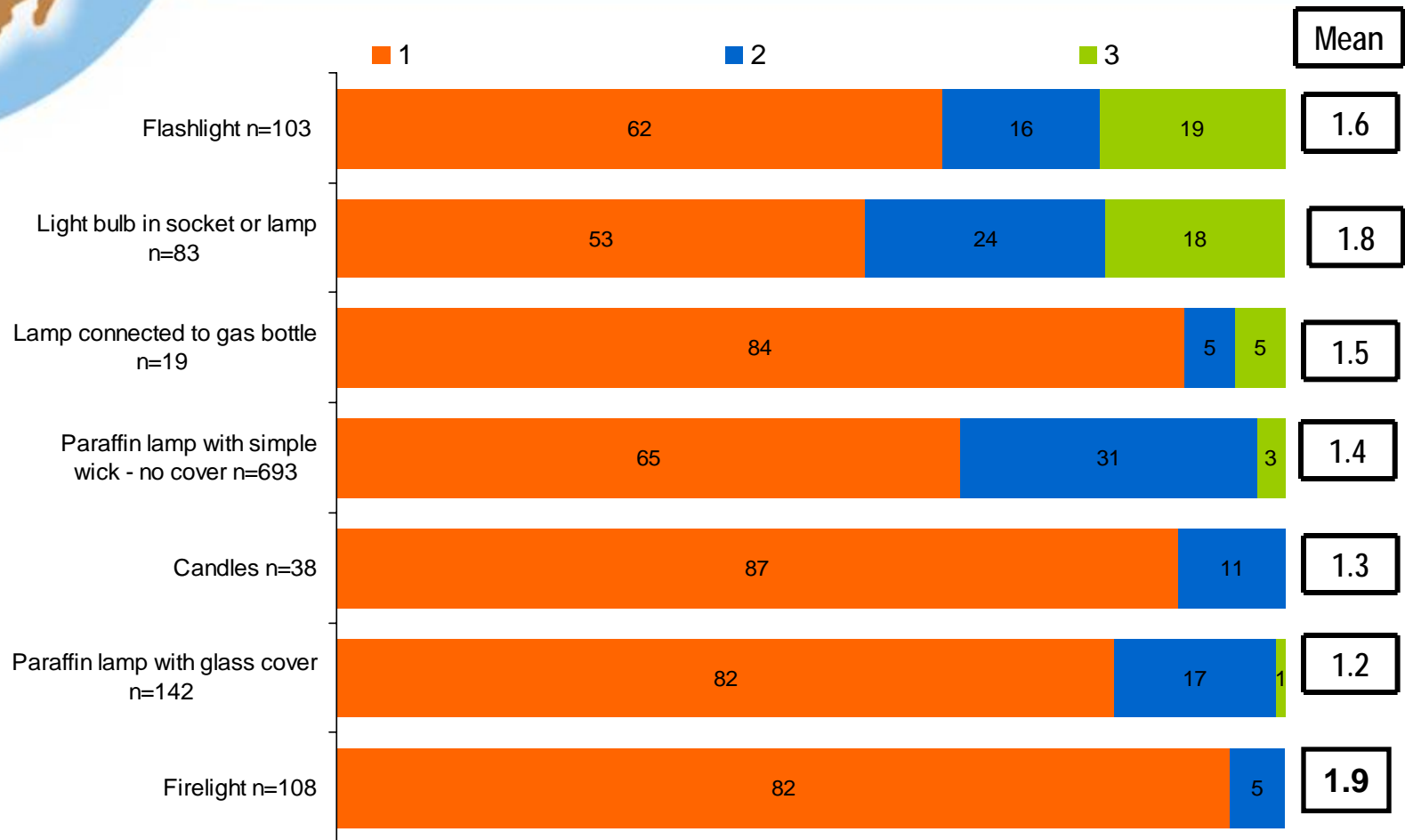


Very few Ethiopian consumers have backup lighting devices available to them – only 40% of our sample



Number Of Each Lighting Device Used

Q. 35 "How many of each lighting device were used?"

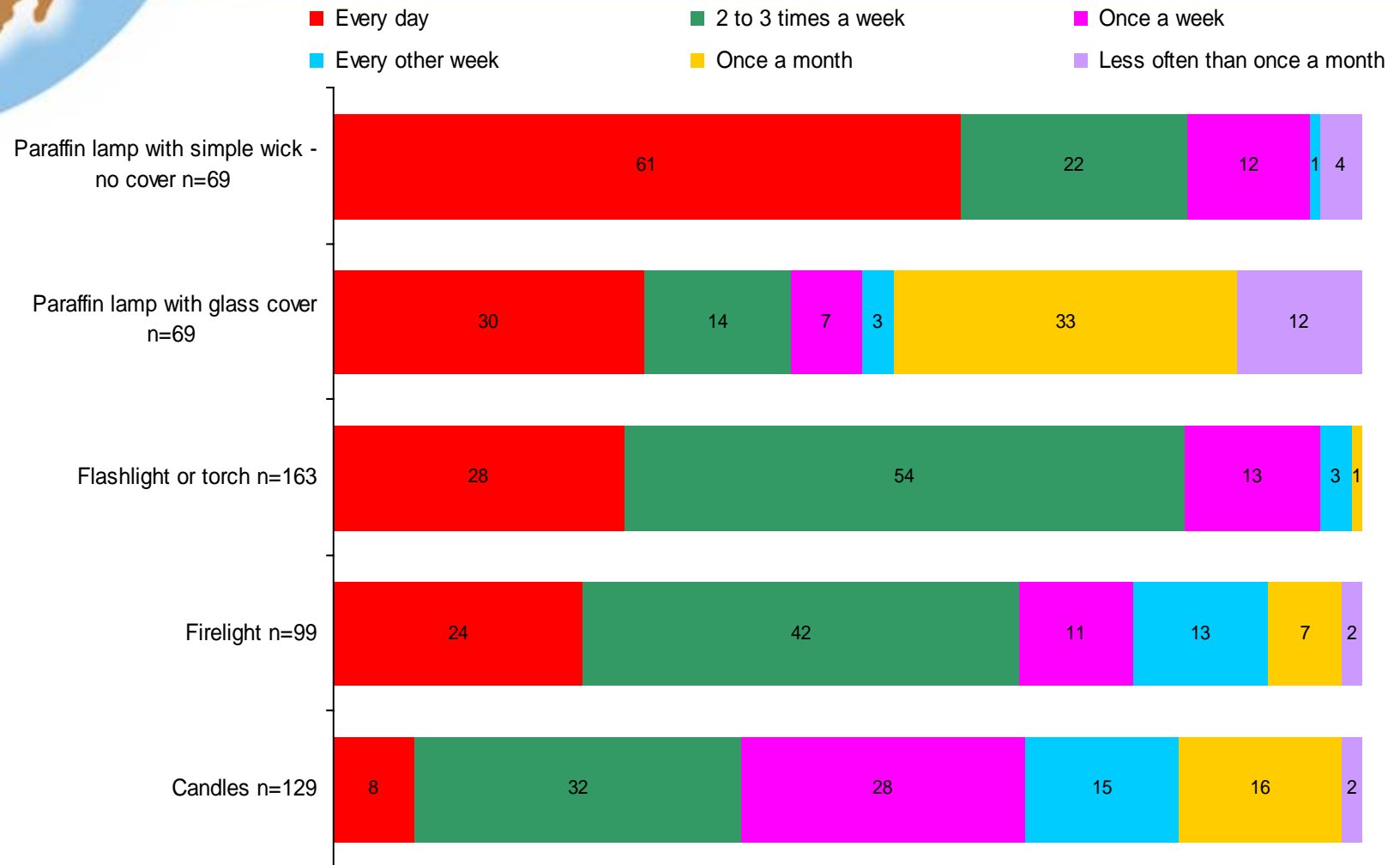


On average between 1 and 2 lighting devices are used to light a room or household at a time



Frequency of Using Lighting Devices

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



Base: All with gargets in working order



Strengths of Types of Lighting

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

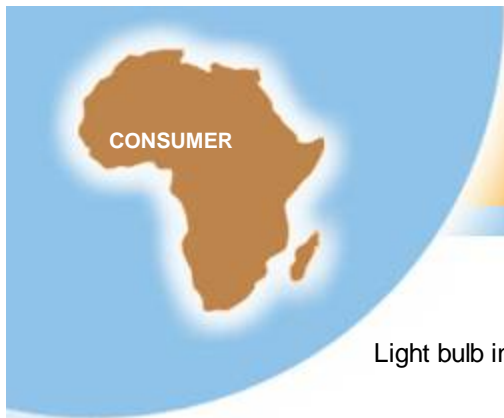
	Total	Firelight	Paraffin lamp with glass cover	Candles	Paraffin lamp with simple Wick - no cover	Light bulb in socket or lamp	Flashlight / torch
Base: Total Sample	1006	108	142	38	693	83	103
It has very clear lighting	37	56	68	24	30	45	49
It is portable from one Place to another	13	0	4	37	14	-	14
It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

Weaknesses of Types of Lighting

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

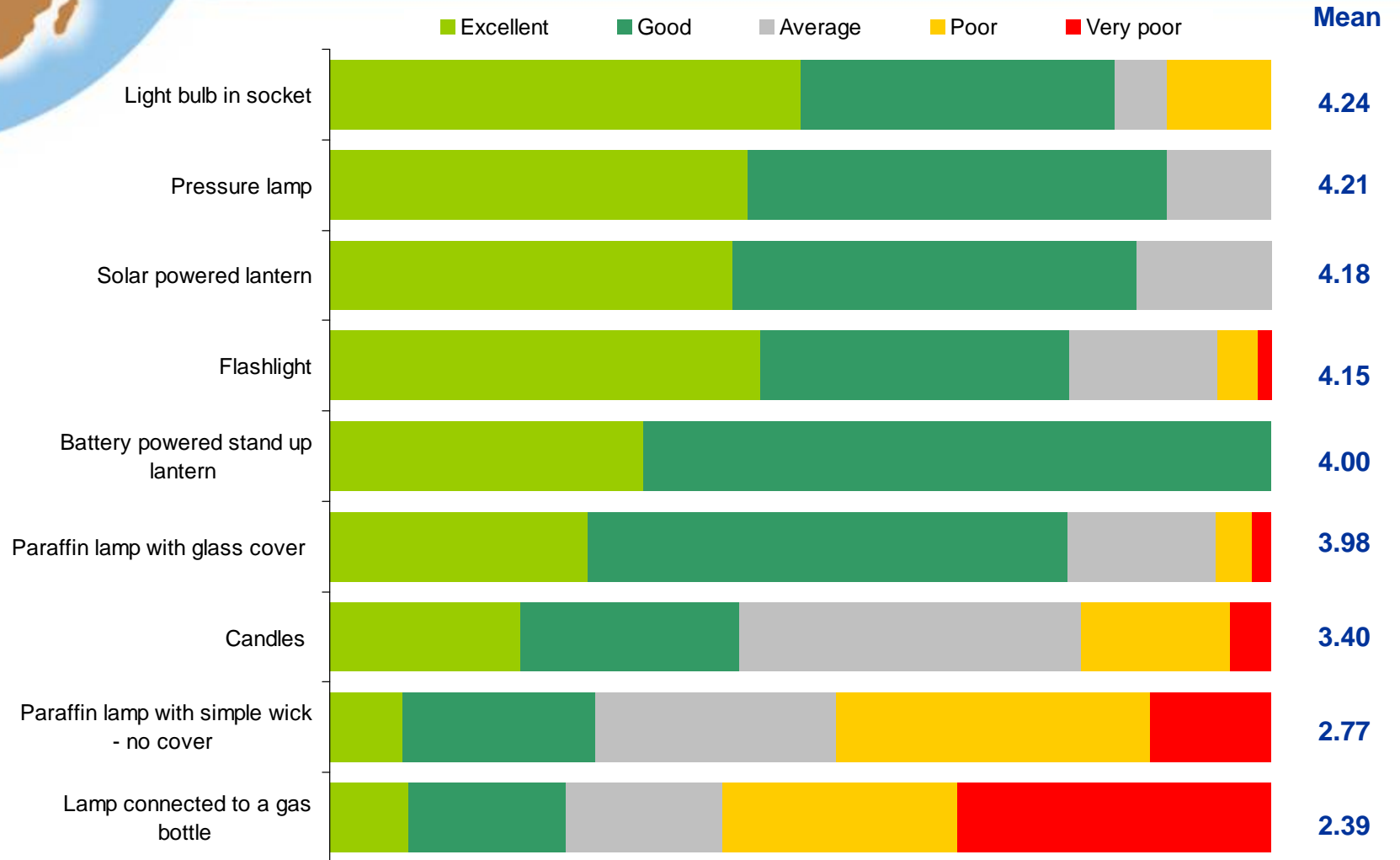


	Total	Firelight	Paraffin lamp (glass cover)	Candles	Paraffin lamp (wick – no cover)	Light bulb in socket or lamp	Flashlight or torch
Base samples	1006	108	142	38	693	83	103
Does not provide adequate lighting.	25	17	25	39	25	5	33
It is expensive		0	4	-	-	-	
It is too smoky, hence pollutes the air	27	31	26	24	34	-	25
It's delicate hence must be handled with care	2	0	8	-	-	-	-
Go off easily when blown by wind	2	3	4	5	2	-	7
It is a health hazard	10	13	0	16	12	-	9
It can easily burn the house	3		5	-	4	-	
Stresses the eyes during use	8	17	0	-	9	2	7
It has some inconveniences like kerosene drying in the middle of the night	2	7	8	-	3	6	12
It's not long lasting	2	-	0	-	-	5	
Power cuts are so frequent	0	3	-	-	-	5	



Rating on Quality

Q. 56 "For each of the devices that I read, how would you generally rate the quality?"

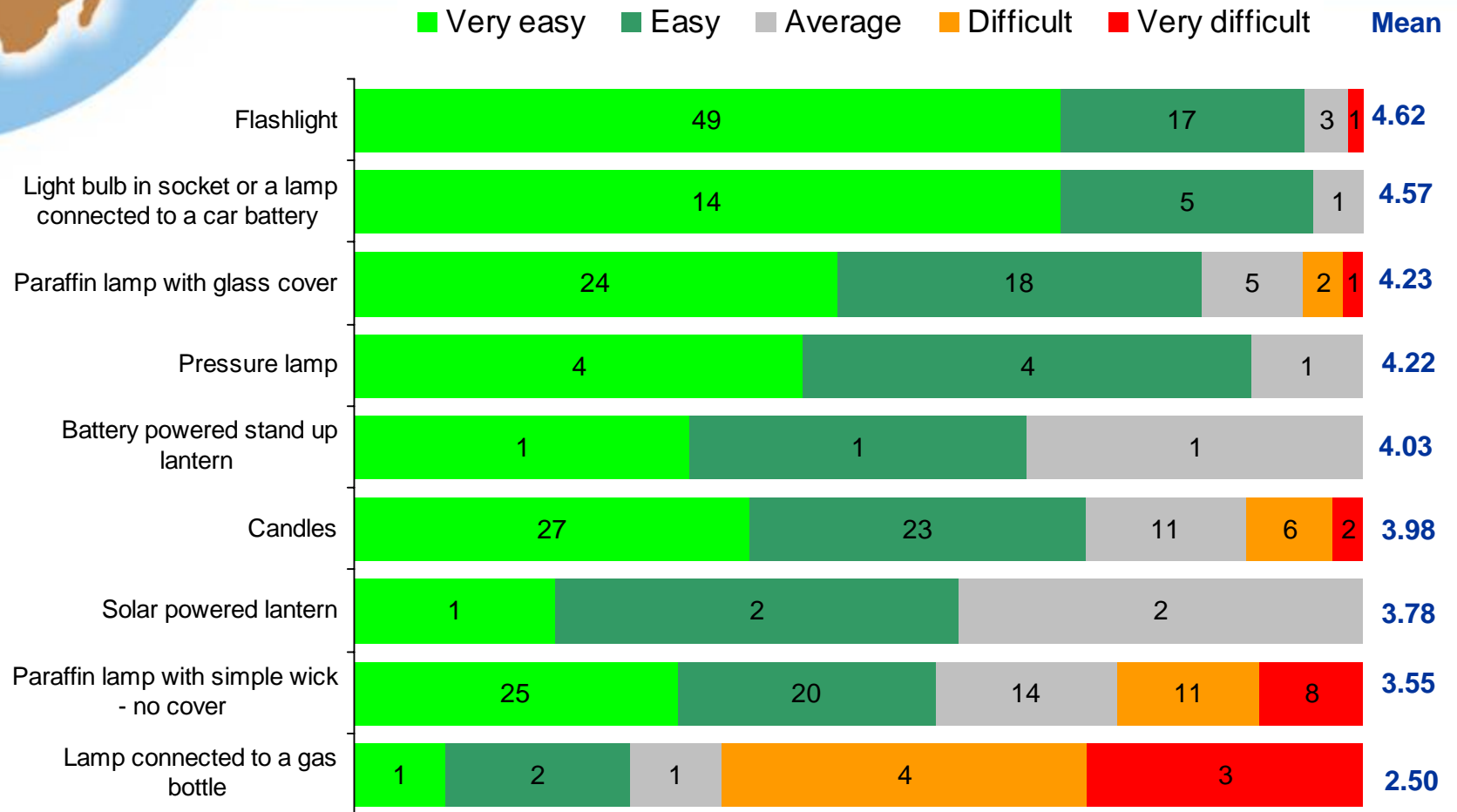


Base (consumer): Total sample =1006



Rating on Ease of Operation

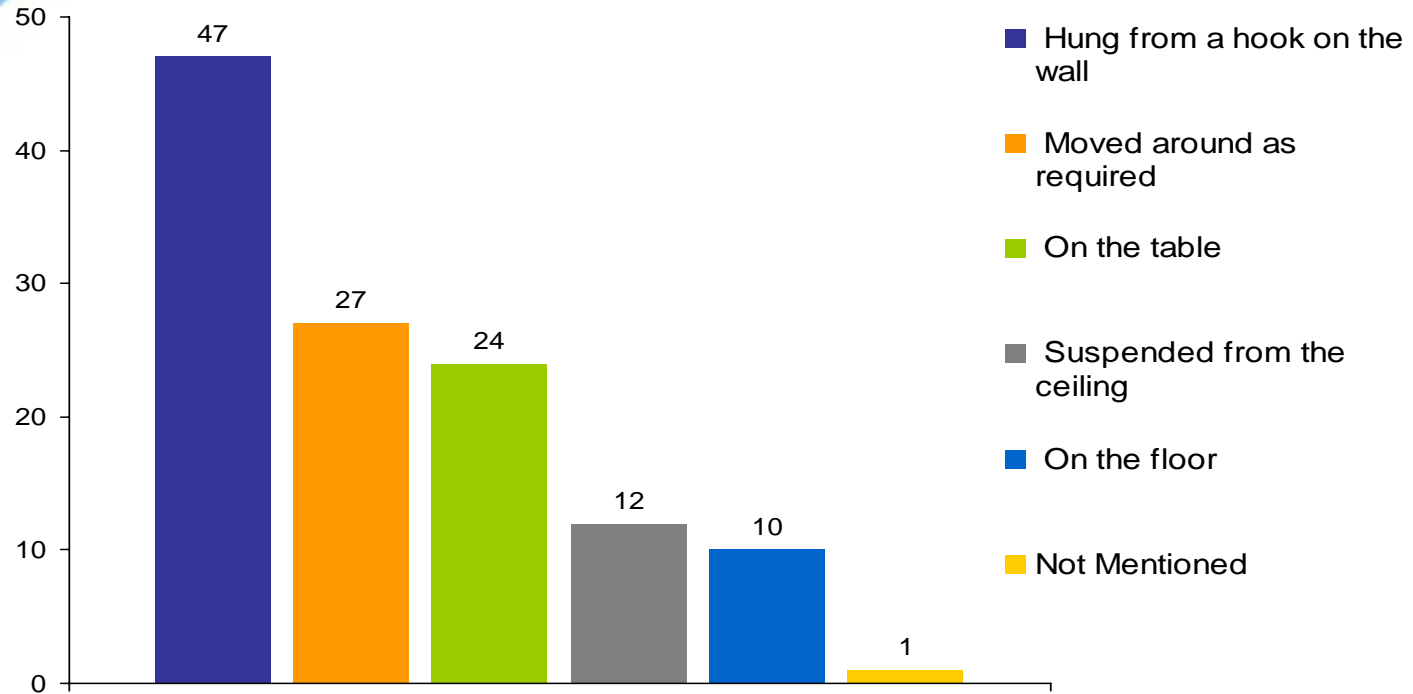
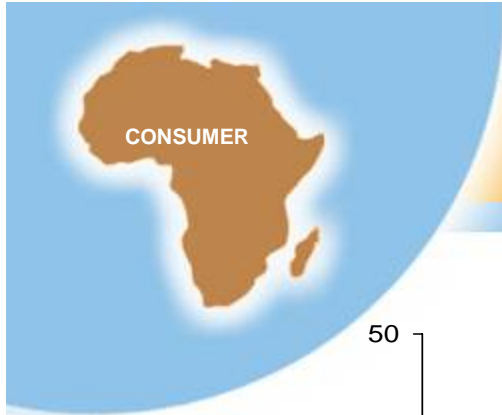
Q. 57 "For each of these devices how would you rate the ease of operation?"



Base: Total sample =1006

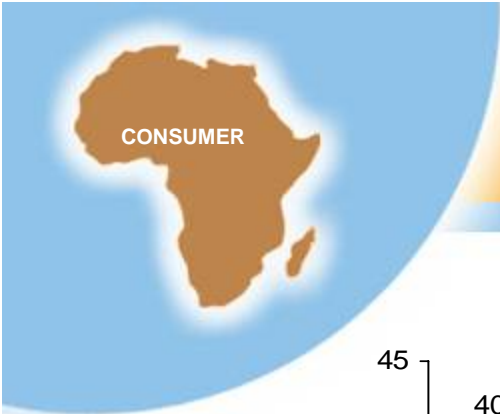
Placement of Lighting Devices

Q. 36a "Where were the lights in the main room located?"



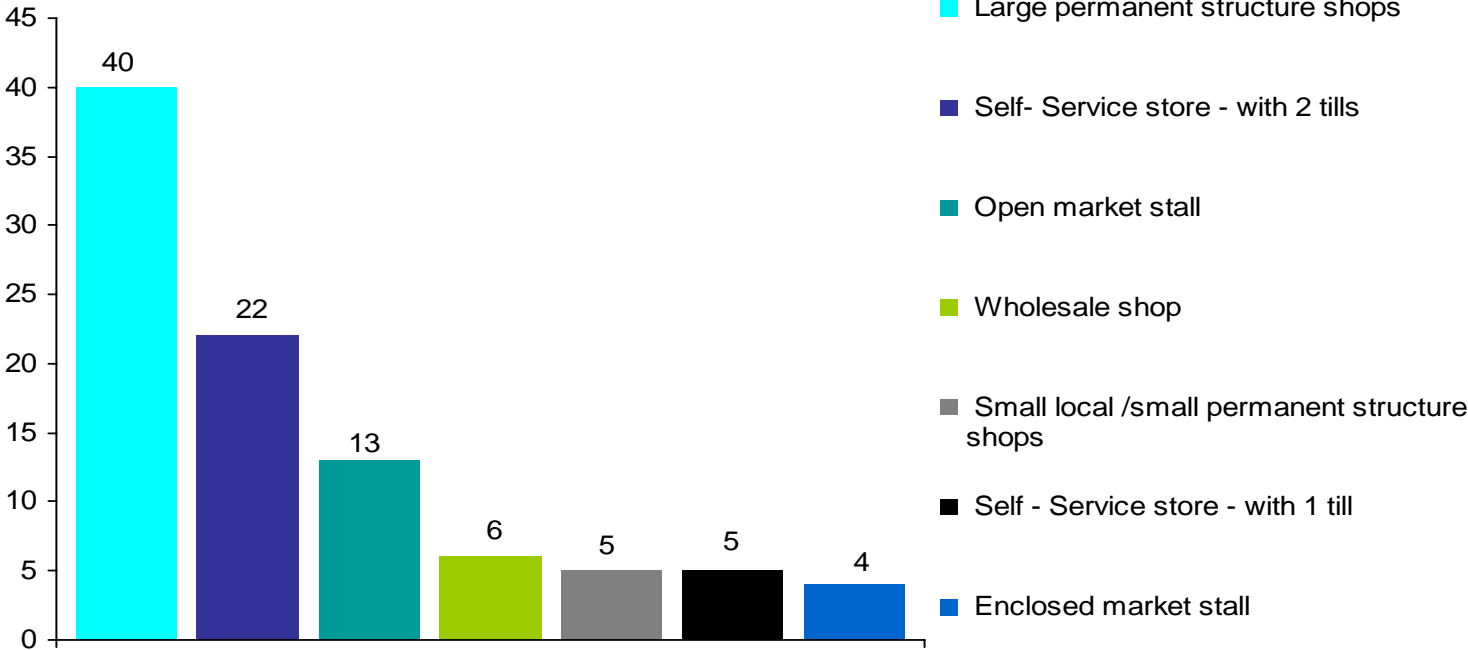
Lighting devices are hung from a hook on the wall 47% with 27% moving around with them and 24% place on the table – generally lighting devices are placed in such a way that they have maximum light impact on the room they are in.

Base: Total sample =1006



Place of Purchase

Q. 55 "I am now going to read out a list of lighting devices, for each one I would like you to tell me where you would generally purchase these?"



The most common place of purchase for lighting devices is large permanent structure shops

Base: Total Sample =1006



Purchasing Paraffin/ Kerosene

Q. 51 "How do you usually buy your paraffin/kerosene; in litres or another measurement?"

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.



Others 7%

Bottles 11%

Kerosene pump 82%



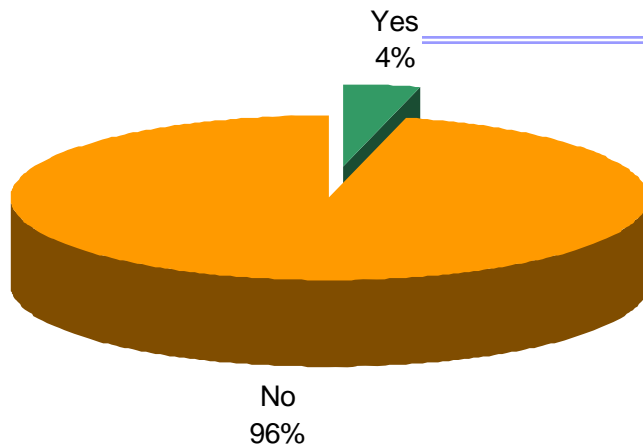
Base = 804: All who use paraffin/Kerosene



Health Effects of Paraffin / Kerosene

Q. 53b “Do you worry about the health effects of using paraffin/kerosene?”

Q. 53c “What do you worry about in terms of health effects?”



Makes eyes itch	72%
Causes coughing	21%
Affects skin	10%
Causes asthma	3%
Causes headache	3%

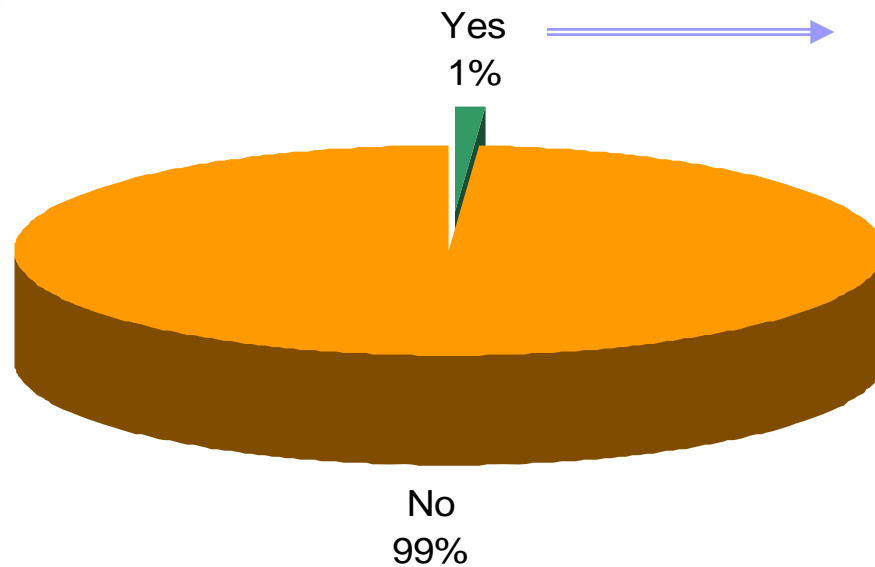
Base: All who use Paraffin/Kerosene= 804

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 coughing



Environmental Effects of Paraffin / Kerosene

Q. 53d "Do you ever worry about the environmental effects of using paraffin/kerosene?"



Environmental effects of using paraffin/kerosene:

The smoke produced is hazardous to vegetation and animals	40%
It can make the house get fire destroying property	60%

Base: All who use Paraffin/Kerosene= 804

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

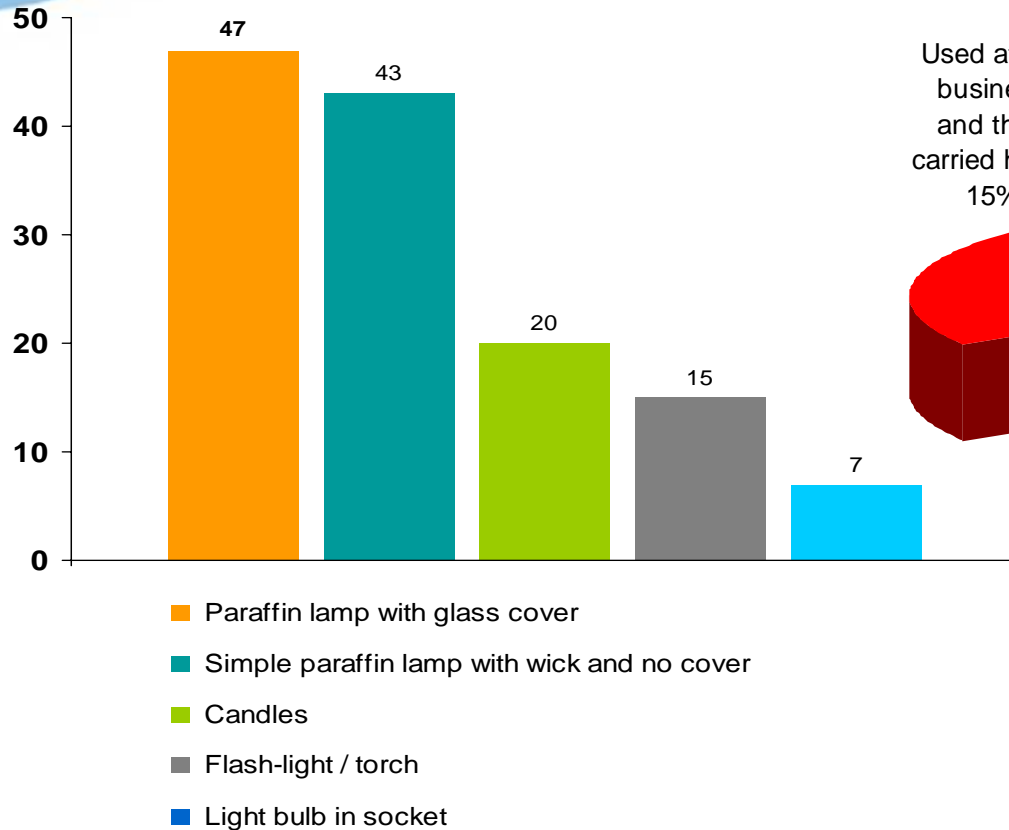
Catalyzing Markets for Modern Lighting

TRADERS



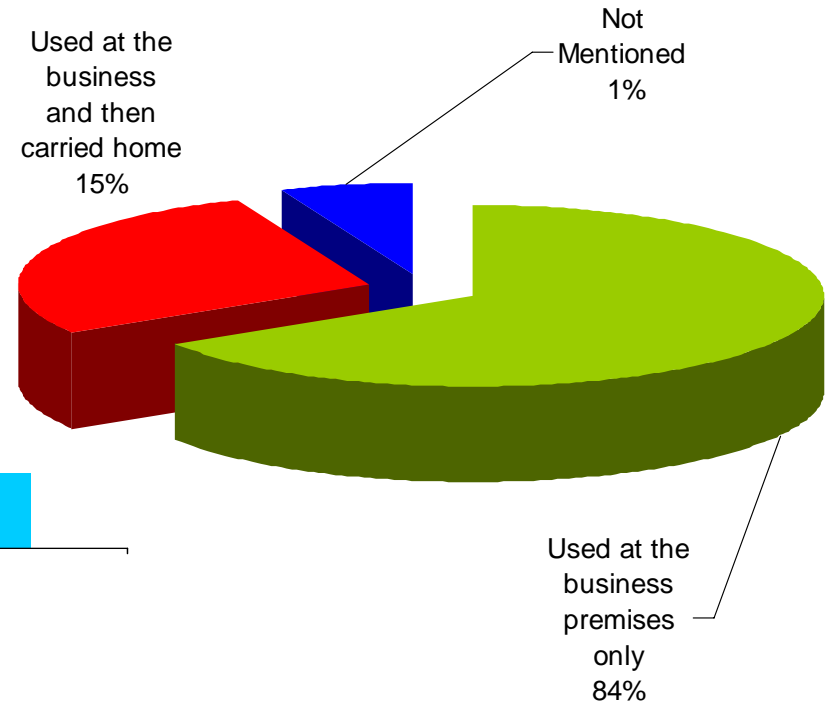
Types of Lighting Devices and Where Used

Q. 33 "What if anything is used to light the business?"



Base: All who use lights in their business = 178

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



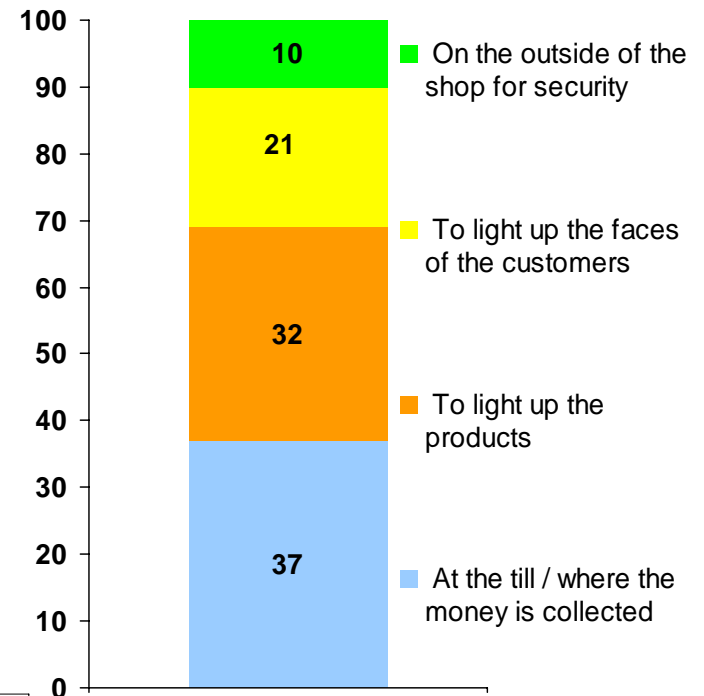
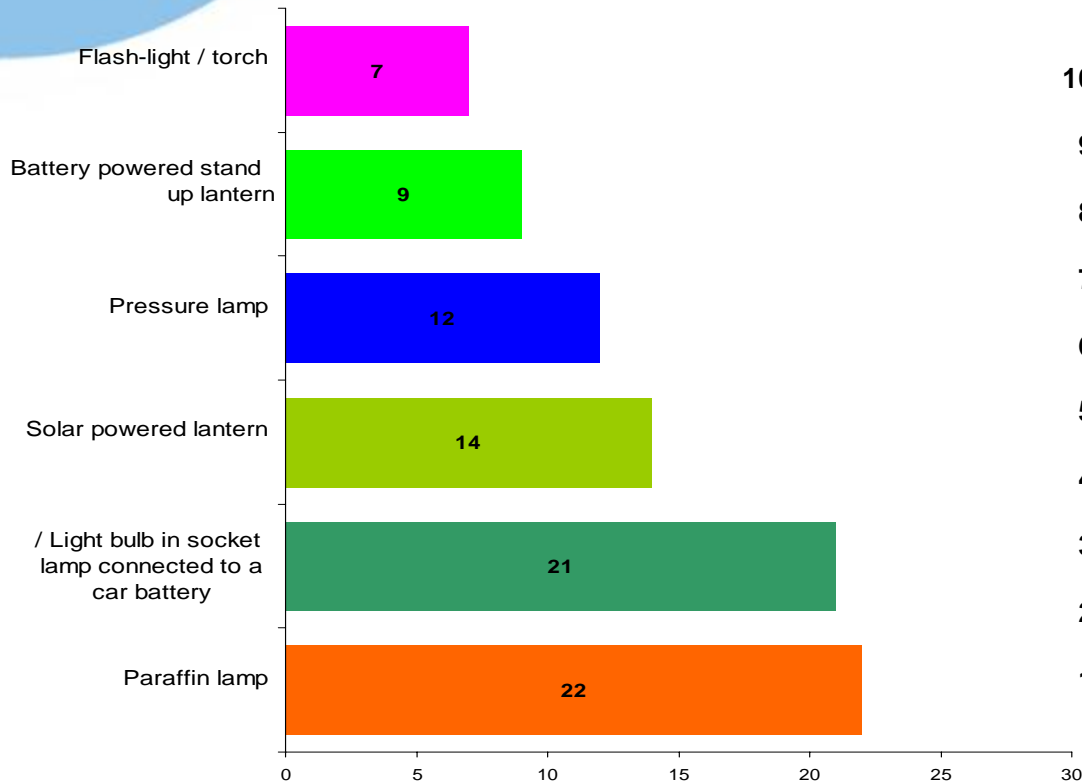
Base (310) = All those who light their business



Preferred Type of Light (Apart from Mains) and Preferred Positioning

Q. 43 "What is your preferred type of light ...?"

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



Base: Total sample =400

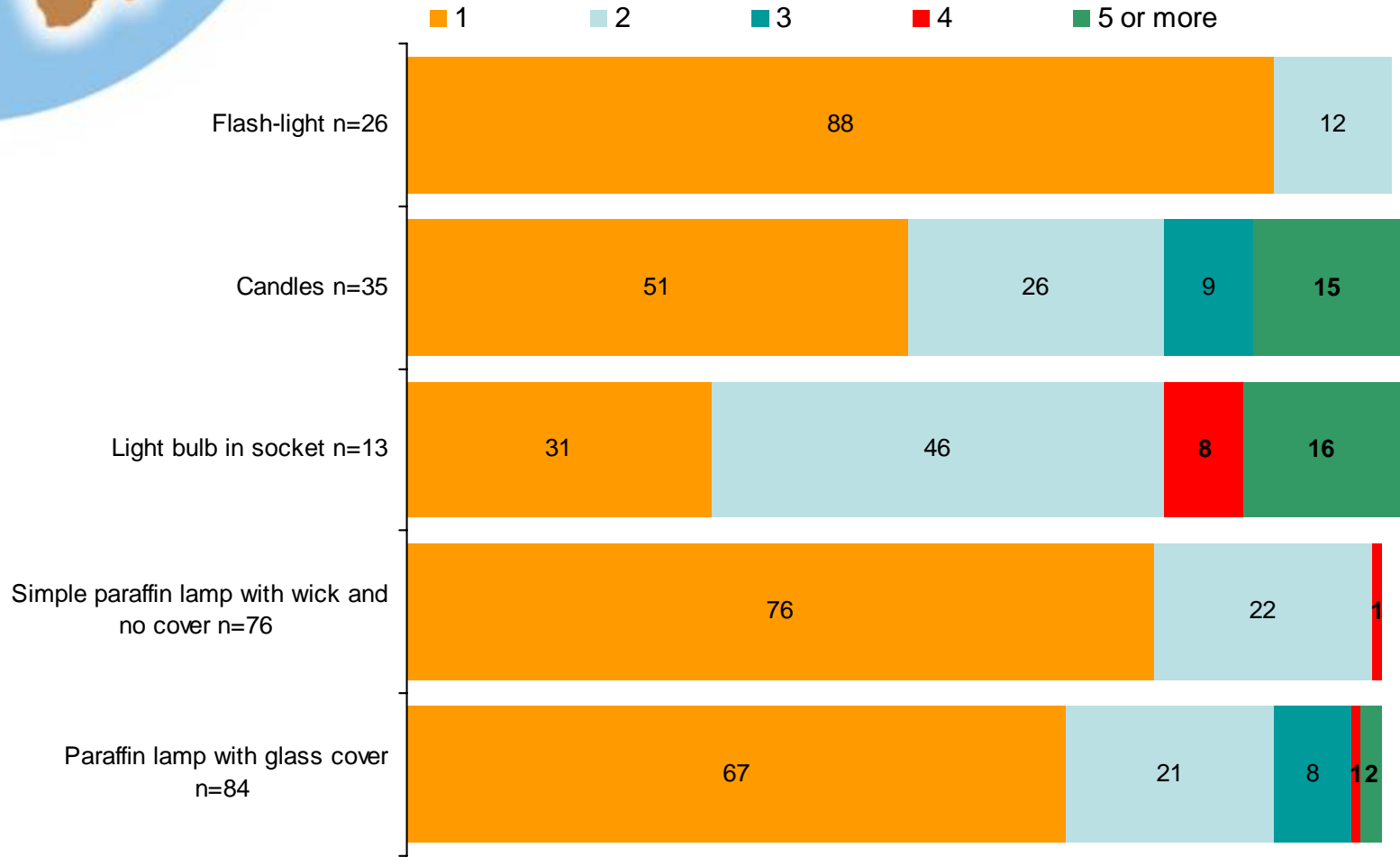
Base: Retail Shops = 370





Number of Each Lighting Device Used

Q. 34 "How many of each type of light do you use at the business currently?"



Base = All who use lights in their business



Lifespan of Lighting Devices

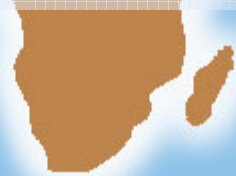
Q. 37 "For how long do the power sources last?"

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

LIGHTING AFRICA



LIGHTING COSTS





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?"

Conversion rate
1US \$ = ETB 9.95

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



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?"

Conversion rate
1US \$ = ETB 9.95

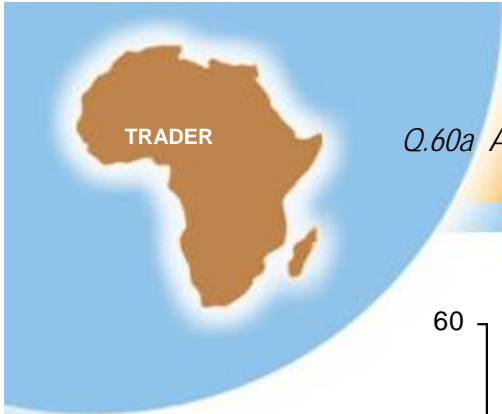
	Base	No. Owned	Cost of running per month	Cost of buying now
Paraffin lamp with glass cover	233	1	US \$2.62 (ETB 26.07)	US \$6.31 (ETB 62.82)
Simple paraffin lamp with wick and no cover	21	1	US \$2.07 (ETB 20.60)	US \$0.65 (ETB 6.50)
Pressure lamp	26	1	US \$6.89 (ETB 68.57)	US \$2.8 (ETB 27.40)
Light bulb in socket or a lamp connected to a car battery	30	2	US \$3.06 (ETB 30.43)	US \$1.86 (ETB 18.46)
Candles	46	2	US \$1.29 (ETB 12.87)	US \$0.8 (ETB 7.95)
Flash-light / torch	53	1	US \$1.93 (ETB 19.18)	US \$1.42 (ETB 14.12)



Summary: Average Claimed Spend per Month on Current Lighting Devices

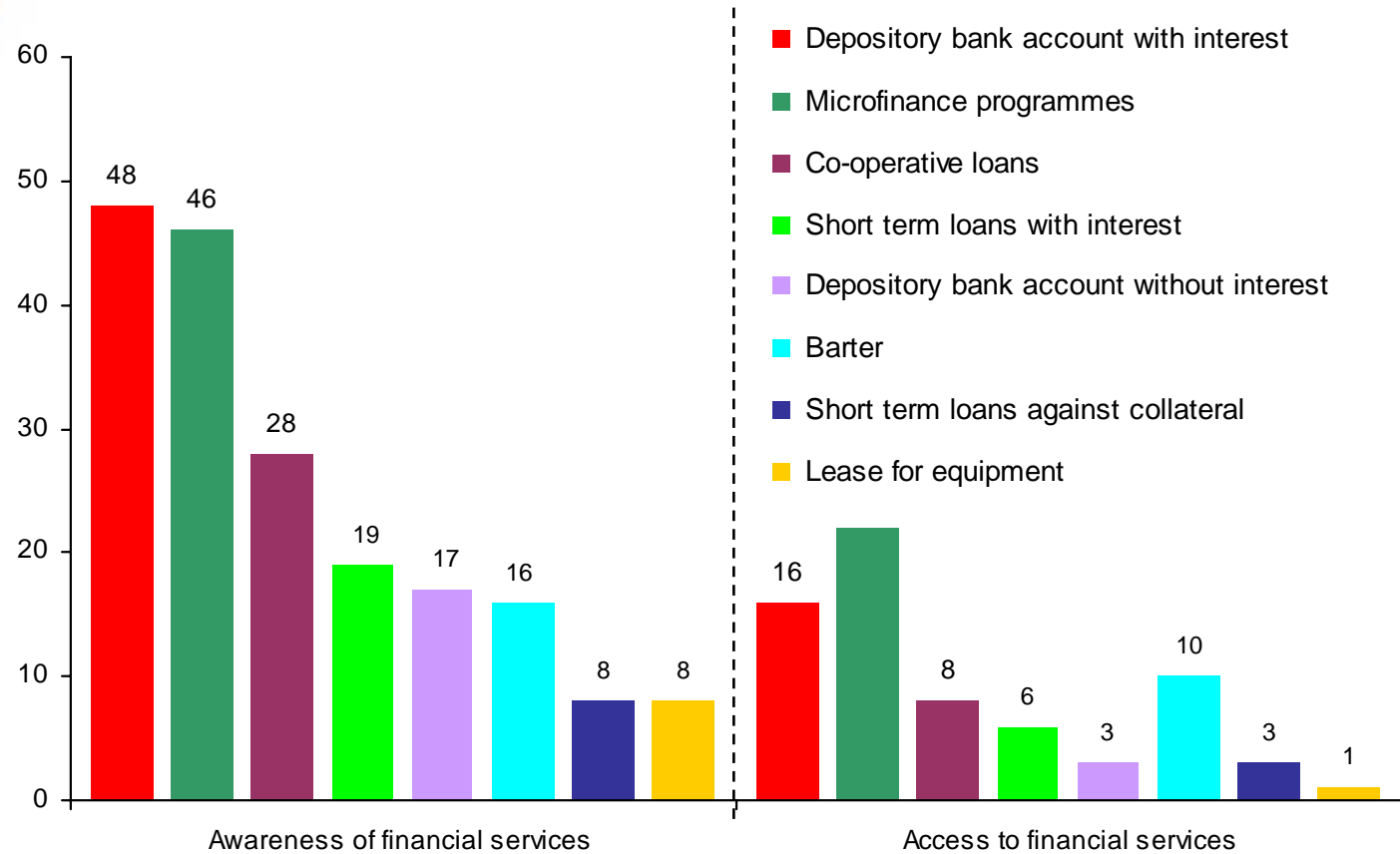
Conversion rate
1US \$ = ETB 9.95

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



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 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

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



MODERN LIGHTING PRODUCT EVALUATION





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

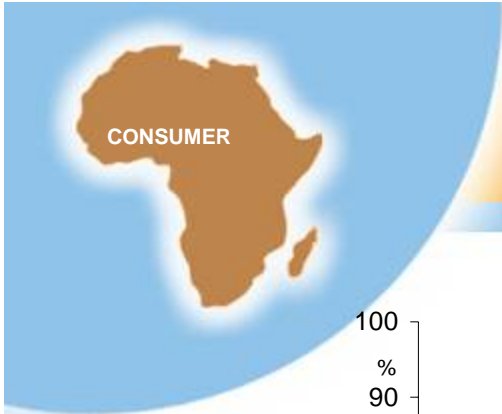
- The Price Sensitivity Measure has been devised in order to ascertain what is the most acceptable price range for a particular product or service within a given market
- In order to ascertain the range we ask each respondent 4 questions:
 - At which point would the product/service be considered cheap
 - 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

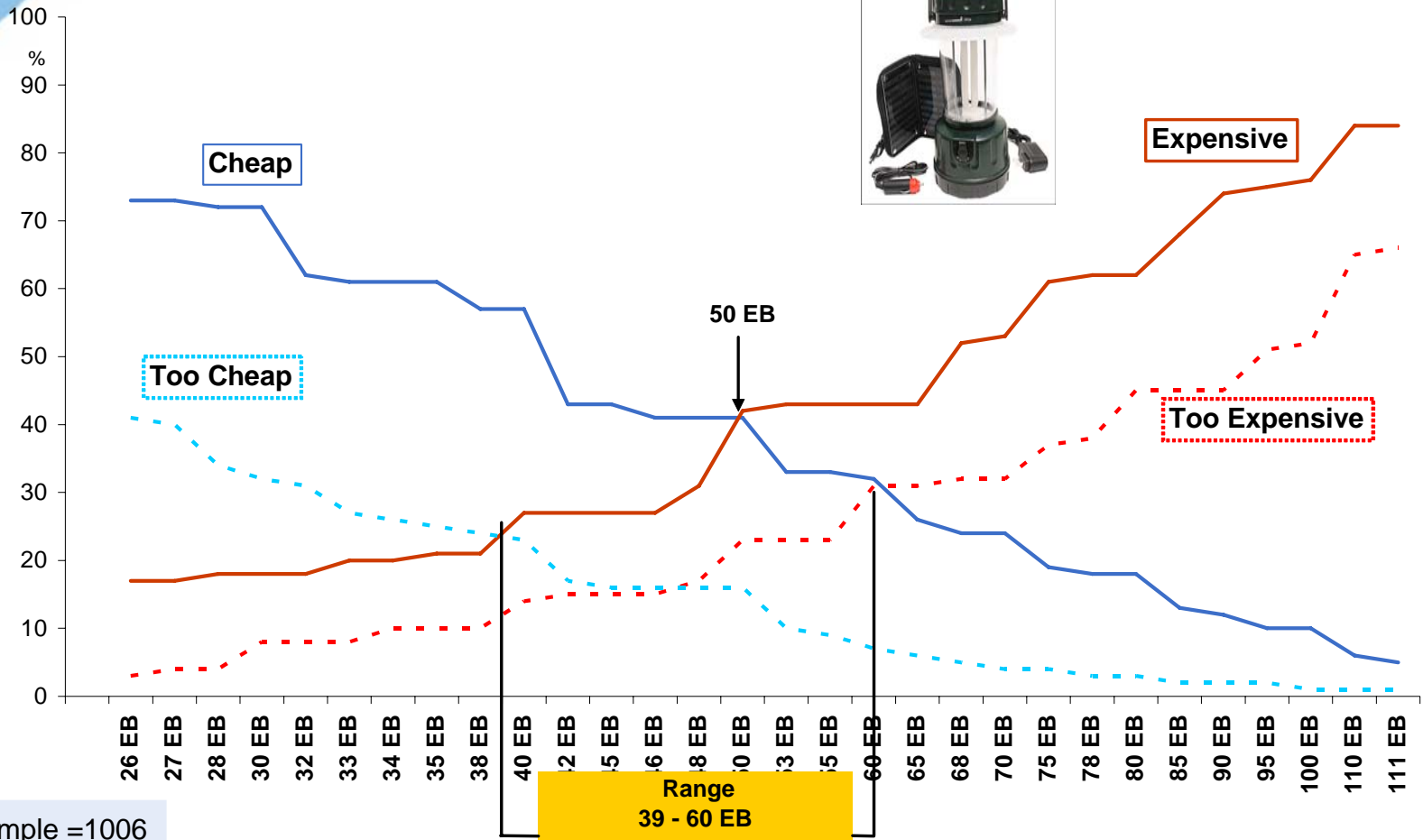




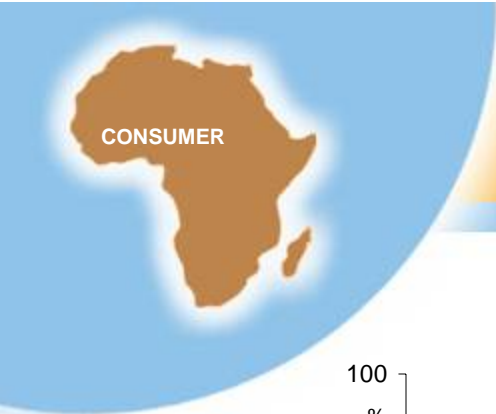
PSM: Rechargeable Lantern



Base: Total sample =1006

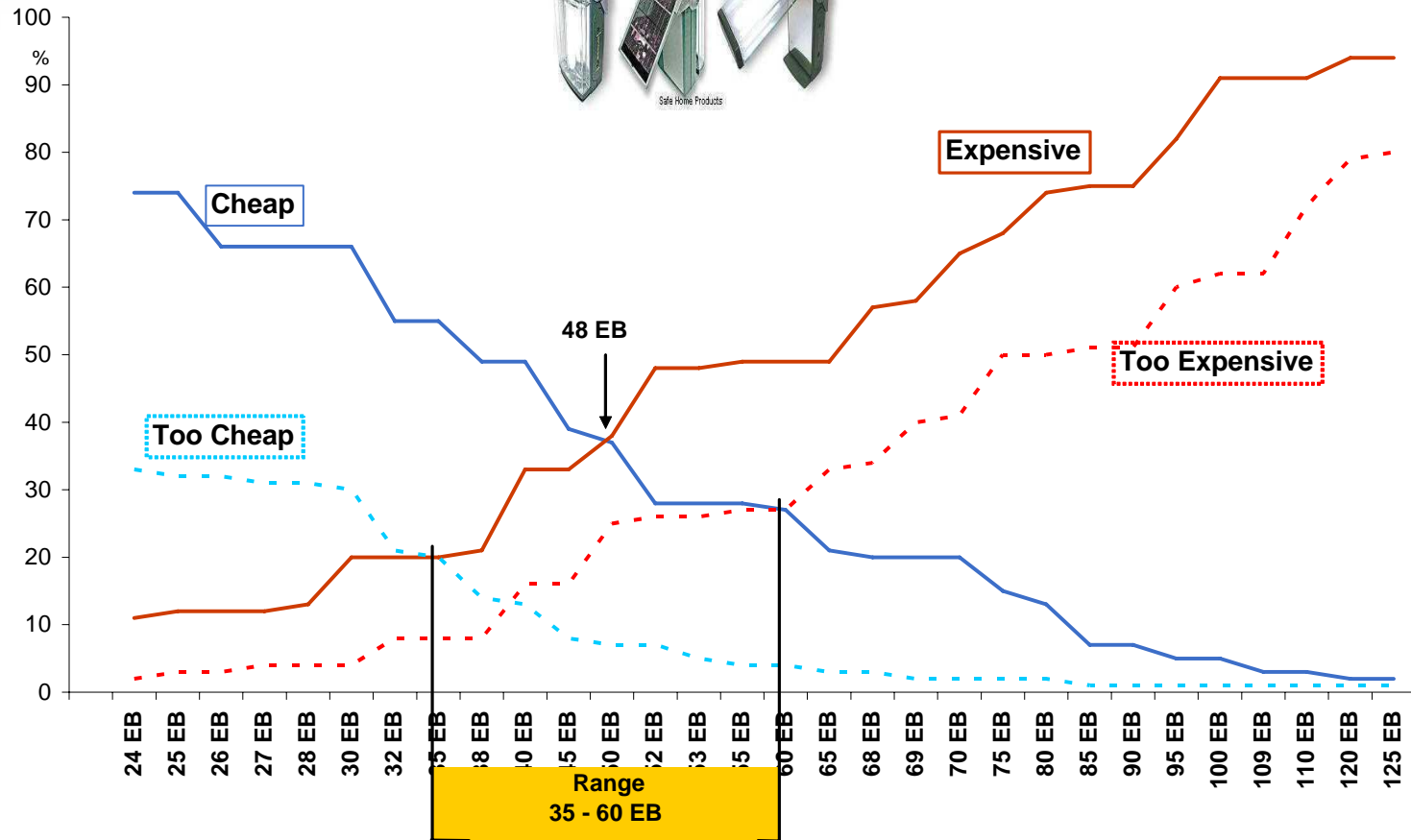


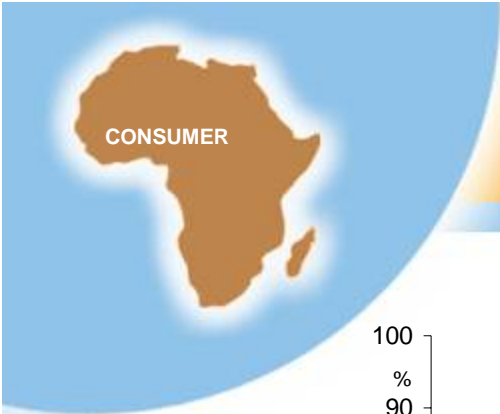
Base: Total sample =1006



PSM: Rechargeable Task Light

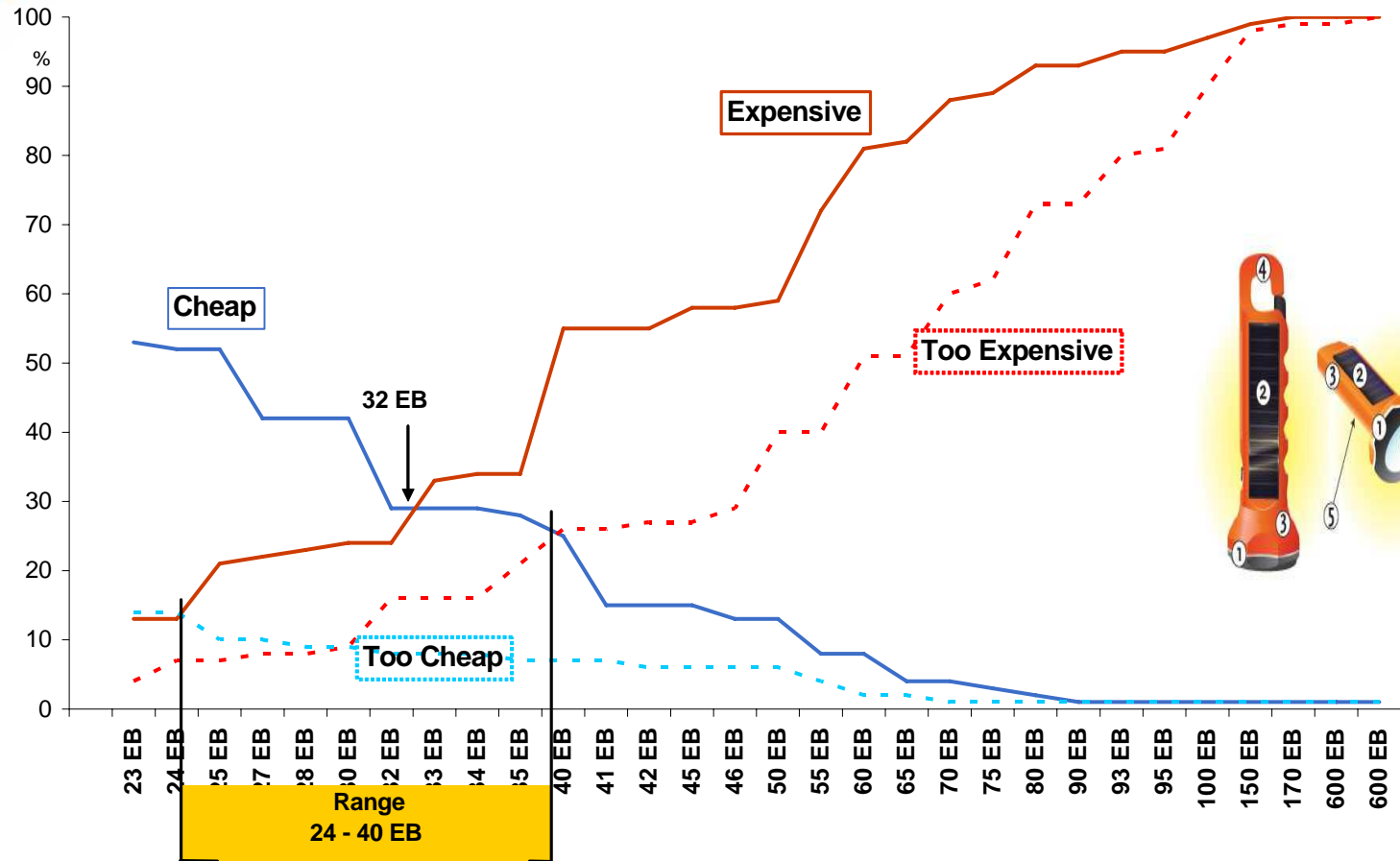
Base: Total sample = 1006





PSM: Rechargeable Torch

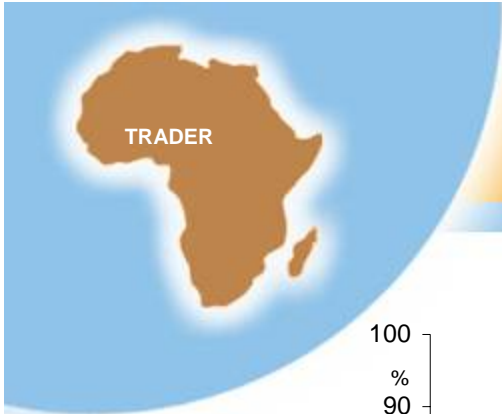
Base: Total sample = 1006



LIGHTING AFRICA

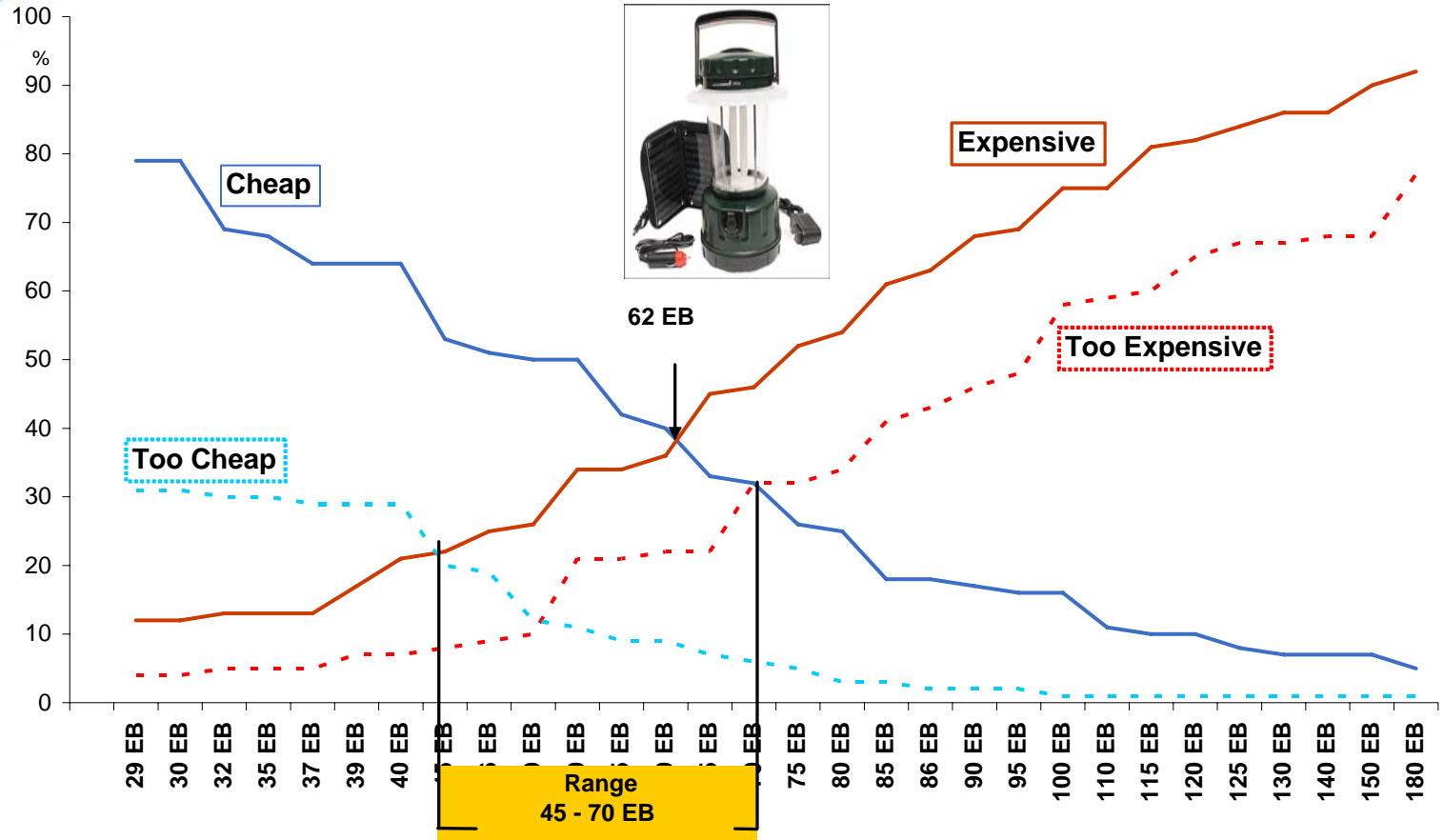
Catalyzing Markets for Modern Lighting

TRADERS

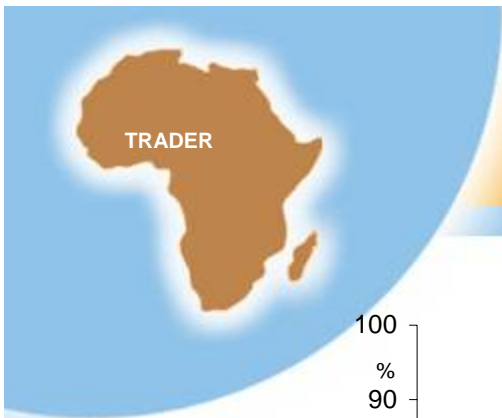


PSM: Rechargeable Lantern

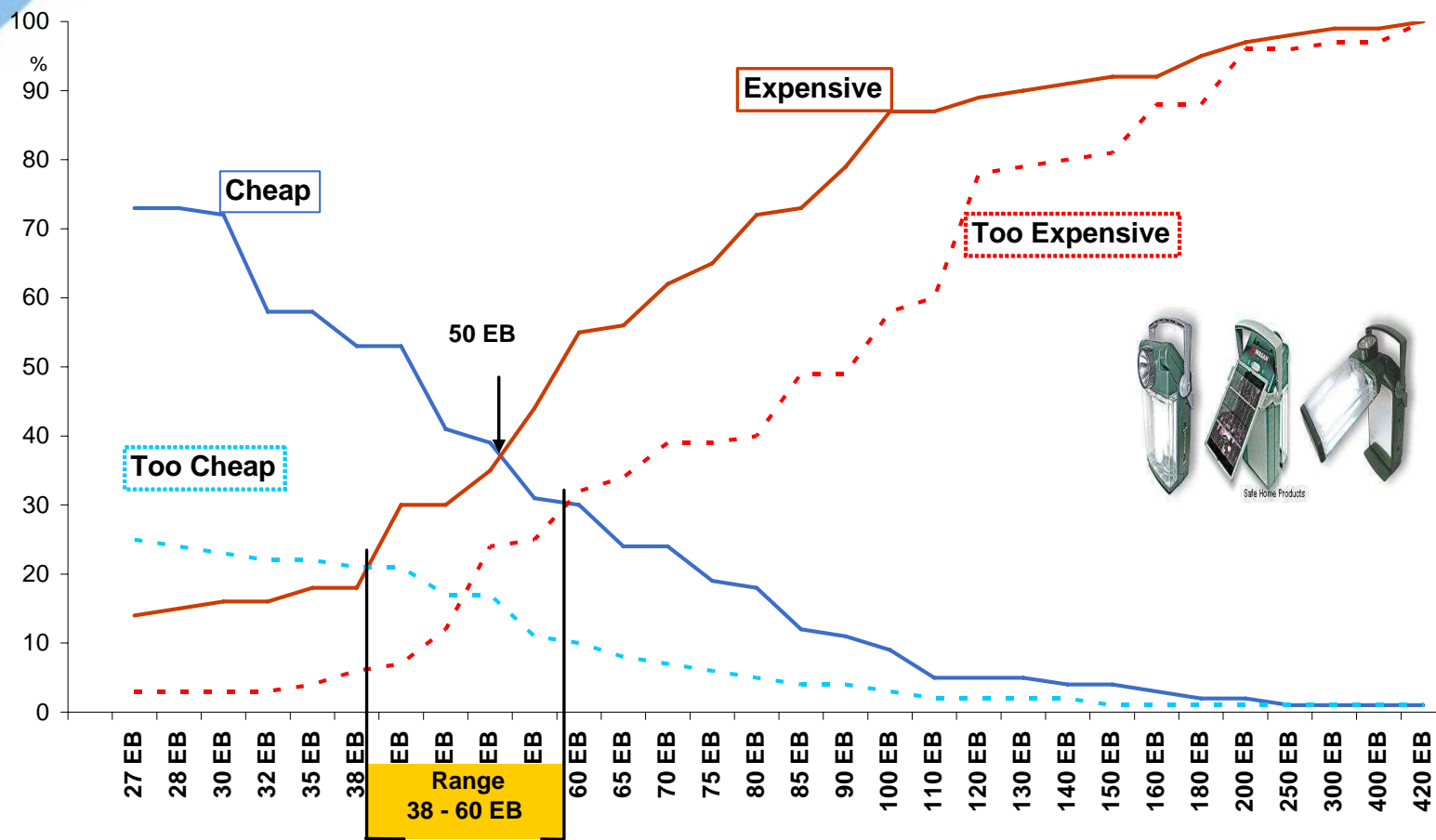
Base: Total sample =400

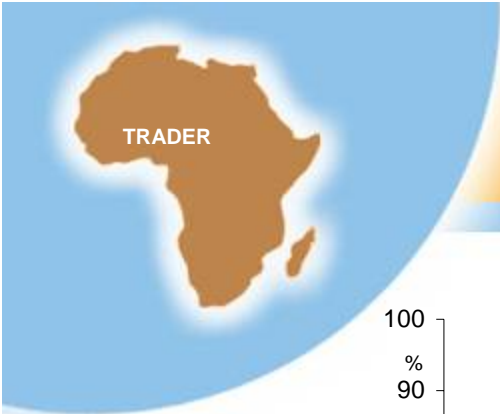


PSM: Rechargeable Task Light



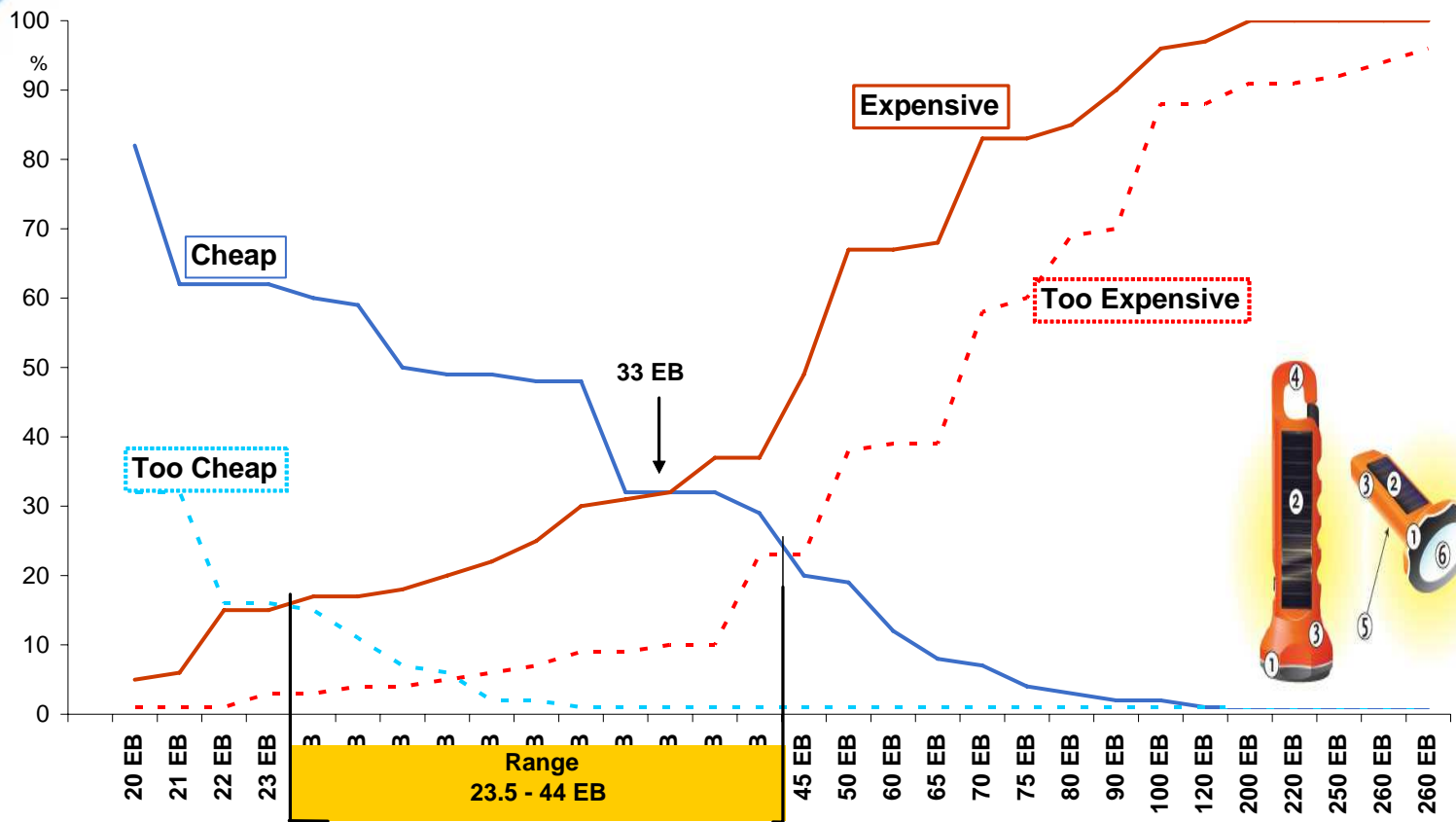
Base: Total sample =400

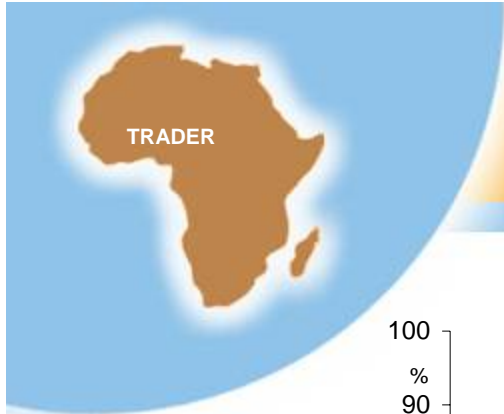




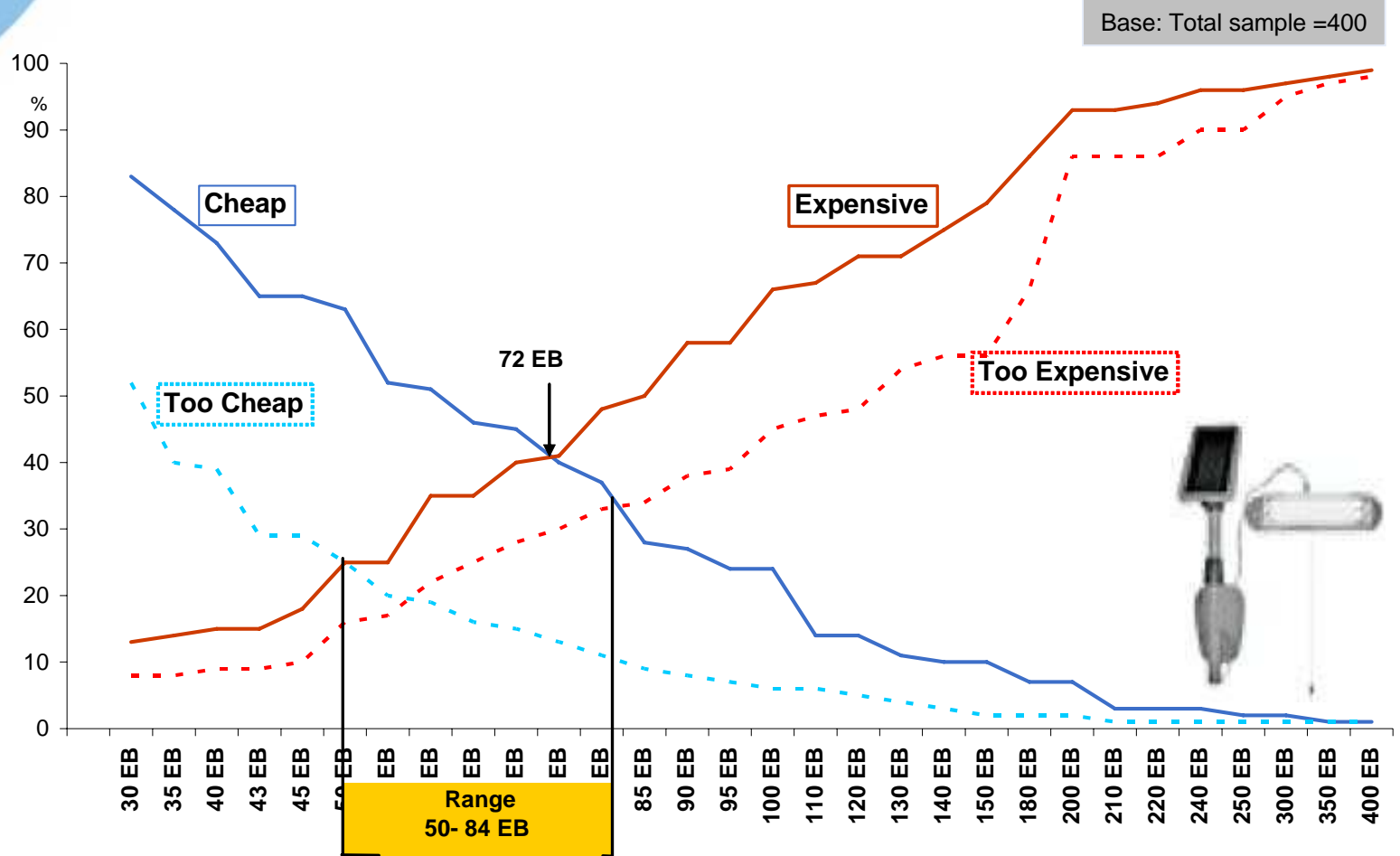
PSM: Rechargeable Torch

Base: Total sample =400





PSM: Rechargeable Flood Light









Summary: Most Acceptable Price Point

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

Conversion rate
1US \$ = ETB 9.95

		Household	Trade
	Lantern	US \$5.02 (ETB 50)	US \$6.23 (ETB 62)
	Torch	US \$3.22 (ETB 32)	US \$3.32 (ETB 33)
	Task Light	US \$4.82 (ETB 48)	US \$5.02 (ETB 50)
	Flood Light	N/A	US \$7.24 (ETB 72)



Home Lighting Concept

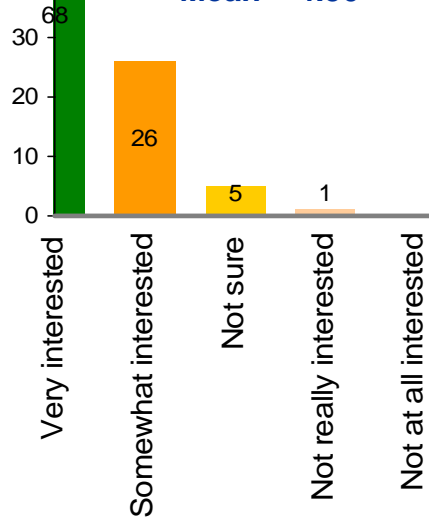




Consumers: Evaluation of Lighting Concept

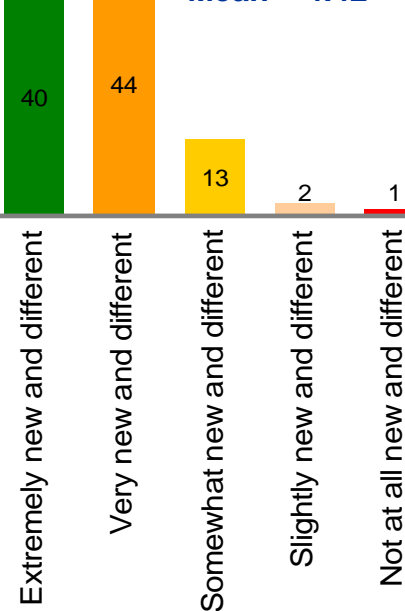
Q. 64 "How interested would you be in having the following lighting solution for your household?"

Mean = 4.50



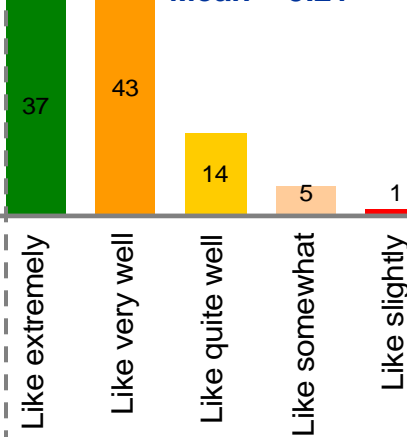
Q. 65 "Which of these phrases best describes how new and different you think this lighting solution is than other lighting solutions currently available in the market?"

Mean = 4.42



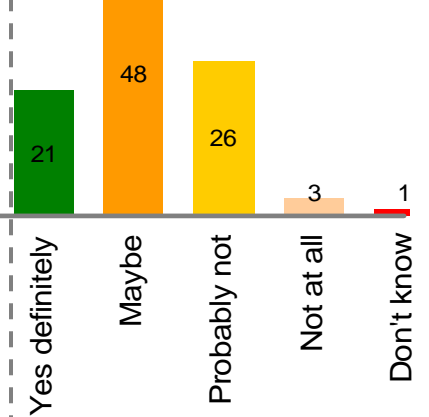
Q. 66 "What statement best describes how much you think you would like or dislike this lighting product?"

Mean = 5.21



Q. 67 "Do you think a product of this type would be adequate for your household lighting needs?"

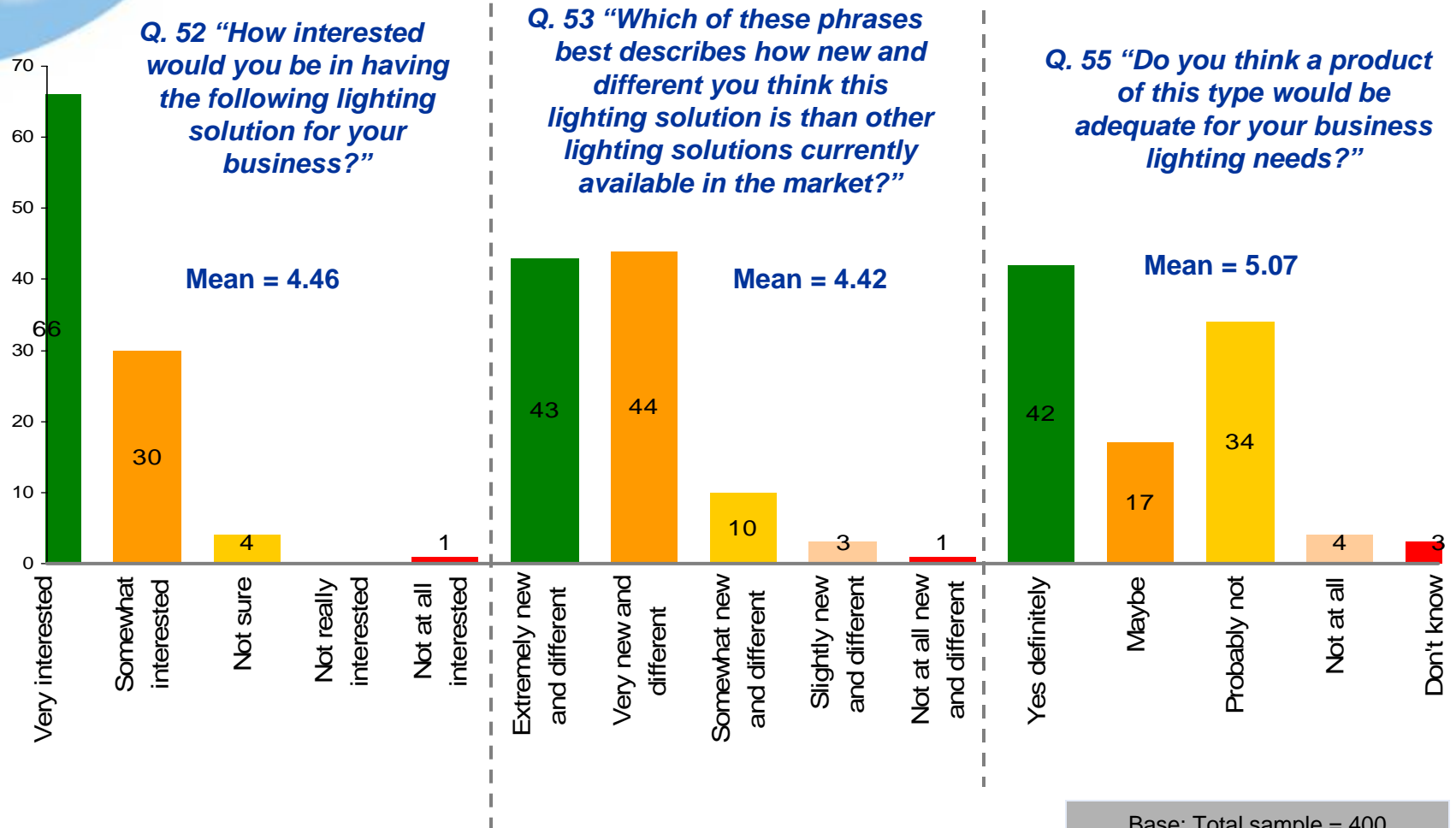
Mean = 4.74



Base: Total sample =1006



Business: Evaluation of Lighting Concept



Base: Total sample = 400

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting



ETHIOPIA SUMMARIES

LIGHTING AFRICA

Catalyzing Markets for Modern Lighting

CONSUMERS





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



Summary: 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

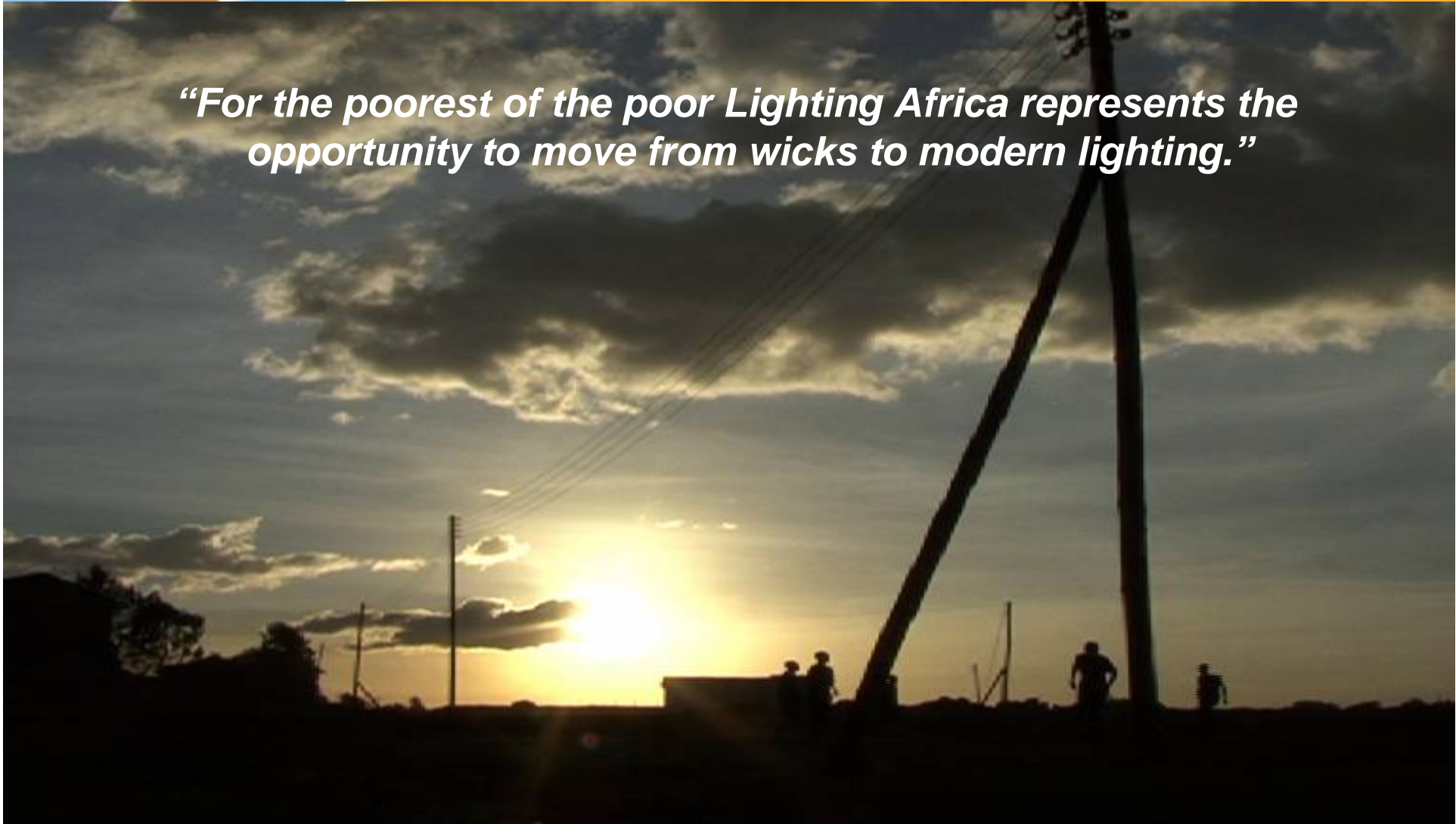
Current Lighting Devices

- 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



Salient Thought

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



www.lightingafrica.org

Corporate Sponsors





RESEARCH INTERNATIONAL