



Consumer survey on the impact of NTT'S SOLAR SERVICE SYSTEM IN NIGERIA

October 2020



Nayo Tropical Technology Limited (“NTT”) is a Nigerian pioneer indigenous renewable energy company founded in 1996, with head office in Abuja and operations across the country.

NTT has been at the forefront of solar mini-grid development in Nigeria for the last 18 years and currently owns and operates four solar mini-grids on its MG-business unit. Recently, NTT is expanding its solar mini grid portfolio with 14 new under construction.

The Company has successfully built a cumulative capacity of over 5 MW of energy production. The majority of these installations have been EPC contracts for private sector entities, multilaterals and federal and state governments.

Project details

In June 2020, NTT contracted Seopad Nigeria Limited to conduct a consumer survey across a select number of NTT mini grid sites to understand the impact of NTT products and services on consumers in rural Nigeria. Specifically, this survey attempts to answer the research question:

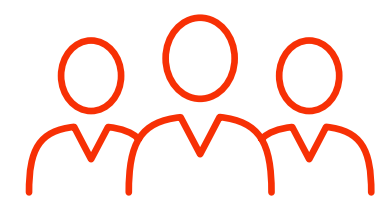
How does access to electricity impact the livelihoods of the rural consumers on NTT's sites?

Seopad Nigeria Limited is a boutique consulting firm based in Lagos, Nigeria with extensive experience advising several Development Finance Institutions (DFIs) and not-for-profit organizations.



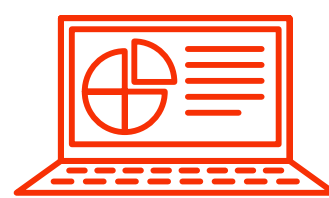
questionnaire design

60 questions
closed-end questions
multiple-choice questions
ordinal questions



sample size

120 respondents
randomly selected
spread across 4 sites:
Old Chikuku, Kare,
Tunga Jika and
Mokoloki



data collection

face to face interviews
digital capture and store
through *Odyssey Energy
Solutions platform*



data analysis

data validation
and analysis by
Seopad consultants



Executive summary



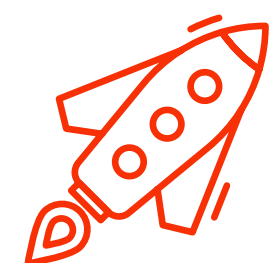
- The majority of respondents (90.8%) in the consumer survey were **male**
- Customers have been with NTT for an average of **10 months** (Old Chikuku), **30 months** (Tunganjika), **6 months** (Mokoloki) and **17 months** (Kare)
- **Kare** hosted the largest number of respondents and is NTT's largest site
- Households were split evenly **by gender**
- There was an average of **9 people** in each household
- Most members of each household had **education** up to a primary level



- **Agriculture** is the primary source of income for NTT consumers
- 83% of households have at least one **mobile phone**
- 31.7% do not track their **weekly spend** on airtime top-up, however, all respondents who do (68.3%) spend under NGN250 weekly



- Before NTT, no households were connected to the **national grid**
- Before NTT, torches and kerosene are the two **main light sources** for households
- Before NTT, 90% of households got under **5 hours of light** from all lighting sources combined – with most getting between 3 to 4 hours
- Post NTT, torches remained an **alternate source** of lighting for all households
- Post NTT, for many households there was a **4x cost saving on energy**
- Post NTT, **additional hours of light** are mainly spent planning for the week and on family time



- Post NTT, 56.3% of all business activities carried out were **new ventures**
- Post NTT, businesses recorded **increased revenue**, between 20% to 60%
- Consensus view is that the NTT has **improved the quality of life** of each member of each household

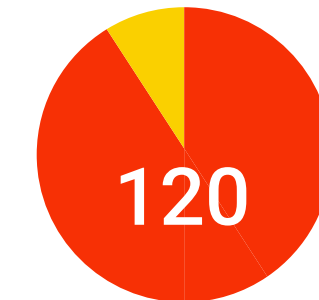


- Post NTT, 66.7% of children spent more time doing **homework** and 86% of these saw an **improvement in grades**
- Post NTT, households felt that **women and children benefitted most** from using mini grid power
- NTT did not change the number of respondents using **mobile money** (15%) but did increase the frequency for those that did use mobile money
- 85% of respondents felt there was **no financial trade off** to using NTT
- 100% of households feel both **healthier and safer** as a result of the NTT

Demographic breakdown

Gender

Whilst the majority of respondents were male, this statistic only represents the gender of the respondent and does not reflect the gender split of the household.

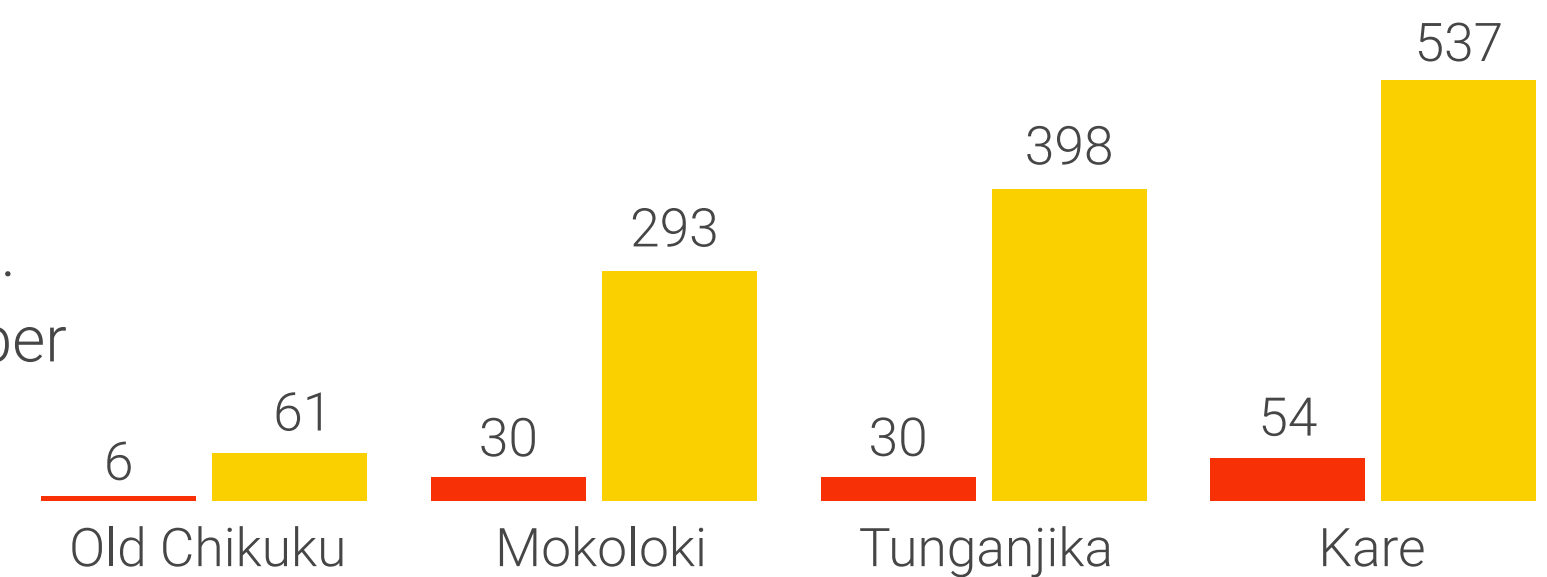


9.2% female
90.8% male

Location

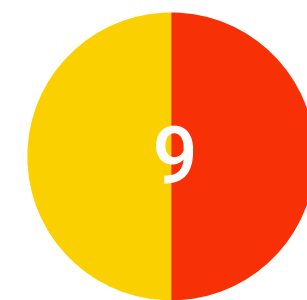
The number of respondents at each site was proportionate to the size of each site. For example, Kare hosts the largest number of respondents as it is the largest site.

respondents customers



Household gender

Number of people per household was high, with households split evenly by gender.

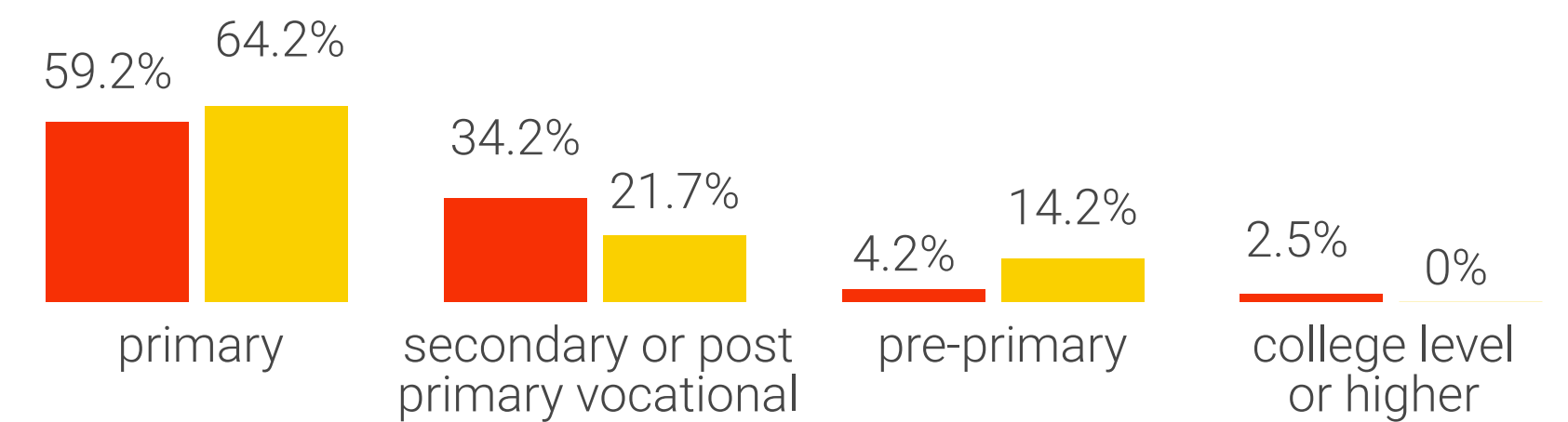


50.1% female
49.9% male

Household education level

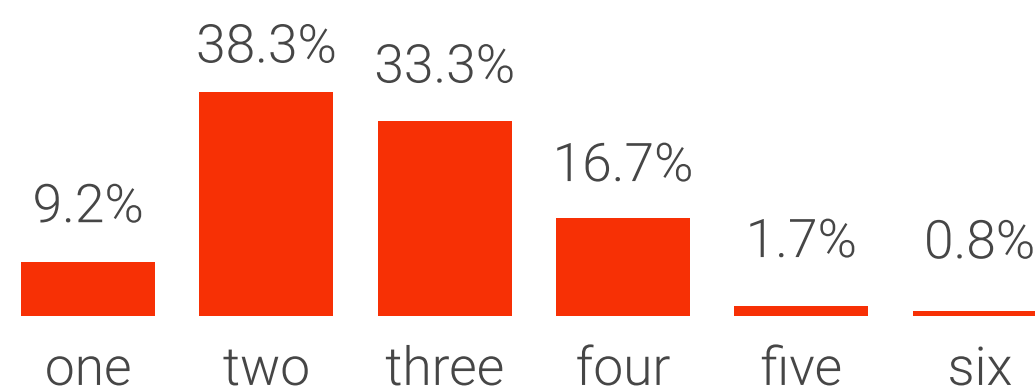
Most households, including women, were educated up to Primary level

all female



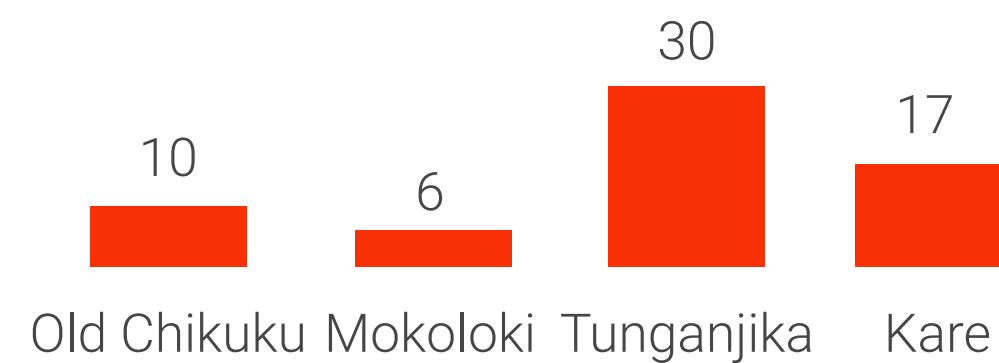
Household numbers

Number of people per household



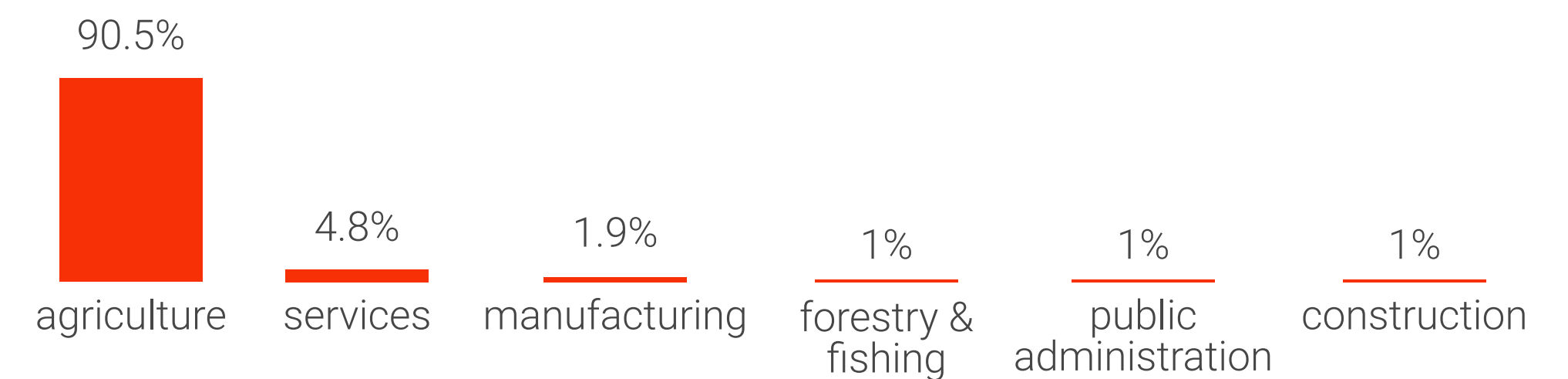
Connection time

Number of months customers have been with NTT by location.



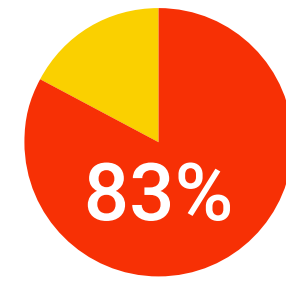
Household income source

Agriculture is the primary source of income for NTT consumers.



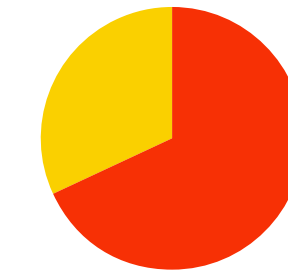
Mobile phone ownership

The majority of households had at least 1 mobile phone, the average being **2**.



Weekly spend

A sizeable amount of respondents do not track their weekly spend on airtime top-up, however, all respondents who do, spend ≤NGN 250 weekly.



31.7% don't know
68.3% NGN 250 or below

Before & after NTT mini-grid

Grid connection

No households were connected to the national grid.

All households are connected to NTT's solar mini-grid and they receive constant electricity from NTT.

Light sources

Torches and kerosene are the two main light sources.

93.3% torches **82.5%** kerosene **39.2%** candles **26.7%** Diesel generator

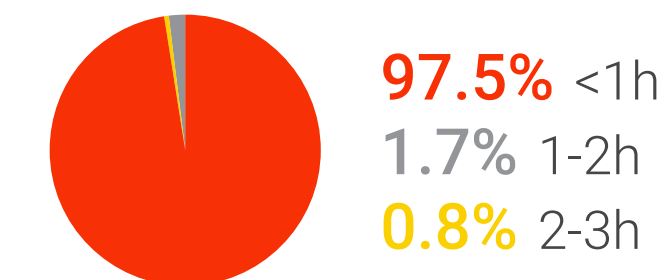
Torches (100%) remain an alternate source of lighting.

Hours supply / day from light sources

90% of households get **<5h** of light from all sources combined, **most** getting **3-4h**.



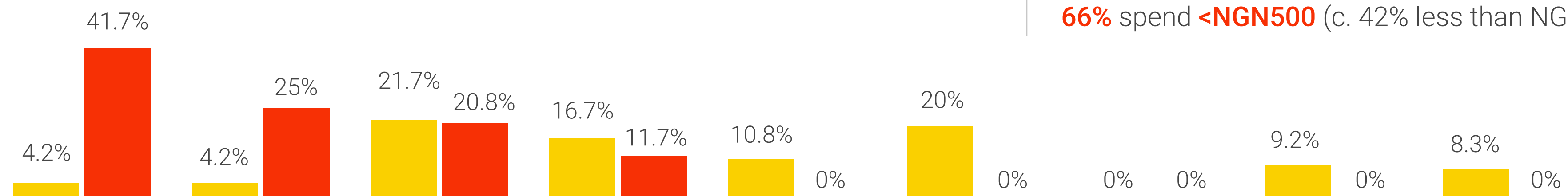
Most households' daily use of torches is for **<1h**.



Cost comparison

before after

50% of households spend **>NGN1k** weekly and only **4.2%** spent **<NGN250**.

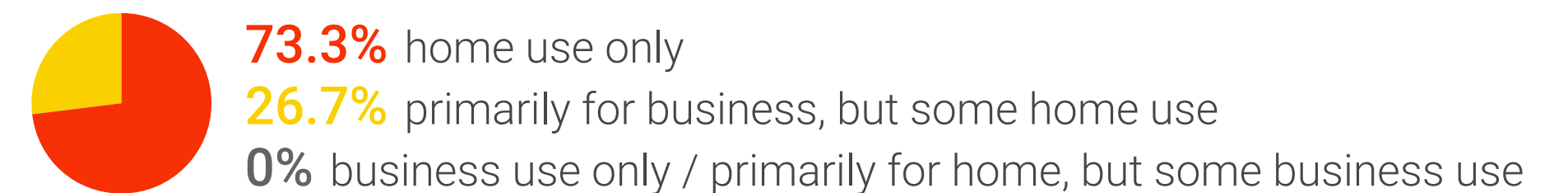


Only **0.8%** of households spend **> NGN1k** weekly and **66%** spend **<NGN500** (c. 42% less than NGN250).

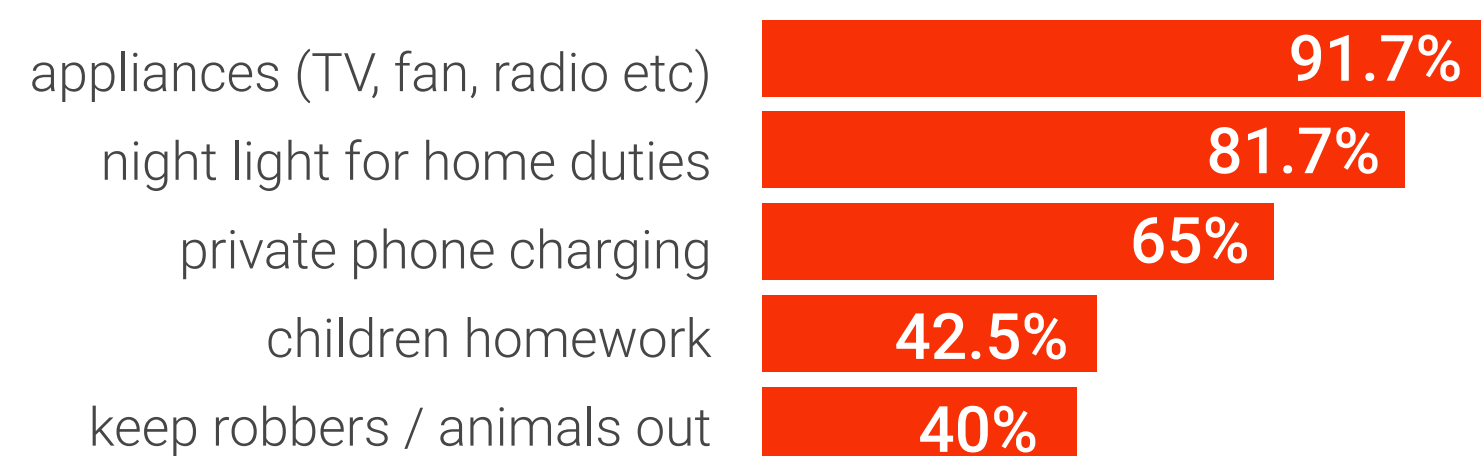
4x
cost savings

NTT mini-grid power use & function - home

The mini-grid primarily services the homes of many households, powering appliances, performing home duties, charging of phones and assisting children with their homework.



Functions



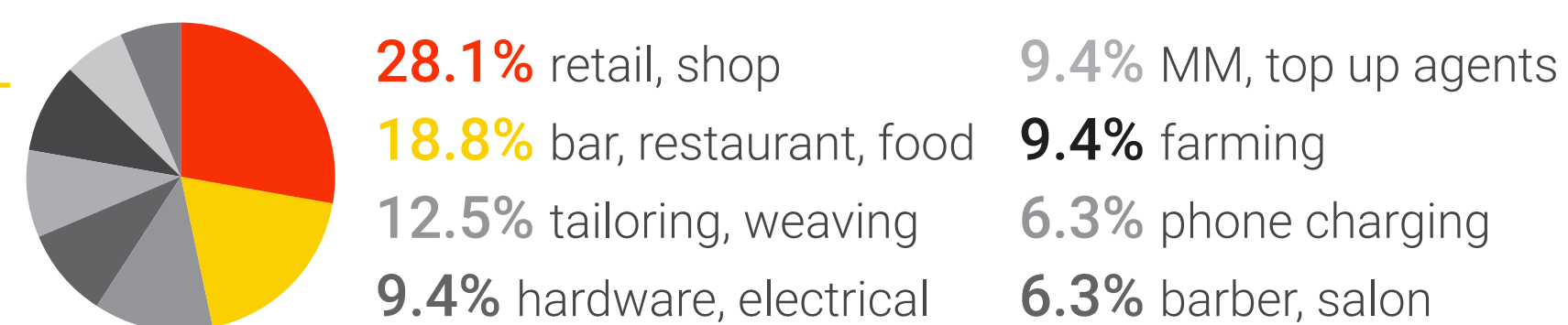
Uses



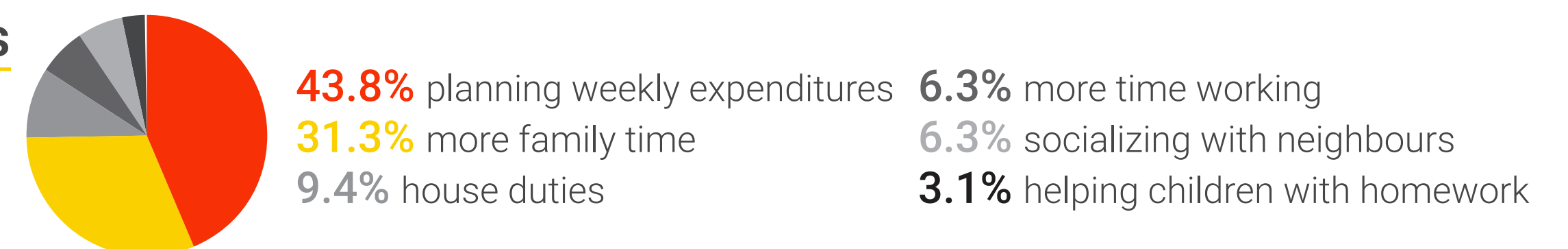
NTT mini-grid power use & function - business

Power from Nayo system support a spectrum of business activities. The primary uses are for lighting the environment and powering appliances and machinery.

Functions

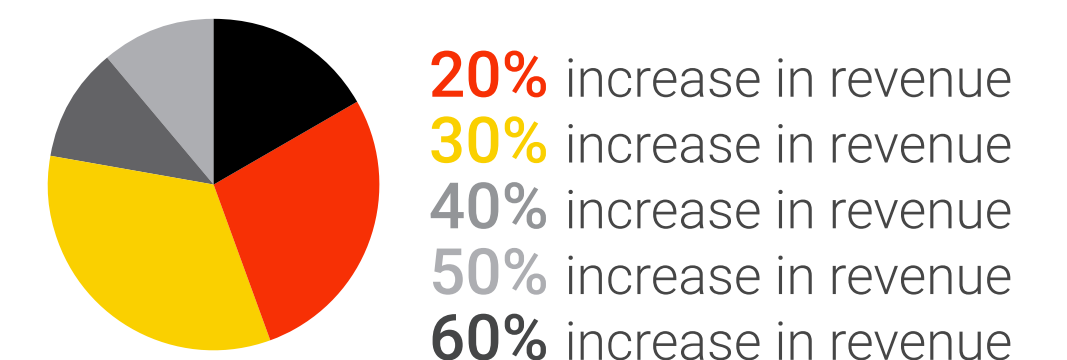
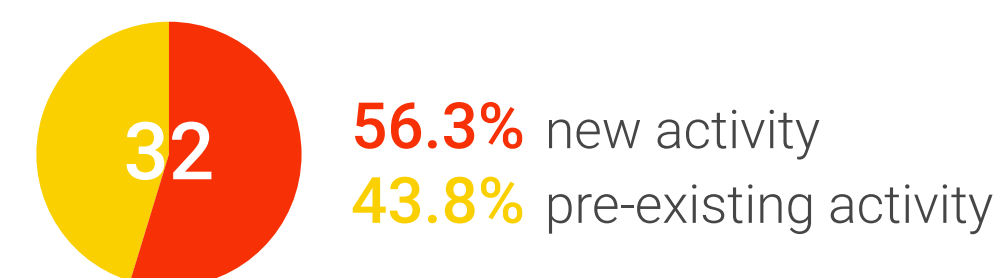


Uses



Impact

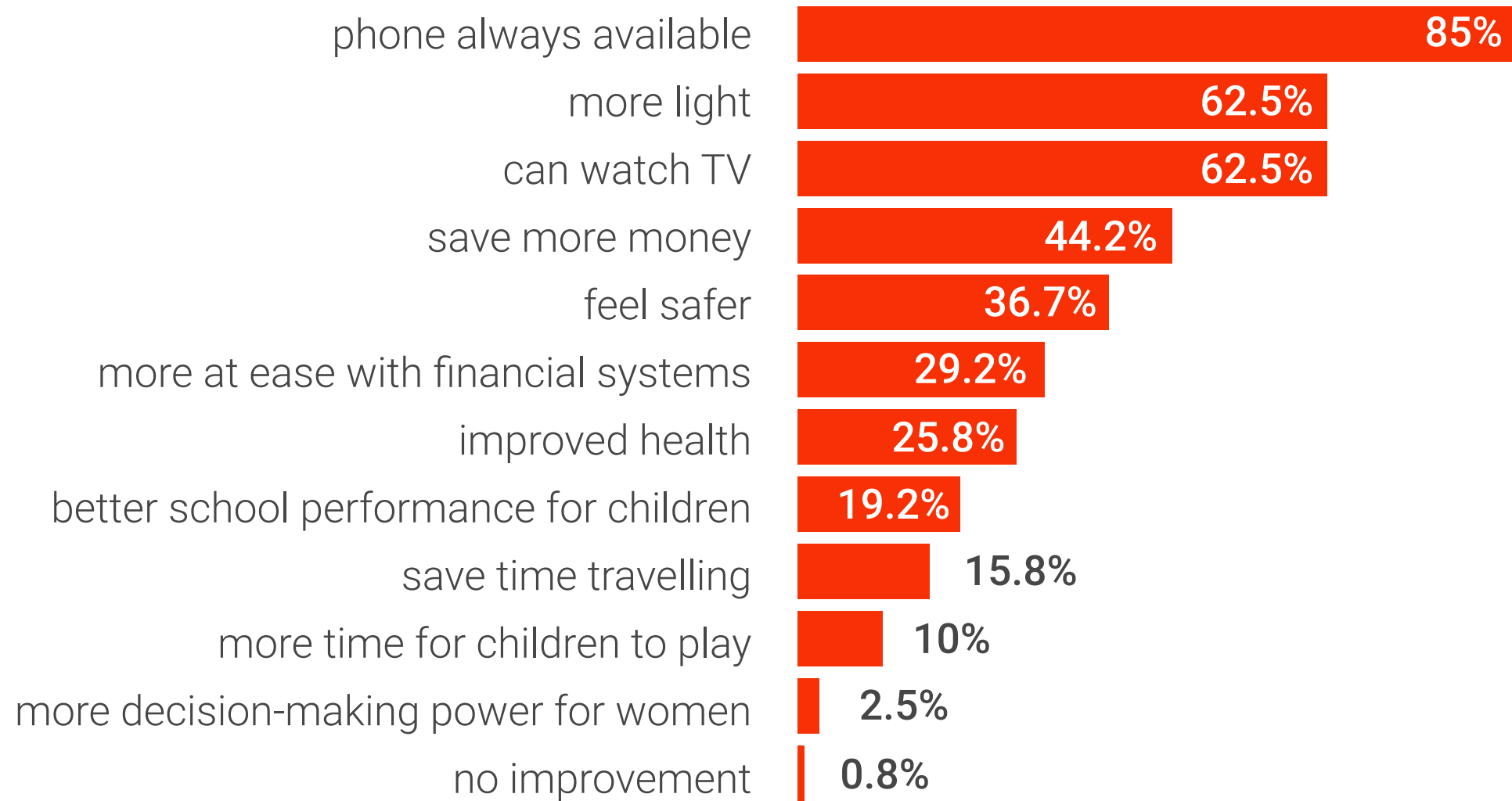
Financial impact only tracked by **56.3%** of businesses, however, impact has nonetheless been significant and revenue increase ranged **from 20% to as high as 60%** since connecting to the NTT mini-grid.



Socio-economic benefits

Consensus view is that the NTT has improved the **quality of life** of each member of each household.

General

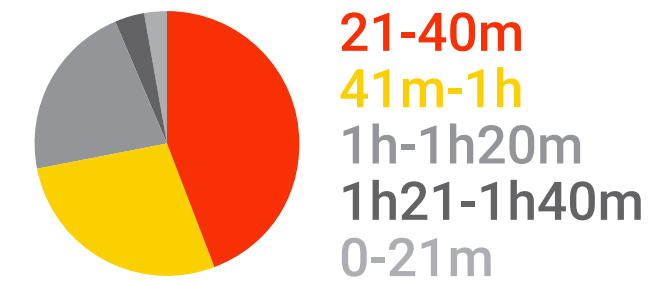


Education

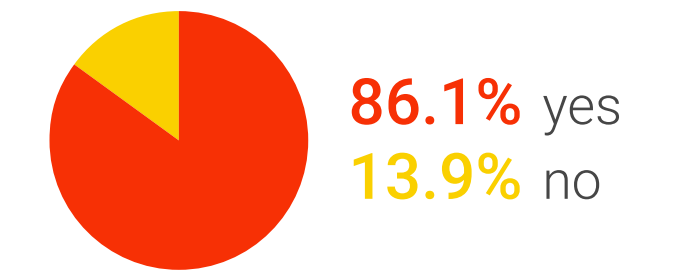
Average number of children per household is **3**.

Children spend **more time doing homework** since connection to NTT.

How much **additional time?**

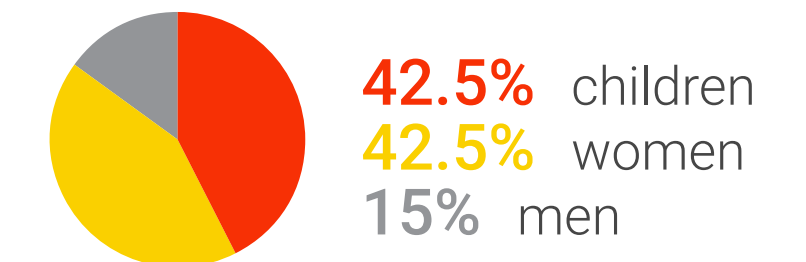


Have **grades** improved?

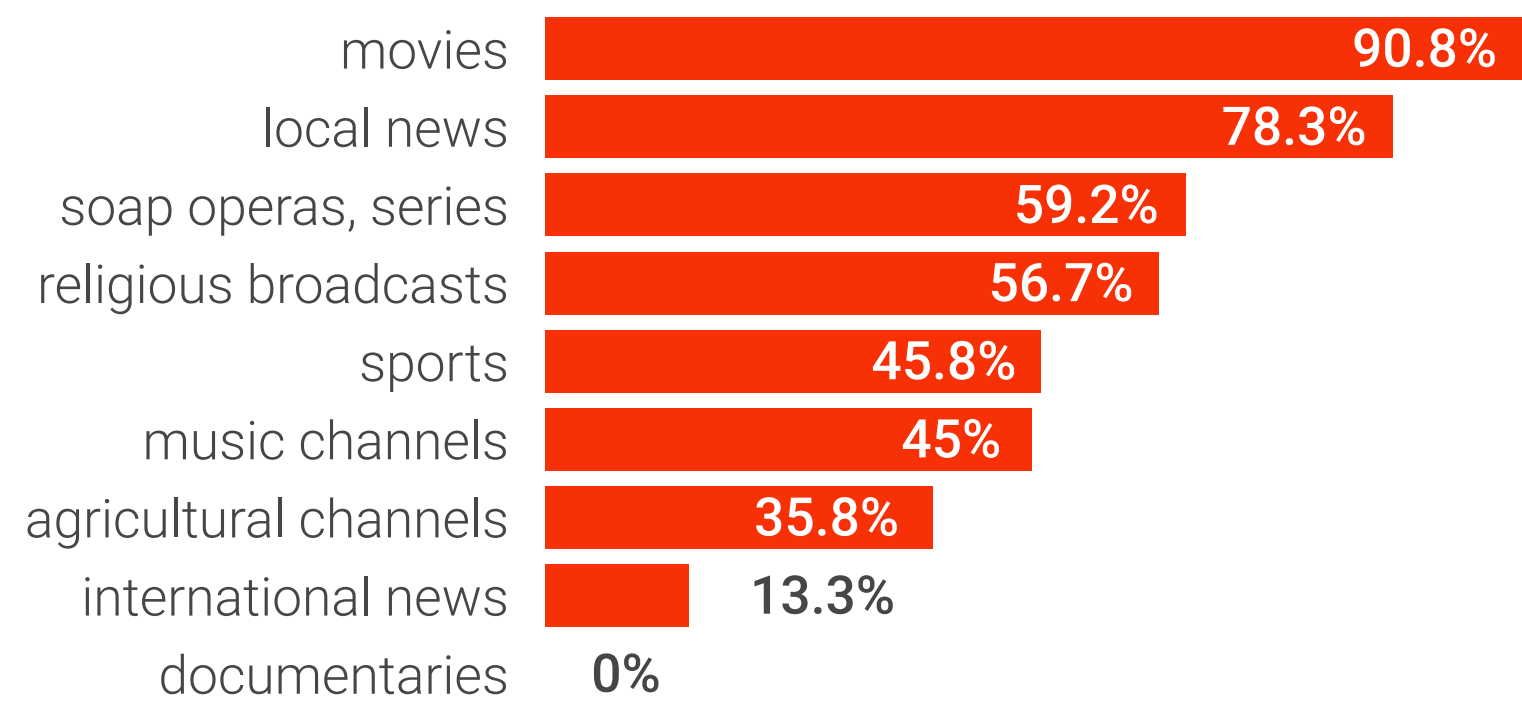


Gender equality

Households felt that **women and children** benefitted most from using mini grid power.

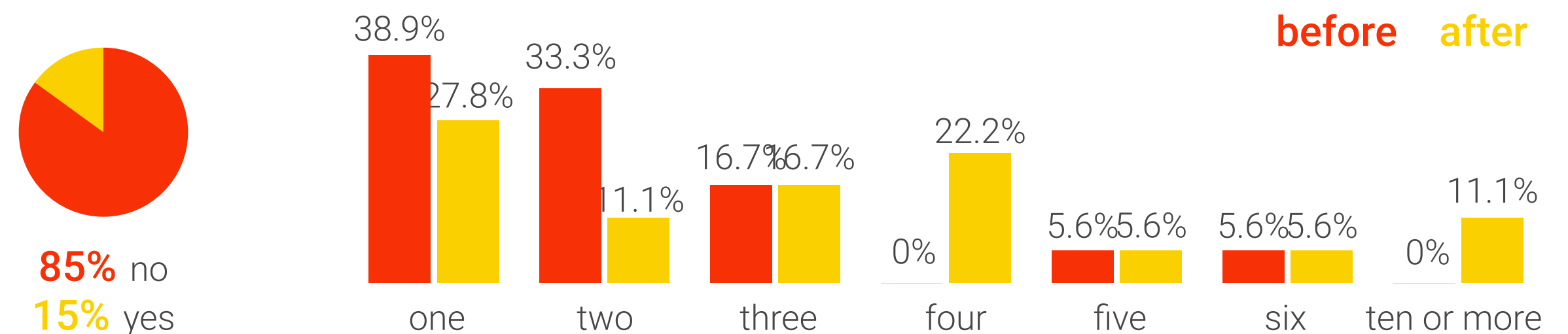


Entertainment



Financial inclusion

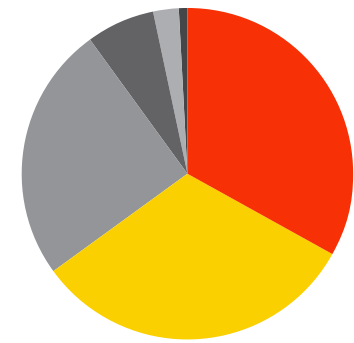
The use of NTT products did not increase or decrease the number of respondents using **mobile money**, but did increase the frequency for those that did use mobile money.



Socio-economic benefits

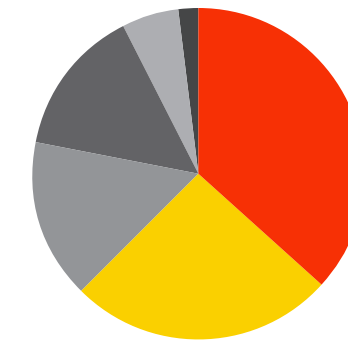
~100% of households feel both **healthier and safer** as a result of the NTT solar system.

Healthcare



33.3% less fumes in the house
31.7% eyes less strained
25% less injuries from no light
6.7% less injuries from burns
2.5% less cough and illness
0.8% don't feel healthier

Safety



36.7% safe at night in the house
25.8% safe to get home when dark
15.8% keeps robbers away from house
14.2% keeps predators away from stock
5.8% less fire incidents
1.7% can fix vehicle if it breaks at night

Socio-economic drawbacks

Indebtedness

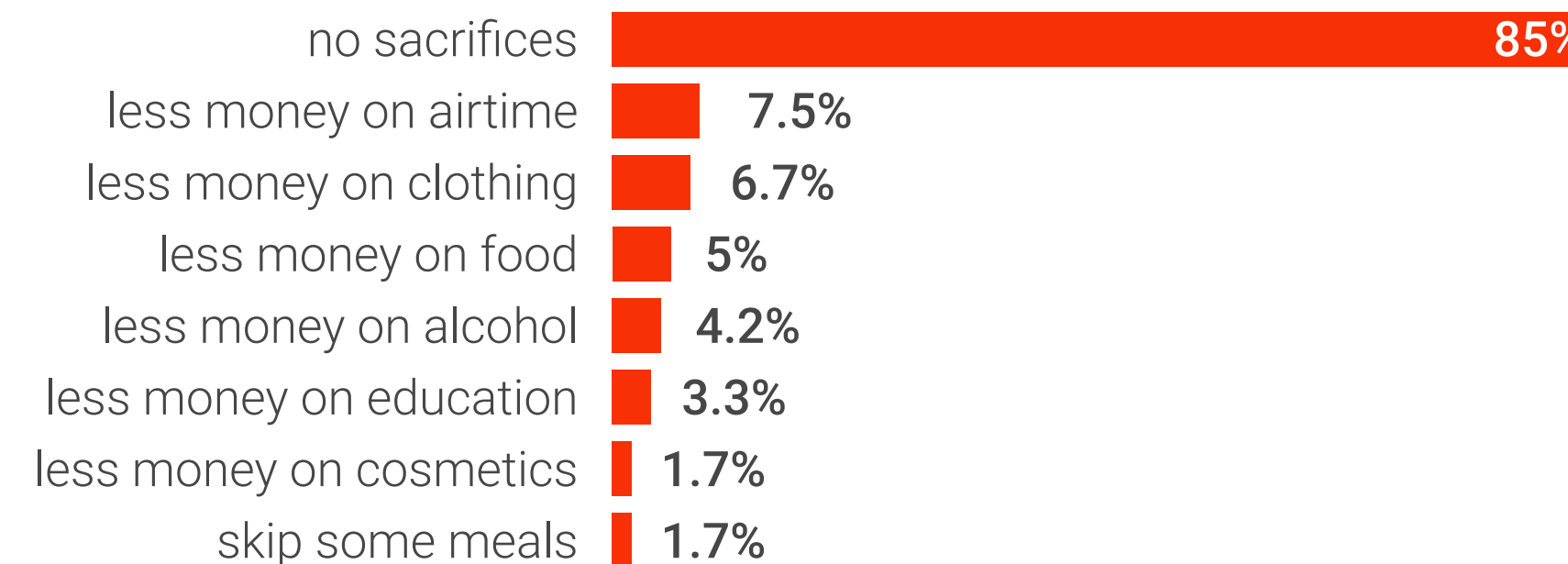
Although only **2.5%** of respondents **had to borrow to pay** for solar power from the mini grid...



33.3% to financial institutions
33.3% to male relative in household
33.3% to relative / friend outside household

Financial trade-offs

...85% of respondents felt there were no financial tradeoffs to using NTT's solar systems.



Customer feedback

"We are happy with Nayo services."
Dahiru Haruna, Tunganjika

"The system has been making life easy but the tariff is a bit high."
Alhaji Akamo, Mokoloki

"Customer service is amazing and helpful"
Attahiru S. Tasha, Kare

"Their power has been helpful and I love it"
Mr Nnamdi, Old Chikuku

Seopad Nigeria Limited is a boutique consulting firm based in Lagos, Nigeria with extensive experience advising several Development Finance Institutions (DFIs) and not-for-profit organizations.

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