



Private Infrastructure
Development Group

Impact survey findings

Bboxx, Kenya Solar Home Systems

Published: 2024

About the report

In line with PIDG's theory of change, the infrastructure projects we develop and invest in are expected to generate positive outcomes for people – by providing new or improved access for individuals and households to essential services such as energy, water, communications, transport, and housing.

Therefore, as part of our impact management system, we systematically assess who the expected end-users are and what difference the PIDG supported infrastructure is expected to make on their lives – with an emphasis on gender outcomes and disability inclusion.

One way we do this, is by regularly conducting surveys of the end-users of our projects to hear more directly about the impact we aim to create for them. We do this in partnership with 60 Decibels, a tech-enabled social impact measurement and customer intelligence company, using their Lean DataSM approach to collect the sought after impact data through phone surveys.

In 2021, GuarantCo facilitated a renewable energy access deal, 'Bboxx Solar Home Systems' that aimed to improve quality of life and avoid/reduce greenhouse gas emissions through the displacement of non-traditional fuels in Kenya.

This report summarises the main survey findings on this project and some of the tangible positive impacts the project has had on people.

Project summary

Enabling first local currency loan by a Kenyan Bank



Investment size:

\$10.6m

USD 11.25m partial guarantee (75%) against a c. USD 15m loan, denominated in KES to be provided by SBM Bank Kenya, a local commercial bank, to Bboxx Kenya, a solar home systems (SHS) provider.

GuarantCo

Bboxx

Expected impact on people

The funds will be used to buy new inventory (circa 89k units), supporting the provision of solar home systems to new customers and generating new contracts for Bboxx. This project is expected to reach over 470k people, 51% of which will be gaining access to a solar lighting product for the first time.

SDG assessment: 7 – By 2030, ensure universal access to affordable, reliable and modern energy service.

Relevance: High – Major challenges remain with progress moderately increasing (assessed at the SDG level)

Market transformation

Challenge: Traditionally, the majority of capital financing to SHS companies done by DFIs/fund investors through grants and equity and in hard currency (US or EUR), which can expose companies such as Bboxx to significant exchange risks.

Channel: Demonstrate local currency investment and mobilisation of local investors, by helping to match Bboxx's funding needs with their income contributing to overall commercial success and sustainability of SHS businesses.

Outcome: Project will help shift how SHS projects are financed in Kenya and possibly the region, to a level where there is an increased level of commercial and local currency loans to SHS corporates from local private banks.

Climate risk

Transition: Transition risks are low for this project

Physical: SHS have been associated with improved resilience to climate change especially for rural households.

Gender

Bboxx is aiming to maintain 40% female labour workforce; over 30% is required for long-term jobs in power sector.

Summary of the survey and respondents

Survey information:

Project: Bboxx, Off-grid solar, Kenya

PIDG Company: GuarantCo

Theme: Power/Energy

Region: Sub-saharan Africa



Date of interview

Dec 22

Number of people interviewed

266

Response rate:

82%

Margin of error:

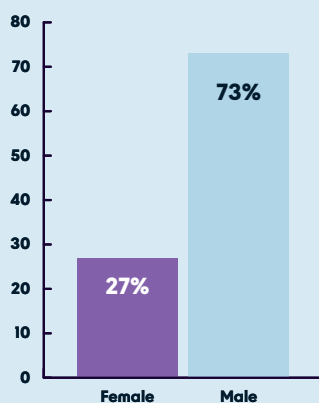
~5%

Language of interview:

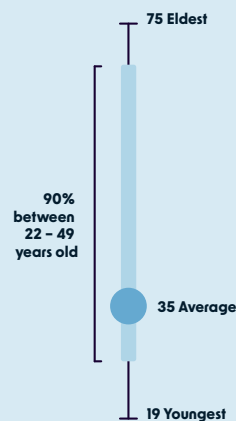
English, Swahili

Profile of end-users

Gender:



Average age:



Household size:



38%

% living below Poverty line of \$3.20 per day

Impact on access and quality of life

Access to service:

54%

% of end-users were accessing Bboxx's solar home systems (SHSs) for the first time.

85%

% of end-users are without access to good alternative to SHSs.

10%

of the end-users use the SHS for business. Of that subset 90% report an increase in income.

46%

% of end-users had prior access to similar service

Access to a cleaner, guaranteed, and safe energy source, with over half of the customers accessing SHS for the first time and a majority without access to good alternatives to the SHS.

Quality of life:

92%

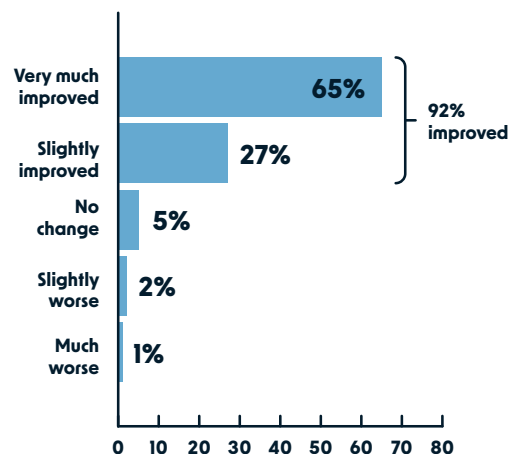
% reporting improved quality of life due to Bboxx's SHS.

33%

% reporting improved educational outcomes due to Bboxx's SHS

Access to a better energy source, the ability to study and work more hours and an enhanced sense of personal safety were the key reasons cited for the improved quality of life.

Perceived quality of life change:



Impact on Safety and Energy spending

Personal safety:

94%

% improved personal safety due to Bboxx's SHS

93%

% improved asset security due to Bboxx's SHS

Nearly all customers report an increased sense of safety in their homes and businesses since getting the Bboxx SHS.

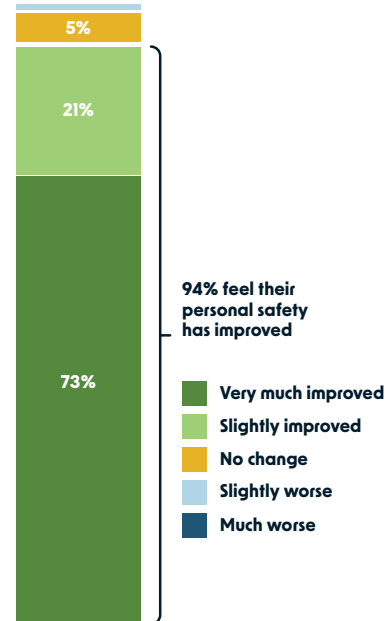
Impact on production:

94%

% improved personal safety

Impact on personal safety:

Q: Has how safe you feel in your home / business changed because of having the SHS Has it: (n = 262)



Energy:

93%

% reporting increased hours of light usage in their homes and businesses due to Bboxx's SHS.

34%

% seeing decrease in spending on energy due to SHS.

45%

% reporting reduced kerosene usage due to SHS.

Customers with decreased energy spending can use those savings to cover other household expenses. The significant quality of life improvements when compared to prior energy sources suggest that movement up the energy ladder is helping to drive quality of life improvements.

Impact on Gender and disability inclusion

Gender:

Data suggests that Bboxx's Solar Home System customers report having a similar overall experience specifically similar first access, ease of use and issue resolution experience regardless of gender.

Indicators	End-user of Bboxx's Solar Home Systems (SHS)	First time access of Bboxx's SHS	Ease of use of SHSs (% of customers experiencing no challenges)	Customer Effort Score (CES) (Ease of issue resolution and customer service of Bboxx)	Net Promoter Score (NPS) (Customer satisfaction and loyalty to SHS)
Gender					
Male	73%	55%	60%	37	73
Female	27%	54%	58%	41	69

Disability inclusion:

2% of households reported end-users with disabilities.

This consists of people reporting difficulty with sight or walking/ climbing steps.

Diversity and Inclusion	
2%	% disability prevalence among customers
3.5%	national disability rate in Kenya
1.1%	% difficulty seeing, even if wearing glasses (if available)
1.1%	% difficulty in walking or climbing steps
0.4%	% difficulty in hearing, even if using a hearing aid (if available)
0.8	% difficulty remembering or concentrating
0.4%	% difficulty with self-care, such as washing all over or dressing
0.4%	% difficulty communicating or being understood, using their usual language

What our end-users said



Impact on business:

"The good lighting enables me to extend my business for longer hours, so I am able to make more profits." – Male, 29

"I am able to attract and entertain my customers with my music. My mobile barber shop is now booming, and people are happy to see it." – Female, 34.

Impact on safety:

"The lights are bright; they're able to surround the whole compound even at night, and when you want to fetch water, you are guaranteed of your safety." – Female, 34

[Bboxx SHS] is safe; kerosene was hazardous, my child could easily get burnt if they tried lighting it but with the solar home systems my child just switches on with no risk of being burnt. There is safety with health as it does not smoke unlike using kerosene where you inhale smoke which brings health issues." - Female, 23

"We live in manyattas, but you would think we have electricity. The children study well to late night, our whole neighborhood is well lit because of the good lighting. I can say we have security we don't live in fear like before." – Female, 38.

Impact on quality of life:

"I have managed to save money because buying kerosene every other day was quite expensive, my children have now improved in their schoolwork because they have extended studying hours as a result of the light bulbs. We are a happy family now as a result of the SHS." – Male, 60.