OVO Foundation
A Forecast Social Return on Investment Analysis on the Impact of Project Jua

This report is authored by Bonnie Chiu and Yu-Shan Chiu at The Social Investment Consultancy.

SOCIAL VALUE INTERNATIONAL

Statement of Report Assurance

Social Value International certifies that the report

A Forecast Social Return on Investment Analysis on the Impact of Project Jua

published on 20/10/21, satisfies the requirements of the assurance process.

The assurance process seeks to assess whether or not a report demonstrates a satisfactory understanding of, and is consistent with, the Principles of Social Value. Reports are independently reviewed by qualified assessors and must demonstrate compliance with the Social Value report assurance standard in order to be certified. The Social Value report assurance standard can be downloaded from the website socialvalueint.org.

Assurance here is against the Principles of Social Value only and does not include verification of stakeholder engagement, report data and calculations.

Awarded 20/10/21

Signed

Mr Ben Carpenter
Chief Executive Officer
Social Value International

Social Value UK carries out the assurance service on behalf of Social Value International. Social Value International is the global network focused on social impact and social value. We are the global network for those with a professional interest in social impact and social value. We work with our members to increase the accounting, measuring and managing of social value from the perspective of those affected by an organisation's activities, through the standardised application of the Principles of Social Value. We believe in a world where a broader definition of value will change decision making and ultimately decrease inequality and environmental degradation.

Disclaimer: Social Value International will not be responsible for any actions that an organisation takes based upon a report that has been submitted for assurance. An assured report does not grant Accredited Practitioner status to the author/authors of the report unless it is part of a full application for Accredited Practitioner status.

Table of Contents

Introduction

Overview

This report summarises the results of an independent forecast of the social return on investment (SROI) of Project Jua, a programme funded by OVO Foundation and delivered by Energy4Impact. It is analysed that the SROI of Project Jua is in a range of GBP 11.99 to GBP 16.01. This study was conducted between March and June 2021.

Background

OVO Foundation (the Foundation) is OVO Energy's charity. Created in 2014, OVO Foundation shares the belief of OVO Energy that businesses should be better for everyone. The Foundation's vision is for all children and young people to have equitable access to a sustainable future. By funding meaningful and impactful organisations and projects, the Foundation wants to make sure that:

- All children and young people have the skills, knowledge, and confidence to take actions on sustainability issues and to help make their own communities more sustainable.
- All children and young people live in a sustainable community.

OVO Foundation supports organisations around issues such as climate crisis, youth poverty and homelessness, educational inequality and access to energy. It invests in projects targeting real and genuine needs, with measurable and meaningful impact, and with a high return on investment. Programmes funded by OVO Foundation are: Project Jua, Future Builders, When I Grow Up, and Climate Changers. The Foundation also run its internal volunteering programme, OVO Gives Back.

OVO Foundation commissioned an independent evaluation on their charitable programmes. This report focus on one of the programmes – Project Jua. Project Jua takes place in rural parts of Kenya, where many schools and health clinics do not have reliable electricity. The lack of power and lighting at schools has limited the use of learning facilities such as computers, printers, and projectors and the number of hours available for study. Similarly, many health clinics cannot operate basic health equipment and power fridges to store vaccinations.

Delivered by Energy4Impact, Project Jua aims to improve the health and education of residents in rural Kenya by designing, supplying, installing and maintaining sustainable solar solutions across 300 schools and health clinics in five least developed counties in Kenya, i.e., Turkana, Kilifi, Taita-Taveta, Kwale and Kilifi. Project Jua, in its current form, is a scale up of a pilot conducted between August 2017 and April 2018, that involved solar panel installation of 20 institutions (16 schools and 4 clinics) in Turkana and Kilifi counties in Kenya.

Purpose and scope

Project Jua is being implemented in two phases: the Implementation Phase (from May 2019 to December 2020) and the Long-Term Sustainability or Operational Phase (from January 2021 to December 2023). The evaluation uses the SROI framework and principles to measure the social value generated by Project Jua during its implementation phase, which include the following activities:

- Research in sites in the hardest to reach rural areas of Kenya.
- Identify and provide electrification using solar energy to remote schools and health clinics in the five least developed counties in Kenya.
- Improve capacity to collect and analyse data and adapt based on lessons learnt.
- Install remote monitoring systems (RMS) to monitor energy consumption and production at each site and troubleshoot where needed.

This SROI is a forecast study, which is an assessment that aims to estimate the social value of the expected changes deriving from an intervention. The main purpose of this study is to support internal management, hoping that the SROI analysis can help understand the values created thus far and areas of improvement, by taking into account the feedback of charity partners, beneficiaries and stakeholders.

SROI Methodology

This study adopts the Social Return on Investment (SROI) methodology, which is an outcome-based method to measure and account for all material outcomes in monetary values with consideration of other contributors to the outcomes. A forecast SROI is chosen as the study recognised that within the current timeframe and resources, it could not engage diverse stakeholders comprehensively. However, through the stakeholders sampled and data collection methods conducted, the study is able to estimate the social value Project Jua is likely to create at the end of its intervention. The report will discuss recommendations for future studies that aim to evaluate the programme's SROI in this section.

The assessment follows "The Seven Principles of Social Value (Social Value International, 2018)" and the six steps stated in "A guide to Social Return on Investment (2012, UK Cabinet Office)". This section explains how the methodology is applied to calculate the forecast SROI of Project Jua.

Principles of SROI

Following the seven principles of SROI, this evaluation has engaged stakeholders in a range of ways to understand material outcomes, gather evidence and value changes. Below gives an overview of what the principles are and how they are applied.

Table 1 Application of SROI principles in the evaluation

SROI Principle	Application in this analysis
1. **Involve stakeholders** – Inform what gets measured and how this is measured and valued in an account of social value by involving stakeholders.	Depending on the types of stakeholders, they are engaged at different stages of the evaluation process and in different ways to ensure accessibility. Stakeholders are engaged to identify outcomes, measure outcomes and value the extent of changes.
2. **Understand what changes** – Articulate how change is created and evaluate this through evidence gathered, recognising positive and negative changes as well as those that are intended and unintended.	Stakeholders were involved to refine the existing Theory of Change, based on which a new Theory of Change was created with new outcomes identified. This helped establish further data collection tools to understand the changes as perceived by wider stakeholders, negative and unintended outcomes.
3. **Value the things that matter** – Making decisions about allocating resources between different options needs to recognise the values of stakeholders. Value refers to the relative importance of different outcomes. It is informed by stakeholders' preferences.	The relative importance of different outcomes is evaluated based on the feedback of stakeholders who would experience the outcomes. This report shows analysis of stakeholders' preferences and includes their feedback.

4. **Only include what is material** – Determine what information and evidence must be included in the accounts to give a true and fair picture, such that stakeholders can draw reasonable conclusions about impact.	The decision of materiality is based on the perspective of stakeholders, from whom data were gathered and analysed to deduce the outcomes that are relevant and significant to stakeholders.
5. **Do not over-claim** – Only claim the value that activities are responsible for creating.	Stakeholders were involved to understand the value that Project Jua could claim. This involved assessing deadweight, attribution, displacement and drop-off. Sensitivity analysis was conducted to test assumptions.
6. **Be transparent** – Demonstrate the basis on which the analysis may be considered accurate and honest, and show that it will be reported to and discussed with stakeholders.	The Theory of Change was created with stakeholders and concepts of SROI were discussed alongside. This report also details the logic, calculations, assumptions and the like, so that readers can feedback on its accuracy.
7. **Verify the result** – Ensure appropriate independent assurance.	The findings in the valuation have been verified by stakeholders, including the project delivery team, beneficiaries (teachers and health professionals) and the funder. This report will be reviewed by Social Value UK to ensure its fulfilment of SROI principles, standards and process.

Evaluation approaches

Building on six suggested steps of SROI, this study has applied 8 stages to conduct SROI analysis, which is explained in the sections below. The stages, though listed chronologically, did not happen sequentially. Some stages may overlap with others in terms of when they occurred, but are listed in chronological order for clarity.

Stage 1: Establishing evaluation scope

The scope of this SROI analysis was first agreed with OVO Foundation and further consulted with Energy4Impact. OVO Foundation wanted to conduct SROI for its overall activities to understand the impact generated by its charitable investment over the recent years. After a review of previous data collected across programmes, it was agreed that the evaluation should cover the timespan between 2019 to 2021, during which the majority of programmes had activities. As for Project Jua, such timeframe corresponds to its scale-up phase. It was then agreed that the SROI should help understand how the project has benefited the 250 schools and 50 clinics in the five counties in rural Kenya (Kilifi, Kwale, Taita Taveta, Turkana and Isiolo) over the scale-up phase. Energy4Impact was further involved to inform data collected so far and to identify wider stakeholder groups and outcomes.

Stage 2: Identification of stakeholders

To identify the key stakeholders that could be impacted by Project Jua, the study invited key members at OVO Foundation, Energy4Impact and Project Jua's research partner at Imperial College London to a workshop, during which a list of direct and indirect stakeholders were identified. Direct stakeholders were then surveyed to inform other stakeholders. The differences between direct and indirect stakeholders are:

- **Direct stakeholders**: stakeholders that are either directly involved in the project activities or directly experienced the changes to the project aims to bring.
- **Indirect stakeholders**: stakeholders that are not involved in the project activities but may benefit from the changes the project brings or be interested in the outcomes of the project.

The table below shows the stakeholder groups, sub groups (identified through conversations with Energy4Impact) and the reasons why they were, or were not, included for engagement. During the timespan of this evaluation, onsite project staff members were at three counties (Kilifi, Kwale and Taita Taveta) and were able to support data collection with local schools and clinics in the three counties. As the five counties were selected for Project Jua based on similar reasons from the needs assessment, this study thus assumes that similar outcomes could be applied to the two counties excluded in the data collection for the SROI study.

Table 2 Inclusion of stakeholders

Stakeholders	Sub groups	Included in SROI?	Reasons for inclusion or exclusion
Direct stakeholders			
Project delivery team (Energy 4Impact)	Project management team	Included	They implement the project in Kenya and have comprehensive understanding of the project from its induction until now.
	Onsite project staff members	Included in data collection support but excluded from evidence provision	The study relies on onsite staff members in rural areas of Kenya to collect data from local schools and clinics. They are excluded from providing evidence in order to ensure the independence of their support in data collection. Also, the project management team can already play the role of providing details of the project, as they have general oversight.
	Research partner	Included	They have conducted research around electricity system performance of the project, which is related the main activities of the project.
Funder	OVO Foundation	Included	They provided funding for the project, including its pilot and scale-up phases.
	Other potential funders	Excluded	The project team has not yet proactively reach out to other potential funders, who

			may be interested in providing further funding.
Schools in rural parts of Kenya	Teachers	Included	Teachers are intended beneficiaries to be supported in their work to provide education to students more effectively.
	Students	Partially included	Students at the local schools are one of the intended beneficiaries, but it was not possible to consult them directly during the span of this evaluation due to time constraints to directly engage the students. Their perspectives, however, were recorded in videos in June 2019 and additional documentation will be carried out by Energy4Impact in July 2021, though beyond the span of this evaluation. This study thus used existing videos to supplement the limitation of direct engagement with students.
Clinics in rural parts of Kenya	Health professionals	Included	Health professionals are intended beneficiaries of this project.
	Patients	Partially included	During the span of this evaluation, it was not possible to consult patients directly due to time constraints to directly engage the patients. However, some patients are interviewed by Energy4Impact in July 2021, though after this evaluation undergone assurance. This study thus used generalised patient data in the calculation.
Indirect stakeholders			
Local communities	Local electricians	Excluded	They could benefit from the project but are not direct beneficiaries. Outcomes related to them were also considered not as important by direct stakeholders such as teachers and clinics.
	Local business	Excluded	
	Other community members	Excluded	
	Environment (or the future generation in the local communities)	Included	Environment was not a stakeholder directly identified by other stakeholders. However, as other stakeholders have identified carbon emissions and the sustainability of local communities as outcomes of the project, the study thus includes “environment” as a proxy stakeholder for the future generation in the local communities.
Government	Local county governments	Excluded	They have supported the development of the five counties the project seeks to

			impact, though via providing different resources from those in this project. Their roles are factored in the valuation.
	Central government	Excluded	They may be interested in or indirectly supporting rural development but are not directly involved in this project.

Due to the limitations of direct engagement to understand the perspectives of some stakeholders, the potential bias is considered in the sensitivity analysis of this evaluation, to reflect the risks in assumptions and data collection accuracy. The study also acknowledges that some stakeholders (such as students and patients) could be further separated into subgroups, using characteristics such as their gender, age and socio-economic backgrounds. However, demographic data was not collected in this evaluation, which causes challenges to further segment the stakeholders and investigate the potential different perceptions of outcomes by subgroups. It is suggested that future study collect demographic data from participants involved in the study, in order to further define subgroups, disaggregate their experiences of changes and identify potential reasons for differences in outcomes.

Stage 3: Engaging stakeholders

For the stakeholders included in this analysis, they were engaged through various ways, including workshops, surveys, and a review of video interviews (based on Project Jua's previous data collection), across different stages of the evaluation. The engagement was on a voluntary basis, which means some stakeholders invited may choose not to participate. For stakeholder groups with larger number of people (i.e., schools and clinics), random sampling was applied.

At the first phase, Project delivery team and the Funder were involved to refine the existing Theory of Change, based on which a new Theory of Change was created with new outcomes identified. Through surveys, teachers and health professionals were invited to share their perception of the importance of the identified outcomes and additional outcomes. As the study could not directly involve children and patients during the timespan of the evaluation, teachers and health professionals were also asked to share their observations of these outcomes on children and patients. Children's perspectives of changes were supplemented by interview videos done previously, while there were no interview videos with patients. For more details on how stakeholders were involved, please see Table 2 Inclusion of stakeholders and Table 3 Engagement with stakeholder groups. For more details on the judgement of how the outcomes were included, please see the discussion around materiality in these sections: Material outcomes for schools; Material outcomes for clinics.

Stakeholders were also involved to verify the SROI results, which will be presented in the section of Stage 8: Reporting and recommendations.

Table 3 Engagement with stakeholder groups

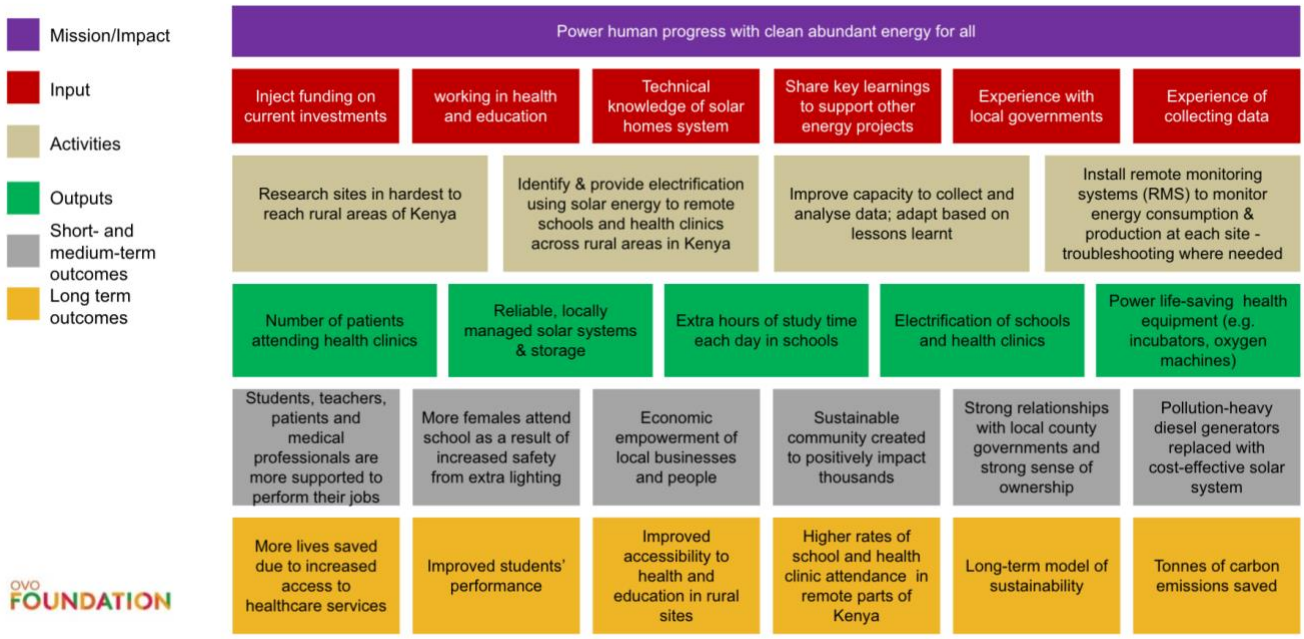
Stakeholders	Subgroups	Engagement method	No. of samples out of total stakeholders (%)
Project delivery team (Energy 4Impact)	Project management team	**Step 1:** Workshop to refine existing Theory of Change **Step 2:** Discuss the data collected from schools and clinics **Step 3**: Verify the report draft	**1:** 4/4 (100%) **2:** ¼ (25%) – with the project manager **3:** 2/4 (50%)
	Research partner	**Step 1:** Workshop to refine existing Theory of Change	**1:** 1/3 (33.3%)
Funder	OVO Foundation	**Step 1:** Workshop to refine existing Theory of Change **Step 2:** Verify the report draft	**1:** 2/2 (100%) **2:** 2/2 (100%)
Schools in rural parts of Kenya	Teachers	**Step 1:** handwritten survey conducted onsite (random sampling) in 3 out of 5 counties to review and identify material outcomes, as well as negative and unintended outcomes **Step 2:** Verify the report draft	**1:** 49/250 schools (19.6%) Kilifi: 19/59 (32.2%) Kwale: 18/68 (26.5%) Taita Taveta 12/12 (100%) **2:** aiming at 10-20% of the survey participants
	Students	**Step 1:** review their attendance and performance baseline **Step 2:** review past video interviews with students to revise the outcomes	**1**: 86,226 students **2:** 4 students
Clinics in rural parts of Kenya	Health professionals	**Step 1:** handwritten survey conducted onsite in 3 out of 5 counties to review and identify material outcomes, as well as negative and unintended outcomes **Step 2:** Verify the report draft	**1:** 16/50 clinics (32%) Kilifi: 4/8 (50%) Kwale: 4/12 (33.3%) Taita Taveta 4/14 (28.6%) **2:** aiming at 10-20% of the survey participants
	Patients	**Step 1:** review patient baseline	**1:** 8264 patients
Local communities	Environment (or the future generation in the local communities)	**Step 1:** review energy consumption data tracked for schools and clinics	**1:** Energy data are tracked automatically, yet analysed data are only available from a school and a clinic. The study uses available data to estimate the energy consumption at all sites.

Stage 4: Refining Theory of Change

Prior to this SROI, a Theory of Change for Project Jua was developed in line with the overall Theory of Change of OVO Foundation. The existing Theory of Change was drafted based on a review of all documentation about project objectives, impact data collected and existing reporting to OVO Foundation, alongside reference to the research in contexts similar to the project. The draft Theory of Change was then validated with OVO Foundation managers and Trustees, following by the creation of impact evaluation framework, including outcomes, indicators, sources of evidence, and means of verification.

Stakeholders (Energy4Impact project management team and partnered researchers) were then invited to a workshop to feedback on the existing Theory of Change, in order to adapt the inputs, outputs, and short-, medium-, and long-term outcomes. The participants also helped map out other stakeholder groups (with whom the study consulted at the later stages) and identify some other outcomes that may be relevant to them but not in the existing Theory of Change. This is also the first time when stakeholders discuss materiality of outcomes and whether to include certain outcomes or not. The questions discuss in the workshop are included in the Appendix.

Figure 1 Existing Theory of Change



Wider stakeholders (schools and clinics) were surveyed to value the relevance and importance of each outcome and identify any other positive and negative outcomes. While the surveys were administered in person by the project delivery team, there were informal conversations between the project delivery team and the survey participants, which provided feedback on how to refine the outcomes and define the chain of events. However, due to the challenges already mentioned in Table 2, as well as stakeholders' experience of time poverty, the definition of outcomes might not have sufficient engagement from stakeholders as it could have had in an ideal world, where we would have asked stakeholders to define the outcomes themselves. Despite the constraints, this study is still confident that the

outcomes included reflect what stakeholders consider to be the most relevant and important. The process to develop the impact maps with the stakeholders is explained below.

The surveys to schools and clinics included almost all the outcomes presented in the original Theory of Change, with the exception of two environment-related outcomes that the evaluator thought could be challenging for the survey participants (teachers and health professionals) to answer: “Long-term model of sustainability” and “Tonnes of carbon emissions saved”. The reason was that the direct stakeholder of these two outcomes is the environment, while indirect stakeholders to these outcomes were the ones being surveyed. As the survey participants might not be the ones that directly experienced the outcomes, it could be difficult for them to share perception on these. To gain feedback on the outcome “Long-term model of sustainability”, the evaluator combined it with another outcome “Sustainable community created to positively impact thousands” and rephrased it as “My communities become more sustainable”, to make it more tangible for participants to answer. As for “Tonnes of carbon emissions saved”, the study did not ask survey participants’ opinions but used the energy consumption data gathered directly from the installed photovoltaic systems.

The survey findings have proved that some outcomes are less important than others, which is factored in the SROI analysis. For more details on the judgement of how the outcomes were included, please see the discussion around materiality in these sections: Material outcomes for schools, Material outcomes for clinics, Material outcomes for the environment and Displacement for outcomes. Survey questions are included in the Appendix.

When the project delivery team was administering the surveys to review and identify material outcomes, stakeholders also were asked about the phrasing of these outcomes and whether they reflected how they would also describe the outcomes. Participants shared informally with the project delivery team on the chain of events and outcomes identified. The video interviews with students and qualitative feedback on the surveys to teachers and health professionals also helped the definition of the chain of events. When the new impact maps for different stakeholders were created, the evaluator consulted the project delivery team to verify the rationale.

While the original Theory of Change focus on the relationships between activities, inputs, outputs and outcomes, SROI requires the mapping of changes for each stakeholder, as an Impact Map. Some outcomes, such as school attendance, may seem more like an output in other contexts. However, in the context of rural Kenya, where access to education[1] and health service[2] is a massive challenge[3], these outcomes are of great importance to the

[1] Takayanagi, T. (2021). Between Development and Tradition: Pre-Primary Education in Rural Kenya.

[2] Kabia, E., Mbau, R., Oyando, R. et al (2019). “We are called the et cetera”: experiences of the poor with health financing reforms that target them in Kenya. Int J Equity Health 18, 98.

[3] While Free Primary Education has been implemented in many countries, there remain huge barriers for students to attend schools. For example, research found that severe poverty makes gaining education and retaining at schools unrealistic for many Kenyan children, yet the poverty rate in Kenya is 34-42% in 2013, estimated by World Bank. Nampushi, J., Welsh, N. (2015). Access issues in Kenyan primary education.

stakeholders, and actually require multi-dimensional efforts to achieve, such as providing access to reliable energy; increasing the availability of education and health resources (which are more outputs).

In addition, some outcomes reflected the changes stakeholders perceived. For example, short-/ medium-term outcomes identified as “More students attend schools” and “Students attend schools more often” correspond with children’s feedback on how solar energy has helped them in study, *“Solar panels will cause difference because we be able to study during the night and we'll be able to extend time for revising for exams. And we will be also able to study during the morning preps [, which was] a great challenge”; and also, “having the solar, the solar panels in our school, will help us a great deal, because we will extend the studying hours in our school, and also as a school we will be able to purchase electronic devices such as computers, and also printers”.*

As the ultimate aim of SVI is to “reduce inequality and environmental degradation and improve wellbeing”, the study attempted to rephrase some outcomes to describe the wellbeing of stakeholders, as in Table 4. However, the languages were revised after the consultation with stakeholders, which means the original outcomes were used in the survey to stakeholders. Hence, original languages could be seen some sections in the report, such as materiality discussion (Material outcomes for schools; Material outcomes for clinics) and deduction (Duration/drop-off for outcomes).

Table 4 Consideration of wellbeing in outcomes

	Original	Rephrased
Short-/ medium-term outcomes	More students attend schools.	Students feel supported to study.
	Students attend schools more often.	Students feel supported to study.
	More females attend school due to increased safety from extra lighting.	Females feel safe to attend schools.
Long-term outcomes	Higher rates of school attendance in remote parts of Kenya.	Students have better learning experience.
	Higher rates of clinics attendance in remote parts of Kenya.	Patients feel supported to access health services.

Through the above-mentioned consultation with stakeholders and considerations about the framing of outcomes, an Impact Map was developed in Table 5.

Table 5 New Theory of Change/Impact Map

Impact/mission: Power human progress with clean abundant energy for all

Stakeholders	Subgroups	Inputs	Outputs	Short-/ medium-term outcomes	Long term outcomes
Schools in rural parts of Kenya	Teachers	● Funding to the project. ● Working in health and education. ● Technical knowledge of solar homes system. ● Share key learnings to support other energy projects. ● Experience with local governments. ● Experience of collecting data.	● Electrification of schools.	● Teachers are supported to perform their jobs.	● Improved accessibility to education in rural sites. ● Students have better learning experience. ● Students perform better.
	Students		● Extra hours of study time each day in schools.	● Students feel supported to study. ● Females feel safe to attend schools.	
Clinics in rural parts of Kenya	Health professionals		● Electrification of clinics. ● Power life-saving health equipment (e.g., incubators, oxygen machines).	● Medical professionals are more supported to perform their jobs. ● Clinics have access to reliable and clean energy. ● Clinics saved costs on electricity.	● Improved accessibility to health in rural sites. ● Patients feel supported to access health services. ● More lives saved due to increased access to healthcare services.
	Patients		● Number of patients attending health clinics.	● Patients received more support on healthcare.	
Local communities	Environment		● Reliable, locally managed solar systems and storage.	● Pollution-heavy diesel generators replaced with cost-effective solar system ● Local communities become more sustainable.	● Tonnes of carbon emissions saved.

Stage 5: Evidencing outcomes and giving them value

During the creation of the Impact Map, teachers and health professionals were surveyed to rate the occurrence, importance and duration of the short- and medium-term outcomes (question list in the appendix), which are expected to contribute to the long-term outcomes. The study then assessed outcome materiality, i.e., whether an outcome is both relevant and important to stakeholders, which was determined by:

- **Relevance:** the percentage of survey participants who have experienced this outcome or think they would experience the outcome.
- **Importance:** the percentage of survey participants who think this outcome is important.

It is assumed that if short- and medium-term outcomes are material, then the long-term outcomes they linked to would be material. Material long-term outcomes were thus valued in monetary terms. To avoid double calculating the value, the analysis does not value short- and medium-term outcomes separately because they are interlinked and contribute to the long-term outcomes (an assured SROI report also used this method[4]). Financial proxies for the changes are identified based on desk-based research and consultation with the project delivery team. USD is used during the valuation as most of the referenced data points use USD in their research or assessment. The final value is converted to GBP using the average exchange rate of USD to GBP in 2020, i.e., 1 to 0.7798[5].

Stage 6: Establishing impact and adjusting the values

To avoid over-claiming the values, stakeholders' perceptions were factored to deduct the values, in four ways:

Table 6 Deductions in value

Consideration	Questions and options in the survey
Deadweight – the amount of outcome that would have happened even if the activity had not taken place.	What changes have you seen or experienced, (or do you think you will), because of Project Jua? ● I have seen this ● I think I will see this happen ● This would have happened anyway ● It didn't happen and/or will not happen The data was used to estimate the likelihood that stakeholders would experience the outcomes even without Project Jua.
Attribution – the amount of outcome that was caused by the contribution of other organisations or people.	Did anyone/anything else contribute to the experience/change? The data was used to determine how much change was contributed by Project Jua.
Displacement – the amount of outcome displaced by other outcomes.	Have all the changes been positive? If not, what have been the negative changes?

[4] A Social Return on Investment Analysis on the Impact of DIAL House.

[5] Exchange Gate (2020). US Dollar to British Pound Spot Exchange Rates for 2020.

	The data was used to decide whether intended outcomes bring other negative outcomes.
Drop off and duration – the length an outcome would last.	How long did the change last for (or do you think the change will last)? ● 3 months ● 6 months ● 1 year ● 2 years ● over 2 years The data was used to estimate how long outcomes would last and when outcome would reduce.

Stage 7: Calculating SROI with sensitivity analysis

The benefits were added up and subtracted by negatives to estimate the values generated by Project Jua. Sensitivity analysis was conducted through using different financial figures and adjusting deductions, in order to how different scenarios could impact the outcomes.

Stage 8: Reporting, verification and recommendations

Findings were presented in this report and shared with stakeholders. OVO Foundation and Energy4Impact were invited to review the full report and shared comments for revisions.

As for the verification with the wider stakeholders, during the consultation with Energy4Impact, some challenges were identified to conduct verification with teachers and health professionals, such as the lack of digital devices, limited access to internet and ability to comprehend the concepts of SROI. To overcome these challenges, suitable approaches were agreed and implemented with the support of Energy4Impact:

1. The evaluator prepared infographics to simplify the SROI analysis and findings in a way that is accessible and understandable for the teachers and health professionals, such as converting the value to Kenyan shilling and presenting the information related to local activities.
2. The consultation prioritised the teachers and health professionals who have access to smartphones and internet. Infographics were shared with the teachers and health professionals via Whatsapp. 17 schools and 9 clinics were invited to comment, during a two-week consultation period.
3. Energy4Impact's delivery team supported the consultation with teachers and health professionals and helped interpret the information in local languages to make the process more accessible to the participants.
4. 4 schools and 5 clinics provided feedback in the end.

The teachers and health professionals showed confidence in the SROI analysis, as in the quotes below:

- *"Thanks for that partnership its realistic we benefiting." – Ngambenyi primary*
- *"Thank you Team project Jua the information is true and factual." – Kajungunyi secondary*
- *"Your findings are true and absolute." – Salim Mvurya Secondary*

- *"On behalf of the student's teachers and community, the findings are realistic." – Chinyume primary*
- *"Energy for impact has saved clinics from payment of huge electricity bill from the unreliable national grid." – Mwashuma dispensary*
- *"The findings are real and accurate I agree with them, thanks" – Manoa dispensary*
- *"True-realistic". – Mwanda dispensary*
- *"Yeah very correct". – Chilodi dispensary*
- *"The findings are accurate to the best of my understanding". – Mabesheni dispensary*

Limitations of the study

There are some limitations of this evaluation that could influence the result of SROI. The evaluator has tried to mitigate the risks of limitations, yet where not possible, limitations are considered in the sensitivity analysis to predict results in different scenarios. Recommendations for future studies are presented in this section.

Difficulties to engage directly with some stakeholders: Due to COVID restrictions and resource constraints, the evaluator was not able to collect data directly with some stakeholders (i.e., teachers, students, health professionals and patients) but relied on the support of the project delivery team. The COVID restrictions have made it challenging for the evaluator of this project to directly speak to stakeholders in person. Additional language support is also required to ensure stakeholders understand the content of the survey, as even though the stakeholders could speak English, it still requires the support of local languages to supplement their level of English proficiency. Thus, the data collection in this study relied on the support of the project delivery team. The reliance may have resulted in stakeholders feeling a need to provide positive feedback in the presence of the delivery team. In addition, there was no additional budget to compensate for stakeholders' involvement in the study, which made it not possible to engage stakeholders widely and deeply. Considering these challenges, the study used surveys to gain the perspectives of teachers and health professionals on the outcomes and previous interview videos to infer children's viewpoints. Direct conversations with the stakeholders might benefit the process in honing the definition of outcomes. It is suggested that future study priortises direct engagement with the stakeholders from the very beginning of the process, and that appropriate budget and time are built in to support their engagement.

Selection and sampling bias: The study was not able to engage with all stakeholders in each group, which could result in bias in opinions. It was voluntary for invited participants to join the workshop, while surveys were conducted onsite with the help of project delivery team in three out of the five counties through random sampling. The approach was chosen to enhance accessibility and take into account the availability of participants; however, it means there could be potential bias in the analysis. The study adjusts the outcome data in the sensitivity analysis.

Potential differences in outcomes: As mentioned in the previous point, sampling limitation could lead to some bias in opinions. Among all the survey participants, only one teacher reported seeing no changes in one outcome, while all health professionals report seeing

changes in all outcomes. Even though the study collected geographic location of the teachers and the health professionals, it is difficult to disaggregate current data and define patterns for differences in outcomes. For future studies, it is suggested not only to expand the scale of sample, but also to collect more types of demographic data in order to identify patterns. The study identified subgroups for stakeholders, yet some subgroups could be further segmented based on their characteristics such as gender, age and socio-economic backgrounds. While the study was not able to collect a range of demographic data from its evaluation participants, coupled with the potential sampling bias, the gap leads to the challenges of identifying patterns of participants and informing their potential different perception in outcomes. In addition, due to the limitation of resources, the study was not able to reconvene participants who experienced different extent of outcomes, to identify the potential reasons. Despite the above limitations, the majority of (and sometimes all) the evaluation participants reported experiencing the outcomes. For those who experienced different outcomes from the others, it might be worth exploring the following questions in future studies: (1) For the stakeholders that did not report seeing positive outcomes yet, do they share any characteristics and what could be the reasons that their experiences were different from others? (2) Do the people who reported experiencing unexpected negative outcomes share any characteristics and why have they experienced negative outcomes? The study thus makes recommendations in this section for the programme to continue collecting data and monitoring the achievement of the outcomes.

Selection of proxy data: While the study uses relevant financial proxies for the outcomes, the choice of proxies would influence the final valuation. The risks in selection of proxies include: (1) Some proxies may not fully reflect the context of rural parts of Kenya, although the quoted reports were conducted in similar contexts, such as low- to middle-income countries; (2) There are not yet standardised prices and the prices could fluctuate or should be adjusted due to country context, such as carbon pricing. To mitigate the risks, the study considers the above factors in the sensitivity analysis.

Use of assumptions: The study has access to the analysis of Project Jua's needs assessment report, which provides rich baseline data. However, while some data have been tracked automatically by the systems introduced to the implementation sites (such as energy monitoring system), one few data points were analysed. This resulted in the lack of endline outcome data. The study thus makes assumptions in some value calculation and intends to mitigate risks of overclaiming by using context-specific or adjusted research and data.

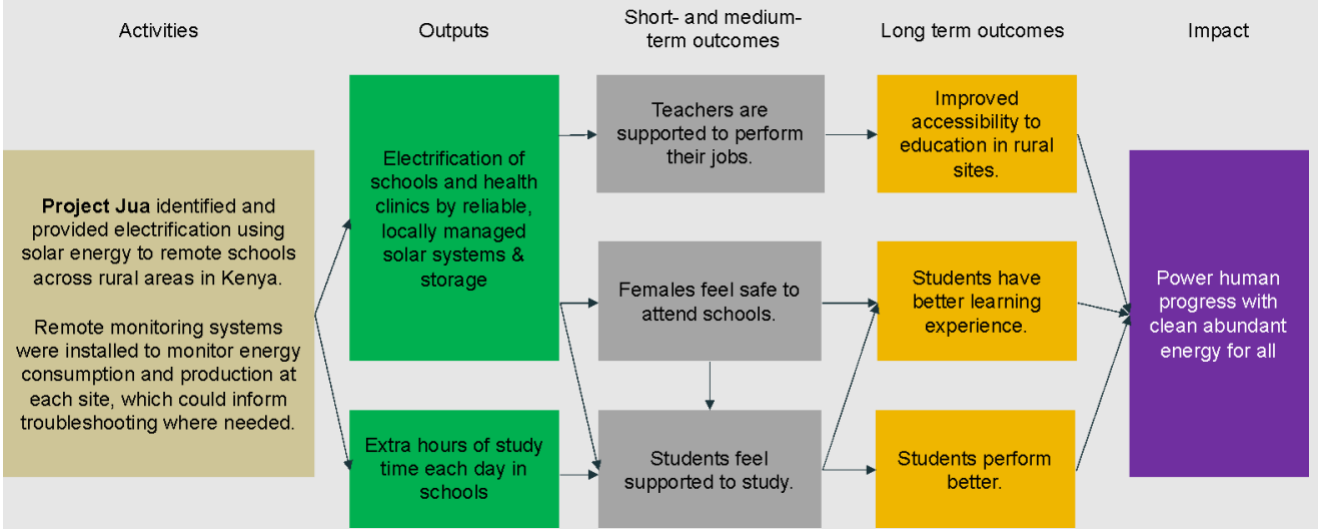
Outcomes and values

Outcomes for schools

Theory of Change for schools

To achieve the education outcomes, the roles of teachers and students are interlinked. The relationships between activities and outcomes are presented below. The chain of events was created based on the consultation with Energy4Impact project management team and partnered researchers in a workshop, the qualitative feedback from the teachers in the surveys, the informal conversation between the onsite project team members and the teachers, the video interviews with students, the judgement of the evaluator and further validation with the project delivery team when the impact map was created.

Figure 2 Theory of Change for schools (teachers and students)



Material outcomes for schools

Teachers were asked to share their experience of the outcomes, as in Table 7. The participants show consensus on their experience of most of the outcomes, with majority of the feedback being “I have seen this” or “I think I will see this happen”, which indicates the relevance of these outcomes to stakeholders. There also seems to be less concern of deadweight for outcome 1-5, as no participants believe the outcomes “would have happened anyway”, although the opinions of the participants could not be generalised as those of all the other teachers. The only outcome getting varied views is “local businesses generate more income”, with only 12% of participants having seen this, 76% gauging it will happen, 6% believing it would have happened anyway and another 6% doubting it would ever happen.

Based on the teachers’ actual experience of the outcomes, the final column of Table 7 shows a “relevance judgement” to summarise whether the outcome is relevant to the stakeholders.

Table 7 Teachers' experience of the outcomes (N=49)

Outcomes	I have seen this	I think I will see this happen	This would have happened anyway	It didn't happen and/or will not happen	relevance judgement
1. I feel supported to do my job.	100%	0%	0%	0%	relevant
2. More children and young people attend schools.	73%	27%	0%	0%	relevant
3. More girls attend schools.	71%	27%	0%	2%	relevant
4. Students attend schools more often.	90%	10%	0%	0%	relevant
5. Students perform better.	78%	22%	0%	0%	relevant
6. Local businesses generate more income.	12%	76%	6%	6%	partially relevant
7. My communities become more sustainable.	71%	27%	2%	0%	relevant

Teachers were also invited to rate the importance of each outcome. Outcomes 1-5 are identified as important as over 95% of participants believed they are quite or very important. Outcome 7 ("my communities become more sustainable"), albeit attracting varied views, still showed importance among 83% of the participants. Outcome 6 ("local businesses generate more income"), however, was believed to be important by only 51% of the participants and most of them (33%) held neutral opinion (i.e., so-so) about this outcome. While still over half of the participants thought Outcome 6 was of importance, the percentage was much lower than that of the other outcomes. It was then defined as "not important" in the last column "importance judgement".

Table 8 Teachers' rating of importance of the outcomes (N=49)

Outcomes	not important	less important	so-so	quite important	very important	importance judgement
1. I feel supported to do my job.	0%	0%	0%	14%	86%	important
2. More children and young people attend schools.	0%	0%	0%	27%	73%	important
3. More girls attend schools.	0%	0%	2%	29%	69%	important
4. Students attend schools more often.	0%	0%	2%	27%	71%	important

5. Students perform better.	0%	0%	2%	20%	78%	important
6. Local businesses generate more income.	4%	12%	33%	27%	24%	not important
7. My communities become more sustainable.	2%	4%	10%	24%	59%	important

Most outcomes were proved to be material to teachers, as they are both relevant and important, except for Outcome 6, which was defined as "partially relevant" and "not important. In consultation with Energy4Impact, it was clarified that schools are regulated by law not being able to pursue other income generation activities, which may be a reason why teachers did not agree on the importance of this outcome. Outcome 6 was then not considered in the Theory of Change for schools.

Finally, the chain of change was also discussed with the teachers when administering the surveys informally, to define how short- and medium-term outcomes could link to long-term outcomes.

Valuation of outcomes for schools

Outcome: Improved accessibility to education in rural sites.
Before Project Jua, 68% of the schools had a source of power (from national grid or PV system), though 73% of schools rarely or never have available power. The remaining 32% of schools have no sources of power at all[6]. Due to the lack of electricity, lots of appliances were not useable, such as lightbulbs, projectors, tablets and laptops, as found in the needs assessment. Students also echo this in the interviews:

- *"We are unable to use the computers, laptops, and the electronic devices, not at school right now because we don't have them in our school. The reason why we don't have them in our school it's because we lack power." – Secondary 1*

With electricity at schools, teachers are supported to save their time commuting between schools and sites with electricity and focus on educating students with powered learning equipment. This can be demonstrated by teachers' feedback:

- *"Documents are also typed and printed in the institution reducing movement of staff members." – Teacher 1*
- *"All typing and printing activities done in school reducing movement of staff members to the cyber cafes." – Teacher 5*
- *"Electrical based services are now available in the institution reducing movement and transport cost of staff members looking for such services." – Teacher 6*

To value this outcome, two indicators informed from the workshop and survey are used:

[6] From Project Jua needs assessment (December 2019).

- **Saved costs from paying unreliable grid energy by schools:** The project's needs assessment shows that 36% of schools (90 schools) has no energy budget, 63% of schools (159 schools) has a monthly energy budget over USD 50, and 1 school has a budget of USD 45. This analysis thus estimated that the annual budget for all schools combined is USD 95,940. As the financial proxy is calculated as a combined number for all schools, the quantity for this indicator uses a percentage, meaning the percentage of schools that have been paying for unreliable energy. 73% schools have unreliable energy and 100% of teachers believed they are more supported due to Project Jua, thus 73% is used with no deduction. Sensitivity analysis will be considered in the sections later.
- **Time saved commuting between schools and electrified sites**: based on the data from Project Jua needs assessment, it is estimated that there are around 1,825 teachers at all schools. It is assumed that they spent around 4 hour per month (once a week; an hour each time) commuting between schools and sites with electricity, which means all teachers spend 87,600 hours commuting for electricity. It is calculated that the average hourly salary of primary school teachers in Kenya is USD 1.5, based on their average annual salary of USD 1,908 (KSh 205,873[7]) and 7.5 hours of work in each school days.

With the calculation in Table 9, the value estimated for this outcome is USD 457,848.70.

Table 9 Valuing "Improved accessibility to education in rural sites"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Saved costs from paying unreliable grid energy by schools	73%	USD 95,940 – annual costs of current energy sources at schools	USD 64,406.47	Project Jua needs assessment
Hours saved commuting between schools and electrified sites	87,600	USD 1.5 – teachers' hourly rate	USD 120,837.65	Pay scale

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

Outcome: Students have better learning experience.

There are three short- and medium-term outcomes related to students that contribute to this long-term outcome. Firstly, most (73%) of the teachers have seen "more children and young people attend schools" and the rest believe this will happen. Attendance data were collected in Project Jua needs assessment, while latest data will be collected again in late 2021 to verify the changes in attendance.

Second, survey results also evidence that "more females attend school" due to increased safety from extra lighting. The majority (71%) of teachers observed that there are more females attending schools and 27% think this will happen. Three teachers also state

[7] Pay scale. Average Primary School Teacher Salary in Kenya.

improved night security as an additional outcome. A girl at a secondary school shared the frustration of not being able to study at night:

- *"Normally we study in school during the day and during the night really want to study but because of lack of light. We only have two kerosene lamps and a torch, so we have a great challenge of studying during the night." – Secondary 1*

Other primary and secondary school students also enjoyed the benefits of solar panels for extra study:

- *"Solar panels cause a difference because we'll be able to study during the night and we'll be able to extend the time for revising and revising for exams. And will be also able to study during the morning preps." – Secondary 2*
- *"Due to lack of electricity, we are not able to study after dark." – Primary 1*

Third relevant outcome, the frequency for students attending schools, was also enhanced. 90% of the surveyed teachers agreed that "students attend school more often", while 10% believed this would happen in the future.

The fact that "Students have better learning experience" may also contribute to the change of another long-term outcome, "Students perform better". The study had considered to use indicators such as increased student attendance or improved school performance, though the outcome data for such indicators would not be available until the end of the project (i.e., end of 2021).

Considering the lack of outcome data, and to avoid double counting the value, the long-term outcome is then valued by the time freed up for family members to pursue other activities, an indicator identified in the workshop with the project delivery team. Official school hour ends at 3:30 pm in Kenya[8]. With light for early morning and night study, students would be able to study at school for extra hours. Assuming they study 2 hours every day for 170 school days a year, they would study 340 hours at school, which also means each family member have extra 340 hours to pursue other activities. As there are 86,226 students in total[9], it is then estimated that there are around 31,936 family whose children may study at local schools, based on an average of 2.7 children in each household in the five counties[10].

If students could study 2 more hours in a school day, 10,858,088 hours could be saved for all 31,936 families in a year (assuming only one person in each family needs to take care of or spend those 2 hours with the student). However, as not all survey participants think this outcome have happened yet (as in Table 7), to avoid overclaiming, the total hours are thus discounted by the average percentage (78%) of participants who have seen the relevant short- and medium outcomes happened, resulting in 8,469,309 hours.

[8] News Pro (2019). Professor Magoha Reveals official school hours for learners.

[9] Project Jua needs assessment.

[10] Kenya National Bureau of Statistics (2019). Kenya Census 2019 Population by County and Sub-County.

Table 10 Overclaim considerations

Long-term outcome	Related short- and medium-term outcome (original languages)	% of participants who have seen this happen
Students have better learning experience.	More children and young people attend schools.	73%
	More girls attend schools.	71%
	Students attend schools more often.	90%
Average		78%

The financial proxy chosen is the willingness-to-accept value of leisure time at EUR 16[11]. As this research was conducted by surveying people in Netherlands in 2018, it is necessary to adjust the figure to reflect the context in Kenya, as calculated in Table 11. The adjusted willingness-to-accept value of leisure time in Kenya is KSh 35.33, converted to 0.35 USD for consistency in calculation.

Table 11 Adjustment of willingness-to-accept value of leisure time

Consideration	Adjustment in 2018	Value
Willingness-to-accept value of leisure time in Netherlands	N/A	EUR 16
Currency rate (EUR to KSh)	1:115.25[12]	KSh 1844.08
PPP conversation factors	Kenya = 40.19[13] Netherlands = 0.77[14]	52.2 times
Willingness-to-accept value of leisure time in Kenya	N/A	KSh 35.33

Table 12 Valuing "Higher rates of school attendance in remote parts of Kenya"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Time freed up for family members to pursue other activities (in hours)	8,469,309	USD 0.35 – the willingness-to-accept value of leisure time in Kenya	USD 1,868,600.80	Time Is Money: Investigating the Value of Leisure Time and Unpaid Work

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

Outcome: Students perform better.

All teachers believed that they have seen or will see "students perform better". From the video recorded interviews, students also shared the benefits of solar panels, which enabled them to extend study hours and use electronic devices at schools:

[11] Kaya Verbooy MSc; Renske Hoefman PhD; Job van Exel; Werner Brouwer. 2018. Time Is Money: Investigating the Value of Leisure Time and Unpaid Work. Value in Health. Volume 21, Issue 12, December 2018, Pages 1428-1436.

[12] The Euro to Kenyan Shilling Historical Exchange Rates Conversion Page for 2018.

[13] World Bank (2018). PPP conversion factor, GDP (LCU per international $) – Kenya.

[14] World Bank (2018). PPP conversion factor, GDP (LCU per international $) – Netherlands.

- *"Having the solar panels in our school will help us a great deal, because we will extend the studying hours in our school, and also as a school we will be able to purchase electronic devices such as computers, and also printers and that would be really great." – Secondary 1*
- *"We will be able to acquire those electronic devices like laptops and computers." – Secondary 2*
- *"When we have solar panels, we will be able to study after dark, use computers, tablets, laptops and other equipment." – Primary 1*
- *"Due to lack of electricity, we are not able to study after dark, not able to use tablets, computers or laptops for the moment due to lack of power. We are going to be able to use laptops, computers and other equipment." – Primary 2*

The indicator chosen for improved student performance is the investment in installing cable infrastructure at schools. Data showed that total investment at all sites (including 230 schools and 31 clinics) were GBP 76,865.15[15], while the amount dedicated to schools was not clear. This analysis then proportionally applies 88.12% to schools (230 out of all 261 sites), meaning GBP 67,735.57 was invested in schools cable infrastructure.

Costs are then proportionally applied to primary and secondary schools, with a further allocation to boy and girls, assuming both genders enjoy the benefits resulting from cable infrastructure. As the precise percentage of boys and girls is not clear for primary and secondary schools, the gender percentage of all students are used; that is, 51.8% (44,663 out of all 86,226) are male and 48.2% (41,563 out of all 86,226) are female. To avoid overclaiming, the estimated investment allocated is further discounted by outcome experience, as only 78% of teachers have seen this outcome happen (Table 7). The figures in Table 13 are then converted from GBP to USD in Table 14 for consistency in calculation.

Table 13 Investment in school's cable infrastructure, by gender

Type of schools	% of schools	Est. Allocated investment	Boys/girls	Est. Allocated investment	Investment after discounted (78%)
Primary	93%	GBP 62994.08	51.8%	GBP 32629.42	GBP 25,450.95
			48.2%	GBP 30364.66	GBP 23,684.43
Secondary	7%	GBP 4741.49	51.8%	GBP 32629.42	GBP 25,450.95
			48.2%	GBP 30364.66	GBP 23,684.43

Financial proxy chosen is the return of investment in primary or secondary education in middle-income countries, which are defined by a study[16] using World Bank's classification of countries with a GNI per capita at the range of USD 1046-12,735 in 2015 when Kenya's GNI per capita was USD 1,290. In that study, apart from the direct investment in education and direct benefits of education, the estimation of return rate also considered the full resource cost of investment and social benefits of education. This consideration is applicable in the context of Project Jua, as electricity can be regarded as an enabler of education in rural

[15] Energy4Impact. Implementation Phase Report- PROJECT JUA: May 2019 - December 2020.

[16] "Psacharopoulos, George; Patrinos, Harry Anthony. 2018. Returns to Investment in Education: A Decennial Review of the Global Literature. Policy Research Working Paper; No. 8402. World Bank.

parts of Kenya and education could bring other social benefits to children. Research shows that the returns of investment related to education are different for primary schools and secondary schools and that investment to girls has 2% more on its return in general.

Table 14 Valuing "Students perform better"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Investment in electrifying the classrooms in primary schools (USD) – boys	19,846.65	17.1% return from investment in primary education in middle-income countries for boys	USD 14,867.68	Returns to Investment in Education: A Decennial Review of the Global Literature[17]
Investment in electrifying the classrooms in primary schools (USD) – girls	18,469.12	19.1% return from investment in primary education in middle-income countries for girls	USD 14,072.04	
Investment in electrifying the classrooms in secondary schools (USD) – boys	19,846.65	12.8% return from investment in secondary education in middle-income countries	USD 14,321.73	
Investment in electrifying the classrooms in primary schools (USD) – girls	18,469.12	14.8% return from investment in secondary education in middle-income countries for girls	USD 13,563.98	

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

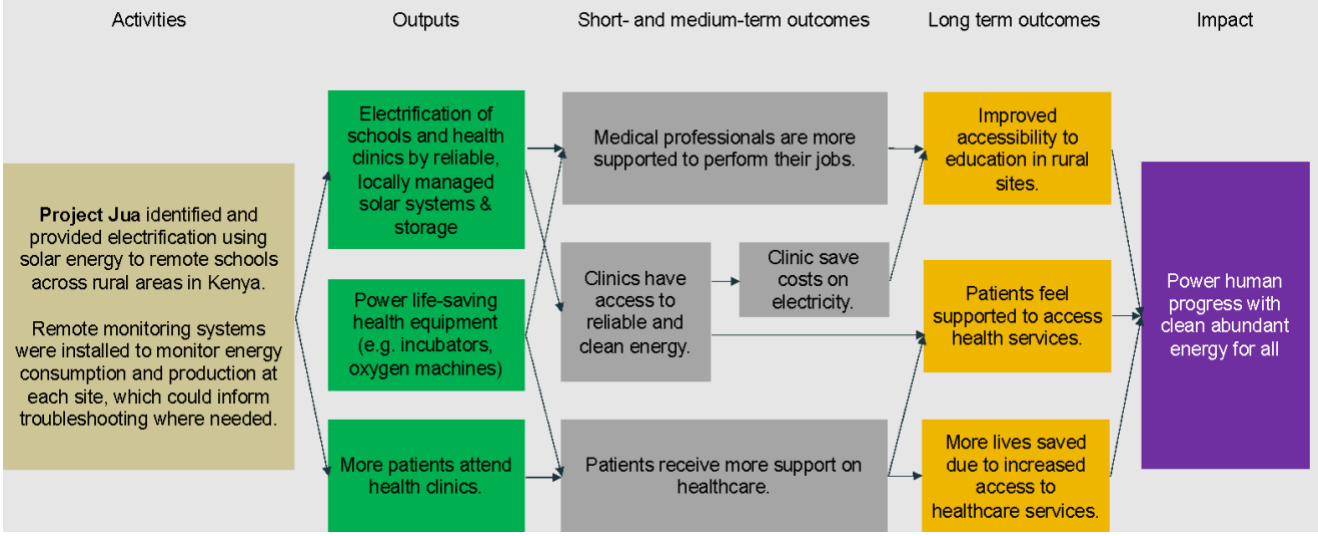
Outcomes for clinics

Theory of Change for clinics

To achieve health outcomes, the roles of health professionals and patients are interlinked. The relationships between activities and outcomes are presented below. The chain of events was defined by consulting with Energy4Impact project management team and partnered researchers in a workshop, receiving the qualitative feedback from the health professionals in the surveys, learning from the informal conversation between the onsite project team members and the health professionals, reviewing the video interviews with the health professionals, using the judgement of the evaluator and further validating with the project delivery team when the impact map was created.

[17] "Psacharopoulos, George; Patrinos, Harry Anthony. 2018. Returns to Investment in Education: A Decennial Review of the Global Literature. Policy Research Working Paper; No. 8402. World Bank.

Figure 3 Theory of Change for clinics (health professionals and patients)



Material outcomes for clinics

Health professionals at local clinics were surveyed to share their experience with the changes. Overall, almost all outcomes have at least 75% of the health professionals seeing them happen. There are four outcomes that have been experienced by all survey participants: outcome 1, 4, 5 and 6 in Table 15. Outcome 7 shows slightly varied opinions among health professionals. While the majority (75%) believe it has happened and 17% think this will happen, there are 8% of participants think this would have happened even without Project Jua, for which the study will consider in the deadweight calculation. The only outcome that has not been observed widely (only 17%) is Outcome 8 “Local businesses generate more income” and 8% thought this would have happened anyway, although 75% of participants think it will happen in the future. It is defined as “partially relevant” in this study, as the average percentage of “I have seen this” for all outcomes is 84%, a lot higher than the 17% for Outcome 8.

Table 15 shows the surveyed results from health professionals. The final column summaries the relevance of its corresponding outcome to clinics.

Table 15 Health professionals' experience of the outcomes (N=12)

Outcomes	I have seen this	I think I will see this happen	This would have happened anyway	It didn’t happen and/or will not happen	relevance judgement
1. I feel supported to do my job.	100%	0%	0%	0%	relevant
2. More patients attend health clinics.	83%	17%	0%	0%	relevant
3. Patients receive more support on healthcare.	92%	8%	0%	0%	relevant
4. More lives are saved.	100%	0%	0%	0%	relevant

5. The clinic has access to reliable and clean energy.	100%	0%	0%	0%	relevant
6. The clinic saves costs on electricity.	100%	0%	0%	0%	relevant
7. Life-saving health equipment can be powered.	75%	17%	8%	0%	relevant
8. Local businesses generate more income.	17%	75%	8%	0%	partially relevant
9. My communities become more sustainable.	92%	8%	0%	0%	relevant

With the same set of outcomes, health professionals rated their importance. On average, outcomes received 77% of participants who rate them as very important. Therefore, we have classified the outcomes that have above 77% “very important” rating as “important” in the judgement column. Outcome 2 and 9, though slightly below the average, are still identified as important, as respectively over 92% and 100% of participants think they are very important and quite important. Outcome 8, however, has just over 40% of participants think it is very important, 33% for so-so, and even 8% for not important. It is thus coded as “partially important” in the judgement column.

Table 16 Health professionals' rating of importance of the outcomes (N=12)

Outcomes	not important	less important	so-so	quite important	very important	importance judgement
1. I feel supported to do my job.	0%	0%	0%	8%	92%	important
2. More patients attend health clinics.	0%	0%	8%	25%	67%	important
3. Patients receive more support on healthcare.	0%	0%	0%	17%	83%	important
4. More lives are saved.	0%	0%	0%	17%	83%	important
5. The clinic has access to reliable and clean energy.	0%	0%	0%	17%	83%	important
6. The clinic saves costs on electricity.	0%	0%	0%	8%	92%	important
7. Life-saving health equipment can be powered.	0%	0%	9%	9%	82%	important

8. Local businesses generate more income.	8%	0%	33%	17%	42%	partially important
9. My communities become more sustainable.	0%	0%	0%	33%	67%	important

For all the outcomes that are relevant and important, they are considered material. Only Outcome 8 are dropped out from the material outcomes, as it is identified as partially relevant and partially important. The chain of events was also discussed with the health professionals when the surveys were administered informally, to define how short- and medium-term outcomes could link to long-term outcomes.

Valuation of outcomes for clinics

Outcome: Improved accessibility to health in rural sites.
Before Project Jua, 56% of clinics have electricity, while 71% among them stated that electricity was either available only half of the time, rarely available or never available[18]. 44% of clinics had no source of power at all. Due to lack of power, clinics were not able to offer services at night and health equipment could not be properly powered. 86% of the clinics operated for 5 days a week for less than 10 hours per day.

Installed with solar PV systems, clinics can offer health services with extended hours and focused staff, as shared by health professionals:

- *"Some services could not be done before the Jua Project such as deliveries at night." – Health professional 101*
- *"All night deliveries are served well with enough light, then movement of staff has been reduced, photocopy of official document is done in the clinic." – Health professional 104*
- *"Deliveries have been picked up due to availability of power we have." – Health professional 302*

To value this outcome, two indicators informed from the workshop and survey are used:

- **Saved costs of paying unreliable grid energy by clinics:** The project's needs assessment shows that 76% of clinics (38 clinics) has no energy budget, 18% of schools (9 clinics) has a monthly energy budget below USD 50 (USD 254 in total), and the remaining 3 clinics has a budget over USD 50 (USD 412 in total). This means that before Project Jua, clinics spent USD 7,992 in total annually in energy, which is used as the financial proxy for this indicator. As the financial proxy is calculated as a sum for all clinics, the quantity for this indicator uses a percentage, meaning the proportion of clinics that have been paying for unreliable energy (71% clinics have unreliable energy). As 100% of health professionals believed they have all seen the outcomes related to this outcome, 71% is therefore used with no deduction in calculation. Sensitivity analysis will be considered in the sections later.

[18] From Project Jua needs assessment (December 2019).

- **Time saved commuting between clinics and electrified sites**: Among all clinics, there are 362 medical staff in total, of which 82 are non-medical staff (1-2 per clinic). It is assumed that non-medical staff would be in charge of non-medical related activities, such as photocopy of official document. Due to Project Jua, staff can now complete these tasks in their clinics, reducing the time of commuting to sites with electricity. Assuming one non-medical staff per clinic spent around 4 hours a month (an hour a week) an hour a day commuting and that most (86%) of clinics operates 5 days a week and less than 10 hours a day[19], which means all non-medical staff spend 2,400 hours commuting for electricity. The average hourly salary of non-medical staff in Kenya is calculated at USD 1.94, based on their average annual salary of USD 4575.60 (KSh 492,000[20]), 10 hours of work each day and 24 days of annual leave in average[21].

Table 17 Valuing "Improved accessibility to health in rural sites"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Saved costs of paying unreliable grid energy by clinics	71%	USD 7,992 – annual costs of current energy sources at schools	USD 4,334.55	Project Jua needs assessment
Hours saved commuting between clinics and electrified sites	2,400	USD 1.94 – nurses' hourly rate on average	USD 3,556.67	MyJobMag

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

However, two clinics stated that current energy is not enough for certain equipment, which may influence the delivery of health services and the duration of the outcome:

- *"The clinic is requesting for a powerful inverter of a greater wattage since the installed one can't fully serve the already present machines like vaccine fridges, autoclaving machines and incubators." – Health professional 103*
- *"The health clinic is requesting for a bigger system since the installed one cannot serve continuously on the vaccines fridges. The fridges get power for two hours before the batteries drain." – Health professional 104*

Outcome: Patients feel supported to access health services.

Among the clinics supported, 42 clinics exclusively offer outpatient services and 8 offer both outpatient and inpatient services. On average, clinics offering outpatient services receive an average of 8,252 patients per month while those offering inpatient services receive an average of 12 patients per month. The number of total patients is calculated:

[19] Project Jua needs assessment.

[20] MyJobMag (2020). The Average Medical Salaries in Kenya. The salary of nurse is chosen as a proxy.

[21] AfricaPay Kenya. Annual Leave.

Table 18 Patients served by clinics

	Data from needs assessment	Data estimated by this analysis
Type of clinics	Patients served /month (all clinics)	Patients served /year (all clinics)
Outpatient	8,252	363,088
Both	12	96
Total	8,264	99,168

Assuming if a clinic can increase 2 hours of operation during its night service, potential number of patients for all clinics in a year could be 19,833 people, as in Table 19.

Table 19 Increased patients

Data from needs assessment		Data estimated by this analysis			
Patients served /month by all clinics	Clinics operation hours /month[22]	Patients served /hours by all clinics	Extra operation hours/day due to night service	Increased capacity each day by all clinics	Increased capacity for all clinics in a year
Outpatient – 8252	216.67	38	2	76.17	19,804
Both – 12	216.67	0.06	2	0.11	29
Total – 8,264	N/A	38.06	N/A	76.28	19,833

**Number of patients in some cells shows decimal for clarity in figures, as it is less than one when calculated. It does not imply that it is not a whole person.*

The increased supply (19,833) may be necessary, as there could be more demands of health services than the increased supply. Potential visits to doctors in the five counties in a year are estimated at 27,726,481 visits (in Table 20), which is significantly more than total patients currently served (99,168) plus increased capacity at 119,001visits.

Table 20 Total potential doctor visits in a year in the five counties

Population in the five counties[23]	Average doctor visit by a person in a year[24]	Total potential doctor visits
3,856,256	7.19	27,726,481

To avoid overclaiming the quantity, the increased capacity is then discounted by the average of survey participants (88%) experiencing relevant short- and medium-term outcomes to this long-term outcome. The discounted quantity is 17,453 patients, which is used in SROI calculation. However, several factors may influence the quantity, such as the capacity at clinics, the actual patients needing health services and their frequency of visits. The quantity will be tested in the sensitivity analysis.

[22] From Project Jua needs assessment, clinics operates 5 days a week and less than 10 hours a day.

[23] Kenya National Bureau of Statistics (2019). Kenya Census 2019 Population by County and Sub-County.

[24] Statista (2018). Number of doctor visits per capita in selected countries as of 2018.

The outcome is valued by considering the increased number of patients served by clinics. As all clinics are public clinics, the financial proxy used is the annual total government health expenditure per capita in Kenya. The reason is that if the patients cannot access health services properly, it would result in a waste of health expenditure from the government. Annual total government health expenditure per capita in Kenya is USD 78.6[25]. Assuming an international average of 7.19 times doctor visit by a person a year, it means USD 10.93 is spent by the government on a person each time they visit doctor.

Table 21 Valuing "Higher rates of clinics attendance in remote parts of Kenya"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Increased number of patients served	17,453	USD 10.93 – annual total government health expenditure per capita per visit to doctor in Kenya	USD 145,743.96	International Journal for Equity in Health[26]; Health Status[27]

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

Outcome: More lives saved due to increased access to healthcare services.

In Project Jua's needs assessment, it is found that a total of 193 patients (83 women; 90 children; 19 men) are referred by a clinic to other clinics per month. Although the reasons for referral are unclear, it could mean that patients were not able to access services or receive appropriate treatment in the clinics they originally visited. If clinics extend operation hours and the medial equipment is powered due to Project Jua, these referrals may be able to reduce to an extent. As for childbirth, a clinic has a total of 3 deliveries per month with 1 of the 3 being done at night, although night services were limited due to the lack of light. With Project Jua, clinics could offer services to more patients, which could reduce the number of patients referred to other clinics and increase the delivery of night births.

Table 22 Patient referrals by clinics

Data from needs assessment	Data estimated by this analysis
Patient referrals by all clinics in a month	Patient referrals by all clinics in a year
193	2,316

Ideally, if every patient could be served in all clinics they visit, 2,316 referrals can be reduced. This number could be covered by the increased capacity (19,833 patients) calculated in the previous section. To avoid double counting, this outcome valuation focuses on child mortality, which may not be solved only by increased capacity. Although data about child mortality or severe situations for children in these clinics are not available, Table 23 shows that children account for a much higher percentage of patients referred (46.9%) comparing to patients served (28%).

[25] Kabia, E., Mbau, R., Oyando, R. et al (2019). "We are called the et cetera": experiences of the poor with health financing reforms that target them in Kenya. Int J Equity Health 18, 98.

[26] Kabia, E., Mbau, R., Oyando, R. et al (2019). "We are called the et cetera": experiences of the poor with health financing reforms that target them in Kenya. Int J Equity Health 18, 98.

[27] Health Status. How Often Should You See A Doctor?

Table 23 Comparison between patients served and referred[28]

	% of patients served	% of patients referred
Women	49%	43.2%
Men	23%	9.9%
Children	28%	46.9%

Such a difference could mean that clinics are not able to provide the appropriate health services to serve the needs of children, even if they have capacity. The issue could possibly be addressed by improvement in medical equipment, which can now be operated more effectively as a result of reliable electricity from Project Jua. The indicator used is the decreased number of children that could possibly suffer from ill health and mortality. As under-five mortality rate in Kenya is 43.2 per 1,000 live births[29], it means the underserved children referrals could possibly lead to 2,425 children death (as in Table 24). With Project Jua, these children could be able to receive appropriate medical treatment and have their lives saved. To avoid overclaiming, the quantity is further discounted by the average survey participants (87.5%) that have seen relevant outcomes happen to 41 children.

Table 24 Possible under-five mortality

Data from needs assessment	Data estimated by this analysis	
Children referrals by all clinics /month	Children referrals by all clinics/ year	Possible under-five mortality (4.32%)
90	1,080	47

Financial proxy chosen is the cost of per year of healthy life saved in Kenya.

Table 25 Valuing "More lives saved due to increased access to healthcare services"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Children saved	41	USD 153 – the cost per year of healthy life saved	USD 4,373.70	London School of Hygiene & Tropical Medicine[30]

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

Outcomes for the environment

Theory of Change for the environment

The environment is used as a proxy stakeholder for the future generation in the local communities. The relationships between activities and outcomes for the environment are presented below. The chain of events was identified via a workshop with Energy4Impact

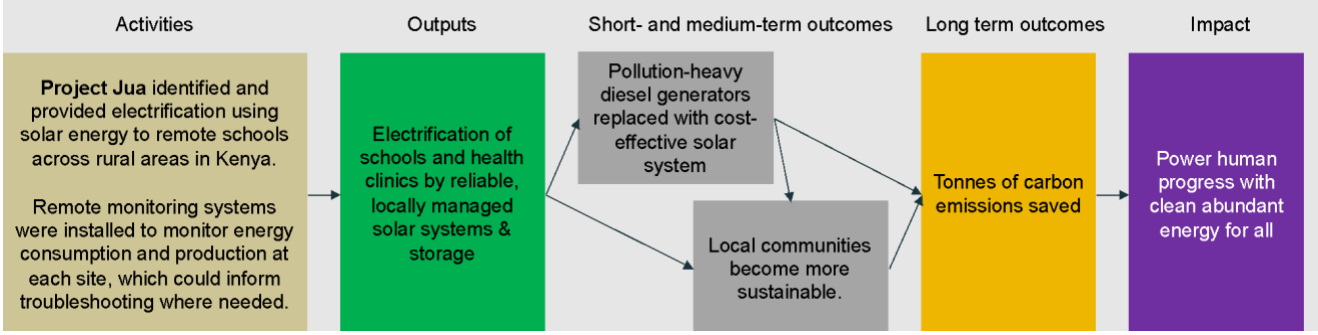
[28] Project Jua needs assessment.

[29] UNICEF. Country profile – Kenya.

[30] London School of Hygiene & Tropical Medicine (2019). Continuing pneumococcal conjugate vaccine in Kenya at full price is cost-effective and could save thousands of children's lives.

project management team and partnered researchers, the judgement of the evaluator and further validation with the project delivery team when the impact map was created.

Table 26 Theory of Change for the environment



Material outcomes for the environment

Although it is not possible to consult the environment on the importance and relevance of the outcomes, the schools and the clinics in local communities have been asked to share their experience of an outcome “My communities become more sustainable”, which is identified as material (as in Table 7, Table 8, Table 15 and Table 16). The study thus decided to maintain this as a material outcome for the environment.

Valuation of outcomes for the environment

Outcome: Tonnes of carbon emissions saved.

At schools

As solar energy was introduced, rural communities around the schools have been more sustainable. 71% of the teachers believe this has happened, and over a quarter (27%) think this will happen in the future. Although the energy consumption data at all sites are tracked directly by the installed photovoltaic systems, data at only one school has been analysed, showing an average consumption of 14.6 kWh per month[31] during November 2019 to December 2020. It means that the annual consumption at a school could be around 175.2 kWh. The PV system can afford even higher consumption, as the highest consumption rate in that timespan was only 27%.

Research shows carbon emissions generated by types of fossil fuels, as in Table 27. If the energy were generated by fossil fuels, the second largest sources of energy, which account for 32.5% of energy sources in Kenya[32], it would generate 19.25 to 21.5 tons of carbon emission per kWh. An average of 20.31 ton$_{CO2}$ per kWh is used for calculation.

With solar energy, 3,558.5 tons of carbon emission (175.2 kWh x 20.31 ton$_{CO2}$ per kWh) would be saved at a school in a year due to Project Jua. As there are 250 school sites supported in Project Jua, a total of 889,627.38 tons of carbon emission could be saved annually. However, only 71% of survey participants has seen this outcome happen, the quantity is discounted 73% to 631,635.44 tons, to avoid overclaiming.

[31] Energy4Impact. Implementation Phase Report- PROJECT JUA: May 2019 - December 2020.

[32] Energypedia. Kenya Energy Situation.

Table 27 Carbon emission of fossil fuels[33]

Type of fuels	Emission (kg_{CO2} / GJ)	Emission (ton_{CO2} / kWh) - converted
Fuel oil	77.4	21.50
Diesel	74.1	20.58
Crude oil	73.3	20.36
Kerosene	71.5	19.86
Gasoline	69.3	19.25
Average	73.12	20.31

The outcome is valued considering carbon price and the social cost of carbon emission. There are two primary ways for the valuation of carbon emission: Social Cost of Carbon (SCC) and target consistent approach. SCC sums up all the quantifiable costs and benefits of emitting one tonne of CO2 in monetary terms and is used commonly in the US and Canada. Though it examines the impact on wider factors, some have criticised that the science used is not up to date; for example, the model used by the US government is based on the literature primarily from the 1990s and early 2000s[34]. In addition, many argues that lots of socioeconomic impacts of carbon emissions are difficult to quantify in monetary terms, such as civil conflict and human migration, which makes the approach problematic and some impacts thus defined as "identifiable but hard to quantify"[35]. Another contentious issue of SCC is the selection of discount rate, whereby the calculation weights the current costs and future benefits. While discount rates varied and are debatable[36], the choice of discount rate would impact the SCC massively.

The target consistent approach, on the other hand, considers the target of carbon emissions reduction and works backwards to develop the path to meet the emission limits. Consequently, a carbon price could be set alongside the path. Its advantages over the SCC are that it could avoid the calculation ambiguity of some social impacts of climate change and that it could support countries on its way to reach emission targets[37]. This approach has been adopted by the UK government to evaluate policy options[38]. The UK government has transferred from using SCC to the target consistent approach since 2008, due to "the considerable uncertainty that exists surrounding estimates of the SCC"[39]. Despite the transition, the UK government has been considering formal modelling evidence and the social cost of carbon to set its carbon reduction targets.

[33] Volker Quaschning. Specific Carbon Dioxide Emissions of Various Fuels.

[34] Carbon Brief (2018). The Social cost of Carbon.

[35] Carbon Brief (2018). The Social cost of Carbon.

[36] Charles Griffiths, Elizabeth Kopits, Alex Marten, Chris Moore, Steve Newbold, and Ann Wolverton (2012). The Social Cost of Carbon: Valuing Carbon Reductions in Policy Analysis.

[37] Carbon Brief (2018). The Social cost of Carbon.

[38] GOV.UK. Carbon valuation in UK policy appraisal: a revised approach.

[39] Department of Energy and Climate Change (2009). Carbon Valuation in UK Policy Appraisal: A Revised Approach.

Target consistent approach for carbon pricing is suitable for countries that have set carbon targets. As Kenya has a target to reduce greenhouse gas emissions by 30% by 2030[40], the study believes target consistent approach is a more appropriate method to value carbon emissions in this project. Meanwhile, as the primary focus of this project is to electrify rural parts of Kenya, many social impact outcomes that materialise from the electrification in rural Kenya have been identified and quantified in monetary value in this study. To avoid double counting, target consistent approach seems a more suitable approach than SCC.

UK government suggests GBP 69 per ton of carbon emission for sectors that are not in the EU Emissions trading scheme in 2020, based on the carbon targets of the UK. While this price could be applied for valuation, as Project Jua is a project in Kenya and supported by a foundation in the UK, the study believes it is necessary to select a price that could reflect the context and targets of Kenya. There is not yet a carbon price set in Kenya[41], however, a USD 25 carbon price per ton of carbon emission is expected to be implemented by 2030 for lower-income emerging countries[42], according to International Monetary Fund (IMF). The price was calculated based on "the Carbon Pricing Assessment Tool"[43] developed by the IMF and World Bank. The model examines the carbon emission targets and climate strategies across 180 countries and sets the prices by assessing carbon emissions, fiscal, economic, public health and mitigation policies for the society[44]. As this proposed carbon price considers the impact on stakeholders beyond the environment, such as children, the non-working poor and vulnerable firms[45] and is likely to be implemented internationally[46], the study believes it is reasonable to use this price as the financial proxy for this indicator. Considering that solar energy may also generate carbon emissions, the study applies a USD 2.2 offset pricing for solar energy[47]. Thus, the carbon price used for this indicator is USD 22.8.

Table 28 Valuing "Tonnes of carbon emissions saved (at schools)"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Tons of carbon emissions saved in schools	631,635.44	Carbon price of USD 22.8 per ton of carbon emission	USD 12,955,760.97	International Monetary Fund[48]; Ecosystem Marketplace[49]

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

[40] Ministry of Environment and Policy (2020). Submission of Kenya's updated nationally determined contribution.

[41] UNFCCC (2019). Carbon pricing approaches in Eastern and Southern Africa.

[42] International Monetary Fund (2021). Launch of IMF Staff Climate Note: A Proposal for an International Carbon Price Floor Among Large Emitters.

[43] IMF (2021). Proposal for an International Carbon Price Floor Among Large Emitters.

[44] IMF (2019). Fiscal Policies for Paris Climate Strategies—from Principle to Practice.

[45] IMF (2019). Fiscal Policies for Paris Climate Strategies—from Principle to Practice.

[46] International Monetary Fund (2021). Launch of IMF Staff Climate Note: A Proposal for an International Carbon Price Floor Among Large Emitters.

[47] Ecosystem Marketplace (2020). Voluntary Carbon and the Post-Pandemic Recovery.

[48] International Monetary Fund (2021). Launch of IMF Staff Climate Note: A Proposal for an International Carbon Price Floor Among Large Emitters.

[49] Ecosystem Marketplace (2020). Voluntary Carbon and the Post-Pandemic Recovery.

The study recognised that there is not yet a universally agreed carbon price. The global average carbon price in 2021 is at USD 22[50], yet the pricing shows huge different across countries and even cities (for example, as low as USD 0.36 per ton_{CO2e} in Ukraine, to USD 9.15 in South Africa, and to as high as USD 137.24 in Sweden[51]) and also across different energy generation technologies[52]. In the next decade, carbon prices are forecasted to rise due to tougher climate goals and the impact of COVID-19 pandemic[53]. The choice of carbon price would be tested in the sensitivity analysis.

At clinics

Solar energy introduced by Project Jua has helped rural communities around the clinics become more sustainable. 92% of the health professional believe this has happened, and the rest (8%) think this will happen in the future. Energy consumption data, though are tracked directly by the installed photovoltaic systems at all sites, has been analysed only at one clinic during the timespan of this research. The analysis shows that an average 17.6 kWh was consumed per month[54] during November 2019 to December 2020. It means that the annual consumption at a clinic could be around 211.2 kWh. The PV system can afford even higher consumption, as the highest consumption rate in that timespan was only 15%.

If the energy were generated by fossil fuels, 4,289.71 tons of carbon emission would be produced (211.2 kWh x 20.31 ton_{CO2} per kWh, as show in Table 27). As 50 clinics were supported in the project, 214,485.50 tons of carbon emission could be saved in total a year. However, only 92% of survey participants has seen this outcome happen, the quantity is discounted 92% to 197,326.66 tons, to avoid overclaiming. The outcome is valued using the carbon price for lower-income countries with offset pricing in solar energy, at USD 22.8 per ton of carbon emission.

Table 29 Valuing "Tonnes of carbon emissions saved (in clinics)"

Indicator	Quantity	Financial proxy	Value in currency	Source of value
Tons of carbon emissions saved in clinics	197,326.66	Carbon price of USD 22.8 per ton of carbon emission	USD 3,749,206.63	International Monetary Fund[55]; Ecosystem Marketplace[56]

**The value shown is after the reduction of deadweight, displacement, attribution and drop-off.*

[50] Bloomberg (2021). 600% Gain in Carbon Prices Vital to Rein in Global Warming.

[51] The World Bank (2021). Carbon Pricing Dashboard.

[52] Ecosystem Marketplace (2020). Voluntary Carbon and the Post-Pandemic Recovery.

[53] The International Emissions Trading Association (2021). IETA's 2021 GHG market sentiment survey.

[54] Energy4Impact. Implementation Phase Report- PROJECT JUA: May 2019 - December 2020.

[55] International Monetary Fund (2021). Launch of IMF Staff Climate Note: A Proposal for an International Carbon Price Floor Among Large Emitters.

[56] Ecosystem Marketplace (2020). Voluntary Carbon and the Post-Pandemic Recovery.

SROI analysis

Overview

The result of this SROI analysis is based on the calculation of inputs for Project Jua by OVO Foundation and all outcome data gathered from stakeholders, including the quantity of outcome indicators, duration, deductions and monetary values. The social return ratio indicates the estimation of value contributed by Project Jua with the support of OVO Foundation. The high return could be understandable as there were no other similar interventions as Project Jua at the benefited schools and clinics. The estimated figure is further tested in the sensitivity analysis. Table 29 presents the results when all data is calculated in the impact map.

Table 30 Social value of Project Jua, with the support of OVO Foundation

Total investment	GBP	2,091,231.00
Total present outcomes value	GBP	28,402,921.36
Net present outcomes value	GBP	26,772,179.43
Social return on investment	GBP	13.58
Social return ratio		1:13.58

Inputs

The main financial and non-financial inputs during the time scope of this analysis (from May 2019 to December 2020) are detailed below:

Table 31 Inputs to Project Jua

Stakeholder	Type of contribution	Input	Value (GBP)
Schools	Time	In line with SROI standard practice, beneficiaries' time is not included in the analysis.	GBP 0.00
Clinics	Time		GBP 0.00
Funder (OVO Foundation)	Funding	Grants to cover some costs in the pilot phase and to prepare for the scale-up phase.	GBP 45,424.00
	Funding	Grants to support the implementation of Project Jua.	GBP 2,045,807.00
Project delivery organisation (Energy4Impact)	Staff time	Staff time to manage and deliver Project Jua.	Covered in the funding from OVO to deliver Project Jua
Total input			GBP 2,091,231.00

Deduction to valuation

Deadweight for outcomes

Deadweight is the consideration of the amount of outcome that would have happened even if the project had not taken place. It is calculated as a percentage, to deduct the proportion of change that would have occurred anyway.

Table 32 Deadweight considerations

Stakeholder	Long-term outcomes	Deadweight
Schools	Improved accessibility to education in rural sites.	There is one short- and medium-term outcome related to this long-term outcome. As shown in Table 7, no teachers believe this outcome would have happened anyway. There is thus no deadweight.
	Students have better learning experience.	There are three short- and medium-term outcomes related to this long-term outcome. As shown in Table 7, no teachers believe these outcomes would have happened anyway, but one teacher (2%) think one of the outcomes didn't happen. Deadweight is thus used at 2%.
	Students perform better.	There are four short- and medium-term outcomes related to this, yet teachers were asked to share their experience with this long-term outcome. As no one believed this would have otherwise happened, deadweight is none.
Clinics	Improved accessibility to health in rural sites.	There are three short- and medium-term outcomes related to this. As shown in Table 15, no health professionals believed these outcomes would have happened anyway. There is thus no deadweight.
	Patients feel supported to access health services.	No health professionals thought that the two short- and medium-term outcomes related to this long-term outcome would have otherwise happen. There is thus no deadweight.
	More lives saved due to increased access to healthcare services	Three short- and medium-term outcomes are related to this long-term outcome, while one health professional (8%) thought one of the outcomes and would have happened even without Project Jua. Deadweight was thus found at 8%.
Environment (or the future generation in the local communities)	Tonnes of carbon emissions saved (at schools).	One short- and medium-term outcome is related to this long-term outcome. One teacher (2%) thought this would happen anyway; thus deadweight is found to be 2%.
	Tonnes of carbon emissions saved (at clinics).	There is one short- and medium-term outcome related to this long-term outcome, and no health professionals believe this outcome would have happened anyway. There is thus no deadweight.

Displacement for outcomes

Displacement is the assessment of the amount of outcome displaced by other outcomes. From the survey with stakeholders, no significant displacement was found. The only negative change, experienced by a teacher/school (2%) and two health professionals/clinics (17%), was the needs to have an inverter that could generate more wattage. This may result in the lack of stable energy and further influence the achievement of some outcomes. Some potential negative outcomes were also identified by project delivery team in the workshop, though they are not mentioned by any beneficiaries, and thus will be discussed in the sensitivity analysis.

Table 33 Displacement

Stakeholder	Long-term outcomes	Displacement
Schools	Improved accessibility to education in rural sites.	2%
	Students have better learning experience.	2%
	Students perform better.	2%
Clinics	Improved accessibility to health in rural sites.	17%
	Patients feel supported to access health services.	17%
	More lives saved due to increased access to healthcare services.	17%
Environment (or the future generation in the local communities)	Tonnes of carbon emissions saved (at schools).	0%
	Tonnes of carbon emissions saved (in clinics).	0%

Attribution for outcomes

Attribution is the amount of outcome that was caused by the contribution of other organisations or people. Stakeholders were asked in the survey whether someone else has contributed to the outcomes. While most stakeholders thought only Project Jua contributed to the outcomes, some other contributors were identified. Survey participants' comments are quoted in quotation marks and *italics* in Table 33.

Table 34 Attribution considerations

Stakeholder	Long-term outcomes	Attribution
Schools	Improved accessibility to education in rural sites.	One survey participant (2%) thought teachers contributed to this outcome, as they have the skills to use of ICT gadgets in teaching and learning. One participant (2%) believed that the government also help, as *"the laptops and computers supplied to school by the government"*. One participant (2%) thought school alumni contributed too, as *"the desktop contributed by the school alumni"*. Attribution was therefore 6%, combining the percentages mentioned above.
	Students have better learning experience.	Students' attendance and performance were improved due to extend hours of learning from

	Students perform better.	night study. This could be achieved because of the *"co-operation among teachers, students and parents in utilising the available light to have extended night studies".* 10.2% of survey participants mentioned the role of parents, as they help *"in bringing their children to perform night studies".* 10.2% mentioned teachers' role, as they *"have introduced night studies which have greatly raised the school's performance."* 8.2% thought students' contributed as well, as *"there was change in attitude towards the learner, a positive attitude was seen and great motivation."* Three other contributors were also identified by survey participants. Although their contributions may be not directly related to Project Jua, it could improve the facility and services of the schools. There was an NGO (2%) who helped build schools' toilet, a funder (2%) who funded the building of school, and another funder (2%) who supported a feeding programme. Attribution was thus found, using the combined percentage mentioned above, at 34.7% in total.
Clinics	Improved accessibility to health in rural sites.	One participant (8.3%) shared that project electrician also contributed to the changes, as "the Maintenance that was done by the project electrician", which would influence the reliability of energy and further affect the achievement of these outcomes. Attribution was thus set at 8.3% for these outcomes.
	Patients feel supported to access health services.	
	More lives saved due to increased access to healthcare services	
Environment (or the future generation in the local communities)	Tonnes of carbon emissions saved (at schools).	The government (such as "*Rural Electronification Authority"* and *"The Kwale County Government"*) was believed by 6% of survey participants to have contributed to this outcome. 2% also thought *"electrical accessories dealers"* have helped. Attribution was therefore 8%, combining the percentages mentioned above.
	Tonnes of carbon emissions saved (in clinics).	One participant (8.3%) believed that the government (i.e., "*Rural Electronification Authority"*) also contributed to the outcome. Combining with the attribution to project electrician, attribution was thus found at 16.7%.

Duration/drop-off for outcomes

Drop-off is an assessment of outcome that would reduce year by year. Survey participants were asked to share how long an outcome would last, as in Table 34 and Table 35. Drop off rates after one year for the long-term outcomes are thus calculated in Table 36, based on their related short- and medium-term outcomes.

Table 35 Teachers' perception on the duration that the outcomes have lasted (N=48)

	3 months	6 months	1 year	2 years	over 2 years
1. I feel supported to do my job.	0%	2%	27%	19%	52%
2. More children and young people attend schools.	0%	6%	25%	23%	46%
3. More girls attend schools.	0%	4%	31%	21%	44%
4. Students attend schools more often.	0%	13%	25%	19%	44%
5. Students perform better.	0%	13%	23%	21%	44%
6. Local businesses generate more income.	4%	13%	13%	19%	52%
7. My communities become more sustainable.	4%	10%	21%	17%	48%

Table 36 Health professionals' perception on the duration that the outcomes have lasted (N=12)

	3 months	6 months	1 year	2 years	over 2 years
1. I feel supported to do my job.	0%	0%	8%	0%	92%
2. More patients attend health clinics.	0%	0%	8%	0%	92%
3. Patients receive more support on healthcare.	0%	0%	8%	0%	92%
4. More lives are saved.	0%	0%	8%	0%	92%
5. The clinic has access to reliable and clean energy.	0%	0%	8%	0%	92%
6. The clinic saves costs on electricity.	0%	0%	8%	0%	92%

7. Life-saving health equipment can be powered.	0%	0%	8%	8%	83%
8. Local businesses generate more income.	0%	0%	25%	0%	75%
9. My communities become more sustainable.	0%	0%	8%	0%	92%

Table 37 Drop-off rate

Stakeholder	Outcomes	After 1 year	After 2 years
Schools	Improved accessibility to education in rural sites.	27%	20%
	Students have better learning experience.	27%	21%
	Students perform better.	23%	21%
Clinics	Improved accessibility to health in rural sites.	8%	0%
	Patients feel supported to access health services.	8%	0%
	More lives saved due to increased access to healthcare services.	8%	3%
Environment (or the future generation in the local communities)	Tonnes of carbon emissions saved (at schools).	17%	48%
	Tonnes of carbon emissions saved (in clinics).	8%	0%

Sensitivity analysis

Social value ratio should be presented as a range, because SROI is calculated based on a mixture of data collected, subjective opinions from stakeholders involved, assumptions in proxies and considerations of deductions. Therefore, scenarios are tested to demonstrate the confidence of this SROI analysis.

Scenario 1 – Increased deadweight.
The selected sites for Project Jua interventions were based on a needs assessment, from which the project team identified schools and clinics that did not have electricity or relied on unstable energy sources. Therefore, most of the stakeholders do not believe that similar outcome might have happened without Project Jua. However, there could be chances that the National Energy Grid of Kenya enhanced the coverage, improved the stability of energy provision and increased the provision of cleaner energy sources. The possibility of government funding was also mentioned in the workshop with project delivery team, as in *"Governments once in a while would get funding and programmes that facilitate electrification (but this takes long and dependent on funding)".* In this scenario, each outcome is added an additional 10% deadweight.

Scenario 2 – Increased displacement.
Similar to the reason in scenario 1, the additionality of Project Jua could make stakeholders experience outcomes more positively than the outcomes could actually bring. There could remain unidentified negative outcomes, such as those identified by the project delivery team:

- *"Displacement of businesses that are providing diesel/ off grid."*
- *"Less money for the national grid (solar PV is competing with national grid)."*

In this scenario, an additional 10% displacement is added.

Scenario 3 – Increased attribution in the outcomes related to clinics.
Currently, the contributor groups to outcomes identified by schools are much more than clinics, 8 and 2 respectively, resulting in the difference in the average attribution rate for school-related outcomes (24%) and clinic-related outcomes (10%). This may be resulted from smaller sample size in clinics (16 comparing to 49 schools), though the sampling rate for clinics (32%) is higher than that of schools (19.6%). If there were more contributors to the outcomes at clinics, the attribution rate would be higher. In this scenario, attribution rate for all clinic-related outcomes are increased by 50%.

Scenario 4 – Reduced the duration of outcomes.
The duration of outcomes identified by clinics (2.37 years) are 0.54 years longer than that by schools (1.83 years) on average. The may also result from the smaller sample size of clinics. Project delivery team also identified an issue of sustainability. In addition, to ensure the outcomes last, it is important for schools and clinics to set aside funding for future maintenance and replacement parts of solar PV, as current warranty is only one year. Therefore, to avoid overclaim, the duration of outcomes experienced by schools is reduced by 0.5 years and that of clinics is reduced by 0.75 years.

Scenario 5 – Adjusted financial proxies
Figures for financial proxies could differ by research, contexts and time. A figure chosen in this analysis is tested below.

	Quantity		
Outcome / proxy	Original	Adjusted	Adjustments
Tonnes of carbon emissions saved (both at schools and clinics). / Carbon price per ton of carbon emission.	USD 22.8	Raised by 20% to USD 27.36	Carbon price is expected to grow in the coming decade, assuming by 20%[57].
Tonnes of carbon emissions saved (both at schools and clinics). / Carbon price per	USD 22.8	USD 19.8 (Global average in 2020)	As the current carbon price used is a price that is expected to be implemented, to reflect current context, we test the assumption using global average carbon

[57] Global carbon market grew by 20% in 2020.

ton of carbon emission.			price of USD 22 in 2020[58] deducted by the carbon price for solar energy USD 2.2.

Scenario 6 – Adjusted quantity

Some quantities chosen in the SROI calculation are based on assumptions and estimation. These quantities are tested below.

	Quantity		
Outcome / Indicator	Original	Adjusted	Adjustments
Students have better learning experience. / Time freed up for family members to pursue other activities (in hours)	8,469,309	5,081,585	Assuming parents need to spend 0.5 hours to pick their children up from schools, time freed up a day would be reduced to 1.5 hours. In addition, as there could be pre-school age children in the families or parents may have their children study at schools outside of their own county, the number of students is reduced by 20% for testing. With these consideration, total hours freed up are 5,081,585 a year.
Patients feel supported to access health services. / Increased number of patients served.	17,453	8,727	As several factors may influence the number of patients served, such as the capacity at clinics, the actual patients requesting health services and their frequency of visits. In addition, during the verification with Energy4Imapct, it is understood that patients usually go to the clinics during the daytime. Thus, though night services were introduced, the increased capacity may not be used fully. With these considerations, the quantity is reduced by 50% to avoid overclaiming.

Table 35 summarises the different values resulted from six scenarios. **The sensitivity analysis provides a SROI range from GBP 11.99 to GBP 16.01.** The analysis demonstrates that the changes in carbon price for the tonnes of carbon emissions saved would impact the value the most. The carbon price used in calculation, when adjusted to a higher or lower price, the value will change significantly. As carbon prices varies across countries and are forecasted to grow in the coming years, it is advised that carbon prices be monitored to adjust the value of this project.

Table 38 Sensitivity analysis

Sce-nario	Sensitivity Test	Outcomes tested	Adjustment	New SROI	Difference from baseline SROI

[58] Bloomberg (2021). 600% Gain in Carbon Prices Vital to Rein in Global Warming.

1	Increased deadweight.	All outcomes.	+10%	GBP 12.20	- GBP 1.38
2	Increased displacement.	All outcomes.	+10%	GBP 12.22	- GBP 1.36
3	Increased attribution in the outcomes related to clinics.	All outcomes related to clinics	x(1+50%)	GBP 13.57	- GBP 0.01
4	Reduced the duration of outcomes.	All outcomes related to schools.	- 0.5 years	GBP 13.58	No difference
		All outcomes related to clinics	- 0.75 years	GBP 13.53	- GBP 0.05
5	Adjusted financial proxies.	Tonnes of carbon emissions saved (both at schools and clinics).	+20%	GBP 16.01	+ GBP 2.43
			USD 19.8 instead of USD 22.8	GBP 11.99	- GBP 1.59
6	Adjusted quantity	Students have better learning experience.	- 40% of hours	GBP 13.12	- GBP 0.46
		Patients feel supported to access health services.	- 50% of patients	GBP 13.51	- GBP 0.07

Conclusion and recommendations

This forecast SROI assessment applies The Seven Principles of Social Value (Social Value International, 2018) and is based on stakeholder consultation, continual data collection conducted by Engery4Impact and secondary research. The evaluation has informed how the intervention of Project Jua creates a positive impact on the people in rural Kenya and generates value for society, beyond the monetary contribution from OVO Foundation. It is estimated that approximately GBP 28,402,921.36 of social value will be created as a result of the programme, giving an indicative SROI ratio of 1:13.58. Alternatively stated, the SROI analysis demonstrates evidence that for every pound invested in Project Jua by OVO Foundation, GBP 13.58 is returned to stakeholders or society at large in social value.

This SROI study identified several areas where OVO Foundation and its partners can improve its evaluation and present the social value that the programme produces.

1. Measure social value regularly.
Apply the methodology, evaluation framework and lessons learned from this SROI study to measure the outcomes of Project Jua at regular intervals. This can help understand how the creation of social value has progressed over time and identify success factors and areas for improvement to adjust the programme delivery accordingly.

2. Integrate the indicators in the programme's regular evaluation.
The programme evaluates its outcomes on a regular basis. It is suggested to integrate the indicators used in this SROI analysis or collect proxy data in the programme's evaluation framework and timeframe. In this way, assumptions could be mitigated or avoided, and more rigorous data could be applied in future SROI studies. In addition, the programme will have baseline, midline and endline data to compare the social value created over time. In short, actual results could be obtained to compare the value in this forecast study.

3. Continued stakeholder engagement.
As the programme has been involving stakeholders in evaluation, it is encouraged to continue engaging stakeholders both to collect outcome data and to understand how they value the changes. To establish the long-term social value created by Project Jua, OVO Foundation should remain in touch with SROI evaluation participants and repeat the engagement conducted in this analysis in the future. OVO Foundation should also consider expand the reach of stakeholders involved in the SROI study, to improve evaluation rigor and indicate potential differences in outcomes. In the best case scenario, stakeholders in all counties should be consulted and the participants involved should be representative in the counties. To better inform the representation of samples, it is suggested to research demographics of the counties and to collect demographic data from participants in characteristics such as gender, age and socio-economic backgrounds.

4. Reinforce data collection methods.
One limitation of this study is not being able to investigate the potential difference in outcomes within one group of stakeholders. Several steps could be applied to address this

gap in future studies: (1) Sample a representative group based on the demographic picture of the areas, as suggested in Point 3 above; (2) Collect both outcome data and demographic data from participants, compare the experience of outcomes with participants' characteristics and derive patterns; (3) Conduct some focus groups or interviews with participants who experience different extent of outcomes, in order to identify potential reasons for different experience or negative experience; (4) Administer another survey to people who share the same characteristics, to verify the reasons for negative experience; (5) Incorporate material negative outcomes in the impact map, or apply deduction for outcomes.

5. Understand the different experience for every outcome.
Although the study consults stakeholders about their experience of every outcome, the different extent of experience could be better identified. For example, in the current survey, the participants could express if they have seen or experienced a certain outcome, but they could not report whether they experience an outcome fully or partially. In addition, the potential negative experience of every outcome should be established. In this way, participants can not only share if an outcome 'didn't happen and/or will not happen', they could also report if they have actually experienced negative changes for that outcome. To address the above issues, revised surveys are suggested in the appendices.

6. Continued research on financial proxies.
As discussed as an evaluation limitation in this section, the selection of proxy financial data would influence the social values generated. Although all the valuation method has been verified with stakeholders, it is suggested that future studies continue to monitor the changes in proxy data (such as carbon pricing) and consult stakeholders on valuation (such as by verifying the values with more stakeholders, by conducting value games with stakeholders to identify new financial proxies.)

7. Collect rigorous data on attribution, deadweight and displacement.
This study has consulted stakeholders to consider the deduction in SROI values in terms of attribution, deadweight and displacement. However, the deduction value is mostly a general estimate that is applied to several outcomes. It is recommended that future studies identify the respective deduction value for every outcome, by consulting stakeholders on the three aspects (attribution, deadweight and displacement) for every outcome. The revised surveys suggested in the appendices allow the collection of more rigorous data on attribution, deadweight and displacement. In addition, future studies can consider including other organisations that contribute to the changes as stakeholders, consulting them how Project Jua might have impacted them positively and negatively and incorporating the changes in the SROI evaluation where appropriate.

Appendices

Workshop questions

- Based on the draft ToC, do you think it makes sense in the aspects below? Are there any missing points you'd like to add?
    - Inputs and ways to value inputs
    - Outputs and which stakeholders they are for
    - Outcomes and which stakeholders they are for
- What are some important stakeholders for the project?
- Are there any unintended outcomes?
- How are you collecting the data currently to share with OVO Foundation?
- What have changed in your organisation or communities due to OVO's partnership with you?
- Have you noticed changes that have occurred for other people?
- How would they value the outcomes?
- What else can we do to ensure that their voices are included?
- *Duration and drop-off:* how long does an intervention last for your beneficiaries? When does the impact drop off?
- *Deadweight:* what are the outcomes that would have happened anyway?
- *Displacement:* are there outcomes that have displaced other outcomes?
- *Attribution:* how much of the outcome was caused by contribution of other organisations or people? Who else is supporting you in this area? What percentage of the outcome is the result of your activity?

Surveys used

OVO Foundation SROI survey for Project Jua – schools
Thank you for your time taking this anonymous survey. It aims to understand your experience with Project Jua. It will take you around 5-10 minutes to complete. (*required question)

1. When did you first come into contact with Project Jua?*
   Please put month, year. For example, August 2018.
   _____

2. What changes have you seen or experienced, (or do you think you will), because of Project Jua?
   Please put X on the options you choose.

Changes	I have seen this	I think I will see this happen	This would have	It didn't happen and/or will not happen

			happened anyway	
I feel supported to do my job.				
More children and young people attend schools.				
More girls attend schools.				
Students attend schools more often.				
Students perform better.				
Local businesses generate more income.				
My communities become more sustainable.				

3. Did anyone/anything else contribute to the experience/change in the previous question?

4. Have all the changes been positive? If not, what have been the negative changes?

5. Can you rate how important these changes are for you?*
   Please put X on the options you choose.

Changes	not important	less important	so-so	quite important	very important
I feel supported to do my job.					
More children and young people attend schools.					
More girls attend schools.					
Students attend schools more often.					

Students perform better.					
Local businesses generate more income.					
My communities become more sustainable.					
Other changes: _____ _____					

6. How long did the change last for (or do you think the change will last)?*
   Please put X on the options you choose.

Changes	3 months	6 months	1 year	2 years	over 2 years
I feel supported to do my job.					
More children and young people attend schools.					
More girls attend schools.					
Students attend schools more often.					
Students perform better.					
Local businesses generate more income.					
My communities become more sustainable.					
Other changes: _____ _____					

Thank you for your time to share your thoughts!

OVO Foundation SROI survey for Project Jua – Clinic

Thank you for your time taking this anonymous survey. It aims to understand your experience with Project Jua. It will take you around 5-10 minutes to complete. (*required question)

1. When did you first come into contact with Project Jua?*
   Please put month, year. For example, August 2018.

2. What changes have you seen or experienced, (or do you think you will), because of Project Jua? *Please put X on the options you choose.*

Changes	I have seen this	I think I will see this happen	This would have happened anyway	It didn't happen and/or will not happen
I feel supported to do my job.				
More patients attend health clinics.				
Patients receive more support on healthcare.				
More lives are saved.				
The clinic has access to reliable and clean energy.				
The clinic saves costs on electricity.				
Life-saving health equipment can be powered.				
Local businesses generate more income.				
My communities become more sustainable.				

3. Did anyone/anything else contribute to the experience/change in the previous question?

4. Have all the changes been positive? If not, what have been the negative changes?

5. Can you rate how important these changes are for you?*
   Please put X on the options you choose.

Changes	not important	less important	so-so	quite important	very important

I feel supported to do my job.					
More patients attend health clinics.					
Patients receive more support on healthcare.					
More lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
Local businesses generate more income.					
My communities become more sustainable.					
Other changes: _____ _____					

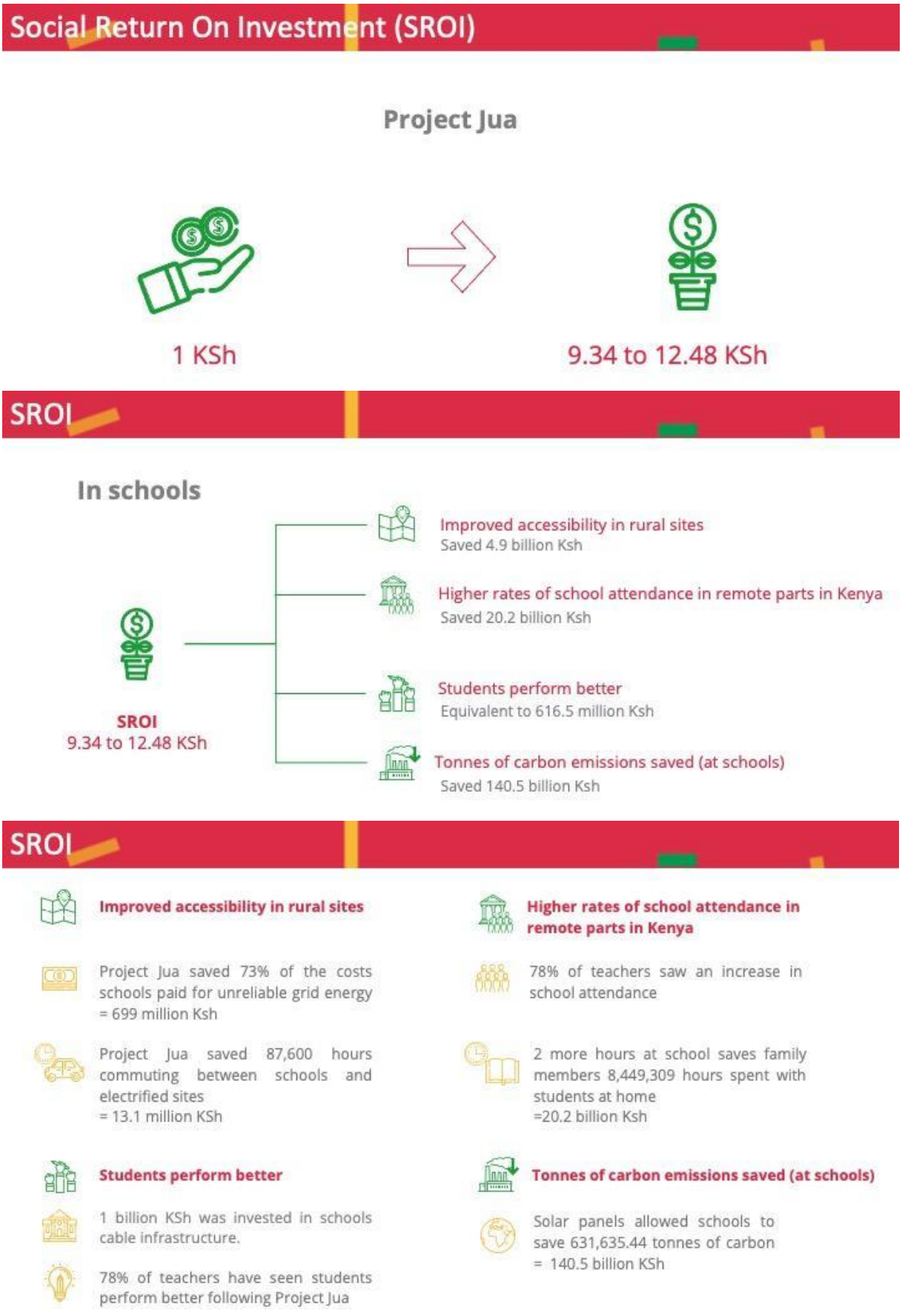
6. How long did the change last for (or do you think the change will last)?*
   Please put X on the options you choose.

Changes	3 months	6 months	1 year	2 years	over 2 years
I feel supported to do my job.					
More patients attend health clinics.					
Patients receive more support on healthcare.					
More lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
Local businesses generate more income.					
My communities become more sustainable.					
Other changes: _____ _____					

Thank you for your time to share your thoughts!

Infographics for verification with stakeholders

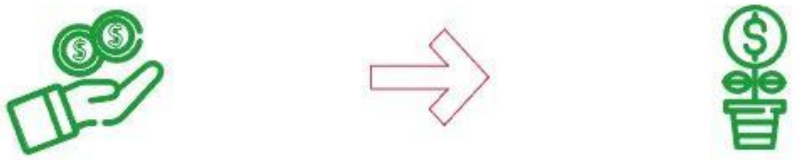
With the teachers:



With the health professionals:

Social Return On Investment (SROI)

Project Jua

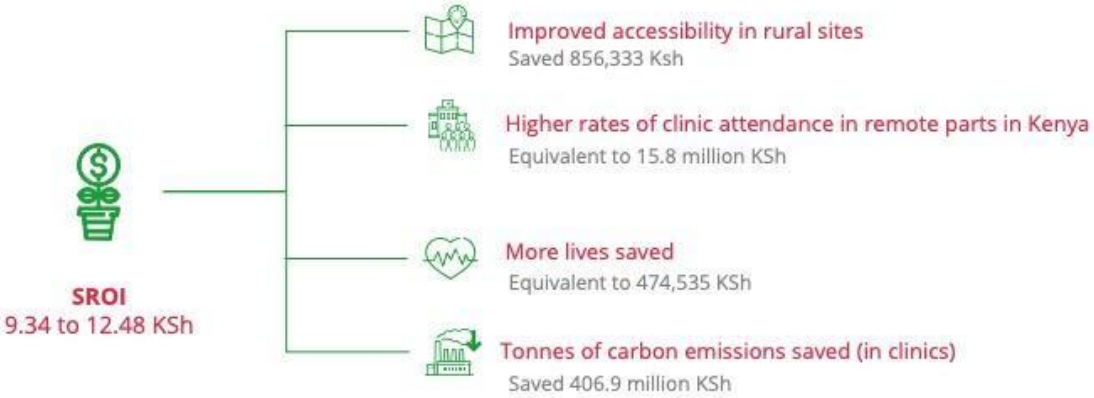


1 KSh

9.34 to 12.48 KSh

SROI

In clinics



SROI

Improved accessibility in rural sites

Project Jua saved 71% of the costs clinics paid for unreliable grid energy
= 470,393 Ksh

Project Jua saved 2,400 hours of commuting between clinics and electrified sites
= 385,940 KSh

More lives saved

41 children received appropriate medical treatment following Project Jua, sparing them from ill health or death
= 474,535 KSh

Higher rates of clinic attendance in remote parts in Kenya

88% of participants saw an increase in capacity

17,453 more patients were served following Project Jua
= 15.8 million KSh

Tonnes of carbon emissions saved (in clinics)

Solar panels allowed clinics to save 197,326.66 tonnes of carbon
= 406.9 million KSh

Full sources of data analysed

- Project Jua needs assessment data (November 2019)
- Project Jua implementation phase (May 2019-December 2020) report (January 2021)
- SROI survey to schools
- SROI survey to health clinics
- Students' video interview recordings
- Health professionals' video interview recordings
- Workshop feedback with OVO Foundation, Energy4Impact and the project's research partner at Imperial College London

Surveys suggested for future studies

OVO Foundation SROI survey for Project Jua – schools (teachers)

Thank you for your time taking this anonymous survey. It aims to understand your experience with Project Jua. It will take you around 10 minutes to complete.

1. What is your gender?
   - Male
   - Female
   - Non-binary
   - Prefer not to say

2. How long have you been working as a teacher?

   _____

3. How long have you been working at this school?

   _____

4. When did you first come into contact with Project Jua?

   Please put month, year. For example, August 2018.

   _____

5. Since the start of Project Jua, what do you feel about the following statement?

   Please put X on the options you choose.

Statement	Much more	A little more	The same	A little less	Much less
I feel supported to do my job.					
I save time commuting between schools and electrified sites.					
Children and young people attend schools.					

Girls attend schools.					
Students attend schools often.					
Students perform better.					
My communities become sustainable.					

6. Following the options which you chose above in Question 5, to what extent do you think Project Jua contributed to this change?
   Please choose an option. For example, in Question 5, if you chose 'much more' for the statement 'I feel supported to do my job'. To what extent do you think Project Jua contributed to this change?

Statement	The project is the only thing that caused the change.	The project contributed to the change significantly.	Half of the change is due to the project.	The project contributed to the change a little.	The project has nothing to do with the change.
I feel supported to do my job.					
I save time commuting between schools and electrified sites.					
Children and young people attend schools.					
Girls attend schools.					
Students attend schools often.					
Students perform better.					
My communities become sustainable.					

7. Following the options which you chose above in Question 5, to what extent do you think the change would have happened anyway?
   Please choose a percentage.

Statement	100% This change would have happened anyway. Project Jua didn't contribute to the change.	80% It's 80% likely that the change would have happened anyway, even without Project Jua.	50% It's 50% likely that the change would have happened anyway, even without Project Jua.	30% It's 30% likely that the change would have happened anyway, even without Project Jua.	0% The change would not have happened if Project Jua didn't exist.

I feel supported to do my job.					
I save time commuting between schools and electrified sites.					
Children and young people attend schools.					
Girls attend schools.					
Students attend schools often.					
Students perform better.					
My communities become sustainable.					

8. In addition to Project Jua, who do you think have also contributed to the changes?

   Please write down other contributors, if any.

Statement	Other contributors
I feel supported to do my job.	
I save time commuting between schools and electrified sites.	
Children and young people attend schools.	
Girls attend schools.	
Students attend schools often.	
Students perform better.	
My communities become sustainable.	

9. Can you rate how important these changes are for you?

   Please put X on the options you choose.

Statement	not important	less important	so-so	quite important	very important
I feel supported to do my job.					
I save time commuting between schools and electrified sites.					
Children and young people attend schools.					
Girls attend schools.					

Students attend schools often.					
Students perform better.					
My communities become sustainable.					

10. How long did the change last for (or do you think the change will last)?

Please put X on the options you choose.

Statement	3 months	6 months	1 year	2 years	over 2 years
I feel supported to do my job.					
I save time commuting between schools and electrified sites.					
Children and young people attend schools.					
Girls attend schools.					
Students attend schools often.					
Students perform better.					
My communities become sustainable.					

11. Do you think Project Jua ‘displaced’ any activities? That is, something good did not happen because of Project Jua, or something bad happened because of Project Jua?

12. Following Question 11, to what extent do you think Project Jua is responsible for the ‘displacement’?

Thank you for your time to share your thoughts!

OVO Foundation SROI survey for Project Jua – schools (students)

Thank you for your time taking this survey. It wants to know more about your experience with Project Jua (the project that provides power to the school by solar panels). It will take you around 10 minutes to complete.

1. Do you know Project Jua (the project that provides power to the school by solar panels)?
   - Yes
   - No
   - I am not sure.

2. What is your gender?
   - I am a girl (female).
   - I am a boy (male).
   - I don't want to be identified as either a girl (female) or a boy (male).
   - I don't want to share this information.

3. What kind of school are you studying at?
   - Primary school
   - Secondary school

4. Which county do you live in?

   _____

5. How long does it take for you to go from your home to the school?

   _____

6. Since the start of Project Jua (or since the school has reliable power by solar panels), what do you feel about the following statement?

Please put X on the options you choose.

Statement	Much more	A little more	The same	A little less	Much less
I attend school often.					
I can focus on my study.					
I can study at night.					
I feel supported on my study.					
I perform better at my study.					
I feel more secured at school.					
My parents have time on their own, when I am studying at school.					

7. Following the options which you chose above in Question 6, how much do you think Project Jua (or reliable power provided by solar panels) contributed to this change?
   Please choose an option. For example, in Question 6, if you chose 'much more' for the statement 'I attend school often.' How much do you think Project Jua (having reliable power at school) contributed to this change?

Statement	The project is the only thing that caused the change.	The project contributed to the change a lot.	Half of the change is due to the project.	The project contributed to the change a little.	The project has nothing to do with the change.
I attend school often.					
I can focus on my study.					
I can study at night.					
I feel supported on my study.					
I perform better at my study.					
I feel more secured at school.					
My parents have time on their own, when I am studying at school.					

8. Following the options which you chose above in Question 6, how much do you think the change would have happened anyway? In other words, how much do you think the change will happen, no matter the school has reliable power by solar panels or not?
   Please choose a percentage.

Statement	100% This change would have happened anyway. Project Jua didn't contribute to the change.	80% It's 80% likely that the change would have happened anyway, even without Project Jua.	50% It's 50% likely that the change would have happened anyway, even without Project Jua.	30% It's 30% likely that the change would have happened anyway, even without Project Jua.	0% The change would not have happened if Project Jua didn't exist.
I attend school often.					
I can focus on my study.					
I can study at night.					

I feel supported on my study.					
I perform better at my study.					
I feel more secured at school.					
My parents have time on their own, when I am studying at school.					

9. In addition to Project Jua (or having reliable power at school), who do you think have also contributed to the changes?

   Please write down other contributors, if any.

Statement	Other people that contribute to the change
I attend school often.	
I can focus on my study.	
I can study at night.	
I feel supported on my study.	
I perform better at my study.	
I feel more secured at school.	
My parents have time on their own, when I am studying at school.	

10. Can you rate how important these changes are for you?

Please put X on the options you choose.

Statement	not important	less important	so-so	quite important	very important
I attend school often.					
I can focus on my study.					
I can study at night.					
I feel supported on my study.					
I perform better at my study.					
I feel more secured at school.					

My parents have time on their own, when I am studying at school.					

11. How long did the change last for (or do you think the change will last)?

Please put X on the options you choose.

Statement	3 months	6 months	1 year	2 years	over 2 years
I attend school often.					
I can focus on my study.					
I can study at night.					
I feel supported on my study.					
I perform better at my study.					
I feel more secured at school.					
My parents have time on their own, when I am studying at school.					

12. Did something good not happen because of Project Jua (having reliable power at school by solar panels)? Or something bad happened because of Project Jua (having reliable power at school by solar panels)?

13. Following Question 12, how much do you think Project Jua (having reliable power at school by solar panels) is responsible for it?

Thank you for your time to share your thoughts!

OVO Foundation SROI survey for Project Jua – clinics (health professionals)
Thank you for your time taking this anonymous survey. It aims to understand your experience with Project Jua. It will take you around 10 minutes to complete.

1. What is your gender?
   - Male
   - Female
   - Non-binary
   - Prefer not to say

2. How long have you been working as a health professional?
   _____

3. How long have you been working at this clinic?
   _____

4. When did you first come into contact with Project Jua?
   Please put month, year. For example, August 2018.
   _____

5. Since the start of Project Jua, what do you feel about the following statement?
   Please put X on the options you choose.

Statement	Much more	A little more	The same	A little less	Much less
I feel supported to do my job.					
Patients attend health clinics.					
Patients receive support on healthcare.					
Lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
My communities become sustainable.					

6. Following the options which you chose above in Question 5, to what extent do you think Project Jua contributed to this change?
   Please choose an option. For example, in Question 5, if you chose 'much more' for the statement 'I feel supported to do my job'. To what extent do you think Project Jua contributed to this change?

Statement	The project is the only thing that caused the change.	The project contributed to the change significantly.	Half of the change is due to the project.	The project contributed to the change a little.	The project has nothing to do with the change.
I feel supported to do my job.					
Patients attend health clinics.					
Patients receive support on healthcare.					
Lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
My communities become sustainable.					

7. Following the options which you chose above in Question 5, to what extent do you think the change would have happened anyway?
   Please choose a percentage.

Statement	100% This change would have happened anyway. Project Jua didn't contribute to the change.	80% It's 80% likely that the change would have happened anyway, even without Project Jua.	50% It's 50% likely that the change would have happened anyway, even without Project Jua.	30% It's 30% likely that the change would have happened anyway, even without Project Jua.	0% The change would not have happened if Project Jua didn't exist.
I feel supported to do my job.					
Patients attend health clinics.					
Patients receive support on healthcare.					
Lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					

Life-saving health equipment can be powered.					
My communities become sustainable.					

8. In addition to Project Jua, who do you think have also contributed to the changes?
   Please write down other contributors, if any.

Statement	Other contributors
I feel supported to do my job.	
Patients attend health clinics.	
Patients receive support on healthcare.	
Lives are saved.	
The clinic has access to reliable and clean energy.	
The clinic saves costs on electricity.	
Life-saving health equipment can be powered.	
My communities become sustainable.	

9. Can you rate how important these changes are for you?
   Please put X on the options you choose.

Statement	not important	less important	so-so	quite important	very important
I feel supported to do my job.					
Patients attend health clinics.					
Patients receive support on healthcare.					
Lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
My communities become sustainable.					

10. How long did the change last for (or do you think the change will last)?
    Please put X on the options you choose.

Statement	3 months	6 months	1 year	2 years	over 2 years
I feel supported to do my job.					
Patients attend health clinics.					
Patients receive support on healthcare.					
Lives are saved.					
The clinic has access to reliable and clean energy.					
The clinic saves costs on electricity.					
Life-saving health equipment can be powered.					
My communities become sustainable.					

11. Do you think Project Jua 'displaced' any activities? That is, something good did not happen because of Project Jua, or something bad happened because of Project Jua?

12. Following Question 11, to what extent do you think Project Jua is responsible for the 'displacement'?

Thank you for your time to share your thoughts!

OVO Foundation SROI survey for Project Jua – clincis (patients)

Thank you for your time taking this survey. It wants to know more about your experience with Project Jua (the project that provides power to the clinic by solar panels). It will take you around 10 minutes to complete.

1. Do you know Project Jua (the project that provides power to the clinic by solar panels)?
   - Yes
   - No
   - I am not sure.

2. What is your gender?

- Male
- Female
- Non-binary
- Prefer not to say

3. Which county do you live in?

   _____

4. How long does it take for you to go from your home to the clinic?

   _____

5. Since the start of Project Jua, what do you feel about the following statement?
   Please put X on the options you choose.

Statement	Much more	A little more	The same	A little less	Much less
I have access to the health clinic.					
People have access to the health clinic.					
I receive appropriate treatment at the health clinic.					
I can access the health clinic at night.					
I feel supported for healthcare.					
Lives are saved.					
My communities become sustainable.					

6. Following the options which you chose above in Question 5, how much do you think Project Jua contributed to this change?
   Please choose an option. For example, in Question 5, if you chose 'much more' for the statement 'I have access to the health clinic.' How much do you think Project Jua contributed to this change?

Statement	The project is the only thing that caused the change.	The project contributed to the change a lot.	Half of the change is due to the project.	The project contributed to the change a little.	The project has nothing to do with the change.
I have access to the health clinic.					
People have access to the health clinic.					

I receive appropriate treatment at the health clinic.					
I can access the health clinic at night.					
I feel supported for healthcare.					
Lives are saved.					
My communities become sustainable.					

7. Following the options which you chose above in Question 5, how much do you think the change would have happened anyway? In other words, how much do you think the change will happen, no matter the clinic has reliable power by solar panels or not?
   Please choose a percentage.

Statement	100% This change would have happened anyway. Project Jua didn't contribute to the change.	80% It's 80% likely that the change would have happened anyway, even without Project Jua.	50% It's 50% likely that the change would have happened anyway, even without Project Jua.	30% It's 30% likely that the change would have happened anyway, even without Project Jua.	0% The change would not have happened if Project Jua didn't exist.
I have access to the health clinic.					
People have access to the health clinic.					
I receive appropriate treatment at the health clinic.					
I can access the health clinic at night.					
I feel supported for healthcare.					
Lives are saved.					
My communities become sustainable.					

8. In addition to Project Jua, who do you think have also contributed to the changes?
   Please write down other contributors, if any.

Statement	Other people that contribute to the change
I have access to the health clinic.	
People have access to the health clinic.	

I receive appropriate treatment at the health clinic.	
I can access the health clinic at night.	
I feel supported for healthcare.	
Lives are saved.	
My communities become sustainable.	

9. Can you rate how important these changes are for you?

Please put X on the options you choose.

Statement	not important	less important	so-so	quite important	very important
I have access to the health clinic.					
People have access to the health clinic.					
I receive appropriate treatment at the health clinic.					
I can access the health clinic at night.					
I feel supported for healthcare.					
Lives are saved.					
My communities become sustainable.					

10. How long did the change last for (or do you think the change will last)?

Please put X on the options you choose.

Statement	3 months	6 months	1 year	2 years	over 2 years
I have access to the health clinic.					
People have access to the health clinic.					
I receive appropriate treatment at the health clinic.					
I can access the health clinic at night.					
I feel supported for healthcare.					

Lives are saved.					
My communities become sustainable.					

11. Did something good not happen because of Project Jua (having reliable power at the clinic by solar panels)? Or something bad happened because of Project Jua (having reliable power at the clinic by solar panels)?

12. Following Question 11, how much do you think Project Jua (having reliable power at the clinic by solar panels) is responsible for it?

Thank you for your time to share your thoughts!