

Final Evaluation Report

| Your Details | |
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| Full Name | Thaddeus Jude Nuru |
| Project Title | Assessing stakeholders' perspectives of adaptation, mitigation, and development benefits of mini-grid solar projects in Ghanaian island communities |
| Application ID | 28999-1 |
| Grant Amount | £6000 |
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| Date of this Report | 21 st May, 2020 |

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

| Objective | Not achieved | Partially achieved | Fully achieved | Comments |
|---|--------------|--------------------|----------------|---|
| To understand benefits of renewable energy projects in rural island communities in Ghana. | | | | Yes, I was able to fully achieve my study objective. The study was completed on schedule. I found out that the inhabitants of the Ghanaian islands indeed derive adaptation, mitigation, and development co-benefits from the solar mini grids deployed in their communities. |

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

It was difficult to access the communities. Being islands without bridges connecting them to the mainland areas, my research assistants and I could not cross the lake by means of a car. In addition, my research assistants were afraid of the water. Also, there were no access routes in the communities. As such, it was difficult and frightful walking through bushes to locate the houses. We conducted the data collection in all three communities on foot.

We, however, overcame the above challenges with the help of community members. First, we had to hire motorised boat operators to convey us across the lake to the communities. Since the routes to the communities were not their regular routes, the motorised boat operators charged us a fee as much as 100 times the amount they usually charge regular commuters. Second, we were provided with life jackets to wear. This intervention minimised the fears of my research assistants and made them comfortable. Third, we were fortunate to meet good community members who provided us companionship throughout the data collection. The support we received from the community members boosted our confidence and we were able to complete the research without any negative incident.

3. Briefly describe the three most important outcomes of your project.

There were several adaptation, mitigation, and development co-benefits that emerged from the study, but those that I found to be of most importance in terms of meeting long term conservation and sustainability goals include:

- a) Reduction in cutting of trees for smoking fish. Being predominantly fisherfolks, the inhabitants of the Ghanaian island communities used to harvest a lot of wood for smoking the fish to preserve them for sale on market days in the mainland areas. However, with the electricity from the solar mini grids, it is now possible for them to store fresh fish in deep freezers without the need for large

amount of firewood for smoking the fish. This has had a positive effect on reduction in deforestation.

- b) There is reduction in environmental pollution in those island communities that currently enjoy electricity from the solar mini-grid systems. Prior to providing them with the solar mini-grid systems, the inhabitants used to rely on diesel generators and kerosene lamps for different kinds of energy needs including entertainment and illumination at night. The installation of the solar mini-grid systems has, however, replaced the use of diesel generators and kerosene lamps in the island communities. Thus, emissions from the generators and lamps have been eliminated, as these sources of energy are no longer in use in the island communities that we studied.
- c) It was also important for us to have found out that because of the solar mini-grid systems, a few community members have developed a sense of responsibility and sustainability by planting trees in their backyards. The practice of planting trees was more visible in two of the communities located in the savanna zone of Ghana. The reason being that with the solar mini-grid systems, some inhabitants now consider their settlements in the island communities as their permanent homes and hence the need to develop their homesteads. Until the installation of the solar mini-grid systems, majority of the inhabitants used to live in temporary makeshift homes constructed with mud and thatch roof. The trend has changed since 2015 when the power systems were introduced, and many of the inhabitants are now building more permanent homes with blocks and aluminum roofing sheets.

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

The key informants and household respondents were recruited from the local communities. The chiefs and some of the community leaders who were part of the key informants were happy about the study and expressed the hope that our findings on the co-benefits would encourage the Government of Ghana and policy makers to extend similar projects to their neighbours who were yet to benefit from the solar mini-grid systems. They also expressed the hope that our findings on some of the challenges we identified from the community, for example the lack of access roads in the island communities and other social amenities such as schools and health facilities will draw the attention of government to come to their aid. During the field study, I interviewed the Deputy Director in charge of renewable energy at the Ministry of Energy in Ghana and he requested that I make available to them a copy of my findings. To honour that request, I am going to make available a copy of the results to the Ministry of Energy in Ghana. If the Director finds some of the outcomes useful, it is likely that my study may influence policy decisions of the ministry that would be to the benefit of the island communities. A few of the inhabitants who supported us with navigation in the communities were rewarded with a monetary token. To maintain a positive researcher-community relationship, the chiefs requested a football from me, and I granted their request. As a result of the study, the local communities that were unknown can now easily be found on the internet. This study has contributed to making these hitherto unknown communities known to the outside world. It is likely that some philanthropists reading about the lack of social amenities in the Ghanaian island communities from my

report might reach out to provide such basic social services as toilet facilities and pipe borne water.

5. Are there any plans to continue this work?

Yes, I am planning to undertake studies in the island communities on improved cookstoves. I realised during the study that even though the island communities now have electricity, majority of them continue to use firewood for cooking their meals. Which means that the impact of reduction on deforestation is not significant. It is my hope that a research into the adoption of solar cookstoves in the communities would be a surefire strategy to significantly reduce their dependence on firewood for cooking and hence conservation of forest resources.

6. How do you plan to share the results of your work with others?

I intend to share my findings through the following ways:

- a) Journal publications. I have already submitted one manuscript for publication through a peer-review process and I am in the process of preparing additional manuscripts.
- b) Conference and seminar presentations. I have already presented my study results at the Antioch University New England Graduate Seminar. I plan to submit abstracts for upcoming conferences in 2020 and beyond.
- c) I will share my journal articles, if accepted for publication, via various social media platforms such as Facebook, LinkedIn with colleagues, friends, as well as with my professional networks, for example Energy and Social Science Network (EASSN), Association for Environmental Studies and Sciences (AESS), etc.
- d) I will also prepare an executive summary of my study for policy makers in Ghana.
- e) My dissertation has already been shared on OhioLINK and ProQuest, which are accessible by over 3000 readers worldwide.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The grant was used between September 2019 and December 2019. This timeframe perfectly matched my proposed data collection timelines. So, the grant was timely, as it came at the time I was in the field. The timing was perfect; it enabled me to pay my research assistants' stipend and lodging. While I had proposed to use two field research assistants, I ended up using four because I later realised that the work involved a lot and I needed additional hands to support me in the field. It would have taken me so long to complete the data collection with only two assistants.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

| Item | Budgeted Amount | Actual Amount | Difference | Comments |
|-----------------------------------|-----------------|---------------|------------|--|
| Research assistants Stipend | £2500 | £4000 | +£1500 | I used 4 research assistants instead of the 2 that I initially proposed to use. Each received a monthly stipend of £250 for four months. |
| In-country transportation | £1000 | £500 | -£500 | I cut down on in-country travel to minimize costs on gas and maintenance of the vehicle used for the rounds. I then used the balance to supplement payment of stipend. |
| Lodging for team | £1500 | £ 1000 | £500 | I spent less on lodging cost than I had budgeted for. The balance was used to support payment of stipend. |
| Living expenses and miscellaneous | £1000 | £500 | £500 | I minimized the living expenses to cater for payment of stipend. |
| TOTAL | 6000 | 6000 | | |

9. Looking ahead, what do you feel are the important next steps?

My next steps are as follows:

- a) Continue with research into strategies that can help reduce rural populations' dependence on natural resources as way of conserving the environment. I will focus on climate change adaptation, mitigation, and development strategies.
- b) Take up a postdoc position in either research/teaching in alternative energy solutions.
- c) Work with global organisations such as UNDP, UNEP, World Bank Group, that are promoting development projects in the developing countries.
- d) Start a non-profit organisation to promote the adoption and use of solar cookstoves in rural communities in sub-Saharan Africa. The goal here is to reduce the use of firewood for cooking by rural people. It will have the added benefit of improving the health of women who are often exposed to indoor air pollution due to the burning of firewood in enclosed buildings.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, I used Rufford Foundation logo during my dissertation defense. I communicated to about 40 people that attended my defense that Rufford had been the primary sponsor of my research. In addition, I acknowledged Rufford Foundation in all materials and manuscripts that I prepared for publications. I also intend to use the Rufford Foundation logo in all future conference presentations relating to my research.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Jessica Agbeku: I included Jessica as a research assistant in the team at the recommendation of my dissertation committee members and Rufford Foundation Trustees to include a female. Jessica helped with administration of the surveys in all three communities throughout the data collection period.

Vincent Blibo: Vincent was my second research assistant. He helped with procurement and transportation of logistics to the field, as well as administration of the surveys in all three communities.

Eric Kweku Kuwornu: Eric was my third research assistant. He helped with administration of the surveys and summary of the survey data.

Chesedh Addy Puplampu: Chesedh was the fourth research assistant recruited for the study. He helped with administration of the surveys. He also conducted interviews and led focus group discussions. He was the most experienced among the research assistants. He worked with the Ghana Aids Commissions as a field research assistant in the past.

12. Any other comments?

I want to register my heartfelt gratitude to Rufford Foundation for the grant. It would have been difficult for me to fully achieve all the study goals without Rufford's financial support. The Rufford Grant has been the greatest financial intervention I received during my field studies. It is my hope that Rufford Foundation will continue to support other researchers in the relevant fields, especially those from poorer countries to enable them achieve their goals and make contributions towards the conservation of the planet for future generations to also benefit from it.