

Final Evaluation Report

Your Details	
Full Name	NGOUKWA Guylene
Project Title	Ecosystems services and local communities' dependencies in the Belabo-Diang Forest Reserve for inclusive solution for its conservation and sustainable management
Application ID	34151-1
Date of this Report	30th July 2022

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
Investigate how local communities' riparian to the Belabo-Diang Forest Reserve (BDFR) identify and perceive the importance of ES;				Socio-economic and ethnoecological survey of 540 people in 20 of the 30 villages neighbouring the Belabo-Diang Forest Reserve (BDFR) villages to the BDFR provided information on the ecosystems services (ES) and goods obtained by the population. In addition, one focus group per village of 10-15 persons depending on the key informants available allows us to identify where they collected ES in the BDFR.
Analyse the socio-economic and demographic factors explaining the variations in the identification of ES and the determinant factors predicting local communities' dependencies in the BDFR				In this study, multiple linear regression models were used to examine the socio-economic factors that influence the rate of ecosystem service identification. For this purpose, three indices of ecosystem service identification were used as dependent variables: (i) the number of provisioning services identified out of the total number of provisioning services; (ii) the number of regulating and supporting services identified out of the total number of regulating and supporting services; and (iii) the number of cultural services identified out of the total number of listed cultural ES.
Analyse the level of communities' participation in forest management and conservation activities and identify possible strategies to reduce their BDFR dependence				The surveys and focus groups conducted in the various villages bordering the BDFR provided information from the respondents: (i) their opinion on their desire to be involved in conservation and sustainable management (CSM) activities; (ii) if they want to be involved in the CSM.
Management, communication, and dissemination of the results of this project.				The results of this project will be a part of my PhD thesis, which is in progress. In addition, the process of writing a paper for publication is undergoing.

2. Describe the three most important outcomes of your project.

Several outcomes of this project were obtained. Concerning the three most important outcomes we have:

This project has generated knowledge that will improve the CSM of the BDFR if it is taken into account by municipal managers. This is:

a). This project has shown that populations identify mostly the provisioning ecosystems for their daily subsistence. It has also been found that during COVID-19, they used only plant species to take of themselves. Therefore, increasing the threats on plant species which are sometimes threatened and endemic.

b). This project has also found that factors such as the active number of working people in the household, satisfaction with the standard of living, and average monthly income are the factors that increase people's dependence on provision services.

c). This project also helped to make each respondent aware of the value of CSM not only for them but also for their future generation. As a result, many are willing to actively participate in CSM activities such as reforestation.

At the end of this work, the communes of Belabo and Diang are informed and sensitised to the benefits of CSM and are encouraged to make efforts in this direction if their capacities are strengthened.

The most significant achievement of this work is the capacity development of local managers, volunteers, and researchers involved in this project. Indeed, we at Conservation and Sustainable Natural Resources Management Network (CSNRM-NET) strongly believe that the long-term CSM of our natural resources is possible only with people who have the skills. Therefore, in addition to local people directly involved in this project, three managers of the BDFR were involved in all planned activities. In addition, one MSc student, two volunteers, and two researchers were involved in this project.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The Covid-19 pandemic was one of the main difficulties encountered during the fieldwork. However, our study was carried out in compliance with the prevention measures decreed by the government. In addition, it should be noted that in the villages surveyed, the populations use plants extensively to strengthen their immune system. Another difficulty was the lack of respect for the planning of our field activities due to the availability of the keys of the administrative and traditional authorities involved in this project. Nevertheless, despite all these difficulties, we were able to carry out all the activities of the current project.

4. Describe the involvement of local communities and how they have benefited from the project.

As mentioned above in section 4, three members of the communal forestry unit of the BDFR were involved in all project activities. Thus, their capacity strengthened in socio-economic survey techniques. In addition, their presence during surveys and the workshop helped them understand the need of their populations as well as how they could work to involve them in CSM activities.

In addition, in each of the 20 villages, the chiefs and sometimes some of their notables were involved in the organisation and planning of the focus groups and socio-economic surveys. For the socio-economic surveys, in each of the 20 villages surveyed, a local guide was recruited and trained and considered as a facilitator. In this case, they were also sensitised and improved their knowledge of best practices to enhance CSM strategies.

Each chief leader and some key local communities, local NGO, and administrative authorities of the council were also involved in the workshop.

Finally, the Belabo council worked hard to ensure the effectiveness of this project during the COVID-19 period. To this end, we are working and will continue to work with them to develop and implement strategies for the CSM of their forest.

5. Are there any plans to continue this work?

Yes, we plan to continue with this work. Furthermore, according to the results and observations obtained during this study, we want to apply for the 2nd Rufford Small Grant to develop future activities in the BDFR.

The present study found that people living near the BDFR mainly use medicinal plants for health care. It is therefore imperative to determine the diversity of plants used and their menaces.

In addition, it was also found that factors such as the active number of working people in the household, satisfaction with the standard of living, and average monthly income are the factors that increase people's dependence on supply services. Therefore, to reduce people's dependence on forest resources, we plan to strengthen their capacity for alternative income-generating activities other than forestry.

We also plan to work with BDRF managers to strengthen their capacity to implement CSM activities such as the demarcation of biodiversity conservation areas within the BDFR, the establishment of nurseries in the communal forest, and even some villages.

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

The workshop was the first communication made used to share the results of our study with stakeholders involved in ecosystem service management in the study area; especially those involved in our project (Mayor of Belabo and Diang, local

NGOs, Research Institute like IRAD, chiefs of villages and local communities). Furthermore, we plan to share our study's results through research platforms like our NGOs and through the first manuscript, which is presently in progress and will be published in a peer-review journal. We are working to share also this project on the website of CSNRM-NET (www.csnrm-net.org).

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

The most important next step is:

1. Carry out botanical inventories to have the potential availability and threats of plant species used for medicinal purposes. This will also inform us of in-situ and/or ex-situ conservation actions to be taken in this BDFR.
2. Implement building capacities on alternative income-generating activities other than forestry (beekeeping, fish farming) to reduce the populations' high dependence on ecosystem services for which harvesting methods are unsuitable for ensuring their conservation for future generations.
3. Continue sensitising the populations to go towards conservation; encourage and support the council in its actions of CSM of its resources.

8. 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?

We used the Rufford logo on the formal letters, reports, and PowerPoint presentations during the workshop. In addition, concerning the course of our work, we make publicity of Rufford like financial support of this work. This was done during the focus group discussion and workshop, and we will also acknowledge Rufford in the manuscript paper and in my thesis, whose writing is in progress.

9. Provide a full list of all the members of your team and their role in the project.

This project benefited from the expertise and advice of many scientific experts in the field of conservation. We thank:

Pr. ZAPFACK Louis, Ph.D. Supervisor and Professor at the Department of Biology, University of Yaounde I

Dr. FOBANE Jean Louis, Senior Lecturer at the Biological Sciences, Department of the Higher Teacher's Training College.

Dr. Kabelong Banocho Roger, Assistant lecturer at the Department of Plant Biology, the University of Yaounde I, have to provide his Ecosystem services expertise.

The field team was composed of:

Miss Ngoukwa Guylène, Project Manager and field team member. I am a Ph. D student at the University of Yaounde I and a member of CSNRM-Net) NGO. I was responsible for coordinating all field activities, ensuring that all methodologies were followed correctly, and writing reports.

Dr. Zekeng Jules Christian, Ph.D. Executive Coordinator of the Conservation and Sustainable Natural Resources Management Network (CSNRM-Net) NGO. He is a conservationist. He was also a panel member during the workshop.

Dr. Chimi Djomo Cédric Researcher at IRAD and one model of conservationist in our laboratory. He is also a Program Manager at Conservation and Sustainable Natural Resources Management Network (CSNRM-Net) NGO. He was also a panel member during the workshop.

Tchonang Djoumbi Bienvenu Leonnel, PhD student at the University of Yaounde I in Cameroon. He is a volunteer at the CSNRM-NET Association. He was involved in field data collection, outreach and workshop. This project helped him achieve his Master of Science.

Miss. Nanfack Tchatchouang Chanceline Laure, Field team member, community animator, and facilitator, Socio-economist expert. She has extensive expertise in socio-economic surveys.

Miss Makoutsing Talla Ameline Clarence, MSc student and volunteer at the CSNRM-NET.

Lekeufack Armel, PhD student at the University of Yaounde I in Cameroon. He is a volunteer at the CSNRM-NET Association. He was involved in field data collection.

Noutanewo Pany, MSc student at the University of Yaounde I in Cameroon. Volunteer at the CSNRM-NET Association. He was involved in field data collection, outreach, and workshop.

Mr. Sapock Didier Messi, Head of Agricultural Research Institute for Development, he was helpful in the workshop preparation and will be a resource person for the project's second phase.

Mr. Ayalang Arnaud, Communal member and field team, botanist.

Mr. Bessendji Manga Nicolas, Communal and field team, local guide.

Mr. Yanou Clément, Communal and field team, local guide.

10. Any other comments?

Currently, we are writing one paper with the data obtained.

Master students trained

Tchonang Djoumbi Bienvenu Leannel, 2022. Dynamique spatio-temporelle de l'utilisation des terres (1984-2020) dans la forêt Communale de Belabo-Diang, Est-Cameroun. Mémoire de Master of Science. Université de Yaoundé I. Cameroon.



Focus group discussion with local people.



Identification of some ecosystem services with local people in the field.



Meeting of team members of this project with the traditional Chief (e.g., Yebi Village).



Meeting of team members of this project with the traditional Chief (e.g., Mbaki Village).



Picture of Workshop with different stakeholders.



Photo of the discussions between the principal investigator and interviewee.