Final Evaluation Report

Your Details	
Full Name	Gaëlle Ndayizeye
Project Title	Seedling production of indigenous multipurpose tree species to reduce pressure on Kibira National Park, Burundi
Application ID	30547-1
Grant Amount	5000£
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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
Determine which indigenous multi-purpose tree (IMT) species are the most preferred by local communities (Bantu and Twa)				Focus group discussions (FGDs) have been organised in 25 villages surrounding the protected area of Kibira. We determined which Indigenous multipurpose tree (IMT) species are most important for the surrounding communities of Kibira National Park within their social groups (Bantu and Twa). We selected Twa villages (n = 10) and farmer villages (n = 15, it encompasses Tutsi and Hutu villages). For each FGD, we involved 5–10 village elders, including both men and women around three sectors of the park: Rwegura, Musigati and Teza. The elders were selected as in our study area these are known to have greater botanical knowledge than young people. The list generated by those groups was made by more than 30 IMT species.
Assess survival and growth of IMT in a nursery trial				After the determination of the most preferred indigenous multi-purpose tree species, we selected six most commonly cited in FGDs for the nursery trial: • *Prunus africana* • *Carapa grandiflora* • *Entandrophragma excelsum* • *Myrianthus holstii* • *Syzigium guineense* • *Bersama abyssinica* The seeds of those species have been collected in Kibira National Park. The nursery was located in Busekera village, at the edge of Kibira National Park (altitude: 1830 m asl; latitude 03°20'32" S and longitude 29°33'3" E). The seeds

				were planted in pots in September 2020 in the nursery and then we assessed their germination rate and survival. We assessed several growth parameters for 15 months. Data collected has been used to prepare a paper for Scientia Horticulture which is in review.
Training with local communities and Park staff on IMT cultivation techniques				We have trained the local communities through engagement with a secondary school. The school had over 1000 students from different social groups (Twa and Bantu) and different surrounding villages of Kibira National Park. During this training, we distributed a 1-page leaflet about IMT cultivation to children of secondary 7-9. We also planted about 40 seedlings in the courtyard and at the border of the school to illustrate the indigenous multipurpose tree species cultivation techniques. The population closest to the nursery and the park staff (rangers and forest guides) were also trained on the techniques and they took seedlings to plant in their fields.
Plant the IMT in degraded areas of the park for restoration and sustainable management of the forest				About 1700 seedlings of six IMT tree species were planted in December 2021. The seedlings were planted in four degraded areas of the park and near the park boundary. Those degraded areas are located in: 1. Altitude: 2266 m asl; latitude 03°15'6.29" E and longitude 029°36'8.29"S 2. Altitude: 2276m asl; latitude 03°15'6.44" E and longitude 029°32'7.73"S 3. Altitude: 2258m asl; latitude 03°15'29.4" E and longitude 029°32'8.42"S 4. Altitude: 2262 m asl; latitude 03°15'3.09" E and longitude 029°32'8.29"S

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

We faced four major unforeseen difficulties:

- Some seedlings were attacked by parasites and mice.
- There was a devaluation of Burundian currency due to the restrictions and guidelines related to the Covid-19 pandemic, all the incomes from foreign countries were not available.
- The period foreseen for monitoring of the seedlings in the nursery in the project was not enough because of the slow growth of some IMT species. We decided to wait until the species were vigorous before planting them in the park so they could survive in the wild. For some species, it took more than a year for the plants to grow up to 30 cm height.
- Lack of security during the plantation of the seedlings in the park, due to rebel groups hiding in the forests. We had to hire armed soldiers to accompany us during the restoration in the degraded areas of the park.

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

- Enhancement of surrounding populations' awareness on how to cultivate indigenous multipurpose trees.

- Restoration of degraded parts of the forest of Kibira and distribution of seedlings to the local populations.

- Two scientific publications: the first one entitled "Ecosystem services from mountain forests: Local communities' views in Kibira National Park, Burundi" has been published in Ecosystem Services Journal and the second scientific paper on growth parameters in the nursery trial is under review. I also presented part of my findings at the online conference Economic Botany in September 2020.

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

The local communities have been involved in all activities during the implementation of this project. We collected information about the most preferred IMT species from the local communities and they received us and made us feel at home. People from local communities were involved in seed collection that was used to restore degraded areas in the forest. The local community's members, especially the Twa, also benefited from getting allowances that given to them for seed collection, the establishment, the maintenance and monitoring of the seedlings in the nursery and other activities during this research project. Their awareness about importance of planting indigenous multipurpose trees outside the forest was raised. The local communities benefitted through: (i) training on the IMT cultivation techniques; and (ii) seedlings of IMT being planted in their fields and the restoration of some degraded areas of Kibira National Park which provide them many ecosystem goods and services in short and long-term.

5. Are there any plans to continue this work?

Yes, there is a need to continue this work as this project was the first step towards reduction of pressure to the Kibira mountain forest. The restoration of all degraded sites in Kibira National Park has not been completed. We intend to continue the restoration of other degraded areas in Kibira National Park, once we can secure more funds, and also grow and distribute seedlings to more villages, as we only targeted a few. We would like to continue this work with survival and growth monitoring of seedlings planted in Kibira National Park as we have the geographic coordinates of the restored areas. I am developing a proposal for a 2nd Rufford Small Grant.

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

We have prepared to share the results with others by publishing papers in journals, conferences, symposia and policy briefs. The first paper has been published on perceptions of the forest by local communities and the second on the survival and growth parameters of IMT seedlings in the nursery is under review. We did many conferences about the first paper with other researchers: (i) Society for Economic Botany Fall Online Symposium in 2020, (ii) conferences at University of Burundi and in East African Science, technology and innovation conference. Another conference is being organised at the University of Burundi in the Research Center in Natural and Environmental Sciences to share our results on growth parameters with others.

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

The project was expected to start in April 2020 and last for 18 months. Unfortunately, due to the pandemic situation, we started the project in June. Not all activities are being normally implemented as planned because of some barriers due to the pandemic situation and the slow growth of seedlings.

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
Local transport with field assistant by motorbike (about 10 £ for 60 days) for data collection and seed collection	600	450	-150	Some areas of the park are not accessible with motorbike. We have to walk
Food for 30 days (focus groups) (15 £ per days)	450	330	-120	We had a reduction with the food allocation

Assistance to village chief (10£ per village for 10 villages)	100	250	+150	We held focus group discussions in 25 villages. We took the money from the field translator.
Field translator for focus groups (10 £ for 30 days)	300		-300	We did discussions in Kirundi, and because of Covid-19, collaborators who speak foreign languages were unable to attend.
workshop to explain the targets of project to Park managers (3 seminaries for 55 £)	165	110	-55	We did 2 seminaries
Seed collection for nursery (15£ for 30 days)	450	370	-80	We had reduction as we have a team from the local communities for all the implementation of the project.
Establishment, maintenance and monitoring and data collection of nursery trial and seedlings (15months, 350£ per month)	2100	3000	+900	Monitoring of nursery and data collection (growth parameters) took many times (15 months) than expected. We had also reduction with the local team.
Training with Park manager and local communities on IMT cultivation techniques (for 15 days, 15£ for 15 days)	225	150	-75	We had to reduce the expenses and the number of days for the training because the maintenance and monitoring of the nursery cost a lot of time and money
Restitution: preliminary report	70	40	-30	We had to reduce the expenses of this item because we used money in maintenance and monitoring of the nursery
Seedling distribution (for 10 days, 15£ per day)	225	150	-75	Only villages surrounding Teza sector received seedlings. Days spent in seedling distribution was reduced
Transport and seedling planting in degraded sites of the park (field work, 15£ for 14 days)	315	210	-105	The number of planted seedlings was above the planned one, but the degraded areas were numerous and very large, we planted only in four

				areas. Also, we used much money for the maintenance of the nursery before and we have to deal with it.
Total	**5000**	**5060**	**+60**	**Note: 1£= 2,339 BIF I paid the difference**

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

The most important next steps are:

- To continue the restoration of other degraded sites of the Kibira National Park to maintain and restore all the ecosystem services provided at the local and regional level.
- Reduction of anthropogenic pressure on the forest, we need to identify alternative livelihood strategies for the local population who are living in extreme poverty and are affected by the sustainable conservation of the park.
- To continue raising the awareness of the importance of restoration of the park and the contribution of the population for a positive responsiveness.

- To continue the monitoring of the IMT seedlings cultivated in degraded areas of the park (to assess survival after first dry season for example).

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, we used the Rufford Foundation logo when presenting the scientific paper on the assessment of Kibira forest goods and services in seminars, symposia and conferences. We used it also at banners and the 1-page leaflet on IMT cultivation techniques distributed in the training and workshop to local communities and park staff. We also acknowledged the Rufford Foundation in all publications from this project.

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

Team leader of the project: **Gaëlle Ndayizeye, MSc**.

The field assistant: **Rosette Irampagarikiye, MSc. and Anatole Bukuru**

The supervisors: (i) **Pr Jacques Nkengurutse:** Senior-Lecturer & researcher at the Department of biology of University of Burundi. He helped with his link to the Office Burundais pour la Protection de l'Environnement (OBPE) to make this research and forest restoration useful for park managers and local communities as he worked before in Kibira National Park. (ii) **Pr Gerard Imani**: Lecturer and researcher at the Department of Biology of the Université Officielle de Bukavu (UOB). His role was crucial in the implementation of the nursery as he has a similar project in DRC, also for the data analysis and publication writing. (iii) **Pr Aida Cuni-Sanchez**: supervisor of the work,

she provided guidelines for the good implementation of this project and helped for data analysis and publication writing.

During our research activities, we worked closely with local population especially the Batwa as the nursery was at the edge of the Kibira National Park for seed collection, establishment, maintenance and monitoring of nursery trial day and night, also for plantation in degraded areas of the park. Those people include **Jotham Nizigama, Kennedy Nimubona, Masharubu Kwizera, Jean Barangenza, Damien Bamporubusa, Béatrice Mbonimpa**. We worked also with the park managers which are **Deus Nimubona**, Park staff and head of other park staff in seeds collection and cultivation of the plants in degraded areas and **Melchior Ndikuriyo**, Park staff of Rwegura sector of the park who helped for seed collection and establishment of nursery.

12. Any other comments?

This grant has been important for the protection of Kibira National Park because it has increased awareness of many social groups of local population about IMT species cultivation and the importance of reducing pressure to the park by having the IMT species in their farms. The results of this project also provided key information for the restoration of other protected areas in Burundi.

We would like to thank the Rufford Foundation for having made this possible.

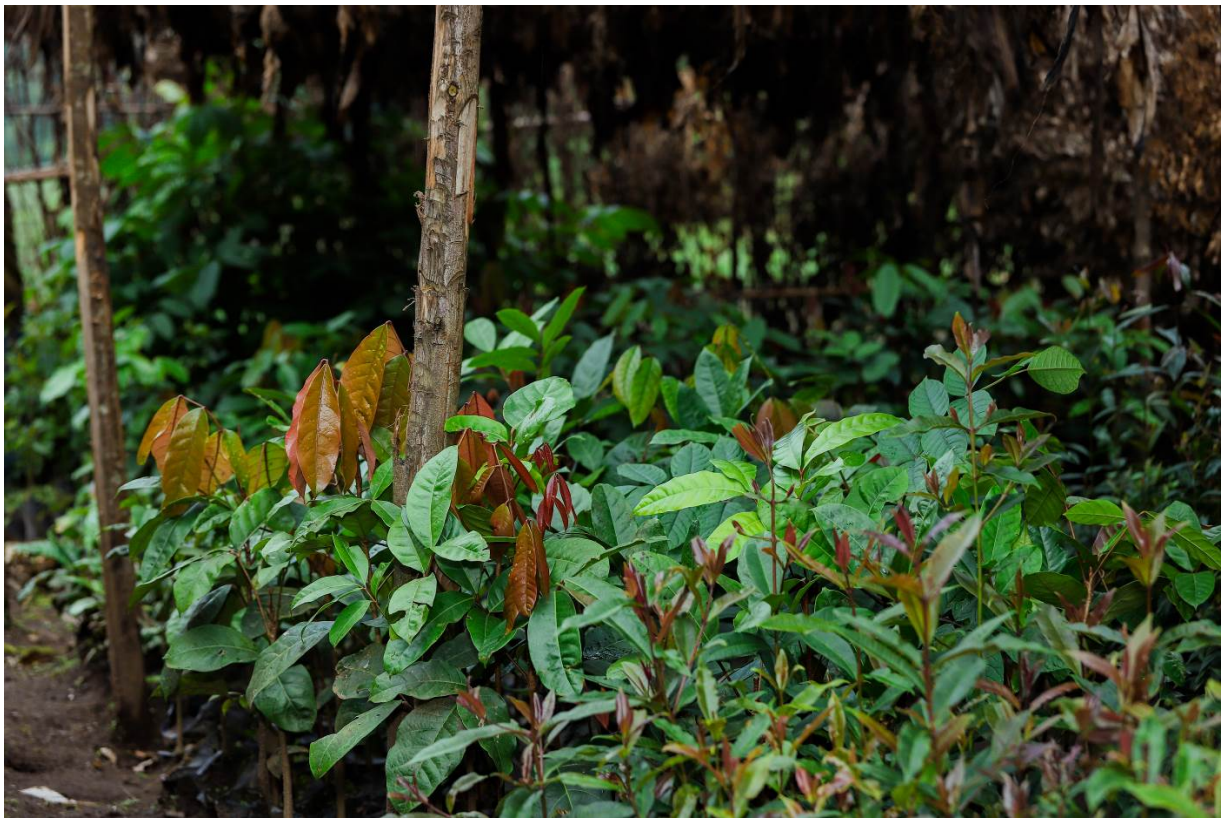

Photo 1: View of seedlings after 15 months in the nursery trial.

Photo 2: View of participants from Kibira national park staff and local community members during training session on IMT domestication and distribution of seedlings.

Photo 3: Training on IMT cultivation techniques and distribution of seedlings at school of Kavumu in Bukeye locality, Muramvya in December 2021.

Photo 4. Demonstration on IMT cultivation at Kavumu School with the active participation of students, December 2021.

Photo 5. Plantation of seedlings in the degraded areas of the Kibira national park with the participation of local community members, December 2021.