

Final Evaluation Report

Your Details	
Full Name	Tran Van Sang
Project Title	Adaptation and suitability selection of mangrove species for restoration and conservation of degraded mangrove forest in Xuan Thuy National Park, Vietnam.
Application ID	28090-1
Date of this Report	5 October 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
Assessment of the current status of mangrove forests				
Establish mangrove nursery				
Planting mangroves trees in pilot models				
Implement training in nursery and mangrove planting techniques and enhance knowledge about conservation and restoration of mangrove forest				

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

a). Assessment of the current status of mangrove forests

The study implemented by establishing transects and sampling plots in the study areas. At least three transects were established and three sampling plots (400m²) set up in each transect. According to survey results, the critical mangrove species communities were: *Aegiceras corniculata* – *Sonneratia caseolaris*; *Kandelia obovata* – *A. corniculata*; *S. caseolaris*; *A. corniculata* – *K. obovata* – *Avicennia marina* – *S. caseolaris*; and *K. obovata* – *Rhizophora stylosa*. The results also indicated that approximately 7.5 km of mangroves in Con Lu islet were eroded by waves and 78.37 ha of *K. obovata* – *A. corniculata* in the same islet were degraded by pests and diseases on *K. obovata* trees. Pests have caused rotten mangrove tree trunks and have been identified as two species *Sphaeroma terebrans* and *Teredo navalis*.

According to the study, *S. caseolaris*, *R. stylosa*, and *Bruguiera gymnorrhiza* also were recommended as critical species to recover the degraded areas.

b). Planting mangroves trees in pilot models

The project has successfully implemented the mangrove restoration model with an area of 1,000 m². After seedlings were planted, some methods were applied such as tending, protecting, and monitoring the model carried out by the project members (from September 2020 to September 2022). The result showed that mangrove survival rate was around 76 %, with current seedlings growing very well. The successful restoration mangrove model will be promoted to improve the diversity of mangrove species, forest cover, habitat, and breeding for many species (benthic species, birds, shrimps and fishes).

c). Training in nursery and mangrove planting techniques and enhancing knowledge about conservation and restoration of mangrove forest

The project has implemented the training class to raise awareness about the role of mangrove and mangrove restoration techniques for local people. The training class

included 30 local people who were members of the Women's Union, and the Red Cross Society of Giao An commune (one of five buffer communes) and was given in a field belong to Con Lu islet, Xuan Thuy National Park. The project trainer provided knowledge and information to participants about the values and benefits of mangroves for the community. Through training courses, the awareness of local people was enhanced about the value of mangrove forests, and how they can contribute to improvement and develop sustainable mangroves based on the community in near future.

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

The project implementation process has been affected by the Covid-19 pandemic, our government has issued social distancing and travel restriction policies that have affected field surveys, forest inventory, and mangrove growth monitoring in the nursery, mangrove planting of the project.

We have solved the above difficulties by applying epidemic prevention measures according to regulations of the government (facemask, disinfection, distance, no gathering, and health declaration), and accelerated project activities after the end of social distancing.

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

The local community directly participated in training courses to raise awareness about mangrove value as well as the benefits that mangroves will provide for the community. The local community was also trained in the introduction of mangrove species, nursery techniques, mangrove planting and maintaining, which helped them to take part in mangrove conservation activities and afforestation project in next time.

Besides that, local people also directly participate in building nursery, mangrove restoration, and tending seedlings to help them get more income, and livelihood from the project. The restoration of mangroves area has contributed to increasing the ability to protect coastal communities from impacts of storms, wind, and high wave energy.

5. Are there any plans to continue this work?

Through the field survey, the research team found that there are many gaps in the mangrove forest at Xuan Thuy National Park. Implementing mangrove enrichment by native species is necessary to increase forest cover and the diversity of mangrove species for the park.

In addition, the field study results showed that the mangroves in the study are facing pest hazards and diseases on *Kandelia obvata* and *Sonneratia caseolaris* leading to rotten tree trunks. Therefore, it is necessary to have further study on mangrove diseases and methods to control them.

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

The project results such as the technical report, building nursery, and mangrove restoration area will be transferred to the Xuan Thuy National Park management board, and local authority (Department of Forest Protection) for them to continue operating and maintaining them.

In addition, the project results will be continued presentation, and sharing at specialised workshops in the field of mangrove coastal ecosystem and conservation.

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

For the short term, restoring gaps in mangrove forests, continuing to educate, communicate, raise awareness, and develop livelihood models based on mangrove forest are the important activities to help protect and sustainable mangrove management at Xuan Thuy National Park, Vietnam.

For the long term, estimating the value of forest environmental services (carbon volume) is essential to get funding for the conservation, protection, and development of mangroves at the park.

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?

The Rufford Foundation logo was shown in presentations at the Rufford Small Grant Conference, exchange seminar with the GIZ organisation, training banner, and project information board at the field. We have been acknowledged for supporting from The Rufford Foundation in communication news, and social networks.

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

There were five key members who involved in our project:

Mr. Tran Van Sang is the project leader conceiving the research ideas, and technical training for local people, coordinating the fieldwork, analysing the data, and writing manuscripts for publication.

Dr. Nguyen Manh Ha is the project advisor who has been involved the development of research ideas, fieldwork, and inventory mangrove forest and he also guided the project leader in writing the manuscript for publication.

Mr. Bui Thanh Tung and Mr. Nguyen Huu Nghia played as assistant research such as field survey, building nursery, planting mangroves, and training community at the project site.

Two national park staffs (**Mr. Ngo Van Chieu, Mr. Pham Xuan Long**) took part in mangrove inventory, calling local labour, and preparing facilities and materials at the National Park.

10. Any other comments?

We will continue to prepare and apply for the next stage of Rufford Foundation funding for our project. Especially, in the context of increasing impacts of climate change, the occurrence of tropical storms is increasing both in quantities and level. Restoration and conservation of coastal mangrove ecosystem are well solutions to reduce damage before natural disasters, maintain biodiversity and implement COP26 agreements on the global environmental issues.



Comparison.



Figure 1. Measured the growth factors of seedlings at planting site



Figure 2. Mangrove seedlings after planting 24 months