

Rignolda Djamaluddin

Completion of the Project on Cost-Effective Mangrove Rehabilitation Focussing on Restoration of Hydrology

With specific regard to mangrove rehabilitation, a great attention has been given to technical aspects since many mangrove rehabilitation programs, mostly using replanting mangrove seedling, have been unsuccessful. In order to provide an alternative mangrove rehabilitation technique, we have initiated a project of cost-effective mangrove rehabilitation process focusing on the hydrological restoration. This project is implemented on some 12 hectares of disused shrimp pond at Tiwoho Village, Bunaken National Park, Indonesia. The rehabilitation technique applied in this project follows the five important steps suggested by Lewis and Marshall (1997), with some modifications to fix the local condition. This project has been initiated by the end of October 2005 with some important achievements. Within seven previous months after the hydrological condition of the site was normalised, there has been new establishment of *Avicennia marina*, *Rhizophora apiculata* and *Sonneratia alba*. A fast growth of artificially planted seedlings of *Ceriops tagal* on some specific locations seems to have been contributed by the normalisation of the site's hydrological condition.

It is expected that the previous two to five years of the restoration program is of importance stage to observe to evaluate the natural secondary succession process of the mangrove ecosystem. At this stage, mangrove species establishment, mortality and survival as well as growth rate of particular species have to be observed at regular period. The site has also to be protected from human and natural disturbances.

This project also supports the integration of mangrove education program into local primary schools curriculum, mangrove training, visitors of restoration site with technical assistances. It is expected that final achievement of this project will be a comprehensive understanding of hydrological restoration procedure in the field of mangrove rehabilitation program.

To read about the previous development of this project http://www.ruffordsmallgrants.org/rsg/projects/rignolda_djamaluddin or for more information contact:

Email: kelola@indosat.net.id

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Final Report

Read about the activities undertaken and findings of this project in the final report below.

File Download	Size
Final Report	171.65 KB

Town/Region Tiwoho, North Sulawesi
 Country Indonesia
 Continent Asia
 Categories Education, Habitats
 Date 29 Sep 2008



The Rufford Small Grants Foundation

Final Report

Grant Recipient Details	
Your name	Rignolda Djamaluddin
Project title	Completion of the project on cost-effective mangrove rehabilitation focusing on restoration of hydrology
RSG reference	08.04.08
Reporting period	August 2008 – May 2010
Amount of grant	£ 12,000
Your email address	Kelola@indosat.net.id ; rignolda@gmail.com
Date of this report	14 May 2010

1. Please 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
Monitoring of mangrove establishment			√	Establishment of new mangrove seedlings was monitored every three months period since September 2008. Seven permanent quadrates of 20m ² each were set up for this purpose of observation. Locations on where new mangrove seedlings were established and physical performance of existing mangrove trees were observed.
Site maintenance		√		Restoration site was regularly checked (at least two times a month) from the presence of free moving logs, human disturbances, and condition of tidal blocking wall that was constructed to normalise tidal current flowing through

				artificial tidal channels. The project team had not been successful to restrain the normal position of the wall although some efforts had been made.
Mangrove training			√	Two mangrove training were conducted during the period of the project. The first was held on November 18, 2008 at Tiwoho Village in collaboration with Public Support Department of Sam Ratulangi University, and the second was conducted on November 11, 2009 at Serawet Village in collaboration with the North Sulawesi Traditional Fishers Association and North Sulawesi Friends of the Earth. A total some 57 people of different backgrounds were attending these trainings.
Mangrove education			√	<p>During the project period two members of the project team had been supporting the implementation of mangrove lecture in two primary schools at Tiwoho Village. At least two hours a week were allocated for the lecture.</p> <p>The restoration site has been used by students from the Faculty of Fishery and Marine Science at Sam Ratulangi University to learn mangrove ecology in general and mangrove rehabilitation in specific; under supervision of the project team.</p>
Technical Services			√	The project team had supported mangrove plantation programs conducted by the University of <i>De La Salle</i> in collaboration with the Regency of North Minahasa and Indonesian Scout Mangrove Plantation Program in collaboration with World Ocean Conference Committee. Both events were conducted at the restoration site on August 30, 2008 and May 13, 2009 respectively.

Discussion/Seminar/ Conference				The project team had a chance to discuss any results of the project in the Faculty of Fishery at Sam Ratulangi University, and to communicate to promote the concept of hydrological restoration and results of the project in the National Conference on Coastal and Sea Resources Management Conducted by The Indonesian Ministry of Fishery and Marine on August 29, 2008 in Manado and 'Im Here' Research Seminar conducted by Sam Ratulangi University on December 28, 2009.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The project team experienced two unforeseen difficulties as follows:

- The construction of tidal blocking wall that was set up to normalise tidal currents flowing in and out the restoration site was not strong enough to face strong tidal currents during neap and spring tide conditions, resulting in the change of the wall position and small scale physical damage. Some efforts had been done to bring the wall in its normal position as well as reparation of the damage. However, reconstruction of a strong and permanent wall may be crucial in order to ensure the existence of a long lasting tidal blocking wall.
- As a new technique of mangrove rehabilitation, great attention and questions had been addressed to the technique applied in this project. The project team provided documents and time to explain any questions, as well as supervision to restoration site visitors.

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

This project has demonstrated successfully the implementation of hydrological restoration technique in rehabilitating an already physically damaged mangrove ecosystem. This finding may indicate the future integration of the technique as an alternative solution to some problems related to mangrove rehabilitation programs.

Finding in this project may contribute significantly in the explanation of natural secondary succession of mangrove ecosystem that may be an exceptional fact. In the context of mangrove knowledge this finding may be of importance to explain mangrove regeneration process.

In addition, the project site provides a good field laboratory (demonstration site) for studying hydrological restoration technique and mangrove secondary succession process.

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

Local communities of Tiwoho villagers have been involving actively in almost all parts of the project. They took part in physical works, site maintenance, mangrove training conducted in the mangrove centre of *Daseng Lolaro*, and artificial plantation. The Village is now being famous with its program relating to mangrove management and education. Many people and institutions of different backgrounds had visited the Village to learn more about mangrove rehabilitation and its management. Children of local primary schools have also been benefited from the project since the mangrove lecture has been introducing in the schools' local subject of environmental education.

5. Are there any plans to continue this work?

It is expected that final results of the project will be very useful in the context of mangrove knowledge, mangrove rehabilitation and conservation. Any plans to be conducted in the next time are as follows:

- Construction of a strong permanent tidal wall to ensure relatively normal hydrological condition at the restoration site that supports for natural secondary mangrove succession process;
- Continuing observation of mangrove regeneration process and site maintenance;
- Providing legal status of the restoration site as a field mangrove rehabilitation laboratory;
- Scientific publication of the implemented hydrological restoration technique and mangrove secondary succession process.

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

To some extent any results from this project have been presented and discussed at several scientific meetings in form of discussion, seminar and conference. The project team is now providing some documents for publication at national and international journal or bulletin.

Within the following couple of months, the project team has also an opportunity to introduce to promote hydrological restoration technique in several mangrove rehabilitation trainings conducted by mangrove taskforce in Tomini Bay area (including three provinces in Sulawesi Island).

The project team has also provided a training material of mangrove rehabilitation that includes hydrological restoration technique practiced in this project to be presented at any following mangrove trainings.

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

This project was designed for one year, effectively started on September 2008. Some additional physical works on reparation of the tidal blocking wall had resulted in the postponement of other project

activities. It was almost six months the project team was fixing the problem. This was the reason why the project team needed extra six months to finish the project.

8. Budget: Please 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.

Item	Budgeted Amount (£)		Actual Amount (£)	Difference (£)	Comments
	RSG	Others			
Monitoring of mangrove establishment	1,200	250*	1,500	(-) 50	Additional budget supported by Kelola
Site maintenance	3,000	500**	4,000	(-) 600	Additional budget (for physical works to repair tidal blocking wall) supported by Research Department of Sam Ratulangi University, Kelola and Mangrove Centre - <i>Daseng Lolaro</i>
Mangrove training	2,900	-	3,800	(-) 900	Additional budget (for one mangrove rehabilitation training at Serawet Village) supported by Public Support Department of Sam Ratulangi University, Kelola and Indonesian Friends of the Earth
Mangrove education and technical service	1,000	250***	2,000	(-) 750	Additional budget (for transport and accommodation of the project team) supported by Public Support Department of Sam Ratulangi University and Kelola
Project monitoring and evaluation	450	-	450	-	-
Fees for field assistants	1,300	700**	2,500	(-) 500	Additional budget (for one field assistant) supported by Kelola, Mangrove Centre – <i>Daseng Lolaro</i> , and Research Department of Sam Ratulangi University
Transport	900	200*	1,700	(-) 600	Additional budget supported by Kelola and <i>Im</i>

					Here Project of Sam Ratulangi University and Kelola
Communication	300	300*	640	(-) 40	Additional budget supported by Kelola
Administration (Secretariat)	450	200**	650	-	-
Documentation	500	-	480	20	-
Reporting	100	-	175	(-) 75	Additional budget supported by Kelola (including materials for discussion, seminar and conference)
TOTAL	12,100	2,400	17,895		

Notes: * (Kelola), ** (Kelola and Mangrove Centre – *Daseng Lolaro*), *** (Walhi – Indonesian Friends of the Earth). One sterling (£) fluctuated between Rp. 13,000 and Rp. 16,000 (Indonesian Rupiah).

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

The hydrological restoration technique applied in this project needs to be improved especially in the construction of “tidal current blocking wall”. Continuous observation of mangrove regeneration process and site maintenance must have to be conducted as well as legal status of the restoration site. In addition, publication of any project results is of importance.

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

I put RSGF logo and quoted the support of RSGF at every seminar/discussion/conference documents.

11. Any other comments?

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12. I agree to this report being published on the Rufford Small Grants website

Signed (or print name):_Dr. Rignolda Djamaluddin