CASE STUDY:
Jalaud, Barotac Nuevo, Iloilo Province

Background

Barotac Nuevo is a second-class municipality in the province of Iloilo, Philippines (Figure 1). The town is surrounded by the municipality of Pototan in the west, Dingle to the northwest, Anilao to the northeast, and Dumangas to the South. It has a population of 51,867 residents in 2010 census subdivided into 29 barangays, namely: Acuit, Agcuyawan Calsada, Agcuyawan Pulo, Bagongbong, Baras, Bungca, Cabilauan, Cruz, Guintas, Igbong, Ilaud Poblacion, Ilaya Poblacion, Jalaud, Lagubang, Lanas, Lico-an, Linao, Monpon, Palaciawan, Patag, Salihid, So-ol, Sohoton, Tabuc-Suba, Tabucan, Talisay, Tinorian, Tiwi, and Tubungan (Province of Iloilo, 2018).

Figure 1. Location profile of Barotac Nuevo (Barotac Nuevo Iloilo, 2018)

The Barotac Nuevo mangrove rehabilitation site was originally planted with species such as *bakhaw*, *bungalon*, *pagatpat*, and *lapis-lapis*. However, due to government lease agreements, the mangrove forest was destroyed and converted to fishponds. Table 1 shows the timeline of the status of mangroves in Barotac Nuevo from 1970s to present. According to a focus group discussion conducted among community members in Jalaud, Barotac Nueva, productive fishponds were present from 1970-1989. The community benefited from marine products such as fishes (e.g. milkfish), crab, shells, and shrimps (*pasayan*). Dikes were built during this time and fishpond lease agreements (FLAs) were established. However, the fishponds were abandoned in 1990 due to the destruction of the main dike brought about by strong waves. The local government unit (LGU) was later notified by the community on the presence of the abandoned and unutilized fishponds. This gave way to the reversion of the site back into mangroves. Hence, marine products, primarily crabs, were once again made available to the community. The mangroves also acted as wave-breakers against strong winds and waves.

Table 1. Timeline on the status of the mangrove forest and benefits received

Year	Status of Mangrove Forest	Benefits
1970 - 1989	Productive fishponds	• Marine products • Dikes built • FLAs
1990	Abandoned fishpond	
	Reverted back to mangrove	• Marine products • Wave-breaker
1991 - 2007	Mangroves as the result of individual planting (voluntary)	• Protection from soil erosion
2008 - 2011	PO (JFA) as manager of the plantation	As member of JFA: • Friends • Linkages • Income • Fishing equipment
2012 onwards	Start of PNAP involving different agencies	• Frequent visits • Projects

From 1991 to 2007, mangrove seedlings were voluntarily planted by the community. The resulting mangrove cover protected the community from soil erosion. The year 2008 was the time when Jalaud Fisherfolk's Association (JFA) was formed and registered as a people's organization, thus making them managers of the mangrove plantation site in Barotac Nuevo. Being a member of JFA has also its share of benefits. According to them, the PO opened opportunities for them to develop friendships in the community. Moreover, the formation of JFA became an opportunity for the members to develop linkages with other agencies. Their source of income was also improved due to the increase in marine harvest that the mangroves entailed. As a member, fishing equipment such as the *pukot* or the gill net, as well as machines and pump boats, were distributed among the fisher folks.

In 2012, the Philippine National Aquasilviculture Program (PNAP) was introduced to the community with the participation of various agencies namely, the Bureau of Fisheries and Aquatic Resources (BFAR), the local government unit of Barotac Nueva, the Iloilo State College of Fisheries (ISCOF), the Provincial Environment and Natural Resources Office (PENRO), and the Provincial Agriculture Office (PAO). This gave way to frequent visits and projects from ISCOF, LGU, and BFAR. PAO and PENRO were also involved with the community but not as frequent as the three abovementioned agencies.

Mangrove rehabilitation started in Barotac Nuevo in 2013 due to the havoc caused by Typhoon Yolanda (Haiyan). In response, the BFAR-PNAP included a mangrove rehabilitation program that was assisted by the academic institution of ISCOF. It was through the assistance of the LGU that the Jalaud Fisherfolk's Association was organized in 2008 and registered to the Department of Labor and Employment (DOLE). The PO now consists of 23 members and is managing the mangrove rehabilitation projects in Jalaud.

The remaining sections of this case study assesses the mangrove rehabilitation project in Jalaud by comparing the different stages of the project to the guidelines set by Participatory Mangrove Rehabilitation Framework. A focus group discussion and a key informant interview were conducted among members of the Jalaud Fisherfolk's Association and a staff of the Municipal Agriculture's Office, respectively, on September 8, 2018.

I. Local Site Coordination

The mangrove rehabilitation project in Jalaud was initiated under the PNAP. PNAP was done in coordination with barangay and municipal officials through the PO members who gave their consent to proceed with the project. A sense of ownership of the project was built through each process of asking for consent among PO members on every project activity. In line with this, the members were the ones who owned the data and decisions on the project.

In the onset of projects, it is the barangay officials who were first coordinated by PNAP implementers, followed by the PO, then a meeting with BFAR was scheduled. An orientation about the proposed project was then conducted before the planting proper. The LGU was the one in charge of coordination and providing information. ISCOF on the other hand was the one that conducted the trainings and were later involved in the project after the LGU. Funding based on submitted LGU documents was provided by BFAR while the DENR implemented policies. Lastly, the fisherfolks were the ones who provided manpower for the execution of the projects.

II. Comprehensive Site Assessment

There was no inspection on the condition of mangroves before the rehabilitation, although socio-economic surveys were performed in the community. The members of the PO on the other hand, had many ways to assess if the site was appropriate for planting, one of which was when the fruit or the '*bunga'* has already fallen. This was learned by the members through experience.

III. Participatory Mangrove Rehabilitation Planning

The PO was involved in the planning process. Residents who were at the age of eighteen years and above were the ones allowed to register together with their boats. An orientation was conducted wherein the elevation, soil, area, and the like are the ones discussed. It was the LGU who were orientated together with technicians and DOST officers. DENR and BFAR were the ones who conducted the seminar with resource speakers from other regions experienced in successful mangrove rehabilitation.

Part of the decision-making process was the consensual agreement among members. A decision must first be agreed upon by 70% of the community members. The goal of the project was to assure that the mangrove reached a 90% survival rate at the least. In line with this, the protection and maintenance of the mangroves must be given importance. Meetings were held once a month during Sundays at 2 o'clock in the afternoon wherein the process of seedling production and planting were among the topics discussed.

IV. Participatory Project Implementation

Capacity building activities were conducted as part of the project's implementation (Table 2). These included PO formation, leadership training, livelihood training, study site visit, hands-on training on mangrove ecology assessment, nursery management, site monitoring, and gender training. Examples of trainings were on the planting protocol and livelihood. Other trainings that were included under the PNAP were on gender and development (more than 30 members attended), cooking ('*puto'* or rice cake, crackers, '*gulaman'* or gelatin, shrimp, '*lukon'* or shrimp) and food processing (shrimp, '*bagoong*' or fish paste, milkfish).

Table 2. Capacity building activities and their perceived contribution to project implementation

Capacity building activity	Description	Frequency	Ranking
PO formation	assisted by the LGU	3	1
Leadership training	conducted by ISCOF	Once for 3 days	2
Livelihood training	• processing and Gender and Development (GAD) through the Regional Fisheries Training Center (RFTC) • shrimp-paste making through BFAR • cooking	2	4
Study site visit	None	0	5
Hands-on training on mangrove ecology assessment	"*hunol"/sticking*	1	6
Nursery management	Individual (based on experience)	0	7
Site monitoring	1 member involved	1	8
Gender Training		1	3

PO formation was conducted with the assistance of the LGU while the leadership training was done by ISCOF. Moreover, as part of the livelihood training, processing and Gender and Development (GAD) were tackled through the Regional Fisheries Training Center (RFTC) and shrimp-paste making was taught through BFAR. Study site visits were not conducted in the community (Table 2). Instead, as part of the activities, a hands-on training on mangrove ecology assessment was conducted wherein '*hunol*', also known as sticking, was imparted among the members of the PO. There were also activities that involved individual participation. These were nursery management and site monitoring.

In assessing the role of stakeholders in the project's implementation, their importance and influence were mapped out (Figure 2). Importance was assessed in terms of how the stakeholder was able to meeting the objectives of the project, while influence was in terms of its capacity to influence project decisions. As shown from the map in Figure 2, among the various agencies involved, ISCOF, MLGU (DA), and PAO had positive importance and influence on the implementation of the project, whereas PENRO, BLGU, and the 4Ps of DSWD had a positive importance yet a negative influence. Hence considering these, ISCOF, MLGU (DA), and PAO were able to meet the needs and interests of the mangrove site as well as influence project decisions. PENRO, BLGU and the 4Ps of DSWD on the other hand were able to meet the needs and interests yet were not able to influence the project decisions.

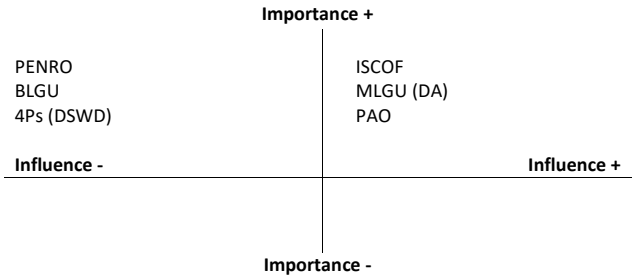

Figure 2. Importance-influence matrix in the implementation of the mangrove rehabilitation project in Barotac Nuevo

V. Participatory Monitoring and Evaluation

An overall monitoring plan does not exist in the project. Coordination is the one given more emphasis. PO members were given the task of monitoring the site, while the LGU visits weekly or sometimes 3 days a week. BFAR also does its monitoring although rarely. Survival rate on the hand is being monitored through BFAR.

Lessons and Challenges

The project benefited the community immensely. Linkages developed among the fisherfolks and other stakeholders. The regenerated mangrove cover provided a myriad of benefits such as serving as wind and wave breakers, augmentation of income of community members from harvesting crabs (*alimasag*) to be consumed and sold, and acquisition of fishing materials like gill nets (*pukot*) and pump boats (*makina*) were provided among the fisherfolks.

The following indicates the best practices that were showcased by the project in Jalaud, Barotac Nuevo:

- Technical/science-based planting (i.e. species identification, measurement must be reduced from 1.5m to 1m for high survival)
- Continuous concern and deeper understanding of the value of mangroves for livelihood
- Active POs that have initiative
- Openness for innovation (1.5m shortened to 1m)
- Close proximity among the fishing boats during fishing hence word on illegal cutting easily spreads
- The community understood the relevance of the project also because of the relatively high number of college graduates, particularly majors in fisheries, among community members

The major challenge in the implementation of the mangrove rehabilitation project was the dishonesty among members on the number of seedlings they planted when obtaining their compensation. The PO addressed this by including it in the monthly report on fisheries that they were submitting to the BFAR regional office. However, according to the members, the current national policy on mangrove forests do not properly address these types of challenges. Apart from these challenges, the project also experienced the limited resources and the lack of regular staff in the LGU.

Table 3 indicates the present issues in the project, its ranking by priority, and the PO's proposed solutions. The present issues include gossiping and jealousy from non-members of the PO, especially those who are aware of the supply provisions from the project and a practice of favoritism in choosing who will become a member. The PO members proposed to solve it by not entertaining such acts. Another issue was the presence of weak or inactive members brought about by burden from farm work since majority of them are farmers. This was proposed to be solved by the provision of additional projects. The next present issue that the project is facing was the trash wherein an estimated 30% came from the community itself while 70% from the adjacent barangays. It was proposed that a monthly river cleanup, assignment of a *tanod* or guard focused on monitoring the river, and individual management be arranged. Apart from these issues, the members also mentioned the foul smell from pigs and people as well as the presence of flies due to the presence of poultry in the mangrove area. Political will from the local chief executive was proposed by the members as a corresponding solution. And lastly, soil erosion or landslide was among the issues that the project faced. Like the previous issue, this can be addressed through political will from the local chief executive according to the members of the PO . As for the ranking in terms of priority, the present issue most prioritized was trash, followed by the foul smell and presence of flies, weak or inactive members, gossip and favoritism, and lastly soil erosion or landslide.

Table 3. Present issues and proposed solutions

Present issues	Ranking (by priority)	Proposed solution
1. Gossip and favoritism	4	Not to entertain
2. Weak or inactive members	3	Additional projects
3. Trash	1	Monthly river clean-up; '*tanod*' or guard assignment; individual management
4. Foul smell from pigs and people and presence of flies	2	Political will from the local chief executive
5. Soil erosion or landslide	4	Political will from the local chief executive

In line with the guidelines, the following are recommended to further improve the mangrove rehabilitation efforts in the future:

- There should be strict implementation of guidelines.
- Suitable species and planting time must be considered during the first visit. It should not depend on the presence of visitors. The mangrove species planted must be suitable because those advised by DENR were not commonly suitable.
- Emphasis must be given to voluntary and replacement planting.
- When it comes to the planting measurement, the 1.5 distance must be shortened to only 1 in order to assure replacement.
- Fisher folks must sustain their monitoring of the rehabilitation site as funded by the LGU (i.e. AIP allocation)
- Leadership is an important factor for the sustainable mangrove rehabilitation process. The community members' trust in the leader is vital. Members must also be active in participating in activities ('*bayanihan'*).

In line with institutional and policy concerns, the following are the recommendations to further improve the mangrove rehabilitation efforts in the future:

- Mangrove tree planting activities are to be initiated by the LGU with the participation of barangays (in order to replace the dead ones during summer).
- Coastal cleanups with the community and not only LGU staff and schools, at least once a month
- Government support is needed during calamity in order to help the fisher folks rehabilitate their site.
- Monitoring must be continued in order for the community to experience government support. The community must have incentives such as gasoline and cellphones for improved communication.
- LGU must continually monitor the rehabilitation site.
- BFAR must be the one who will produce a monitoring plan because of the lack of manpower in the LGU.
- Incentives for the communities must be provided during their monitoring (i.e. allowance for gasoline, communication)
- The mayor through the '*sangguniang bayan'* ATTN, principals, and district supervisors must be the ones responsible for reinforcing regulations on mangrove protection and its sustainable use.
- Ecotourism must be promoted if funding from other agencies is available.

And finally in line with the academe,the following are the recommendations to further improve the mangrove rehabilitation efforts in the future:

- It is recommended that latest researches on mangroves involving the PO be encouraged.
- Environmental Impact Assessment must be conducted especially among drainage systems since it can help in protecting the mangroves from outside developers or investors.

References:

Province of Iloilo. (2018). Retrieved December 2, 2018, from http://www.iloilo.gov.ph/municipality/barotac-nuevo.

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