

CASE STUDY:

Katunggan Ecopark, Leganes, Iloilo Province

Background

The Katunggan Ecopark is a mangrove rehabilitation site located in the municipality of Leganes in Iloilo Province. Leganes is a coastal town with a total land area of 3,200 ha and 6km of coastline. It has a population of 30, 989 residing in its 12 inland and 6 coastal barangay. Along and near its coastline, there are about 591 ha of fishpond in Leganes (Batislaon, 2013).

Conversion to fishponds, damage from typhoons, and the cutting of mangroves due to the lack of people's awareness of its ecological value were the factors that the Municipal Environment and Natural Resources Office (MENRO) identified, which caused mangrove degradation in the area. Prior to the mangrove rehabilitation project implemented by the local government unit (LGU) and initiated by the Zoological Society of London (ZSL), mangrove forests were converted into fishponds, particularly in Barangay Nabitasan and Gua-an. The community cited that the lack of monitoring of fishponds and the unregulated leases were among the reasons why mangrove forests were converted. According to the members of the Community Based Mangrove Seedlings Growers Association, a people's organization established in 2017, who are residents in the area, fishponds used to operate in the site in 2005. Back then, local people were able to buy fish harvested from the ponds for a lesser price. The economic worth of the fishponds was perceived to be more valuable to both the leasers who are mostly non-residents and the local people than the conservation of the mangrove cover. However, leasers started to abandon the fishponds in 2007 because of the high cost of maintenance. In 2008, Typhoon Frank devastated the area that leasers could no longer recover from the financial and economic loss, completely leaving the fishponds unutilized.



Figure 1. The team with MENRO, ZSL, and the Community-Based Mangrove Seedling Growers Association at the Katunggan Ecopark in Leganes, Iloilo Province

In 2009, the mangrove rehabilitation project that would later on be popularly known as the Katunggan Ecopark was implemented by the local government unit through the initiative of the Zoological Society of London. The Katunggan Ecopark is now a mangrove forest that revegetated an area of 9.5 ha (Fig 1). Going to the Ecopark, people still need to pass by some abandoned fishponds that remind visitors of the past status of the area (Fig 2). Today, the Katunggan Ecopark is considered as one of the successful mangrove rehabilitation projects in

the Philippines. A before and after photo of the area illustrating the outcomes of the project (Fig 3) was installed on one of the Ecopark's *kubo* (nipa hut) to inspire local people and visitors to sustain the rehabilitation efforts in the site and in similar areas.



Figure 2. Before and after rehabilitation



Figure 3. Unrehabilitated area outside of the Katunggan Ecopark

The purpose of this case study is to assess the mangrove rehabilitation project under a particular tenurial mode, that is, by the municipal local government unit of Leganes. The following sections of this report are thus organized following the Mangrove Rehabilitation Framework used in this project, namely, local site coordination, comprehensive site assessment, participatory mangrove rehabilitation planning, participatory project implementation, and participatory monitoring and evaluation. A narrative analysis from focus group discussions (Fig 4) among members of the Community Based Mangrove Seedlings Growers Association (Community Based Mangrove Seedlings Growers Assoc., 2018) and structured interviews (Fig 5) with the Municipal Environment and Natural Resources Officer of Leganes during visits



Figure 4. Focus group discussion among active members of the Community-Based Mangrove Seedling Growers Association

in January and September 2018 (Batislaon W. A., 2018) were used to assess the different stages of mangrove rehabilitation in the Katunggan Ecopark.



Figure 5. Interview with MENRO Wilson Batislaon

I. Local Site Coordination

The mangrove rehabilitation project in Leganes started in 2009. It began with the initiative of ZSL to find a site of abandoned and damaged fishponds within the municipality for its planned mangrove rehabilitation project. After consultations with LGU Leganes, the area in Barangay Nabitasan was identified as the prospective project site for mangrove rehabilitation. However, upon several visits to the site, the local people and leaders in the adjacent barangay of Gua-an were appealing that they too should be considered as interest groups of the

project. The LGU and ZSL agreed to include Barangay Gua-an in the project since part of the barangay was still covered with mangrove where they could source out for seedlings. Consent was then secured among interest groups, particularly the LGU, ZSL, and Barangay Nabitasan and Gua-an represented by the barangay captains, through signing a Memorandum of Agreement in 2009.

During the coordination phase of the mangrove rehabilitation project, the benefits from a rehabilitated mangrove ecosystem were highlighted in meetings with the barangay. The people in the communities, however, initially felt anxious about the project because they were not yet sure about the long-term benefits of mangrove rehabilitation. This consequently affected the people's motivation to participate and the decision of the LGU to delay the creation of a people's organization that will be actively involved in the implementation until 2017. During the preparatory phases of the rehabilitation project, ZSL provided technical and logistical support, while the LGU facilitated the involvement of community members.

II. Comprehensive Site Assessment

The site assessment team was organized by ZSL and composed of a biologist, marine scientist, zoologist, and community organizers. The community members were involved as guides and did not participate in the collection of data or documentation since they lacked the technical knowledge, while LGU technicians learned actual, hands-on field assessment. There were ten species that were identified as feasible for rehabilitation in the site. Species selection was based on the hydrology patterns, periods and duration of tidal inundation and dryness, water depth, and substrate height. Some of the mangrove species planted

are *Avicennia*, *Ropiana*, *Rhizophora*, and *Maconata*. The seedlings were grown in a nursery outside of the rehabilitation site.

During the site coordination and assessment, it is important for the project proponents to establish a sense of ownership among all interest groups, not just among technical staff. In Leganes, the community members of Barangay Nabitasan and Gua-an did not feel any form of ownership over the information that were gathered in their locality. This had implications on the level of motivation to participate in the future activities of the project, especially in the planning process. Consequently, the local people commented that the assessment study for the mangrove rehabilitation project did not regard the community and the individual's needs and interests, nor assessed their understanding of the benefits of a mangrove ecosystem. This was one of the reasons why the people were organized into an association relatively late in the project. According to the MENRO, this was because the LGU did not see the enthusiasm in the local people to participate in the project until the mangrove forest was starting to grow back.

III. Participatory Mangrove Rehabilitation Planning

It was during the planning stage that interest groups envision the goals and objectives of the mangrove rehabilitation. It was clear with the LGU and ZSL that the goal of the project was the reversion of denuded areas to forest to prevent coastal erosion and as a means for climate change mitigation and adaptation. However, the key problems and underlying causes that contributed to mangrove deforestation were not discussed among interest groups. Decision-making and planning of activities were only upon the discretion of the LGU and ZSL. The community only proceeded to do the tasks that were prescribed to them by the MENRO.

As part of the planning process, ZSL and LGU conducted site visits to Nabitasan where they oriented the students of Nabitasan National High School and members of the *Sangguniang Barangay* about mangrove ecology and biology. DENR Region 6 also initiated the planning for the Coastal Resource Management Plan of the LGU in 2009, which was approved later that year.

In January 2010, the LGU budgeted an amount of PhP 147,000 for the mangrove rehabilitation project (Table 1). Consistent with their commitment to this project, the LGU legislated in 2011 Ordinance No. 2011-227, an ordinance declaring the mangrove protected areas in Leganes and establishing regulations for the conservation and protection, and providing penalties in violation.

Table 1. Budget allocation of the mangrove rehabilitation project of Leganes

Item	Budget allocation (PhP)
Nursery establishment	50,000
IEC materials	10,000
Advocacy campaign	15,000
Plastic bags	4,800
Caretaker salary (one year)	67,200
Total	147,000

Source: (Batislaon W. , 2013)

IV. Participatory Project Implementation



Figure 6. Bamboo footbridge to the kubo

During project implementation, the MENRO allotted an amount of Php 47,000 for the construction of the shed at the entrance as resting spot for planters, and Php 250,000 for the bamboo footbridge and tower (Fig 6). The *kubo* (nipa hut) in the shore, used as a resting place for visitors, was built through donations and efforts of volunteers. As

mentioned above, the roles of community members and the people's organization were to implement the mangrove-related activities of the MENRO, for instance, 1) the construction of the T-fence, the bamboo footbridge, and the floating cottage; 2) guiding tree planting activities including orientation of students and other volunteer planters; 3) planting and bagging seedlings; and 4) maintenance.

The LGU has grown its network since the project coordination phase, especially during seedlings production and planting. From 2009 to 2013, the project has involved more than a thousand volunteers in seedling production and planting, and out planted almost 60,000 seedlings in the site (Table 2).

Table 2. Seedlings out planted and involved volunteers, 2009-2013

Year	Number of seedlings out planted	Involved groups
2009	1,712	Nabitasan BLGU, TESDA scholars, BFAR 6, LGU Leganes, Nabitasan National High School, USA PICHE
2010	2,425	Nabitasan National High School, private individuals, WIMAPHIL/WVCST/Golden Z, LNHS
2011	2,425	Ajuy NIPSC Criminology students, LNHS, LGU Leganes, OSY, CDA, Jollibee, BALA, Wimaphil Youth/PGCA/Outreach office of St. Therese, CPU
2012	20,475	Students from WVSU, WVCST, UP-USA, UI-Phinma, JBLFMU, LGU, PGBI, PENRO
2013 (January-May)	17,930	PAF, PNP, PCG, BJMP, JBLFMU, PENRO, St. Therese -MTC College
TOTAL	58,924	

Source: (Batislaon W. , 2013)

However, it was only during the implementation stage when the community members were realizing the benefits they were getting from the mangrove rehabilitation did they envision programs that could augment their livelihood, particularly through tourism and recreation, such as making souvenir items and food catering. There have been several capacity building activities that were conducted in order to sustain the project. Members of the Community-Based Mangrove Growers Association listed these activities

during the focus group discussion and ranked them according to the level of contribution to project implementation (Table 3).

Table 3. Capacity building activities and their perceived contribution to project implementation

Capacity building activity	Description	Frequency	Ranking
People's Organization (PO) formation	<ul style="list-style-type: none"> Organized by MENRO Formed in 2017, i.e. the Community Based Mangrove Growers Association 	once	4
Leadership training, including logistics	<ul style="list-style-type: none"> Participated by the PO president and vice president Facilitated by ZSL 	once	6
Livelihood training	Seedlings bagging	once	5
Study site visit	*Participated only by the MENRO and not yet with PO	none	3
Hands-on training on mangrove ecology assessment	Technical training through ZSL and UP Visayas like seedling production, schedule	thrice	1
Training on nursery management and production	Provided by ZSL but trained members are already training other members	once	2
Site monitoring	Provided by ZSL, including the method for measuring the height	every 6 months	3

* by level of contribution to project implementation

When the PO was organized, information sharing and reinforcement of rules and regulations have become more effective. They also noticed that they have become more efficient in accomplishing tasks since they were following the guidelines together while checking the work of one another. Capacitating their leaders was also perceived as important. The president and the vice president of the PO became capable of managing the people and leading them. The PO were becoming independent capable of self-governance.

The most beneficial capacity building activity in project implementation as perceived by the members of the PO was the hands-on training on mangrove ecology assessment. When they were trained, they came to know parameters for increased chances of survival of the seedlings, for example, its height should be at least 1 ft or the number of leaves should be 6 and above. Members remarked before the training:

"Dati bahala ka na. Hindi alam kung anong klase ng species ang dapat itanim. Yung ibang itinanim namin namatay dahil hindi pala pwede sa lupa o yung facing sa dagat."

We were not guided before. We did not know what species to plant on where. Some of those we planted died because they were not supposed to be planted on dry land or others should be facing the sea.

Additional funding from the National Greening Program was received for another 5 ha amounting to PhP 1.5M. This was allotted for payment for labor and sale of seedlings.

When asked to rank the influence and importance of each interest group in the success of the project implementation, the community members grouped together the LGU, the people's organization, ZSL,

DENR, as well as partners in funding and tree planting to having both high importance and influence (Fig 7)

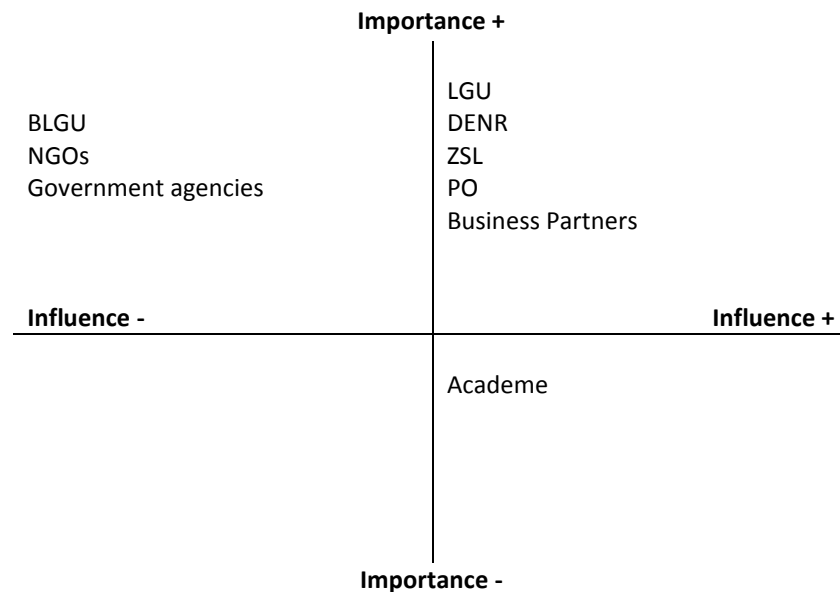


Figure 7. Importance-influence matrix in the implementation of the mangrove rehabilitation project in Leganes

V. Participatory Monitoring and Evaluation

The PO are participating in the monitoring and evaluation of seedlings planted, primarily to assess if replacement planting is needed. However, they do not have a monitoring and evaluation plan which the PO and the LGU assumed is with ZSL. Similarly, the results of the monitoring and evaluation were not being relayed to the PO, which could be used for replanning and strategizing.

Yet, the project was deemed successful since it has brought back the mangrove cover in Barangay Nabitasan. According to the MENRO, the project was a success because of the collaboration between interest groups and the aid of volunteers. The MENRO also noted the significant contribution of the PO when the obligations of sustaining the project were transferred to them. The hindrances to success, on the other hand, are the limited budget, overworked MENRO staff consuming almost 30% of the MENRO's work, and the lack of enthusiasm among local people about the beneficial impacts of the project.

Lessons and Challenges

In a decade that the mangrove rehabilitation project in Leganes is being implemented, the PO and the LGU are now trying to generate income from the Katunggan Ecopark. There have been consultations with the LGU Tourism for their vision to be supported and realized. The interest groups in the Katunggan Ecopark, particularly the Community-Based Mangrove Growers Association and the MENRO shared their lessons learned for other sites of mangrove rehabilitation in the Philippines. According to the MENRO, the following are important considerations for the success of mangrove rehabilitation:

1. Identification of interest groups that should be involved and be willing in the project;
2. Building partnerships with organizations especially to augment limited resources;
3. Supporting innovative technology or infrastructure to protect the growing mangroves, such as the bamboo T-fence;
4. Hands-on learning on technical mangrove planting;
5. Efforts to change the negative/apathetic attitude of community members, for instance, by forming a PO and letting trained PO members to educate other members of the community ; and
6. Eventually planning for a source of supplementary income, for example, through ecotourism.

In addition to this, the members of the PO also listed what they think were the factors to the success of the project and ranked each according to their perceived influence on success (Table 4). They agreed that the most influential factor to success based on their experience was the PO formation. Through the PO, members were able to understand the common goal and mission they committed in achieving. They learned that the willingness of the PO members was crucial and the project could be sustained even without the facilitation of the MENRO or ZSL, but also emphasized that all PO activities should also be informed to the MENRO. However, the PO also observed that they were not being consulted in the planning of future activities. Realizing their participation and interests should also be recognized; they are planning to get themselves involved in the decision making process as well.

Table 4. Lessons learned according to members of the Community-Based Mangrove Growers Association

Factors to success	Ranking
Establishment of T-fence as wave breaker	7
Species selection	6
Planning, including area establishment and protection before planting	4
Assessment study, including assessing water depth and duration of inundation	3
PO formation	1
Support from LGU and other groups	5
Support of the community	5
Capacity building	2

There are still pressing issues that the Katunggan Ecopark need to address. The members of the PO enumerated the issues they are facing in Table 5 along with their proposed solution and their ranking by which they think should be prioritized. The identified top priority issue is the negative attitude and harmful practices of non-members of the PO. There are anecdotes about people (non-members) fishing during high tide within the mangrove area using nets. The fishes have returned to the mangrove forest but the fishing net is causing damage to, even killing, some newly planted seedlings.

Table 5. Present issues ranked by priority and their proposed solution

Present issues	Ranking	Proposed solution
Negative attitude and harmful practices of non-members of the PO	1	Invite as member of the PO
Garbage coming from outside the community especially from the river when high tide	2	Clean up drive and IEC campaign by the barangay
Lack of regular source of livelihood could lessen people's motivation to participate	4	Conduct of monthly meeting and a training on ecotourism
Expectations were unmet in some projects of MENRO	3	Follow-up MENRO
Conflict among PO members, such as in the selection of representatives, scheduling, jealousy, and insistence to use the seedlings even without reaching the required height for planting	5	The PO president intervenes and facilitates a resolution by explaining the circumstances

To ensure the sustainability of the project, enabling policies and its enforcement should also be taken into consideration. According to the MENRO, the mangrove rehabilitation efforts of the LGU need to be integrated in its Comprehensive Land Use Plan, its Comprehensive Development Plan, and in the Local Climate Change Action Plan. Enforcing the land use and zoning regulations could also safeguard the mangrove forest from the probable negative impacts of development that is encroaching the shorelines of Leganes.

There should also be prohibitions and a penalty clause in the Municipal Environment Code to regularly and strictly enforce regulations on mangrove protection, such as no cutting of mangroves, no littering, and no smoking. In addition to the Bantay Dagat, enforcement should be in partnership with the LGU and the community. The community, particularly the PO members, have successfully reported misconducts in the site through texting. The MENRO noticed that reporting through texting is enabling more immediate actions.

References

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