

Gender- Based Conservation in Calatagan Mangrove Forest Conservation Park in Batangas, Philippines

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Abstract – Mangrove resources around the world are now overexploited and undervalued without realizing its direct and indirect benefits. This study aimed to determine gender difference on the level of knowledge and awareness and the economic valuation of direct uses of mangrove resources. And conservation activities of PALITAKAN members. Focus group discussion (FGD) was used to determine the gender-based conservation practices of the People's Organization commonly known as PALITAKAN and key informant interview was conducted to validate the information gathered from FGD. The women from the PO and local community have very high level of awareness and knowledge on mangrove resources, services and conservation practices. Men from the LGU have higher awareness on conservation practices than women. However, it was observed that men (LGU and PALITAKAN) have very high level of awareness toward mangrove conservation. Both men and women would sell the different mangrove resources in different prices. The knowledge and awareness and economic valuation of the three important stakeholders of the mangrove conservation park give a better picture on how the value mangrove forest. There are still mangrove conservation activities that are exclusively done by men and women of PALITAKAN. Gender-based conservation provided greater and sustainable efforts in mangrove education and conservation.

Keywords – Biodiversity, gender and development, mangrove conservation, Philippines

INTRODUCTION

Gender mainstreaming in environmental conservation up to date lacks evidences of how women's empowerment and gender equality are being integrated into environmental management [1]. Thus, this study tried to document the role of women in mangrove forest conservation.

Mangrove's ecosystems are the common habitats of many different species and considered as a good source of food, medicine and other forest products such as fuel and timbers. Mangrove ecosystems, for the local community, provide livelihood in terms of gathering and selling of marketable species found in the area, fuel and timber, and ecotourism [2]-[3]. In addition, mangrove ecosystems provide indirect benefits, which are undervalued, like shoreline protection services. It protects the shoreline from erosion and extreme weather events, such as cyclones, typhoons and storms [4]. Thus, mangroves play a significant role for human being in terms of food security and protection of coastal communities worldwide and in sustaining biodiversity [5].

In the Philippines, mangrove degradation was counted for about 175, 000 hectares or about 35 percent mangrove lost and this was due to conversion of

mangrove areas into fishponds [6]. Local community must be the one organizes the community-based conservation in conserving and managing coastal resources together with the LGUs and other non-government organizations [7]. The integration of biological and social elements in conservation efforts provided greater and sustainable efforts [8].

Objectives of the Study

The study determined the gender role in community-based management done by the people's organization (PALITAKAN) in Calatagan Mangrove Forest Conservation Park in Barangay Quilitisan, Calatagan, Batangas, Philippines.

It specifically determined: the level of knowledge and awareness of men and women from the LGU, PO (PALITAKAN), and local community of Barangay Quilitisan toward mangrove resources, services, and mangrove conservation practices; and the valuation of direct uses of mangrove resources as perceived by the men and women of LGU, PO, and local community. Lastly, the gender-based mangrove conservation activities of people's organization members done in the CMFCP.

METHODOLOGY

Study Area

The Barangay Quilitisan in Calatagan, Batangas where the Calatagan Mangrove Forest Conservation Park (CMFCP) is situated, was the site of the study. The Calatagan Mangrove Forest Conservation Park is locally known as "Ang Pulo." This is a 7.5 hectares Marine Protected Area (MPA). This CMFCP is being managed by a local organization named Pro-mangrove Alliance and Implementing Team and Arm as Kilitisan's Advocates of Nature or *PALITAKAN* [9]. There were estimated 500 households in the barangay.

Instrument of the Study

The researcher used the structured questionnaire modified from instrument of Da Silva (2015) to determine the knowledge and awareness toward mangrove resources, services, and conservation practices. The researcher modified the instrument of Da Silva [10] to determine the knowledge and awareness of men and women from the LGU, PO, and local community toward mangrove resources, services, and conservation practices.

The Option Pricing Questionnaire of Damodaran [11] was used to determine the value of direct uses of mangrove resources based on their knowledge and perception. This questionnaire was accomplished with the same number of respondents mentioned above. This used structured questionnaire based on Option Pricing Model to determine the value of direct uses of mangrove resources based on their knowledge and perception.

Participant of the Study

There were 79 respondents who participated in the survey. They are composed of 39 local fishers, 19 representatives from local barangay, and municipal government, and 21 *PALITAKAN* members.

FGD involved the members and volunteers of *PALITAKAN*. The Harvard Analytical Framework Tool No. 1 or the Activity Profile was used to list all the activities required to manage the mangrove park and discussing "who does what."

The respondents were gathered in particular place and time in their most convenient schedules. All of the FGDs were recorded. The researcher interviewed key informants to validate the information gathered from the FGD. The researcher chose the focal persons of *PALITAKAN*.

Statistical Analysis

Mean was used to analyze the demographic profile and sex disaggregated data.

Ethical Considerations

Consent letter were given to all participants before the conduction of the survey. Information such as participant's name and address were kept confidential and would never be disclosed to anybody.

RESULTS AND DISCUSSION

Table 1.0 shows the total number of respondents their sex and age. FGD respondents were composed of 21 participants who have an average age of 40.9 years old with the age range of 17 to 71 years old. They were composed of 7 males and 14 females. The *PALITAKAN* members are the ones who manage the CMFCP. They have attended different seminars and trainings in mangrove conservation from both international and national levels.

In general, the volunteers at CMFCP belong to the local fisher folk families. They do not have other jobs aside from fishing, gleaning, and farming. CMFCP started to have seven female volunteers and after few years they have encouraged their family members to be involved in mangrove conservation.

Table 2.0 shows that all men and female respondents from LGU, PO, and local community exhibited high or very high level of knowledge and awareness. In general, women have higher level of awareness and knowledge than men on mangrove resources, services and conservation practices. However, it was observed that men (LGU and *PALITAKAN*) have very high level of awareness toward mangrove conservation since most of the male respondents are "Bantay Dagat" members; as such they are more exposed on the different activities in mangrove conservation.

Table 1.0. Demographic Profile of *PALITAKAN* members

| Characteristic | Male | Female | Total |
|----------------|--------------------|---------------------|--------------------|
| Sex | 7 | 14 | 21 |
| | Mean (Year old) | Range (Year old) | Standard Deviation |
| Age | 40.9 | 17-61 | 14.4 |

Table 2.0. Gender Difference on the Knowledge and Awareness of LGU, PO, and Local Community toward Mangrove Resources, Services, and Conservation Practices

| Stakeholder | KNOWLEDGE | | | AWARENESS | | |
|-----------------|-------------------|-------------------|------------------------|-------------------|-------------------|------------------------|
| | Resources | Services | Conservation Practices | Resources | Services | Conservation Practices |
| LGU | | | | | | |
| Men | 27.4 | 28.6 | 41.3 | 28.0 | 28.8 | 42.0 |
| Women | 26.1 | 28.1 | 39.7 | 27.9 | 28.9 | 40.1 |
| Mean | 27.0 ^b | 28.4 ^b | 40.7 ^b | 28.0 ^b | 28.8 ^b | 41.0 ^b |
| PO (PALITAKAN) | | | | | | |
| Men | 31.4 | 31.4 | 45.9 | 31.3 | 34.2 | 44.9 |
| Women | 31.5 | 33.3 | 49.9 | 33.3 | 33.9 | 48.8 |
| Mean | 31.4 ^a | 32.2 ^a | 47.2 ^a | 32.1 ^a | 30.4 ^a | 46.3 ^a |
| Local Community | | | | | | |
| Men | 26.3 | 27.7 | 35.9 | 27.6 | 28.3 | 37.9 |
| Women | 28.5 | 31.0 | 37.7 | 29.7 | 30.7 | 42.0 |
| Mean | 27.2 ^b | 29.0 ^b | 36.6 ^b | 28.4 ^b | 29.2 ^b | 39.5 ^b |

* Mean Values with the same letter in the superscript under the same column means not significantly different at $P = 0.05$

The men and women of PO (PALITAKAN) exhibited very high level of knowledge and awareness compared to the two groups because they are the main stakeholders who facilitated the mangrove conservation project and had attended various seminars and workshops in mangrove conservation. Women from the local community exhibited high level of knowledge and awareness toward mangrove services and conservation practices than men.

The women in Brgy Quilitisan were the most active volunteers in mangrove rehabilitation and management

project when the CMFCP was still at its infancy; they were concerned with the unabated cutting of mangrove trees and the depletion of their mangrove resources usually done by fishers both from their barangay and nearby barangays [12]. They sought help from LGUs and international NGOs to teach them how to protect and conserve their mangrove forest. Through the high motivation initiated by the good leaders among them to protect their own resources, they have high participation rate in maintaining the mangrove resources and attending seminars and meetings.

Table 3.0. The gender differences on the perceived selling price of mangrove resources

| Stakeholder | Perceived Selling Price (Peso) | | | | | | |
|-----------------|--------------------------------|-----------|----------|--------|-------|----------|---------------|
| | Timber | Fuel Wood | Charcoal | Bark | Seed | Seedling | Mangrove Tree |
| LGU | | | | | | | |
| Men | 68.75 | 41.67 | 129.17 | 256.67 | 43.13 | 34.92 | 298.08 |
| Women | 72.86 | 48.57 | 114.29 | 240.00 | 31.00 | 52.57 | 139.57 |
| PO (PALITAKAN) | | | | | | | |
| Men | 396.67 | 58.75 | 216.67 | 152.50 | 55.50 | 44.67 | 351.67 |
| Women | 179.42 | 49.66 | 153.37 | 216.39 | 43.21 | 44.05 | 263.11 |
| Local Community | | | | | | | |
| Men | 244.17 | 45.00 | 293.75 | 253.21 | 14.25 | 21.06 | 1663.13 |
| Women | 140.00 | 30.67 | 278.00 | 463.87 | 28.07 | 17.40 | 1403.07 |

Both men and women would sell the different mangrove resources in different prices. The Table 3 shows that the men from LGU would sell the charcoal, bark, seed, and mangrove tree in a high price than women, and women would sell fuel wood and seedling in a high price than men. The men from PO would sell timber, fuel wood, charcoal, seed, and seedling in a high price than women, and women would sell bark and mangrove tree in a high price than men. The men from local community would sell timber, fuel wood,

charcoal, seedling, and mangrove tree in a high price than men, and women would sell bark and seed in a high price than men. People in Barangay Quilitisan, way back when mangrove area was not yet declared as marine protected area, legally exploited these different mangrove resources and became depleted. Men have the control over there mangrove resources [12].

Table 4.0 shows that mangrove conservation practices done in CMFCP were generally categorized into three: mangrove propagation, education about

mangrove, and PALITAKAN mangrove management practices. It was observed that repair and maintenance of facilities were done by men but FGD respondents agreed that it could also be done by women. Lectures and information dissemination about mangroves and history of Ang Pulo were done by women, mostly by the president of the PALITAKAN, but they agreed that it could be done by men. Research and development is being done by a male member who is also their technical adviser and with graduate degree in environmental science and post graduate education in biology major in environmental biology. However, they agreed that it could be done by women especially

those who were trained by the Conservation International, an international NGO that initially trains women in mangrove species identification and assessment. Harmonizing the knowledge and awareness of the three important stakeholders (PO, LGU, and local community) of the Ang Pulo benefit them in both the direct and indirect ecosystem services that mangroves can provide [13].

Men and women have equal opportunities in their roles in mangrove conservation project. However, there were still few activities exclusively done by men and women but it was agreed that these activities could be done by both sexes

Table 4.0. Gender-Based Mangrove Conservation Activities of PALITAKAN members

| Mangrove Conservation Activity | Done by: | |
|---|----------|-------|
| | Men | Women |
| Mangrove Propagation | | |
| 1. Collecting propagules | / | / |
| 2. Planting of seedlings | / | / |
| Education about Mangrove | | |
| 1. Lecturing about mangrove and history of "Ang Pulo" | | / |
| 2. Tour guiding | / | / |
| PALITAKAN Mangrove Management Practices | | |
| 1. Initiating and facilitating meetings | / | / |
| 2. Cleaning of "Ang Pulo" | / | / |
| 3. Monitoring of mangroves | / | / |
| 4. Repair and maintenance of facilities | / | |
| 5. Promotion of "Ang Pulo" | / | / |
| 6. Establishing partnership in mangrove conservation | / | / |
| 7. Localized policy making | / | / |
| 8. Research and development | / | |

Figure 1.0 shows the assessment framework that highlighted the gender-based assessment for the three major stakeholders (LGU, local community and people's organization) and how their knowledge and awareness toward the mangrove resources, services and conservation practices and contingent valuation would serve as the key drivers toward sustainable management of Calatagan Mangrove Forest Conservation Park (CMFCP) in Barangay Quilitisan, Calatagan, Batangas. The sustainable management of CMFCP or *Ang Pulo* by the PALITAKAN, which started as a volunteered group of women, showed the importance of gender role in sustainable mangrove conservation efforts. In the end, the CMFCP provides different mangrove products and services and ecosystem benefits not only to the PALITAKAN but to the whole community including the local government.

CONCLUSION AND RECOMMENDATION

Women are more knowledgeable and aware than men on mangrove resources, services and conservation practices. The men and women of PALITAKAN exhibited very high level of knowledge and awareness since they facilitated the mangrove conservation project and had attended various seminars and workshops in mangrove conservation. Both men and women have different perceived economic value for different mangrove resources. Men in LGU would sell the charcoal, bark, seed, and mangrove tree in a high price than women and women would sell fuel wood and seedling in a high price than men. People in Barangay Quilitisan, exploited the different mangrove resources during the time when it is not yet declared as marine protected area and now, they are putting economic values on these resources. It shows that mangrove resources still have monetary value for different stakeholders.

There were division of labor between men and women members in doing their conservation, education and ecotourism tasks. However, everyone agreed that the tasks could be done by both men and women.

It is suggested that men and women from the different stakeholders involved in mangrove conservation must have equal opportunities to learn more about mangrove. They must attend seminars, conferences, trainings and short courses in mangrove conservation. Local

government can make a local policy that will be effective in the Batangas Province to include mangrove conservation in the education curriculum for Secondary and Tertiary levels. It is also recommended to study the other gender attributes of all the stakeholders like their access and control over the mangrove resources, consumption patterns, and different fishing activities within the mangrove area.

Gender- Based Mangrove Conservation Initial Assessment Framework

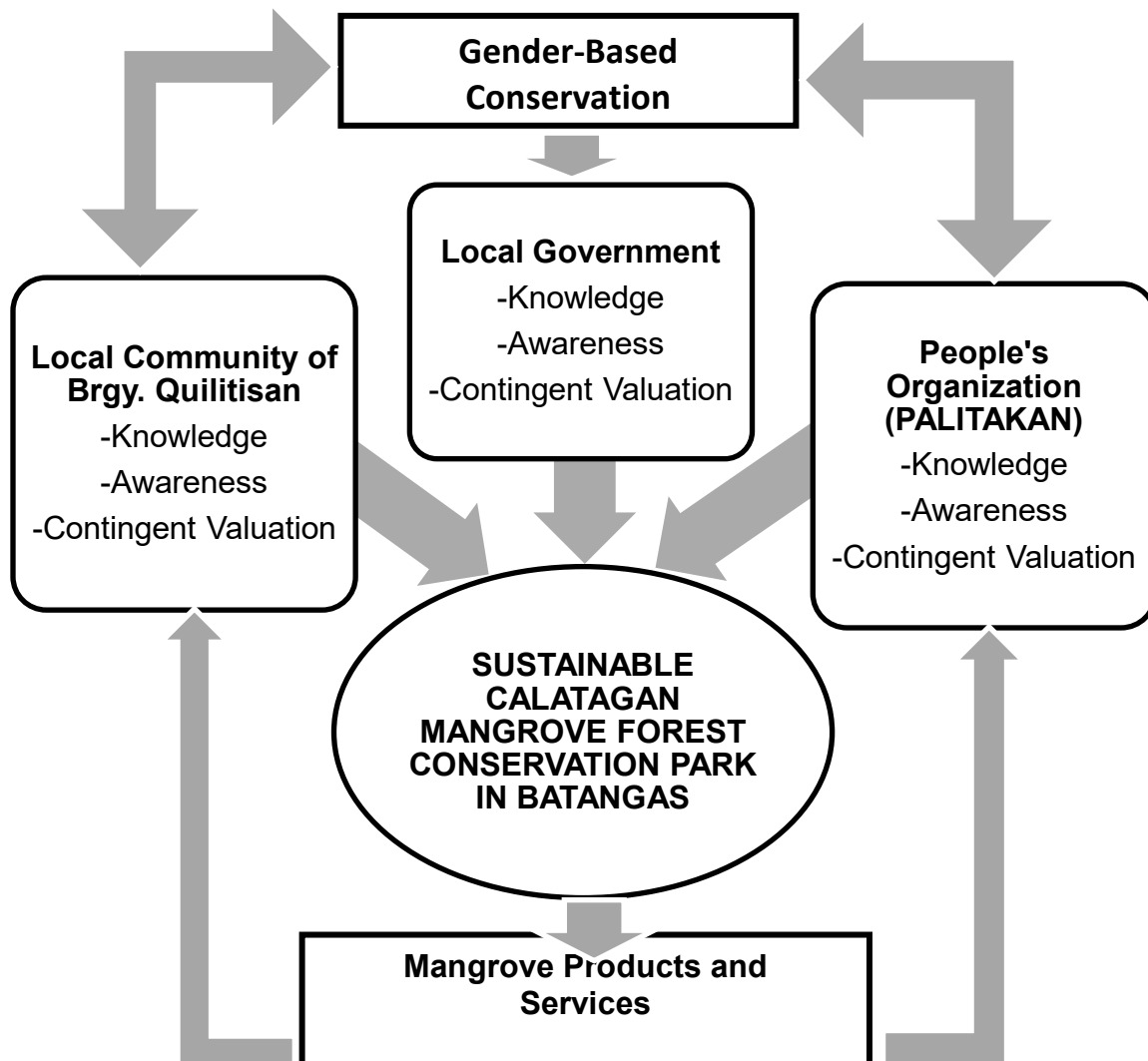


Figure 1.0. The Gender- Based Mangrove Conservation Initial Assessment Framework in Calatagan Mangrove Forest Conservation Park in Batangas, Philippines

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