

Why Gender Equity Matters In Marine Protected Areas (MPA): Taking Examples from Mangrove Conservation Initiatives in Catanduanes Island, Luzon

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Abstract-Social representations (SR) of Moscovici's theory of social-psychology provides a framework for understanding the gender and equity issues in marine protected areas (MPA) which is currently under-researched in the Philippines. This paper presents insights on gender equity issues mangrove conservation restoration; social representations (SR) of the dimension of innovations. Findings indicate that the lack of adequate space for crops and animal farming, extreme weather disturbances due to typhoons in the island and the government's inability to enable women to fully engage in and benefit from marine conservation programs. Asset poverty exists in the mangrove dwelling communities, but does not represent the main dimension of poverty as expressed by the local women who are fully engaged in mangrove restoration projects.. Gender analysis on the dimensions of livelihoods, roles and relations (LRR); and assets, capabilities and shocks (ACS) were used as inputs in the analysis why gender equity matters in MPAs and mangrove restoration. Women responses associate household poverty with the inability to own a house or a parcel of land; and conflicts on gender equity exist with the divergent perceptions on the benefits coastal resources management (CRM). Women engagement in both mangrove restoration is still under-addressed despite the fact that perceptions that women participation can lead to better governance among the local coastal dwellers.

'Doing research is the easy part of conservation; the most challenging and exciting thing is linking findings with the conservation actions, and this will always include people. Do not stop until you get to that point'.

Julie Hanta Razafimanahaka [from Flora and Fauna International (Rakowski, 2012)].

I. INTRODUCTON

The Philippines is an archipelago of 7,107 islands covering 300,000 km² (30 million ha) of land and 1,830 km² of water. In recent years, the country is now facing crisis in the marine water resources and the need for concerted efforts to utilize these more efficiently is clearly becoming a high priority. Catanduanes island (found north of the Philippine Sea) (Figure 1) have economically and ecologically important rivers, estuaries and coastal wetlands (REWs) that need to be managed sustainably (Masagca, Morales & Araojo, 2018). Sustainable development as a process in which present and future human needs can be satisfied without degrading the socio-environmental systems has to be emphasized in understanding poverty, equity and the over-all social - wellbeing of rural communities dependent on the ecological functioning and ecosystem services of REWs (Masagca, 2018; Masagca, Morales, Araojo, Sapico, Tribiana & Mercado, 2018). The mangroves and fisheries resources contribute to the over-all richness within the identified major center of the world's marine biodiversity (see Carpenter & Springer 2004). The world renowned "Mangrove Hero", Dr. Jurgenne Primavera (Scientific Mangrove Advisor, Zoological Society of London (ZSL) in her essay on *Mangroves, Fishponds and the Quest for Sustainability* (2005) highlighted land disputes in Panay Island (Central Visayas) that included issues on gender and gender disparity issues possibly on ownerships and land grabbing.



Figure 1. Catanduanes island, with respect to the Philippine archipelago. (from Google)

It has been argued that the support of local communities is important for the effective implementation of marine protected areas (MPA) and community-managed marine spaces (CMMS) (Masagca et al., 2018) and conservation of mangrove resources (because, unless the immediate livelihood needs of local stakeholder populations are met, longer term conservation objectives are considered to be unattainable (Al-Azzawi, 2013; Flintan, 2003). There has, therefore been increased emphasis on linking conservation with development objectives; even within organizations whose primary stated objectives are conservation.

On mangroves, the conservation of forests that incorporate local communities into their management was found to fare better. Recognizing the importance of gender and community rights in mangrove use and planning prevents the deterioration of these fragile ecosystems (Rotich, Mwangi & Lawry, 2016). Moreover, the culture of aquatic organisms in marine waters known as aquaculture is the fastest growing sector of food production in the world (Subasinghe et al., 2009), however its income, food, and other benefits are not evenly accessible to, nor distributed between women and men of different age and social groups who engage in and depend on it (Kruijssen, McDougal & van Asseldonk, 2018; Ndanga et al., 2013). In recognition of these gendered differences in aquaculture, mangrove conservation (see Djohani, 2017), recent literature suggests that including a gender perspective in value chain analysis and interventions is vital, including assessment of power structures, division of labor, welfare effects and empowerment (Schumacher, 2014).

Achieving gender equality and empowering all women and girls is one of the seventeen goals of Sustainable Development Goals (SDGs). Gender equality is a fundamental human right and necessary foundation for a peaceful, prosperous and sustainable world. Unfortunately, gender inequality practices still occur in nearly all fields of development; one of which is the education development. So, providing women and girls with equal access to education is very important and will fuel the benefits for humanity at large.

Gender in this paper is defined as the socially-constructed norms, roles, and behaviors for men and women in a society. It determines social expectations for men and women, as well as access to assets and resources, chain decision making and bargaining power, and control over benefits derived. As explained by Schumacher (2014), gender relations influence and intersect with cultural practices, domestic and social interactions, aspirations and material livelihoods, and, especially, power relations, and out-comes for wellbeing. This paper subscribes to the notion that integrating gender issues in mangrove conservation or establishment of MPA that men and women intrinsically hold equal rights to benefit from development or the *social justice argument*. This argument is found in the Sustainable Development Goal No. 5 on gender equality, and the broader commitment “to leave no one behind”.

Women and men in coastal communities are often closely connected to their coastal ecosystems and gender roles are often traditionally identified and clearly divided. They differ in how they interact and depend upon mangroves – how they use the ecosystem, which mangrove products they choose, and the benefits they receive. There is now growing evidence that integrating gender into conservation projects can increase the benefits of conservation for all people and nature. It is generally important to look for opportunities, not only to empower vulnerable groups, but to provide a space to share knowledge, perceptions, and experiences, and to avoid exacerbating existing inequalities of men and women.

Several stories depicting gender issues, gender disparity, gender equity and gender effects are seemingly kept frozen for research and are said to be waiting for attention. This limitation becomes critical in this study with particular reference to the communities in marine protected areas (MPA) and mangrove conservation areas in the Philippines. One of these islands in the archipelago that needs to be given attention is Catanduanes island in Bicol region (Luzon) and found to be located in the “typhoon highway.” Papers on gender, equity and poverty, within the issues of marine coastal or mangrove communities of the island continue to increase as evidenced by the robust and invigorated campaign for more emphasis on women and gender of the island university (Catanduanes State University) Gender and Development Office. Efforts on these issues using various frames of analyses (e.g. political ecology) are needed now. This is extremely significant in consideration of an increasing attention on the links between biodiversity conservation, poverty and the role of women in development and nation building (Philippine Republic Act No.7192, Women and Development and Nation Building Act). This act promotes the integration of women as full and equal partners of men in development in nation building.

Gender analysis and a feminist perspective are by no means new to the (agricultural) development literature (Kruijssen, McDougal & van Asseldonk, 2018). This literature has highlighted the importance of the analysis of key social institutions such as the household, the labor market, the economy, and societal norms and values, as well as of the interactions between productive and reproductive roles, paid and unpaid work, and intra-household dynamics (for critical reflections on gender and development see Jackson and Pearson, 2005).

Part of this discourse on gender equity in marine conservation and mangrove restoration is Henry Bernstein’s agrarian political economy and the pro-poor land policies and land governance materials of Borrás & Franco (2010) which served as guide in carrying out this inquiry. Likewise, several materials on political ecology (Piers Blaikie’s papers from 1980s to the year 2000, Bryant 1992, Batterbury et al. 1997, Peet and Watts 1996, Belsky 2000, Forsyth 2008) were scanned in completing the paper. On political ecology with equity in community forest, Shrestha’s work in Nepal (2005) and human ecology work by Berkes (1989) are important references. Walters (wrote on several papers on mangroves and community-based initiatives that started from his Bais Bay, Philippines research for a doctoral dissertation), who criticized the apparent lack of coherence of political ecology (Vayda & Walters 1999) noted that property rights regimes in mangroves are complex, conflict-ridden and under continuous negotiation between similar and dissimilar resource users.

Studies on gender intend to reduce gender disparities in access to and control of different resources such as the natural resources in inland and coastal areas and on decision-making. The present study looks on the views on the norms, attitudes, beliefs and practices relating to gender roles, by strengthening the role of women in decision-making, and by emphasizing increasing access, ownership and control over productive resources for women. Two dimensions on (1) Livelihoods, roles and relations; and (2) Assets, capabilities and shocks were used in the present inquiry that serve as inputs for water governance and sustainability research on benchmarking, forecasting, and innovation (technological, political and societal).

World Bank’s poverty benchmark of US\$1 to US\$2 per capita per day will allow us to acknowledge that were more people living near inland waters and coastal areas under study are living in extreme economic poverty. This benchmark falls between PhP52 to PhP105 in the Philippines. However, this threshold if used does not tell about what it is like to be poor in this part of the world. The pronounced deprivation of the local people under study is used here as a meaning of poverty which is related to the lack of material income or consumption, low level of education and health, lack of opportunity to be heard” (World Bank 2002).

Gender is a means of understanding how society operates through the study of the negotiation of power roles and influence between men and women. Understanding how gender impacts on inland and coastal fisheries are managed, for example, means of looking at how men and women interact with the resources being addressed. In addition, the presence of marine protected areas or reserves are also important in the discussion of coastal areas. This study therefore attempted to integrate these systems following the concept of Ridge to Reefs (protecting watersheds and coasts). This is an approach based on the “reef to ridge concept” that is similar to the ecosystem-based approach was applied to coastal rehabilitation and management in Thailand. This approach utilizes the bottom-up process, which is stakeholder-driven, building upon community-based organizations (CBOs).

Formulation of the framework of action through participatory processes involving various stakeholders at multiple levels, ranging from village to national levels, proved to be successful (Soonthornnawaphat and de Silva). This approach utilizes the bottom-up process, which is stakeholder-driven, building upon community-based organizations (CBOs). The CBOs — two forest and river conservation groups — with communities are managing and taking actions to protect important ecosystems within the watershed.

This study determined the social representations and perspectives of women and men on two key dimensions of two marine conservation areas covered by the PhP 7 million Commission on Higher Education – National Agriculture and Fisheries Extension System (NAFES) funded R&D program known as SURMABIOCON in Catanduanes Island, Philippines. This was carried-out to provide a framework for understanding the gender equity issues in the coastal marine areas. Key questions underscoring political

dynamics between women, farmers/fisherfolks, coastal dwellers, local groups and social classes in the said areas under consideration. Two research dimensions on gender equity analysis as to (1) *livelihoods, roles and relations*; and (2) *assets, capabilities and shocks* were considered in this work. To some extent other dimensions are also discussed, particularly along gender division of labor, distribution of benefits, access and control over assets and resources, gender and social norms, power relations and governance.

In sum, this will serve as inputs for water governance and sustainability research on benchmarking, forecasting, and innovation (technological, political and societal). The goal is to examine the relationship between gender equity and MPA and mangrove conservation or CMMS. MPAs are diverse in their size, ecological representation, and governing structures. In this case, the paper specifically examined why gender equity matters in relation to conservation and to some extent marine or brackishwater aquaculture. This relationship is particularly relevant in the Philippines. Starting in the early 1990s, the marine management of municipal waters (15 km offshore) has been decentralized to municipal and village levels (Lowry et al., 2005). Community level marine management often takes the form of no-take MPAs, which in the past have been identified as preferred management measure in this region (Martin-Smith et al. 2004). However, as of 2010, MPAs covered only 0.5% of Philippine municipal waters, and 90% of those MPAs were less than 1 km² (Weeks et al. 2010). The community-based management of MPAs can also differ greatly and is prone to shift over time often in response to local political factors (Pomeroy et al. 2010).

II. METHODOLOGY

Study Area

Our study included two communities, one with no-take MPAs that is being actively managed by the community through a mangrove planters association, and another a mangrove area that included intertidal habitat that is contiguous with the community or barangay shoreline. The MPA in San Andres is actively managed by the community through the mangrove association known as Agojo Mangrove Planters Association, Inc. or AMPAI. The second mangrove community area is managed by the LGU of Barangay Buenavista in Baras, Catanduanes. Although both women and men used a variety of fishing methods in these two coastal communities, women were primarily gleaners in the intertidal areas for different mollusks and also catch crustaceans.

This study focuses on the mangrove areas of the municipalities of San Andres and Baras in the island province of Catanduanes. Figure 2 shows the island of Catanduanes, while Figures 2 and 3 show the satellite images of Agojo and Buenavista, respectively where the researchers conducted ethnographic fieldwork, field interviews and community immersion in March to May (2011), March to June (2012), and continued between March 2016 to September 2017.

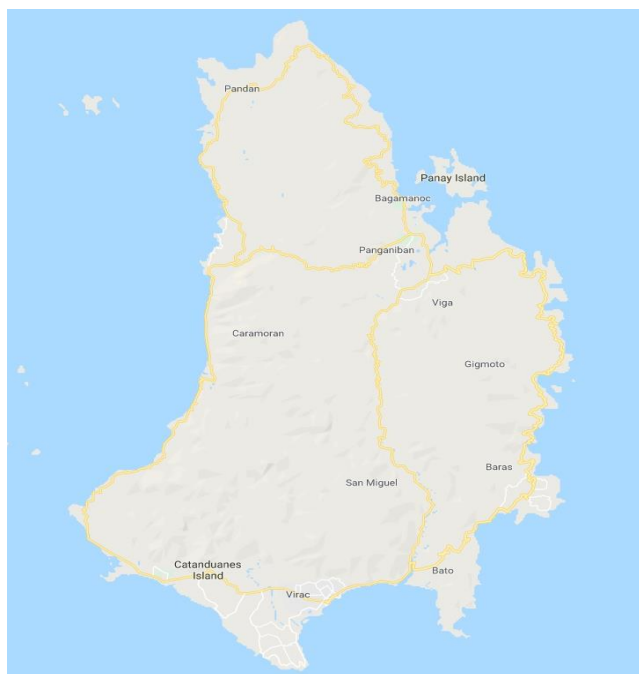


Figure 2. Catanduanes Island, Philippines

The researchers visited the Office of the Mayor of the respective municipalities and subsequently hosted by the barangay captains, local leaders and families. The researchers conducted semi-structured interviews with a total of 120 respondents composed of 50 women, 50 men and 20 youth for each of the two mangrove areas ranging from 15 min to 1.0 h. Multiple visits with some respondents families of the women were carried out along the marine coasts of the said municipalities. In addition, the research team also attended barangay council meetings, public assemblies, organizational meetings, *fiestas* and other life cycle activities like baptisms, wedding ceremonies, birthdays, anniversaries, etc.). All of these were conducted in the language or dialect most comfortable for the respondents. Responses were written and some were recorded instead in the mangrove areas of San Andres, Catanduanes. Some residents in the areas under study were interviewed within the 3 km radius of protected and non-protected inland and marine coastal waters by haphazard sampling, by walking around the barangay and approach anybody who was spotted to be available for interview was asked about any questions on gender and equity.

The paper used the lens of political ecology with the specific approaches on (1) poststructuralist, de-constructivist that considered questions on the predominant discourses of environmental change and politics within Gender analysis using dimensions of (1) Livelihoods roles and relations (LRR); and (2) Assets, capabilities and shocks (ACS) were used in the present inquiry that serve as inputs for water governance and sustainability research on benchmarking, forecasting, and innovation (technological, political and societal). The concept of poverty in a barangay which is located near a community-based mangrove area in Agojo, Tominawog, Catagbakan and Dimaterain, San Andres; and the barangays of Buenavista, Paniquian and P. Teston in Baras, Catanduanes; (2) analysis of concepts of the local people and in relation to the nature found in the mangrove and beach forest coastal areas, particularly the analysis of gender as a constructed category; and (3) rights-based protocol dealing with the questions of accessibility in utilizing the mangrove and beach forest resources, equity and aspects on environmental justice.

The poststructuralist lens includes the analysis of the production of social reality. Escobar (1996) claims that it includes the analysis of representations as social facts inseparable from what is commonly thought of as “material reality” and also pertains to the view that that language is not a reflection of reality (Stott, 1999). Hence, discourses about the rivers, estuary and coastal environment and the rest of the coastal resources in the barangays under study can occupy the popular role in poststructuralist view in political ecology.

Participants and Sampling

Participants of the study are men, women and youth in women groups, women leaders, local fisher folks, LGUs, and other members of the local coastal dwellers community. Clearly, the study uses a qualitative approach by hiding the actual identities of the participants. To actually conduct this study in numerous communities, we would normally be required to identify the people concerned. However, it is assumed that the other villages will not allow the researchers to conduct this study, so that identities are not being considered here. Recording was not also allowed and some had negative thoughts on this mode of gathering data, thus notes were scribbled and upon arrival in the host family and the campus dormitory in Panganiban, the responses were encoded. The study employed a snowball sampling technique (Blasé & Blase, 2002; Masagca & Londerio, 2008) that requires others to recommend participants who they believe can have experience and are knowledgeable about poverty, gender and equity in the barangays. The researchers exerted their efforts by telephoning or texting the barangay captains from different areas for referrals in order to help select the respondents. Initially, the purpose of the study was explained to those whom contacted and discussed with them about participation in the fieldwork. Several authors (Glaser, 1978; Taylor & Bogdan, 1998) claim that snowball sampling techniques are useful in grounded theory research that attempts to draw samples from a variety of settings. It is known that this technique maximizes variation in the database to generate a larger number of categories that describe the phenomenon under study.

Data collection

We randomly selected 120 adult interview participants (here defined as 16 or older) from the barangay census of each of the 2 communities. The respondent selection was stratified by gender. Respondents who were interviewed are those who had caught fish, gathered shrimps, crabs (including gleaning) at least once in the last 8 to 12 months. In the case that a selected candidate could not be found, a family member or neighbour was instead interviewed. This sampling was haphazard covering about 50 % of the participants. Interviews were done after the study had been explained and verbal consent had been sought. Research assistants speaking the dialect conducted the interview, and later translated their notes into English. With the consent of the barangay captains, meetings, FGDs and interview of respondents were carried out also with audio recordings and consulted these to clarify responses, but the interview notes served as the primary form of data. Participant observation of fishing, and had informal discussions about the placement of MPAs in gleaning areas with NGO workers and local community leaders.

During haphazard sampling, participants were identified, local people were approached personally in their residence and in the weekend afternoon hours near the plazas, village halls, small grocery stores (*sari-sari stores*) or Saturday and Sunday wine drinking sessions either in fiestas or other leisurely activities and among members of the informal social group known as *Sociedad* or “Sosyodad” (from Sarmiento, 2009). The researchers contact them through the help of the Municipal Mayor those who had expressed interest to participate in this qualitative research. Researchers explained during the field work on the addressed questions and

concerns, discuss the backgrounds and generally the chance to get to know the main participants, the elderly, the leaders, women leaders, etc. Documentary analysis was based on the household demographic and socioeconomic information derived from the offices of the municipal mayors, barangay captains and local organizations. Lively discussions were done to find out perceptions on key problems and causes of poverty; (3) type of livelihoods (4) aspects on life cycle needs (birthdays, weddings, baptismal);(5) material quality of life; (6)access to land; (7)health and wellness of the local people;(8)fishing activities;(9)involvement of the local people in the community-based marine sanctuaries; and(10) views about the impacts of government programs and projects on natural resource conservation to their lives.

Interviews and Focused Group Discussion (FGDs)

Unstructured interview was used to gather information from the fisher folks as regard to the livelihood activities engaged in by men and women, their patterns of mobility, and life cycle patterns (Adanza, et. al., 2009). Questions asked to the fisher folks were based on the tools and matrix for the study, however, translated in the dialect. The participants have provided informed consent verbally or ideally on a written form, in line with research ethics best practices. Lively information giving also occurred during the courtesy call of the research team to the barangay captain. Two other FGDs with the barangay council and the officers of the Agojo Community Oriented Mangrove Development Organization (ACOMDO) and finally becomes Agojo Mangrove Planters Association, Inc.(AMPAL) in 2017 after a new set of officers and newly registered association with the Securities and Exchange Commission (SEC) of the Philippines.

Framework of Analysis

Like other island provinces in the Philippines, the socio-nature relations of Catanduanes can be affected by the globalizing society and the varied regional and national issues on how natural resources (i.e. inland fisheries and marine coastal areas) are being managed and used sustainably. Various sectors are directly and indirectly affected by these relations that involve the different sectors dependent on the rivers and coastal marine resources, particularly, in protected and non-protected marine spaces (e.g. mangrove swamps, sea grass beds, coralline areas). The third wave of globalization (Martell, 2007) that involves profound transformative change becomes a central driving force behind changes reshaping the world including this island province in the Southern Philippine Sea. No clear distinctions are observed in the transformative wave between the domestic and the international in economic, social and political processes. An analytical approach is called for that involves new patterns of stratification across and within societies. The importance of diversity, agency, and local context, while incorporating the significance of broader “structural forces” (Grossman 1998) will be important in an approach that will include various aspects in shaping Catanduanes island’s transformation. The political ecology serves as an inspiration that can help to reveal more complex picture of the reality of globalization today and gender analysis. Through this framework, attention can be brought to the appropriate understanding. The framework is immune to criticisms (see Vayda & Walters 1999) and this is still very useful and vibrant as what CSU Gender and Development (GAD) would like to include in its broad framework for analyzing gender issues in fisheries, aquaculture and marine conservation. Emerging from this type of localized political ecology study in Catanduanes, we tried to link the human-environment relations at the local level to the broader forces of political economy and political sociology. In referring to Blaikie and Brookfield’s *Land Degradation and Society* (1987), the concept of ‘political ecology’ combined with ecological concerns having broad adherence to political economy, particularly on Henry Bernstein’s agrarian political economy.

Given the widespread marine resource depletion and the need to maintain the benefits of marine resources for people, sustaining viable fish stocks and ecosystems is important. Global concerns about the need to conserve marine ecosystems have resulted in rapid growth in the establishment of formally protected marine conservation areas. In order to understand the dimensions of gender and equity in mangrove protected areas, this inquiry used the Social Representation Theory of Serge Moscovici (2003, 1981), which is a social psychological framework of concepts and ideas to study psycho-social phenomena in modern societies (Wagner et al. 1999). This can be “properly understood as these are seen to be embedded in historical, cultural and macro-social conditions” of the rural people specially the women. A social representation is a collective phenomenon pertaining to a community which is co-constructed by individuals in their daily talk and action. Wagner et al. (1999) summarized that social representation is “an ensemble of thoughts and feelings being expressed in verbal and overt behavior of actors which constitute an object for a social group”.

In the present study, talk and actions were observed among members of women organizations as social groups in the study areas. A social group (a minimum of 4 persons), which is a set of at least 2 persons which confront at least one other group in the social setting that can be men, women, barangay leaders, children, students, teachers, administrators, other sectors of the local communities. Because a group is a subset of a universe of people, the shared understanding of their world and of the objects composing it provides the ground for communication and other forms of co-action. The phenomena composing the local world of a group are social objects. There is no doubt that things or objects can be described by frames, which are provided by physics, chemistry, biology and the social sciences. The descriptions extended by these frames are valid descriptions by themselves but are said to be inappropriate to capture the specific social characteristics of objects constituting the local worlds (Wagner et al. 1999). Social objects are constituted by

representations, i.e. discourse and concerted action of the members of the group that maintain a homorganic communication (=people prefer to communicate to others of similar opinions and to read newspapers which are likely to confirm one's own beliefs instead of confronting opposite opinions).

III. RESULTS AND DISCUSSION

Issues and gender in mangrove restoration in Catanduanes

This section considered the different issues on poverty, livelihoods, aspects on life cycle needs (birthdays, weddings, baptismal); material quality of life; access to land; health and wellness of the local people; fishing activities; involvement of the local people in the community-based marine sanctuaries; and views about the impacts of government programs and projects on natural resource conservation to their lives. The succeeding paragraphs are the findings.

Engaging women and maximizing their participation in mangrove restoration initiatives could help enhance success in mangrove re-plantation, reduce poverty and enhance nutrition security. Extant literatures reveal that land access as asset is an important predicate of alleviating poverty. However, we observed that asset poverty, though present in the two mangrove dwelling communities, does not represent the main dimension of poverty as expressed by the local women fully engaged in mangrove conservation and restoration projects. The other sectors, the youth or Kabataang Barangay and other residents living near mangrove swamp estuaries and river mouths within the 3 km radius of protected and non-protected marine spaces of the island also share similar representations.

Poverty is unsolved in the areas under study due to landlessness, weather disturbances, and government's inability to address the real needs of the inland and coastal dwellers, specifically government's inability to redistribute lands for the rural people. In some cases, as what local coastal dwellers in Catanduanes island asserted poverty remained to be serious and continue to be lurking in many households.

1. *Landlessness* or the lack of adequate space for fishing, farming and dwelling unit is not an important thing to consider in their lives. It was explained that the local people do not need much of the land for agricultural production considering the lack of capital, cheaper prices of agricultural products but higher prices of agricultural inputs.

On the other hand, success stories on the contribution of women in community-based approaches for marine coastal fisheries and aquaculture have gained much attention worldwide, but the concept of gender and equity or "fairness" and women participation are said to be wanting. And despite such successes, the real intent of alleviating rural poverty in marine coastal communities is not happening. On the issue of poverty in marine coastal communities Llanto & Ballesteros (2003) have attested that land access is an important predicate of alleviating poverty. On fisheries and aquaculture, poverty in policy in the memberships in the Philippines, Irz et al. (2007) reported that asset poverty, though present, does not represent the main dimension of poverty in three fishing communities and they noted that only a "...few respondents associated household poverty with the inability to own a house, land or durable goods." Observations in Catanduanes note the conflict-ridden land tenure, common property resource and Transboundary issues in rivers and coastal marine areas may have evolved from the divergent perceptions of ecological relations and divergent perceptions of land relations and management authorities in both protected and non-protected areas. Gender and equity in water areas (inland and coastal marine) can be achieved between men and women residents. What involvement is needed among women and men to ensure positive gender effects on land conflicts and attainment of success in conservation and utilization?

2. *Weather disturbances*. This issue disappoints the local people. If they decide to go into agri-cultural production then typhoon comes, they are not happy with the usual losses. Opportunities are lost with the unpredictable weather conditions. Costs in making/reconstructing houses are very high. With the popular value of resiliency, disaster preparedness became embedded in their daily lives, despite that no insurances for crops are being given. Government's disaster programs seem not to work well, but with the most recent program on Disaster Risk Reduction Management (DRRM) loss of lives and were drastically reduced.

3. *Government's inability to address the real needs of the local people*. Local people claim that the government seemingly fail to consider the real needs of the local people due to the following: Most government officials have too much politicking and the politics of patronage is serious, with little opportunities for people who have not previously supported the elective officials; 2) Community Based skills training seem not to work well with the inappropriate and mismatch of skills training given to the local people; and 3) Livelihood projects introduced are not properly implemented and monitored coupled with lack of product markets.

Additionally despite the implementation of the Agrarian Reform Program, the government seems not to comprehensively redistribute lands to the rural coastal people. It appears that asset poverty does not represent the main dimension of poverty within the 3 km radius of marine coastal zone, river, and estuary or mangrove community. Fewer number of respondents associate household poverty with: 1) inability to own a house (cemented house with GI sheets as roofing); 2) small land ownership (considering that house dwelling units are small with fewer lands for other purposes). Local people feel that they are not considered poor with the regular assistance

they get from their children or relatives from Manila or other cities and abroad. Remittances continue to flow in their household especially during weather disturbances. Example: The tsunami alert given last March 10 to 11, 2011 after the Japan earthquake generated much fear of the relatives that most of them received assistance. In fact some of them received money to buy lands in the uplands as a reaction to the tsunami scare.

4. *Education or schooling.* As one of the predicates of poverty, schooling was not considered an important factor by the respondents. Respondents claim that most of the children or the members of the households have received college education with the very cheap cost of education provided by the local state college charging at least 100 pesos (2 US dollars) per unit orequivalent to a 1hour lecture.

Catanduanes State University (CSU) has been running mangrove restoration and sustainable development projects in the island province of Catanduanes. Gender integration as a core strategy in several Asian countries is clearly recognized in the most recent program on SURMABIOCON of CSU funded by CHED (Php 7 million pesos) from 2018-2020. SURMABIOCON uses participatory, community-based project approach ensuring women’s and men’s voices considered to be of equally important. In other words, the program aims to improve women’s social and economic empowerment through several water-based and mangrove-based livelihood initiatives. . Some projects of CSU such as Catanduanes Sustainable Technology Infusion for Inland Fisheries (CSTIFDP) have supported women organizations in the island through sustainable tilapia-based livelihoods and fish fortification or nutrient enrichment of tilapia fish foods training which provides them with alternative livelihoods and income opportunities. For example, where women have received training on the processing of tilapia fish balls (TFB), tilapia fish siomai (TFS) or dumplings and tilapia fish curry (TFC). Moreover, the newly acquired fish processing skills have ensured additional income for the family and leading fo small-scale business success.

SURMABIOCON and CSTIFDP are unique partner-led initiative to promote the well-being of rural women that incorporates coastal ecosystem conservation for sustainable development. The programs provide platforms for collaboration among the LGU, NGO, peoples organization, mangrove associations, fisherfolks and many different agencies, sectors and municipalities in the island province which are addressing challenges to mangrove utilization and conservation including beach forest and coastal vegetation restoration and livelihood issues. The goal is to promote an integrated province -wide approach to fisheries and coastal resource management and to building the resilience of ecosystem-dependent coastal communities. Mangroves are the focused ecosystem of the SURMABIOCON initiative, but integrates all types of coastal ecosystem, such as seagrass, sandy beaches, beach forests, rivers, estuaries and wetlands (REWs).

Women social representations (SR) on the fortified tilapia foods (FTF) within the dimension of innovations

Social representation theory provides a useful framework for examining everyday knowledge and the way scientific discourse enters the domain of everyday thinking (Backstrom et al., 2003). Social representations aim to transform what is disturbing and unknown into something familiar and known; they are a form of collective symbolic coping with new phenomena (Wagner & Kronberger 2001). In the present study we looked into the knowledge of women and as to the innovative dimensions of FTFs.

The SR of FTFs was determined with a total of 50 women in 2 fish processing demonstration-training and 3 focus groups. The groups were homogenous as shown in the age of the women, gender and schooling. Thematic and content analyses of the interview data showed several dichotomies (Table 1) characterized the social representation on the FTFs. Many metaphors were used by the women to describe the FTFs being associated metaphorically with, for example, fortified tilapia foods being associated with ‘healthy life’, ‘nutritious foods’, ‘hunger’, ‘sufferings’, ‘luck’, ‘freedom’, ‘discovery’ and ‘inventiveness’. Chronological references of the women representations focused on the development of food processing and *Catandunganon* cuisine. The perceived nutritive value of FTFs was an important argument for younger women but not for the older ones.

Table 1. Dichotomies as to the positive and negative words expressed by the women characterizing their social representations.

Positive Words	Negative Words
Not fishy (<i>bakong malangsi</i>)	(fishy) <i>Malangsi</i>
<i>Managom</i> (delicious)	<i>Bakong managom</i> (not tasty)
<i>Mariputok</i> (concentrated)	<i>Lasaw</i> (diluted)
<i>Manatok</i> (creamy)	<i>Matabang</i> (lacks salt)
<i>Mahamot</i> (good aroma)	<i>Maanggo</i> (pungent)
<i>Di nakaribong</i> (not dizzy)	<i>Nakaribong</i> (dizzy)
<i>Mayuta</i> (soft)	<i>Matagas</i> (hard)
<i>Dugang</i> (dry)	<i>Labo</i> (wet)
<i>Mapulot</i> (sticky)	<i>Bokong mapulot</i> (not sticky)

<i>Bakong maasgad</i> (not salty)	<i>Maasgadon</i> (salty)
<i>Tama sa pagnamit</i> (just enough for the taste)	<i>Kulang sa namit</i> (lacks taste)

In the framework of inventing new tilapia processed foods at CSU, social representations of the women are shaped to cope with the feeling of eagerness evoked by the ‘novelties’ or ‘innovativeness’ of fortified tilapia foods seen and demonstrated to the women. These fortified foods have roles in ‘socio-cultural’ acceptance of new products by making the women familiar with the nutritive aspect, health and safety dimensions.

Overall, the results of the SR study on the FTFs reflect the development of a new “scientific sense” and ‘innovative sense’ among the women in Catanduanes in which there could be a tendency to popularize scientific views that are embedded in the process of ‘urbanizing’ and ‘globalizing’ the rural areas through research, development and extension initiatives of the state college.

Analysis of gender equity issues within two key dimensions on gender and development

Power and decision making (PADM)

Generally, women’s decision- making to participate in food security projects such as fish processing such as fortifying, packaging and marketing of tilapia are influenced by following: (1) their own initiative and interest to fortify tilapia products; (2) decisions of both the husband and wife; (3) encouragement from barangay officials and the women’s group; (4) nutrition enhancement for their children; (5) livelihood diversification and (6) business prospects engaging in worthwhile activity. As a caring mother, the majority of them were mostly concerned with the nutritional intake specifically the micro-nutrient deficiency (MND) of their children for better performance in school. It was realized that fortified TFS, TFB and TFC were one of the prospected sources of nutrients. Some were only got interested for the reason that they wanted a worthwhile activity to be engaged with. Only few thought of it as business prospects to become a source of family income. This observation is not congruent to the assertion of Geheb (1997) who reasoned out that people have joined fish processing because of their desire for cash income. Perhaps these women involved in the study have not fully understood the importance of FTFs in increasing income. Table 2 shows the different aquatic species available for the fortified fish foods raw materials to be used by the women in the two areas.

Table 2. Aquatic species of available in the areas under study

Local Name	Family	Scientific Name
Kabonbon,	Gobiidae, Eleotridae	<i>Glossogobius giuris</i>
Biya (goby fish)		<i>Ophieleotris, Ophiocara</i>
Hito (catfish)	Clariidae	<i>Clarias batrachus</i>
Tilapia (cichliid fish)	Cichliidae	<i>Oreochromis</i>
Urang (shrimp)		<i>Macrobrachium</i>
Tabagwang (snail)	Pachychilidae	<i>Melanoides, Jagora</i>
Kayumpo (crab)	Varunidae	<i>Varunaliterata</i>
Carpa (carp fish)	Cyprinidae	<i>Cyprinus carpio</i>
Kasili (eel)	Anguilidae	<i>Echidna, Anguilla</i>
Baranak (mullet fish)	Mugilidae	<i>Valamugil, Liza</i>

When women participated in this fortification project, they projected to change their daily routinary activities and increased their family income at home because aside from the routinary activities that they had, most of their time would be allotted in FTFs processing, packaging and marketing as they generated income. However several constraints that women faced in their involvement in the implementation of the CSC project were (1) insufficient funds, (2) infrequent insufficient tilapia harvest, (3) weather disturbances; and (4) inadequate support from other sectors. These findings also support the study made by Nenna (2012) in Nigeria on factors influencing women participation in fisheries and marine fishing.

Nevertheless, queries for possible livelihood trainings to be conducted on the production, packaging and marketing of fortified tilapia products as a support for women who wanted to be engaged to the said activity yielded a positive response.

Needs, priorities and aspirations (NEPA)

Based on the descriptive story telling or conversation with women respondents, the researchers found out that their needs were more concerned on how they could help their husbands to increase their family income. In-line with these, their priorities at the time that CSU implemented this project were also to increase the family income level and to increase the family nutritional intake and food security as well. Therefore, respondents viewed that the project on tilapia fortification was a suitable activity to meet their needs, priorities and aspirations to increase their socio-economic stability. They believed that it would provide them the opportunity to participate in livelihood diversification initiatives. Also, in the future, when they got involved in this activity on fish fortification, they could help in poverty alleviation and as private individuals they could have helped in eradicating MND in their locality. These findings are most likely of congruence to the women in Lagos as observed by Fregene & Bolorunduro (2009) on food security and expenditure patterns fishing communities.

Gender and Equity

It is acknowledged that the different roles of women and men have in the ecosystem and community are essential for the over-all well-being of the local people. The differentiated inputs and efforts of women and men have been observed. Following the IUCN approach to integrating gender-responsive approach into mangrove conservation efforts, SURMABIOCON has been into empowering women and enhancing gender equality through membership in mangrove association, such as AMPAI of Agojo in San Andres, Catanduanes. The consequences of a gender-responsive approach in mangrove biodiversity conservation could lead to increases food and water security, gained leadership and voice, improved health (with the fortified fish ball with malunggay), education and skills, improved livelihoods.

Integrating a gender-responsive approach into mangrove conservation efforts is currently gaining global momentum with significant results toward empowering women and enhancing gender equality. In the case of women beneficiaries of both SURMABIOCON and CSTIFDP some of the observed consequences of a gender-responsive approach are increased food and water security among the women participants of the university's food security programs. These are also gained leadership and voice, security, education and skills development as well as improved livelihoods and income. CSU's water-based and mangrove-based programs that support GAD to 'ensure gender equity, considered to be central to sustainable global environmental solutions.. Particularly around the conservation and restoration of mangrove forests, the university, CHED and its partners and other organizations are active to integrate gender considerations and responses.

Along *gender aspect*, the following were uncovered: 1) conflicts in the community are due to the divergent perceptions of the local people and the leaders at the time when the marine protected area was established many years ago; 2) There were inequalities of opportunities provided by the government for male and female. This means that more opportunities are given to males than females; 3) With the presence of a people's organization, the ACOMDO (Agojo Community Oriented Mangrove Development Organization) now known as AMPAI, membership is extended to the household members through which gender bias is eliminated; 3) Fisherfolks have shown resiliency in facing natural shocks. Fishing is the main source of livelihood in the place. When weather condition would not allow them to fish, they engage in other livelihood activities, such as boat making and farming; 4) The families in the place are the typical stereotypes. The father is the decision maker; the wife takes of the household chores and the children. There is division of labor. The number of family members is quite large, composed of 6 or more children. To sustain family needs, women and children get shells "tahang" (bivalves) and "boto-boto" (sea cucumber) for sale while some are for family consumption. When propagule are to be harvested, the man cuts the propagule; the wife arranges them in a sack; 5) The place was also a recipient of various government programs, however, political influence hinder their implementation. The barangay captain commented even that a certain government program to alleviate/reduce poverty among the marginalized sector of the barangay is a cause of marital trouble/domestic violence — an additional problem in their peace and order problem; 6) As to governance, the place is headed by a strong woman leader. Her experience as SK groomed her to be a firm leader; 7) Religion may have a bearing on their attitude. Sunday may be is for their religious activity and family or rest day. These may be the reasons in the absence of any woman or children residents walking along the beach carrying "sagad and agahid" to get marine products for consumption and for sale.

IV. CONCLUSION AND RECOMMENDATION

Social representations perspective provided the framework to understand gender and equity issues in the coastal marine areas of the island under study. The lack of adequate space for crops and animal farming, extreme weather disturbances due to typhoons in the island province of Catanduanes in Luzon and the government's inability to enable women to fully engage in and benefit from marine conservation programs were revealed. Engaging women and maximizing their participation in mangrove restoration initiatives could help enhance success in mangrove re-plantation, reduce poverty and enhance nutrition security. Several insights were gathered on productive roles; natural and physical assets; health and financial assets; disaster or typhoon shocks; community participation and politics. Some women participants associate household poverty with the inability to own a house or a parcel of land. It most likely that several conflicts on gender equity could exist in the areas under study and are known to have evolved from the divergent perceptions of the local people, the local leaders and the local government units involved in coastal resources management (CRM). Likewise,

women engagement in both marine conservation and possibly beach forest conservation are still considered under-addressed. Women participation in the mangrove conservation initiatives can lead to better governance in marine coastal ocean waters,

The presence of people's organization could eliminate gender bias; 2) residents are resilient to natural shocks; 3) families in the place are the typical stereotypes; 4) the place was also a recipient of various government programs, however, political influence hinder their implementation. A certain government program to alleviate/reduce poverty among the marginalized sector of the barangay is a cause of marital trouble/domestic violence—an additional peace and order problem; 5) Religion has a bearing on the attitude of the fisherfolks; Sunday seems to be a time for family or rest day; and 6) lack of livelihood opportunities and inappropriate government intervention. The following are recommended: 1) conduct livelihood activities/trainings on: a) fish processing, b) shell-craft making, c) nursery management (propagule propagation), and 2) putting up stalls to sell t-shirts and other souvenir items for eco-tourism purposes; 3) charging fees from tourists, researchers, and students on educational tours/trips; 4) local government officials must undergo values orientation workshop (VOW); 5) local residents should be given gender awareness/sensitivity trainings; and 6) conduct fieldwork/research any day except Sunday.

Together, the evidence presented in this paper indicates the need for research to elucidate practical ways to increase women's engagement in mangrove conservation and beach forest restoration. Gender mainstreaming towards gender equality that implies more than just ensuring equal numbers of women in men in current initiatives or structures must be carried out by the university. Efforts to include gender perspectives the design and implementation of plans and programs to carry-out the mandates of the agencies like SUC-instruction, research and extension. The university has to allocate adequate logistics for the conduct of gender-responsive activities in the regular programs of the organization. Efforts to achieve gender equality are brought into the mainstream decision making criteria and processes and are pursued from the center rather than margins

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Summary of Highlights

Introduction

Social representations perspective provides a framework for understanding the gender and equity issues in the coastal marine areas are thinly discussed in many parts of the Philippines.

Research Problem

Why gender equity matters in MPAs and mangrove conservation initiatives in the Philippines as shown in two mangrove areas in Catanduanes island, Luzon

Objectives

To determine the different issues and gender in relation to MPA and mangrove conservation restoration in two study areas of Catanduanes island, Luzon, Philippines

To analyze the gender equity issues within the key dimensions of Dimension 1 - Livelihoods, roles and relations LRR; Dimension 2 - Assets, capabilities and shocks (ACS); and other aspects of gender equity in the dimensions of:

(a) gender division of labor, (b) distribution of benefits, (c) access and control over assets and resources, (d) gender and social norms, (e) power relations and governance

Methodology

Use of fisheries and aquaculture matrix and tools for analysis
Use of Moscovici's Theory of Social representations in social-psychology.

Summary of Findings

Socio-economic issues

a) Lack of adequate space for crops and animal farming,
b) extreme weather disturbances due to typhoons in the island province of Catanduanes in Luzon; and
c) Government's inability to enable women to fully engage in and benefit from marine conservation programs such as marine protected areas (MPAs) or mangrove restoration initiatives.

Women participants associate household poverty with the inability to own a house or a parcel of land.

Gender analysis

Dimension 1- Livelihoods, roles and relations LRR;

Dimension 2- Assets, capabilities and shocks (ACS)

Several insights were gathered on (1) productive roles; (2) natural and physical assets; (3) health and financial assets; (4) disaster or typhoon shocks; and (5) community participation and politics.

Several insights related to fisheries, fisheries resource management and marine aquaculture were gathered on

- (a) productive roles;
- (b) natural and physical assets;
- (c) health and financial assets;
- (d) disaster or typhoon shocks; and
- (e) community participation and politics.

Conclusion

Women, Men, youth, local people (non-members of NGO, PO or Civil society groups), local leaders (NGO, PO or Civil Society) and officials of LGU involved in coastal resources management (CRM) have divergent perceptions of gender and gender equity issues

Recommendations

- a) Improving women's participation in decision-making roles
- b) Increasing research on women's contribution to fisheries and aquaculture activities in general through gender mainstreaming