



CLIMATE TROUBLE: WOMEN IN COASTAL COMMUNITIES IN THE PHILIPPINES RESPOND TO CLIMATE CHANGES

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ABSTRAK

Ang pagbabago ng klima at kapaligiran ay ramdam na sa mundo sa kasalukuyan. Ang papel na ito ay nagpakita ng mga karanasan ng mga kababaihan na naninirahan sa mga komunidad sa tabing-dagat na lumahok sa First Philippine National Workshop on Women in Fisheries and Climate Change na ginanap sa Tagbilaran, Bohol. Ang mga komunidad na ito ay masasabing bulnerable dahil sa pag-angat ng lebel ng karagatan at pati na rin ang pabagubagong panahon. Dahil dito ay nasabi ng mga kababaihan na apektado ang kanilang pangunahing kabuhayan na pangisingda, ilang aspeto ng kanilang kalusugan, relasyong pampamilya at iba pang gawain sa buhay. Kasama ring inilalahad ng papel na ito ang mga paraan kung paano nila naipapaliwanag ang mga pagbabago sa kanilang kapaligiran hango sa kanilang kaalamang-bayan at kung paano nila nireresolba ang mga hamong kanilang hinaharap. Ang mga karanasang naisalaysay ng mga kababaihan ay nagpapakita ng pagkakaiba nila sa mga gawi ng mga kalalakihan na naninirahan din sa tabing-dagat. Naipakita rin ng papel na ito na ang bigat ng pagharap sa mga hamon ng pabagubagong klima ay pasan ng mga kababaihan, habang ang mga kalalakihan naman ay abala sa paghahanap-buhay. Ang papel ay nagtatapos sa paglalahad ng mga rekomendasyon na mula na rin sa mga kababaihang naglalayong ibayong pagtibayin ang kanilang kakayahan kasama ang kanilang asawa at mga mahal sa buhay, nang mangibabaw sa mga paghamon ng pagbabago ng klima at kapaligiran.

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Climate change characterized by sea level change and extreme weather events, among others, is currently experienced by communities worldwide. Coastal communities are particularly vulnerable as climate change adversely affects fishing, the main source of livelihood of settlements along the shore. This paper looks into the experiences of the participants in the First Philippine National Workshop on Women in Fisheries and Climate Change held in Bohol, Philippines in 2010; women in coastal communities from the three major island groups of the Philippines (namely, Luzon, Visayas, and Mindanao); and NGO workers who had deep engagement with grassroots women in their partner coastal communities. It covers the challenges the women faced, the explanatory models they utilized as they tried to make sense of the environmental changes, and the strategies they employed to cope with these challenges. It reveals how some of the local knowledge utilized by the people continued to help them cope with the environmental and climatic challenges while other traditional knowledge no longer seemed to be adaptive in the current environmental context. It shows the health and socio-economic impacts of climate changes. It highlights gendered differences in concerns and strategies, particularly those employed by women within their respective fishing communities as shaped by their roles and responsibilities -- including the burden of household recovery and rehabilitation. The paper also tackles recommendations drawn from the women themselves, particularly on self-empowerment towards working hand in hand with the men in achieving resilience and reducing disaster risk in their communities.

Keywords: women in coastal communities, climate change, climate coping, climatic and environmental extremes

BACKGROUND

Climate change as an environmental phenomenon has continued to make its presence felt in many communities in the world today. Indeed, rises in temperature, sea water levels and precipitation levels increase have been reported not only in the Philippines but in other countries as well. In a survey conducted by the Social Weather Station in 2013, about 85 percent of Filipinos claimed to have “personally experienced” climate change impacts (Yeo 2013). The Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report provided the scientific basis for this long observed phenomenon (Galvan in Ferrer and Dalisay 2010). Climate Change as defined by the IPCC “...refers to any long term change in the statistical distribution of weather patterns, whether in terms of changes in average condition (more/less rainfall, higher/lower temperatures), or in the distribution of events around the average (extreme weather events such as floods or droughts). Generally, the term is used for any change in climate over time, regardless of cause, but the UN definition is more specific in using the term to denote changes that are attributable, whether directly or indirectly, to human activity” (IPCC 2007 in Skinner 2011).

Intense disasters associated with natural hazards brought about by extreme weather conditions (thus attributed to climate change), particularly those involving 100 or more dead or those affecting 1,000 or more people, have continued to rise from 1971 to 2012 (Ueda et al. 2012). The same report shows that rainfall and temperatures associated with intense floods and storms have become more variable and extreme, and that coastal regions in South, Southeast and East Asia are at greater risk because of concomitant factors. These factors involve the changing nature of hazards that are affected by climate change, including human-induced climate change as evidenced by greenhouse gas emissions (GHG), rising population exposure and limited adaptive capacity.

In the Philippines, the annual frequency of tropical cyclones has been rising (Ueda et al. 2012). Greater casualties have been reported from tropical cyclones of lower intensity than from typhoons, apparently because these now bring heavier rains compared with past occurrences. Storm surges the likes of those associated with typhoon Yolanda (international code name Haiyan) had caught people unprepared. Furthermore, the typical path of tropical cyclones has changed in the last 60 years, with a greater frequency of tropical cyclones observed in the eastern part of the

country in the 1950s and 1960s. By the 1970s, the path has shifted towards Northern Luzon. In the last decade, Central Visayas has borne the brunt of majority of the tropical cyclones that hit the country. Figure 1 shows the frequency of tropical cyclones that passed through the Philippine area of responsibility from 1961 to 1970 and from 2001-2010 (Ueda et al. 2012). Comparing the two images in Figure 1, one would notice a slight shift to the South of the path of tropical cyclones in the country. Take note, also, that the darker colors represent greater frequency of occurrence of tropical cyclones.

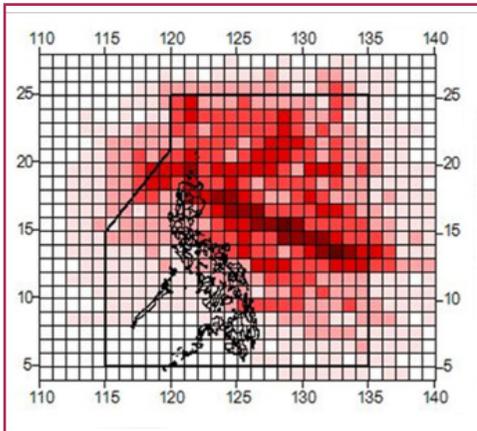


Figure 1. The Frequency of Tropical Cyclones per Decade in the Philippines from 1961-1970 (Ueda et al. 2012)

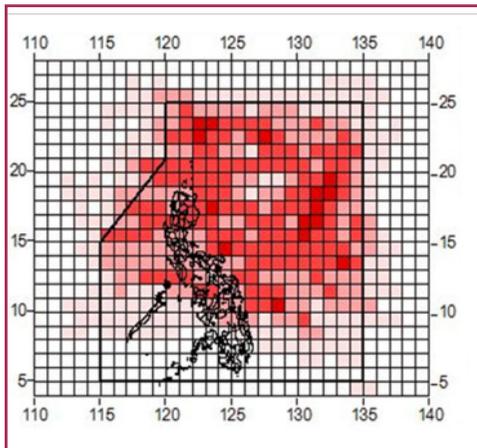


Figure 2. The Frequency of Tropical Cyclones per Decade in the Philippines from 2001-2010 (Ueda et al. 2012)

Temperature rises were, likewise, observed in the Philippines, with the average temperature rising at a rate of 0.65 degrees Celsius from 1951 to 2010 or an annual increase of 0.0108 degrees Celsius. The number of hot days and warm nights thus increased whereas the number of cool days and cold nights decreased. Heavier rainfall was also observed. Ueda et al. (2012) showed that, in Luzon alone, rainfall of 350 millimeters was experienced, compared to the 275 millimeters recorded in the 1960s and 1970s.

The number of climate-related disasters rose in some sub-regions of Asia and the Pacific, causing disaster risk to become more evident, particularly in hazard-prone areas where vulnerable populations reside. Such areas cover the Philippines. These present the urgent need to look into local experiences of climate-related changes and their impact on the everyday lives and livelihoods of people.

Moreover, the need to look into the plight of women in the midst of climate change has been pointed out in the literature. Structural constraints in the form of gender norms have rendered women and men vulnerable to disasters in their communities. Such social inequalities that have already existed pre-disaster exacerbate vulnerabilities post-disaster (Henry 2005). Climate change experiences of women and men vary (Enarson 1998; Oliver-Smith 1996; Enarson n.d.). Sexual and gender-based violence has also been reported (Pittaway et. al. 2007; Hamilton and Halvorson 2007). The preceding studies provide evidence that climate change could have profound implications for gender equality and social or climate justice – issues that need to be addressed in light of recent findings in climate-related disasters.

In many developing countries, economic constraints and cultural norms restrict women's access to livelihood opportunities (Yodanis 2000). In climate-sensitive economic sectors such as fishing, such inequalities in opportunities – already a burden that women have to face – are exacerbated by climate change. Moreover, women and girls are often responsible for tasks in the household and care of the family members. In the face of extreme weather conditions such as droughts, for instance, women and girls become preoccupied with caring for the sick as well as travelling long distances to be able to gain access to water for their household use. This leaves little time for the women to engage in other productive pursuits that would help augment the family income and for the girls to attend to their studies. Men, too, are affected by climate change. Many men who

experienced setbacks in their livelihood activities due to extreme weather conditions, particularly those in small fishing and farming, suffer from deep anxiety as they are no longer able to fulfill their social role as the family breadwinner (Skinner 2011). Oftentimes, in such situations, the women assume the additional burden of securing resources to ensure the family's survival.

In the climate change scenario, women are often depicted as victims rather than individuals with the agency for transforming situations to their own and their family's benefit. The challenges they face and the efforts they exert in overcoming these challenges need to be documented and recognized, particularly in view of developing gender-sensitive climate-change policies and programs. Skinner (2011) has recognized that Climate Change has the potential to play a transformative role in society wherein an enabling environment for both the women and men may be created. Climate change can, in fact, contribute to social and gender transformation. This paper presents recommendations from the workshop participants themselves on how to develop skills for greater resiliency in overcoming the climate changes they were already experiencing.

METHODOLOGY

This study addresses climate-change issues and problems experienced by women in coastal communities in the Philippines. Data are drawn from the First National Workshop on Women in Fisheries and Climate Change held last March 9-10, 2010 in Tagbilaran City, Bohol, where grassroots women fisher-leaders from the country's three major islands (namely, Luzon, Visayas and Mindanao) had participated. During the workshop, the women shared their experiences of a phenomenon they had not named yet but had heard about from various sources, including print and other media. Follow-up interviews were conducted in 2014 with several of the same women, many of whom acknowledged that it was only in the workshop that they gained knowledge and some understanding of the weather changes that they had been experiencing of late. For instance, at least two of the women leaders revealed that they initiated similar workshops not only with women in their own communities but with partner communities as well, primarily to elicit their experiences with climate changes and how they were coping with such changes. This paper hopes to accomplish the following: to bring to the attention of climate change advocates the conditions of these women in relation to climate change events; and to influence

policy and programming in both national and international levels to eventually redound to better lives and livelihood conditions for women in coastal communities.

The National Workshop was attended by 35 participants, including women fisher leaders as well as representatives from Non-Government Organization working in fisheries, the academic community, and the Local Government of Tagbilaran City. The participants from the academe and the NGO staff had a track record of working with coastal communities as well as climate-related issues and concerns of their partner communities. Six women participants from Thailand came to listen to the experiences of women in the Philippines, to learn from them, and to impart their own experiences. This paper focuses on both first-hand experiences of the women fisher-leaders from Cavite, Zambales, and Sorsogon and case studies in Cavite, Aurora in Quezon Province, Northern Samar and Nueva Ecija, where some NGO participants had worked.

FINDINGS FROM THE WORKSHOP

1. Climate Related Experiences in Coastal Communities

The workshop had shown that coastal communities in the Philippines recently experienced climate-related events that they had never experienced before. Faced with a daunting novel experience, the women in particular are exposed to new risks and vulnerabilities.

1.1. Sea water level rise

Sea-level rise was notable in the following places: Naic, Cavite; Sorsogon City, Bicol; and Botolan, Zambales. As a result, homes along the coastline now get inundated during high tide. A woman leader from Cavite mentioned that "... the sea level was rising and the coastline was shrinking" – pointing out that homes along the coasts had always been built some distance from the sea, but that, as a young girl, she never experienced water getting into her home. Nowadays, water would reach up to their doorstep during high tide. Their settlement patterns had always been based on their knowledge of the coastline; however, since the coastline now encroaches into their dwelling units, they have had to move further inland to avoid being flooded.

1.2. Extreme heat

The effects of extreme heat on the small fishing industry in Cavite and Zambales have been detrimental to the people's livelihoods. In Cavite and Zambales, the women fishers reported that they began to experience temperature rises a few years ago. Because of the extreme heat, their fisher-husbands have had to cut their fishing trips short so as not to endanger their health. They narrated that the fishing expeditions used to extend well into the midday. However, extreme heat now prevented this. Currently, the fishers have only been able to fish till midmorning or till approximately 10 a.m.- resulting in a diminished catch. The women also observed that the corals in their usual fishing grounds were dying, and attributed this phenomenon to extreme heat. They also noticed that the fish had migrated to other areas where they can thrive and, as a result, these fishing grounds no longer yielded the usual catch. The only apparent change in the environment had been the change in the temperature, and so they could not explain the migration of the fish in any other way.

1.3. Unpredictable weather

The weather patterns that fishers used to define their fishing activities with were no longer dependable. A participant from Cavite shared that the people in her village complain of heavy rains and typhoons during summer and hot and humid weather during the rainy season. They lamented that the agricultural and fishing calendar that has served them well for several generations can no longer be relied upon. Local fishing and agricultural knowledge that had been passed on through the generations no longer worked as accurately as it used to. Fishers and farmers had to make adjustments in their fishing and farming schedules to accommodate the changes in the weather patterns that they were currently experiencing - and, in many instances, these adjustments failed.

The people's local knowledge of their environment and the cycles for fishing and farming had depended in part on avian migratory patterns. The Cavite participant shared that the usual migratory pattern of the birds in their area had been altered. They used to wait for a certain species of bird to pass through the skies above their village as this signaled the start of the rainy season. While she could not recall the species of the bird, she said that she knew what these birds looked like and that she thought that these came from China.

One NGO participant shared that in 2009, in Nueva Ecija, the unpredictability of the weather (in this case, the rains that came unexpectedly) had caused massive agricultural losses. Another participant from Aurora, Quezon observed that the quality of rice produced by the farmers for the commercial market was not good because the crops had been soaked in unusually heavy rainfall. Seaweed-planting season was also affected as it was now difficult to ascertain when the planting should begin because of the unpredictability of the weather. In some instances, fishers noticed that the seaweed they had planted were “melting” and appeared to be “wilted” because of the cold seawater. As with the rice, the seaweed cultivated by the farmers was no longer fit for their clients. And, thus, they had not been able to recoup their investment.

1.4. Stronger and more frequent typhoons

One participant shared that typhoons have been growing stronger and more frequent in Sorsogon, and those typhoons of late have been accompanied by gusty winds with strengths that even older members of the community have never experienced before. The Bicol Region is one of the regions of the Philippines frequented by typhoons. Many of the devastating typhoons that hit the country passed through the Bicol Region. Worth noting were the twin super typhoons that hit the Bicol Region late in 2006, namely, Milenyo (with international code name Xangsane) in September and Reming (with international code name Durian) in November. Both had been particularly devastating for the Region, costing huge amounts of money in damage to property and taking a great toll on the lives of the Bikolanos. Philippine news reported (2006) that Typhoon Milenyo caused the death of one person in Legaspi and eight people in Albay. In Camarines Sur, damage to infrastructure reached P200M. On the other hand, typhoon Reming left fifty-five (55) people dead (GMANews.TV 2006a). The typhoon also caused P1B in infrastructure damage (GMANews.TV 2006b). Inasmuch as the Region is frequented by typhoons, none of those that passed through recently were of such magnitude. Moreover, Reming hit while the Region was still reeling from the onslaught of Milenyo, which had visited just two months earlier. The damages from the two super typhoons were such that the Bicol Region have had not experienced before and these changes in intensity were attributed to climate change.

2. Gendered Impacts of Climate-Related Events

The perceived effects of climate changes among the population are never equal. Because of the socially-constructed roles of women and men in societies, the way such changes affect their situated lives vary significantly. Such gendered differences in the perceived effects and coping strategies have also been recorded elsewhere, such as in Bangladesh (Davis and Ali 2014).

2.1. Flooding

In Cavite, during the onslaught of the more recent tropical cyclones Pepeng and Ondoy, one of the women participants shared how certain areas in her province were inundated. She cited Barangay Patungan in Maragondon in particular as having experienced flooding for the first time in its history as a Barangay. Flood waters brought about by Typhoons Pepeng and Ondoy had reached a height of up to seven feet in some barangays in Maragondon and Ternate. She could not recall any other typhoon in the past where the flood waters reached this height. She also reported that these floods resulted in one death in Rosario and a tornado in San Jose, Ternate left fifty homes devastated. Ternate had never been visited by a tornado of such intensity before. Because people in these areas had no experience of flooding despite the super typhoons they had experienced in the past, there were no social protection measures in place for them. There were no community-level organizations that would be able to address the needs of flood victims. Hence, disaster resulted - taking a toll not only on the people's lives but on their sources of livelihood as well. Many of the fisherfolk living along the coastline of Cavite had to stop fishing not only during the typhoon but also for a few weeks after because they had to rebuild their homes.

Flooding was also experienced in Sorsogon City and, unlike past typhoons, the super typhoons Milenyo and Reming in 2006 had caused massive flooding in several areas due to unusually heavy and prolonged rainfall.

Floods pose an additional burden on the workload of women, who are mainly responsible for cleaning up the mess that floods leave in their homes. Usually, the men simply return to work post-disaster but the women, who are in charge of domestic duties, have to deal with the mud and the dirt the floods leave behind.

2.2. Salt water intrusion in deep wells

A participant from Botolan, Zambales shared that water from some of the wells tasted of saltwater after super typhoon Juan. Because of this, the people had to source safe water for drinking, bathing, and doing the laundry from outside their barangay. This often entailed several minutes to almost an hour of walking to and from these faraway sources. In such cases, the burden of the women and children is increased as it is their task to provide for the water needs of their families. One NGO participant mentioned that the women in Ormoc, Leyte had to purchase bottled water, which caused a strain on their limited household budget. She mentioned further that the women in Catarman, Northern Samar jokingly referred to bottled mineral water as "*criminal water*" in reference to its prohibitive cost.

One NGO participant noted that farmers of ricefields in Southern Samar also experienced saltwater intrusion, causing areas normally reserved for rice production to now lay idle because these were no longer viable for the production of this crop. As such, food security has become a serious concern and women, whose task it was to prepare the food, are also the ones who explore other sources of income in order to buy food for their families. However, their limited education and skills also limited their options.

3. Health Impacts

3.1. Increased incidence of illnesses

Climate change health impacts have been widely documented elsewhere. For instance, the increase in Hantavirus Pulmonary Syndrome and the West Nile virus in the United States (Epstein 2005) has been associated with climate changes. In Indonesia, climate extremes have been associated with outbreaks and the spread of infectious diseases such as dengue hemorrhagic fever, malaria, cholera and other diseases such as diarrhea (Haryanto 2009).

Some of the workshop participants from Botolan, Zambales complained that there has been an increase in the incidence of high blood pressure among the fishers, particularly because of their exposure to extreme heat while at sea. The men reportedly experience headache and dizziness. Asthma attacks have also become frequent.

One of the NGO workers in Naic, Cavite, shared that climate-related changes led to an increase in reported incidences of water-borne diseases like diarrhea. He mentioned further that the people in Naic attributed the increase in urinary tract infections to saltwater intrusion in their deep wells, which are their sources of drinking water.

In Nueva Ecija, one NGO worker noted that people have also complained of being afflicted with eye problems. They attributed this to “too much brightness” brought about by fishing under the intense heat of the sun. Extremes in temperature – intense heat during the day and severe cold in the late afternoons and evenings – have led to an increased incidence of coughs and colds among the children and adults in Nueva Ecija. A standing joke in the villages is that a particular household houses a “combo” (musical band) or a barangay is holding a “concert”, in reference to the cacophonous sounds created by several members of a household or a barangay coughing in unison. Some very young children developed skin rashes on their bodies and lumps on their scalps, which were presumed to be due to intense heat and aggravated by neglect of personal hygiene because of scarcity of water in their area. Whenever family members got sick, this posed an additional burden on the women as caring for the infirmed is considered more to be part of a woman’s role than a man’s.

3.2. Malnutrition among the children

Food insecurity resulted from the devastating effects of extreme climate events. Reduced income and food from fishing had taken its toll among the children of affected communities. Malnutrition incidence among the children and mothers in Gubat, Sorsogon, had likewise reportedly risen. Because household nutrition was considered to be within the women’s responsibilities, it is the women’s task to seek remedies for illnesses resulting from poor nutrition of the household members.

3.3. Lack of access to sanitation facilities

For some of the households, lack of access to sanitation facilities was already a concern. Flooding and other environmental impacts linked to increased rainfall have deepened this concern. Sanitation problems worsen during floods as even toilets are inundated. This lack of sanitation facilities leads to illnesses in affected communities. Whenever a family member gets ill, women

take the responsibility of caring for them on top of their usual household chores. In addition, makeshift toilets, when these were available, did not offer enough cover for privacy of the users. This is a major issue for women because they have to maintain societal norms of modesty no matter the circumstances. Even in disaster situations, the burden of ensuring that they are not sexually harassed are still on the women.

In addition, in areas vulnerable to flooding, innovation in latrine design has to be initiated. Hydrometeorological data have to be taken into consideration in Water, Sanitation and Hygiene (WASH) programs being implemented by Local Government Units during disaster situations. Such considerations have been articulated by Oates et. al. (2014).

4. Socio-economic Impacts

4.1. Diminished income from fishing

Diminished income from fishing has been one impact articulated by the participants in the workshop. Because of the extreme heat experienced by the fishers, they could no longer stand the long hours that they used to allocate for their fishing expeditions; instead, they could only fish for a few hours before returning to the shore. The unpredictable weather has also rendered the traditional fishing calendar that had guided the fishing expeditions of the men and their ancestors since time immemorial unreliable. Similar reports had been observed in Camiguin in the Visayas, where the usual fishing calendar covering January to May each year has changed as heavy rains and strong waves are now experienced in late March or early April - cutting short the fishing season by one to two months (Tandoc 2009) and resulting in less fish catch by the men. Such experience was observed elsewhere. Susan Crate (2011) expressed similar conditions being narrated in the ethnographies about cultures elsewhere in the world. For the women, this meant less fish to sell and dry - and since women from fishing communities had the task of stretching the family budget to accommodate their families' needs, they had to work harder to earn extra. The participant from Sorsogon City lamented that because small fishers living in the coastal areas are poor and have not finished schooling, their opportunities to earn a living are limited. Fishing is the only means of livelihood that they know and with diminished fish catch, their livelihoods are imperiled.

4.2. Tension in the homefront

As a result of their extra income-earning activities, the women had to leave their families behind for extended periods of time. The women in the workshop worried for the safety of their children while they were away from their homes. They were afraid that their children would not be adequately cared for. Spending more time away from the home also reportedly resulted in tensions between the husband and the wife because the men felt that the women were not attending to their domestic duties anymore. The husbands have had resented the time spent by the women away from home.

Moreover, Enarson (1998) pointed out that, in disaster situations, violence against women, particularly in the form of battering, does not stop. In fact, battered women are placed in an even more precarious situation, having to address the battering while also concerning themselves with surviving the hazard. In instances when the hazard cuts all means of contact with other people, women become isolated in their homes with violent husbands and have no access to the usual institutions, organizations, and social network that could bail them out.

4.3. Relocation due to damage to residences and infrastructure

With the coastline pushed further inland by the rising sea level, people now experienced the loss of what used to be their front yard. They have had to migrate inland to avoid being inundated, particularly during high tide – and, even then, were still susceptible to storm surges. In light of recent events linked to climate change such as unusually high waves hitting the shores, coastal communities continue to be at risk. Migrating to safer ground far from the shoreline had been proposed by chief executives of local governments, but the affected people had refused. Women, in particular, refused to move because this would displace them from the areas where they usually carried out their economic activities. Moreover, there was no assurance that the relocation site would house them and their families close to the social network they had long established in their former abodes. Such social networks formed the social capital they had long depended on in times of crisis. This is of such importance because, in their communities, the women's role included that of approaching relatives and friends for help during emergencies and in crisis situations.

In Botolan, particularly, residents had resented being moved to mountainous areas because these were quite far from the usual spaces they utilized for their social and economic activities. Relocating meant providing them with physical safety and security from the storm but also uprooting them from their sites of economic security. Residences and other community structures near the coastline have been washed out, and vital road networks connecting coastal communities have been inundated and destroyed. This had made it difficult for relief and rescue workers to reach the affected areas swiftly. Their agricultural products had also been devastated, leaving them with further uncertainty that they would be able to weather the storm. For the women, damaged roads meant that they would have to traverse difficult paths to get to the market for food.

In Sorsogon City, the people had been called “hard-headed” for refusing to evacuate during critical periods of a typhoon. In many instances, the villagers had locked horns with local government personnel over resettlement issues.

4.4. Safety and security issues

Sourcing safe water from faraway areas has become a security issue for affected people. Because of salt water intrusion in deep wells, particularly in Botolan, Zambales, the women and children, whose task it was to fetch water for domestic use, were forced to walk long distances just to get safe drinking water as well as water for bathing and washing. The long trek to a water source has not only caused fatigue on the part of the women and children but has also posed a security risk for them as incidents of crime and violence encountered en route to safe water sources had been reported.

4.5. Non-recognition of local knowledge

For the affected Indigenous Peoples (IP) in Mindanao, particularly, their local moral world encompasses local explanatory models for the climate-related changes they were experiencing. Part of their explanation involved their beliefs and relationship with nature and the supernatural. Such explanations have been recognized by IP groups since time immemorial to provide meaning to their daily life activities. In many cases, these have helped IP groups survive potentially fatal disasters. Research literature has documented several case studies on Indigenous Knowledge being used by IP groups in triumphing over hazards (Walsh and Nunn 2012; Singh 2011; Rede-Blolon 2004; McNamara and Westoby

2011; Infanullah and Motaleb 2011). In Agusan del Sur, for example, the IPs felt that the balance of nature could only be restored if they are able to perform their rituals to stem the increasing deaths from their more recent encounters with flooding. Yet, they could not perform their rituals as they claimed that the non-IPs in their area degrade their long-standing traditions and ridicule them. To avoid social stigma in the communities they share with non-IPs, the IP groups chose to just blend in and reluctantly give up their traditions.

Both IPs and non-IPs have the notion that the extreme weather conditions they are currently experiencing are partly due to the way people have destroyed their environment. They believe that their illegal fishing practices and their overexploitation of the resources have led to environmental destruction, and now, nature is getting back by plaguing them with disasters from natural hazards.

5. Summary, Conclusions and Recommendations

The preceding discussions have illustrated the changes in weather patterns being experienced by people in several parts of the country today. Such changes included more frequent and stronger typhoons, seawater level rise, unpredictable weather and extreme heat. Impacts of such changes were felt in several areas: the physical environment, particularly, through flooding, landslides, storm surges and salt water intrusion on the deep wells; health impacts, which covered increased incidence of illnesses, malnutrition among the women and children, and lack of access to sanitation facilities; and, lastly, socio-economic impacts, among which were diminished income, tension at home, resettlement concerns, and safety and security issues.

Also, the workshop revealed that because the changes people were experiencing were extreme in nature and were such that have never been experienced in the past, the usual protection measures they had adopted do not seem to be working anymore. Hence, affected populations have had to build their own capacities for preparedness and mitigation measures to enable them to withstand weather-related challenges they were experiencing and to develop self-reliance for resiliency.

People have their own traditions and local knowledge on how the world works and why they are experiencing climate related challenges now. It would be wise to incorporate such knowledge and traditions on climate change adaptation measures

to be implemented at the local level. This would help to increase confidence of the people in dealing with the effects of climate change and to build upon their own resources for greater resiliency and sustainability of the adaptation measures. The people also believe that their experiences were brought about by destruction in their environments. Hence, they were willing to participate in environmental conservation programs that they believe could restore the balance in nature and bring back the once bountiful harvests they enjoyed. It would help if the people are able to source funding for their environmental activities, such as mangrove conservation. Women, particularly, were very active in their women-managed fishing areas, and their greater participation could yield positive results.

The workshop showed that there are gendered differences in how people are affected by such weather-associated changes. Women are often adversely affected, and such detrimental effects are rooted in the gender norms and expectations surrounding women's activities in their communities. Yet, the paper has also shown that women are taking an active role in rehabilitation efforts. While their husbands were concerned with recovering their occupations prior to the disaster, women were busy rehabilitating their homes. Such occurrences had been observed in Quezon as well after the landmark landslide brought about by typhoons Yoyong and Winnie when these struck the province (Bacalla 2005). Hence, there is a need not only to increase women's awareness of climate change issues and impacts, particularly on their roles as mothers, wives, sisters and daughters in their communities but also to identify ways of capitalizing on their roles in recovery efforts after an encounter with a particularly devastating hazard. Moreover, the workshop saw the need for greater involvement of the women in policy formulation and program development for more gender-responsive climate change adaptation measures. Bradshaw (2004), Hamilton and Halvorson (2007), as well as Yonder et. al. (2005), have all recommended the inclusion of women in community decision-making processes in recognition of their involvement in post-disaster reconstruction work. With this, greater institutional and policy support could hopefully be extended to women to help ease the additional burden of building back better for their families and their communities.

Generally, it was noted that while climate change effects were felt by people in the country, there seems to be a lack of awareness of the reasons why such changes are occurring. A comprehensive

information and education campaign adapted to local knowledge and conditions has to be implemented to increase people's awareness and understanding of their changing environment. Hopefully, this would lead to the adoption of more effective resilience practices that would help people respond better to the challenges of climate change.

Communities are already organized along significant social alliances. It would help if climate change intervention workers use such organizations and leadership structures rather than create new ones that may not fit into the local structures. People are already familiar with such structures and new ones may not be recognized. The institutional capacities of such structures can be strengthened further through seminars and trainings so that they would be better informed on climate change issues and better able to carry out their duties efficiently. Local organizations include peoples' organizations like fishing groups, non-government organizations working to help the fishers, government organizations like the Bureau of Fisheries and Aquatic Resources, and religious organizations as well. The private sector's role in disaster risk reduction and management efforts of the Philippines also has to be recognized and strengthened. Their vital role during rehabilitation efforts after Washi and Bopha has been documented (Mahmood 2013).

Knowledge and skills that would help towns develop alternative sources of income would be useful in times when fishing is not viable, given that extreme weather conditions really prevent them from going out to the sea. With alternative sources of livelihood, people would still be able to provide for the needs of their families even in the face of extreme weather conditions. Women in particular, have shown interest in learning new skills so they can be involved in alternative sources of income for their families.

Improved communications systems for imparting early warning advisories would be helpful in keeping people alert and prepared in the event of extreme weather conditions so that information does not come too late for people to adopt safety measures.

While the workshop promotes resilience measures, it does recognize the need for appropriate infrastructure development. One such example is a seawall of appropriate height and structural integrity to withstand storm surges that could devastate lives

and property on the coastline – especially since some of the participants mentioned that the seawall in their areas have already been damaged by the strong typhoons. Another example is the construction of roads that would not easily get washed out with a single flooding incident. Such infrastructure would help to prevent the damage of extreme weather events.

The women participants in the workshop were able to articulate the difficulties they were now experiencing and attributed these to the changes they encountered in their environments. They were also able to relay how they had coped and adapted to these changes. Much as there are valuable lessons in these adaptation measures, it seems that there is still much that could be done for women to be able to live more fruitful and productive lives in light of climate changes.

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