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Women and the Environment*

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Strategic Objectives:

K1. Involve women actively in environmental decision-making at all levels.

K2. Integrate gender concerns and perspectives in policies and programs for sustainable development.

K3. Strengthen or establish mechanisms at the national, regional, and international levels to assess the impact of development and environmental policies on women.

Beijing +20 in the era of climate change is the fitting context of the NGO alternative report on women and the environment. Climate change, a complex human-induced phenomenon closely monitored by scientists and environmentalists, is today's most ominous crisis affecting the planet. Reviewing the Beijing Platform for Action (BPA) offers a unique opportunity to explain the basis for why strategic objectives K1, K2, and K3 above have to be refined from a climate change perspective, and achieved soonest.Indeed, because women are emerging as early as now to be among the most hapless victims of climate change-related adversities, the urgency of integrating women-focused climate change actions into the BPA discourse cannot be overstated. Disproportionately burdened by climate change that is not of their making, women from less developed countries like the Philippines, have to be on the frontlines of the struggle for climate justice and sustainable development.

Across the globe, women play an essential role in tackling the climate change challenge as it affects yearly about 200 million people all over the world. A World Bank report says that in Asia, women perish in disasters more than men: 61% in the 2008 Myanmar cyclone; 67% in the 2004 Indian Ocean tsunami in Banda, Aceh; and 95% in the 1991 cyclone Gorky in Bangladesh (Trohanis, Svetlosakova & Carllson Rex, 2010). An earlier report

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by the International Union for the Conservation of Nature also says that worldwide, women and children are 14 times more likely to die than men during a disaster. Still earlier on, researchers from the London School of Economics and Political Science, and the University of Essex and Max-Planck Institute of Economics confirmed the gendered nature of disaster vulnerability. Looking at 141 countries, the researchers also found that, when it came to death, the higher statistics among women were linked to their social and economic rights, and were the result of existing inequalities. Even then, these statistics only tell half the story of the differentiated impacts of climate change on women.

WOMEN AND CLIMATE CHANGE

In fact, there is growing evidence from all over the world today that, even without disasters, women in their daily lives are already suffering heavily from the gradual but already real and recognizable patterns of the adverse impacts of climate change. Most basic of these impacts are the increasing food, land and water scarcities that have been there for decades now because of environmental degradation, but have been worsened by the unprecedented changes in weather and climate accompanying global warming. These changes include the altered reliability and timing of rainfall, extreme temperature swings and weather events, glacial melt, ocean acidification, and sea level rise (SLR), among others.

Overall, evidence suggests that, women's disproportionate burdens and greater vulnerability to climate change risks are attributable not only to existing disparities in exposure and sensitivity to said risks but also to existing gender norms and discrimination. In particular, because they are traditionally assigned the role of seeing through their family welfare needs, women bear the brunt of the intensifying food, land and water crises. This, even as they continue to battle with less access to and control of land and property, fewer legal rights, and less political representation.In settings where gender inequality pervades, the situation becomes even worse for women.

In November 2014, on the 3rd day of the United Nations 20th Conference of Parties held in Lima, Peru, German Watch disclosed the Global Climate Risk Index 2015, the latest list of countries most affected by weather-related disasters like storms, floods and heat waves. The index, based on events of 2013, ranked the Philippines as number one, followed by Cambodia and India (Kreft, Eckstein, Junghans, Kerestan & Hagen, 2015). The findings, said German Watch, "reconfirms that, according to the Climate Risk Index, less developed countries are generally more affected than industrialized countries."

Climate change must be addressed by shifting growth paths and enhancing resilience to disasters and economic shocks caused primarily by humans. As governments across the world struggle to boost growth, increase access to

energy, and improve food security, it is imperative that these are achieved simultaneously with addressing global warming and its consequences.

With sharp gender lens, the climate change mitigation and adaptation measures in the Philippines need to accelerate development of clean energy, improve power efficiency, radically reduce dependence on fossil fuels, and find new ways to reduce greenhouse gases.

Philippine Scenarios: Climate Change and Environmental Degradation

Climate change is already a stark reality in the Philippines. This is evidenced by the increasing frequency and intensity of weather-related disasters, notably typhoons and floods, which exacerbate the degradation of the country's land, water and forest resources. All this causes even more poverty and vulnerability among Filipinos, women and men, dependent on natural resources for their livelihood

The Philippines' peculiar location is along the western rim of the Pacific Ring of Fire. This is a path routinely battered by strong storms, a belt ridden with active faults and major earthquakes. Thus, the Philippines is fated to be one of the world's most disaster-prone countries due to a combination of high incidence of typhoons (average of 20 per year and about eight to nine landfalls), floods, landslides, droughts, volcanic eruptions, seismological activities, and other hazards.

Increasing Temperature and Sea Level Rise

The current climate trends show that the Philippines, like the rest of the world, has exhibited increasing temperature, rising by 0.57°C from 1971 to 2000. The climate projections done by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) for 2020 and 2050 indicate that all areas of the Philippines will get warmer, with largest increase in temperatures in the summer months of March, April and May (MAM). A reduction in rainfall in most parts of the country will also be expected during the MAM season. Extreme rainfall is projected to increase in Luzon and the Visayas, while a decreasing trend is projected in Mindanao.

More Frequent and Intense Typhoons

Over the last six years, the country battled extreme weather events in increased intensity and frequency that resulted in catastrophic damages and losses. Typhoons Ondoy (International code name Ketsana), Pepeng (Parma), Sendong (Washi), Frank (Fengshen), Pedring (Nesat), and Pablo (Bopha) claimed the lives of more than 3,000 people, caused economic damage and losses amounting to approximately US$5.7 billion, and affected new areas such as Mindanao, which historically had not been hit by strong typhoons.

In November 2013, Typhoon Yolanda (Haiyan), one of the strongest typhoons to ever make landfall and only the latest in a series of six powerful typhoons that battered the country in three years beginning 2011, left a trail of devastation in 44 provinces including 6,300 reported deaths. The Office of the Presidential Assistant for Relief and Recovery (OPARR) reported that 918,261 families were physically displaced (OPARR 2014). The relative unpreparedness of the local people to the phenomenal storm surges brought about by Yolanda highlights the insufficiency of existing community knowledge on the types and scale of disasters that may be spurred by climate change, and so underscores the need for awareness-building and for nuancing the country's disaster risk reduction strategies with the still unfolding ground realities and uncertainties associated with climate change.

Threatened Biodiversity

The Philippines is considered one of the 17 mega diverse countries in the world, home to 52,000 species of flora and fauna. The country's species count ranks in the top ten in the world, making it one of the most unique in terms of biodiversity (Medium Term Philippine Development Plan [MTPDP] 2004–2010).

But this wealth in biodiversity continues to be threatened by forest clearing, the encroachment of agriculture and mining into critical areas, the expansion of settlements and urban development, water and air pollution, destructive fishing, and other environmentally unsound economic and physical development activities. How much of this wealth will be ably protected and conserved under existing laws and arrangements remains to be seen, and will require concerted actions from the local to the global levels.

Climate change is likely to aggravate existing biodiversity threats, as it puts additional pressures on agriculture, forestry and towns and cities that can result in a chain of adverse impacts on the country's landscape and seascape. Temperature increases will also imperil the integrity of species and ecosystem biodiversity. Wild fires, extreme temperatures and fluctuating air and soil moisture content can also lead to the spread of invasive alien plant species, insects and pests.

Decreasing Forest Cover

The United Nations' Development Programme (UNDP) reported that in early 2004, forest cover was about 7.2 million hectares or 24% of the total land area of the country. This is 0.71 million hectares or 11% higher than the 1998 actual forest resource inventory record of 6.5 million hectares. However, forest resources have been declining because of massive deforestation, the conversion of forest land to non-forest use, mining, forest fires, and natural death of trees (National Statistical Coordination Board [NSCB], 2005). As much to blame are the country's forest policy failures, resulting in the ab-

sence of sustainable forest management and the vulnerability of millions of hectares of open access forest resources. Poverty in the uplands also contributes to deforestation and forest degradation. The Philippines ranks fourth in the identified 10 threatened forest hotspots in the world in 2011 as reported by Conservation International. These hotspots have all lost 90% or more of the original habitats and each harbors at least 1,500 endemic plant species (Conservation International, 2011).

Climate change is likely to exacerbate existing threats.As air temperature rises, so does the sea level. This, together with erratic rainfall intensity and timing and the occurrence of extreme weather events, can wreak havoc on the forest ecosystems. Forests can dry up and become more vulnerable to destructive fire, reforestation efforts may become less successful, species may migrate or perish, wetlands can alternately dry up or flood up, and mangroves may be driven inland. Among Philippine forest ecosystems, dry forests are the most vulnerable to climate change threats.

Declining Coastal, Fishing, and Water Resources

Today, only 20% of the country's mangroves are still intact. Mangroves are a vital source of biodiversity and function as protective barriers against typhoons and waves. The productivity of the coastal and marine areas has been continuously threatened by destructive and illegal fishing methods, siltation, pollution and overfishing. Widespread loss of mangroves and sea grass has contributed to the dwindling of the fish population. Coral reef bleaching episodes, rising ocean acidification and the increasing frequency of coastal water disturbance due to storm surges further limit the growth of fish and other organisms. Presently, the country's coral reefs have already lost a tremendous amount of their fish biomass and species richness, causing the decline in marine productivity. Sea level rise is also already threatening some coastal communities. For example, during times of heavy monsoon winds and storm surges, and often in combination with high tides, coastal flooding and erosion of beaches have occurred in some low-lying areas on the small flat islands off southern Palawan and in Central Visayas.

The country's coastal and marine ecosystem has been in constant stress from various factors such as cutting of beach and mangrove forests, mining, the rampant use of destructive fishing methods, pollution, siltation, and dredging and land reclamation. Marine turtle nesting sites have decreased. Mangrove forests are showing a diminishing ability to buffer strong wave action and storm surges and support fishery production as well as marine and terrestrial biodiversity..

Climate change is worsening the degradation of the coastal and marine ecosystem. In particular, rising sea temperatures are resulting in coral bleaching episodes. Together with increasing ocean acidification spurred by the ocean's uptake of carbon dioxide from the atmosphere, coral bleaching threatens larval survival and transport in open oceans.

The condition of coastal and other water bodies in the country is far from pristine. Increased pollution levels and contamination are present in the freshwater reservoirs of the more than 400 rivers and streams. This has led to an increase in water-borne diseases, such as cholera, diphtheria, typhoid fever, and amoeba infections. According to recent studies, sub-standard water quality is the cause of more than 30% of diseases (Greenpeace 2007, p. 22).

In the water sector, climate change will worsen the geographic and seasonal variations in the availability of water fit for human consumption across the country. At risk are urban areas in four regions already facing acute shortage of clean adequate water, including the National Capital Region, Central Luzon, Southern Tagalog and Central Visayas. By 2025, water deficit will also take place in several river basins such as in Pampanga and Agno, Pasig-Laguna, Cagayan Valley, all other regions in Luzon, Jalaur in Panay island, Ilog Hilabangan in Negros Occidental, and the island of Cebu. The deficit will constrain the availability of water for various uses, including water for agriculture, industry, power generation, and water for domestic uses other than cooking and drinking. Water quality issues due to pollution and saline water intrusion into the aquifers and reservoirs will also become more pronounced without counter-measures.

Furthermore, the scope of climate change's likely adverse impacts extends to the built environment and human health, which are not within the realm of this report but have been touched to complete the list of vulnerable development sectors.

Other Vulnerable Development Sectors

Other development sectors confronted with various climate change threats consist of agriculture, energy, infrastructure, water, and health. The general existing conditions and vulnerability profiles of these sectors are discussed below.

Agriculture. In agriculture, biological and plant production cycles are interrupted by high temperature and erratic rainfall. Pests and diseases in rice, scale insects in fruit trees and invasive weeds are being transferred by excessive rains from the uplands to the lowlands, signs of which are becoming discernible in the fruit plantations of Mindanao and the rice producing areas of Dumangas, Iloilo.

Rice, corn and coconut occupy almost 80% of the Philippines' arable lands. They are cultivated generally by poor and climate-vulnerable small farmers. Nearly half of these lands is suffering from degradation and soil erosion, which lead to higher requirements for oil-based farm inputs. Serious loss of soil fertility particularly affects corn and coconut production. While remaining a pillar of food production and employment, accounting for at least a third of all employed, agriculture has lagged far behind those of other economic sectors over the last several years. For example in 2013, when the

country's economic growth hit a record-high of 7.2%, agriculture (including fishing and forestry) grew only by 1.1% as against 9.5% of industry, and 7.1% of the service sector (NEDA, 2015).

According to the NCCAP, damages from natural disasters, averaging PhP 12.43 billion annually in 1990–2006, largely account for the dismal performance of agriculture over the last decades. Of these damages, 70% were from typhoons, 18% from droughts, and 5% from floods. These statistics emphasize the extreme vulnerability of the sector to climate change risks.

Energy. Climate change is likely to affect energy production from both renewable and non-renewable sources. Hydropower generation, which is sensitive to the amount, timing, and geographical patterns of precipitation as well as to temperature, will be constrained by reduced stream flows especially in summer when demand is highest. So will the operation of gas-fired, oil-fired and coal-fired power plants, which is water-intensive. Solar power generation may be hampered by increased cloudiness and decreased levels of daily global radiation. Wind power generation, which is susceptible to variations in ambient temperatures, humidity and precipitation, will be subject to increased variability in wind patterns, creating additional challenges in accurate wind forecasting, dispatch planning and the integration of wind energy into the utility grid. Biomass energy production, currently planned to be scaled up, will also be affected by climate-induced changes in crop residues and crop growth rates. Power transmission and distribution systems will also be affected by several aspects of climate change including SLR, rising temperatures and extreme typhoon events, which can lead to the toppling of systems.

Against this backdrop, promoting energy efficiency and conservation, coupled with developing the right mix and appropriate scale of clean energy generation and distribution appears to be the most viable option for dealing with the challenges posed by climate change to the sector. Said option will also contribute in reducing greenhouse gas emissions.

Infrastructure. As they are directly exposed to climate change, all types of infrastructure (including bridges, roads, railways, buildings, hospitals, houses and those in water, power and communication provision) are vulnerable to climate change. Prolonged and frequent rainfall, strong winds and extreme heat and cold, for example, can lead to accelerated structural fatigue and materials failure, as well as greater operation and maintenance costs. The impacts could be severe in areas where existing structures are not designed to cope with both the slow and sudden adverse consequences of climate change. And such may be the case with most Philippine provinces and cities that until now still have to breathe from the series of disasters, and think and implement forward-looking strategies for addressing climate change.

Health. The incidence of respiratory, cardiovascular and vector-borne diseases may rise with temperature extremes, erratic weather and rainfall,

spread of insects, and the deterioration of living environments. Hunger and malnutrition can intensify with persistent food and drinking water shortages, weakening people's resistance to common illnesses. Disasters will cause more diseases and loss of life and limb, and consequently, more incapacities and miseries.

Impact on Women

Climate change reduces income from farming and fishing, driving women in communities especially in poor countries like the Philippines into dangerous work and very difficult life. Environmental problems have greatly affected women's livelihoods, food security, and over-all health and well-being. Natural and man-made calamities have added to the burden of women, given their domestic and caring roles in the family and in the community. They experience discrimination, neglect of their needs, and even violence while in evacuation centers. Women's participation and empowerment in relation to disaster risk reduction and management as well as climate change adaptation have been limited.

Tracking the impacts of climate change on women in terms of hard statistics has however been extremely difficult due to the absence of sex-disaggregated data in weather-related disaster statistics as well as a full accounting of women's participation in farming, fishing and forestry activities.

Local accounts also conform to growing evidence around the world of the gender-differentiated impacts of climate change. In particular, because of existing gender norms and discrimination, women are disproportionately burdened by increasing food, land and water scarcities as well as the lack of adaptive capacity among the poor.

One author cites the three ways described by Amihan, a rural women's organization, regarding how climate change "disproportionately affects women farmers vis-à-vis men farmers":

> First, since women manage, control, and own fewer resources—especially land—than men, they have fewer assets to sell to cope when harvests collapse either because of floods or droughts. Second, more women than men fall into chronic indebtedness related to climate-induced crop failures because micro-credit is largely targeted at women and because, as managers of production and household expenses, they are under stronger pressure to bridge resource gaps. One study found that some 94% of women involved in rice production borrowed money from informal moneylenders, small convenience stores, cooperatives, and relatives to finance rice cultivation and augment household expenditures. Third, when food shortages arise from poor harvests linked to weather problems, women prioritize the food needs of male household members and children over their own. (Peralta 2008, p. 8)

GOVERNMENT COMPLIANCE WITH THE BPA

Overall, the report finds government's compliance to the Beijing Platform for Action (BPA) related to women and environment to be essentially wanting. In particular, it says the following about the progress made in each of the BPA's women and environment strategic objectives.

> ***Strategic Objective K1.*** *Involve women actively in environmental decision-making at all levels.*

There is admission from the bureaus of the Department of Environment and Natural Resources (DENR) that policies and programs "were centrally formulated and involved limited consultation with stakeholders" (Women's Empowerment, Development and Gender Equality [Women's EDGE] Plan, 2014, p. 215).

Lack of awareness of gender issues seems to be the key problem in both government bodies and in the field. Women, especially those among the poor in rural areas do not know about environmental policies and programs which can benefit them. Knowledge products from both government and NGOs have a very limited reach and often do not tackle the gender dimension.

Women's positive roles in environmental management, disaster risk reduction and management, and climate change adaptation are not yet appreciated. Generally perceived as victims, they are seldom involved in decision making when it comes to disaster preparedness, relief, recovery, and rehabilitation efforts.

> ***Strategic Objective K2****. Integrate gender concerns and perspectives in policies and programs for sustainable development.*

The Philippine government has adopted two framework plans directly relating to climate change: the National Climate Change Action Plan (NCCAP) 2011–2028; and the National Disaster Risk Reduction Management Plan (NDRRMP) 2011–2028. A third has been formulated, the Philippine Adaptation Strategy on Climate Change (PASCC).

NCCAP. The framework of the NCCAP needs to be supported. It builds on Philippine Agenda (PA) 21 and adopts the overall direction of the PA 21 as its own. It prioritizes adaptation over mitigation, and rightly so. Mitigation in light of the Philippines' insignificant contribution to greenhouse gas emissions should be subsumed within the more urgent need to strengthen the resilience of vulnerable sectors and population groups. In particular, it should be built into adaptation in such sectors or geographic areas where adaptation provides opportunities for achieving

transformational changes in existing paradigms and transitioning into a sustainable future.

The NCCAP translates the national climate change framework strategy and prioritizes food security, water sufficiency, ecological and environmental stability, human security, climate-smart industries and services, sustainable energy and knowledge and capacity development into as the strategic directions for 2011–2028. Its ultimate goal is to build the adaptive capacities of women and men in their communities, increase the resilience of vulnerable sectors and natural ecosystems to climate change, and optimize opportunities towards gender responsive and rights-based sustainable development. The plan recognizes that gender and development cuts across strategic priorities and sectors.

Despite the soundness of its overall direction, the NCCAP has some essential deficiencies, which are discussed below.

i) The menu of actions it identifies for 2011–2016 are mostly preparatory. Actions that will bear direct and immediate results on the ground are lacking.

   Agriculture is an interesting case to highlight, as the PASCC has already specified small farmers engaged in rice, corn and coconut production to be vulnerable to climate change. It will not require a complete vulnerability assessment to initiate adaptation in this group of farmers. There is today a growing wealth of knowledge about alternative practices and approaches that are practicable and helpful in arresting the day-to-day erosion of livelihoods in small farms; i.e., organic farming, multiple cropping, use of mulching, home gardening, rainwater collection, micro water reservoirs, water reclamation and reuse; etc. There is no reason why they cannot be disseminated at the field level as soon as possible. In fact, a number of women NGOs have already been implementing some of said approaches in certain areas of the country.

   Like the small farmers, marginal (municipal) fishers should not be made to wait for studies and assessments to be completed before being engaged in actions that will improve their livelihood potentials. Mangrove reforestation is one such action that is relevant and immediately feasible.

ii) There seem to be no integrative approaches or mechanisms for enabling adaptation to be rooted in regular development work. Concretely, it seems to be approached as a special agenda. This disallows adaptation from becoming an integral part of the regular development decision-making processes. It also hampers the growth of cross-sector synergy and collaboration and the pooling of resources so necessary in accelerating the delivery of results.

   Adaptation is not a development agenda all to its own. It is a cross cutting concern that needs to be mainstreamed into all aspects of development planning/programming and investment decisions.

iii) The role of the Regional Development Councils (RDCs) and regional sector agencies is unclear. The regional level may provide the closest approximation of the scale of an integrated ecosystem approach to adaptation. As such, the RDCs and regional sector should be brought into the loop. Not fully covering the entire geographic spread of an ecosystem may cause incoherence that can lead to adaptation in some areas but mal-adaptation in others.

NDRRMP. NDRRMP elements address disaster risk reduction to which many communities in the Philippines are already familiar. But this familiarity does not extend to climate change risk reduction, as shown by the Yolanda experience. Nevertheless, the shock and disbelief that enveloped the nation in the aftermath of Yolanda was soon replaced by greater responsiveness among at-risk communities to early warnings on disasters. The Yolanda tragedy also developed eagerness among the people to know more about climate change and its associated risks.

The NDRRMP also addresses gender concerns in building disaster-resilient communities. It recognizes gender mainstreaming as a cross-cutting strategy in disaster preparedness, disaster response, and recovery and rehabilitation (Women's EDGE Plan, 2014, p. 214).

Disaster risk reduction (DRR) can be used as a springboard for adaptation planning. This is where a climate change vulnerability assessment (CCVA) will be most important. The object of CCVA should be to specify the nature and extent of climate change risks, which vary significantly across places, depending on the location and physical characteristics of the place. These risks are also strongly influenced by the social, economic, cultural and environmental conditions in the place. In this regard, the role of CCVA in bringing to the fore gender issues masked by official poverty statistics and current discourses on climate change cannot be overemphasized.

The CCVA should be seized by women particularly from the impoverished sectors of the farmers, fishers and indigenous peoples' communities as a vehicle for integrating the gender perspective into both DRR and adaptation planning. As such, it can be harnessed as a tool for ensuring that through adaptation, women's strategic and practical interests are an integral part of the transformational changes to be achieved to overcome the challenge of climate change.

Philippine Agenda 21. PA 21 continues to be the guiding document for the country's strategy for sustainable development. Its action agenda for protecting the ecosystem is comprehensive, with targets for the following: forest and upland, coastal and marine, urban ecosystem, freshwater, lowland and agricultural, minerals and biodiversity. In the 2004 version of the PA21, gender-inclusive development became a helpful policy guide to environmental activists.

The 2006 DENR's Framework Plan for Environment and Natural Resources Plan incorporated *Mainstreaming Women and Development in the Environment and Natural Resources (ENR) Management Framework.* DENR's accomplishments along this line include: formulating policies that incorporate women's concerns and contributions to various forestry projects and activities; institutionalizing gender parity in the community-based forestry management process; including women as members of the protected area management boards; and supporting projects that establish empirically the role of women in community-based forestry and biodiversity projects.

Stated in the Philippine Development Plan 2011–2016 of the National Economic and Development Authority are five major guideposts. One of them is the integrity of the environment and climate change mitigation and adaptation and their corresponding critical indicators in measuring sector outcome that includes women in the poverty reduction of vulnerable sectors.

Despite the above inroads in major planning documents, there is still "a lack of integration of gender issues in policies and programs on environmental management, biodiversity conservation, and climate change resiliency." Whatever integration is taking place is considered to be just in the entry phase. (Women's EDGE Plan, 2014, p. 214). Policy makers and implementers still have limited capacity for gender mainstreaming. Thus, "despite the presence of women-initiated environment and natural resource management activities, the roles of women in environmental management have not been fully mainstreamed, resulting in the poor or limited implementation of the relevant policies and programs" (Women's EDGE Plan, 2014, p. 215).

Strategic Objective K3. *Strengthen or establish mechanisms at the national, regional, and international levels to assess the impact of development and environmental policies on women. (BPA 1995).*

Government acknowledges the fact that sex-disaggregated data bases are not yet available regarding exposure to risk and actual experience of disasters and other negative environmental developments. Without data-collecting mechanisms, it is difficult to assess impacts of policies on women, much less crafts more realistic and appropriate ones (Beijing Platform for Action [BPA], p. 36).

The NCCAP and NDRRMP have guidelines for tackling gender concerns, but there is "need for a mechanism to ensure that the strategies are put into concrete action and their implementation is monitored" (Women's EDGE Plan, 2014, p. 216).

NGO Initiatives on Women Led and Gender-Based Adaptation

The Earth's warming and its many dire consequences are already locked into the global climate system. The only thing that can be done now is to keep it from reaching dangerous levels. The earlier adaptation is undertaken, the lesser will be the cost in terms of physical, natural and human losses. Adaptation is a must, and Filipino women's groups are not standing by. In greater numbers, they are responding in many different ways not only to adapt to climate change but also to build a future free of the menace of climate change and gender inequality.

- **SARILAYA (Kasarian-Kalayaan Inc.)**, focusing on environment issues since 2001, the group started a women-led organic farm project in Imelda Valley 1, Palayan City Nueva Ecija and expanding to Tarlac, La Union and Cavite. The same year, it responded to women's health issues by promoting primary health care and initiating seven village pharmacies using alternative healing modalities and herbal medicine. SARILAYA's efforts gained acceptance. Soon after, it partnered with local government units to integrate women's interests and perspectives into sustainable agriculture, health and climate change adaptation. Through its local chapters, SARILAYA has also been active in local poverty reduction work in General Mariano Alvarez, Cavite and Palayan City. Nueva Ecija. It recently successfully completed its early recovery project for Yolanda survivors, promoting sustainable agriculture and establishing herbal gardens to address health and food security problems in Giporlos, Eastern Samar. Established in 1994, SARILAYA reaffirmed its socialist-eco-feminist vision in 2011, building on lessons learned 17 years of organizing grassroot women (SARILAYA, 2014).

- **DAMPA (Damayan ng Maralitang Pilipinong Api),** a network of 217 community organizations, recently, organized a women-led water cooperative to provide clean drinking water for poor communities in Manila, by working with members of Congress and a public utility company. It has also set up a mortgage program which encourages them to save, and allows community members to buy and share land. Other efforts include a sustainability or "resilience fund' which encourages members to put aside one peso ($0.02) per family per month, to safeguard against emergencies. Such best practices of grassroots women have been recognized by international organizations, the government and the UN.[1]

- **Miriam College Environmental Studies Institute** (ESI) consolidates the academic, outreach and research environmental programs within the school. As a center for environmental studies and education, it envisions the development of citizens and leaders respectful of the sacredness of creation, who will work for an ecologically sound environment, equitable economic growth, and people's empowerment as pillars of sustainable development. Miriam College practices the "whole school approach" in addressing environmental concerns and encourag-

[1] Based on an interview with Josephine B. Castillo, National Coordinator-Philippines, DAMPA, Inc.

ing environment-friendly lifestyle changes among its students and other members of the academic community. The institute's research project called Solid Waste Reduction Master Plan for Metro Manila (SWARM) and community-based solid waste management training provide knowledge essential to addressing climate change (Reyes, 2014).

- **Partido Kalikasan, Women Kabalangay** engages in lakeshore conservation and promotes organic agriculture and alternative healing through herbal medicines among its members of more than 300 women in Pila Lakeshore Community in Laguna. It expanded its program and went into savings mobilization to help women in times of disaster and closely work with local government units in putting into the barangay development plan the gender responsive climate change mitigation and adaptation plans.
- **Amihan**. Founded in 1986, Amihan has the overall goal of empowering peasant women through organizing and collectively advocating for alternative policies and strategies that respond to their particular situation as peasants and women. Recently the organization has begun to examine the issue of climate change. With limited resources and support, Amihan members in the provinces of Rizal, Pampanga, Quezon, and South Cotabato are increasingly engaged in organic farming initiatives, integrated pest management programs, agro-forestry, and tree-planting projects. Amihan also calls for government support and funds directed towards rural communities—and especially rural women—for the provision of subsidized organic seeds, fertilizers, and pesticides; access to affordable agricultural technologies; dissemination of agro-forestry techniques; and provision of low interest farm credit and crop insurance schemes specifically targeted at small farmers (Lindio-McGovern (1998); Reyes-Cantos and Bernabe (2006) in Spieldoch (2007); Amihan personal communication, 2008, cited in Peralta, 2008).
- **Women in Maritime Philippines Association (WIMAPHIL)**. WIMAPHIL launched on May 04, 2014 the Citizens of the Sea, An Innovative Strategy on Volunteerism for the Protection of the Coastal and Marine Environment (Advocacy, Monitoring and Reporting) conceived due to the environmental issues which the government needs to respond to with the support of the people. The WIMAPHIL volunteers inmonitoring illegal activities and reporting to proper authorities through modern technologies in communication. They serve as advocates of environmental protection through education, information drive, capability building and other IEC activities and projects. It regularly conducts coastal clean-ups and mangrove reforestation projects in Western Visayas.
- **The Pambansang Koalisyon ng Kababaihan sa Kanayunan (PKKK) organized in 2003 with the following advocacy platform:** Fulfillment of Rural Women's Property Rights in Agrarian Reform, Coastal Resources; Fulfillment of a Peace Agenda, especially in Mindanao; Access to Basic Services and Social Protection, Safe and Adequate Food, Potable Water, Right to Fair Wages and Just Working Conditions, Reproductive Rights and Protection from All Forms of Violence and other Oppressive Relations; Representation and Participation in the Implementation of Gender and Development Programs and Local Sectoral Representation; and the Right to Safe Environment and Protection from the Impacts of Climate Change. PKKK filed petitions for the issuance of notices of coverage

(NOCs) for agrarian reform of more than 80,000 hectares of land nationwide in a bid to have these distributed to landless women farmers. Trinidad Domingo, PKKK spokesperson, said the petitions were filed in the Department of Agrarian Reform. The organization's key demands include a genuine agrarian reform program that addresses land rights for women and the protection of peasant women's economic and political rights. PKKK supports organic farming as a major mitigation and adaptation action for rural women (Orejas & Cabreza, 2014).

- **BAI, the national network of indigenous women's organizations in the Philippines** evolved from a national workshop of indigenous women held January 23–26, 2004 in Baguio City. As a national network, BAI serves as a campaign center for indigenous women's issues, a network that will strengthen the capability of its network members in terms of organizing, education, research and campaigns, and building links with other indigenous women's organizations in the Philippines. In partnership with government and other institutions, BAI undertakes programs to conserve the remaining resources and biodiversity in Itogon. Indigenous systems of resource management and conservation are strengthened and supported. Programs to revive soil fertility and to wean the soil from dependence on agro-chemical inputs are initiated. Organic farming of traditional varieties of rice and vegetables is promoted in areas where still feasible. Dalupirip serves as a pilot area for a model farm where traditional varieties of rice and vegetables are cultivated. Government and non-government agencies help communities to gradually shift back from HYV to traditional varieties so farmers will not be economically dislocated in the process. The formation of BAI as a national network is considered a breakthrough in the indigenous people's movement, in the women's movement as well as in the overall people's movement in the Philippines (Innabuyog, 2004).

RECOMMENDATIONS

Given the information earlier provided, the report puts forward the following recommendations:

1. Support the immediate dissemination of appropriate agro-ecological practices and technologies in small farms and upland communities, and accelerate mangrove reforestation in coastal areas. There is today an abundance of literature on how small farms and agro-forestry areas can be made more resilient to climate change, with clear immediate benefits such as preventing the erosion of incomes and livelihoods and improving household capacity to meet basic food needs. Abovementioned women NGOs' experiences also indicate strong potentials of success.
2. Immediately conduct community-based CCVA and adaptation planning involving women in identified climate hotspots. CCVAs already undertaken by the scientific community such as the Manila Observatory should be brought down to the community level and enriched with community observations of the gradual and still unfolding changes in the environment due to climate change. Community-based CCVAs can build upon existing DRR hazard maps and damage assessment tools. Adaptation planning should be consistent with commu-

nity priorities and should reflect areas of action that are within the capacity of the communities to implement, with financial requirements kept at optimal levels and directed toward the acquisition of hardware (e.g., equipment and facilities) and support infrastructure. Involvement of women should provide a vehicle for coming out with gender-disaggregated data and for integrating gender into CCVA and adaptation planning.

3. Integrate CCA into government development plans at the national, regional, provincial and local levels, as well as into the relevant sector plans. This will embed CCA in regular development planning and programming processes, and investment decisions, and in turn will lead to consistency in CCA efforts across the various sectors while allowing cross-sector synergies and collaboration to accelerate the delivery of results.
4. Develop a Gender-DRR-CCA-Sustainable Development data center and knowledge hub, which should facilitate continued monitoring and evaluation of the gender dimensions of DRR and CCA as well as enable enrichment of knowledge from experiential learning.
5. Institutionalize the prevention of disaster-related gender-based violence. Government recognizes that it has been largely unable to address gender-based violence occurring in the aftermath of disasters. To address this problem, government should integrate the prevention of gender-violence in its DRR responses, and establish mechanisms within existing DRR agencies at all levels to ensure and monitor the implementation of these responses at field level.
6. Incentivize women's contributions to carbon capture and the avoidance of GHG emissions in agriculture and the forest sectors, and establish mechanisms to promote women's equal access to climate finance. Doing so will enable the generation of badly needed resources for adaptation.

The following additional recommendations emerged from the session on environment, climate change, and disaster mitigation which formed part of the third National Women's Summit, October 25, 2014 held at Miriam College:

1 Accelerate information and awareness-raising campaigns linking gender, disaster risk reduction and management (DRRM), climate change adaptation (CCA), food security and sustainable development

2 Institutionalize formal and non-formal education on environmental issues, DRRM, and CCA.

3 Ensure women's participation in environmental policy-making bodies in both GOs and NGOs, and guarantee inclusion of women civil society representatives in government bodies from the local to the national.

4 Have multiple partnerships and a combination of economic, environment, and technology strategies in addressing environmental concerns.

5 Ensure women and gender concerns are adequately addressed in national climate change financing policies, programs and frameworks by creating mechanisms that guarantee women's equal access to negotiating, developing, managing, and implementing adaptation and mitigation financing

6 Develop principles and procedures to protect and encourage women's access to national adaptation programs and projects

7 Conduct gender impact assessments of adaptation and mitigation strategies

REFERENCES

Asian Development Bank (2011). ADB Climate Change Programs: Facilitating Integrated Solutions in Asia and the Pacific. Manila.

_____ (2010). Building Climate Resilience in the Agriculture Sector of Asia and the Pacific.Manila

_____. Supplementary Document 6: Typhoon Yolanda-affected Areas and Areas Covered by the KALAHI-CIDSS National Community-Driven Development Project. http://www.adb.org/sites/default/files/linked-documents/46420-002-sd-06.pdf.

Beijing Platform for Action (1995). United Nations Entity for Gender Equality and Women's Empowerment.Retrieved from http://www.un.org/womenwatch/daw/beijing/platform/plat1.htm

Conservation International (2011). *The World's Ten Most Threatened Forest Hotspots.* Retrieved from http://www.conservation.org/NewsRoom/pressreleases/Pages/The-Worlds-10-Most-Threatened-Forest-Hotspots.aspx

Carino, J. *Indigenous Women and Food Sovereignty in* Our Harvest in Peril: A Sourcebook on Indigenous Peoples' Food Security (2004). EED Philippine Partners' Task Force on Indigenous Peoples' Rights (EED-TFIP), pp. 234-242. Retrieved from http://aboutphilippines.ph/filer/Indigenous-Women-and-Food-Sovereignty.pdf

Climate Change Commission (2012). *National Climate Change Action Plan (NCCAP) 2011–2028.* Retrieved from http://adaptationmarketplace.org/data/library-documents/NCCAP_TechDoc.pdf

Climate Change Commission (2010). *National Framework Strategy on Climate Change 2010–2022 (NFSCC).* http://www.seachangecop.org/files/documents/nfscc-part_1.pdf

Espinueva, S. R. (2011). *Extreme events and Climate Change Projections for the Philippines: An Opportunity for Collaborative Research.*PAGASA.

Green Climate Fund (2015). *Governing Instrument of the Green Climate Funds.* Retrieved from http://gcfund.net/documents.html

Greenpeace (2007). *The State of Water Resources in the Philippines.* Retrieved from http://www.greenpeace.org/seasia/ph/Global/seasia/report/2007/10/the-state-of-water-in-the-phil.pdf

Intergovernmental Panel on Climate Change (2007). *Fourth Assessment Report.* Retrieved from http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm*Title.*URL/Publication Details.

International Union for the Conservation of Nature. Disasters and Gender Statistics. cmsdata.iucn.org/downloads/disaster_and_gender_statistics.pdf, accessed on March 22, 2015.

Kreft, S., Eckstein, D., Jungham, L. , Kerestan, C. & Hagen, U. Global Climate Risk Index 2015. Retrieved from http://germanwatch.org/en/download/10333.pdf

Lambrou, Y. & Piana, G. (2006). *Gender: The Missing Component of the Response to Climate Change.* Retrieved from ftp://ftp.fao.org/docrep/fao/010/i0170e/i0170e00.pdf

Medium Term Philippine Development Plan 2004–2010. Manila: National Economic Development Authority. Retrieved from http://www.neda.gov.ph/wp-content/uploads/2013/10/Updated_MTPDP-2004-to-2010.pdf

Neumayer, Erik and Thomas Plümper (2007). The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002. Blackwell Publishing, UK.

OPARR (2014). *Yolanda Rehabilitation and Recovery Effort* – consolidated as of 28 July. Retrieved from http://president.gov.ph/wp-content/uploads/2014/08/Revised-DraftYolanda-Rehab-Briefer-as-of-1-Aug-2014-w-status-report.pdf

Orejas, T. & Cabreza, V. (2014). Women farmers lay claim to 80,000 ha for CARP. *Philippine Daily Inquirer*.Retrieved from http://newsinfo.inquirer.net/614990/women-farmers-lay-claim-to-80000-ha-for-carp#ixzz3RDk25HU9

PAGASA (2015). Climate Projections. Retrieved from *http://pagasa.dost.gov.ph/climate-agromet/climate-change-in-the-philippines/116-climate-change-in-the-philippines/595-climate-projections*

Peralta , A. (2008). *Gender and Climate Change Finance. A Case Study of the Philippines*. WEDO and Heinrich Boll Foundation. Retrieved from http://www.wedo.org/prototype/wp-content/uploads/genderandclimatechangefinance.pdf

Philippine Council for Sustainable Development (1997). *Philippine Agenda 21: A National Agenda for Sustainable Development for the 21st Century*. Manila: Philippine Council for Sustainable Development.

Reyes, D. (2014). Presentation on the Miriam College Environment Studies Institute, National Women's Summit, Oct. 25, 2014.

SARILAYA (2014). Accomplishment Report 2014. Unpublished document.

Stern, Nicholas (2006). *The Economics of Climate Change*. Cambridge Publishing.

Trohanis, Z., Svetlosakova, Z., & Carllson Rex, H. (2010). *Making Women's Voices Count in Natural Disaster Programs in East Asia and the Pacific*. Retrieved from http://siteresources.worldbank.org/INTEAPREGTOPSOCDEV/Resources/12680GNEAPDisaster.pdf

United Nations Environment Programme & United Nations Development Programme (2009). *Mainstreaming Poverty*.

UN Development Programme and National Economic and Development Authority. The Philippines 5th Progress Report: Millennium Development Goals. Philippines, 2014.

UN Food and Agriculture Organization AQUASTAT Programme.UN Water Philippines. UN Water Country Brief. 2013. www.unwater.org/fileadmin/user_upload/unwater_new/docs/Publications/PHL.

UN Fund for Population Activities (UNFPA) and Women, Environment and Development Organization (WEDO). Women at the Forefront. http://www.unfpa.org/sites/default/files/pub-pdf/climateconnections_1_overview.pdf