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Report on Gender and Extreme Weather Events

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Preview

In this report, we investigate the reasons why, in some places, women have been especially vulnerable to extreme weather events. We also look for new ways to respond to these vulnerabilities, especially in the area of risk communication.

We review the scholarly and professional literature and summarize the evidence linking gender and extreme weather events. While the supporting evidence is still limited, some patterns are already emerging in this literature. Most importantly, much literature indicated that women, in particular contexts, can experience climate change (in general, and extreme weather events more specifically) in different ways.

This report will discuss what research on worst-case scenario disasters such as Typhoon Haiyan, Cyclone Gorky, and the Indian Ocean Tsunami can tell us about the gendered experiences of such natural disasters.

We also theorize about the potential of narrative --i.e., encouraging women in the field to recount their experiences with extreme weather events, to reveal ways of addressing vulnerability. The last part of the report examines some of the stories told by female survivors of Typhoon Haiyan in the Philippines and Cyclone Sidr in Bangladesh, analyzing the pathways they identified by which women were inordinately affected by these events. We end the report with reflections on what reforms (to the risk communication and disaster risk prevention processes) are suggested by the analysis.

Several key insights emerge from the analysis. One is that there is a difference between the univeralizing, neutral, technical speech of risk analysis and the gendered, embodied, directed speech that speak directly to people, especially the most vulnerable persons in a community. This suggests that we find ways to communicate risks with speech that speaks to the particular conditions, and in the voice of, the affected community. This relational model of communication suggests that messages be constructed as if in the voice of one member of the community speaking directly to another.

Another insight is that cultural norms, perceptions of home, confinement of some people to domestic activities, and other factors all interweave to create a strong inertia against evacuating in the face of a coming event. This suggests the need to improve the conditions and perceptions about evacuation centers and to make the process of evacuation easier for people. But it begins with listening to the most vulnerable about their issues vis-à-vis these centers.

Another is the issue that the "either-or" nature of choices has been exaggerated --e.g., one either has faith in the provider or one takes actions to protect self; members of a household either take on a private, domestic role confined to the home or a public, professional role revolving around the outside world, etc. To address these, program reforms may need to take some extraordinary steps in the beginning.

I.   Introduction: Gender and Extreme Weather Events

I.1 Evidence from the Literature on the Gender Dimension of Natural Disasters

Climate change affects everyone, but how it affects differs dramatically depending on where we live, our income, livelihood, race, age, and gender. People who are socially, economically, politically or otherwise marginalized are especially vulnerable to climate change. According to the International Panel on Climate Change (IPCC), "differences in vulnerability and exposure arise from non-climatic factors and from multidimensional inequalities often produced by uneven development processes." A person's vulnerability is therefore not due to a single cause, rather, "it is the product of intersecting social processes that result in inequalities in socio-economic status and income, as well as in exposure. Such social processes include, for example, discrimination on the basis of gender, class, ethnicity, age and disability" (IPCC, 2014b, p. 54). This is why policy makers often refer to climate change as a "threat multiplier," because climate impacts such as droughts, floods, and other extreme weather events often exacerbate pre-existing risks such as poverty, disease, food and water insecurity, and political instability, thereby amplifying existing social, political, and economic inequalities. (Olsson, et al., 2014, p. 799). Climate change is therefore far more than an ecological crisis, it is also a social justice issue and humanitarian crisis with immediate and far-reaching implications for billions of the planet's poorest and most vulnerable people.

Women too can be disproportionately impacted when it comes to climate change due to the gender norms and roles that marginalize them socially, politically, and economically. According to UN Women, women's "historic disadvantages," such as their restricted rights, muted voice in shaping decisions, dependence on and unequal access to land, water, and other resources and productive assets make them particularly vulnerable to external threats and stressors such as droughts, floods, and extreme weather events (UN Women, 2015). When we look at gender-disaggregated data on climate impacts from around the world, we see indications of how climate change is acting as a threat multiplier for women, amplifying risks to their health, safety, livelihoods, access to food and water, and economic security.

The specific area of natural disasters provides some evidence of differential impacts borne by women. In cases such as the 2004 Indian Ocean tsunami, Cyclone Gorky in Bangladesh in 1991, and Typhoon Haiyan in the Philippines in 2015 – all catastrophic disasters with casualties in the tens or hundreds of thousands -- the vast majority of victims were women (Sellers, 2016). During disasters such as these, women not only often die at higher rates than men, but those that survive also experience greater risks to their health, safety, and economic security. Several studies have noted, for example, that gender-based violence increases in the wake of a natural disaster (David and Enarson, 2012; Cutter, 2016) and that gender disadvantages in basic living conditions and livelihoods are amplified during and after disasters and humanitarian crises (Fordham and Meyreles, 2014; Cutter, 2016).

Another broad study on gender and natural disaster mortality rates looked at gender disaggregated data from disasters that occurred between 1981 to 2002 in 141 countries and analyzed this data in the context of gender roles and norms in each of these countries. The study concluded that in cases where men and women's gender roles and norms were not highly differentiated, and where their economic and social rights were more equally distributed, the death rates between men and women were similar (Neumayer & Plumper, 2007, 551-566). This implies that gender equality reduces the vulnerability differential between men and women, and therefore to disaster risk reduction for women.

Typhoon Haiyan, the Indian Ocean Tsunami, and Cyclone Gorky are three stark examples of natural disasters in which women died at significantly higher rates than men. In the case of the 2004 Indian Ocean tsunami, roughly 70% of the estimated 250,000 deaths were women (Sellers, 2016; Oxfam, 2005). During Cyclone Gorky, which struck Bangladesh in 1991 killing an estimated 140,000 people, women are reported to have died at a rate of 14 to 1 higher than men (Lindeboom, Alam, Begum, Streatfield, 2012; Bern et al, 1993). Similarly, preliminary assessments of mortality rates from Typhoon Haiyan in the Philippines, which took an estimated 6,300 lives, suggested greater impacts among women than men (Ballera et al, 2015; Sellers, 2016).[1]

What factors led to women dying at such high rates? In the case of Gorky in Bangladesh, researchers attributed the exponentially higher female death toll to three main factors. First, women in Bangladesh typically do not know how to swim. Secondly, Bangladeshi women's traditional dress – the sari – made it very difficult for women to swim or run away from the storm surge. In many cases women's saris became entangled in trees and debris, or weighted down by water, acting as an anchor and causing them to drown (Haider, 1994, p. 300). And thirdly, women in Bangladeshi culture are subject to 'purdah' the cultural norm that restricts their spatial mobility. Purdah literally translates to "a curtain" and is used figuratively to signify the separation of a woman's world from that of men's. Because of Purdah, women are often confined to the home and are expected to seek their husband or parents' permission before leaving the house, and not venture out without male accompaniment. (Ikeda, 1995, p. 179). Thus, many women who were home without their husbands when the storm hit opted to stay at home rather than seek shelter, and sadly drowned. In other cases, women and their husbands opted not to evacuate because they feared the cyclone shelters would not provide adequate privacy or safety (p. 179).

In the case of the Indian Ocean Tsunami, researchers theorize that several factors contributed to the much higher mortality rates among women. Some of the causes of deaths among women were similar across regions. For example, across regions and cultures, many women died because they stayed behind to look for their children and other relatives, or because women more often than the men could not swim, or because the men more often than women chose to climb trees (Oxfam, 2005). However, significant differences can also be seen in the factors that contributed to women's deaths across regions struck by the tsunami. For example, in Aceh Besar, Indonesia, women died at a rate of 3 to 1 over men, while in Pachaankuppam, India, the only people who died were women. Some of the factors that led to women's deaths in Indonesia, India, and Sri Lanka were highly context-specific, and it is important to note these differences.

"Women in Aceh, [Indonesia] traditionally have a high level of participation in the labor force, but the wave struck on a Sunday morning when they were at home and the men were out on errands away from the seafront. Women in India play a major role in fishing and were waiting on the shore for the fishermen to bring in the catch, which they would then process and sell in the local market. In Sri Lanka in Batticoloa District, the tsunami hit at the hour women on the east coast usually took their baths in the sea." (Oxfam, 2005, p. 2).

Research on the aftermath of the tsunami also indicates that those women who survived experienced greater risks to the safety, wellbeing, and livelihoods than men. For example, researchers on the tsunami's effects in India have seen an increase in the number of marriages of girls within their extended families in some of the affected villages in Cuddalore. "There are cases where girls whose marriages had

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[1] We should note that the figure of approximately 6,300 was a number that was used for official purposes but thought by some sources to be lower than the actual (Esmaquel 2013; Avila 2014).

already been arranged before the tsunami, and who have lost both their parents, are now being married off by members of the extended family or the community to other young men. These marriages seem to be contracted in desperation and without involving the girls' consent" (Oxfam, 2005, p. 4). In Sri Lanka, researchers reported that incidents of sexual assault have taken place in displaced people's camps and safety shelters, and that incidents of domestic violence are also on the rise (Oxfam, 2005, p. 10).

In the case of Haiyan, frustratingly little is known about how many more women died than men, or why this may have occurred. One study, entitled "Management of the Dead in Tacloban City after Typhoon Haiyan," was conducted by a team from the Department of Health who was tasked with identifying, processing, and collecting data on 128 victims of Haiyan. This study reported that the adult male-to-female ratio of victims was 1:1.5, or 50% more females than males (Ballera et al, 2015). These findings are consistent with another integral study, conducted by a different team from the Department of Health, in which 100 cases of people who died during Haiyan in Tacloban City were surveyed. (Ching et al, 2015). This study relied on proxies, such as family members, who answered interview questions on behalf of the deceased in order to assess the risk factors that led to their deaths. Of those surveyed, all victims died from drowning. Ninety-five percent of cases did not evacuate because they did not expect the severity of the storm. While all cases had heard about the coming typhoon, 88% did not understand the warning messages about the storm surge and the magnitude of the threat it posed. Ninety percent reported not knowing that their homes or place of residence was not safe (Ching et al., 2015, p. 36).

Sixty-two percent of the deaths surveyed were women. However, this was determined to be a statistically insignificant number. Researchers concluded the being female was not a risk factor during Haiyan, at least not according to this study. These researchers hypothesized that since the study area was a fishing village, with men were its predominant residents, this may have skewed the results. In other words, had there been a more even number of women and men living the area, they might have seen far more female victims. The researchers also speculated that the small sample size of the study may have limited their results (Ching et al., 2015, p. 37).

Sixty-eight percent of cases surveyed also did not know how to swim, though this too was determined to be statistically insignificant by the researchers. Sixty-nine percent of deaths were people over the age of 55, which *was* considered to be statistically significant. The researchers concluded that not evacuating before the storm, despite official warnings, was the greatest risk factor for mortality during Typhoon Haiyan.

"Although it was reported that messages about the coming storm were received, it was also reported that the message to evacuate was not understood. The term "storm surge" was used to warn the public before Typhoon Haiyan, but many did not understand what this meant" (Ching et al., 2015, p. 37).

What conclusions if any can be drawn from these studies in Haiyan, where the majority of deaths were women? What, if anything, did Haiyan have in common with Gorky and the tsunami, in terms of impacts for women? In many cases, it seems that it was just a matter of women being in the wrong place at the wrong time, as in the example from Batticoloa, Sri Lanka, where the tsunami hit while the women of the village were bathing in the sea. There do seem to be a few common threads, however. It seems that not being a strong swimmer was a common cause of death for women in all three disasters. Also, choosing not leave the house for whatever reason, be that out of fear of the safety of the shelters, or because of "purdah," or because of wanting to protect family and belongings, was a common cause of death. Also important to note are the common ways in which women are negatively impacted after the disaster. Frequently, female survivors are the ones burdened with additional child-care and work, while not being granted access to the

same financial resources and capital to support their families as men. It's important to keep these common risks and burdens in mind in the creation of disaster risk reduction (DRR) work.

I.2   Gaps and Limitations in Gender and DRR Research and Policy

Unfortunately, there are some impediments to understanding how and why climate change and natural disasters are impacting men and women differently. One limitation is the way in which data on gender and vulnerability has been collected and analyzed. Often, studies that seek to assess vulnerability of men versus women do so at the household level rather than the individual level, comparing households that are female-headed to those that are male-headed. This, however, ignores intra-household gender differences in vulnerability. Therefore, claims that women's restricted rights, voice, and access to resources put them at a severe disadvantage cannot be evaluated using this methodology because these claims refer to the distribution of responsibilities and power within households" (Andersen, Verner, & Weibelt, 2016, p. 6).

Another major impediment to understanding of the differential impacts born by women during climate disasters is that not enough data exists yet to analyze. Policymakers and researchers have only recently realized the urgent need for gender-disaggregated data on disasters and begun to make collecting such data a priority in the wake of natural disasters (Bradshaw, 2015a, p. 63). As a result, there has been a great deal of speculation and theorizing on the topic, but not enough empirical evidence to substantiate these kinds of blanket claims. In fact, the most current research on gender and climate change shows that the impacts are not always worse for women than men across all contexts and cultures. As the body of research grows, it is becoming apparent how variable and context-specific gender differences are across communities, cultures, and regions, with women being more severely impacted in some cases and men in others.

In some cases, males may be more vulnerable to harm from events related to climate change, as evidenced by higher rates of suicide among men, as well as higher fatalities from flooding. While some evidence suggests that men tend to have particular advances in coping with climate shocks, much of the adaptation literature suggests that women and men are both able to adapt, but do so in different ways, such as men tending to migrate while women often use home gardens, small-scale agriculture or forest production collection (Sellers, 2016, 11).

Perhaps a more accurate narrative would be to say that differences rather than inequities exist in the way climate change and climate disasters impact women versus men. In most cases, women's restricted rights, lack of voice in decision making, and lack of access to resources are impacting their ability to cope with and adapt to climate change. Overall, we should assume that climate change will continue to compound and magnify pre-existing gender inequalities if action is not taken to address women's rights, needs, and lack of agency.

Policymakers are also finally beginning to recognize the value of a gender-inclusive approach to Disaster Risk Reduction (DRR) policy and planning. In 2015, the UN adopted the Sendai Framework at the 3rd UN World Conference on Disaster Risk Reduction. The Sendai Framework is a 15-year, voluntary, non-binding agreement whose goal is the "substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries" (UNISDR Website). It is the first UN DRR framework to include gender rhetoric, though some argue that it still does not do enough to address women's rights during and after disasters. Sara Bradshaw, a leading advocate for gender-inclusive sustainable development and disaster risk

reduction, notes that:

> The new framework adopted at the World Disaster Conference in March 2015 saw some mentions of the need for sex-disaggregated data, but this wasn't uniform. There is some recognition that women are more than 'victims,' and leadership is mentioned in a number of places. However, the vulnerability discourse remains dominant and the leadership discourse is somewhat problematic; for example, it promotes 'empowering women and persons with disabilities to publicly lead...'. It does include one mention of sexual and reproductive health – under discussion of 'access to basic health care services', and there is no mention of VAWG [violence against women and girls]. (Bradshaw, 2015b, p. 64).

Bradshaw's critique of the Sendai Framework suggests that while some small progress has been made in addressing women's rights and including women's voices in DRR, not much has changed in the last twenty years. The discourse in DRR policy literature remains largely universalist and unrecognizing of gender (a perspective which, she argues, is actually a male-centered one) (Bradshaw, 2013). Further, Bradshaw argues that in the rhetoric around women and disasters, "women are often constructed as blameless victims, as protectors (of children), or as needing protection (from men)" (p. 99). The lack of women's agency that this implies, and the power dynamic it potentially reinforces, has long-term implications for men and women's material and emotional well-being.

I.3   Potential for Inclusion of Women's Voices in Policy and Action

Conversely, there is great potential for women to participate more integrally in climate change adaptation, both in terms of more gender-inclusive policy creation and more effective action on the ground. Prioritizing women's involvement in disaster risk reduction, educating and empowering women to take action against climate change in their communities, may present more innovative, different, or foundational contributions that we have yet to fully access. Women, as Bradshaw and others suggest, are not helpless victims of climate change. Just as men in some cases are more vulnerable to climate threats, women in some cases possess greater knowledge, skills, and adaptive capacities. In many cases, women are already leading the fight against climate change by developing new technologies, and new mitigation or adaption strategies. As Christina Figueres, the Executive Secretary of the United Nations Framework on Climate Change states,

> What makes women vulnerable also makes them pivotal to climate change action. Whether in developing countries or in developed countries, women stand at the front lines in the battle against climate change: as providers of water, food, and energy or as leaders in businesses, communities and politics. Women are in a unique position to recognize some of the opportunities that climate change provides" (Figueres, 2014).

Figueres and others who advocate for gender-responsive climate action emphasize that women are powerful agents of change whose innovations and contributions to climate action need to be acknowledged. She stresses the tremendous potential that exists in increasing women's participation in climate change decision making, planning, and programming. As Figueres states, "women are the secret weapon to tackling the climate crisis" (2014) precisely *because* of their vulnerability, and their position at the frontlines of climate change. In much of the developing world, women serve as the securers of food, water, and energy for their families. In addition to their role as providers, women often take on community organizing

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activities, ensure the provision and maintenance of collective resources within the community (Moser, 1993). This means that women are in a special position on the front lines of climate change to first spot its threats, recognize the value of adopting adaptation and mitigation strategies, and to encourage other community members to adopt them as well.

For example, as Figueres notes, "fifty percent of women around the world still burn wood, dung, coal and other traditional fuels for cooking inside their homes. The resulting air pollution in unventilated homes releases high levels of black carbon, causing approximately 1.5 million deaths a year, mainly of women and children in the poorest communities in the world." Initiatives like the Low Smoke Stoves Project in Dufur are working to change these outcomes by educating women about biofuel stoves and other low-smoke, sustainable cooking technologies, and then training them to educate other women in their community to do the same. In doing so, they are providing women in the developing world with opportunities not only to reduce greenhouse gas emissions, improve their health of the health of their families, but also save time and money, freeing them up for more productive work (Figueres, 2014).

The Low Smoke Stoves initiative is just one example of how climate action can dovetail with sustainable development goals, having triple-bottom-line benefits for developing economies, climate action, and social justice. (For more examples, see Boxes 1 & 2 in Appendix: *Digital Stories of Women on the Frontlines of Climate Change*). This is the fundamental assumption of a gender mainstreamed approach to climate action: that empowering women to be agents of change and including them at all levels of decision making around climate action can have multifold benefits,

> from raising healthier and more educated children, to strengthening and expanding national economies and improving businesses' bottom line; from making more environmentally friendly legislation to pursuing more sustainable consumer choices. Promoting women's empowerment and advancing gender equality are drivers for a global community that is more adept at mitigating, adapting and building resilience to a changing climate (Aguilar, Granat, & Owren, 2015b, p. 2).

Why shouldn't policymakers and planners make gender mainstreaming a priority then, if only positive outcomes can come from it, while potentially disastrous outcomes could come from taking a gender-blind approach? As we previously mentioned, one impediment to understanding and incorporating gender mainstreaming into DRR is that it's very hard to generalize about gendered experiences of disasters. These experiences are highly localized and context-specific, depending on things such as the time or season in which the disaster struck, and the cultural, economic, or political context in which the disaster struck. Secondly, as previously mentioned, there are limitations to the way in which empirical evidence on the gender dimension of natural disasters has been collected. Thirdly, even when gender mainstreaming language is incorporated into policy, it's not always made a priority or enacted effectively. Given these limitations, what other strategies might be employed to help us both better understand the problem and to save lives? Digital storytelling and narrative might hold the key. At the very least, narrative and anecdotal evidence might help to fill in some of the gaps in research on women's experiences during extreme weather events, and to capture and amplify women's voices and opinions on how best to address their unique needs during and after climate disasters.

I.4   A Gender Analysis Framework for Climate Change and DRR

Understanding how gender norms and roles contribute to differences in vulnerability is the first step toward enabling gender-sensitive adaptation or DRR programs. Norms and roles vary by culture, community, age, class, or socio-economic status, thus it's necessary to take a context-specific approach to analyzing how gender plays a role in the impacts of natural disasters on communities. That said, there are

certain commonalities among women across the globe that make them especially vulnerable to external threats and stressors such as climate-related disasters. Gender analysts refer to these commonalities as women's "special condition," meaning "the social, economic and cultural factors and mechanisms which keep women in a situation of disadvantage and subordination with regard to men" (ICUN, UNDP & GGCA, 2009, p. 17). Women's historic disadvantages include restricted rights, muted voice in shaping decisions, dependence on and unequal access to land, water, and other resources and productive assets. Research has found that climate change tends to compound and magnifying these existing patterns of gender disadvantage (UNDP, 2007, pp. 81-82).

Women's traditional social and familial roles also put them at increased risk. Traditionally, women play central roles in both families and communities, often while simultaneously shouldering jobs or other productive work. This is what Caroline Moser in her book *Gender Planning and Development: Theory, Practice, and Training* refers to as women's "triple role," meaning the multiple roles women often perform simultaneously in the areas of production, reproduction, and community affairs. In contrast, men are often less involved with household activities or community affairs, and more engaged in production and community politics (Moser, 1993).

Moser's gender analysis theory, which has come to be known as The Moser Framework, is often cited by gender mainstreaming advocates and those working around women and sustainable development. According to the Moser Framework, women's traditional reproductive roles include childbearing, rearing, health care and caring for the elderly, and any domestic tasks required to guarantee "the maintenance and reproduction of the labor force" such as the provision of food, water, and fuel (March, Smyth, & Mukhopadhyay, 1999, p. 57). In addition to their reproductive roles, women often take on community roles, such as organizing activities that ensure the provision and maintenance of collective resources, such as water, land, and soil. Traditional productive roles include the activities that produce goods and services for consumption or trade, such as growing crops for sale, barter, or household consumption. Both men and women can be involved in these activities. However, women often carry out these productive roles within the domestic sphere and alongside their reproductive roles, in a household farm or home garden, for example, which makes their contributions less visible and less valued than men's productive work (Moser, 1993; March, Smyth, & Mukhopadhyay, 1999).

Threats from natural disasters can have a compounding impact on women's triple roles, often turning them into triple burdens. Take, for example, a woman living through a drought in Machakos, Kenya, who consequently has to walk up to fifteen miles a day to collect water for her family (see Box 1 in Appendix). Doing so deprives her of the time she needs to care for her family members, which in turn impacts both her family's wellbeing and her own, as walking for long distances also poses risks to her health and physical safety.

Or take, for example, Anna Ngau of the Kayan tribe in the Borneo Tropical Forest of Malaysia, whose community is experiencing unprecedented and prolonged flooding. While her husband is away for long stretches of time in search of logging work, Anna must single-handedly care for her home and family as she wades through a foot-and-a-half of water. As she explains, she doesn't have time to do farming, or collect water or food from the forest, because she alone must do all the housework while responding to daily crises that arise from the flood (See Box 3 in Appendix).

And yet despite her increased burden, Ann Ngau and the other women of her tribe are coping. They are developing new systems and technologies for home farming, foraging, and fuel collection, and establishing social networks to support each other and share resources. Their resiliency and capacity to adapt to the impacts of extreme flooding speaks to Figueres' point that women living on the frontlines are the unsung heroes in climate disasters and that they possess key knowledge, strategies, and adaptive

capacities that the rest of the world could stand to learn from.

> Men generally will go on to a much more leadership capacity, but women are really the true champions for climate change actions. They are the ones getting their families together, their children together, their husbands mobilized. And they do it so willingly and open-heartedly....I would like them to express themselves, articulate themselves, and celebrate how they build resilience. They *are* coping. They are not waiting for anyone to come and tell them how to do this, they are finding technologies, they are finding ways forward. They are working very hard at the ground level, at the grassroots level. For me, doing this research, it's [about] coming to them and embracing their ideas of stewardship and the work they are already doing within their communities. It's not an easy task [what they are doing], especially not when you have to do it invisibly. (*https://vimeo.com/163574307#t=733s*)

Here, Bisan echoes Figueres point that these women are not helpless victims but "true champions for climate change action," whose triple role in the productive, reproductive, and community domains position them at the frontlines of climate change, making them the problem solvers and invisible leaders in their community's response to climate threats. The impediment for these women, Bisan implies, is not a lack of understanding of how to adapt or how to lead their community forward, but a lack of visibility and voice. This speaks to the purpose of a gender-responsive approach to both development and climate action, which is not simply to provide aid to women in poverty and the developing world, but to learn from how women are already building resilience, to empower them to leadership roles, and to include them and their ideas in all levels of decision making and adaptation planning.

There is a compound injustice at play: not only are women being disproportionately affected by climate change and during climate shocks, but their voices are not being heard by government, policy makers, planners, and in disaster response, and thus their need for things like access to resources, technology, safety, information and education, are not being met. One solution to this problem is increased female participation and leadership at all levels of climate change planning, problem-solving, and communication. This raises new questions, however, not only about how to go about amplifying women's voices and empowering them to be agents of change, but also whether it is reasonable and just expect women in the developing world to take on an active role in climate action.

One of the fundamental assumptions of climate justice is that those who suffer the greatest burdens from climate change are often the ones who have contributed least to the problem. Sujatha Byravan and Sudhir Chella Rajan have labeled this phenomenon "asymmetrical impacts," implying that there is an unequal burden on the developing world and poor communities, which is "all the more unfair because they play only a minor role, if any, in causing the climate problem, and certainly have not reaped the benefits of fossil-fuel intensive economic development" (2010: 246). Take, for example, a woman living in on the coast of Barguna in the Bay of Bengal in Bangladesh (see Box 4) whose village will soon be swallowed up by the sea. Her community's livelihood is primarily subsistence fishing. Her husband was killed while fishing during a typhoon, and now she alone must support her family. She consumes very little and produces very little in the way of carbon emissions. Her carbon footprint is practically non-existent. Is it fair to expect her to see climate action as her responsibility, or to have the time to address climate change, when she is facing the immediate threats of sea-level rise, food insecurity, loss of livelihood, and displacement? In her own words:

No land, no trees. there is nothing there. Everything is gone. Our mothers and sisters are all widows. Do you want our sons to lose their fathers? Why are the tidal waves happening? If you didn't make the earth so warm, this wouldn't be happening.

Most would argue that it falls on those in the developed world who are the main contributors to the climate crisis to mitigate the effects of climate change and to assist vulnerable communities in responding and adapting to climate crises. And yet we need women from the frontlines to participate in the movement too, so that their unique needs and vulnerabilities can be addressed, and so that they can communicate and educate their communities about climate change adaptation and disaster response.

I.5   Emergence of the Gender-Responsive Climate Action Movement

Within the last five years the body of data and research on the gendered impacts of climate change has grown exponentially, from a few dozen case studies to thousands from all over the world. The frameworks used to analyze and evaluate the gendered impacts of climate change have their roots in the gender and development (GAD) movement. This is a gender-sensitive approach to policy and planning for international development that first emerged between the 1970's and 1980's, out of joint effort of the Unites States Agency for International Development (USAID), the Harvard Institute of International Development, and the World Bank. GAD is "a case-study based methodology to identify how women have been left out of development on the grounds that 'women are key actors in the economic system, yet their neglect in development plans has left untapped a potentially large contribution'" (Moser, 1993, 2). Gender mainstreaming is a similar approach to policy and planning but with broader applications that was first proposed in 1985 at the United Nations Women's Conference in Nairobi, Kenya and later established as a major global strategy for the promotion of gender equality in the Beijing Platform for Action from the Fourth United Nations World Conference on Women in Beijing in 1995. The UN Economic and Social Council defines gender mainstreaming as

> the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality (Gender Mainstreaming: an Overview, UN, 2002).

It is only within in the last decade, however, that analysts, policymakers, humanitarian aid organizations, and funders have begun to apply this approach to tackling climate change and have begun to collect and analyze sex-disaggregated data on climate change and natural disaster impacts (Benelli, Mazurana, & Walker 2012). Data on mortality rates from recent catastrophic natural disasters such as the heat wave that swept Europe in 2003, and the 2004 Indian Ocean tsunami (women made up 70% of the deaths in both instances) served as a catalyst for broader and more in-depth research into the gender-differentiated impacts of climate change (Aguilar, Granat, Owren, 2015a). Initial research revealed that stark inequities exist across the globe in the way climate change and natural disasters are affecting women's health, safety, livelihoods, food and resource access, and economic security. This has led in the last few years to the development of several new initiatives, organizations, and programs designed specifically to raise awareness of gender issues among climate decision makers and take a gender-responsive approach to

policy, programs, and financing.

In 2007, the United Nations Development Program (UNDP), United Nations Environment Program (UNEP), International Union for Conservation of Nature (IUCN), and Women's Environment and Development Organization (WEDO) founded the Global Gender Climate Alliance (GGCA). The GGCA is "a unique alliance comprised of nearly 100 members—UN, intergovernmental, and nongovernmental organizations from around the world, working together to ensure climate change decision-making, policies and initiatives at all levels are gender responsive and improve the lives and livelihoods of women and men" (Aguilar, Granat, Owren, 2015a, p.2). The first task of the GGCA was to create the *Training Manual on Gender and Climate Change*, "one of the first comprehensive collections of information on gender and climate themes—ranging from the normative international policy framework to support then-nascent gender-responsive decision making, to gender mainstreaming across adaptation, mitigation, technology, and finance" (Aguilar, Granat, Owren, 2015a, p.10). In 2016, GGCA published the Gender and Climate Change literature review, which references over 600 case studies. this is the most comprehensive review of gender and climate change to date.

I.6   Gender-Responsive Climate Action Programming and Financing

Global development financing institutions such as the Rockefeller Foundation and the World Bank Group (WBG) have also begun to address the gender dimension of climate change in both their research and funding operations. Both organizations have been trailblazers for Gender and Development since the 1970s, though it appears they have ramped up their efforts in the last few years in light of new findings that previous gender mainstreaming efforts were not achieving their intended outcomes (Fofack, 2014, 84). In response to this, the WBG established the Advisory Council on Gender and Development in 2011, which serves to assist the WBG in promoting gender equality, by closing gender gaps in education, health, promoting women's ownership/control over key assets like land and finance, and enhancing women's voice and agency (World Bank Group website).

Similarly, the Rockefeller Foundation has made gender equity one of its top priorities, and identifying and addressing gender disparities a key tenet of its strategy and grant making. The Foundation "applies a gender lens to all its work, including climate resilience and agriculture, while supporting women as agents of change." In September 2012, the Rockefeller Foundation awarded a grant to the United Nations Climate Change Secretariat to launch Momentum for Change: Women for Results, an initiative to inform governments, the media and the public about "the role of women in solving climate change" (Rockefeller Foundation website).

Several climate-specific financing institutions have also begun to adopt a gender-mainstreaming approach to policy and programming. Climate financing refers to the funding of projects designed to mitigate and adapt to climate change in developing countries and vulnerable communities that "lack the necessary resources to develop infrastructure and institutions to address its effects. Such projects include renewable energy development, habitat restoration, sustainable infrastructure development, and capacity building to develop climate-resilient livelihoods practices" (Sellers, 2016, 7). The Green Climate Fund, the Global Investment Fund, the Global Environment Facility, The Clean Development Mechanism, and the Adaptation Fund, all have adopted specific gender policies and action plans within the last five to ten years. As an example, the Global Environment Facility's gender action plan includes:

> Conducting gender analysis and social assessment during project design; consulting with women as project stakeholders; including gender in the statement of the project's intended objective;

developing project components with gender targets; collecting sex-disaggregated data; and creating a budget item for gender-related activities (GEF, 2008).

The question remains, however, as to whether gender-mainstreamed financing, policies and programs are achieving their intended outcomes and impacting the women they intend to serve. Not much literature exists yet, either in academic papers or in reports published by NGOs, on the impacts and outcomes of these gender-responsive approaches. "Many in the advocacy community strongly believe that gender mainstreaming improves outcomes for women and men, yet there is a strong need to document whether and how this is true" (Sellers, 2016, 8). Evaluating the impacts of gender-mainstreaming programming should be a top priority in the next few years, in order to insure that the goals of gender-responsive climate action are being met and if not to make course corrections.

I.7   The potential of ICTs and Participatory Communication for Climate Action

This literature review examines existing research on the use of Internet Communications Technologies (ICT) programs for social change within climate vulnerable communities, with a particular focus on their efficacy and applicability for women living within these communities. What are the best practices and key outcomes of participatory climate change communication programs in "frontline communities?" Could ICTs be an effective way of amplifying the voices of women living within vulnerability communities and bringing increased visibility and voice to their experiences and needs? What additional benefits might exist for women who engage in participatory climate change communication using internet technologies such as digital storytelling? What is the benefit to society and the environment by amplifying the voices of women in these communities?

While ample literature exists on the use and efficacy of participatory ICT programs for social change and community development, not much yet exists on their use for climate change communication by and for women specifically. There is, however, ample literature on the use of ICTs with women in the developing world, as a tool not only for communication about issues impacting women but for their economic and psycho-social empowerment. This review seeks to integrate an analysis of these two applications of ICT programs: those that focus on aiding and empowering women in developing countries, and those that focus on the creation and dissemination of climate messages within frontline communities. The goal is to create a rationale for their use with women living on the frontlines of climate change, as both a tool for communication about the gendered experiences of climate change and a means of empowerment. Additionally, this literature review seeks to research best practices of these two applications, with the ultimate goal of developing an effective female-driven ICT program that empowers women to be change agents in their communities and brings global attention to the gendered impacts of climate change.

In her article entitled "ICTs in Climate Change Communication in the Pacific Islands," Usha Harris conducts a case study of a participatory video training program in Fiji that attempted to convey messages about climate impacts to local Pacific Islanders and mobilize them to take action. She argues that the inclusion of local voices in both the creation and dissemination of climate messages was essential in order to effectively reach locals about the impending threats of climate change and galvanize them to take action (Harris, 2016, p. 47). She further theorizes that ICT strategies such as digital storytelling are the most effective means of including local voices, and that it is through this this inclusive, dialogic approach to climate communication that climate action can best be achieved (48).

Harris grounds her analysis and discussion within the framework of Communication for Development (C4D) (47). This is a concept that first emerged in the 1970s and has its roots in the Participatory Action Research movement and the Pedagogy of the Oppressed championed by Paulo Freire. Freire stressed that people should be regarded as agents rather than objects, able to teach and help themselves through dialogue with one another (Freire, 1970). According to Freire, the process of raising questions and engaging in dialogue sparks a "critical consciousness" both in individuals and communities, which enables a shift from reflection to action.

This participatory approach to communication is hard to define succinctly as it can take many forms. It has been described in similar ways but with various nuances by several different theorists. In their book, *Development communication: Human change for survival,* Fraser and Restrepo-Estrada define participatory communication as

> the use of communication processes, techniques and media to help people toward a full awareness of their situation and their options for change, to resolve conflicts, to work towards consensus, to help people plan actions for change and sustainable development, to help people acquire the knowledge and skills they need to improve their condition and that of society, and to improve the effectiveness of institutions (1998: 63).

Some of the key elements of participatory communication programs include a focus on "horizontal" communication; a focus on collaborative processes, identifying solutions and developing strategies for change within the community rather than applying models of change from outside the community; and recurring cycles of reflection and action (Tufte & Mefalopolis). These ingredients, according to Tufte & Mefalopolis in their World Bank working paper entitled, "Participatory Communication: A Practical Guide," create a recipe for success in any participatory ICT program. Successful PC programs "allow for the sharing of information, perceptions, and opinions among various stakeholders and thereby facilitates their empowerment," especially those who are most vulnerable and marginalized. "Participatory communication is not just the exchange of information and experiences, it is also the exploration and generation of new knowledge aimed at addressing situations that need to be improved." (Tufte & Mefalopolis).

II.   Implications for Risk Communication

We reproduce the table from the Guidebook, below, and build on the insight that a more interpersonal kind of talk, that used by insiders known to the recipient of a message rather than neutral experts, can be more effective than routine, technical talk. The lesson was to be able to craft messages using "interpersonal" talk that is more personalized and contextual.

Formal Communication	Interpersonal Communication
Standard / Routinized Talk Bureaucratic Speech Technical Terms Public Voice Objective Tone Third Person / Neutral e.g., "The storm surge is classified as a high-hazard warning to near-shore residents, who are advised to evacuate."	Particularized / Direct Talk Personal Speech Descriptive Terms Private Voice Confiding Tone Second Person / Concerned e.g., "This flood will be worse than anything you have ever seen, please evacuate before it is too late."

There is another, related issue. Much of risk communication is expressed in language that can be referred to as "universal" talk. This is speech that is neutral, addressed to the general public --i.e., it is universalistic in the sense of not made in any particular voice (except that of the neutral, technical expert) or addressed to any particular other. This differs from another kind of speech we refer to as embodied talk. We already spoke about contextualizing a message so that it is directed to a particular community. Building on this, we can even think of messages that speak to the concerns of particular persons or groups within a community. Moreover, the message itself can be expressed in the voice of persons from the particular group. The table below contrasts universal speech and embodied speech.

Universal Speech	Embodied Speech
Neutral Disinterested Technical General Nonspecific, Anonymous e.g., "Residents of coastal communities should proceed to designated evacuation centers immediately. These centers conform to UN ISDR standards for hygiene and safety."	Situated Concerned Descriptive Specific Gendered, Situated e.g., 'To the women of the community, please move your families to the evacuation centers immediately. Do not worry, we have improved the safety and health conditions at the centers to address our concerns."

There is some overlap between tables, but the emphasis of this second table is that there is a speech that belongs to particular persons. This speech is embodied, speaking to particular situation and concerns of specific people, such as the elderly or the young. It can also be gendered. In this discussion, we focus on the dimension of gender and discuss how messages can speak to the concerns of women (especially more vulnerable women from lower-income sectors). Moreover, such messages can be made by and/or expressed in the voice of a member of the specific group.

Risk analysis and disaster risk prevention is conventionally done in the universal voice. Universal speech is associated with the expert. Considered neutral, objective, and authoritative, expert speech is also often associated with the masculine. Cultural norms and stereotypes influence how risk communication is practiced. Risk communication is associated with the expert, formal, public, professional sphere. And these, in turn, are often associated with the masculine. In many situations, the female, on the other hand, can be associated with the everyday, informal, private, domestic sphere. We will see how associating formal risk communication activity with the public/outside realm can put women at a disadvantage in contexts where they are assumed to primarily take on roles associated with the home (private/indoor).

Why should we consider messages that target (or are specifically issued by) women? One of the foremost concerns was previously discussed: that, in a number of extreme weather events in the past, women were discovered to be inordinately impacted. Risk communication, classically understood, is universal speech conveying objective, technical information. An action-oriented risk communication, however, speaks to people and moves them to effective response. To do this, it needs to address concerns that are not universal or general, and it needs to provide assurances and knowledge needed by specific groups of people.

In the following sections, we take up a number of interviews we conducted with female survivors of large cyclones and attendant storm surge from Typhoon Haiyan in the Philippines and Cyclone Sidr in Bangladesh. We analyze the interview transcripts in order to understand, in the particular terms and according to the experiences of the interviewees, two themes:

(i) why and how women in some communities may be more vulnerable to harm from extreme weather,

(ii) how messages can address the particular concerns of women in these situations.

The first theme is about analyzing the problem, and the second is about prescribing responses to the problem.

As a preview of the following sections, we point to two specific themes that stand out. The first is that the particular roles assigned to women in some communities can act to exclude them from participating in risk communication (in some cases, isolating them from vital knowledge). The second is that factors that prevent some women from going to evacuation centers or taking other measures are best identified and addressed by the same persons. Lastly, those found more vulnerable to impacts are also prime spokespeople for communicating these risks and communicating responses to them.

III.   Survivors' Interviews

We illustrate how a specific focus on gender can be incorporated into Disaster Risk Reduction research. In June and July, 2017, four female survivors of Typhoon Haiyan were interviewed by the research team in the Philippines. This was supplemented with interviews, conducted in October, 2017, of two female survivors of Cyclone Sidr in Bangladesh. The interviews covered the entirety of their experience: how they survived, those they had lost, their reflections on the experience, and their advice for others at risk. These interviews are being transcribed and analyzed as part of the Final Report for Phase 2 of the project. In addition, 10 minute video segments were prepared, with English subtitles, and uploaded onto the project's online portal, found at: https://environmental-communication.space.

This discussion only takes up the portion of the interviews that took up the specific experiences of women. The interviewer began that part of the discussion by mentioning several studies that suggested that women were possibly more affected than men (in terms of fatalities and, for the survivors, emotional trauma and difficulty of recovery).

The women spoke about how women might experience the calamity differently than men. The following summarizes key themes, and relevant passages, from the interviews.

1.   Some women can be isolated from channels of communication.

As one interviewee suggested, some women were more isolated from risk communication about the storm surge and evacuation because of physically spending time at home:

> J: News…? Of course, since they are not exposed in their communities, they are more focused in their houses, in their house, in their household to take care of the kids.. They wash clothes, so more of their chores at home, they have limited access to news.. maybe because we are used to the culture that women are just home. It's like we are contented that they are just there. Like the decision making (power) for the whole community they are already dedicating it to other people… Ok.. yes I mean if they're not busy since we have a notion that women are only at home the whole day.. But actually, it's not because, to take care of the house, it's a fulltime job. You wake up in the morning you take care of your kids, your husband and when they leave for school or work, you wash the

dishes, you clean the house, it's like your rest is to take a nap and watch tv.. Something to relax you.. Not news… So many things are done by mothers or by women who just stay.. Of course, since you are tired the entire day… you just sleep… Very dangerous since she herself who is at home she's very busy…

M: But usually with poor families, that (evacuation order) is not really what they're concerned about. Taking care of the household is their (the women's) top priority.

J: Home is considered the safest place.. So when storms come, where do we usually go? We go to our houses.. We are not even allowed to go out because it is safer at home. Those who usually go are the fathers or the male children, the mother and the younger children are just in the house. This is… there is a gender role where the male,... the male is the protector of the family.. So the women are only inside the house.. Will take care of the kids.. Take care of the house.
…
Because… of course, if we say consider barangay officials, if they spread their information like only up to where they can reach and they do not go house to house, that's it.. Limited, no longer reaching the women who are only in their houses.

Someone relegated to the home can still hear official news about typhoons/cyclones and evacuation orders while still being isolated from more interpersonal, tacit, face-to-face communication (the latter being something we identified earlier as vital to risk communication).

The above insights are related to the next, which has to do with cultural roles ascribed to different people in a community.

2.   Cultural norms can impede women's capacity for action.

Cultural norms vary across country contexts. In fact, these can show variations from community to community. In some situations, the social roles and cultural traits assigned to women within society can inhibit their ability to participate in decision-making and to act on risk information.

This pattern can exhibit itself in different ways, as heard in some of the interviews (discussed below). In the previous section, we saw how assigning women and women's economic activities to the domestic (or indoor) sphere, and men and their activities to the public (or outdoor) sphere, can isolate some women from routes of communication. Some of the interviewees suggested that the main purview of women were the church and home.

Several interviewees also discussed social norms that assign women to the domestic sphere (i.e., activities mainly inside the home and not outside in the public arena). In some cases, cultural norms (even if never made explicit) can assign official business, such as disaster risk prevention activities, to men, leaving women out of decision-making and a kind of training that comes with exposure to this area of activity. One informant put it this way:

J: "I am not aware of any presence of those that are being conducted about disaster risk reduction specifically for women, because uhmm...honestly if I think about disaster risk reduction management. The first thing that enters my mind… it's for men."

M: But the thing is, with women, it's not easy to get them involved with such things because they're always busy with household chores. You often hear them say, "Oh, that's fine! Just tell me what they discussed about." Especially if they have many children, it would be really hard for them to attend these meetings.

R: I haven't. I don't attend any of those seminars because I mainly focus on church activities. I'm focused on the church. I don't attend seminars here.

In some cases, social and cultural norms can portray women as passive, relegating decision-making to a husband or father.

J: "their contribution to the decision making in their house, and because because of because maybe we are used . because we are used of the culture that women are just home it's like we are contented that they are just there. Like that the decision making power for the whole community they are already dedicating it to other people."

M: On our part, we stayed because my husband really didn't want to leave and had no intention to transfer. Maybe because he didn't feel he knew what a storm surge was. And also, we had new things at home, because my husband was newly retired, and we had a lot of rice sacks and new car and many other new things.

Women are like that. There are frailties, they are fragile. And they follow what the husband wants... I don't like that my husband will be left alone, I won't have peace of mind on whatever will happened to him. And besides, if something bad happened to my husband, what will the children say about it? I left him alone? No. So if he don't want to go, I won't go as well. Come what may.

Z: Actually, in my case, from my family's stories, the women are not reluctant. They wanted to. But the men would like to stay. Most of the time, it's the men who would prefer to stay. Just like the case of my brother. He said that the entire neighborhood is gone and went to the evacuation center, but he and family decided to stay. So what can the wife do? What can the children do? They could not leave the father, as well. So they all stayed together.

Z: Some measures really have to be done, like empowering women. Do not treat them as weak people. Let them show their potential in the fields of business, corporations, employment… In other countries, they're encouraged to have blue-collar jobs. We can have women who are welders, fishermen, mason; they can be trained that way. That is also a way to build their potential, not just physically but mentally, as well as emotionally. To be stronger.

But there still are some who are dependent on their husbands. There still are some who just prefer to stay at home and take care of their kids and just do nothing. In fact, there still are a lot, especially those who married young and did not finish their studies, they just wait for their husbands. I think a lot of these women, actually, have died, especially when a lot of them were in coastal areas. That's the reason, probably. And these women are those who really depend on everything to their husbands. Physically, mentally, emotionally, socially – in every aspect, they're so dependent on their husbands. So these are the women who are not quite weak, but they will wait for somebody

to save them.

They (women) are not aggressive. Especially in UP. They are so mental. They won't engage in class, they won't engage in sports, they actually just prefer to sit down and study. I don't know if technology has an effect, but even in previous times, women would just sit down, gather, and just talk. They're not really aggressive. Though you will see them, unlike in other cultures. I've been to other parts of the world and I see women as young as 5 years old, already at the sea using boards. Already fighting the waves. But our girls here are not like that.

And Waray men, sometimes they have this attitude of fending off women when it comes to information. "We know this already, so there's no need to tell us." That's what I noticed about Waray people, Waray men. They're kind of arrogant.

Men, specifically. So women tend to just keep quiet and that impose on what they learn, what they know. Because if you will tell somebody – a man specifically – they will just say, "Ah, we know that already. There's no need to tell us." And then somebody will also be sarcastic. "Why will you tell them? Are you now a radio announcer?"

3. Women have to deal with multiple concerns.

The theme of women's multiple, consuming responsibilities was a recurring theme. One interviewee said that, during the first rush of water from the storm surge, many women were caught trying to save their children, as she recounted what happened to her neighbor:

R: Because firstly, women are always concerned about the welfare of her family. Secondly, they let their children out first. And women don't know how to swim. They're concerned about their children.
…That's because the water suddenly rose. Her children started to panic, she struggled to put her family to safety first, which is why more women died compared to men.
… When they (the men) found out that there's a storm surge coming, when the water rose up, they hurried to put themselves away from danger while the women, they went to save their children first.
… Just like what happened to one of our neighbors, Mana Charit. She was so worried about her husband, kept saying, "Oh my, where's my husband?" and I kept saying, "Mana Charit, climb up here quick!" So she climbed up to where we were. But in the end, she was the one who died. Her husband, on the other hand, was safe and sound in the mountains, across Rendisa. I mean, why would she keep worrying about her husband? Free yourself from worries. In the end, she's the one who got swept away by the waves when we jumped over there. She got separated from us.
… It's because women are slower and tend to panic easily. Men, on the other hand, remain calm, even in the face of tragedy. They just remain calm. Us women, we're slower. We easily panic, especially when it comes to our children. That's why more women died than men, here in our area.

Z: From my experience, during the typhoon, the difficult challenge women encountered – just like in my case – was their responsibility to the family. During that time, when Haiyan was ravaging us, all my thoughts, in my experience, were on my kids. All my family. So at that moment, while I was fighting for my life, I kept praying to God, to save my family.

R: Mana Charit. She was so worried about her husband, kept saying, "Oh my, where's my husband?" and I kept saying, "Mana Charit, climb up here quick!" So she climbed up to where we were. But in the end, she was the one who died. Her husband, on the other hand, was safe and sound in the mountains, across Rendisa.

Z: . Being a woman is really difficult. Because emotionally, we are so attached to everybody in the family. We might play the super woman, but our capacities are limited. And we also easily get frustrated at times. And if our expectations are not met, we get frustrated at once. And the task around us, for example caring for our kids and tending to other matters, also burden us so much. In fact, that's also the reason some women just easily give up.
…And the task around us, for example caring for our kids and tending to other matters, also burden us so much. In fact, that's also the reason some women just easily give up. They're tired.

M: I firmly believe that women have bigger responsibilities than that of men. Because a woman handles everything, unless she's a working lady, working for the government or any private entity. But if a woman just stays at home, goodness, there are a lot of things to be done! She does the laundry, she cooks, and at the same time she's a wife and a mother. Taking care of everything. You can't even pay money for that.

The reality of multiple cares and burdens overlaps with the phenomenon of isolation from channels of communication (by which people might gain direct knowledge about the impending event):

J: You wake up in the morning you take care of you kids, you husband and when they leave for school or work, you wash the dishes, you clean the house, it's like you rest is to take a nap and watch tv.. Something to relax you.. Not news. And of course in the afternoon you will clean whatever needs to be cleaned. Weed the grasses, wash clothes. So many things are done by mothers or by women who just stay.. Who only stay in their houses and when the kids and the husband gets home… prepare again.. Of Course, since you are tired the entire day… you just sleep… How is this… How is this dangerous when it comes to .. if they are subject to that.. Too busy.. Too.. how is this dangerous when it comes to being alert in weather events like Yolanda… Very dangerous since she herself who is at home she's very busy.. Her kids will not be watching news. Her husband as well. There is no guarantee that he has access to news so worst case scenario the entire family does not know that there will be a storm or they will know from their neighbors and sometimes information is not passed correctly… what we call here as Radyo Baktas.

4. Some women can be more physically challenged.

This idea was expressed by each of the four survivors of Typhoon Haiyan. For example, Z and R expressed the basic idea in these terms:

Z: Men, women would not survive. But there will be a great(er) chance for men to survive because they're strong. It really needs strength. They could endure more in terms of battling maybe, (doing) hard tasks. But for women, it is really difficult. I survived because I had skills in terms of gymnastics, in terms of swimming, in terms of strength. I have good enough reserved strength inside and I have willpower. Another thing is, once if you're in the water, you will really be

overwhelmed by fear. You will really give up. I did. I gave up when I could not breathe anymore. I just prayed for miracles, and it happened. My having survived is due to a miracle. I may have all the skills in the world that I needed but I was really at the brink of death. Sure, physical willpower will save me. It was a miracle for me. But for the others, it really needs a strong mind, willpower to survive. Without it, you will be dead. In the case of Coleen, it was a miracle she survived. She was unconscious already, carried by the water. In the case of the girl, she will not survive because she was in the water. Luckily, she was on top of a cabinet. Some of the women, I heard, died because they really don't have the skills and it's really very hard once you're under. You will panic and no more. You will just give up easily.

R: And women don't know how to swim… Yes, she doesn't know (how to swim). Her children started to panic, she struggled to put her family to safety first, which is why more women died compared to men. For example, me. I know how to swim. Just imagine, from here to there. Just like that, when I crashed over there, with just a single wave, my clothes were even…
… But majority of (the men), especially here in our area where most people are divers, people who catch fish. They're good. Catching fish is their livelihood.
… The men, yes. That's why more men survived here compared to us women. Because the men here work as anglers, fishermen, so they know how to swim. Meanwhile, the women don't know how to swim. Such is the case.

(And referring to women's livelihoods) Nothing. They just watch over their children. Help their children prepare for school. Majority of them are unemployed. I'm one of them, but then my daughter is all grown up.

Because the sentiment appears in each of the Haiyan interviews, we need to take seriously the idea that some aspects of vulnerability can be, at least in part, related to physical strength or skill. To the extent that there might be truth to this sentiment, then this should suggest some appropriate modes of intervention. At the same time, to the extent that the truth lies not so much in physical differences but in common perceptions of this (which can affect one's confidence to react to a situation), then we need to better understand how these sentiments are reinforced. As one interview put it, one does not have to believe the gender roles or stereotypes, as the interviewee says below.

J: This is… there is a gender role where the male,... the male ar the protector of the family.. So the women are only inside the house.. Will take care of the kids.. Take care of the house. And maybe because there is a generalization that … sorry i just can't take to say that women are… men are stronger than.. I'm sorry..
…But there is a generalization that men are stronger than women. And in my own opinion they are just equal.. Women.. Women can do what men can.. Women can protect their families, same as men…. Women can also provide for their families.. Same with men.

In the next item below, we discuss one possible reason behind the almost universal sentiment of the physically disadvantaged victim.

5.   Some describe their own capabilities one way and women, as a general category, another.

There are differences between one's report of one's capabilities to deal with events and stereotypical

characteristics attributed to women in general. In several of the interviews, the female informant would state that women, in general, were weaker and less capable of dealing with extreme events. However, these same interviewees would report the opposite when speaking about their own selves. One way to possibly explain this discrepancy is that, when talking about a general category, interviewees may be repeating conventional wisdom or popular stereotypical norms. On the other hand, when asked to talk about specific people, especially themselves, they describe real persons with specific attributes. The following quotations illustrate this.

> M: …As far as strength is concerned, and also the emotion is concerned, women are weaker that men. Because women, our strength is limit. And the mindset of other women are weak. That I do now know, because I was the one who helped my husband and hold him by the neck for him to stand up. Maybe it depends on the woman. Because I myself is somewhat manly. Maybe I was given the strength by the Lord and the presence of mind, because both my husband and I had presence of mind. So, our fear, we overcame it. It was scary but we persevered to survive. For the women, I cannot comment on behalf of them. But for me, I survived.

> Z: Actually, since women are weaker vessels, I believe there's truth to that statement. Women are of weaker vessels. During that time, anyone would not survive. Men, women would not survive. But there will be a great(er) chance for men to survive because they're strong. It really needs strength. They could endure more in terms of battling maybe, hard tusk. But for women, it is really difficult.

but, in contrast to characteristics attributed to others, her own account reflects empowerment:

> I survived because I had skills in terms of gymnastics, in terms of swimming, in terms of strength. I have good enough reserved strength inside and I have willpower…I went on top it like a surfer. I've never surfed in my life but its good that I love surfing I know what to do on top of a wood, I know what kind of position, so I was like surfer like this, so I had my balance, I had a perfect balance, I said oh my god, so I was a superwoman, I was superman, I now I am now I am a surfer so I said but the wind is still the wind and the waves kept coming and I said oh my god this is tsunami after this I'm safe already so I'm fine but what I'm afraid of of then is oh thank god I'm safe now… I saw I saw a tube, black tube this this wide this wide its good I had knowledge in gymnastics I rode I rode on it like a horseback riding girl I rode on that I actually every time I was relying on the waves… .but maybe because we had you know, we had that super strength already because of adrenaline, because were strong that we could not feel anymore the strength of the wind because we were already empowered by that adrenaline within us we could feel anymore the strength of the wind.

What this suggests is that we consider whether, in fact, that there are significant physical differences across gender or that, in reality, what is disempowering is the prevalence of cultural norms reinforcing the idea that women as less capable than men during these emergency situations.

6. Some women can lack the confidence to deal with these events.

Some thought that differences between men and women were not about (or not only about) the physical but the psychological.

Z: Yes, it's very natural that women would give up easily and will have difficulty surviving. Men have the tendency to play with it, even. "I can handle this, I can manage this. I will not give up". But for women, when faced with such kind of ferocious strength, ferocious weather, and scene, they would give up easily. I did when I was trapped already. I gave up. I said, this is my last. But, I prayed. So all that was left in me during that time when I gave up was a miracle from God. But afterwards, I was able to recover. I'm by myself again, but praying to God, to help me. But as we heard before, you have to do your thing, and God will have mercy on us. So I really had to fight for my life. I really had to do everything to survive, not to give up.

…Actually, until now. Whenever I pass by that area, my tears would run down. I'm not totally healed. So every morning I would pass by that area, I would remember. And so, what I do, before, I would stop looking around. So when I am near here, it's good that I have a cellphone so I would be busy with my cellphone.

…Otherwise, every time that I would see the bridge, I would see where I was, my tears would run down. Being inactive, being passive. Just waiting for miracles to land. Just waiting for a knight in shining armor to save them.

And this speaks to the need to foster more confidence and empowerment among the vulnerable, such that women feel they can do things about a situation (i.e., a sense of agency).

7. Messages should speak directly to women's situations, such as apprehension over evacuation centers.

Another opinion found in most of the interviews (including the two accounts of Cyclone Sidr) is the negative perception (and realities) of evacuation centers and the great intertia working against leaving one's home. First, there is the common sentiment that one is most secure in the safety of one's home:

J: Because for all of us.. Let us say in a family.. Home is considered the safest place.. So when storms come, where do we usually go? We go to our houses.. We are not even allowed to go out because it is safer at home. Those who usually go are the fathers or the male children, the mother and the younger children are just in the house.

… It is typical an answer for the residents here as we are used to typhoons so it's like we already knew what we needed to to. So basically, the preparations that we made, since we did not evacuate knowing that our house was concrete… we knew our house will be able to withstand the wind.. The rain ..and our place.. Our neighborhood doesn't get flooded.. Like ever since we move here we have not yet been flooded.

The problem with the common notion of "home = safe" is that, while this may have proven true in previous circumstances, this might no longer hold during an extreme event that one has never encountered in the past.

Another common sentiment that was expressed by many is a general inertia against evacuating, whether the women herself was unwilling, or the spouse or parent.

M: …my husband really didn't want to leave and no intention to transfer. Maybe because he didn't feel what is storm surge. And also, we had new things at home, because my husband was newly

retired and we had a lot of rice sacks and new car and many other new things.

…if there is an announcement, you, as a mother, should prepare the things you will bring for evacuation. And if your husband refuses, you should really persuade him to transfer, and if still he doesn't want to, transfer your kids instead. This time, you need to be on a safe place. They should be ready, they should pack what need to be packed. So if in case something happened, they are already in a safe place.

…One way to do this is for the government to have a female representative who can spearhead this initiative, and have women in her team who can help other women in a community in preparing for disasters. You see, women's roles are limited. Just limited to "womanly" duties like household chores. Very domestic, so to speak.

Z: They should have given us fliers like the storm surge is like this it will wipe off everything on earth… Maybe workshops should cover different aspects on how to rescue the people around you during the time of calamities. Also, the skills that need to be done. I mean, how do you move in times of danger; when to move in times of danger; how to help others in situations like that. Because in my case, we were at a loss. During that moment, we didn't know what to do, so we were just worried about saving ourselves.

J: We were still at our ancestral house, our grandmother's house in Pawing, Palo. We were all there because… we were having Dinner because it was our last night with our relatives from Iloilo . Then our uncles, my uncles, my aunts, they said.. The told our father.. "Don't go home, stay here for the night and leave tomorrow.. " they said "the water will rise.. " like that.. And that this storm is different, that it will be not like any other. And we.. father said.. The water will not rise because this is not the pacific ocean, this is not an open sea. We will just go back because.. We are more .. more comfortable if we are here at home..

Some interviewees underscored the need to remind people that, whatever apprehension they have about leaving the house unwatched, it is a small pricec compared to life and health. But, as one respondent put it:

J: For other people you can say that it is just material thing.. It is just a house, we can get that.. But they do not understand that it is not just .. its its not just a house.. It's the it's the love you put into building to make that home.. To building that house and making that into a home.. Because you did.. You worked hard for that for you family.

8. Evacuation centers pose particular concerns for women.

Several interviewees pointed to real (and perceived) problems with the evacuation centers, beginning with the general discomfort of staying in the center:

M: But apart from this neighborhood getting used to typhoons, they feel that it's better to just stay home. I mean, people listen now and they immediately go to evacuation centers whenever there's a storm warning, but when they're there, of course they don't feel at home. It's hard to stay in evacuation centers. It's not like their homes, where they can cook as they please, for example. In evacuation centers, it's easy for you to get sick, too.

Female survivors of Cyclone Sidr point to multiple concerns regarding evacuation centers as among the reasons people do not evacuate. Along with the physical condition of the centers, harassment was also cited as a problem:

> S: We did not go to the shelter because the shelter was in a bad shape. We had to face hardship for not taking necessary preparation. I could not eat for 2 days. I only had wet "chira" (a form of rice) bought earlier from a store…Another reason is, the shelter is risky for us, adolescent girls. The shelter is also occupied by other boys of the same age or older. They look at us in a bad way, harass us or try to touch us, which is why parents are reluctant to take adolescent daughters to the shelter.

9. Faith can go hand-in-hand with, instead of displacing, action during a situation.

Religious faith can be associated with inaction. One survivor recounted her experience with Cyclone Sidr in Bangladesh in the following way:

> S: …no preparation was taken. I had my grandmother living with us. She is old and had seen many floods in her time. She said, "God will take what God created, no need to take any preparation."
> …I will try to convince my neighborhood (to act regardless of) the prevalent wisdom that, "the one who gave flood, will end flood." I will tell others to start taking preparation as soon as they get warning signs. We will take preparation and tell our neighbors to go to the shelters.

There is the conventional wisdom that faith can lead to a kind of fatalism, which can prevent someone from taking positive action to save one's self. However, in some of the accounts, the act of entreating one's maker seems to keep the beleaguered person fighting and actively dealing with the situation. Consider how one survivor recounts how faithful appeals seem to be part of an active response to a situation that, otherwise, would overwhelm a person.

> Z: I had to release myself from the trees because its down there… so I was already on my own. I said Lord, I will not survive, some more debris are coming over …I said give me give me please a piece of wood to hold on to. I saw one but because of the wind and the waves again coming strong [that] it would go with the wind, I said, Lord, I need something bigger, and then, I was answered, and He sent me two big wood (pieces of) plywood like that I said, oh my God, you are really awesome, you are so good, and then I held… I said, Lord help me, I need to be somewhere, somewhere on top of a building that was my thought I need to be on top of a building please help me so when I look back I saw a building without anymore roof but the I could I could see I could see the wall and their terraces, terrace,.. oh thank you, Lord, this is my opportunity.

There is also a sense, one gets from some of the transcripts, that faith can be empowering and can support one's belief that one is not alone in the situation.

10. Women can be more resilient.

Several interviewees expressed the opinion that women might, in general, have more coping resources, than men, for example:

Z: I saw some women in San Jose, they were in a group, already drinking tuba. When I conducted a home visit for my students, for the UP STFAP – STS now. And I saw some women, they were drinking, they were gathering. They lost their houses, they lost a lot, and some were parents who lost kids. In fact, one mother lost a kid. She's a teacher in San Joaquin. Her two sons studied in UP, one is now teaching there. She lost a son, and she's coping. I mean, it was very easy for women to recover. But for men, I saw, it's difficult. Even one of my colleagues, he had to leave the place because he lost his wife and two kids. He said, "Ma'am Sen (not sure about this), I cannot come to work sensibly and sit here and remember them being here. So I had to go somewhere. I had to be relocated. So he transferred.

…Maybe because women are more used to accepting things as they are. It happened, we can do nothing about it. But for men, they have to recover things. Losing somebody, to them, is really very painful. Women can (more) easily adjust, maybe. I think the adjustment of women is quicker and easier. But for men, it's really very difficult. That I think so, emotionally. For them, it is. So, physically, men may be a stronger vessel but they're weak when it comes to emotions – handling emotional problems.

…It's because I have seen women who lost husbands and children, and they were able to go on and still smile. Have that smile on their face. They were able to continue for the sake of those that were left to her. So, they have that easy patch on their scratches. They can patch it up easily. But for men, it's really very difficult. That's because, maybe, men may not show their emotion, but maybe they think of it more deeply.

11. Decision-making and policy-making for disaster risk prevention can exclude women.

Some interviewees pointed to the lack of awareness among decision-makers of the specific concerns faced by the most vulnerable. One put it this way:

M: Because mostly, the barangay (local district) officials are men. And so they usually call the attention of men (in the community). That's why earlier, I said there should be more women to represent and spearhead a community and encourage other women to get involved. Raise awareness about their roles, their duties and responsibilities in case of disasters. But that doesn't exist here in our community. In Tacloban, I'm not really oriented with it because I'm not from the city. But in our own community, there's really no involvement among women. Otherwise, I'd volunteer. Being a retired principal… No, there's no encouragement. The thing is, whenever there's a meeting among officials, it's nothing but politics. There's no deeper involvement, particularly for women... But the thing is, with women, it's not easy to get them involved with such things because they're always busy with household chores. You often hear them say, "Oh, that's fine! Just tell me what they discussed about." Especially if they have many children, it would be really hard for them to attend these meetings.

Social roles can affect involvement in public processes, too. As one respondent said: " I don't attend any of those seminars because I mainly focus on church activities. I'm focused on the church".

This suggests a need for decision processes to be more inclusive, as well as to have the most vulnerable to have women speak for their concerns at these forums. One possible strategy could include having members of these communities act as spokespersons, delivering messages directly those most affected:

M: Yes, it will be more effective because you will somehow have similar vibes. You will share the same feelings, same thoughts. For instance, you can both take on the role of mothers. What should be done? Because you see, it's different how a man communicates with a woman, and how a woman communicates with another woman. There are certain restrictions. Gaps.

_____

What did we learn from the interviews, in addition to the insights already gained from the literature? First, even when the interviews confirm insights in the literature, we learn how these things appear in practice. It is one thing to learn about the claim, in general terms, that women can be burdened with multiple cares and to hear, from the informant, how thoughts about others take one's thinking away from responding to the calamity at hand with action. It is one thing to read how religious faith can give a person a certain fatalism and another to read a first-account of how imploring the almighty pushes the person to brave acts of self-preservation, armed with the belief that she is not alone.

We also learn how factors act, in real life, to convince someone to stay home and ignore an evacuation warning. In the case of Typhoon Haiyan, there was no such norm like a 'purdah' that fixed a woman's place to the home. Instead, there were multiple factors acting in concert, each of them further putting in place the inertia against leaving one's home. There was some cultural predisposition to regarding women's roles as pertaining more to the domestic, revolving around family life. But this acted in concert with predispositions to view the home as safe harbor, to rely on one's experiences with past typhoons (which one survived by staying at home), and to stay with a spouse or parent who refused to leave. These factors did not seem to act directly upon the person, as in the case of purdah, but through a cognitive route, where there are many reasons or forces that pull the women back inside the home. The effect of having multiple cares (e.g., keeping the home safe, the children fed, etc.) act through this cognitive route, as well, and add to the degree that a woman is distracted away from the crisis at hand, adding yet another factor keeping the person from evacuating.

In other words, there are many reasons for a woman to stay home and not evacuate. All of them can all act in concert to tip the decision toward the default (staying in place), which is the path of least resistance. Or, among all these factors, perhaps one can emerge as a dominating factor. On the other had, there is only one reason for her to leave the home. It is, for sure, a very important reason (staying home may mean perishing), but it is mitigated by the fact that this scenario is distant or improbable in one's mind. One has never been engulfed by a storm surge before. On the other hand, the reasons to keep her home are immediate and undeniable (e.g., an unwilling husband). In the cognitive sciences, this is known as the small probability, large consequence effect. For negative consequences, risk aversion amounts to leaning more toward the low probability outcome and away from the more certain one (Kahneman and Tversky, 1979).

Also, we should note that all of the respondents did, at some point, hear a warning and the order to evacuate (some by megaphone). But, for some, the message was not relevant, as people relied on their own intuitions that their homes were safe against typhoons and that typhoons were common occurrences. Invariably, the message (that a strong typhoon was coming, and that people should evacuate) did not distinguish itself from situations in the past. This was compounded by the warm, sunny weather and calm conditions the days leading up to the typhoon. As one respondent put it: "they should have given us fliers like the storm surge is like this it will wipe off everything on earth."

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Scholars, aid organizations, and others are beginning to spend more time and effort analyzing the gender dimensions of vulnerability. There is a need to begin translating the emerging knowledge into practice. Even while at least some programs are becoming increasingly 'gender-informed', they need to become more 'gender-actioned'. How might we improve emergency preparedness and response programs to better address the situations of the most vulnerable? How might decision-making and policy setting be more inclusive, allowing the hitherto excluded to participate or at least be represented? What follows is a preliminary, tentative attempt at working out the implications of the analysis for risk communication.

IV.   Improving the Risk Communication Process

In the previous reports (i.e., Guidelines, along with Addenda A and B), the limitations of official agency storm and surge warnings were discussed. Official memoranda can be assumed to be 'business-as-usual' and dismissed as routine communication. This poses a problem, especially in unique, once-in-a-lifetime events such as a record storm surge, for which routine communication may not suffice. In the interviews conducted herein, all of the Typhoon Haiyan informants had hear agency warnings and evacuation orders prior to the event, but none of them evacuated.

One of the problems with agency communication is that these are written by experts who are 'insiders' who know the background detail that lies behind a brief technical note. Terms such as 'storm surge' or 'tidal flooding' do not need to be spelled out for an expert, because insiders know the meaning behind official language. But for a community resident, who is necessarily an 'outsider' to the technical agency, meanings have to be spelled out, and warnings need to provide vivid descriptions that will help people imagine what is to take place. Several interviewees shared their frustration with official communication, saying that this did not directly tell people exactly what to expect.

Another problem with technical, official communication is that people may not feel it is directly relevant to them. One does not know that a message, which one assumes is speaking to the entire country or region, has particular, direct, and immediate significance for her. Part of the perceived non-relevance can stem from the neutral, objective language used in risk communication. It is one thing to hear that "storm surges can pose a threat to life and property" and another to be told that "you and your home will be struck by the storm surge". One possible remedy is to have at least some of the messages be written in the voice of someone you know telling you directly what to expect and what to do.

In one of the interviews discussed above, one of the women talked about speaking directly to mothers, to tell them to ready their family for evacuation. They should be told, moreover, that if the husband refuses to leave, that they should force him to do so and, if he still refuses, that she should take the children and leave. This brings up one possible reform, which is to design messages that speak directly to members of a vulnerable group.

In the Guidebook and attached Tutorial, we discuss ways to personalize and contextualize risk communication messages. In the same vein, messages can be written in the embodied voice of someone from the target group, in contrast to the traditionally universal, neutral text. Such 'direct messaging' need not displace routine, technical messages but, rather, complement them.

The first lesson for those involved in risk communication and disaster risk prevention is to be aware of the often hidden biases that can put women at greater risk to harm from extreme weather events. In some cases (though we caution, one can never generalize), these result from social and cultural norms that need to be identified and explicitly taken into account. These are some of the possible issues:

▪ Social-cultural norms and/or economic conditions may work to screen some women from direct contact with lines of communication regarding storms, evacuations, and other public information. For example, some may spend most of their time indoors, too consumed with work in the domestic environment to be part of the activities (including communication) occurring outside the home. For this reason, measures have to be taken to spread messages more widely and deeply into the community. Similarly, there may be norms about some groups being more passive, dependent, silent, trusting --the point being not to critique culture but to suggest that such norms need not preclude agency (which is a person taking action in response to a situation).
▪ The situation of the most vulnerable (e.g., low-income, non-working mothers) may be thought to be particular or local interests, details that can be left out of general warning messages. But the danger is that the messages do not speak directly to certain groups in the community and can appear not to be directly relevant to their situation. Messages need to speak diirectly to their situations and concerns. For example, concerns by nursing mothers about sanitation and privacy in the evacuation centers need to be part of the messages communicated.
▪ Program managers in the area of disaster risk prevention generally strive to increase participation. But inviting more people to participate is one thing, and actually having their voice spoken and heard is another. Most of all, even while women from communities at risk are enjoined to participate in emergency preparedness seminars, there may not be enough opportunities for them to actually be part of program planning and decision-making. And when those most at risk are able to voice their concerns, there can be a tendency to qualify their remarks and regard them as different or unusual (a 'minority' view). For this reason, the perspectives of those at risk should be given priority, and their preferences deliberately integrated into program planning.
▪ For similar reasons, statements from people who are regarded as 'outsiders' to the official, public forums might be assumed to be subjective, non-technical, and informal --i.e., inferior to expert language. One respnose to this is to increasingly replace technical, 'agency' language with 'everyday' language in risk communication and emergency response planning.

The idea of 'direct messaging' needs to be translated into practice. In workshops held in the Philippines and Bangladesh, participants did the exercise of composing messages that were interpersonal, context-specific, and direct. In some of these examples, the voice takes that of a representative speaking to concerned women in the community. The following are samples of the messages emerging from the workshops.

"Nay (Mother), do not worry (about evacuating). Your life is more important than your possessions, these things can easily be found/replaced. Also, there are security personnel assigned to guard your homes."

"Nanay (Mother), as the protector of your beloved family, their safety is in your hands. The approaching typhoon is expected to be very strong and dangerous; it is not like any of the usual typhoons you have experienced."

The following table shows these and other particular messages (from the workshop held in Tacloban City, Philippines, in October, 2017) crafted by workshop participants.

Sector	Waray	English Translation
Women	Nay, ayaw kamo kabaraka, mas importante an kinabuhi kesa han mga material nga butang, madali la po ito matad-an ngan usa pa, mayda assigned security personnel nga magbabantay.	*Nay**, do not worry (about evacuating). Your life is more important than your possessions. These things can easily be found/replaced. Also, there are security personnel assigned to guard your homes. *Nay is derived from the word *nanay*, the literal translation of which is *mother*. However, in this context, *nay* can refer to an older woman.
Youth	Mga budoy, mga uday nakita man kamo hit mga ginsasalida ha news yana. Nagtitikakusog na it mga bagyo. Diri na in pareho han kahadto. Ini nga tiarabot yana paru-pareho ini han Yolanda o bangin mas makusog pa. Pan-bakwit na kamo para maging talwas na kamo.	Boys and girls, you've seen the news. Typhoons are becoming stronger. The approaching storm is not like the previous storms you have experienced in the past. This storm will be like Yolanda or even more powerful. For your own safety, evacuate immediately.
Older Persons	Lolo/ Lola ma evacuate kita yana kay may-ada makusog na bagyo na maabot mangin magka may-ada storm surge, maguba an aton balay.	**Lolo/lola*, we need to evacuate now because there is an approaching typhoon. The typhoon may cause a storm surge that can destroy our homes. **Lolo/lola* literally translate to *grandfather/grandmother*. However, in this context, *lolo/lola* refers to elderly man or woman.

Persons with Disabilities	Tay/Nay… Ayaw kamo kabaraka kay an evacuation center nga iyo kakadtuan in guin-andam nah in maupay para maisugarado nga talwas nga komportable kamo. Mayda guihap mga opisyales hit barangay/ DSWD nga mabulig para hit iyo mga kinahanglan.	*Tay/Nay* Do not worry because the evacuation that you are assigned to has been prepared to ensure your safety and comfort. There are also officials from the barangay and from DSWD (Department of Social Welfare and Development) that can assist you regarding your specific needs. *Tay/Nay* is derived from *tatay/nanay* which mean *father* and *mother* respectively. This may be replaced with *sir/ma'am.*

Along with delivering messages that speak directly to the target group, there is suggestion (made by one of the interviewees) of having spokespersons from the group speak directly to the latter --e.g., women speaking directly to women from the same community. This is the model of the kindred spokesperson.

Taking the logic one step further, we also conceive of new practices where the impacted persons speak directly to others about their experiences. In this project, we created a number of digital narratives, wherein female survivors from the Philippines and Bangladesh (in fact, the interviewees) speak directly to the camera. The idea is to simulate face-to-face communication, which transmits directly relevant knowledge from an identifiable and trusted other. These digital narratives can be used in risk communication preceding an extreme weather event or for disaster risk prevention workshops. These can be found at the following site: https://environmental-communication.space.

Appendix A: Digital Stories of Women on the Frontlines of Climate Change

Box 1: Stories from the Frontlines of Machakos, Kenya
Learn how women in **Machakos, Kenya** are being impacted by drought, and how walking for long distances poses threats to their health and safety. **Women's Enterprises International** is working with women in Machakos to "learn to earn and save money to solve the water problem together." ☐ Watch here: https://vimeo.com/110295122

Box 2: Stories from the Frontlines of Kabngetuny, Kenya
Learn how women like Zeddy Rotich are adopting **Climate Smart Agriculture** practices the **Fairtrade Kabngetuny Farmers Cooperative Society** - "Women in Coffee" program embraces gender mainstreaming in its operations ☐ Watch here: https://vimeo.com/channels/994465/145641417

Box 3: Stories from the Frontlines of Malaysia's Tropical Forest
Learn more about how women in **Kayan and Penan tribes** in the **Borneo Tropical Forest of Malaysia** are learning to cope with and adapt to extreme flooding in the short film, **"Women of the Forest: The Hidden Burden of Climate Change."** ☐ Watch here : https://vimeo.com/163574307#t=393s

Box 4: Stories from the Frontlines of Bangladesh
Learn how women like Mamtaz Begum in the Bay of Bengal are coping with rising waters and frequent typhoons ☐ Watch here: https://vimeo.com/123518175

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