CHAPTER 1

Introduction

Stephenson (1994) stressed that development and disasters are closely linked, and disasters can both destroy development initiatives as well as create opportunities. Even as this was underscored, the cause and effect relationship between disasters and socio-economic development was not given prominence in the past. It was further observed that disasters were seen in the context of emergency response rather than as part of long-term development programming (UNISDR, 2007). Overtime, the effects of disasters can seriously degrade a country's long-term potential for sustained development and cause governments to substantially modify their economic priorities and programs (Stephenson, 1994; Stephenson & Dufrane, 2002). Similarly, Harvey (2005) emphasized that the social and economic cost of natural disasters has increased in recent years. Aside from disruption of the community's

livelihood, disasters have long-term repercussions in growth, development and poverty reduction (Benson & Clay, 2003).

The United Nations estimates that the consequent economic loss of the yearly occurrence of disasters worldwide is $520B, and this deplete public funds that can be used to provide basic services and social protection. The Office of Civil Defense-National Disaster Risk Reduction Management Council (OCD-NDRRMC) report in 2017 revealed that the economic cost of natural disasters in the Philippines reached Php6.446B due to 22 tropical storms, flashfloods and intertropical convergence zones (Cordero, 2018). Damages caused by flashfloods was estimated at Php104,229M, excluding damages to private properties, commercial activities and foregone revenues from hundreds of lives lost as a result of the calamities.

UNISDR likewise estimated that the cost of disaster in the Philippines accounts for 0.8% of Gross Domestic Products (GDP) since the effect is mostly on production of goods and investments, translating to imbalance in payments, employment, exchange rate and inflation (Cordero, 2018). With the heightened awareness of risks, governments must make the necessary actions in developing disaster-resilient communities (Bacasmas, 2018).

The UN Office for Disaster Risk Reduction (UNDRR, 2019a) defined Disaster Risk Reduction (DRR) as "*the concept*

and practice of reducing disaster risks through systematic efforts to analyze and reduce the causal factors of disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of disaster risk reduction. Disaster risk reduction does not only include the disciplines like disaster management, disaster mitigation and disaster preparedness, but, greatly a part of sustainable development. In order for development activities to be sustainable they must also reduce disaster risk."

Thus, disaster risk reduction (DRR) involves every part of society, every part of government, and every part of the professional and private sector (UNISDR, ND; UNISDR, 2007). Countries can build resilience to disasters through DRR, however this begins with an effective disaster risk governance in a country, and requires effective mechanism for coordination within and across sectors involved (Kerstholt et al., 2017; Forino et al., 2017). Mainstreaming DRR has been a goal for sustainable development (UN-ESCAP, 2017) and that it allows opportunities for the continuity of development initiatives (Kellet & Karavani, 2013; Oxfam, 2019). Moreover, unsound development policies will only increase disaster risk and disaster losses.

There is an extensive body of literature on disaster management that emphasize the role of risk communication towards risk reduction (Comfort et al., 2004; Comfort et al.,

2004; Mercado, 2016; Pidgeon et al., 2003; Kasperson et al., 1988). However, studies on this aspect are mostly on addressing the different stages of the disaster management cycle, analyzing social vulnerabilities, and/or operationalizing models as intervention mechanisms. There is a gap in relevant works that investigate the integration of risk communication and disaster management, specifically on risk communication as fundamental to risk reduction. Hence, this will focus on risk communication management as an integration of risk communication and disaster management towards risk reduction strategy for flood-vulnerable communities.

Traditional approaches to risk communication are being used by disaster managers for community education (O'Neill, 2004). Using the traditional top-down approach for awareness and preparedness are useful but this may not take into consideration the context-specific risk perceptions of the community towards disasters, as well as determine the capacities of the communities to respond to these risks. There is a need to shift from an emergency response to a "proactive risk management" approach that integrates a participatory approach and community safety as a total system, with all the elements involved being integrated into the entire system. Using risk communication as a tool for effective risk management at the community-level can enhance preparedness and reduce risks triggered by flooding.

Moreover, disaster preparedness intervention is relevant at the level of communities since it has the capacity to collectively identify problems, take decisions and act on them (Allen, 2006).

The Philippines has two (2) national policies that can be referenced for disaster risk reduction management: (1) the Climate Change (CC) Act or RA 9729 of 2009, and (2) the Disaster Risk Reduction and Management (DDRM) Act or RA 10121 of 2010 (RP Gazette, 2012). These policies highlight the role of the local government units (LGUs) as frontline agencies in the formulation, planning and implementation of climate change and disaster risk reduction plans in their respective areas. However, the barangays play a vital role in disaster risk reduction and, therefore should be empowered to initiate a participatory approach in developing the awareness, preparedness and mitigation strategies of the community. The inputs based from the experiences and local knowledge of the communities can be integrated into the DRR plans, to capture the specific contexts of the different localities in risk communication management. The paradigm shift on disseminating communication protocols, risk, and messages from top-bottom to a localized and participatory approach encourages a more transactional flow rather than a linear flow of communication.

Disaster risk reduction remains to be a challenge for everyone and requires a risk management approach (Twigg, 2004). For one, the literature on hazards and disasters have varied technical terms and jargons. These terminologies can be classified as: (1) *disaster terminology*, referring to nature and elements of disaster. These include *disaster* (damage and disruption that affects society's capacity to cope), *hazard* (potential threat to humans and their welfare), *risk* (the likelihood of a specific hazard occurring and its probable consequences for people and property), *vulnerability* (the extent of effect of hazard related to a person, group or socio-economic structure's capacity to cope, resist or recover from its impact); and, (2) *disaster management terminology*, referring to the terms on the components of disaster management that includes *mitigation* (any action taken to minimize the extent of a disaster or potential disaster that can take place before, during or after a disaster, but the term is most often used to refer to actions against potential disasters. Mitigation measures are both physical or structural (such as flood defenses or strengthening buildings) and non-structural (such as training in disaster management, regulating land use and public education); preparedness which are specific measures taken before disasters strike, usually to forecast or warn against them, take precautions when they threaten and arrange for the appropriate response (such as organizing evacuation and

stockpiling food supplies). This falls within the broader field of mitigation; prevention is for activities to ensure that the adverse impact of hazards and related disasters is avoided. As this is unrealistic in most cases, the term is not widely used nowadays. However, the more general term being used is "disaster reduction" or "disaster risk reduction" to mean the broad development and application of policies, strategies, and practices to minimize vulnerabilities and disaster risks across society through prevention, mitigation, and preparedness. Disaster risk reduction management, on the other hand, covers the implementation of preparedness, mitigation, emergency response, and relief and recovery measures. Disaster cycle (Figure 1) and disaster management (Figure 2) models illustrate the link of these concepts with one another through diagrammatic presentations.

Figure 1

Disaster Management

Figure 2

Disaster Management Cycle
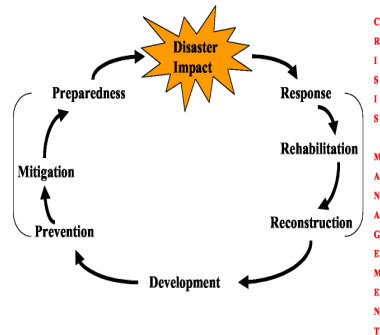
Disaster Risks and Development

Disasters are a major threat to development. The UNDP reports between 1992 and 2001 revealed that developing countries are hit hardest by natural disasters, including flooding (UN, 2005). The imbalance of impact between developed and developing countries is due partly to geography and the increase of economic costs of natural disasters are attributed to population growth, change in land use patterns, migration and unplanned urbanization, environmental degradation and global climate change (Harvey, 2005). Many of the developing countries, including the Philippines, are highly prone to disasters such as earthquakes, volcanic eruptions, landslides, typhoons, droughts, hurricanes and floods. Stephenson (1994) argued that effects of disasters can seriously degrade a country's long-term potential for sustained development, development requires institutional and structural transformations to speed up economic growth, reduce levels of inequality and eradicate poverty. Disaster Risk Reduction Management (DRRM) approach, therefore, must consider a systematic approach (Twigg, 2004). Incidentally, the World Bank Development Committee stressed that natural disasters can be a serious impediment to poverty reduction and affect poor and vulnerable people the most and its impact is on the rise. Disasters triggered by natural hazards are killing more people over time and costing more, a trend revealed by the date

collected by the Center for Research on the Epidemiology of Disaster (CRED) in Belgium (EM-DAT, 2005 as cited in O'Brien, Keefe, Rose & Wisner, 2006). Thus, the poorer nations are usually the most affected. As UN Secretary General Kofi Annan stated: "communities will always face natural hazards, but today's disasters are often generated by, or at least exacerbated by, human activities" (United Nations, 2005).

Disaster risk management refers to both mitigations as minimizing effects of disasters, and preparedness as ensuring the readiness of the society to forecast, take precautionary measures and respond to impending disaster (Christoplos et al., 2001). Mainstreaming disaster risk management has been the focus of some vulnerable countries in the last decade. Bello et al. (2017) profiled five selected member states of the Caribbean Development and Cooperation Committee that includes the Bahamas, Belize, Dominican Republic, Haiti, and Jamaica looking at the national development plans and how they integrated DRM policies and climate change adaptation strategies. In Australia, climate change adaptation and risk reduction strategies are the highlight of DRM as projected in their strategies, policies and plans (Forino et al., 2017). Specifically, the Philippines, being a developing country considered as highly vulnerable to flooding has devoted efforts and initiatives to help build disaster-resilient communities through different approaches in risk reduction management

(Dela Cruz at al., 2010). Current approaches on risk reduction management specifically focused on flood risk management (Bubeck et al., 2018; Wang et al., 2018; Vin Hung et al., 2007; Baan & Frans Klijn, 2004).

Disaster Risk Reduction and Management in the Philippines

The country's high exposure to disasters is often attributed to geo-physical characteristics which predispose the country to natural hazards like strong typhoons, earthquakes or volcanic eruptions. Natural hazards leave catastrophic results when affected communities are vulnerable and do not have the capacity to cope with their physical, socio-economic and psycho-emotional impacts. (Dela Cruz et al., 2010). Thus, there is a need to uphold and implement DRR initiatives to reduce the harmful impacts of disaster to the affected community. Reducing the risks can be a better alternative to disaster rehabilitation and recovery.

In the Philippines, disaster risk reduction policies and institutional mechanisms exists, however, the effectiveness of such policies and mechanisms is considerably restricted, hence the pressing need for a strategic approach for improvement and enhancement by emphasizing DRRM Law. To address this concern, Saño (2010) documented the experience of a civil society network advocating for a national law on DRRM.

Results of the Case Study provided understanding on the significant role of stakeholders in a national policy formulation process that aimed to establish a progressive framework addressing related issues on institutional mechanisms, financing and planning. The reality that disasters, especially those induced by climate change, will be more frequent and ferocious in this and the succeeding generations, thus, requires the steadfast effort in finding new solutions and promoting proven strategies to mitigate if not prevent damaging impacts. This task is more urgent because it is the poor majority who are most at risk to these disasters, yet the least prepared and least able to cope with its consequences (Villanueva and Aid, 2010). Resilience, thus, is becoming influential in development and vulnerability reduction sectors such as social protection, disaster risk reduction, and climate change adaptation. Policy makers, donors and international development agencies are now increasingly referring to the term (Bene, et al., 2012).

To address the centrality of communication to community resilience and disaster risk reduction is the recognition of the role of the communication systems which accounts for holistic approach to communication as a complex process with its elements of Source-Message-Channel-Receiver. It involves various processes, both formal and informal, by which information is passed between the different elements using effective communication (Murphy &

Hildebrandt, 1997) and guided by communication protocols (policies and set of rules) using varied resources (media, official sources of information and communication infrastructure), community relationships (social capital, organizational linkages, communication infrastructure), strategic communication processes (community planning, storytelling and disaster response coordination) and community attributes such as flexibility, diversity and economic resources (Houston, 2018).

Disaster Risk Management and its factors

Disaster Risk Management (DRM) can be seen within a broader context of disaster risk reduction that includes different activities involving public administration, strengthening organizational and institutional development, implementing policies, strategies and coping capacities of the society to reduce negative effects of hazards (UNISDR, n.d.). As a collective term encompassing all aspects of planning for and responding to disasters, it includes both pre- and post-disaster activities. It refers to the management of both the risks and consequences of disaster (UNDP, 1991). The five pillars of DRM include: risk identification, risk reduction, preparedness, financial protection, and resilient recovery (Bello et al., 2017). Thus, there is a need to approach the issue on a holistic approach (Cardona, 2004), whereby four areas of

concerns must be addressed: disaster prevention and mitigation and disaster preparedness for the pre-disaster stage; while disaster response and disaster rehabilitation and recovery for post disaster stage (NDRRMP Manual).

The Philippines' approach in responding to climate change and disaster has been an attempt to integrate all the efforts of different agencies and build on the premise that vulnerability, hazards and capacity-building have been explored and studied. Specifically, priority 2 which states that there is a need to "strengthen disaster risk governance to manage disaster risk". Consequently, this approach also addresses the Millennium Goal Section IV, protecting our common environment: "*To intensify collective efforts to reduce the number and effects of natural and man-made disasters* (United Nations, 2001). However, after 15 years, the Millennium Development Goal (MDG) report revealed that one of the issues that still need closer attention is the climate change and environmental degradation that undermine progress and that the poor people suffer the most. Thus, there is an urgent need for disaster management to be further enhanced and carefully planned. In so doing, whether the disaster is caused by environmental, climatic, biological, technological, geological, industrial or accident-related activities --- the new approach calls for capacity-building and resilience.

As resilience has been identified as the ability to recover from natural disasters, it has been noted that majority of countries worldwide focus their disaster management on disaster preparedness. Noteworthy to mention that a lot has been devoted to building shelters, evacuation areas, providing capacity through drills (Badri et al., 2006; Bene et al., 2012; Cadag & Gaillard, 2012). However, recent literature reveals that recovery patterns of majority of documented disasters have focused on resettlement highlighting the role of institutions, other agencies and public and private partnerships (Carrasco et al., 2016; Auzzir et al., 2014; Tselios & Tompkins, 2017; Comfort & Kapucu, 2006). Moreover, studies have also been devoted to policy analysis (Kim et al., 2017; Koivisto & Nohrstedt, 2017) related to community's response and behavior to disasters, how youth can be involved in preparedness, rescue and recovery (Helsloot & Ruitenberg, 2004; Fernandez & Shaw, 2013; Carcellar et al., 2011).

Dela Cruz et al. (2010) compiled the cases of some communities in the Philippines where disaster resilient communities and capacity-building initiatives have been introduced to address vulnerability reduction and social protection that may eventually lead to sustainable development. It reflects that the state of the community's capacity to face and overcome disasters is deeply affected by its physical/environmental, economic, socio-cultural and

political contexts - these factors ultimately translate into environmental degradation, people's access and control on different forms of resources and assets, inequality that led to exclusion of women, children, elderly and minority groups - all contribute significantly to shaping a community's level of resiliency or vulnerability to disaster risks (dela Cruz et al., 2010).

Similarly, studies on *Early Warning Systems* at the community levels in the Philippines have been documented. David et al. (2010) emphasized the need for a community and DRR Technology interface in the case of the Bicol River Basin II (BRB2) project. The collaborative efforts of Manila Observatory, UP-National Institute of Geological Sciences (NIGS), the COPE Foundation, Inc., Naga College Foundation, Ateneo de Naga University and University of the Philippines – College of Social Welfare and Community Development (UP-CSWCD) have paved the way to the recognition that complexities of disasters and its diverse effects on people requires a multi-disciplinary approach. For one, the project addressed the integration of Science & technology, DRR and community knowledge integration. The decentralization of the Early Warning Information involved the establishment of home-based early warning stations that did not only involved communities but also offered alternative to the top-down approach, thereby, empowering the local

communities but using a technology that can be useful to the volunteers.

In addition, there are three cases of participatory disaster-responsive governance have been initiated to enhance community-based participation. Magalang (2010) documented that in 2005, the involvement and cross-sectional approach in Marinduque of mainstreaming DRR and Climate Change Act (CCA) in the planning and budgeting process of the barangays collaborated with the church, Non-government Offices (NGOs) and the Local Government Units (LGUs). Furthermore, the barangay-based institutions like the Local Disaster Coordinating Committee's (LDCCs) have been revitalized, re-organized, strengthened and capacitated. The Case Study results show that a Systems approach at the community-level would be beneficial for all the stakeholders while empowering the community on decision-making and governance. Similarly, Balang, Jr. (2010) documented the experiences of Apas, Bulacao and Kalunasan communities in Cebu City from October 2008 to March 2009 and his study revealed that adopting a holistic approach to DRR is crucial to address the health and well-being concerns of the community who resides along the riverbanks. Ripraps can only address threats of flashfloods and landslides but other risk factors like solid waste and waste water disposal, lack of latrines among community residents, limited livelihood opportunities and

malnutrition are equally critical concerns that deepen the vulnerabilities of the community. Furthermore, a continuous communication and awareness campaign should be sustained to increase awareness and equip the community with knowledge and skills that can strengthen existing capacities.

Social capital may be defined in different ways according to the context where it is applied. In the case of disaster situations, the term may refer to resources i.e. trust, norms and networks of associations inherent in social relations which facilitate collective action for a common purpose (Daniel & Meyer, 2015; Vandaie, 2007). In addition, the Australian Red Cross (2013) emphasized that building relationship and ties is crucial for social capital to play its positive role to disaster resilience. Similarly, Zhao (2013) did a study of the role of "social networks" in reducing the risk of disasters using the case of Wenchuan earthquake in 2008. The study revealed that using a network study approach can help understand the social structure and processes involved during disasters and provided insights on how to improve the management policies and communication systems. Moreover, it has been considered as one of the strategies to reduce vulnerability and increase community resilience. There is an increasing trend on the shift of the attention of disaster interventions from the scientific, technical and physical structures into building social ties and cohesion. The role of social capital has been slowly being given

due attention and focus. Nahapiet and Ghoshal (1988) viewed that social capital can be measured through three dimensions: (1) structural referring to network ties, configurations and appropriate organizations; (2) relational as trust, norms and identification, and (3) cognitive covering shared goals and culture.

Leelawat et al. (2015) has proven that information and communication in disaster management makes it necessary for those involved in the communication systems to learn and prepare both new information and utilize communication technologies and traditional media to take care of emergency situations, for instance, the power blackout in Tacloban during Typhoon Haiyan. In such crisis, portable radios have been found to be necessary to provide uninterrupted, timely and accurate information. Similarly, communication has been found to be a significant tool for risk management such as in the case of the 2011 flashflood incident in Matina, Davao City (Estacio, 2013; Sanchez & Sumaylo, 2015; Cayamanda & Lopez, 2018). The communication of information about natural hazard risks to the public is a difficult task for decision makers. Research suggests that newer forms of technology present useful options for building disaster resilience (Feldman et al., 2016).