CHAPTER 3

Risk Communication, Resilience and Risk Reduction

Strategies for Disaster Risk Reduction can be enhanced through effective risk communicative processes and practices and is widely regarded as a core to disaster management (Howard et al., 2017). Disaster and risk communication have been found to be a significant strategy, but careful attention must be given to its processes and systems to help improve the disaster-related outcomes. Specifically, the need to address the context of audience vulnerabilities, perception, experiences, and practices on disaster-related communication.

Samaddar et al. (2015) cited that Pearce (2003) argued that the growing literature on disaster-related communication has revealed that risk communication can be an effective tool to address the growing consensus among researchers and planners to incorporate local communities in disaster risk management and climate change adaptation planning. However, its actualization largely remains a dream.

Risk communication is a component of risk governance towards disaster mitigation, preparedness, response, and recovery. Thus, risk communication is usually aimed for making people aware of the risks; improve their knowledge on possible disasters and how they could be prepared; change their attitude towards preparation; and changing eventually their behavior. Being a core to DRRM in Georgia, a communication system was found to be useful in the areas of early warning and preparedness activities, utilizing several tools and channels as suggested by Van Westen and Kingma in 2009 (as cited in CENN, n.d.) as follows:

Risk Communication Tools	Messages	
	Early Warning	Awareness
Mass Media (TV, Radio, Newspaper)	**X**	**X**
Electronic media (WWW, SMS, MMS)	**X**	**X**
Audio-visual (video, audio, multi-media, animation, photographs, model, map, slide show, artwork, graphs)	**X**	**X**
Postal (direct mailing)		**X**
Stand-alone print (billboard, poster, banner, warning sign, flood water level)		**X**
Face-to-face (meeting, seminar, workshop, conference, march, exhibition, demonstration, training, exchange visit, planning)		**X**
Distributor print (leaflet, pamphlet, brochure, booklet, guideline, case study, newsletter, journal, research paper, report)		**X**
Folk media (story, drama, dance, song, puppet, music, street entertainment)		**X**
People (community leader, volunteer, project worker, head of sectoral groups, i.e. tribe, women, youth)	**X**	**X**

Meanwhile, Bradley, McFarland & Clarke in 2014 presented a systematic review of intervention studies using disaster risk communication. Five studies were presented that promote preparedness for natural disasters such as flashfloods, earthquakes, five natural hazards, and general preparedness. Results show that interventions using communication tools have increased awareness on natural hazards, upgraded knowledge on preparation, evacuation, and recovery from disaster. One study involves communication preparedness for man-made disaster like nuclear or radiation incident in New Jersey that resulted to effective awareness campaign on the identification of the warning signs of the incident. Three studies were mentioned on the effect of risk communication interventions to improve disaster recovery: one study conducted after the 911 New York terrorist attack and two studies after the Hurricane Katrina in New Orleans. The studies revealed that media campaigns are effective tools to solicit financial support to fast track recovery period of the victims of the disaster. Three studies focused on communicating early warning on natural disasters, specifically, the Tsunami in Mauritius in 2003, Cyclone in India in 2003 and Evacuation during wildfire in California, USA in 2007. Results reveal that responses to communication signals for early warning purposes have been affected by different factors like personal circumstances, beliefs and attitudes, societal response,

characteristics of the disaster, level of persuasion of the authorities to evacuate, the setting where the disaster occurred and the nature of the communication messages used. The 12 studies enumerated revealed improvements on disaster-related knowledge and behavior. However, due to the differences and variations in context of the studies, it was impossible to conclude that one method of risk communication is superior to others.

Similarly, Zhang et al. (2007) worked on post-disaster field survey to establish the bottleneck of disaster risk communication during the early warning and evacuation in Japan during the 2008 Wenchuan earthquake. Results of the case studies reveal that there is a problem at the level of transactions between the agencies/institutions concerned and the local community levels. Incidentally, Cole and Fellows in 2008 studied hurricane Katrina and explored the "inadequacies" of the risk communication based on Lundgren and McMakin (2004) and Rowan's (1977) rhetorical perspective. Results show that while care communication was adequate for its purpose, inadequate clarity, insufficient credibility and failure to adapt to critical audiences resulted in failure of consensus communication and crisis communication. These studies suggest that there may be a need to propose a policy modification as well as explore a new model of communication transfer from the institutions to the

local communities, emphasizing the significant role of communication management on risk and disaster-related messages.

Disaster policy response to climate change is dependent on a number of factors, such as readiness to accept the reality of climate change, institutions and capacity, as well as willingness to embed climate change risk assessment and management in development strategies. These conditions do not yet exist universally (O'Brien et al., 2006). Previous decades considered disasters as generally natural phenomenon and that it was part of nature's reaction to climate and weather situations. However, through the years, there is a growing realization that disasters are becoming closely correlated with human activities. In fact, studies have shown that some of the most harmful disasters are caused by human activities (Blaikie et al., 1994; Cardona, 2004; Cowles, 2015; Grothamm & Reuswigg, 2006. Some literatures (Chiang, 2018; Duzi et al., 2014; Fatti & Patek, 2013; Forino et al., 2017; Higginbotham et al., 2014) on disaster and climate change have shown that disasters have been a consequence of inevitable events that are done by nature or by actions of humans. In the current situation where the main characters of disaster are massive population growth, intense urbanization and uneven development, disaster assessment and management become an integral part of the planning and development concerns. There

is a close correlation between increased demographic pressure, especially in developing countries (most notably in less developed countries), growing environmental degradation, increased human vulnerability and the intensity of the impact of disasters. Detrimental development and inappropriate use of resources are contributory factors to natural disasters. They can accelerate or amplify recurrent phenomena such as droughts. Environmental degradation increases the intensity of natural hazards and is often the factor that transforms the hazard or a climatic condition such as heavy downpour into a disaster --- thus, river and lake floods are aggravated by deforestation which in turn causes erosion and clogs rivers (UNISDR, 2003).

Moreover, risk communication is an "intentional information transfer" and researches in this area focused primarily on probability and magnitude of risk. Transmission of risk messages are key components of risk reduction and its reception is affected by the construction of risk perception. At the individual level, two factors that affect the perception towards risk are trust and accountability. However, it was observed that some problems in risk communication are attributed to the lack of input from the communities, thereby, disregarding a participatory approach. Hence, initiatives on risk communication encourages a people-centered approach (United Nations, 2015).

Since risk communication is an interactive process of exchanging information and opinions between stakeholders regarding the nature and associated risks of a hazard on the individual or community and the appropriate responses to minimize the risks, O'Neill (2004) argued that the key to behavioral change lies in risk communication must be viewed in the context of the community's safety under the four stages of the disaster cycle. He also stressed that each of these stages require different type of messages since different people has varied and changing perception of risks. Moreover, a shift from response-oriented to a participatory approach translates into integrating the elements involved with the following strategies: locally focused and integrated planning; greater community participation and community-centric approaches. In addition, this also requires a shift of the community attitude towards risk reduction from merely receivers of the risk communication messages to integral part of the message conceptualization and development.

In addition, as risk communication is a core function that uses risk perception knowledge from the risk manager's perspective, the purpose of risk communication is to help residents of affected communities understand the processes of risk assessment and management, to form scientifically valid perceptions of the likely hazards and to participate in making decisions about how risk should be managed. Risk

communication tools, therefore, must explore all the possible tools that may be written, verbal or visual and utilizing the most appropriate media for such information, thus, there should be a synergy of various communication methods from traditional, modern and digital communication (Fatma Sjoraida & Anwar, 2018). Thus, identifying the implications of risk perception and responses to flooding towards governance can contribute to the policy-makers' assessment of their approaches (Fatti & Patek, 2013).

Risk communication on disaster interventions

Communication between authorities and the public about disasters occurs in all stages of the cycle, with different aims at each stage. Thus, there is a need to assess and evaluate the effectiveness of the communication programs specifically on risk communication. Disaster studies emphasize the significant role of risk communication (Comfort et al., 2004; Mercado, 2016; Pidgeon et al., 2003; Kasperson et al., 1988; Terpstra et al., 2009; Lindell & Perry, 2012). Disaster risk reduction strategies can be enhanced through proper knowledge transfer of disaster communication from the different concerned agencies to the communities that would eventually implement the procedures presented therein. Consequently, focusing on how the communication tools and DRR strategies can be made more relevant to the target recipients.

Studies on risk communication highlights awareness and preparedness (Lindell & Perry, 2004) and the critical role of decision-making on disaster eventualities (Lindell & Perry, 2012). Specifically, flood risk communication studies have been documented highlighting the role of social networks (Haer et al., 2016), different strategies i.e. using agent-based model, tapping social networks and prevention-focused motivation to improve flood risk communication (Haer et al., 2016; Lazrus et al., 2016; De Boer et al., 2014) as well as looking at different perspectives to assess the flood risk communication systems towards upgrading awareness and preparedness (Maidl & Buchecker, 2015; Demeritt & Nobert, 2014; Rollason et al., 2018; Feldman et al., 2016).

On the other hand, Skinner and Rampersad (2014) mentioned that Nyondo in 2006 emphasized that if the process of communication is difficult in our ordinary and daily lives, it is far more so in times of disaster. The challenge remains to not only respond with accurate, understandable and complete information as quickly as possible during a disaster, but also to communicate in a proactive way that involves members of communities to reduce the potential risk of a disaster. Communication is therefore a dynamic process with a two-fold purpose that can foster learning, positive change and empowerment. It is a continuous process of coding, decoding and interpretation, and a way of sharing objectives, attitudes,

knowledge, information, and opinions. It takes place in a social context and people take the roles of both source and recipient, to cite Berlo's communication framework. In addition, Abarquez and Murshed (2004) stated that when considering communication for disaster risk reduction, one should take into consideration that context plays a key role. The sociocultural context of the society, gender perspectives and scale of community (rural, small or mega) will determine how communication will be implemented. Skinner and Rampersad (2014) emphasized that communication planning occurs in an organizational context and is embedded in institutional cultures with specific agendas. Moreover, communication takes place in a context of risk assessment, risk intervention and risk evaluation, making it a strategy that is executed within disaster risk management. In addition, social vulnerability is key to determining the methods of communication and therefore people, complex social systems, and non-structural solutions should also be analyzed and considered.

Consequently, there are a number of local studies in Davao City that have been documented in relation to the use of communication as a tool for disaster preparedness. Estacio (2013) made a study documenting the methods used by the local barangay unit in the post crisis phase of the flashflood. Her study employed the Coombs 3-Phase model, the Diffusions of Innovation Theory and Trish Center Scholars'

Crisis Management Cycle. Results of the study revealed the organizational learning of the barangay from the disaster were transformed into strategies that can be utilized in preparedness and recovery stages of their disaster management process. On the other hand, Sanchez (2014) looked into the information, education, and communication (IEC) strategies and programs for the residents' risk management and precautionary practices towards flood incidents using the Precaution Adoption Process and Berlo's Communication models. Results of her study show that communication plays a vital role for the residents' risk awareness and preparedness on disasters. Montajes (2015) examined the disaster preparedness and awareness level of the community in Banay, Davao Oriental. Her results showed that at the barangay level, there is still a need to "localize" the approach on disaster campaigns, preparation and communication approaches. Meanwhile, Villanueva (2016) studied the reception of barangay 19-B of Davao City residents on the flood risk communication programs, strategies, and messages. His study revealed that improvements should be done to address the specific information-seeking concerns of the community. Similarly, Cayamanda and Lopez (2018) looked at the role of communication and social capital in building resiliency in the context of the 2011 flashflood incident of Matina, Davao City. Using the Crunch Model, the progression of vulnerability has

been determined as well as the institutional dynamics involved during the disaster. Results of the study revealed that despite the positive social relationships and immediate emergency response, there is a need to address the gap on disaster management that would encourage community-based processes and promote community engagement in disaster preparedness and management. These studies affirm the presence of communication efforts as DRR strategies, however, these also highlight the need for a community-based disaster communication systems and protocols.