An Empirical Study on the Community Based Disaster Management Framework with the Cyclone Preparedness Program in Bangladesh

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An Empirical Study on the Community Based Disaster Management
Framework with the Cyclone Preparedness Program in Bangladesh

（バングラデシュにおけるサイクロン準備プログラムによるコミュニティ防
災の枠組みに関する実証的研究）

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Summary

In recent times, the frequency of natural disasters is increasing in the world. Natural disaster cannot be prevented, but we can minimize the loss of life by developing strategies, plans, and coordination between different stakeholders. Community involvement has become one of the main priorities for establishing effective partnerships for disaster risk reduction. Now a day one of the wide-reaching approaches for managing disasters is termed Community Based Disaster Management. Many researchers show evidence that Community Based Disaster Management contributes to community awareness, preparedness, and resiliency. However, among developing countries like Bangladesh, the government still has not ensured all the measures; such as community preparedness plan, drill, and training program. As a result, in the coastal belt of Bangladesh, the evacuation rate is still low in case of cyclone disasters. Previous studies found that there is a high positive correlation between the rate of evacuation and the understanding of a hazard warning disseminated by CPP volunteers, which indicates that if warnings are heard and trusted, they are very likely to result in an evacuation. CPP is a joint program of the Government of Bangladesh & Bangladesh Red Crescent Society, since 1973. Through Cyclone Preparedness Program (CPP), the Bangladesh government has officially started the process of CBDRM. Cyclone Preparedness Program volunteer topics were chosen as the focus of this study as it is imperative to have accurate early warnings to decrease the vulnerability of local coastal villagers. Even though the CPP program facing some organizational problems such as equipment problems, training, etc. Nevertheless, the volunteers try to ensure to disseminate the early warning information to the community.

The purpose of the study expected to fill a gap in existing knowledge about CPP volunteer participation in Community Based Disaster Management in Bangladesh and provide the much-needed evidence base for the formulation and implementation of future policies to enable and improve CPP's participation in Disaster Risk Reduction (DRR). The research objectives are as follows: 1) to examine the current framework of CPP in Bangladesh and address the evolution and characteristics of these policies and exploring their strengths and weaknesses. 2) to develop a framework for enhancing CPP in DRR that will apply not only to the case study areas but also to other CPP command areas as well. 3) To compare the best

practices of community-based volunteer's response during a disaster in the selected countries. Community best practices and success stories, which may be, simulated in future endeavors for the development of volunteerism. To achieve these objectives, the following questions are raised: 1) what are the major factors that enable CPP volunteers to perform best in disaster management? 2) how the residents in affected areas tend to respond to the warnings and evacuation orders by CPP Volunteers? 3) To what extent do variations of the community volunteer's performances exist in emergency response in Japan and Bangladesh?

This research adopted both qualitative and quantitative methods to analyze the data. The primary data were collected by personal visits to the field from CPP volunteers and the community people of selected areas through Focused Group Discussion and interviews following semi-structured and open-ended questionnaires. The data were collected in February 2020. A total of 23 CPP volunteer's opinions from both male and female volunteers were separately collected through questionnaires and Focused Group Discussion (FGD). The volunteers were selected by the Bangladesh Red Crescent Society (BDRCS) based on their working experiences, gender, and age. Also, a total 177 number of households were surveyed in the study areas (Koyra and Ukhiya sub-district) to assess the performance of CPP volunteers in their community. Random sampling was used for primary data collection of the selected areas. The study areas were selected based on CPP volunteer's activities as well as BDRCS recommended that there is no previous specific research was conducted in both study areas. The geographical locations of both study areas are different. Koyra sub-district is located in the Southwest region and the Ukhiya sub-district is located in the Southeast region of Bangladesh.

To identify institution involvement and functionality; expert interviews were conducted which involving in-depth interviews with CPP and local government officials. A descriptive comparative study was undertaken through a methodology by selected case studies based on community-based volunteer activities in disaster responses. To achieve this objective, in 2018, I visited Iwate and Miyagi prefecture to access the information about the Shobo-dan member's response to the Great East Japan Earthquake. Furthermore, in 2019, I interviewed two Shobo-dan members at Nagata Ward in Kobe city to acquire Shobo-dan member's responses in the case of the Great Hanshin Awaji Earthquake. The interview results in indications that most of the members of the Volunteer Fire Corps (Shobo-dan), contribution to their local

community as their motivation of becoming members, they also mention that balancing the activities for the corps and their formal job turns to be a difficult task in disaster time. It is also clear that as a modern lifestyle society, it is becoming difficult to balance private life and life as a member of the Volunteer Fire Corps. Another result of this is the decline in the number of memberships in the Volunteer Fire Corps. The current study shows that social capital and leadership in the community are basic attributes that are universal, irrespective of the development stage of the country. Several other factors affect volunteers, such as individual issues, which are similar in Japan and Bangladesh.

In Bangladesh, Cyclone Preparedness Programme (CPP) volunteers are gradually being the most reliable source of gets warning information and helping hand for communities to evacuate the cyclone shelter. The Upazila level government is responsible for organizing, opening the local control room, and ensuring that local CPP is properly informed of the level of warning. CPP has wide acceptance among the community people in coastal regions. They provide door-to-door information and can reach the community before any other organizations. According to the data, in Koyra Upazila 43% and 37% of respondents in Ukhiya Upazila received cyclone warnings and evacuation orders from CPP volunteers, who disseminate the information door to door. Approximately 25% in Koyra and 29% of respondents received evacuation orders from the radio. The remaining evacuation information was received through mosques, TV, BMD, and NGO staff. The study also revealed that the community did not understand the cyclone early warning signal system properly. Still, there is a gap between from provider and receiver sides. One of the most important noticeable issues is the language problem. The cyclone warnings are usually broadcasted in the official language (Bangla) in Bangladesh, which was not always understood by the people in the coastal belt's areas. The people of Ukhiya 30% of respondents answer that they cannot interpret the language announced by CPP. Because the ethnic community has its dialects. Also, those who are not educated well cannot interpret the warning message. This could be either due to the lack of knowledge of the community members about the disaster or the government did not handle it the proper way.

It is found that the volunteer's activities varied by their age, education, individual experience, training, individual equipment, awareness campaign, recognition of responsibilities, and insurance coverage. The factors that put a negative

impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/ CPP officials, no or inadequate training and equipment for performing their duties. Both Koyra 58 % and Ukhiya 42% of volunteers mention that because of poor road network; it takes longer time to dissemination the information. According to the volunteer's explanation, the Koyra sub-district road network is worse than the Ukhiya sub-district. CPP volunteers generally walk to every household to give the evacuation information and suggest evacuating to the nearest public cyclone shelters. During cyclone Mohasen, an issue from the district level is delayed for 2-3 hours than CPP to Upazila level due to time for getting the permission of delivering information in each level. Both 57% in Koyra and 43% in Ukhiya sub-district volunteer state the number of equipment is insufficient during an emergency. Some of the equipment is very old and unusable during search and rescue. A conceptual framework (figure 1) of the local network has been developed to find out the relation between the groups.
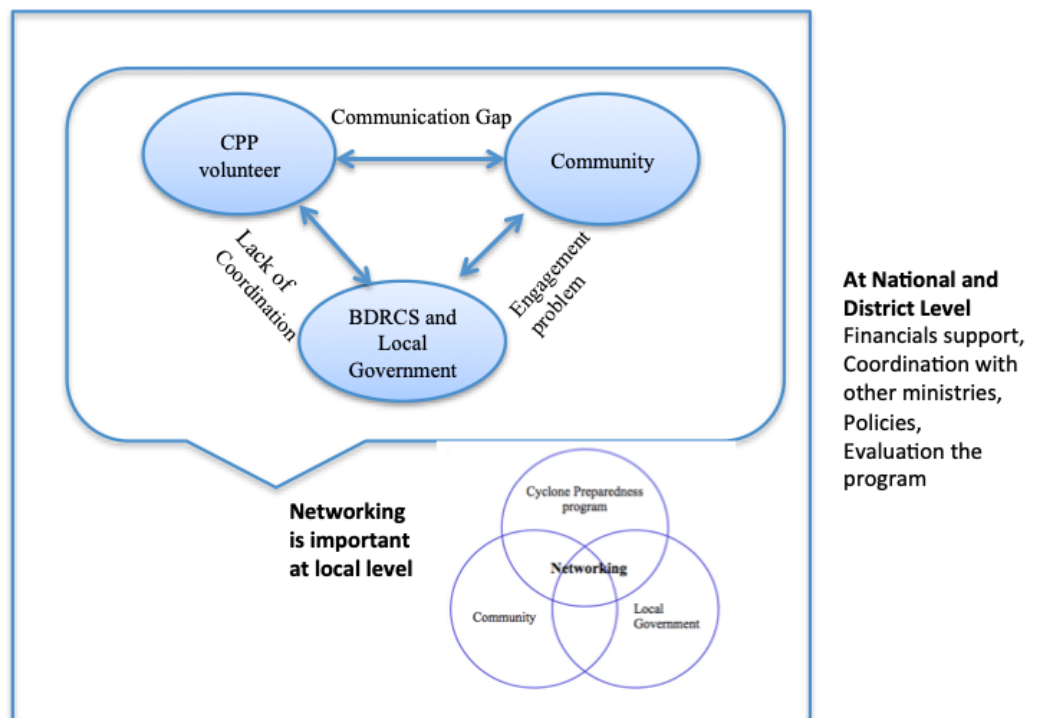

Figure 1: The relationship among CPP volunteer, Community, and Organization Source: (Created by author)

The above framework suggests that networking at the Upazila level among CPP, Community, and local government plays an important role in the success of the program. Individual stakeholders (Community, CPP & local government) continue to make significant contributions but multiplier effects are still missing. The networking

process, especially during normal periods, is expected to results in the shift of pre-disaster risk management. The CPP program mainly works actively at the Upazila level. Each Upazila has a unit team leader and five groups for warning, rescue, first aid, shelters, and relief. Upazila office controls the entire voluntary system to become more functional and help to sustain volunteers' motivation. CPP organize a meeting at the unit, union, and Upazila committee levels but not regularly. Organize periodic training for volunteers, and also organize rallies and demonstration/ cyclone simulation by volunteers for raising awareness at the community level. Based on the findings of 70% of CPP male and female volunteers received the basic training. However, 30% have not received any training at all. They are working as a volunteer without any training. Systematic training is essential for persons in charge of unit leaders at the Upazila level. Establishing an information transmission system needs improvement of reliability. As a challenge for information dissemination, it is needed to develop the capacity of local CPP leaders at the Upazila level to properly understand the meteorological information provided by Bangladesh Meteorological Department, and disseminate accurate information to all residents.

It is found that in both Koyra and Ukhiya Upazila, there is no strong communication between the different local governments and communities in disaster preparedness. Evacuation drills are not satisfactory in both study areas. In Koyra 67% and Ukhiya 68% of respondents said they never participate in any disaster drill. In addition, 64% of Koyra and 56% of Ukhiya Upazila respondents do not have any idea about this disaster preparedness program. On the other hand, studies have found people's lower degree of contact with CPP volunteers also appeared to restrain them from relying on warning messages. It has been found that Koyra (62%) community has good communication skills with CPP volunteers rather than the Ukhiya (39%) community. It is mentionable that after 2007 many cyclones hit Koyra, hence the community becomes more aware than before. More frequent contact with CPP volunteers than their counterparts. In other words, communication with CPP volunteers makes households with preparedness, an understanding of early warning messages, reliability on the received warning signal. The weakness in these areas lies in the fact that not all vulnerable communities receive an early warning. This is not only due to a lack of cooperation, but more accurately, early warning information access during a cyclone. It should be recommended that roads and local infrastructure need strengthening, not the partnerships that create the initial warnings.

CPP program identity acts as a mediator between local government and community in terms of receiving the early warning information. From the discussion, the CPP has introduced wide-ranging programs and integrated approaches in disaster management in their course of action. But in the absence of proper coordination, ensure the early warning information to all vulnerable communities remains. The existing condition of both study areas is not fit for proper preparedness activities and is incapable of reducing the impact of the devastating cyclone insignificant amount due to lack of knowledge, awareness, and capabilities. The study area Koyra and Ukhiya need an Upazila level community-based disaster preparedness plan with coordination between the CPP program and community. After ensuing, a large-scale awareness program among locals along with the capacity building of the responsible authorities as well as increased facilities for vulnerable groups can only change the current scenario, and finally, it can be expected to have a disaster-resilient community at both study areas. An educational campaign by the government is needed in the coastal areas to understand the early warning message properly. The Bangladesh government in cooperation with other related ministries should initiate large-scale projects for infrastructural development in the coastal areas.

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ADB	Asian Development Bank
AFD	Armed Force Division
BBS	Bangladesh Bureau of Statistics
BDRCS	Bangladesh Red Crescent Society
BMD	Bangladesh Meteorological Department
CBDM	Community Based Disaster Management
CCC	Climate Change Cell
CERT	Community Emergency Response Team
CPP	Cyclone Preparedness Program
DMB	Disaster Management Bureau
DRR	Disaster Risk Reduction
FDMA	Fire and Disaster Management Agency
FEMA	Federal Management Emergency Agency
FGD	Focused Group Discussion
GoB	Government of Bangladesh
HF	High Frequency
LGED	Local Government Engineering Department
MoDMR	Ministry of Disaster Management and Relief
SDF	Self Defense Force
SOD	Standing Order on Disaster
MoEF	Ministry of Environment and Forest
NGOs	Non-Government Organization
UNDP	United Nations Development program
UNO	Upazila Nirbahi officer (Sub-district Chief)
n	Sample Size

1. CHAPTER I: Introduction

1.1. Background

Bangladesh is among the world's most disaster-prone countries and also the frequency of natural disasters has increased in recent years. Additionally, the unique geophysical shapes of the Bangladesh coast and the socioeconomic features of coastal residents also contribute to the vulnerability of the residents to cyclones. The entire coastal zone of Bangladesh is prone to cyclones, which are associated with storm surges. The coastal zone area covers 32% of the country's geographical area and is home to 28% of the total population (Bangladesh Bureau of Statistics, 2011). The population density in the coastal areas of Bangladesh is lower than in the rest of the country, the population growth rate in the coastal zone is higher than the national average (Bern et.al, 2008). Out of 64 districts in Bangladesh, 19 districts are considered coastal districts and around 36.8 million people live in these areas.

During the period from 1991 to 2000, Bangladesh suffered from 93 large-scale disasters that killed 0.2 million people and caused loss of properties (Habiba & Shaw, 2012). In 1971 the cyclone-induced total death toll was estimated between 300,000 and 500,000, with 100,000 missing people; estimated damage was about USD 450 million. After the 1991 cyclone, the official death toll was 140,161 and the total estimated damage was USD 1.8 billion to 4.3 billion (Paul & Routray,2013). Compared to the cyclones in 1970 and 1991, the death toll in Cyclone Sidr occurred in 2007 was relatively small: approximately 3,406 people died and 55,000 were injured, with more than 1,000 missing, and estimated damage of USD 1.6 billion (Tiffany 2012; Paul, 2012). In addition to the geophysical characteristics of the Bangladesh coast, the poor socio-economic conditions of coastal inhabitants also contribute to increasing the vulnerability of inhabitants to cyclones and storm surges (Paul & Dutt, 2010). The livelihoods of coastal populations are highly dependent on agriculture, fishery, crab farming, mangrove forestry and salt farming, etc. However, due to global warming increasing the frequency and severity of cyclones will certainly

affect the livelihoods of vulnerable populations living in the coastal belt of Bangladesh (Chowdhury et.al;1993, Paul & Routray, 2013).

The cyclone warning system of Bangladesh has improved its efficiency after the occurrence of the 1991 cyclone as a result of improved macroeconomic management, increased resilience of the poor, and progress in disaster management and flood protection infrastructure (Chakma, 2020 and ADRC, 2017). The existing cyclone warnings still complain about uncertainties in the warning message does not contain vital information, the accurate location and landfall timing, etc. (Paul & Dutt,2010). It is very important to implement proper disaster management policy and adaptive measures for protecting loss of life and property. Hence, the Government has expressed its commitment through preparing Standing Orders on Disaster (SOD), National Disaster Management Plan and a Disaster Management Act,2012. According to Standing Order on Disaster (SOD) the necessary coordination mechanism has developed and roles of responsibilities of different levels of government officials and entities of Union Disaster Management Committee and CPP have been articulated accordingly to build a disaster resilient community. It was observed throughout the long period that the deaths toll rate is low even though almost the same category of cyclones hit in the coastal belt of Bangladesh. For instance, the death toll during Cyclone Sidr 2007 and Aila 2009 were 4234 and 197 whereas cyclones in 1970 and 1991 were 300,000 and 138,958 respectively (World bank, 2013). It is recognized by the local, national and international communities that CPP volunteers work very hard to disseminate early warning information and save people's lives during cyclones, even keeping their lives at risk (Amin, 2013). CPP volunteers use different basic warning gear (sirens, megaphones, flags, and transistor radios) and assist at-risk communities during emergencies. The national disaster management institutional structure acknowledges the importance of comprehensive disaster management by the institutional presence at the local level. To carry out disaster management related activities (prevention, mitigation, preparedness, response and relief) Disaster Management Committees (DMC) are established with the local government

institutions.

As a joint program of the Government of Bangladesh & Bangladesh Red Crescent Society, since 1973. CPP has been working in the field of disaster management in Bangladesh especially in the early warning systems, search and rescue, evacuation, sheltering, first aid, relief distribution and rehabilitation to minimize the loss of lives and damage of properties in cyclones. 26 volunteers dedicated their lives on duty for the welfare of the coastal belt people. Due to the dedicated service of the CPP the death rate & rate of property damages declined over time in different cyclones that happened in Bangladesh. CPP owns the "Smith Tumsaroch Fund award-1998" for its outstanding performance. The government of Bangladesh has expanded the activities of CPP at new 05 Upazilas Mongla in Bagarhat. Dacope, Kayra in Khulna and Assasuni, Shymnagar in Satkhira districts after Cyclone SIDR and AILA. In these 5 Upazila recruited 6540 volunteers are provided with training and supplied with volunteers warning equipment's and initiative has been taken to provide training and supply equipment's for the rest 32 Upazila as necessary. Due to climate change, the importance of CPP is increasing. So, it is very important to strengthen CPP the welfare of the coastal belt people.

Cyclone Preparedness Programme (CPP) volunteers have played a vital role in preparing and protecting vulnerable people in their own community from any cyclonic disaster in the coastal belt of Bangladesh by relentlessly disseminating early warning messages and other preparedness activities. However, very limited studies have been done focusing on the issues and challenges of CPP volunteers toward saving the lives and properties of vulnerable community of coastal region of Bangladesh. To manage the paradigm shift from traditional relief culture to a comprehensive disaster management approach, a disaster management regulative framework is established. The Department of Disaster Management (DDM) the National Institute of Local Government (NILG) and some national and international NGOs have been working to strengthen the capacity of local government institutions as well as the Disaster Management Committees to perform their role in Disaster Management.

So far CPP is the largest volunteering program in Bangladesh. The Programme covers 350 unions of 40 Upazilas under 13 districts and is aided by 55,260 volunteers including 18,420 female and 36,840 male volunteers in 3684 units (each unit covers one or two villages) in 40 coastal Upazilas (CPP, 2020). So, it is apparently difficult to sustain motivation of all volunteers at the same level. Previous studies show that, there are some factors that motivate volunteers to show their highest level of volunteerism. At the same time there may have some underlying factors, which obstructs motivation or causes demonization to work as volunteer.

Government of Bangladesh pays CPP employees' salary where as there is no program operation cost at the field level for CPP volunteers including their capacity building. From the very beginning Bangladesh Government is supposed to support CPP for running the expenditure (i.e., Officer & Staff salary, House/office rent, Electricity & Telephone bills, etc.) while on the other hand, Bangladesh Red Crescent Society is supposed to support the operational expenditure (i.e., Conducting Trainings, providing equipment for volunteer and communication network, etc.). However, due to long time gap to provide volunteer's training & equipment supply, Bangladesh Government came forward to assist volunteer for their training & equipment supply in addition. Previously this program operation cost was mainly borne by Bangladesh Red Crescent Society but now a day it becomes irregular and sometimes no support due to non- availability of fund.

On the other hand, Bangladesh government does not allocate budget on this program operation cost (Mahmud, 2013). So, the program operation fully depends on external funds. Supply and management of logistics like early warning equipment, volunteers' personal gears, and search and rescue materials of such a large-scale program is a challenging task which may have impact on the motivation of CPP volunteers. In this situation there may have some limitations to adequately and evenly support the CPP field programs that may affect volunteers' motivation. Still a good number of volunteers are serving in the field at the time of cyclone. Therefore, this

study attempted to explore the factors that positively and negatively affecting motivation of CPP volunteers in the study areas.

After 33 years of CPP in 2008, the Government decided to make a new shape of Cyclone Preparedness Programme (CPP) by giving the responsibility of director (Admin.), a joint secretary in additional charge from MoDMR, later on, posted on deputation a Deputy Secretary as Director (Admin.) CPP since 2010.The CPP volunteers & officers moved under the proper guidance of Director (Admin). On 23 June 2009, The Secretary, MoDMR gave a decision to support CPP activities from CDMP in a meeting. In 2009, for the first time, CPP signed MoU with other organizations like CDMP to assist CPP volunteers on training and capacity building, at Secretariat's conference room. Later on, the Climate Change Trust fund, VOCA and other organizations come forward to assist CPP in operational side, at last the government come forward to support on operational expenditure which will be very few, the volunteers are happy that at least government has started to support for their interest.

Bangladesh has been identified as the most vulnerable country in the world and therefore, disaster management is considered to be one of the most important issues in this country. To mitigate the disaster, there is a worldwide approach for dealing with disasters is named Community-Based Disaster Management (CBDM). The Sendai Framework for Disaster Risk Reduction documents clarifies that in disaster risk reduction the importance of the role is not only the government, but also the involvement of many stakeholders such as local governments, civil societies, community, children, women, the elderly, and those with disabilities. Community participation involves people in the disaster management cycle that can be led preparedness to the recovery process and forms community resilience.

1.2. Community volunteerism and Disaster Risk Reduction

In disaster response, the role and contribution of volunteerism are well recognized. When a disaster happens, volunteers are normally the first to act. Volunteers play a strategic role in community development processes and in

strengthening community resilience to disasters. Through the use of participatory methods, awareness-raising and education, the great dedication of volunteers can mobilize communities and contribute to building preparedness and response capacities at the national, local and community levels (UNV, 2007)..

The impact of volunteers in disaster response can be tremendous, as the extent of damage – in terms of economic and human loss – is greatly influenced by the initial response to a disaster. In 1995, it was the massive voluntary response of citizens to the Great Hanshin Awaji earthquake in Japan that led to the *International Year of Volunteers* being held in 2001(UNV, 2007). In turn, this fostered a greater understanding of the role of volunteers in the humanitarian field and DRR. UN General Assembly Resolution 57/106 'Follow up to the International Year of Volunteers' in 2003 and the Yokohama Strategy and Plan of Action for a Safer World marked the increased recognition of volunteerism in DRR in 1994. The Hyogo Framework for Action also highlights the importance of volunteerism in DRR, stating, "Civil society, including volunteers and community-based organizations, the scientific community and the private sector are vital stakeholders in supporting the implementation of disaster risk reduction at all levels." The Priorities for Action of the Framework suggest that community role in disaster risk reduction includes the strategic management of volunteer resources and calls for the development of specific mechanisms to engage active stakeholder participation in particular by building on the spirit of volunteerism." Further, it acknowledges, "civil society, including volunteers and community-based organizations, the scientific community and the private sector are vital stakeholders in supporting the implementation of disaster risk reduction at all levels." The Hyogo Framework also called for education and training to "promote community-based training initiatives, considering the role of volunteers, as appropriate, to enhance local capacities to mitigate and cope with disasters." Volunteerism also highlighted as a way of contributing to community resilience, community engagement and good governance for all stakeholders, particularly those

most vulnerable to disasters. International framework and Policy Relevance to CPP in action shown below box 1:

Box 1: Policy relevance to DRR action (Source: https://media.ifrc.org/ifrc/wp-content/uploads/2018/06/CaseStudy6_Bangladesh-CPP-Final.pdf

Sendai Framework – Priority 4: Invest in disaster preparedness to enhance response and to "Build Back Better" in recovery, rehabilitation and reconstruction. Investing in disaster preparedness helps to mobilize the existing resources and support using new technologies and equipment. In disaster phase, this can be a life-changing factor, which has been proven in the case of CPP. The Bangladesh government and BDRCS have always placed great importance in implementing CPP and volunteer development to ensure adequate capacity building support. With the continuous and significant investment for CPP, this programme has trained and equipped more than 50,000 volunteers. Whenever a cyclone hits the coast, these volunteers promptly respond to the affected area and in most cases, they can provide first aid, do search and rescue, relief distribution, needs assessment, etc. One of the reasons behind this is the investment into developing CPP. Now, CPP has become a global standard in disaster response having contributed to significant drop in the death rate in Bangladesh.CPP has significantly contributed to the response phase of disaster management.

SDG Goal 17: Partnerships for the Goals. CPP is one example of long term and sustained partnership between the government and BDRCS. To keep the programme functional, the government and BDRCS provided human resource, training, funding towards CPP.

1.3. Research Problem

Bangladesh is a cyclone-prone country due to its geographical location. Around 10% of the world's cyclones originate in the Indian Ocean and the adjacent

Bay of Bengal each year, which accounts for at least 85% of the cyclone damage worldwide (Ahsan et.al; 2015). On average, at least 17 tropical cyclones form in the Bay of Bengal each year, peaking from April to May and then from October to December (Haque, 1992). Having suffered from the deadliest cyclone in the history of Bengal (Cyclone Bhola) in 1970, the government of newly independent Bangladesh initiated three specific countermeasures to minimize cyclone impacts: (1) the cyclone preparedness program (CPP); (2) the construction of public cyclone shelters; and (3) the construction of high earthen platforms known as killas to protect livestock during hazard emergencies. The program which has not only acted as an independent unit but also has functioned to support the Storm Warning Center (SWC) of the Bangladesh Meteorological Department (BMD) and local governments during emergencies. The SWC is in charge of preparing all weather forecasts and hazard warnings. Together with designated channels, hazard warnings are also disseminated (before, during, and after a hazard period) by CPP volunteers to at-risk communities at the local level. Table 1. Presents a trend in the development of three supporting measures to mitigate cyclone devastation, as the country has experienced four major tropical cyclones since 1970.

Table1: Capacity building over time

Cyclone name (year)	No. of cyclone shelters	CPP volunteers
Cyclone Bhola (1970)	44	-
Cyclone Gorky (1991)	445	20000
Cyclone Sidr (2007)	3573	42675
Cyclone Aila (2009)	3751	49,365

Source: Ahsan et.al; (2016)

The effectiveness of hazard warnings revolves around several factors, such as message content and features, source credibility, and the recipient's level of understanding of and previous experiences with hazard warnings (Paul et al., 2010). Even if people receive the same hazard warning, they may not comprehend the core meaning in the

same way. The reaction to a warning depends on how people interpret the content of its message (Paul, 2009; Tiefenbacher and Wilson, 2012). Hence, there is a high positive correlation between the rate of evacuation and the understanding of a hazard warning disseminated by CPP volunteers which indicates that if warnings are heard and trusted, they are very likely to result in evacuation (Dash & Gladwin, 2007; Paul, 2009). From this perspective, hazard warnings can be considered a social process consisting of interconnected activities: warning messages, information dissemination, message reception, previous experiences, preparedness, and response (Mileti and Sorensen,1990). In the case of cyclone Gorky in 1991, it reveals that 30.5% of respondents had evacuated. Paul et al., (2010) found that 33.2% of respondents evacuated in safe places during cyclone SIDR. Compared to the case study of cyclone Gorky in 1991, cyclone SIDR in 2007, the evacuation rates during cyclone Komen in 2015 significantly higher than the cyclone SIDR and Gorky. This evacuation rate indicated that the improvement of cyclone warning dissemination system by Government. However, there are some difficulties in evacuation process.

CPP volunteers are trained on early warning dissemination, evacuation, search and rescue, first aid, as well as basic disaster management and leadership. Outside of emergency periods they are also responsible for raising awareness of hazards and building understanding of and support for disaster preparedness in their communities. CPP is sustained through government and donor support. Government funding is mainly used to cover recurring costs, whilst training programme and volunteer equipment is usually covered through donor financing. CPP has undergone a variety of changes in the four decades since it was established. One evolving challenge relates to volunteer motivation and retention. In recent years the programme has found it increasingly difficult to maintain the motivation and active participation of volunteers in the gaps between disasters and formal CPP events (refresher training or awareness raising events). To overcome potential inertia or decline between formal CPP events (or disasters), as well as to maximize the effectiveness of CPP volunteers, a number of additional strategies are being piloted. There have been several sporadic attempts

within the CPP to engage its volunteers in livelihood and microcredit activities, to give volunteers a clearer remit between disasters and to start to get them focused on longer-term resilience building rather than just short-term disaster preparedness. However, much more can be done as at present the CPP's focus remains squarely on disaster preparedness rather than risk reduction and resilience. This narrow focus on preparedness amongst CPP volunteers is not only a lost opportunity in terms of resilience building, but it is also a risk to the preparedness and early warning agenda itself, as it becomes hard to maintain volunteer motivation and commitment between disasters. Another dilemma faced by the CPP is the debate between pure volunteerism versus the allocation of monetary benefits in the name of the CPP. Weighing up the sustainability and continued effectiveness of a purely volunteer based system, versus a more professionalized (and financially supported) system is an ongoing challenge.

Supply and management of logistics like early warning equipment, volunteers' personal gears, and search and rescue materials of such a large-scale program is a challenging task which may have impact on the motivation of CPP volunteers. Based on the source of the UNDP 2018, the research gaps are:

Research gaps are:

1. *Analysis on whether disaster-prone communities receive weather forecasting and early warning in a timely manner that enables them to take appropriate early action.*
2. *Research on how to ensure early warning messages reach all vulnerable groups (e.g., including fishermen far out at the sea).*
3. *Proposed revisions to the cyclone/high wind Early Warning signaling system have not yet been implemented. Research can help assess how this system can be improved (taking into account how early warning ratings are compiled and disseminated).*
4. *Given recent improvements in ICT, research could look at the role of CPP volunteers in dissemination of cyclone early warning.*
5. *Research on the advantages, disadvantages or trade-offs between pure volunteerism versus incentive-based volunteerism.*

Box 2: Research gap; Source: UNDP (2018)

Cyclone Preparedness program volunteers' action were chosen as the focus as this study as it is imperative to have accurate early warnings to decrease the vulnerability of local coastal villagers. Early warnings are the first step in evacuating people to a safe location before a cyclone storm to decrease loss of life and property. Currently, there is a centralization of power within the national government. The CPP program and has begun to work together with local government and community-level to increase risk awareness and improve the evacuation rate. However, there is still lack in the systems to reducing vulnerability and loss of lives because of distrust within those receiving the warnings and CPP volunteer's internal and external issues.

1.4. Research purpose and objectives

The purpose of the study expected to fill a gap in exiting knowledge about CPP volunteer participation in Community Based Disaster Management (CBDM) in Bangladesh and provide the much-needed evidence base for the formulation and implementation of future policies to enable and improve CPP's participation in DRR. Research that sheds light on the extent to which community participate in DRR and the factors that facilitate or inhabit their involvement is currently sparse, not only in the Bangladesh but in other countries. This study incorporated the local government, CPP's perspective and the community level opinions of the effects of these policies and early warning systems. This research aims to investigate the potential of the CPP volunteers as an effective vehicle for community participation in CBDM in the Bangladesh. It will focus on the whole process of CPP such as current level of knowledge, capacity and functionality of Cyclone Preparedness Programme (CPP) existing issues and challenges. The specific objectives of this study are the following:

- To examine the current framework of CPP in Bangladesh and address the evolution and characteristics of these policies and exploring their strengths and weaknesses.
- To develop a framework for enhancing CPP in DRR that will be applicable not only the case study areas but also to other CPP command areas as well.
- To compare the best practices of community-based volunteer's response during a disaster in the selected countries.

1.5. Research Questions

To achieve these objectives, the following questions are raised:

1. What are the major factors that enable CPP volunteers to perform best in disaster management?
2. How the residents in affected areas tend to respond to warnings and evacuation orders by CPP Volunteers?
3. To what extents do variations of the community-based volunteer's performance exits in emergency response in selected countries?

1.6. Significant of the study

Natural hazard is a common phenomenon in today's world. It is an event, which has an adverse socio-economic impact on the human being. It is observed that a number of studies have been carried out in Bangladesh considering at different aspects of flood, cyclone a systematic documentation of the causes of human ignorance of cyclone warning, incapability to seek refuge is lacking and damage assessment. In addition, there is only one study available about the motivation of CPP volunteers (Amin, 2012), which is not published in any journal. Yet, there has been limited studies have been done focusing on the contributions of community volunteers (CPP) toward saving the lives and properties of valuable communities. This study investigates the potential of the CPP volunteers as an effective vehicle for community participation in CBDM in Bangladesh. It will focus on the whole process of CPP such as the current level of knowledge, capacity, and functionality of Cyclone Preparedness Programme (CPP) existing issues and challenges and incorporate the community as well. This kind of research has never been conducted in Bangladesh, especially comparative study with other countries that is unique also. The study is to find out the preparedness condition before any kinds of disaster and CPP volunteers groups activities, its problems and future protection against natural disaster. This research is based on primary data collection at the community level and CPP volunteers, and all the analytical figures or diagrams, and tables are original. To achieve the aims and objectives of the research and answer the research questions, the work incorporates both qualitative and quantitative methods. Strengthen Weakness Opportunities Threat (SWOT) method was applied which bringing all stakeholders together to participate in the disaster management cycle. It is a process where the internal and external factors that will affect the volunteer's future performance. The hypothesis testing and answers to the research questions will allow that volunteers' individual, socio-economic and socio-cultural factors affect their performance and motivation to work as a volunteer. The research is not only an assessment of the early warning provider (CPP) side but also the receivers (community) side too.

At the local scale, the outcome of this research allows one to understand how the coastal community of Bangladesh receives the early warning information from the different sources. However, they cannot interpret the warning signals provide by CPP. Those who illiterates were incapable of grabbing the meaning of cyclone forecasting signals. In addition, the entire coastal community is not under the CPP coverage. The number of CPP volunteers is also not adequate to cover all of the coastal communities. CPP volunteers send the warning messages and evacuate people to the safe shelters. However, CPP volunteers also sometimes face difficulties to disseminate the early warning to community because of rough weather and lack of transportation and communication system. Therefore, the long-term Disaster Risk Reduction intervention ensures access to early warning as well as other services.

At national scale this research proposes a framework suggests that networking among CPP, Community, and government plays an important role in the success of the CPP program. There is a communication gap between community and CPP volunteers in real situation. In addition, the community has its individual (Socioeconomic) and Household (Physical) vulnerability. A lack of disaster knowledge can be triggering them more vulnerable in future disaster. Even people knew that in those areas' cyclones happened every year but they do not give importance to evacuation to reduce risk once the cyclone hit. Therefore, it is necessary to engage local government and community in disaster risk mitigation. Engagement of the local community contributes to building social capital, raises awareness of disaster risk, and strengthens local capacities to address a wide range of development issues.

This research study also provides some policy measures towards rendering improved the existing access of community to cyclone early warning system through existing CPP dissemination system. The practical significance of these findings may help policymakers and practitioners to advise on interventions for enhancing the effectiveness of current cyclone forecasting systems, with a broader goal of building a disaster-resilient coastal community. It will be also beneficial to the researchers and

organizations in strategic management, when they employ effective learning in their project purpose. Finally, the study will also provide an opportunity for the researchers to conduct further studies in community-based disaster risk reduction in Bangladesh.

1.7. Structure of the thesis

This thesis is organized into Ten (10) chapters, which has four sections. Part 1 contains Chapters 1, 2, and 3 and provides an overview of the thesis and introduces the potential of the CPP volunteers as an actor in CBDM. It also discusses the situation of the Bangladesh and explains why community-based volunteerism is important in DRR. An overview on the literature has been provided about on community-based volunteerism in Bangladesh and example from different countries in the world. This part also includes with CPP volunteers' action and it's with peoples the evacuation decision in Bangladesh. Chapter three outlined methods, approaches and tools that were utilized throughout the study.

Part 2 includes Chapters 4 and 5 and focuses on how the early warning system in Bangladesh is related to CPP programme. It also provides details regarding grass roots vulnerability of the study area and local village responses to cyclone early warnings. Chapter five synthesized the cyclone policies and current early warning outlined by the national Government. This chapter discussed all finding and gaps within both policy and early warning practices.

Part 3 include Chapter 6, 7 and 8. Chapter Six introduces community-based volunteerism in the case of Japan, Bangladesh and USA. And give a brief introduction about CPP program, Shobo-dan and CERT program. It discusses how community volunteer are embedded in DRR networks and investigates how the social capital of the community-based volunteer can be enhanced in order to improve their participation in DRR activities and well as how to be more enmeshed in DRR networks. Chapter 7 summarizes the results of the questionnaire survey of CPP volunteer and community. Results of selected variables, charts, and tables have been provided in order to identify the factors that influence decisions not to follow evacuation orders during disasters by community and factors affecting the CPP volunteer performance

in disaster response. Chapter 8 discussed about a comparative a two-case study of CPP and Shobo-dan volunteers' performance in different disaster.

Part 4 contains Chapter 9 and 10 discusses volunteers the importance in DRR activities. Chapter 9 summarizes the discussion in the previous chapters and lays down the framework and recommendations for improvement of volunteerism participation in CBDM. Lastly, Chapter 10 wraps up the thesis and presents some points to be pursued in the future for further research.

Finally, this thesis is intended to highlight the important role played by CPP volunteer in addressing DRR in the Bangladesh and to offer insights on how volunteer might be more effectively integrated as agents of action in their own community within the realm of DRR.

2. CHAPTER II: Literature Review

2.1. Review of the literature

The purpose of chapter 2 is to develop a well documented argument for the selection of the research topic, to formulate the research questions, and to justify the choice of research methodology. As for Bangladesh, many researchers emphasize the impact and damage assessment of cyclone and people's perception on evacuation behavior and risk assessment in Bangladesh. However, only few research studies have been done focusing on the contributions of community volunteers (CPP) toward saving the lives and properties of valuable community. Even though CPP volunteers are the main actor for disseminate the early warning information. Different scholars have discussed the importance of cyclone preparedness program volunteer's activity which is related to evacuation to a safe place. Paul (2010) study found that there is a high positive correlation between the rate of evacuation and the understanding of a hazard warning disseminated by CPP volunteers, which indicates that if warnings are heard and trusted, they are very likely to result in evacuation. Amin (2012) studies shows that training affects volunteers' motivation. Moreover, studies on the role of gender in volunteers' participation under disaster scenarios have been quite limited (Mumita and Shannon, 2018).

Even though CPP program facing some organizational problem such as equipment's problem, training etc. However, the volunteers try to ensure the early warning information to the community. Because CPP volunteers comes from the community and they know their locality and they can reach to the community before than any other organizations. This study argue that the Bangladesh Red Crescent Society should concentration on providing equipment's and training to all volunteers so they can disseminate the information on time. The study also uncovers the details of gender-based involvement and issues working as a CPP volunteers that has not been widely reached in the past. The CPP program should provide equal opportunities (training, relief work) both male and female volunteers to revive the program.

In this paper argue that initiating recognition for their volunteering efforts, are more likely to experience increased self-esteem associated with their motivation. Government should focus on this issue because they are non- paid volunteers. This study is different from the other researches since no researches were conducted using statistical evidence showing the link between CPP volunteers' activities and communities' perception towards volunteers in Bangladesh.

Community based volunteers play vital role in emergencies in helping the affected people. According to the Hong Kong Red Cross: community-based volunteers are not only 'first responders' in an emergency situation but also remain long after external assistance. They come from the community and are willing to help others; a functional volunteer is someone who is equipped with specific emergency skills, such as rescue, first aid and psychological support. In the past, community volunteering was mainly regarded as work or activities contributed to private charitable or religious organizations. However, volunteers have become a crucial resource for various types of organizations not only in the nonprofit sector but also in the public sector. As an example, the 1992, 1990, and 1988 Gallup organization surveys on volunteering in the United States show that a significant portion of volunteer efforts went to government organizations (Brudney, 1999).

When disaster strikes, people come together – either individually or through organizations–to help affected residents and their communities recover. Many disaster organizations rely on volunteers to provide the skills and services that are needed to respond to and recover from an event. These organizations interact with and— ideally—cooperate and collaborate with each other to help aid those affected by the disaster. These roles, interactions, data and value exchanged are called a Disaster Volunteer Ecosystem. One example is shown in Figure 1.
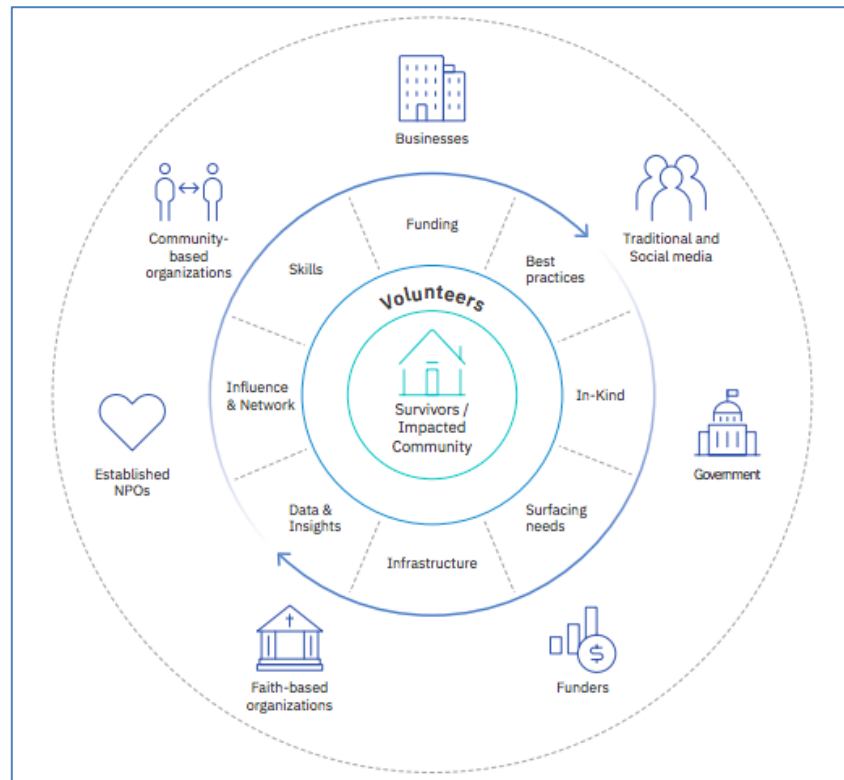
Figure 1: The disaster volunteer ecosystem (Johnson, 2014)

During the four phases of the disaster management life cycle, namely, disaster prevention/ mitigation, preparedness, response and recovery, voluntary organizations for disaster management have provided unique services and resources. In particular, the role of voluntary organizations for disaster management has been crucial to disaster relief efforts. Being trusted by communities, voluntary organizations for disaster management are often the first to arrive at the disaster area and the last to leave the location (Johnson, 2014).

Volunteers often play a critical role across the entire spectrum of rescue efforts. For example, immediately following the 2011 earthquake and tsunami in Japan, the community-level response was the key that saved countless human lives. The volunteer fire corps are community-based organizations (Shobo-dan) trained in disaster management used various tools such as handheld loud speakers, fire bells, sirens, and fire engine loudspeakers to warn communities throughout the affected areas. Ishiwatari (2012) remarks, "local communities have been responding to and

managing disaster risk for centuries before the creation of Japan's formal state system, local communities carried out disaster-related activities as volunteers; community-based organizations (CBOs) have existed for centuries". This study also focused on how citizens only prepare for threats they perceive as imminent and whose risk is worth preparing for. This helps them feel in control of the perceived threat.

In Japan, the local volunteer has a very strong relationship with the elementary school to educate people in disaster preparedness. At the initiative of the Shobo-dan, regular drills were conducted in cooperation with the schools (Ishiwatari, 2012). The miracle story of students of Kamaishi East Junior High School immediately ran out of the school to higher ground after the earthquake. Their very quick and resolute response prompted local residents and even the students and teachers in a neighboring elementary school to follow and consequently saved lots of lives (Isoda et.al; 2019). The response of Kamaishi East Junior High School students was based on the three principles of evacuation. It's all about the disaster drill and behind the efforts by Shobo-dan member's awareness contribution in their community.

In USA the Community Emergency Response Teams (CERT) were set up following Hurricane Katrina in the United States (CERT, 2021). These involved local volunteers trained in disaster preparedness and response, which, becomes more vital in an effort to make disaster management as effective and safe as possible for survivors and rescuers alike. The Cuban model is often held up as an example for reproduction in other countries around the world. Cuba DRR plan successfully integrates volunteerism, with most community members acting as volunteers, and awareness raising and education (UNV, 2007). In Sri Lanka, a people-centered early warning system was established that includes teams of volunteers using local communication methods (Rahayu et.al.,2019). Also, Thailand community volunteers have been trained at the village level to monitor hazards and transmit early warnings in a timely manner (UNDP 2011 & 2018). The Japanese government has integrated emergency education into school education and community activities and established multiple disaster prevention activities to carry out emergency training and exercises (Shi M.

et.al, 2018). Volunteer organizations were also established in New-zeland, Germany, the UK and Australia (Zeenat Mackwani and Chris Sullivan, 2016). In the case of emergencies, these organized volunteers can be mobilized and deployed rapidly. Such systems also offer appropriate protections on the health of the volunteers through training, support and insurance coverage.

Many community-based non-profit organizations would not be possible without the work of volunteers (Peachey, et al., 2014). A more enhanced understanding of this topic can allow participation rates and performance to increase for volunteers and enhance relationships with administrators (Bortree & Waters, 2008). "Volunteers do things for their own reasons, not yours, so your role is to create an organizational culture that stimulates the inner motivation of each volunteer.

In Bangladesh, the Meteorological Department plays an active part in raising the awareness of citizens and institutions by explaining the characteristics of cyclones, their phenomena, their risks and how to reduce them, as well as how to respond to cyclone warning messages However, the effectiveness of hazard warnings revolves around several factors, such as message content and features, source credibility, and the recipient's level of understanding of and previous experiences with hazard warnings (Paul et al., 2010). Even if people receive the same hazard warning, they may not comprehend the core meaning in the same way. The reaction to a warning depends on how people interpret the content of its message (Paul, 2010). Hence, there is a high positive correlation between the rate of evacuation and the understanding of a hazard warning disseminated by CPP volunteers which indicates that if warnings are heard and trusted, they are very likely to result in evacuation (Dash & Gladwin, 2007; Paul, 2009). From this perspective, hazard warnings can be considered a social process consisting of interconnected activities: warning messages, information dissemination, message reception, previous experiences, preparedness, and response (Mileti and Peek, 2000).

Shahed (2009) paper share the data that, cyclone flag warnings are that most people do not have a clear understanding about cyclone warning signals, which

disseminate by CPP volunteer. In JICA report in 2013 it is found that CPP implemented no functional activities even in the time of AILA. Learning from this experience, CPP is now working to establish their offices in the three southwest districts. Another researcher Mahmud (2013) investigate that Local people mentioned about low manpower of CPP volunteer and their incapability of logistic support. Amin (2012) paper focused on factor affecting the motivation of volunteers. His results indicate that, there is a difference between male and female in physical formation, which some time indicate the negative position of the female volunteers during disaster time and social factors affects the motivation also. Differences between men and women have been identified in a number of areas, such as ethical behavior, social problem solving (Goddard, Dritschel, and Burton 1998), human cognition (Caplan, Crawford, Hyde, and Richardson 1997). Paul and Dutta (2010) paper published that Eleven non-evacuee respondents (6.40%) complained that they did not evacuate because the warning message delivered by the CPP volunteers did not contain vital information, such as wind speed and wind direction, possible surge height and duration, landfall time and location, and the extent of damage expected.

Under the financial support from Save the Children USA, CPP prepared a database by an independent consultant Mr. Aminul Kawsar (2009) on the volunteer's capacity, their motivation, and status of equipment and needs of 5654 volunteers' of Bhola, Barisal and Barguna Zones. One of the important findings was that around 50% CPP volunteers worked very hard to aware and saved community people from cyclone Sidr 2007 but remaining volunteers could not take active part in cyclone warning phase due to lack of training and equipment. However, the internal and external factors affecting volunteerism aspects were not explored thoroughly in this study.

Another research by Mahmud about "Identifying Gaps, Challenges and Limitations of Access of Women, Children and PWD of Nijhumdwip to Cyclone Early Warning towards Rendering Improved Early Warning Services through CPP Dissemination Mechanism/System". This study reveals that a majority of the respondents is unable to follow & respond to the cyclone warning. In a very few

cases, all the members of a family evacuate while children are sent to cyclone shelters earlier in some cases. Many respondents mentioned that they tried to move towards cyclone shelters during the recent cyclone but due to the high surge of water they attempted to make their way back home. However, they neither reached the shelter nor got back to their homes.

Paul and Dutt (2010), point out that reasons for not responding to evacuation orders fall into three broad categories: Public cyclone shelters; the warning message itself; and individual perceptions and beliefs. In addition, an individual's response characteristics and socio-demographic variables such as age, gender, household income, education and the level of preparedness as well as ethnicity play important roles on human evacuation behaviors. Warning systems can save people's lives and reduce economic damages from natural disasters such as floods, tsunamis, earthquakes, landslides, and other events. Start with low-cost systems. Warning systems can start with simple methods. Low-cost equipment, such as fire bells and sirens, were widely utilized as warning tools during the GEJE. EWS should be linked with community-based activities in order to trigger efficient response. Actions at the community level are crucial as demonstrated by the volunteer fire corps that issued warnings and saved lives on March 11, 2011 in Japan (Khan and Rahman, 2007). Warning systems and other measures organized by communities may be particularly relevant in developing countries where government capacity and resources are limited.

Since warning systems are meant to benefit communities on the ground and to inform their actions, the responsible organizations should understand how local people cope with and respond to disasters. Community members decide on their own when, where, and how to escape or evacuate during disaster. The organizations should tailor the contents of warning messages to the users' needs and points of view. Such messages need to be simple, timely, and encourage early action. Establishing end-to-end EWS ensure that warnings reach the communities at risk (Chandan & Rita, 2015). Overall, very few studies incorporate validated scales that can be assessed across activities and contexts. It is important that new researchers recognize these limitations

and address them in future research, particularly if volunteer administrators are to build the best available evidence into their policies and practices.

Participatory approaches to disaster management and preparedness often pre-suppose a basis in local knowledge and practices because communities in disaster-prone areas have accumulated a lot of experience over time (Battista & Baas, 2004). These approaches also recognize that local people are the primary actors by default when a disaster strikes. From a local knowledge perspective, according to Battista and Baas (2004), it is more interesting to examine recurrent shocks that gradually increase the vulnerability of communities. Exceptional disasters require external means, beyond normal coping strategies. Experience has shown that some of the most successful risk reduction initiatives have closely involved communities in understanding risks and designing appropriate response plans. Community-based disaster management (CBDM) transforms vulnerable groups into disaster-resilient communities. By its nature, community participation creates partnerships around a common agenda. Hence, it relies on developing participatory mechanisms among stakeholders by identifying leaders, understanding interests, gaining trust and attaining commitment. However, to be successful, communities should be construed as "being part of" rather than "taking part in" an activity. Disaster risk reduction issues must be framed within a community's social, cultural, environmental and economic context. Garnering community participation often requires a catalyst for change (e.g., experts who can provide knowledge and facilitate discussions), as well as self-motivated participation. Community participation involves a process that first identifies linkages between formal government structures and a community's social structures and then creates mechanisms to integrate them into a common agenda. Twigg (1999) also argues that existence of community-based organizations allows people to respond to emergencies rapidly, efficiently, and fairly, and therefore available community resources (even if scarce) will be used economically.

Community based volunteer work has a transformative effect on volunteers. Numerous studies have found that volunteers enjoy better mental and physical health,

are happier, and tend to live longer. While healthy and happy people are more likely to volunteer, longitudinal studies have found a real causal effect by which volunteering improves mental and physical health (Musick & Wilson, 2003). Volunteering also contributes social capital, defined here as norms, networks, and trust. Volunteers join networks with others, which reinforce norms of cooperation and helping and develop trust. Volunteering may create bridging social capital, bringing people from different walks of life together in a common group. Bridging social capital is thought to be particularly important in supporting a healthy democracy (Putnam, 2000). While it seems likely that volunteering might create bridging capital, a recent review of the literature found "little direct evidence of how the actual benefits of bridging capital are produced through volunteering" (Stukas et. al., 1999).

A bulletin titled "Contribution of Volunteerism to Disaster Risk Reduction" published by UN Volunteers practice note 2012 was reviewed. The first part of the article discussed the theoretical issues of Disaster Risk Reduction and volunteerism. The second part mentioned six case studies of different countries related to "volunteerism in action". One of the case studies is on "Integrating volunteerism into community disaster risk preparedness", and this case study focused on how volunteerism practice helps to reduce the loss of lives and assets from cyclone. The third part of this article discussed about other relevant issues such as gender, youth, and involvement of marginalized groups. Moreover, it also discussed about the external factors that female volunteers face as challenges. This case study didn't cover other challenging issues or factors like management constraints and personal limitations.

In the United States, Benjamin Franklin established a volunteer fire department in 1736 as the first voluntary organization for disaster management. Volunteerism has been an American tradition since the colonial days; almost everyone in the nation has served as a volunteer in one-way or another. However, the activities of voluntary organizations for disaster management have not always been successful. For example, volunteers were not smoothly integrated into the phase of disaster response when

hurricane Katrina struck the country in 2005. The staff members of voluntary organizations did not know how to manage their volunteers and the work that had to be done at that time. However, having learned from that experience, when hurricane Sandy hit the east coast of the United States in 2012, volunteers played a role in spreading early warnings and supporting local shelters. Accordingly, several researchers have studied how to improve the role of voluntary organizations in the field of disaster management from various perspectives, such as leadership, participation, and organizational effectiveness. Among them, one research mentioned that the number of volunteers in the United States has steadily decreased in cities and states, compared with twenty years ago (Stunder, 2013). To solve it, All Americans need to clearly recognize the indirect positive effects of volunteering for not only volunteers themselves but also communities.

Community volunteers also make a psychological contract with the organizations where they participate (Starling et al., 2010). Volunteers do not expect to be treated just like paid employees, but expect that their volunteer experience will meet their emotional and relational needs. The strength and nature of volunteer motivations and the ability of organizations to satisfy those motivations correlates with volunteer satisfaction, commitment, and retention. Many studies use the Volunteer Functions Inventory (VFI) (Clary et al. 1998), which measures six motivations for volunteering: building career skills, enhancing self-esteem, protecting oneself from negative emotions, social motivations, understanding others, and prosocial values. Some studies found that recruitment efforts were more effective if they included messages that accurately targeted volunteer motives. Support for the importance of motivations in retention and hours volunteered has been mixed, but a recent article found a positive correlation between motive fulfillment and retention (Stukas, Clary, & Snyder, 1996). One important personality trait that encourages volunteering is volunteer role identity. People may begin volunteering for any number of reasons, but as people continue to volunteer, they begin to think of themselves as volunteers and seek out new volunteer opportunities after their original volunteer commitment ends.

Volunteer role identity helps explain why the best single predictor of future volunteering is past volunteering (Matsuba et.al 2007).

Motivations include a range of personality traits, values, and needs. An influential study of volunteer motivations divides them into six types: self-enhancement, career development, the desire to understand the world, the desire for social relationships, moral values that lead one to help others, and the use of volunteer work to protect oneself against negative feelings or deal with personal problems (Clary et al., 1998). Psychological studies have explored the different types of moral traits and values that encourage volunteering, which include empathic concern, prosocial role identity, moral obligation, generative concern, and an extensive moral orientation (Einolf & Chambré, 2011). Religious people tend to volunteer more, although scholars disagree on whether this is due to the altruistic values that are preached by religions or the social networks that come with religious participation (Einolf & Chambré, 2011).

A number of recent studies explore the propensity to volunteer as a function of various demographic and economic indicators (see for example, Pho 2005). While these indicators seem to capture a large portion of the variation, there remains the possibility that exogenous events, such as natural disasters, may have an effect on the decision to volunteer. Pho also presents evidence on interesting differences in volunteer participation rates across various demographics groups and other related attributes. For example, volunteering is negatively correlated with city size. A multitude of techniques for assessing the factors that drive volunteerism based on the wage rate are also presented by Pho, including the opportunity cost approach (i.e., wage of primary occupation), the replacement cost approach (i.e., shadow wage rate), and a measurement called the propensity to volunteer. The use of demographic statistics and wage rates to explain volunteer participation is a common theme throughout the literature and explains a large portion of the variation, but there are other factors, such as crises, that also play roles.

Social networks hold a strong influence over people's volunteering. Most people volunteer because someone asked them to, and people with broad social

networks are more likely to be asked. Social networks can build trust, and people who have a strong sense of trust feel more solidarity with other people and feel more inclined to help them. Trusting people are also less inhibited by concerns about others taking advantage of their generosity (Brown & Ferris, 2007). Some social networks, such as those that exist in religious institutions and service clubs, create external norms that favor volunteering. These external norms motivate people to volunteer even when they are not intrinsically motivated to do so, because other people in their group expect it of them.

In 2006, Skoglund concluded that there are three important factors that influence the retention among volunteers. The first Factor is that volunteers feel alone in their volunteer work (they need to establish more friendships among other volunteers). Secondly, there is need for increased attention with respect to training and professional development, and lastly there is need for opportunities to cultivate their role identity. Meanwhile, Skoglund (2006) recommended that the volunteer organizations should develop a support group as well as ongoing training seminars. In this way the organizations would be able to reduce volunteer turnover and subsequently increase retention. This author further recommended a longitudinal study be conducted to monitor the long-range influence the suggestions would have on volunteers. Decision to leave. In summary, there are a number of factors, situations, and variables that influence retention as well as turnover among volunteers.

Previous studies have shown that diverse internal variables motivate community in volunteering. Emerson et.al; (2017) in their research, nine variables were tested. In summary, studies highlight that internal variable can have an influence community on volunteering, as (self-esteem, generosity, personal obligation, personal satisfaction, solidarity, social status, family tradition, identification with the organization and/or cause and social responsibility). External motivators (environmental and social) have an effect on an individual's willingness to volunteer. In summary, it can be seen through previous studies that variables external to the individual, such as professional image, recognition from society, identification with

other volunteers from the group, organizational reputation, natural disasters, are important for an individual becoming a volunteer.

Volunteering also contributes social capital, defined here as norms, networks, and trust. Volunteers join networks with others, which reinforce norms of cooperation and helping and develop trust. Volunteering may create bridging social capital, bringing people from different walks of life together in a common group. Bridging social capital is thought to be particularly important in supporting a healthy democracy (Putnam, 2000). While it seems likely that volunteering might create bridging capital, a recent review of the literature found "little direct evidence of how the actual benefits of bridging capital are produced through volunteering" (Stukas et al., 1999).

Community participation teaches communities how to resolve conflict and allows for different perspectives to be heard. In this way, learning is promoted and people will be able to help themselves (Nampila, 2005). Communities will be able to assess their own situation, organize themselves as a powerful group and work creatively towards changing society and building up a new world. These increased capacities of individuals allow communities to mobilize and help themselves to minimize dependence on the state and leads to a bottom-up approach (Nampila, 2005). While disasters are increasing in frequency and intensity, they are also taking roots in more complex and volatile environments where their consequences are less foreseeable and controllable. Beyond costs, Governments alone cannot plan for all the particularities of an emergency situation. This increased unpredictability is accelerating the shift from top down to bottom-up EM approaches. This shift is both leveraging and asserting response and adaptation mechanisms found at the community level and thus encouraging "whole of society resilience". With their unique knowledge of local conditions, local volunteers and Voluntary Sector Organizations (VSOs) can accelerate disaster assessment and access to immediate emergency resources. The assistance of a dynamic base of volunteers can be significant, particularly when volunteers have training and knowledge that is relevant to the situation to which they attend.

Internationally, resources for social welfare services are shrinking. population pressures, changing priorities, economic competition, and demands for greater effectiveness are all affecting the course of social welfare. The utilization of nonprofessionals through citizen involvement mechanisms to address social problems has become more commonplace (Kaufman et.al. 2004).

The existing literature shows that partnering with community-based social networks increases community participation. The deployment of local volunteers who have a sound knowledge of the culture, religion and language of the region helps volunteers to gain the community's trust and, as a result, promotes greater participation and a spirit of volunteerism in the community.

3. CHAPTER III: Research Methodology

3.1. Research Design

This Research adopted both qualitative and quantitative method of field-based analysis and literature-based analysis. The Field based primary data were collected by personal visits to the field from CPP volunteers, officers, unit, union & Upazila team leaders and community people of selected area through focus group discussion and key informant's interviews following semi-structured and open-ended questionnaires. The data were collected in February, 2020. A total 23 CPP volunteers' opinions from both male and female volunteers were separately collected through Focused Group Discussion (FGD). To identify institution involvement and functionality; expert interviews were conducted which involving in-depth interviews with CPP head officials and BDRCS official at field level. Also, a total 177 number of households were surveyed in the study areas (Koyra and Ukhiya sub-district) to assessment the performance of CPP volunteers in their community.

Figure 2: Research methods and process of data collection
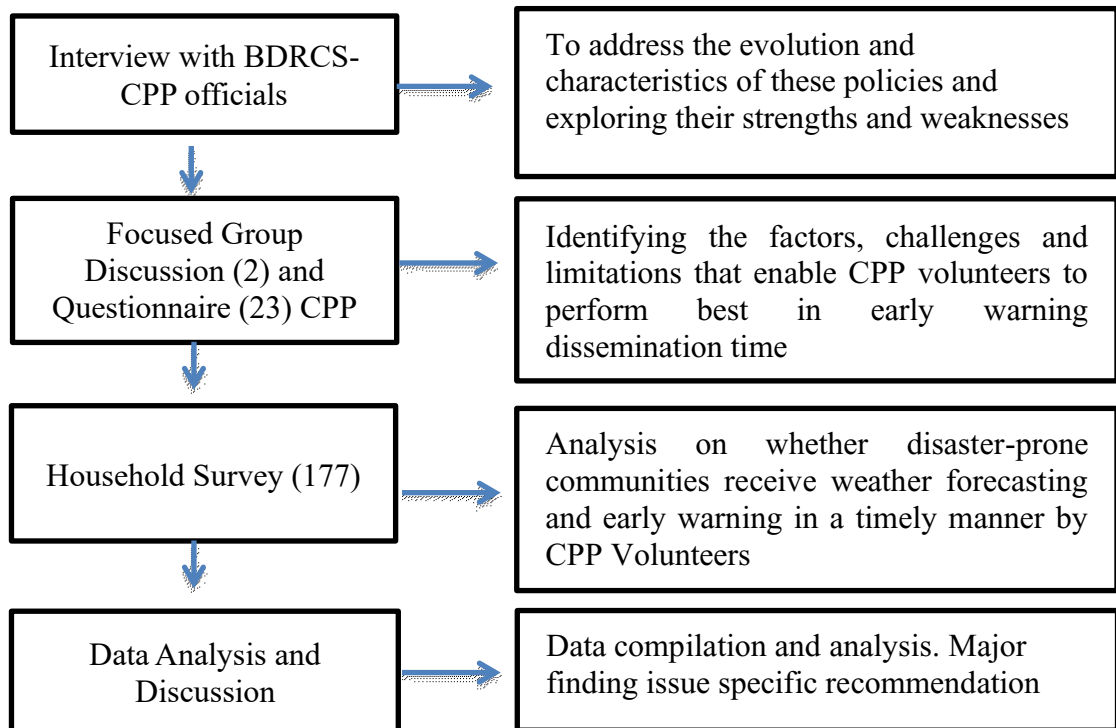
Source: (Created by author)

3.2. Research Framework
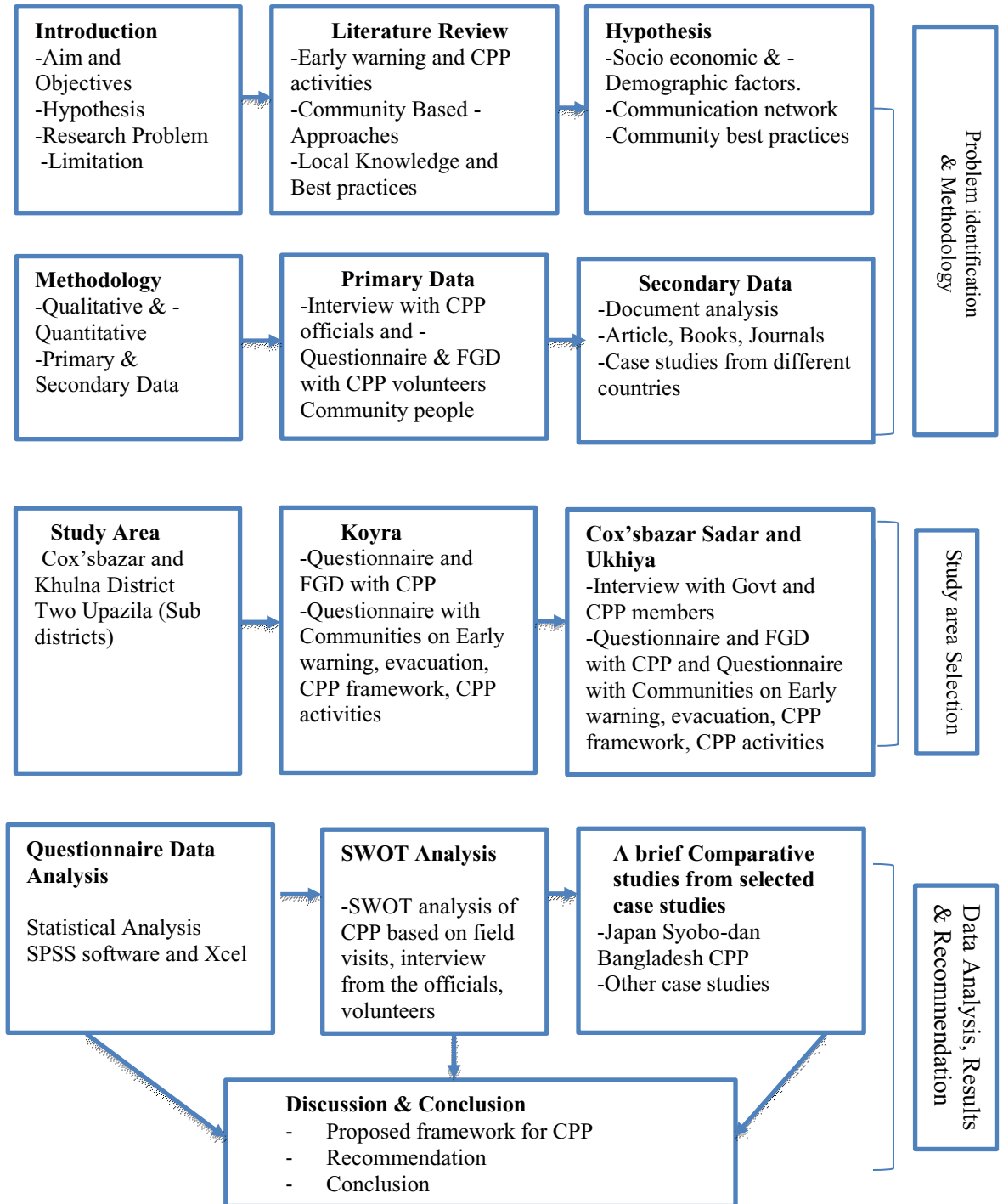
Figure 3: Framework of the thesis

Source: (Created by author)

3.3. Selection of the Study areas:

The study areas were selected based on CPP volunteer's activities and their performance during disaster as well as no previous specific research is conducted in those areas. The geographical location of the both study area is different. Koyra Upazila is located in Southwest region and Ukhiya Upazila is located in Southeast region. It should be noted that, during my interview with CPP officials I shared the intention to select the study areas and they also agreed and recommended the selecting areas because both study areas not enough research done by the authority.

3.4. Data collection and Analysis method

For data collection questionnaire, interview, discussion and field observation was apply for obtaining the related information. To maintain the right of privacy of the respondents, they have been briefed on the research purpose and asked whether they want to participate the survey as well allow us to use their information.

3.4.1. Quantitative Methods

Two questionnaire surveys were conduct in the study areas. In the first questionnaire survey (Survey-1), the CPP volunteers or their representative, were ask to answer questions regarding structure and quality of the relationships of the CPP volunteers with other DRR actors specially communities, as well as the major factors that enable CPP volunteers to perform best in disaster management. The CPP officials in the study areas also asked to enumerate their partner organizations in their DRR activities and to rate the strength of their interactions as well as indicate the direction of flow of information, funds etc. In the second questionnaire survey (Survey-2), Analysis on whether disaster-prone communities receive weather forecasting and early warning in a timely manner by CPP Volunteers. The community peoples will ask to assess of volunteer's performance of cyclone preparedness program from their point of view. After gathering all information, in the last stage it will analyze through statistical tools, which include frequency analysis, and chi-square test of association.

3.4.2. Conducting questionnaire interviews

Before conducting a survey, it is very important to conduct physical observations in the study area. I made a transect-walk with two interviewees. After this physical observation, optical information helped me to become familiar with the affected area. Additionally, I received preliminary information about their lives, socioeconomic structure and livelihood. At the community level, all questionnaires were conducted in Palongkhali and Uttar Bedkashi Union. Primary data were collected using questionnaires aimed at 177 people, who were affected by cyclone disaster. Responders were from local communities living near the cyclone shelter and far from the shelter. Random sampling was used for primary data collection. If the randomly selected household was absent during the survey, then the neighboring household was interviewed. The survey consisted of semi-structured, open and closed-ended questions. The survey of the local community was carried out in February 2020. At the beginning of the interview, I explained to the respondents the purpose and goals of my research. With their consent, the interviews took place in the respondents' home during their free time. On average, each interview took half an hour.

3.4.3. Data Analysis:

To analyze the interview data, I developed profiles of individual interviewees that contained socio-economic status and people's response in disaster, receive early warning information and communication with communities was analyzed using SPSS software. The analysis was carried out in two phases: phases 1- all data were arranged in a SPSS and excel sheet, and phase 2- chi-square tests were run to test for relationships among several variables. Finally, a narrative analysis was shown that included text and table forms describing the study results. The final results are presented in the results section in Chapter VII.

3.4.4. Qualitative Method

The qualitative method aims to be adopted in this research to: better capture diversity (example: Gender, Minority). Key Informant Interviews were applied to understand the context. Explore people's experiences, cyclone awareness, CPP

framework, CPP activities, early warning and evacuation, Government and NGO"s involvement. The purpose of Key Informant interviews is to collect from a wide range of people- including community leaders, professionals who have first-hand knowledge about the community.

3.5. Analytical Framework

An analytical framework was developed from the theory containing four independent variables that likely effect only dependable variable Institutional capacity. The independent variables are resources, network, cooperation, training and leadership.
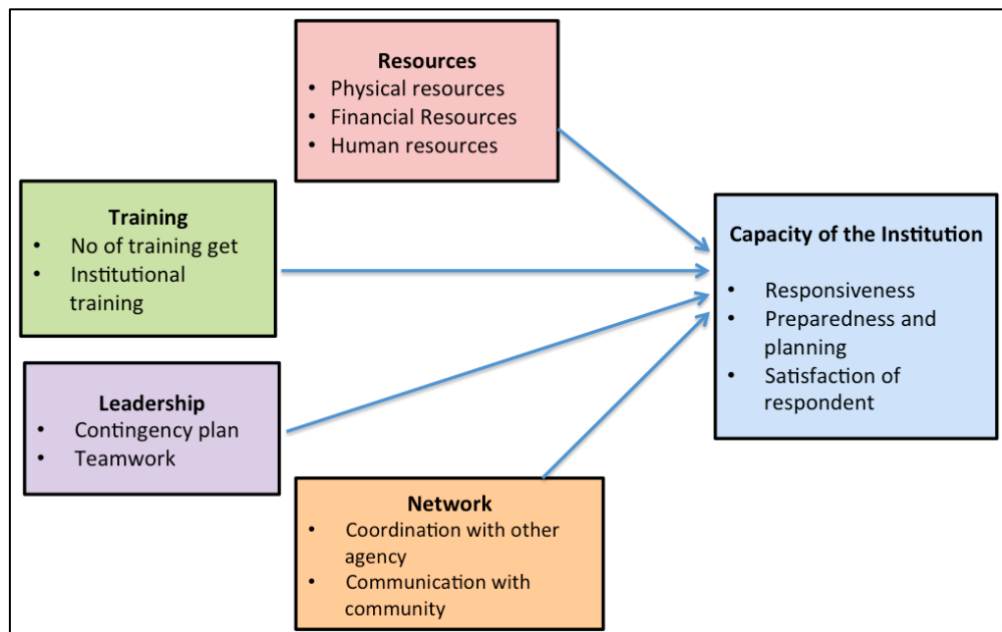
Figure 4: Analytical framework

Source: (Created by author)

3.6. Strengthen Weakness Opportunities Threat (SWOT) analysis

Strengthen Weakness Opportunities Threat (SWOT) analysis that can be a useful method for bringing all stakeholders together to participate in disaster management cycle. It is a process where the internal and external factors that will affect the volunteers and communities' future performance. Based on the literature review, field study and interview SWOT analysis was applied for CPP.

3.7. Comparative analysis

A descriptive comparative study was undertaken through a methodology by selected countries based on their contribution to community disaster responses, coordination and organizing of disasters as well as their experience in disaster management. The countries Bangladesh and Japan were chosen in this step as case studies based on their contribution to issues such as policy-making, planning, community-based approach, community-based models, community stakeholders, and community-based intervention as well as their experience in disaster management and access to related information.

3.8. Interview with expert bodies

Relevant information regarding CPP activities, policies and challenges have been gathered from relevant expert bodies by using an unstructured questionnaire to gain new or additional insights into the issues being studied and which is also not available in the literature or even in the primary documents. The relevant expert bodies were chosen from CPP head office and field officials, Bangladesh Red Crescent society who directly worked with CPP volunteers. Depending on the availability of respondents, distance, and accessibility to them; interviews were conducted via face-to-face interview, email and mobile phone conversation. A set of three unstructured questions was asked to each interviewee to know the phenomenon in details and then relevant information were translated into English to accomplish the purpose of the study. Several times mobile phone conversation has been done with the related bodies due to avoid the glitches, better understanding and accomplish the objectives of this study.

3.9. Limitation of the study

One important limitation in my research was that I was not able to cover all unions of Ukhiya and Koyra Upazila. Due to corona situation many CPP volunteers could not come to join the meeting at local CPP office and also, they have their own works. Yet there has been limited research activity on CPP in Bangladesh. Considering the limitations, conducting research on CPP volunteer's activities in DRR in Bangladesh

is imperative. On the other hand, in Japan case, due to my lack of Japanese language I could not conduct depth interview with Shobo-dan members. Cultural barriers may have caused respondents to withhold valuable opinions.

3.10. Ethical issues

Ethical issues arise from the social context and from the kinds of questions the researcher asks the informants (Sufian, 1998). This study was conducted using questionnaire surveys, and focus group discussions; for data collection and surveys. I engaged the community in all levels. The participants in this study were voluntary. I assured the interviewee that all collected information would only be used for the research purpose.

4. CHAPTER IV: Study Areas

4.1. Introduction of the study areas

The coastal area of Bangladesh is historically recognized as the venue for disasters (Chowdhury et.al; 1993). The below mentions unions are the most vulnerable unions and under high-risk zone for cyclone. As cyclone frequently affects these unions, therefore, volunteerism practices supposed to be developed in these areas. The study areas were selected based on CPP volunteer's activities and their performance during disaster as well as no previous specific research is conducted in those areas. Koyra and Ukhiya study areas was considered as the study areas for few reasons;

- Both areas are severely affected by cyclone disaster.

- As cyclone frequently affects these unions, therefore, volunteerism practices supposed to be developed in these areas.

- The selected study area's geographical location is different. Koyra Upazila is located in Southwest region and Ukhiya Upazila is located in Southeast region.

- In Ukhiya sub-district the local and indigenous people live in this area.

In Koyra sub district CPPs unit established after Cyclone Aila (May 2009). On the other side, Ukhiya CPP Unite was under Cox'sbazar district, which established in 1973. Later, Ukhiya Upazila unit separated from Cox'sbazar Sadar unit.

Table 2: Information of the survey areas

District	Upazila	Union	No of respondents from community	No of CPP volunteers
Cox'sbazar	Ukhiya	Palongkhali	91	12
Khulna	Koyra	Uttar Bedkashi	86	11

Source:(Created by author)

Figure 5: Map of the study areas

Source:(https://documents1.worldbank.org/curated/en/160611468014459434/pdf/90
4870v20Bangl0LIC000Sept004020140.pdf) [Access online 4th June, 2019]

4.2. Introduction of Koyra Upazila

Koyra Upazila (Khulna district) area 1775.41 sq km, located in between 22°12'
and 22°31' north latitudes and in between 89°15' and 89°26' east longitudes. It is
bounded by Paikgachha Upazila on the north, the Bay of Bengal and Sundarbans on
the south, Dacope Upazila on the east, Assasuni and Shyamnagar Upazila on the west
(BBS, 2011)

4.2.1. Administrative section

The Upazila consists of 7 unions, 72 populated mauzas and 133 villages. The average population of each union, mauza and village are 27704, 2693 and 1458 respectively (BBS,2011).

4.2.2. Housing and Household Characteristics

In the Upazila, there are 45750 households. Distribution of household by type shows that there are 99.78% general unit, 0.02% institutional and 0.20% other unit. Household Size: The average household size (general) for the Upazila is 4.2 persons, for rural area the size is also 4.2 and for urban area the size is slightly higher i.e., 4.3 persons. Type of Housing Structure: In the Upazila, 4.4% general households live in pucca house, 5.5% in semi-pucca house, 86.9% in kutcha house and the remaining 3.2% live in jhupri which are shown in Figure 5 (BBS,2011).
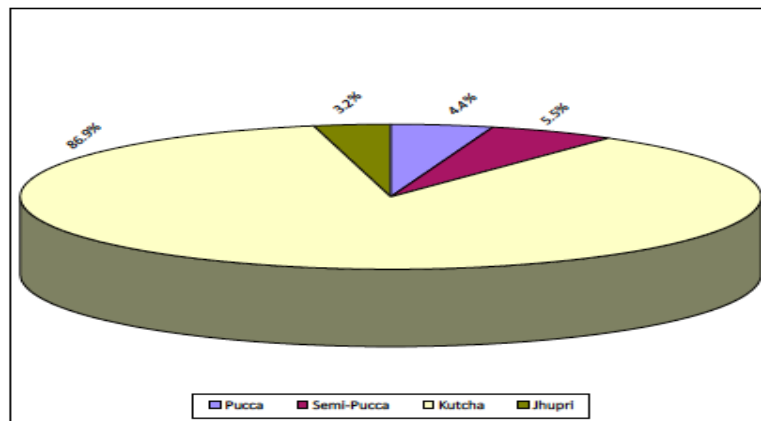
Figure 6: Housing condition of the Koyra Upazila

Source: BBS (2011)

4.2.1. Income source

The main sources of income in this Upazila are Agriculture 66.64%, non-agricultural laborer 7.12%, industry 0.51%, commerce 12.66%, transport and communication 1.85%, service 3.54%, construction 1.31%, religious service 0.31%, rent and remittance 0.09% and others 5.97%. Ownership of agricultural land Landowner 62.76%, landless 37.24%; agricultural landowner: urban 63.51% and rural 50.74% (BBS, 2011).

4.2.2. Literacy rate

In Koyra Upazila, it is found that 50.4% populations aged 7 years and over is illiterate. Literacy rate by sex of three consecutive censuses are shown below table 3:

Table 3: Literacy rate of Koyra Upazila

Item	1991	2001	2011
Both sex	32.4%	44.5%	50.4%
Male	43.6%	53.2%	55.8%
Female	21.4%	36.0%	45.2%

Source: BBS (2011)

The literacy rate of the Upazila in 2011 is 50.4% for both sex, 55.8% for male and 45.2% for female. It shows an increase of 5.9, 2.6 and 9.2 percent point in 2011 over 2001 for sex, male and female respectively.

4.2.1. Education status

School attendance of boys and girls between ages 3-29 years is presented in table 4 School attendance rate by sex

Table 4: Education Status of Koyra Upazila

Item	3-5 years	6-10 years	11-14 years	15-29 years	20-24 years	25-29 years
Both Sex	10.1	80.74	85.23	46.16	7.00	1.19
Male	9.84	80.06	81.20	50.81	11.94	2.08
Female	10.19	81.47	41.68	41.68	3.82	0.49

Source: BBS (2011)

There exist differences in school attendance rates in different age groups, which can be observed from the Table 4. The female attendance rate in the age groups 3-5, 6-10 and 11- 14 and years is higher than their male counterparts. On the other hand, male attendance rate in the age groups 15-19, 20-24 and 25-29 years is higher than female. The highest school attendance rate is 89.53%, which is found for female in the age group 11-14 years (BBS,2011).
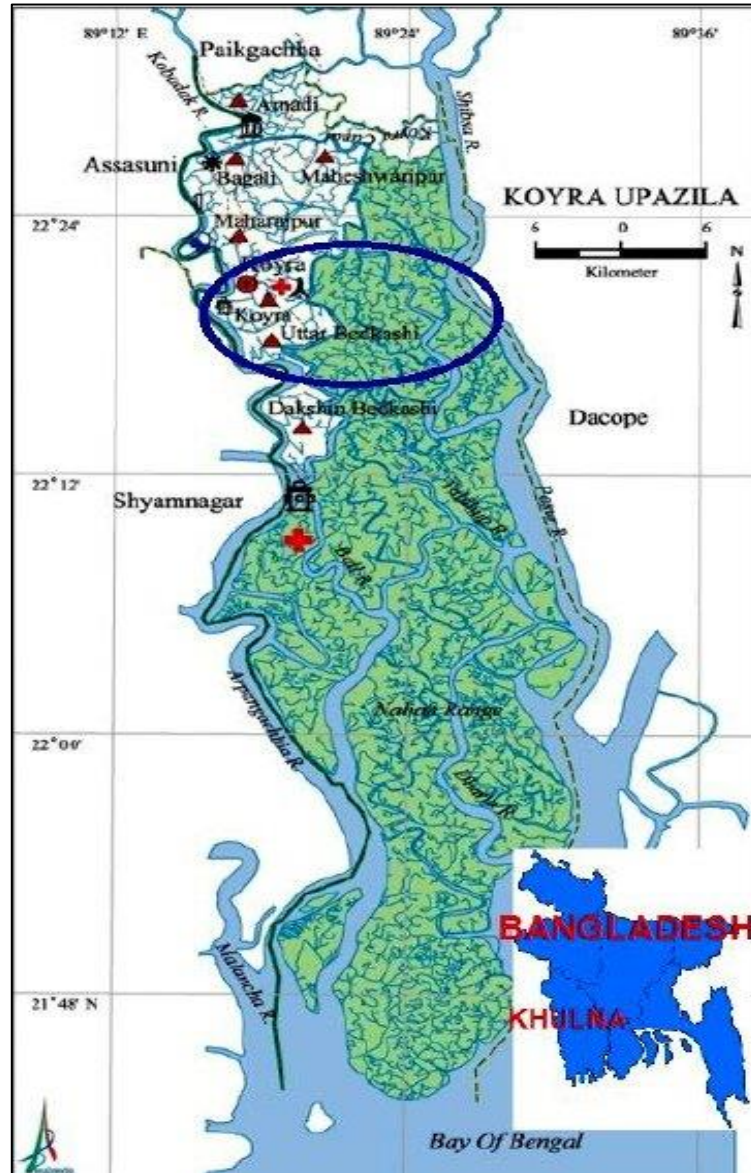
Figure 7: Map of the study area Koyra Upzila

Source:(https://en.banglapedia.org/index.php/Koyra_Upazila)
[Access online 4th June, 2019]

4.3. Introduction of Ukhiya Upazila

Ukhia Upazila area 261.8 sq km, located in between 21°08' and 21°21' north latitudes and in between 92°03' and 92°12' east longitudes. Ramu Upazila bound it on the north, Teknaf upazila on the south, Arakan state of Myanmar and Nakhainogchori upazila on the east, the Bay of Bengal on the west (BBS,2011).

4.3.1. Administrative Unit

The Upazila consists of 5 unions, 13 populated mauzas and 54 villages. The average size of population of each union, mauza and village are 41476, 15952 and 3840 respectively (BBS,2011).

4.3.2. Housing and Household Characteristics

In the Upazila, there are 37940 households. Distribution of household by type shows that there are 99.54% general unit, 0.15% institutional and 0.31% other unit. The average household size (General) for the Upazila is 5.4 persons, for rural area the size is slightly higher i.e., 5.5 and for urban area the size is slightly lower i.e., 5.2. In the Upazila, 4.0% general household live in pucca house, 10.5% in semi-pucca house, 67.8% in kutcha house and the remaining 17.7% live in jhupri which is shown in a pie-chart in figure 8 (BBS, 2011).
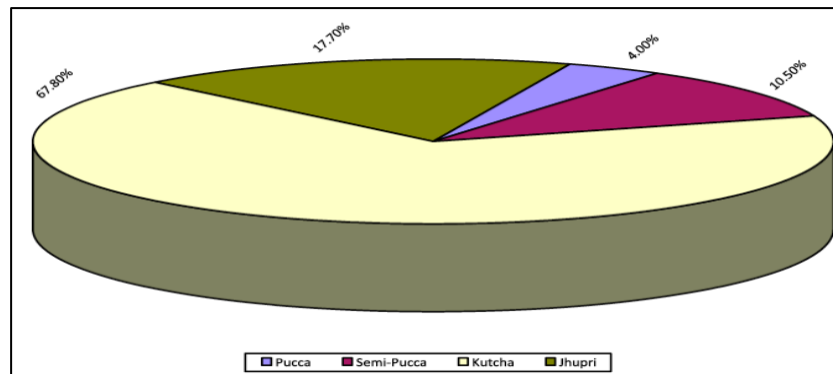
Figure 8: Housing condition of Ukhiya Upazila
Source: BBS (2011).

4.3.3. Population

According to the population census of 2011, the total population of the Upazila was total 155187; male 80561, female 74626; Muslim 136739, Hindu 3605, Buddhist

57, Christian 11761 and others 25. Indigenous community such as Chakma belongs to this Upazila (BBS,2011).

4.3.4. Literacy rate

In Ukhiya Upazila, it is found that 36.3% populations aged 7 years and over is illiterate. Literacy rate by sex of three consecutive censuses are shown below table five (5).

Table 5: Literacy rate of Ukhiya Upazila

Item	1991	2001	2011
Both sex	16.8%	38.11%	36.3%
Male	22.7%	33.0%	38.0%
Female	10.5%	23.11%	34.5%

Source: BBS (2011)

Above table shows that the literacy rate of the Upazila in 2011 is 36.3% for both sex, 38.0% for male and 34.5% for female. It shows an increase of 7.9, 5.0 and 11.1 percent point in 2011 over 2001 for sex, male and female respectively (BBS,2011).

4.3.5. Education Status

School attendance of boys and girls between ages 3-29 years is presented in table 6:

Table 6: Education status of Ukhiya Upazila

Item	3-5 years	6-10 years	11-14 years	15-29 years	20-24 years	25-29 years
Both Sex	11.9	74.81	67.78	27.15	4.55	0.73
Male	11.10	73.61	64.47	25.78	6.62	1.20
Female	11.9	76.06	71.17	28.54	2.89	0.34

Source: BBS (2011)

There exist sex differences in school attendance rates in different age groups which can be observed from table 6. The female attendance rate in the age groups 6-10, 11-14 and 15-19 years is higher than their male counterparts. On the other hand, male attendance rate in the age groups 3-5, 20-24 and 25-29 years is higher than female. The highest school attendance rate is 76.06%, which is found for female in the age group 6-10 years.

4.3.6. Income Source

The main sources of income are agriculture 54.40%, non-agricultural laborer 10.61%, industry 0.36%, commerce 15.05%, transport and communication 3.40%, service 0.34%, construction 1.45%, religious service 0.34%, rent and remittance 1.46% and others 12.95%. (BBS, 2011).

Figure 9: Map of the study area Ukhiya Upazila

Source:(https://en.banglapedia.org/index.php/Ukhia_Upazila#/media/File:UkhiaUpa zila.jpg) [Access online 4th June, 2019]

4.4. History of major cyclone disaster in Koyra and Ukhiya Upazila

There have been numbers of cyclone hit the Bangladesh coast since 1965, leaving thousands of people dead. With about 700km coastal line Bangladesh is often exposed to cyclone. The one of the reasons for heavy causalities are that cyclones

always come with storm surges, tremendous property damages, and the total disruption of development activities of the country occur almost every year. Both areas have a long history of cyclone disasters. Every year during pre-monsoon (April-May) and post-monsoon (October-November) periods the inland faces cyclones, heavy rainfall, tidal surges, extreme high tide etc. During cyclone of 1991, Ukhiya Upazila experience 9/10-foot tidal surge. Similarly, in 2009 due to cyclone Aila, Koyra Upazila also experiences 6/7foot huge waves. Normally the areas are flooded with 3−4-foot surges during the rainy season, and sometimes water logging lasts for 72 hours in low-lying areas. The wind normally blows from south to west and tidal surges hit from the west side. Salinity is one of the hazards in this Upazila. The salinity found excessive during the months of December to May. During the rainy season the proportion less than another season. Agriculture sectors affected during wintertime and the pure drinking water scarcity is found as well due to increasing amount of salinity. Some of the massive cyclone disasters that was hit Koyra and Ukhiya by in the recent past are shown in the table below 7:

Table 7: Major cyclone disaster in Koyra and Ukhiya Upazila

Cyclone name	Date & year	Area	Causality overall of the country
Cyclone Gorky	April 29, 1991	Ukhiya	150,000
Cyclone Sidr	Nov 15,2007	Koyra	3,363
Cyclone Aila	May 25, 2009	Koyra	190
Cyclone Mahasen	May 16, 2013	Ukhiya	17
Cyclone Komen	July 30, 2015	Ukhiya	7
Cyclone Roanu	May 21, 2016	Ukhiya	26
Cyclone Mora	30 May, 2017	Ukhiya	7
Cyclone Fani	4 May, 2019	Koyra	17
Cyclone Bulbul	09 Nov, 2019	Koyra	2
Cyclone Amphan	20 May, 2020	Koyra	25

Source: BMD (2020), (http://www.bmd.gov.bd/weather_forecast.php.)

[Accessed online 9th April,2020]

5. CHAPTER V: Cyclone Disaster and Early Warning Systems in Bangladesh

5.1. Background

According to the UNDP global report on Reducing Disaster Risk (2004), Bangladesh has been identified as the most vulnerable country in the world to tropical cyclones. The coastal areas of the Bengal plain and offshore islands are low-lying and very flat. Cyclones are treated as the biggest natural disaster in Bangladesh because of their continuous impact on human lives and property (Shultzl et al. 2005). Normally, cyclones occur during April and May (pre-monsoon), and October and November (post-monsoon), and the Bay of Bengal is the procreation center of cyclones in Bangladesh. Among the 64 districts of this country, 19 districts are known as coastal districts 36.8 million people, of which more than half are poor, live-in high-risk areas in the coastal zone (Parvin et. Al; 2009), and the coastal zone of this country is most susceptible to cyclones.

Table 8: Risk scenario of cyclone

Hazard	Potential impact of selected scenario	Districts likely to be severely affected
Cyclone	*Vulnerable people living along the coastal line could be affected. *Loss of life, livelihoods and property *Displacement and migration *Damage of infrastructure *Environmental damage	Chittagong, Noakhali, Bagerhat, Bhola, Patuakhali, Shatkhira, Barguna, Khulna, Bhola, Pirozpur and Cox's Bazar etc.

Source:(Created by author)

5.2. Historic event and impact of cyclone in coastal Bangladesh

Past records show that Bangladesh experiences one damaging cyclone every four and a-half years (Paul and Dutt 2010). From 1969-1990, an annual average of thirteen depressions formed in the Bay of Bengal and almost all of the resulted in disasters (Paul and Routray 2013). In Bangladesh, three catastrophic cyclones in 1970, 1991 and 2007 caused deaths of about 300,000 and 138,882, and 3,363 people

respectively (Paul, 2010).

Tropical cyclones from the Bay of Bengal accompanied by storm surges are also one of the major disasters in Bangladesh. The high number of casualties is due to the fact that cyclones are always associated with storm surges. The height of the storm surges in excess of 9 meters is not uncommon in this region. For example, the 1876 cyclone had a surge height of 13.6 meters and in 1970 the height was 9.11 meters (WARPO, 2005). In fact, the 1970 cyclone is the deadliest cyclone that has hit the Bangladesh coastline. With a wind-speed of about 224 kilometers per hour and an associated storm surge of 6.1 to 9.11meters. A list of devastating cyclones is given in Table 9.

Table 9: Major cyclones that hit the Bangladesh coast

Date and Year		Maximum Wind Speed (km/hour)	Strom surge Height (meters)	Death toll
12 November	1970	224	6.0-10.0	300,000
25 May	1985	154	3.0-4.6	11,069
29 April	1991	225	6.0-7.6	150,000
19 May	1997	232	3.1-4.6	155
15 November	2007	223	Up to 5	3,363
25 May	2009	92	2-3	190
16 May	2013	93	1	17
30 July	2015	85	3.3-6.6	7

Source: BMD (2020), http://www.bmd.gov.bd/weather_forecast.php

[Accessed online 9th April, 2020]
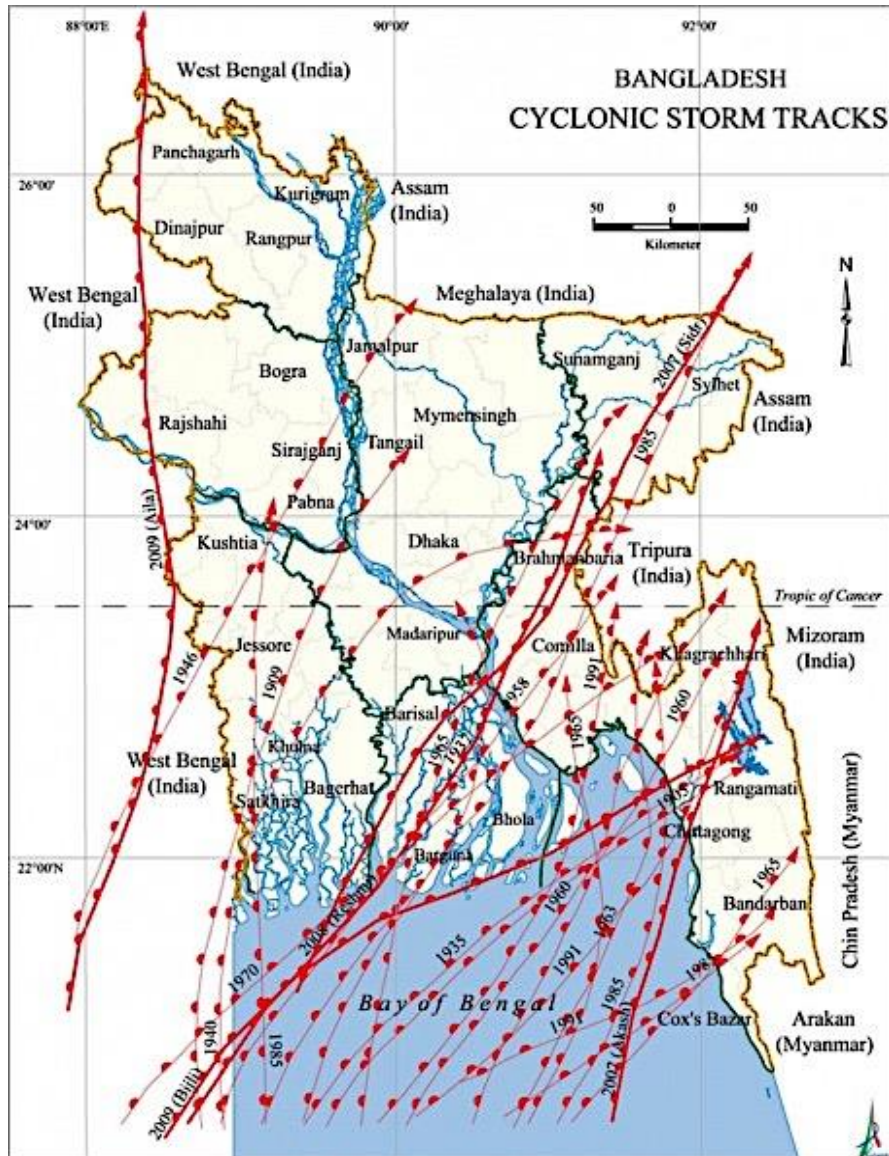
Figure 10: Historical track of cyclone

Source:(https://en.banglapedia.org/index.php/Cyclone#/media/File:Cyclone.jpg)
[Accessed online 6th April, 2020]

Figure 10 shows the tracks of cyclones hitting the coastal areas of Bangladesh since1909 to 2009. It is observed that the formation of a tropical cyclone is from a southwest to northeast direction.

5.3. Early warning systems in Bangladesh

In general, the early warning system and the dissemination its information is issued by the Bangladesh Meteorological Department. Prediction of cyclonic storm in

the Bay of Bengal and issuance of timely warning are the tasks of the Storm Warning Centre (National Weather Forecasting Centre) Dhaka. The cyclone information issued by the Storm Warning Centre (SWC) requires detection and monitoring of cyclones from formation until landfall and forecasting the cyclone's future track. Modern technology has provided the means for early detection and constant tracking. The cyclone warning contains the following information.

- Position of storm center and maximum wind speed

- Direction and rate of movement of a cyclone

- Area likely to be affected, specifying Upazila of the district if possible.

- Approximate height of storm surge/tide and areas likely to be affected.

BMD collects meteorological data through 35 ground-based, 10 weather balloon, 5 radar, and 3 rawinsonde stations. In addition, BMD receives weather satellite data, ocean-buoy-recorded meteorological data, and sea surface data, and numerical-model-generated weather forecasts from other national and regional meteorological offices, as a member state of the World Meteorological Organization (Chandan & Rita, 2015). The Storm Warning Center (SWC) for providing disasters warning coordinates the four stages of forecast. The Bangladesh Meteorological Department Bangladesh (BMD) administrates the whole process of the warning message dissemination system. BMD is responsible for:

- Observing different meteorological parameters both for surface and upper air all over Bangladesh round the clock.

- Preparing and analyzing all weather charts and to make interpretation on the basis of analyses.

- Providing weather forecasts for public, farmers, mariners and aviators on routine basis and also to issue warnings for severe weather phenomena such as tropical cyclones, tornadoes, nor'swesters, heavy rainfall, etc.

- Exchanging meteorological data, forecasts and warnings to meet national and international requirements.

- Providing meteorological data, radar echoes and Satellite imageries and

weather forecast for flood forecasting and warning center.

- Monitoring micro seismic events and earthquake round the clock.
- Conducting special studies required for the policy makers and for the development of hydrometeorology and Meteorological sciences in the region.

Figure 11: BMD's Dissemination Network

Source: Mahmud (2013)

5.4. Formulation and dissemination of warning messages

The meteorologists at BMD formulate warning messages based both on self-produced and numerical-model-generated forecasts received from the Regional Specialized Meteorological Center (RSMC) in India, with most of the weight on self-produced forecasts. In cyclone emergency situations, BMD disseminates new warning messages as special weather bulletins. The basic flowchart of TC forecasting at BMD at every three to six hours, depending on the severity and motion characteristics of the approaching TC. BMD disseminated 29 special warning bulletins during the 6-day

lifespan of TC Sidr and 35 special warning bulletins during the 7-day lifespan of TC Mahasen. In each bulletin, information was added, changed, or deleted depending on the changes in forecasted TC track and intensity. BMD issues warning messages for the maritime and the river ports following a system that was introduced during the British colonial period. In a warning message, the same signal (danger level) is issued for the maritime ports and their command areas.

During the British colonial period, the coastal region of Bangladesh was sparsely populated and TC warnings were mainly used for ocean-going vessels. Therefore, it was not necessary to include safety measures for coastal residents in the issued warning messages at that time. As this century-old system is still in use, warning messages issued by BMD during the TCs Sidr and Mahasen did not contain any recommended safety measures for the residents. Safety measures for the residents are added later following the guidelines prepared by DDM (Department of Disaster Management).

SPECIAL WEATHER BULLETIN, SL NO: 23 (TWENTY THREE), DATE: 19.05.2020

THE SUPER CYCLONE 'AMPHAN' (PRONUNCIATION: UM-PUN) (ECP: 926 HPA) OVER WEST CENTRAL BAY AND ADJOINING AREA MOVED NORTH- NORTHEASTWARDS AND NOW LIES OVER THE SAME AREA (LAT. 16.0°N, LONG. 86.7°E) AND WAS CENTRED AT 06 AM TODAY (19 MAY, 2020) ABOUT 890 KM SOUTHWEST OF CHATTOGRAM PORT, 840 KM SOUTHWEST OF COX'S BAZAR PORT, 785 KM SOUTH-SOUTHWEST OF MONGLA PORT AND 775 KM SOUTH-SOUTHWEST OF PAYRA PORT. IT IS LIKELY TO MOVE IN A NORTH-NORTHEASTERLY DIRECTION AND MAY CROSS BANGLADESH COAST BETWEEN KHULNA-CHATTOGRAM DURING LATE NIGHT 19 MAY 2020 TO AFTERNOON / EVENING 20 MAY 2020.

MAXIMUM SUSTAINED WIND SPEED WITHIN 90 KMS OF THE CYCLONE CENTRE IS ABOUT 225 KPH RISING TO 245 KPH IN GUSTS/ SQUALLS. SEA WILL REMAIN VERY HIGH NEAR THE CYCLONE CENTRE.

MARITIME PORTS OF MONGLA AND PAYRA HAVE BEEN ADVISED TO KEEP HOISTED DANGER SIGNAL NUBMER SEVEN (R) SEVEN. COASTAL DISTRICTS OF SATKHIRA, KHULNA, BAGHERHAT, JHALOKATHI, PIROZPUR, BORGUNA, PATUAKHALI, BHOLA, BARISHAL, LAXMIPUR, CHANDPUR AND THEIR OFFSHORE ISLANDS AND CHARS WILL COME UNDER DANGER SIGNAL NUMBER SEVEN (R) SEVEN.

MARITIME PORTS OF CHATTOGRAM AND COX'S BAZAR HAVE BEEN ADVISED TO KEEP HOISTED DANGER SIGNAL NUBMER SIX (R) SIX. COASTAL DISTRICTS OF NOAKHALI, FENI, CHATTOGRAM AND COX'S BAZAR THEIR OFFSHORE ISLANDS AND CHARS WILL COME UNDER DANGER SIGNAL NUMBER SIX (R) SIX.

UNDER THE INFLUENCE OF THE VERY SEVERE CYCLONIC STORM "AMPHAN" AND THE NEW MOON PHASE, THE LOW-LYING AREAS OF THE COASTAL DISTRICTS OF SATKHIRA, KHULNA, BAGHERHAT, JHALOKATHI, PIROZPUR, BORGUNA, PATUAKHALI, BHOLA, BARISHAL, LAXMIPUR, CHANDPUR, NOAKHALI, FENI, CHATTOGRAM AND THEIR OFFSHORE ISLANDS AND CHARS ARE LIKELY TO BE INUNDATED BY STORM SURGE OF 4-5 FEET HEIGHT ABOVE NORMAL ASTRONOMICAL TIDE.

THE COASTAL DISTRICTS OF SATKHIRA, KHULNA, BAGHERHAT, JHALOKATHI, PIROZPUR, BORGUNA, PATUAKHALI, BHOLA, BARISHAL, LAXMIPUR, CHANDPUR, NOAKHALI, FENI, CHATTOGRAM AND THEIR OFFSHORE ISLANDS AND CHARS ARE LIKELY TO EXPERIENCE WIND SPEED UP TO 140-160 KPH IN GUSTS/ SQUALLS WITH HEAVY TO VERY HEAVY FALLS DURING THE PASSAGE OF THE STORM.

ALL FISHING BOATS AND TRAWLERS OVER NORTH BAY AND DEEP SEA HAVE BEEN ADVISED TO TAKE SHELTER IMMEDIATELY AND WILL REMAIN IN SHELTER TILL FURTHER NOTICE.

TO
1. HON'BLE MINISTER, MINISTRY OF DISASTER & RELIEF. FAX: 9545405.
2. CABINET SECRETARY, FAX: 9566559.
3. PRINCIPAL SECRETARY TO THE HON'BLE PRIME MINISTER. FAX: 9143377
4. SECRETARY TO THE HON'BLE PRIME MINISTER, FAX: 8128799
5. SECRETARY, MINISTRY OF DEFENCE, FAX: 9110535.
6. SECRETARY, MINISTRY OF AGRICULTURE, FAX: 9540555
7. SECRETARY, MINISTRY OF DISASTER MANAGEMENT AND RELIEF, FAX: 9566559/9545405.
8. SECRETARY, MINISTRY OF WATER RESOURCES, FAX: 9576773.
9. JOINT SECY. (W&D), MOD, FAX: 9110535. 10. SSF, FAX: 8111351/9113651 , 11. CPP, FAX: 9338401. 12. DDM: 9851615.
13. NHQ, FAX: 8754270, 9885633. 14. SHIPPING MINISTRY, FAX: 9660311, 9562007, 15. NDRCC, FAX: 9549148, 9540567
16. BIWTA, FAX: 9551072. 17. BTV FAX: 8312927.18. BETAR FAX: 8117850.19. FFWC, FAX: 9557386.20. UNB, FAX: 9344556
21. BSS, FAX 9557929 22. MMO, CTG, FAX: 031-2500988 23. CDMP, FAX: 9890854. 24.COAST GUARD, FAX: 9140092
25.PORT AUTHORITIES, MONGLA 04662-75224 26.PORT AUTHORITIES, CHITTAGONG: 710593 27. BSS: 9557929, 9551052
28. HON'BLE PRIME MINISTER'S, ARMED FORCES DEPT. (AFD), FAX: 8754399, 8115900, 8823233.
29. BANGLADESH ARMY, FAX: 8754455 30. BANGLADESH AIR FORCE, FAX: 8751931 31. REUTERS: 8312976
32. BIWTC: 9563653. 33. ATN: 8111876/ 9139883 34. UNHCR: 8826557 35.SPARRSO: 8113080 36. UNDP: 8123196
37. channel1: 9343674 38. RTV: 9130879-80 39.JIKA BD :9891689 40. PORT AUTHORITIES, PAYRA, FAX. 031-2510889
41. D.C COX'S BAZAR: 0341-63263. 42. SOMOY TV: 9670057, 43.INDEPENDENT TV:8879001-2, 44. ETV: 8189905-6
EPENDENT TV:8879001-2, 45. ETV: 8189905-6

(Md. Abdur Rahman Khan)
Meteorologist
For Director
19, 0630 BST

Figure 12: Example of special weather bulletin of BMD

Source: (https://reliefweb.int/sites/reliefweb.int/files/resources/96279.pdf)

[Accessed online 6th April, 2020]

5.5. Cyclone Warning System for Maritime ports (Bangladesh Meteorological Department)

Table 10: Cyclone warning signal for maritime ports

Signals	Meaning
1. Distant Cautionary Signal No.1	I) There is a region of squally weather (wind speed of 61 kms/hour) in the distant sea where a storm may form.
2. Distant Warning Signal No.2	II) A storm (wind speed of 62-88 kms/hour) has formed in the distant deep sea. Ships may fall into danger if they leave harbour,
3. Local Cautionary Signal No. 3	III) The port is threatened by squally weather (wind speed of 40-50 kms/hour).
4. Local warning Signal No. 4	IV) The port is threatened by a storm (wind speed of 51-61 kms/hour) but it doesn't appear that the danger is as yet sufficiently great to justify extreme precautionary measures.
5. Danger Signal No. 5	V) The port will experience severe weather from a storm of slight or moderate intensity (wind speed of 62-88 kms/hour) that is expected to cross the coast troche south of Chittagong port or Cox's Bazar port and to the east of Mongla port.
6. Danger Signal No. 6	VI) The port will experience severe weather from a storm of slight or moderate intensity (wind speed of 62-88 kms/hour) that is expected to cross the coast troche north of the port of Chittagong or Cox's Bazar and to the west of the port of Mongla.
7. Danger Signal No.7	VII) The port will experience severe weather from a

	storm of light or moderate intensity (wind speed of 62-88 kms/hour) that is expected to cross over or near the port.
8.Great Danger Signal No.8	VIII) The port will experience severe weather from a storm of great intensity (wind speed of 89 kms/hour or more) that is expected to cross the coast to the south of the port of Chittagong or Cox's Bazar and to the east of the port of Mongal.
9.Great Danger Signal No.9	IX) The port will experience severe weather from a storm of great intensity (wind speed of 89 kms/hour or more) that is expected to cross the coast to the north or the port of Chittagong or Cox's Bazar and to the west of the port of Mongla.
10. Great Danger Signal No.10	X) The port will experience severe weather from a storm of great intensity (wind speed of 89 kms/hour or more) that is expected to cross over or near the port.

Source: Paul & Routray (2013)

Table 11: Stages of Cyclone warnings

Stages	Timing (Before cyclone landfall)	Contents
Cyclone Alert	36 hours	BMD issues a cyclone alert message and informs the maritime ports, river ports, and media about the approaching TC. BMD also sends warning messages directly to the national coordination committee, the cyclone preparedness program, the relief and rehabilitation authorities and to the local administrations.

Cyclone Warning	24 hours	A cyclone warning message is sent to the respective authorities and media, containing information about: position of the cyclone, movement direction and rate of movement, maritime ports and areas likely to be hit, wind speed, height of the storm surge, and suggested safety measures for fishing boats.
Cyclone Disaster	18 hours	A cyclone danger warning is issued and an updated danger-warning message is disseminated every 30 minutes.
Cyclone Great disaster	10 hours	A cyclone great-danger warning message is issued and the residents are urged to evacuate at this point. Updates to a great-danger warning message are usually disseminated every 15 minutes.

Source: Paul (2010)

Bangladesh Meteorological Department (BMD) MD uses two separate signaling systems for the maritime and the river ports (and respective command areas) to convey the danger levels associated with TCs. A Ten-point signaling system, ranging from low to high danger level, is used for the maritime ports. In contrast, a four-point signaling system, ranging from low and high danger levels, is used for the river ports. In a warning message, the coastal districts located to the west of the Meghna estuary lie in the command area of Mongla maritime port, while the districts located to the east lie in the command area of Chittagong maritime port.
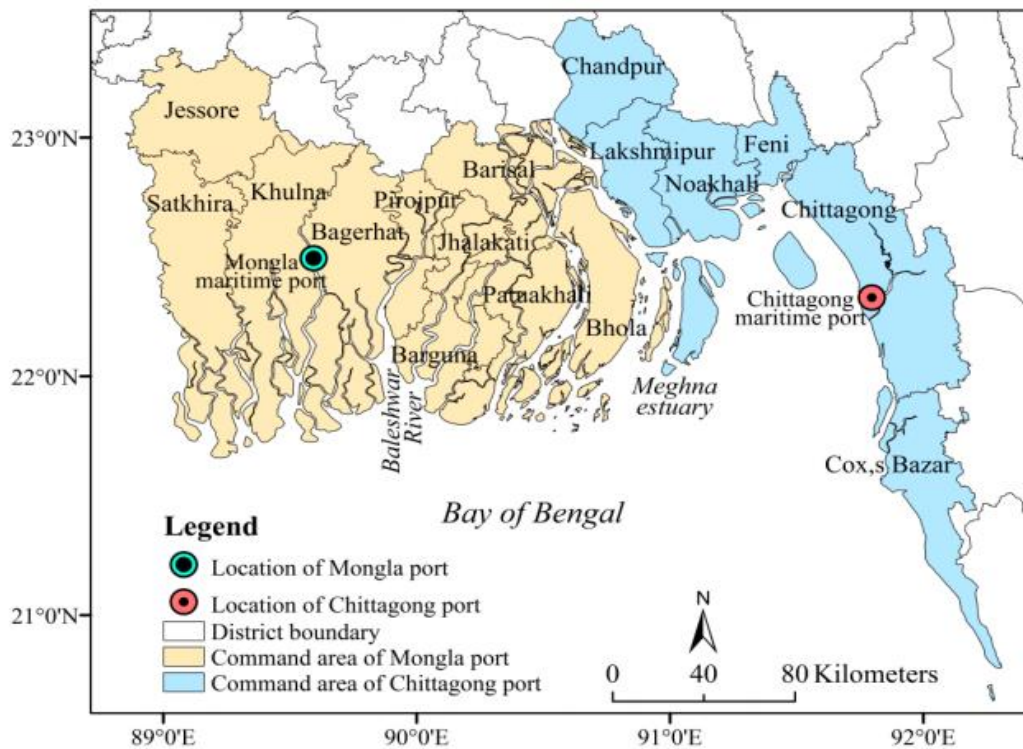
Figure 13: Location of the maritime ports and their command areas

Source: Chandan & Rita (2015)

5.6. Early Warning from Department of Disaster Management (DDM) Line

5.6.1. Early warning from DDM line

DDM line is early warning and disaster information dissemination direction by the government. For the transmission of information, there are several lines of early warning dissemination in Bangladesh Such as DDM line [a line though DDM, DMIC, DMC (from Central government to the local government)]. Then DMIC [DC, Disaster Relief and Rehabilitation Officer (DRRO). DMIC Upazila (UNO/PIO)]. A landline can be used, and they can communicate through landline, fax, e-mail and mobile phones. However, below Upazila level, there are almost no landlines, so they mainly use mobile phones for communication. In the DDM line, they used to use High Frequency (HF) wireless communication system until around 2008. Recently they can use e-mail due to spread of the Internet, therefore they use e-mail instead of HF wireless communication system at the moment. In some Districts, the HF wireless systems are out of order, but in some district still the system is working. An issue is

that the information is delayed for 2-3 hours than CPP to Upazila level due to time for getting permission of delivering information in each level.

5.6.2. Early Warning CPP line

CPP line is early warning and disaster information dissemination route by CPP. In CPP line, HF wireless is used between HQ and Zones, Upazilas simultaneously. VHF is used between Upazilas and Unions. Mobile phones are used for communication between Unions and Unit leaders. Unit leaders call CPP volunteers and they disseminate the information usually using bicycles and on foot.
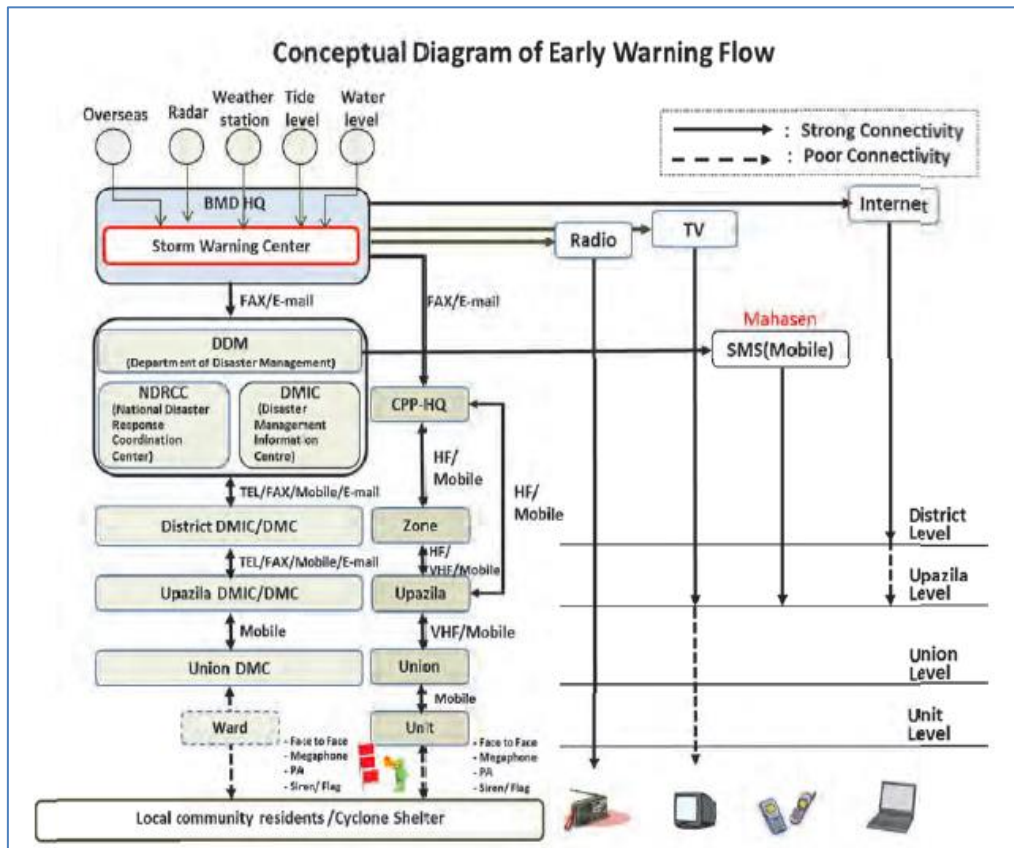
Figure 14: Conceptual diagram of Early warning in Cyclone Mahasen time
Source: JICA (2013)

5.7. New methods for warning message dissemination:

The Bangladesh Department of Disaster Management (DDM) has recently developed three mobile-network-based warning message dissemination methods in order to make warning. Location of the maritime ports and their command areas. For

messages easily accessible to the coastal residents and field-level disaster management committees.

- Cell Broadcasting System can be used to send warning messages to a targeted population group that is, residents in the coastal areas.

- Interactive Voice Response is a method where residents can listen to a recorded warning message by calling a number.

- Short Message Service is a text messaging service, which is specially designed for field-level disaster management committees. Members of these committees continuously receive updated information about the approaching TC on their mobile phones in cyclone emergencies.

CPP has simplified the signaling system through introducing flagging system corresponding to maritime signals. Three flags have been developed to represent the whole range of Maritime Port Signaling System of British India. Meanings of first flag correspond to signal numbers 1 to 3, second flag corresponds to signal number 4 to 7 and the third flag correspond to signal numbers 8 to 11 of Maritime Port signals While understanding of the meanings of these flags still remain questionable, increase in the number of flags on a mast generally indicates a greater severity of the cyclone event to the local community. Figure 15 shows flag numbers and corresponding signals.
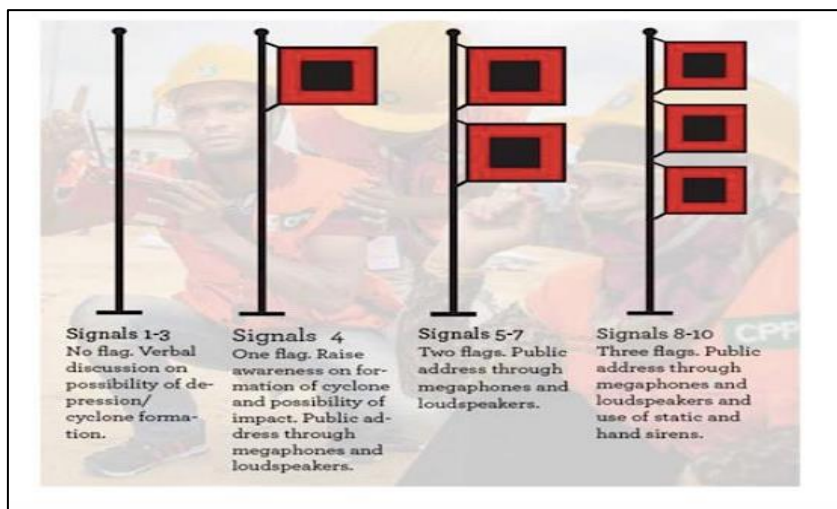
Figure 15: Revised new flag Warning System

Source: UNDP (2018)

5.8. Issues and problems in present cyclone warning system

BMD has applied ten (10) warning system of ten signal levels for the maritime ports and four (4) signal levels for the inland ports, and has designated evacuation styles for each signal level. However, in the signal levels of the SOD, there was found some different description from the original meanings of signal levels in BMD. For example, some parts of the explanation of the warning were deleted in the SOD (JICA, 2013). Since the SOD was revised in 2010, the government has made efforts to establish a six (6)-level warning which residents can easily get used to. However, the new signal level system has not been recognized yet. There must be great confusion between CPP and residents for the revision of the existing ten levels of warning signals. As a challenge for forecast and warning of meteorological disasters, the accuracy of information needs to be improved.

Table: 12: Previous research on Early Warning & CPP relation with evacuation

Authors	Issues related to CPP
Paul and Dutt (2010), Ahsan et al.,	Eleven non-evacuee respondents complained that they did not evacuate because the warning message delivered by the CPP volunteers did not contain vital information, such as wind speed possible surge height and duration, landfall time and location, and the extent of damage expected.
Haque and Blair [2010], Tiffany [2012],	Warning message was incomplete, Lack of understanding of cyclone warning signals, Cyclone warning was too late, No Cyclone warning issued
Mahmud (2013)	Local people mentioned about low manpower of CPP volunteer and their incapability of logistic support.
Paul and Routray, Roy et al. (2010)	Lack of understanding of cyclone warning signals and Issuance of evacuation order prematurely.

Shahed (2009)	Cyclone warnings is that most people do not have a clear understanding about cyclone flag warning signals which disseminate by CPP volunteer.
Amin (2012)	There is a difference between male and female in physical formation, which some time indicate the negative position of the female volunteers.
Paul (2010)	Although nearly 70 percent of inhabitant found local BDRCS as effective cyclone early warning signal disseminator, they are not wholly satisfied with their performance. They complained about timely signal dissemination from their experience. They also stated that Red Crescent volunteer emphasis more on relief activities than early warning signal dissemination
JICA (2013)	CPP implemented no functional activities even in the time of AILA. Learning from this experience, CPP is now working to establish their offices in the three southwest districts.

Source: (Created by author)

Below two case shows that the problems in the present early warning dissemination information in Box 3 and box 4:

Cyclone Komen July 30, 2015

BMD warning for Cyclone 'Komen' (July 30, 2015) Chittagong and Cox's Bazar ports asked to maintain cautionary signal no. 7. Mongla and Payra ports to maintain cautionary danger signal no. 7. Coastal districts of Cox's Bazar, Chittagong, Noakhali, Laxmipur, Feni, Chandpur, Bhola, and their offshore islands and chars under danger signal no. 7. Coastal districts of Borguna, Patuakhali, Barisal, Pirozpur, Jhalokathi, Bagherhat, Khulna, Satkhira and their offshore islands under danger signal no. 5. District names are mentioned in addition to port names but No Local Area Specific Information about Storm Surge Height or Cyclone Intensity.

Box 3: Cyclone Komen scenario
Source: Parvin et.al; (2009)

Cyclone Sidr November 15, 2007

BMD warning for Cyclone 'Sidr' November 15, 2007: Meteorological office sounded great danger signal No. 10 for Mongla port and great danger signal 9 for Chittagong and Cox's Bazar as a severe storm in the Bay of Bengal is estimated to make landfall Thursday. Only port names are mentioned – nothing is mentioned about the districts or Upazila.

Box 4: Cyclone SIDR scenario
Source: Parvin et.al; (2009)
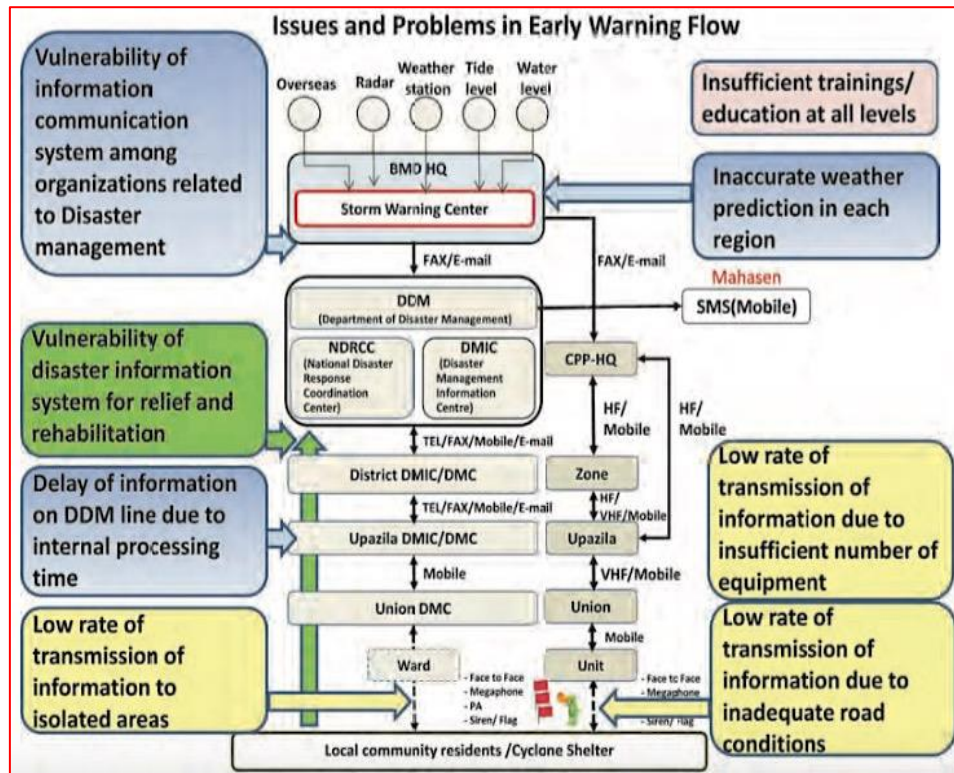
Figure 16: Issues of disaster information system
Source: JICA (2013)

Problems in Present Cyclone Warning System in Bangladesh this cyclone warning is generally criticized as:

- Warnings are basically seaport oriented not local area specific. Sometimes change of cyclone warning signal no. Indicates the change of cyclone track, which is confusing for community.

- Language of warning are still difficult to understand for local people (people only take the 'warning number' and apply their own judgment to interpret it.

5.9. Elements of people centered EWS

As Juan Murria in 2007, put it, no matter how sophisticated an EWS is in terms of its scientific and technical designs, if the warning message does not reach all the people at risk clearly, timely and efficiently, the system is rendered ineffective.
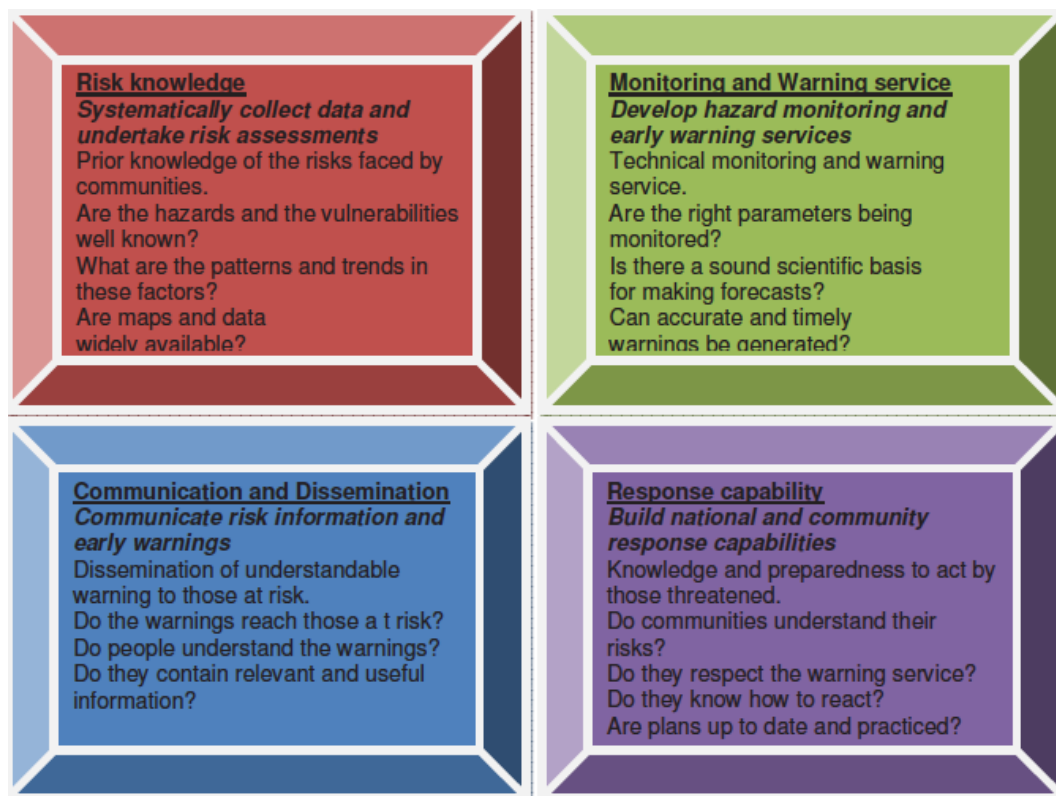
Figure 17: Elements of people centered EWS
Source: UN/ISDR (2006)

Risk knowledge - Risk assessment and mapping should help to set priorities among EWS needs and to guide preparations for response and prevention activities. Risk assessment could be based on historic experiences and human, social and environmental vulnerability

Warning service - a sound scientific basis for predicting potentially catastrophic events is needed. Constant monitoring of possible disaster precursors is necessary to generate accurate warnings on time.

Communication and dissemination - must be timely, clear and understandable and should be able to reach those at risk.

Response capability - communities should know how to react. There is need for participation of formal and informal educational centers. This is critical because one challenge of EWS has been noted as weak linkage between technical capacity to issue warnings and the public's capacity to respond effectively to the warning.

Weaknesses or failure in one of these four components could result in malfunctioning of the whole system. Therefore, the four components should be strongly interlinked. To these four components, one could affix aspects of good governance, which comprises of robust legal and regulatory frameworks and political commitments, and appropriate integrated institutional framework, for the system to work effectively (Wicklung and Raum, 2006). Thus, to be effective, EWS need to actively involve communities at risk, facilitate public education and awareness of risks, effectively disseminate messages and warnings and ensure there is a constant state of preparedness (Concern Worldwide, 2005; UN/ISDR, 2006a).

6. CHAPTER VI: A Brief Study on Community Based Volunteer Organizations Best Practices in Bangladesh, Japan and USA

6.1. Community Based Volunteer

Community involvement is the process by which individuals, families, or communities assume responsibility for their own welfare and develop a capacity to contribute to their own and the community's development by being involved in the decision-making processes in determining goals and pursuing issues of importance to them (Wasilwa,2015). Volunteering is an important phenomenon worldwide. Volunteers program provide essential social services, promote culture, and contribute to associational life. Volunteers form an important part of community organizations, and many community organizations are primarily or entirely made up of volunteers.

Community-based preparedness program allows us all to prepare for and respond to predicted disruptions and potential hazards following a disaster. As individuals, we can prepare our families and neighbors to cope during that critical stage. Through planning; neighborhoods associations can also work together to help reduce injuries, loss of lives, and property damage. Neighborhood preparedness will enhance the ability of individuals and neighborhoods to reduce their emergency needs and to manage their existing resources until professional assistance becomes available. Large-scale disasters can severely restrict or overwhelm our response resources, communications, transportation, and utilities and leave many individuals and neighborhoods cut off from outside support. Damaged roads and disrupted communications systems may restrict the access of emergency response agencies into critically affected areas. Thus, for the initial period immediately following a disaster, often up to 3 days or longer; individuals, households, and neighborhoods may need to rely on their own resources for food, water, first aid and shelter.

6.2. Application of Community Based Volunteerism in selected countries

In this chapter, the study chose to focus on community based voluntary organization in the Japan, USA and Bangladesh from among the nations in the world. Each of the three nations selected has unique characteristics The United States is a

first world country, highly developed and economically powerful. Disaster such as; tornadoes, hurricanes, floods and snowstorms frequently hit the nation. The United States is considered as a frontrunner in the field of volunteer program activities. Especially, the CERT program volunteers account for a large part of its disaster management support. Similarly, Japan has also traditional fire fighter volunteers who involved in disaster management since 18th century. Several disasters often occur in Japan, including earthquakes that trigger tsunamis, typhoons with resultant landslides and floods, heavy snowfall, volcano eruptions and building fires. On the other hand, Bangladesh has been progressively working on expanding the community-based volunteer system on disaster. Some disasters, such as cyclones, landslides, floods and heavy rain frequently hit the nation. In this chapter the present research gives a brief idea about these three countries in terms of community based voluntary organizations for disaster management.

Table 13: Community Based Disaster Management in USA, Japan & Bangladesh

Country	Organization	Level of Intervention	Emphasis on disaster cycle
Japan	Shobo-Dan	National, Local, Neighborhood	All Phases
USA	CERT	Local and Neighborhood	All Phases
Bangladesh	CPP	National, Local, Neighborhood	Pre and During disaster

Source: (Created by author)

6.3. Background of Cyclone Preparedness Program (CPP)

6.3.1. Historical background of CPP

Bangladesh is densely populated, low-lying, riverine and disaster-prone area located in south Asia. During last two centuries, Bangladesh has faced more than 70 terrific cyclonic storms causing millions of peoples of Bangladesh and damage billions of dollars' wealth. After the severe cyclone in 1970, by the request of the United

Nations, Cyclone Preparedness Programme (CPP) was established in 1973 with the help of the then league of Red Cross. After one year the league of Red Cross decided to withdraw the program from the field with effects from 1st July, 1973. Considering the importance of the programme, for the interest of the coastal belt people, government came forward and took the responsibility of the programme by deciding to continue the programme with effect from July 1973.

The Cyclone Preparedness Programme (CPP) is a unique institutional organization for community preparedness created to mitigate the challenges of catastrophic cyclones that frequently hit Bangladesh coast. Basically, the idea of Cyclone Preparedness program started in 1965 when the National Society Bangladesh Red Crescent Society requested the International Federation of Red Cross and Red Crescent Societies (IFRC) formerly the League of Red Cross and Red Crescent Societies, to support the establishment of "disaster warning system" for the population living in the coastal belt. In 1966, the International Federation and Swedish Red Cross began the implementation of a pilot scheme for cyclone preparedness which consisted of warning equipment and was operational in 299 unions in 30 Upazila under 11 districts.

Following the emergence of independent Bangladesh, Bangladesh Red Cross Society (BDRCS) was constituted vide President's Order no. 26 of 1973. It was recognized by the International Committee of Red Cross-ICRC on 20 September 1973 and admitted into International Federation of Red Cross and Red Crescent Societies (IFRC) on 02 November 1973. The Status (PO 26 of 1973) was last amended in 1989. The name and Emblem of the Society was changed from Red Cross to Red Crescent on 4th April 1988. The community people accepted this programme and the volunteers are honored in the community for their dedicated services. 23 Volunteers in 1991 & 3 Volunteers in 2007 have dedicated their lives on duty to save the Coastal People. In spite of some limitations, CPP volunteers showed highest dedication in their duties.

CPP is a permanent voluntary programme at the field level to face disasters. There is no other such type of government or NGO programme in the field of disaster

management in Bangladesh. CPP volunteers serve without monetary benefit keeping their lives at risk. CPP volunteers work even when there is great danger signal number 10 declared by Bangladesh Meteorological Department (BMD). It has an established wireless network from Dhaka to remote high-risk unions and a monitoring system as well as chain of command from Dhaka head office to village level CPP units. The CPP volunteers believe and follow the seven fundamental principles of the International Red Cross and Red Crescent. The movement those are Humanity, Impartiality, Neutrality, Independence, Voluntary Service, Unity and Universality. Today, CPP provides a robust early warning system for the coastal population in 3,684 villages, 350 unions and 40 sub-districts of 13 districts. CPP is now considered a role model worldwide as an organization that has evolved in the true spirit of volunteerism.
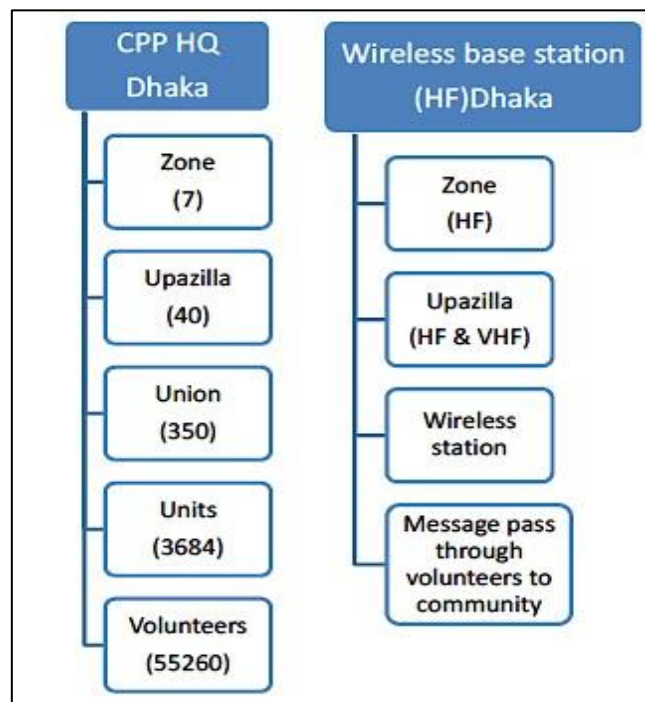
Figure18: Cyclone warning dissemination process structure by CPP volunteers

Source: Ahsan et.al, (2016)

The CPP disseminates cyclone early warning messages through its extensive HF and VHF radio network (156 stations) to districts along the coastal belt. It has a strong volunteer base in the community level to deliver the messages to the people and also to get involved in rescue, first aid activities and relief distribution. CPP is run by a

joint management mechanism through programme "Policy Committee" and programme "Implementation Board" comprising representatives from Bangladesh Government and BDRCS. The administrative part handle by local government and BDRCS has the mandate of handling the operational part of the CPP, which includes volunteer trainings, equipment, and distribution of manuals for operations. The Standing Orders on Disaster of 2010, the National Plan for Disaster Management 2010–2015 and the National Disaster Management Act of 2012 are the major guiding documents for disaster management in Bangladesh, which defined the roles of CPP volunteers and officials from local to national level.

The goal of the CPP is "to minimize loss of lives and properties in cyclonic disaster by strengthening the capacity in disaster management of the costal people of Bangladesh" based on the following objectives.

- To develop and strengthen the disaster preparedness and response capacity of coastal communities vulnerable to cyclones.
- To increase the efficiency of volunteers and officers.
- To maintain and strengthen the CPP warning system and ensure effective response in the event of a cyclone.

6.3.2. Institutional improvement of CPP program

The official mandate of the BDRCS as stated in the Standing Orders on Disaster (SOD) is to complement the government's efforts in case of emergency response, emphasizing the development of disaster preparedness related plans and programme. In 1985 the Government of Bangladesh introduced its "Standing Orders on Disaster" (SOD) (revised in January–1997, 2011, 2019). Which specify the functions of each concerned Government Ministry, Division, Department and Agency including the specific functions of the Cyclone Preparedness Programme (CPP). This Standing Orders (SOD) lay down the various actions to be taken at different stages by the Cyclone Preparedness Programme. In this SOD Government of Bangladesh identified the role & responsibilities of CPP in community level, Union level, Upazila level and District level also. The role & responsibilities of CPP Implementation

Board (CPPIB) have been clarified in SOD at part-4. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 also emphasize the role of BDRCS to enhance the cyclone preparedness programme. The Standing Orders on Disaster of 2010, the National Plan for Disaster Management 2010–2015 and the National Disaster Management Act of 2012 are the major guiding documents for disaster management in Bangladesh that defined the roles of CPP volunteers and officials from local to national level.
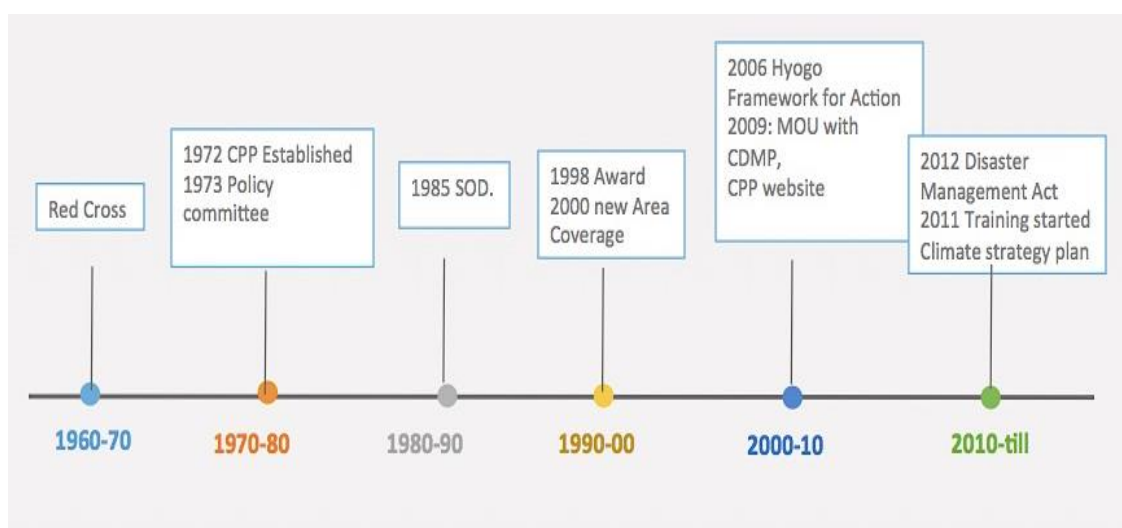
Figure 19: Institutional progress of CPP till now

Source: (Created by author)

This programme has been awarded with "Smith Tumsaroch award-1998" from Thailand for its outstanding effort that has saved thousands of lives in Bangladesh. The community people accepted this programme and the volunteers are honored in the community for their dedicated services. Welfare activities by the volunteers in the event of road accident, fire, boat capsize river erosion, epidemic etc. Due to CPP activity Peoples are in positive attitude to rush to the cyclone shelter. CPP is managed by the Ministry of Disaster Management and Relief (MoDMR), and the Bangladesh Red Cross Society that comprise a Policy Committee and Implementation Board:

1. The Policy Committee is headed by the Honorable Minister, Ministry of Disaster Management and Relief (MoDMR) who governs the overall policy framework of the CPP. BDRCS Chairman is the vice chairman of the Policy

Committee. The committee includes BDRCS and other relevant Ministries as key members.

2. The Implementation Board is headed by the secretary, MoDMR. The board has a mandate for implementing the policies agreed by the policy committee. This is the overall administrative body of the programme. BDRCS and IFRC are members of this committee.

At the implementation level, two directors run the -daily business at CPP National Headquarters. As per the gazette 2004, Director of Administration is appointed by the Government of Bangladesh (GoB), and he the administrator of the program with the oversight of staff salary, budgeting, reporting to the GoB. The Director of Operations on the other hand, is appointed from BDRCS with the oversight of the operations of the CPP program such as trainings, ensuring the function of the wireless networks, and managing volunteers, etc.

6.3.3. CPP Command Area:

40 Upazila, 350 unions, 3684 units are the CPP Command area which are very adjacent to the coastal of the Bay of Bengal and also these areas are very cyclone prone.
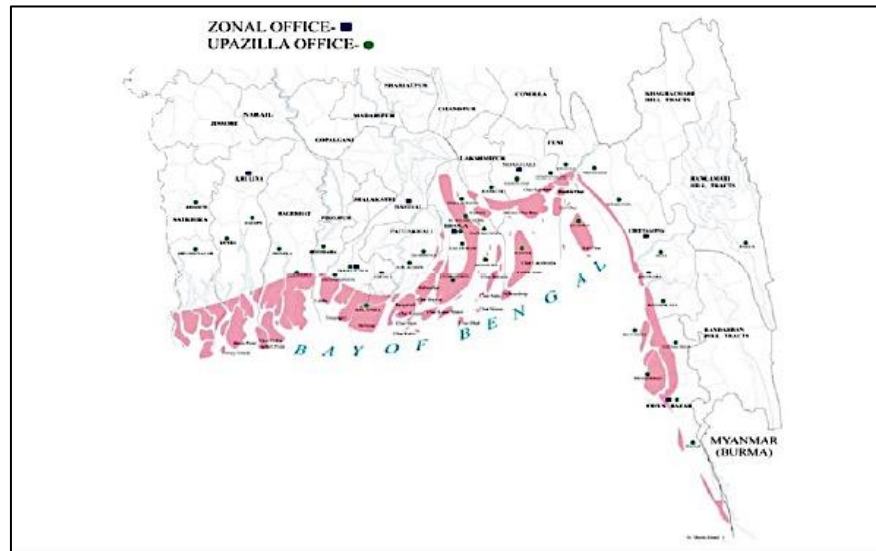
Figure 20: CPP command area in the Southern part of Bangladesh

Source: (http://www.cpp.gov.bd/site/page/adfddd01-4d3f-4040-849a-211fcfc31033/) [Accessed online 4th June, 2019]

6.3.4. CPP Organizational structure

CPP has a Head Office in Dhaka under which there are 7 zonal offices. Each zonal office has some Upazila offices, each Upazila office has some unions, and each union has some units. The lowest committee of CPP volunteers is referred as 'Unit', which consists of 15 volunteers (10 male and 5 female) for 5 groups, each volunteer unit generally covers 2.5 square km and about 2000-2500 populations (figure, 21). There is a union committee comprising all units (10-12) under the union and also an Upazila (sub-district) committee comprising all unions. The unit team leaders with his volunteers spread out in the villages and disseminate cyclone-warning signals almost door to door using megaphones, hand sirens and public address system. All members of each volunteer unit are divided into 5 sub-groups. The groups are:

- Warning Group
- Shelter Group
- Search and Rescue Group
- First aid Group
- Relief Group
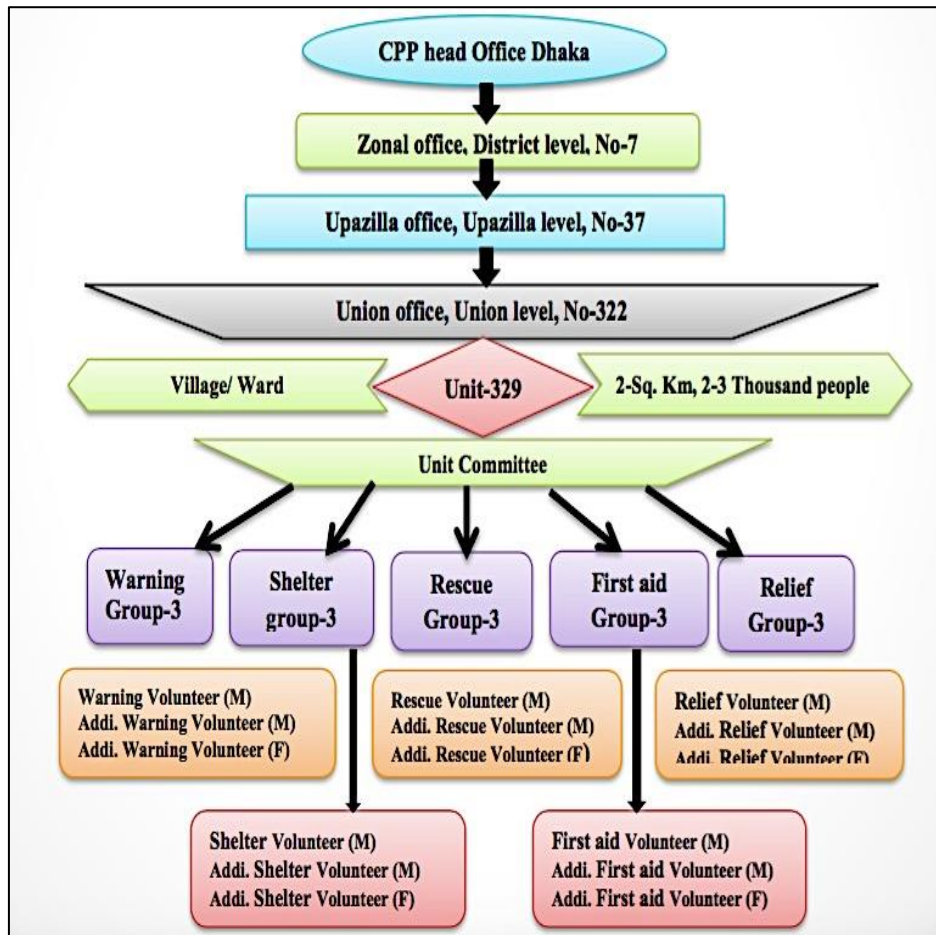
Figure 21: CPP organizational structure

Source: (http://www.cpp.gov.bd/content.php?id=CPP_Structure)

[Accessed online 4th June, 2019]

6.3.5. CPP Management committees at field level:

There are several committees at the Field level: For example;

Unit Committee: At Unit levels, 15 volunteers form a Unit Committee; elect one of them as Unit Leader and another as Deputy Unit Leader.

Union Committee: On an average 10 Units form a Union. The Unit Team leaders of a Union form a Union committee and elect one of them as the Union Team Leader and another as Deputy Union Team Leader.

Upazila (Sub-district) Committee: On an average 10 Unions form an Upazila (sub district). The Union Team Leaders of the Upazila form the Upazila Committee and

elect one of them as Upazila Team Leader and another as Deputy Upazila Team Leader.
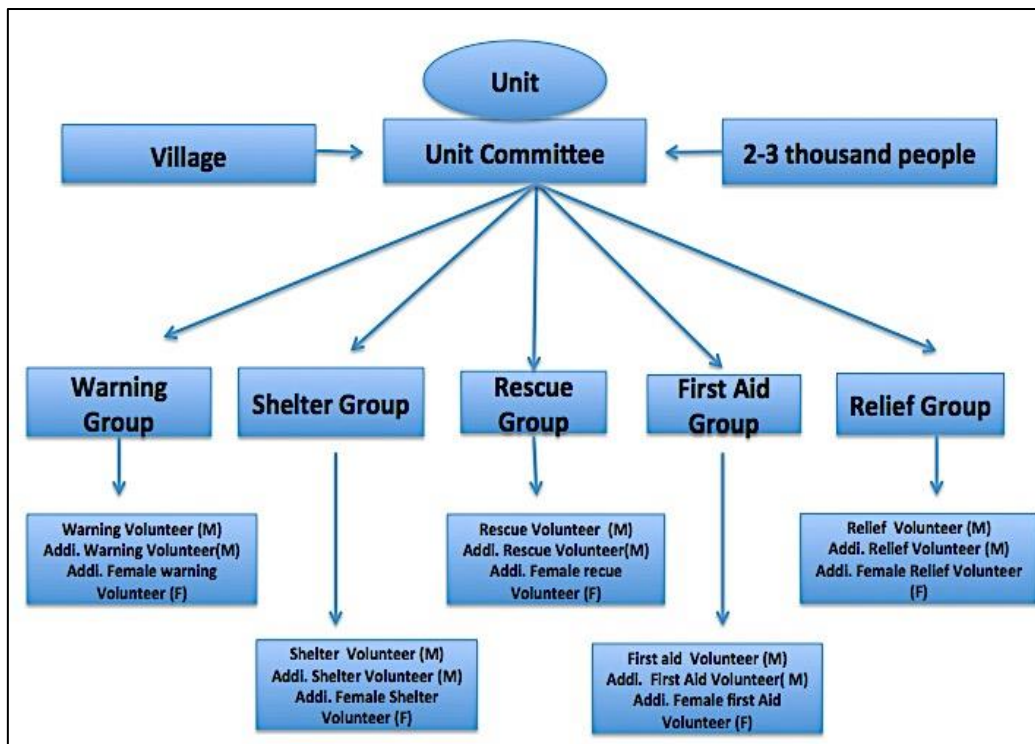
Figure 22: Unit committee of CPP volunteers

Source: (http://www.cpp.gov.bd), [Accessed online 4th June, 2019]

6.3.6. CPP Field level responsibilities

The field officers of the CPP at the level of district zonal officer and the development officer and union leaders and volunteers will discharge the following functions, besides other functions within their respective jurisdiction.

Normal Time

- Organize simulated preparedness programme in cyclone prone areas on continuing basis and hold mobilization drill on disaster in April and September every year to check status of preparedness.

- Complete before April recruitment and training of volunteers as per CPP procedure and organize grouping of families through them for facilitating evacuation in time of need.

- Checkup stock of authorized equipment with volunteers and undertake repair and acquire if necessary needed equipment.
- Check and keep in proper functioning of wireless communication and continue wireless communication with CPP Headquarters and CPP officers at thana and union level.
- Educate and create awareness amongst the local people about cyclone preparedness programme and understanding of warning signals of various types. Motivate and popularize preparedness measures through meetings, discussions, posters, leaflets and film shows.
- Earmark and keep shelter, killas, high rise safe places fit and ready and publicize and make known to the people evacuation plans towards these.
- Co-ordinate with the Upazila and the union Parishad to motivate the public and the volunteers about the cyclone danger responses.

Alert Phase
- Set up Control room and maintain contact with the Thana, the Unions and the CPP.
- Keep close contact with the local office of the department of Meteorology and other offices and use means of communication for input of cyclone alertness.
- Receive special weather bulletins from BMD and send them to Upazila and regional offices and to instruct the Upazila offices to send them to Union offices as quickly as possible.
- Alert local Chairman and Members of District/ Thana/ Union Disaster Management Committees and local NGOs, religious leaders and teachers.
- Instruct sub-ordinate offices and officers to send liaison volunteers to the union Team Leaders with instruction for CPP volunteers to listen to Radio Broadcast. Do ensure that union Team leaders and their co-workers commence activity as per instructions laid down in the volunteer guide book (Ghurnijhar Nirdeshika) published by CPP.

Warning Phase

- Inform DC/TNO/Union Parishad Chairman to hold emergency meeting of the Disaster Management Committees.
- Implement decisions of emergency meetings of the committees.
- Detail and check development and functioning of CPP Volunteers to ensure that livestock, poultry and other domestic animals are shifted to raised land, killas etc. under adequate safety measures.
- Transmit Special weather Bulletins to all field offices including District, Thana, Union and Zones.
- Warn the people about the threat.
- Advise and help people in taking shelters when evacuation order is given.
- Use Megaphone, Signal Light and signal flag to give final warning to the people.
- Keep all including Thana, District, D.G. Relief and Rehabilitation informed of the situation in the field from time to time i) Co-ordinate activities with all other agencies, NGO's.

Disaster Phase

- Prepare a report on the impact of the cyclone by collecting information and submit it to CPP Headquarter, union disaster management committee, and the Upazila and district control rooms.
- Carry out rescue operation and provide First-Aid as needed in co-ordination with the union and Upazila authorities.
- Assist local administration in distribution of relief goods.

Recovery Phase

- Keep wireless communication open and make frequent contact with CPP and transmit damage reports as soon as received.
- Help local bodies/local administration in disposal of dead bodies and carcasses.
- Assist in inoculation vaccination drive and other Health measures.
- Participate in rehabilitation efforts along with other Agencies including NGOs.

6.3.7. CPP Volunteer

CPP is a unique example of community-based volunteering which has gained worldwide reputation on cyclone preparedness and early warning dissemination. This programme has been in full swing with the support of about 49,365 enthusiastic, dedicated and committed volunteers among them 16,455 are female and 32,910 are male. These volunteers, besides performing duties related to warning dissemination during the cyclone season, undertake awareness raising campaign through mock drill, stage drama etc., and contribute to long term mitigation activities such as tree planting throughout the year. The process of becoming BDRCS CPP volunteer is strictly regulated by the following criteria; age between 18-30, strong commitment and attitude to serve people, permanent resident of the locality, ability to read and write and manically independent and self-supporting, etc. Moreover, a candidate has to go through a rigorous selection process and probation period before becoming a regular volunteer.

Cyclone preparedness Program was developed with a goal to develop and strengthen the disaster preparedness response capacity of coastal communities vulnerable to cyclones, to increase the efficiency of volunteers and officers, and to maintain and strengthen the warning system ensuring effective response in the event of a cyclone. In order to achieve the goal, CPP is involved with number of pre-disasters, during disaster and post-disaster activities. The following main activities of the program are being implemented to fulfill the objectives: (CPP, 2021)

- Disseminate cyclone-warning signals issued by the Bangladesh Meteorological department to the community people.
- Assist people in taking shelter.
- Rescue distressed people affected by a cyclone.
- Provide First Aid to the people injured by a cyclone.
- Assist in relief and rehabilitation operations.
- Organize drill and demonstration.
- Assist in rehabilitation of the affected people

6.3.8. Communication system

Early warning information is collected from the Bangladesh Meteorological Department, which is transmitted to CPP head office to zonal offices and sub-district offices. The sub-district offices pass this information to unions (at the village level) through high-frequency radios. Unit teams then spread out, issuing cyclone warnings throughout villages. The Programme covers 13 coastal districts and consists of a network over 55,000 volunteers of which one-third is female and covering 41sub-districts (CPP, 2021). Villagers select CPP volunteers and they usually comprise school teachers, social workers, and community leaders (Paul, 2010). These volunteers disseminate the warnings, assist people in the evacuation process, execute rescue operations, provide first aid, and help in distributing relief goods.

Table 14: Communication system of CPP is shown below

Office	Communication tools	Language
HQ ⇔ Zonal office, Sub-district	High Frequency wireless system	English/ Bangla
Sub-district ⇔ Union	Very High Frequency wireless system	Bengali
Union ⇔ Unit Leader	Mobile phone	Bengali
Unit Leader ⇔ Volunteers	Mobile phone	Bengali
Volunteers ⇔ Community	Door to door, Using Microphone and Megaphone, Two/three Flag Hoisted By walk, motorcycle, Bicycle, By Boat,	Bengali/ Local Language

Source: JICA (2013)
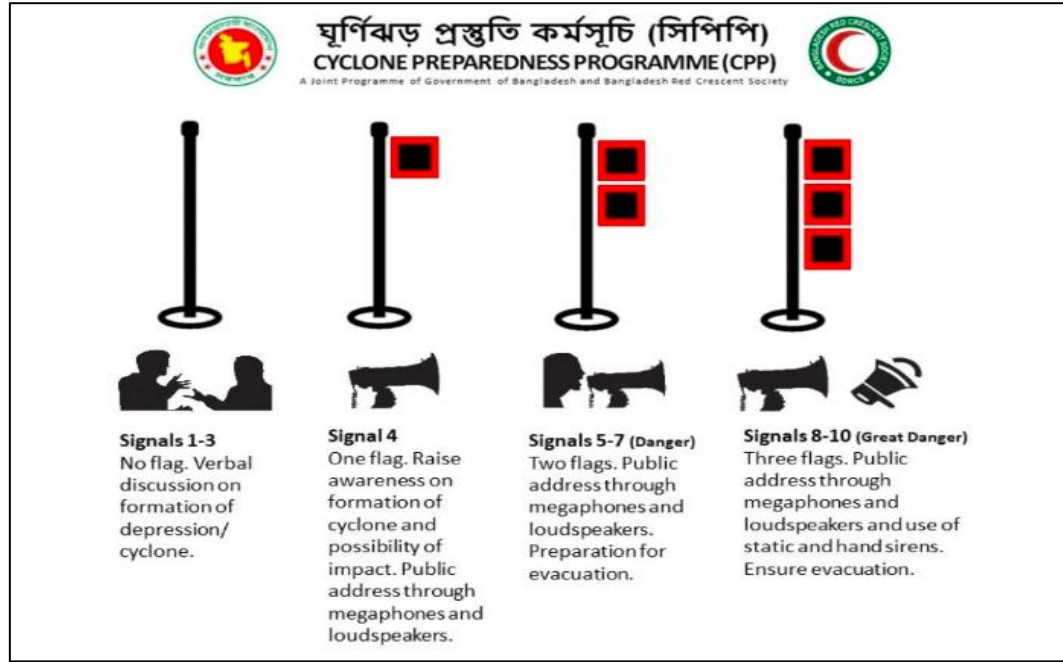
Figure 23: Flag warning Signal system by CPP

Source: UNDP (2018)

6.3.9. Criteria become CPP volunteer

There are some set criteria to recruit new CPP volunteers that are listed below:

- Must be the permanent resident of the concern unit.

- The age limit is 18-30 years and must submit the document.

- Education qualification is at least class VIII. Be healthy, energetic, strong & stout. (Disable and physically unfit is not expectable.)

- Be financially solvent to discharge the voluntary service.

- Be interested to do the voluntary service without any instigation.

- Be responsible to his own duty. Must have time & opportunity to do the voluntary service.

- Be acceptable by the local people.

- Not be the government servant.

- Non-government & private service holders, which are transferable not to be volunteers.

- To be confident& regard to the basic moral of Red Crescent Society.

- To pay induction fee & fixed annual fee as a volunteer.

After primary selection volunteers must pass the probationary period for three (03) months successfully. After passing the probationary period if the appointing authority is satisfied with his work than she/he will be regularized. Although they do not receive any monetary incentives, the main benefits gained by CPP volunteers are respect from their peers and communities and the satisfaction that comes from saving disaster-stricken vulnerable people.

6.3.10. Telecommunication Network

The Cyclone Preparedness Programme operates an extensive telecommunication network with HF and VHF radio station that directly link Headquarter of CPP with coastal area of Bangladesh. To receive the meteorological storm warning signals, each Unit Team Leader is provided with a transistor radio. To disseminate warning signals among the community Megaphone, Hand Siren, Signal Flag, Signal Light are provided to each team of volunteers. Volunteer team leaders are provided with bi-cycles, Motor-bikes to receive and disseminate storm warning signals. The network consists of a combination of High Frequency and Very High Frequency radios, which covers most of the high-risk cyclone areas. At present CPP has 38 HF & 114 VHF radio. The telecommunication network of the Cyclone Preparedness Programme is composed of three elements as follows:

- High Frequency (HF) Transceiver Radios with a main base station located at the Dhaka Headquarter. To transmit information related to the cyclone and the preparedness.
- Field stations send the progress and effects of the cyclone to the headquarter. Very High Frequency (VHF) Transceivers to receive and transmit messages from HF field stations to Sub-Stations locate at Union/Islands.
- Transistor Radio Used by each unit Team leader (3684 teams) Receive Meteorological information, cyclone-warning signal.

CPP has an extensive wireless network along the coastal area through which CPP offices communicate with one another any time without any disturbance or

interference. This communication forms a network among head quarter, zonal offices, Upazila offices and union offices. Head quarter is connected with all zonal offices and Upazila offices with 34 HF stations and Zonal & Upazila offices are connected with 96 VHF stations. Following is CPP's wireless network at a glance:
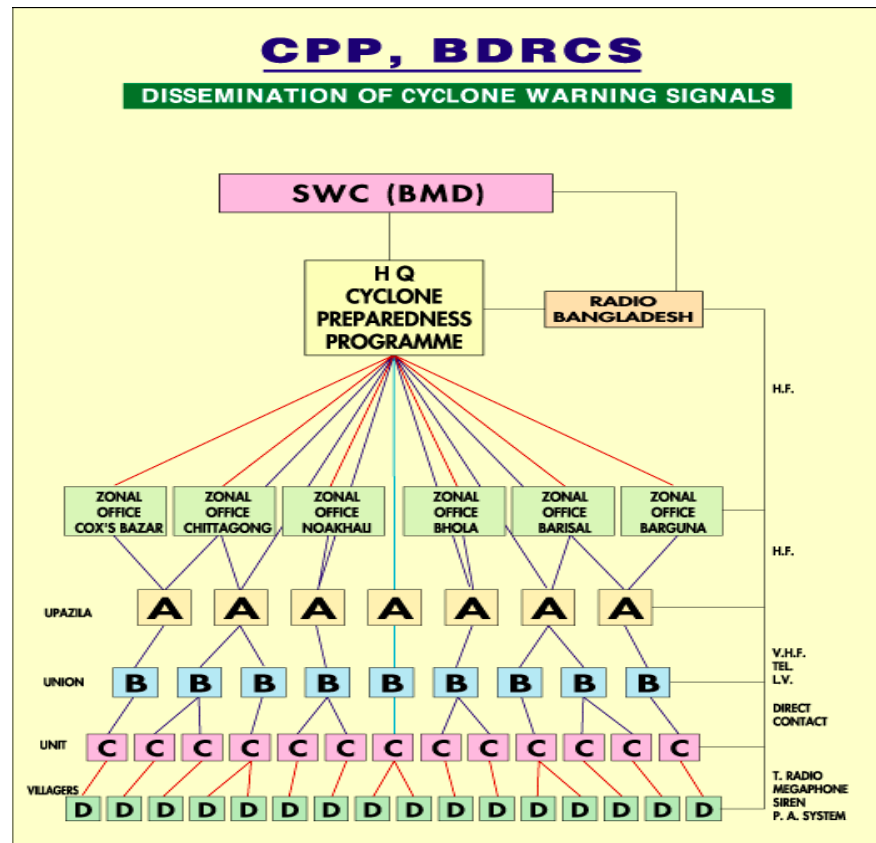
Figure 24: Telecommunication Network of CPP
Source: (http://www.cpp.gov.bd/) [Accessed online 4th June, 2019]

6.3.11. Actual condition of Equipment's/ Volunteers' Gears

CPP volunteers use the different kind of equipment and gears to discharge their duties in the field level. Bangladesh Meteorological Department is primarily responsible for generating warnings for hazards, which is disseminated to the vulnerable community through the administrative network of Bangladesh Government along with the infrastructure of the Bangladesh Red Crescent Society where CPP is a project of the BDRCS. BDRCS and the CPP units receive messages of warning from BMD through high frequency satellite radio. The unit Team Leaders of CPP is provided with a transistor radio for receiving the messages. CPP then disseminate the

warning signals among the villagers through megaphones, sirens, public address equipment, signal lights etc. Signal flags are also provided to each volunteer's teams where number of flags on a mast indicates the severity of the event.

To facilitate the Volunteers movement in the adverse weather, they are provided with raincoats, gumboots, hardhats, life jackets and torchlights. Besides these, the first aid and rescue volunteers are provided with first aid and rescue kits.

CPP provided early warning equipment (megaphone, siren, etc.), gears for volunteers for disseminating early warning signals and other materials for first aid and rescue operations. CPPs established after Cyclone Aila (May 2009) has more equipment than CPPs established in the 1970's, however the number of equipment is insufficient. Also, around 80% of the equipment of CPPs, which were established in the 1970's, is out of order. CPPs rent megaphones as necessary, CPP members have to pay the rental fee by themselves because of insufficient budget. In the 1970's, Japan provided megaphones and waterproof radios that had worked more than 20 years (JICA, 2013). It is also found that, some radios provided in 1990's by Japan are still working. Many donors provided radios 5-6 times after 1990's, but they broke down within one (1) year, the shortest was only three (3) months. The demand for Japanese equipment is high among CPPs since it generally lasts for a long time.

Recently, CDMP provided windup radios with solar panel made in China, but they broke down in one (1) year. CPP tried to repair the radios but they were not in common in Bangladesh, so CPPs could not procure parts and repair the radios. The supply situation of spare parts should be considered. Therefore, the number of equipment has been less than Cyclone Aila (May 2009) due to trouble of equipment at the moment in some CPPs.

6.3.12. Applicability of equipment related to early warning and disaster information by CPP

(a) High Frequency (HF) /Very High Frequency (VHF) wireless system

HF/VHF wireless system is a major communication system among CPP Head office, Zonal Office, Upazila Office (HF), and Union Office (VHF). However, this

system has not been installed in all of the unions, and not all of the systems are working. Some CPP indicated they wanted to install a HF/VHF system in all Unions, but on the other hand, it is better to install walky-talkies, an interactive wireless system, because HF/VHF system requires electricity, is not portable and expensive and difficult to repair (JICA,2013). The system has some weak points, but an interactive system such as HF/VHF is an important item for early warning and disaster information systems.

(b) Siren

Sirens are usually used for signal above 8(eight), and it can be used for disseminate early warning information. This is very common in Bangladesh and it covers wide areas. The sound of a siren has effectiveness to make community people recognize a state of emergency; therefore, most CPPs emphasize the importance of sirens. Especially, CPPs require high-power sirens to reach wider areas. On the other hand, some CPPs reported that sirens could not deliver the content of the information. Some CPPs have super megaphones in which the sound of siren is set in. They are effective in terms of sound effect and information dissemination. In the early warning stage, CPPs use megaphones up to signal 7, and they use sirens for more than signal eight (JICA,2013).

(c) Megaphone

A megaphone is quite simple equipment, and it is very effective to disseminate information to wider areas when it is attached to motorbikes, bicycles, vehicles and rickshaws. Megaphone could deliver content of the information. Such as, evacuation orders, signal number etc. If megaphone battery is not work, that can replace it from rental shops. Megaphones are one of the most important pieces of equipment to disseminate the early warning information. The high-power megaphone-siren system is a fixed system; therefore, a mobile megaphone system is quite important in order to supplement the fixed siren system. A portable megaphone is effective in areas with insufficient road networks; on the other hand, vehicle, motorbikes and bicycles with a megaphone are effective in areas with sufficient road networks (JICA,2013).

(D) Mosque Microphone

In Bangladesh, mosques have microphones and the microphones are used every day, therefore there are no problems with maintenance. The microphones are one of the effective pieces of equipment for early warnings. Muslims and non-Muslims live in the same areas, so there is no problem regarding areas. On the other hand, the number of mosques is limited in areas where non-Muslims are dominant in rural areas. Therefore, consideration is to be given regarding in rural areas. However, most mosques, which have microphones, are in areas where upper class people live, and mosques, which do not have microphones, are in areas lower class people live. Also in upper class areas, they give much of their charity to mosques and there is no problem for maintenance, but in lower class areas, there is issue for maintenance. According to JICA report, there are many CPPs where they use mosque microphones for early warning information, but if cyclone hit at night, it cannot possible because after 8 pm, the last prayer of the day, they said they couldn't guarantee they can use mosque microphones. Therefore, there might be some problems for dissemination of information at night.

6.3.13. Training of Volunteers

For maintaining a high level of efficiency and increasing volunteerism, the volunteers are given basic training on disaster management activities behavior, warning signals and their dissemination, sheltering, rescue, first aid, relief operations, gender issues, humanitarian values, climate change issues, climate change impact in Bangladesh, technique of adjusting capability with changed climate, forestation and others social welfare cyclones activities.

The important trainings are details in the below:

- Basic Training on disaster Management
- First aid Training
- Search & Rescue Training
- Leadership Training.

6.3.14. Social welfare/other activities:

Other than the mandatory responsibilities, the volunteers are very much involved in performing social welfare activities by integrated themselves with local government administration, NGO's, Upazila disaster management committee, educational institutions, religious institutions, social club and other agencies in the event of road accident, fire, boat capsize, river erosion, epidemic etc. On those situations the volunteers stand beside the helpless people with sincerity and offers wholehearted cooperation. The community people have recognized the services rendered by the volunteers with satisfaction.

6.4. Volunteers Fire Fighters (Shobo–dan)

6.4.1. Historical Background of Shobo-dan

Shobodan has been organized by the local people and is based on the spirit that tries to defend the local community voluntarily from the disaster impact. In other words, Shobodan is volunteer fire corp. The Shobodan is one of three firefighting organizations (fire department, fire station, Shobodan) by which cities, towns, and villages should establish entirely (or part) Fire Defense Organization Law. The Shobodan where Akita Prefecture was a full-time organization at the end of May 1994, which exists, dissolves, and all Shobodan are part times. While the firefighting activity and the emergency relief for fire and flood are engaged in every one's occupation in daily life, is the duty of fire fighter in cooperation with the fire brigade. Shobodan inspects the spot where Fire Chief orders, sets area to be guarded against fire, and has the authority to do emergency measures for firefighting. During the Heian era the fire-fighting group is seen as firefighting organization according to history records. However, in Edo era it developed as an organization. The history of Japanese firefighting originates until Heian era (8thC). The main activity of the firefighting was royal palace protection (Ishiwatari, 2012). However, later in Edo era that firefighting was organized and developed. Then, in the Meiji era and firefighting was incorporated into the governmental organization while it was a pure autonomy organization in Edo era. Community-based fire brigades called "Shobo-dan," composed of ordinary

citizens play an important role in firefighting and fire prevention. The Japanese government reorganized Shobo-dan under police agencies in 1927.After the World War-II, it is transferred police agency to local government. The Fire Defense Organization Act and by-laws it operates everywhere under the jurisdiction of Fire Chief.
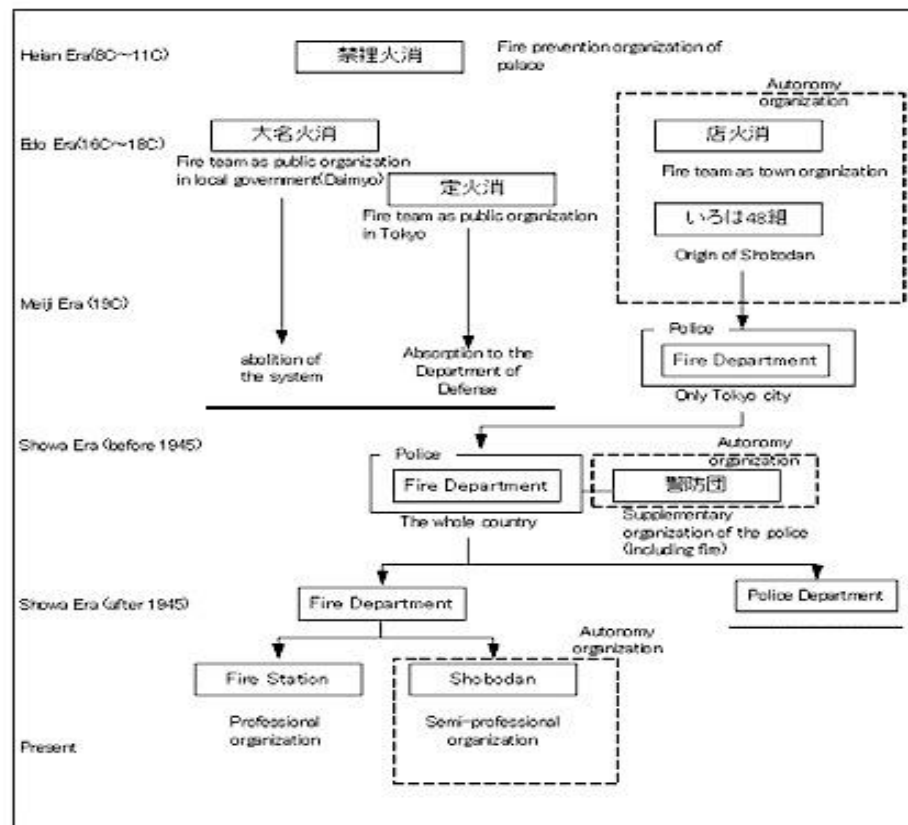
Figure 25: History of Fire Fighting Organization in Tokyo

Source: Choi et. al; (2004)

Figure 25 shows that the history of the fire fighting in Japan. Today the firefighting organization is based to the Fire Defense Organization Law in 1945. Now Japan has almost achieved the nationwide standardization of fire prevention services, even though the functions and activities of volunteer fire corps vary according to how they cooperate with regular fire prevention services (fire departments and fire stations) and the local circumstances, volunteer fire corps still retain their importance, and are rather of even more importance in today's social circumstances. Their properties of 1)

community-based, 2) great mobilization and 3) immediate responsiveness, along with their members carrying out dedicated activities with love for their own local communities and the spirit of courage are all indispensable when it comes to extensively ensuring the safety and security of communities (FDMA,2014).

Basically, communities should decide their own affairs, defend their own security and create their own necessary organizations while government should support or cover their insufficiencies and inabilities, expanding among municipal, regional and national in order. No other organization or entity than the volunteer fire corps is community-based, helps each other or can exercise disciplined power. An organization like the volunteer fire corps is indispensable in forming a community,

Municipalities organize the fire departments and stations, volunteer fire corps in Japan. Volunteer fire fighters are not professionals and engaged in firefighting as secondary occupation (Koresawa, 2013, Choi et. al; 2004). The fire corps is independent from the fire departments and fire stations and there are no top-down relationships between these two. However, in cases of where the fire corps is called out in emergencies, they must follow the orders of the chief of the fire department or fire station (White paper on fire service). For the volunteer fire corps, the basic rule is one corps in one municipality. The number of volunteer fire corps is 2,208 and the number of members is 859,995 people. Volunteer fire corps has been established in every municipality (White paper on Fire Service, 2016).

The courageous act of these volunteers to fight against disaster is based solely on their resolution to protect their communities on their own and their sense of responsibility to live up to people's trust in them. Members of Volunteer Fire Corps are working for communities to protect people's lives and property through firefighting activities when a fire occurs, lifesaving and rescue activity, patrolling and guidance for evacuation in a natural disaster, such as an earthquake, storm, or flood, fully utilizing their knowledge of and skills in firefighting and disaster preventing activities acquired as members of Volunteer Fire Corps. They shoulder a variety of roles including the organization of first aid classes, fire prevention instruction to residents,

special lookout patrols, and public relations activities.

The mobility of Volunteer Fire Corps members, who are familiar with the geography and individual residents of the area, has made a great contribution in many a serious disaster, preventing further disaster and saving local residents. Volunteer Fire Corps are increasing their importance under improving cooperation between them and fire departments as well as other autonomous disaster preventing organizations led by local residents. To support such activities conducted by Volunteer Fire Corps, Fire and Disaster Management Agency is providing people with disaster prevention education using the Internet and acting to encourage people to participate in Volunteer Fire Corps, in addition to the promotion of improvement in activity environments and machinery and equipment of Volunteer Fire Corps (Interview data from Shobo-dan members at Nagata).

6.4.2. Status and activities

When the disaster occurs, they warn the community by loudspeakers, sirens and tsunami time they help to people to evacuate to the safe place and close the water gates. However, the most prevalent strength identified is that of quality Shobo-dan members take pride in its work and enhance the capacity of disaster preparedness program at the community level (White paper on Fire Service, 2016).

- Engaged in their own occupations under normal conditions and acting as fire organization during disasters.
- Having authority and duty to carry out fire defense activity in the region
- Turning up depending on the types of disasters.
- Implement firefighting at an initial stage in communities and respond to natural disasters by using their own capacities.
- Members are part-time (special post）　local government officers. Unlike firefighters who engage in firefighting professionally, they are local residents who have their own professions and also participate in the volunteer fire corps.
- Loss of injury they received compensation in case of disaster. Payment by municipal government.

- Volunteer Fire corps members engage in firefighting, lifesaving, and first-aid activities during a disaster, including fires and earthquakes, with fire stations as one of a local government's fire services. Close the Watergate, support residents to evacuate high grounds.

- In non-crisis times, they work on the promotion of disaster preparedness awareness to local residents. They conduct regular checkups of fire alarms in the schools, assist schools to conduct DRR drills.

Status for Firefighting Organizations (As of April 1, 2018) (Chapter 2, Section 1)

○ Fire departments
- 728 fire departments and 1,719 fire stations have been established, with the number of firefighting personnel coming to 164,873 people.
- The number of firefighting personnel increased compared to the previous year (an increase of 1,059 people), while coming to 104.4% versus ten years ago.

○ Volunteer fire corps
- The number of volunteer fire corps is 2,209 and the number of members is 843,667 people. Volunteer fire corps have been established in every municipality.
- The number of volunteer fire corps members decreased compared to the previous year (a decrease of 6,664 people), while coming to 94.9% versus ten years ago.

[Trends in the number of firefighting personnel and volunteer fire corps members]

Notes: 1. Prepared based on the Survey on the Current Status of Fire and Disaster Prevention and Earthquake Countermeasures
2. Due to the effects of the Great East Japan Earthquake, the number of firefighting personnel and volunteer fire corps members in Iwate Prefecture, Miyagi Prefecture, and Fukushima Prefecture for 2011 were totaled using the figures from the previous year (as of April 1, 2010).
3. Due to the effects of the Great East Japan Earthquake, the figures for Onagawa Town, Oshika-Gun, Miyagi Prefecture for 2012 were totaled via the figures from two years ago (as of April 1, 2010).

Figure 26: Status of firefighting organization

Source: White paper on Fire Service (2016), [Accessed online 22nd May, 2020]

6.4.3. Structure and Function of Volunteer Fire Corps

The Volunteer Fire Corps underwent changes in its function and role inside the structure of the Fire Department, along with the completion and modernization of the Fire Department itself. The relations between the Fire Department and the Volunteer Fire Corps, as well as the trend of the relations in the future prospective. It also found

90

that the position of the Fire Department and the Volunteer Fire Corps in the fire/disaster prevention and firefighting administration. The organization of fire/disaster prevention and firefighting system in Japan can be broadly divided into state level, prefectural level, and municipal level. However, the management of fire prevention and firefighting is entrusted in the hand of the municipalities. Thus, the fire prevention and firefighting system of municipalities is in itself an independent system. The relations between the Fire Department and the Volunteer Fire Corps can be seen in the municipalities level. Even though basically the Volunteer Fire Corps is an independent institution from the Fire Department, it is positioned under the governmental administration. The Volunteer Fire Corps shows its expectation of financial support from the government. While the government expects the independent role of the Volunteer Fire Corps, as it has some characteristics which are different from those of the Fire Department, such as, its ability in mobilizing a large number of people and its close adherence to local community. This tendency is in the rising since Hanshin- Awaji Great Earthquake in 1995 (Koresawa, 2013, Robertson, 2012). From a legal point of view, the Volunteer Fire Corps is an independent institution from the Fire Department system. However, in reality, both institutions are inseparable from each other. On the other hand, the relationship can be seen as a cooperative one, while on the other hand it is a mutual dependency. The Volunteer Fire Corps is often packed as one of community administration. The reason for why there is a mutual dependency between the Volunteer Fire Corps and the government administration.
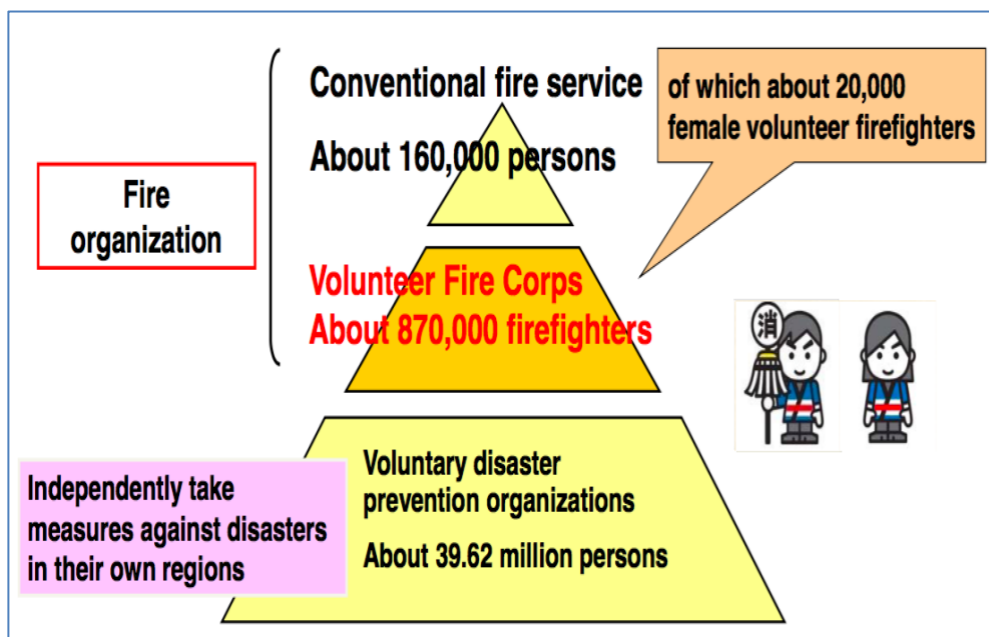
Figure 27: Volunteer Fire Corps and regional disaster prevention system
Source: White paper on Fire Service (2016), [Accessed online 22nd May, 2020]

6.4.4．Criteria become a Shobo-dan volunteers

1. Membership requirements

- In principle, any healthy adult aged 18 or older.

- High Spirit people who enjoy cooperation to community.

- Usually, they recruit the local people by themselves.

- No repayment (twice a year in small amount) that used for Nomikai (Drinking),

- In an aging society with a falling birthrate, it is hard to assemble younger members. So, students will play a key role to revitalize the volunteer fire corps.

- Other than disaster-relief activities, female members also engage in public relation activities, fire prevention activities and first-aid for families giving a female perspective.

6.4.5. Financial System of Shobo-dan

The Japanese government has given significant direct funding to volunteer fire departments; municipalities cover the majority of costs with some help from the central government (Field survey 2018, 2019 by author). Although the amount of funding varies by department, the city usually provides the firehouses, trucks, hoses, uniforms, and other necessary equipment. The volunteer units may also receive small, additional funds for extra hoses and other equipment from their local neighborhood association, but the amount of these extra funds is usually 10% or less of the total budget (Robertson, 2012). In addition to equipment, the volunteer units also receive cash to cover maintenance and entertainment costs (Field survey 2018, 2019). The Fire Bureau of the national government sets guidelines for the allowances, but the actual amount is determined by municipal statute and therefore varies widely. Although this money appears in budgets as allowances given to individual firefighters, the money is usually pooled for use by the unit as a whole for such purposes as cleaning supplies for the firehouse or going out for food and beer together after a drill session. In addition to direct funding for equipment, municipalities also provide insurance benefits for volunteer firefighters. The Fire Defense Organization Law requires municipalities to compensate volunteer firefighters or their families for death and disability incurred as a result of injury or illness sustained on official duty and must pay them a retirement allowance.
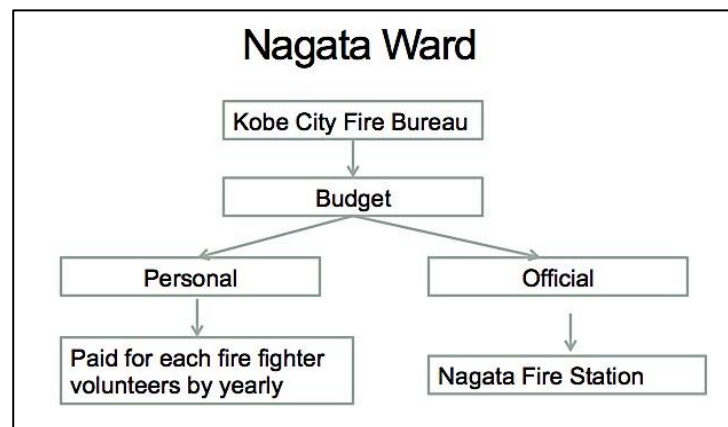
Figure 28: Example of budget system in Nagata ward, Kobe city

Source: (Created by author)

6.4.6. Emerging Shortage of Disaster Management Leaders

The Citizen firefighters play an important role in rescue and evacuation activities during storms, floods and earthquakes in addition to their work preventing fires and fighting them. They also help strengthen community bonds by visiting older people couples as well as those living by themselves. Shobo-dan faces the problem of decreasing and aging members (Fire and Disaster Management Agency (FDMA, 2010). The total number of members has constantly decreased from 1.3 million in 1965 to 880,000 in 2010. The national government is promoting recruiting campaigns, awarding private companies supportive to Shobo-dan, and encouraging female members. Also, the national government provides local governments with grants for facilities.

The number of volunteer fire corps is 2,208 and the number of members is 859,995 people. Volunteer fire corps has been established in every municipality. The number of fire corps volunteers, who directly support local disaster resilience, is on a long-term downtrend, and at the same time, aging is proceeding among such volunteers (White paper on Fire Service, 2019). The decrease in and aging of fire corps volunteers not only means the shrinkage of the pool of personnel who directly support disaster resilience but also raises concerns that disaster resilience may not necessarily be effectively exercised. Trends in the number of firefighting personnel and volunteer fire corps member show in below figure.
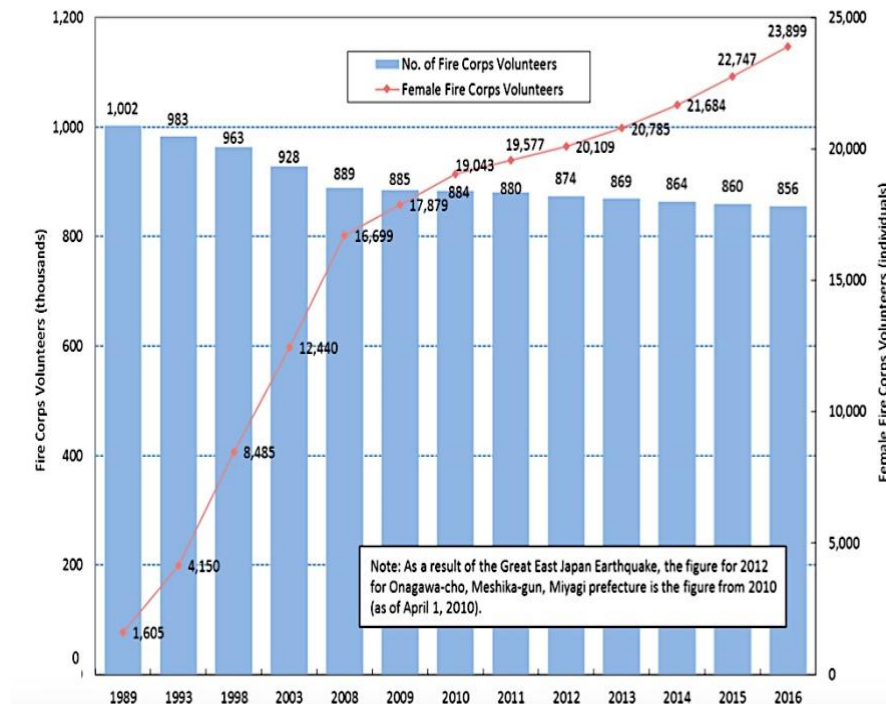
Figure 29: Trends in the number of firefighting personnel and volunteer fire corps members
Source: White paper on Fire Service (2019), [Accessed online 22nd May, 2020]

6.4.7. Training Status

Improving knowledge and skills that form the basis of activities is essential to ensure that Volunteer Fire Corps respond appropriately to more complex and diverse disasters, rescue efforts and more advanced fire prevention responsibilities. Education and training of Volunteer Fire Corps is conducted in a mutually coordinated arrangement with the national government, prefectures and municipalities, by assigning various functions particular to each of them. Training is conducted by each fire defense headquarters, fire department and Volunteer Fire Corps, as well as at the Fire and Disaster Management College and prefectural fire and disaster management schools. Specialist education and training is also conducted at emergency medical training institutes (White paper on Fire Service, 2019).

Training of firefighting personnel that will eventually become fire-fighting leaders capable of responding to new types of disasters and accidents, and keeping up with advances made to science and technology is strongly encouraged. At the Fire and

Disaster Management College, general training is provided for administrative positions within firefighting organizations, including the fi re chiefs, commissioners and heads of Volunteer Fire Corps. Training is also provided to develop personnel with specialist knowledge and skills on protection and policing, rescues, emergencies, fire prevention, dangerous materials and fi re surveys for those who will take an active role in activities at disaster sites. Hands-on training is also actively provided to meet the demands of today including management of dangerous materials.

6.4.8. Women engagement

In order to strengthen such fire brigades, the "Act on the Improvement and Reinforcement of Local Disaster Prevention Power Centered on Volunteer Fire Service" came into effect (White paper on Fire service, 2019). Based on this law, it is necessary to aim for the improvement and reinforcement of local disaster prevention power, including volunteer fire services. In 1990, there were only about one-thousand-woman volunteer firefighters, but as of April of 2014, this number had climbed to roughly 22,000 people, and it continues to increase each year. In addition, these women's activities are generally focused on public relations and education, preventative activities, and so forth, but there are also woman volunteer firefighters who put men to shame with their firefighting and rescue activities, and those roles are expanding.

Former President Abe Cabinet has set forth the creation of a society in which women can shine as one of its most important policies. Various strategies are being introduced in a bid to arrest this decline in numbers. Examples of these strategies include the setting up of a new category of volunteer firefighters in prevention campaigns, retired volunteer firefighters being encouraged to become involved in other capacities and awards being presented to companies that encourage their employees to volunteer as firefighters. These initiatives are part of a broader community-based approach. As a result of the efforts, the number of women volunteers firefighters have been steadily increasing to the point of where around 60% of volunteer fire departments nationwide now (Ozawa, 2014). However, the actual

number of women volunteer firefighters is still only 21,000, which is less than 3% of the total volunteers (White paper on Fire Service, 2016). It is difficult for women to gain acceptance in this area because firefighting is still regarded as dangerous, as a man's job, and as a physical job. That has been the tradition of Japan. *The "hashigo-nori" the ladder performance by firefighters. The history of women volunteer firefighters can be traced back more than 100 years to Tobishima, a remote island near the city of Sakata in Yamagata prefecture. Here the women of the village were responsible for firefighting because the men were often at sea. It is believing that women throughout the rest of the Japanese archipelago have performed similar roles. Japan is a nation that is regularly beset by major natural disasters* (Ozawa, 2014). It is vital that everyone be ready and able to protect himself or herself when disaster strikes.

In various departments, women get together and take part in the fire preventive activities. A national firefighter contest for women volunteer firefighters is held every two years to demonstrate their high skills. The meet presents an opportunity for participants to demonstrate their outstanding skills such as this and also hose training to protect our cultural assets. Depending on which fire department you look at, they take part in various types of activities. And there are also programs including visiting the houses of elderly and rescue activities and fire prevention and disaster prevention education targeting children. Japan is very disaster- prone and we have to be aware of how to protect ourselves. Especially who need to educate their kids and also train the next generation of instructors and educators. Every year Japan has a national motivation convention for women volunteer firefighters and make presentations about actual activities and other topics by women volunteer firefighters.

Lastly, in order for us to develop we need to win the trust and the understanding of local communities. That is women volunteer taking part in the various forms of the media marketing and advertising to try to promote to their activities. At the same time, women firefighters have households to take care of their family and kids and without their understanding their jobs will not be completed. At the end, by involving more

women firefighters can meet the goal of protection the human lives.

In conclusion, Volunteer Fire Corps plays a role of cooperation between conventional fire service and voluntary disaster prevention organizations, and constitutes a core presence in regional disaster prevention. Shobo-dan has the following advantages (Committee on Strengthening Shobo-dan, 2010):

- Real relevance for the needs of community: The members live in their community and are well acquainted with situation in the community.

- Large-scale mobilization: The total number of the members is some six times of professional staff of firefighting agencies. Shobo-dan is expected to play a crucial role during enormous disasters, such as the Kobe Earthquake in 1995.

- Ready to response: The members are trained at normal times.

The volunteer fire corps greatly contributes to the safety, security and stability of local communities through their wide variety of activities, not only their response to disasters, including fires and floods, but also emergency preparedness training drills during ordinary times, educational activities to raise the awareness of firefighting or disaster prevention in cooperation with women's firefighting clubs, voluntary disaster prevention organizations, etc., the search and rescue of missing persons in water accidents, snow removal after heavy snow and clearing the snow off the roofs of elderly people, and carrying on local traditional events.

6.5. Community Emergency Response Team CERT (USA)

6.5.1. Historical Background of CERT Program

The CERT concept was developed and implemented by the Los Angeles City Fire Department in 1985. The Whittier Narrows earthquake in 1987 underscored the area-wide threat of a major disaster in California. Further, it confirmed the need for training civilians to meet their immediate needs. CERT became a national program in 1993. There are now CERT programs in all 50 states, including many tribal nations and U.S. territories. Each is unique to its community and all are essential to building a Culture of Preparedness in the United States. There are over 2,700 local CERT

programs nationwide and more than 600,000 people have trained since CERT became a national program (CERT, 2021).

Officials from Los Angeles traveled to Japan in February of 1985 to study its disaster response plans. The team discovered that Japan had extensive training programs that were neighborhood-based, focusing on fire suppression, light search and rescue operations, first aid, or evacuation. The LA group traveled to Mexico City following a magnitude 8.1 earthquake that killed more than 10,000 people. Although there had been no pre-disaster training, groups of volunteers conducted light search and rescue operations. The volunteers were credited with saving over 800 people, but over 100 volunteers died in the effort. Having determined that pre-disaster training was a valuable resource for the city, officials began training leaders of neighborhood watches to perform basic fire suppression, light search and rescue, and first aid. This first team of 30 people completed training in early 1986 and proved that the concept was viable through various drills, demonstrations, and exercises.

6.5.2. Activities:

CERT is a locally organized program that builds upon the local knowledge and relationships of community and neighborhood members. CERT only operates in areas serviced by its parent or sponsoring agency. CERT does not deploy regionally, nationally, or internationally. The CERT Program educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community (Scanlon, 2015).

6.5.3. Structure of the CERT program

An organizational structure helps CERT leaders and members to be more effective and focused in their response. An accountability system and management structure help ensure the safety of the team. Organization also makes communication, information management, and activity documentation more effective. The ICS is a "management system designed to enable effective and efficient domestic incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure ("Incident Command System Resources," 2015)". Professional responders utilize the ICS because it provides a universal structure that can expand or contract depending on the needs of a particular crisis or disaster. It also provides a universal language that anyone can understand, so that responders, whether professional or volunteer, can cooperate together without vital communication being lost or misunderstood in the miasma of jargon that is often utilized by a wide variety of first responders. The ICS is normally structured into five functional areas including: Command, Operations, Planning, Logistics, and Finance/Administration ("Incident Command System Resources," 2015).

When applied to CERTs, the ICS operates in the usual framework, with the command function being filled by the first CERT Team Leader to respond to the disaster scene. The ICS functions within CERTs by organizing volunteers/personnel into specialized functional groups based on acquired skills, or ones that were already present. ICS functions in the following ways:

- Management, or Command, (the CERT Team Leader) is responsible for deciding what is to be done.
- Operations are responsible for how it gets done.
- Logistics is responsible for how it gets supported.
- Planning is responsible for determining what is going on and how the information gets communicated and/or displayed.
- Finance/Administration is responsible for how everything gets documented
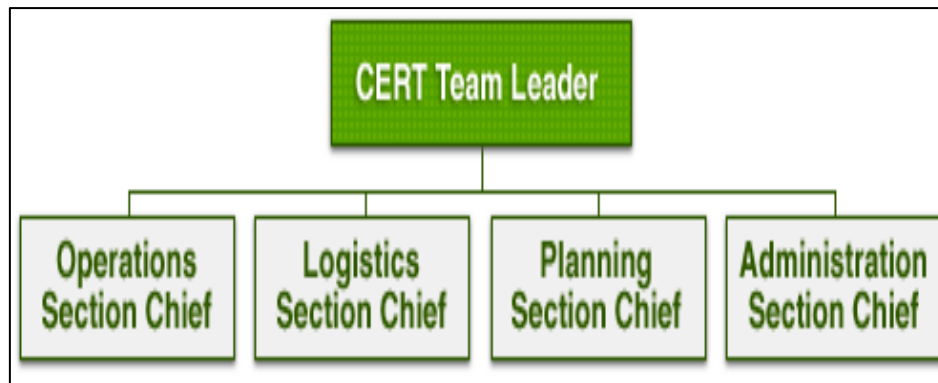
Figure 30: CERT Team leader function

Source: CERT (2020), [Accessed online 22nd May, 2020]

The ICS can also, as professional personnel utilize it, expand and contract based on the needs of the disaster situation. As a disaster situation grows graver, and personnel from a state or federal level begin to arrive, the simpler ICS structure that fit the needs of just the CERT team can grow to meet the needs of the expanding disaster relief efforts.
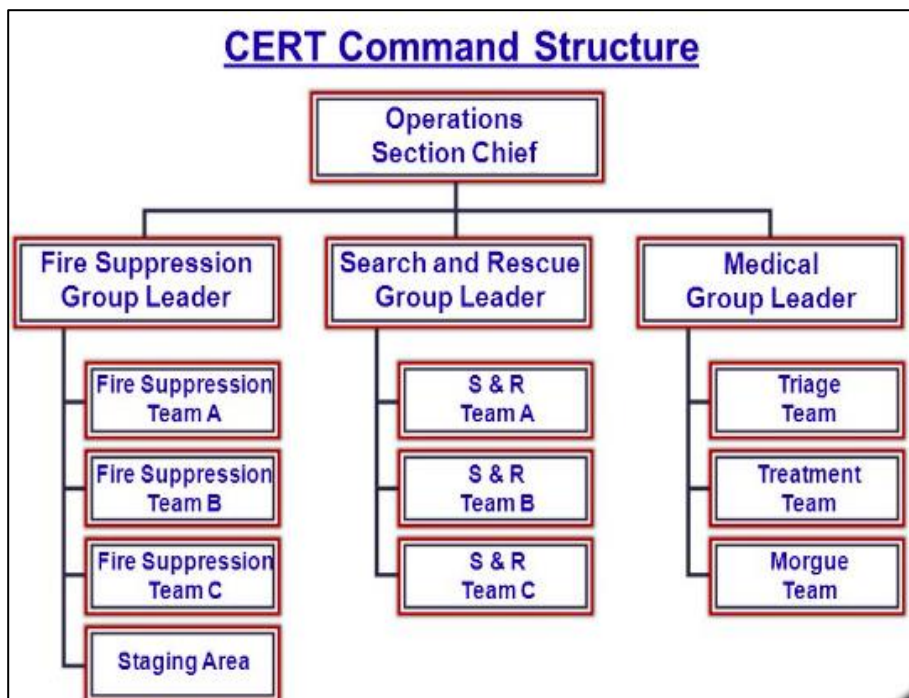
Figure 31: CERT Command Structure

Source: CERT (2020), [Accessed online 22nd May, 2020]

6.5.4. Training Status

CERT members are local volunteers who are trained in disaster preparedness and response for events/issues their local community faces. FEMA has outlined universal training guidelines for the CERT program, but how communities deliver that program, and how they mobilize and utilize their volunteers, is up to the discretion of CERT team leaders and local authorities/ professional responders. The CERT course is delivered in the community by someone who is qualified, usually first responders, and the instructor has completed a CERT Train-the-Trainer (TTT) course. The Train-the-Trainer course is usually conducted by the State Training Office of Emergency Management or the Emergency Management Institute (CERT, 2020).).

The CERT training for community volunteers may be given using a variety of schedules, for example, given over successive weekends. The training covers the following categories covered in nine separate units:

Unit 1: Disaster Preparedness

Unit 2: Disaster Fire Suppression

Unit 3&4: Disaster Medical Operations

Unit 5: Light Search and Rescue Operations

Unit 6: CERT Organization

Unit 7: Disaster Psychology

Unit 8: Terrorism and CERT

Unit 9: Exercise and evaluation

6.5.5. Disaster Management and Response

CERTs take on many active roles within a community. They seek to alleviate suffering not only during a disaster, but also before and after as well. That is, through training, CERT members are prepared to serve their community not only in disaster response, but in disaster preparedness, mitigation, and recovery as well. This section of the paper will attempt to illustrate the importance of CERTs within a community before, during, and after a disaster.

Before a Disaster

CERTs can provide a means of preparing their communities for disasters. By learning preventive measures, a community can ensure that their families are safe as well as work to minimize potential damage. Distribute preparedness materials and conduct preparedness demonstrations.

- Ensure that community members have up-to-date knowledge and information of local first responders.
- Demonstrate how to properly install smoke detectors and other household monitoring devices.
- Verify and update a list of special needs residents who may have already registered with local emergency responders. Make sure these residents are properly prepared for disasters and that they will be accounted for in the face of a disaster.
- Distributing information, and teaching people how to about disaster kits.
- Teaching hazard mitigation procedures (e.g., eliminating hazardous material from home, ensuring electrical outlets are not overloaded, etc.).

During a Disaster

When a disaster is occurring, widespread damage can take place and create more needs than can be immediately met by professional emergency responders. At times, these emergency responders may be delayed due to infrastructure damage or other causes. When such situations occur, CERTs can assist their local communities until professional responders are able to arrive. CERTs can contribute to disaster response in a number of ways, such as:

- Conducting light search and rescue operations.
- Documenting damage and relaying important information to emergency personnel.
- Conducting triage on disaster survivors before emergency responders arrive. Providing basic first aid to disaster survivors.
- Assisting with crowd control and providing updated information to residents.

Helping lost individuals and those with special needs.

After a Disaster

As soon as the critical phase of a disaster has passed the process of regaining control and normalizing the affected area can begin. During this recovery process CERTs might fill the following roles:

- Helping survivors, first responders, and other CERT members cope with trauma induced from the disaster.

- Keeping up-to-date information for citizens on recovery efforts.

- Delivering food and other supplies to survivors and emergency responders.

- Directing traffic and helping to maintain security around affected or high damage areas. Helping to staff and set up shelters and medical centers.

In conclusion, the Community Emergency Response Team (CERT) is a program that is rapidly gaining in importance as the need for trained civilians, often the first responders to their own local disasters, becomes more vital in an effort to make disaster management as effective and safe as possible for survivors and rescuers alike.

6.6. A brief analysis of this three-community based volunteer organization

Community participation is one of the most important issues in social sciences. People's involvement in the various phases of disaster management cycle can differ in the form of passive presence as well as answering the questions for an active participation in management and guidance of the activities. Here below table shows the basic information of these three countries community-based volunteer organization.

Table 15: The basic information about these three-community based volunteer organization

Characteristics	Japan	Bangladesh	USA
Name of the organization	Shobodan/	Cyclone Preparedness program (CPP)	Community Emergency

	Volunteers fire fighters		Response Team (CERT)
Organizational type	Traditional community-based organization, later it handles by Government	Community Based Volunteer organization introduced by Government	Community Based Volunteer organization introduced by Government
Established	18th century	1973	1998
Legal Act	Fire Defense Organization Act	Standing Order on Disaster (SOD)	Federal Volunteer Protection Act of 1997 (VPA)
Supervising government organization	Fire and Disaster Management Agency (FDMA)	BDRCS and Local Government	Federal Emergency Management Agency (FEMA)
Number of Staff or Groups	870,000 volunteer fire fighters	55,000 CPP volunteers	Over 2,600 nationally recognized CERT team
Funding	Local Government	Government/Donor organization/ NGO's	A variety of sources in the public, private, and not for profit sectors.
Coordination	Active and Lerner	Passive, Lerner	Passive, Lerner

Source: (Created by author)

Community participation is one of the most important issues in social sciences. People's involvement in the various phases of disaster management cycle can differ in the form of passive presence as well as answering the questions for an active participation in management and guidance of the activities. What is important is that implementing participatory and community-based approaches have been tested in various fields of disaster management.

In comparison with the selected countries, it can be found that most of the interventions have been taken place in the local and neighborhood levels and in various phases of disaster management cycle. However, in all these countries, the type of disasters, country divisions, laws and legislations, and the disaster management system have affected the community participation and therefore resulted in emphasis to be focused on only one of these specific steps in some of these countries. The levels of volunteer's involvement are various community participations, the type of involvement with regard to its approach is considered. This approach includes active participations at one end and passive one on the other end. Participation of the learner means that people will be taught methods that can then identify their problems and help in solving them with the cooperation of the related authorities. (Jahangiri et.al; 2011). In this way, they can have a chance to be creative. Participation of the cooperator is to use the assistance and cooperation of all involved groups, but authorities are those who are responsible for acting. The consultant participation means that people will be consulted for their choice of selection, encountering the situation and solving the problems, but they do not have any role in its process. Finally, the passive participation only asks people to do some work without considering their ideas and opinions (Jahangiri et.al; 2011).

7. CHAPTER VII: Results and Data Analysis of CPP, Community and Organization Interviews

7.1. Results and Analysis

The results of the questionnaire survey have been described and analyzed briefly with proper figures in this chapter. The result of survey classified into main three categories: (1) Identifying the factors, challenges and limitations that enable CPP volunteers to perform best in early warning dissemination time. (2) Assessment of volunteer's performance of cyclone preparedness program from community point of view (3) Organizational factors and characteristics scope and challenges.

7.2. Identifying the factors, challenges and limitations that enable CPP volunteers to perform best in early warning dissemination time

7.2.1. Characteristics of respondents (CPP Volunteers)

The respondents were 39% female and 61% male CPP volunteer who resided in their community. Only 9 % had obtained a higher secondary level qualification. 30% of male volunteer's occupations is farmer and fisherman. More than 35% female volunteers are housewife.

Table 16: Demographic data of CPP volunteers

Sample demographic data			
Characteristics		N-23	Percentage %
Gender	Male	14	61%
	Female	9	39%
Age	20-29 years	9	39%
	30-39 years	8	35%
	40-49 years	4	17%
	50-59 years	2	9%
Occupation	Small Business	3	13%
	Farmer	7	30%

	Fisherman	2	9%
	Housewife	8	35%
	No job	2	9%
	Student	1	4%
Area of residence	Semi- Urban	13	57%
	Rural	10	43%
Education	No education	3	13%
	Primary	8	35%
	Secondary	10	43%
	HSC	2	9%
Ethnicity	Bangali	21	91%
	Indigenous	2	9%
Past experiences of disaster events	Yes	15	65%
	No	8	35%

Source: (Created by author)

The social condition of an area can be better understood from its demographic characteristics, resource and various economic and social indicators. The socio-demographic characteristic is very much influenced by the geographic characteristics of any particular area. From the above table it is clear that the geographic characteristics have great impact on the socio demographic characteristics at the Koyra and Ukhiya volunteers' life. In terms of the characteristics of the sample, it is found that 15 volunteers (out of 23) had past experiences of disaster events, which indicate that they worked with community on evacuation process.

7.2.2. CPP early warning system operational methods

The Bangladesh Meteorological Department (BMD) monitors cyclone activity and contacts CPP by mobile phone or handheld radio when they identify a cyclone forming that may affect the coastal areas, CPP volunteers will use a '3 flag system' (see below) to communicate the level of danger to the community. CPP early warning flags are red, with a black square in the middle. They are square and 2ft high by 2ft

wide and will be displayed on a pole 18ft high (CPP, 2020).

FLAG 1 – WARNING

A storm has formed with the potential to turn into a cyclone. NO megaphone will be used to play warning messages

FLAG 2 – DANGER

A cyclone has formed and may come to this area. You have approximately 24 hours until the cyclone arrives. A megaphone will be used to play early warning messages.

FLAG 3 – GREAT DANGER

A cyclone has formed and will impact this area soon. You have approximately 10 hours until the cyclone arrives. A siren will sound, and megaphones will play early warning messages.
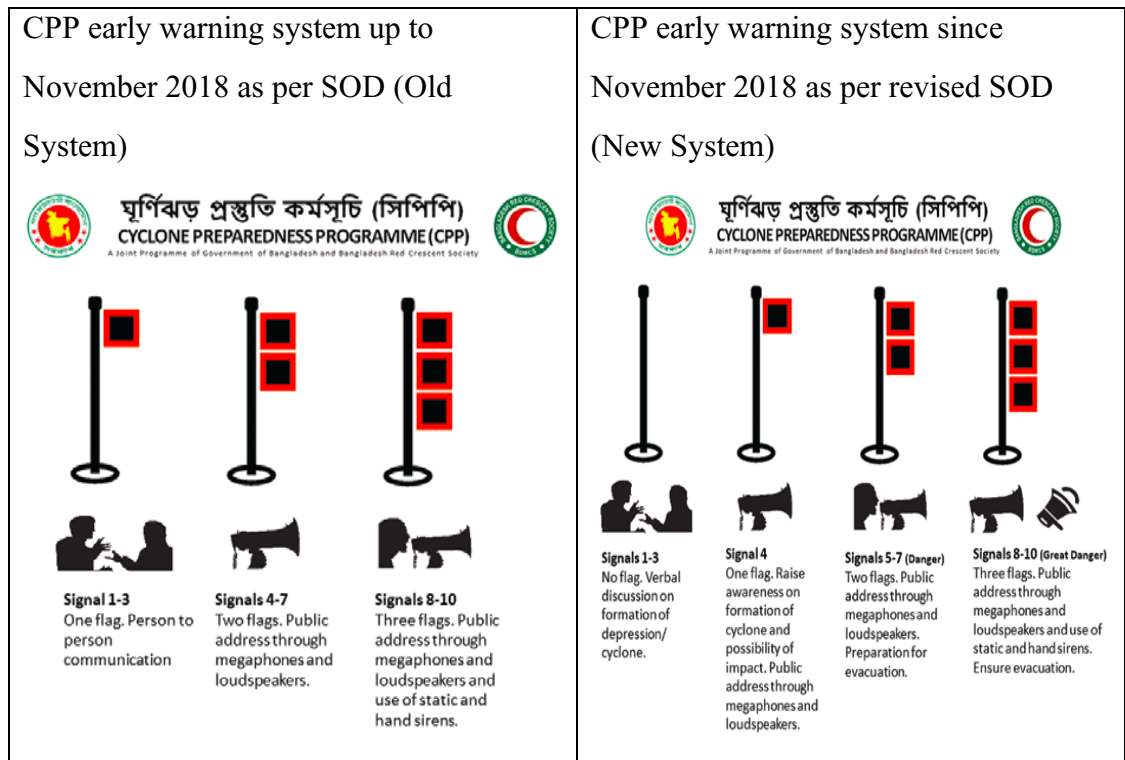
Figure 32: Government revised the system of warning flags

Source: UNDP (2018)

A 10-level warning has been adopted in the SOD. A new warning method, which using 6 levels is also mentioned in the SOD, but the implementation is practically impossible

at this moment because CPP does not recognize the advantage to use the new warning level, and also community people will misread the warning level and will not evacuate although they have to. Fig 32 shows that the Government revised the system of warning flags in the Standing Order on Disaster (SOD) in 2018. However, during my discussion with CPP volunteers it is found that among the 23 CPP volunteer only 8 (eight) male volunteers know about the new system. Remaining 15 volunteers don't know the new changes. So CPP volunteers has lack of knowledge about new flags warning system.

7.2.3. Early warning information to community

CPP provided early warning equipment using megaphone, siren, etc., gears for volunteers for disseminating early warning signals (CPP, 2020). They are trained on warning signal system. After receiving warning messages through wireless network/ cellphone/ radio/ TV, CPP volunteers organize preparatory meeting at unit, union, and Upazila levels and refresh volunteer's knowledge, skills, roles and responsibilities of each group (warning, shelter first aid etc.) so that they can properly perform their duties. Then they start disseminating warning messages and advise people what to do according to the level of signal and listening to weather bulletin in the radio. They provide door-to-door information to community at the remote rural areas where does not have access any electricity.

CPP volunteers action to dissemination the early warning information to the community Multiple ans; Male Volunteer-14, Female volunteer- 9

Action	Female Volunteers	Male Volunteers
Using Flag	3	10
Using Siren	4	9
Using Megaphone	6	11
Door to Door	5	13
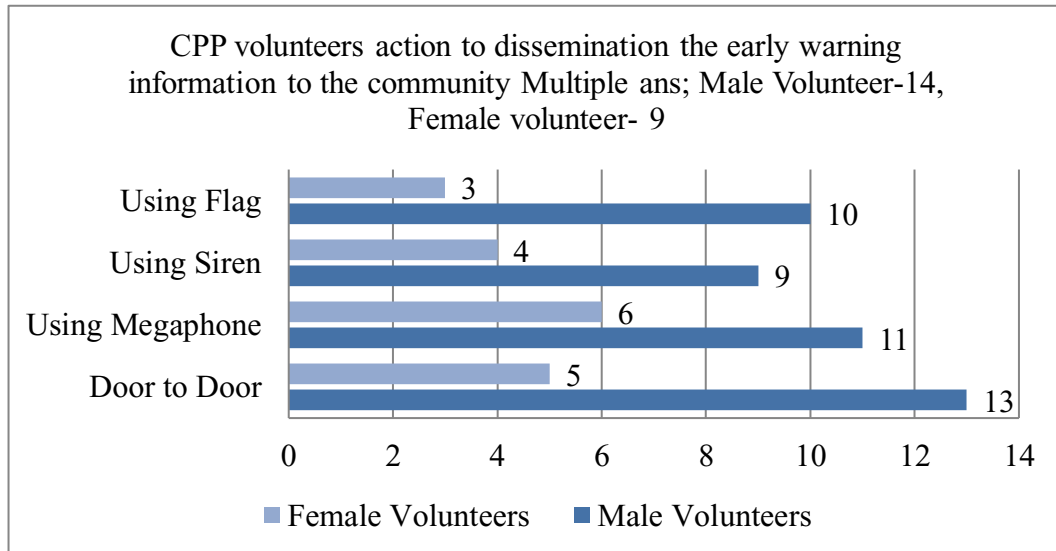
Figure 33: CPP volunteer's early warning information system to the community

Source: (Created by author)

According to the figure 33, the male and female volunteers' performance to disseminate the warning signal dissemination. It shows that male volunteer's contribution is much higher than the female volunteers. People who need to evacuation order they are mainly living along coastal areas and in farming villages where there are no concrete buildings (JICA, 2013). In this case, male volunteers are more responsible to visit every individual household to provide person-to-person evacuation order information. In the focused group discussion, it is also found that female volunteer volunteers were not given the raincoats or any safety equipment's during early warning dissemination and rescue operation (Amin, 2012). That's a one-reason female volunteer performance is less than the male volunteers in operational time. On the other hand, some female volunteers are not aware about flags warning system because they did not receive any training from BDRCS. Also, they stated that sirens (equipment) are very heavy to carry it by walking. That's another reasons female volunteers prefer to use megaphones. Both male and female volunteers agreed that Megaphone/Hand-Mike is very effective in terms of sound effect and easy to carry everywhere.

7.2.4. Advantages and limitations for different early warning and other methods for raise awareness of people at risk

The early warning system is aimed to enhance a system, which disseminates disaster information before disasters hit based on analysis of related organizations Bangladesh Meteorological department (JICA,2013). In Bangladesh, during the monsoon period April-May and October-December, cyclones are more likely to make landfall in the coastal areas. Different sources of early warning, based on respondent's opinions, imply that radio-television; siren, megaphone, and warning flags more commonly disseminate information and advisories 72-48 hours before a cyclone's landfall (Ahsan et.al, 2016). Community people are the receivers of the early warning's information. The Cyclone Preparedness Program volunteers they disseminate the information usually using bicycles by boat, and on foot. Table 17 shows that seven early warning related sources is use to inform people at risk in previous cyclones; methods are warning messages from radio and television, From Government and NGO's and CPP volunteers' activities by using flags, hand-sirens, hand-mikes. However, respondents' opinions about advantages and limitation of sources for warning dissemination shown in below table 17: Advantages and limitations for different early warning and other methods for raise awareness of people at risk.

Table 17: Advantages and limitations for different early warning and other methods for raise awareness of people at risk

Sources	Advantages	Limitations
Early warning from Radio and TV	Alert to community and provide update information to prepare for evacuation	Without electricity and battery both assets are unable to work; specially in remote rural areas

Early warning by CPP volunteers (Door to Door)	Visit individual households (Face-to face) to deliver the evacuation order	Strom surge, wind and poor road network, sometimes they cannot deliver the information to the remote areas
Displaying warning Flag by CPP	Easily visible in the coastal area	Difficult to understand the meaning of each flag and difficult to see from distant locations
By using hand Siren by CPP	Easy to understand and alert the community quickly	Limited coverage and sometimes it works only towards the wind direction
By using Hand Mike /Megaphone by CPP	Easy to communicate and easy to carry	Limitation of Battery capacity and limited coverage
From Government agencies	Reliable & sufficient information	Lack of manpower to disseminate the information
From NGO's	Door to Door information, Via mobile delivery information	They provide information only their beneficiaries/stakeholders, not all the community

Source: (Created by author)

In Bangladesh Radio AM is covered all over the areas; therefore, it is effective for information dissemination to wider areas. However, the audience of AM radio is less than 5% and, it is very low (JICA, 2013). On the other hand, many CPP volunteers conveyed those portable radios are cheap and, they wanted to high quality, long-life and waterproof. Most people do not have TV especially in the rural area and there is almost no electricity (Tiffany, 2012). Therefore, TV is not effective in remote coastal areas. A portable megaphone is effective in areas with insufficient road networks; on the other hand, vehicle, motorbikes and bicycles with a megaphone are effective in areas with sufficient road networks. Sirens are usually used for signal above 8, and it can disseminate early warning information to wide areas (Roy et.al, 2015). The sound

of a siren has effectiveness to make community people recognize there is an emergency; therefore, most CPPs emphasize the importance of sirens. Especially, CPPs require high-power sirens to reach wider areas. CPPs use megaphones up to signal 7, and they use sirens for more than signal 8, therefore, installation of high-power megaphone-siren systems is effective for dissemination of information at any signal levels. It is noted that a consideration be given to the contents mentioned in section "4.1 Department of Disaster Management (DDM), (2) Megaphone-Siren System Installed by DDM" (JICA, 2013).

7.2.5. CPP volunteer faced difficulties during operational time

The coastal areas are not well connected by road networks and evacuees generally walk to the nearest public cyclone shelters (Ahsan et. al, 2016). Volunteers also mention that there is no CPPs are assigned in Char (isolated) Areas (Tiffany, 2012, JICA, 2013). Therefore, the areas are out of the information network. According to the volunteer's explanation, Koyra sub-district road network is worse than the Ukhiya sub-district. CPPs volunteers generally walk to every household to give the evacuation information and suggest evacuating to the nearest public cyclone shelters. In Koyra 58 % and Ukhiya 42% of volunteers mention that because of poor road network; it takes longer time to dissemination the information. They faced difficulties at night to disseminate the information because the shortage of manpower and equipment's. They stated that at night due to storm surge, heavy rain and wind makes them delay to reach to the community.
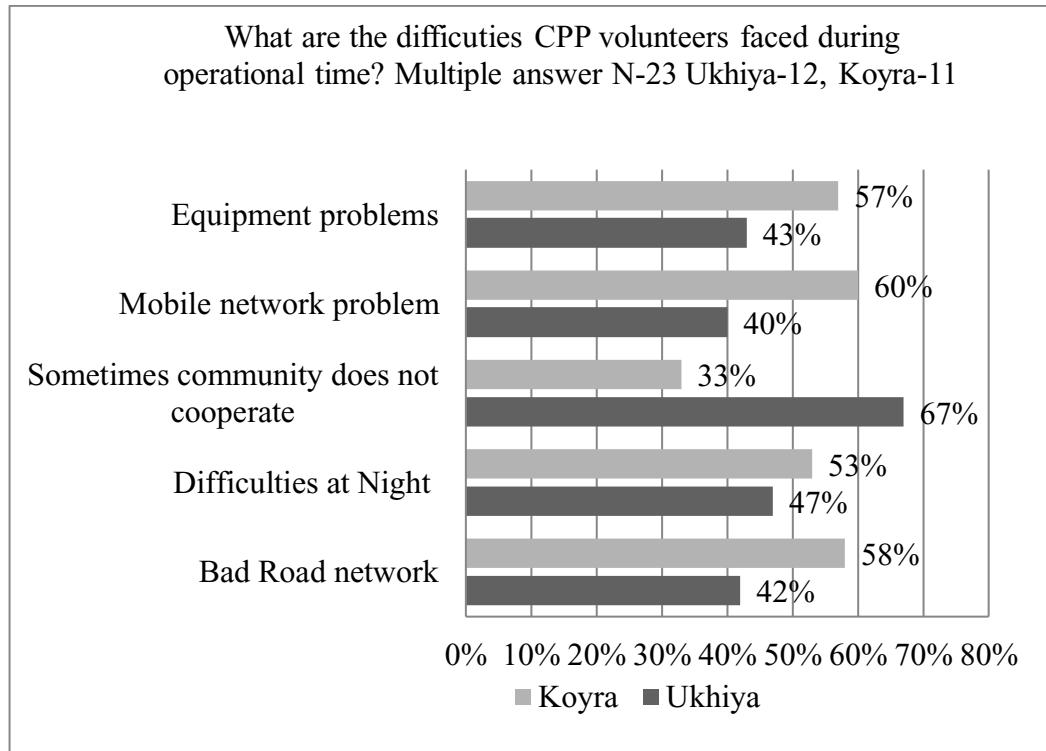
Figure 34: Difficulties during emergency operational time

Source: (Created by author)

Volunteers also indicate that, it is very difficult to disseminate early warning to fishermen that go to deep-sea area. Even if fishermen have mobile phones and radios, it is impossible to communicate from deep-sea because the signal areas are very limited. Around 25% of deaths were fishermen during Cyclone Aila in 2009 (JICA, 2013). They could not be communicated in deep-sea, and then they were hit directly by the cyclone.

CPP provided early warning equipment megaphone, siren, etc. to volunteers for disseminating early warning signals and other materials for first aid and rescue operations. However, 57% in Koyra and 43% in Ukhiya sub district state that the number of equipment is absolutely insufficient during emergency. Some of the equipment's are very old and unusable during an emergency. For example; to use megaphone; high quality battery is needed to operate it. Sometimes this equipment is not updated that's why it's not works in emergency time. In this case volunteers buy new battery by their own money. But this is not their responsibility. It is also found

that among the responded volunteers many of them did not receive personal items like helmet, gumboot, raincoat, lifejacket, torchlight etc. CPP provides priority-based equipment's to warning and first aid group first than other. Inadequate amount of equipment in CPPs causes delay on disaster information dissemination below Upazila. However, CPP volunteers are eager to fulfill their tasks even they do not have adequate experience, equipment.

The volunteers also state that mobile phone contributed to improve the rate of early warning information dissemination, especially in Cyclone Aila, 2009. Though, the mobile phone network does not cover all of the cyclone prone areas. According to the results of the interview survey, 60% in Koyra and 40% in Ukhiya Upazila volunteers share that, sometimes mobile phones were disconnect and towers for mobile phones were broken due to heavy wind and rain. They faced difficulty to communicate with other volunteers. So, if the cyclone warning signal level rises up, sometimes they receive the information lately via other source and this also one reason that community received the information lately.

7.2.6. CPP training during normal time

Training is to be conducted twice a year, April and September (CPP, 2020). However, the training has not implemented due to lack of budget. Training for new CPP volunteers is to be conducted once a year before April. The training has not been fully implemented as well (Amin, 2012 and JICA, 2013).
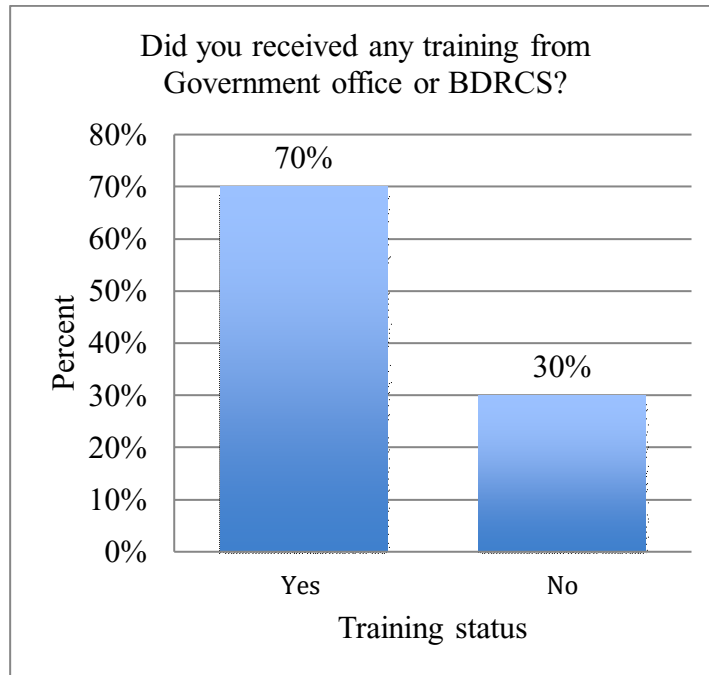
Figure 35: CPP volunteers training information

<div align="right">Source: (Created by author)</div>

Table 18: Gender based CPP volunteers training information

Gender	Name of the training					
	Basic training	First-Aid	Leadership	Search & Rescue	Refresher Training	Total
Male	6 (50%)	2 (17%)	1 (8%)	2 (17%)	1 (8%)	12 (100%)
Female	1 (25%)	1 (25%)	0 (0%)	1 (25%)	1 (25%)	4(100%)

<div align="right">Source: (Created by author)</div>

While about 70 percent CPP male and female volunteers received the basic training, around 30% have not received any training at all (figure 35) Volunteers have also shared that undergoing refresher course without having basic training knowledge. In addition, some volunteers have received the same training course more than once (Amin, 2012). Early warning dissemination is one of the most important duties of CPP volunteers while Search & Rescue and First Aid are also very important duties when cyclone hits. Early warning topic covers in basic and most of other trainings but only about seven (7) volunteers received the basic training and three people received the

first aid training (table 18). Those who did not received any training on search & rescue and first aid; they are still performing as a search and rescue member. So, it is not credible that these volunteers will be able to perform their assigned duties without a minimum level of training on the areas of their liability

7.2.7. Factors associated with motivation to CPP volunteers and participation in volunteering:

Based on the survey data collected from CPP volunteers, it is found that the socioeconomic, demographic and socio-cultural factors associated with motivation to CPP volunteers and participation in volunteering. Volunteer's activities varied by their age, education, individual experience, training, individual equipment, awareness campaign, recognition of responsibilities, and insurance coverage. However, no significant differences were found in education and residency status. Both male and female volunteer participation is positivity associated with past disaster experiences, training, individual equipment's, disaster drill, awareness program, insurance coverage and recognition of responsibility (p>0.05, Table 19).

Table 19: Factors associated with motivation to CPP volunteer's performance

Characteristics	Gender (Volunteers)			p-value
	Male (n-14)	Female (n-9)	N-23 (%)	
Age				
20-29	1 (13%)	7 (87%)	8 (100%)	
30-39	8 (89%)	1(11%)	9 (100%)	0.005*
40-49	2(67%)	1(33%)	3 (100%)	
Over 50	3(100%)	0(0%)	3 (100%)	
Education				
Primary School	8 (57%)	6 (43%)	14 (100%)	
Secondary High School	3(60%)	2(40%)	5 (100%)	0.85

College	1(100%)	0 (0%)	1(100%)	
No education	2 (67%)	1 (33%)	3 (100%)	
Occupation				
Business	2 (67%)	1 (33%)	3 (100%)	
Farmer	7 (100%)	0 (0%)	7 (100%)	
Fisherman	2 (100%)	0 (0%)	2 (100%)	
Housewife	0 (0%)	8 (100%)	8 (100%)	0.001*
No Job	2 (100%)	0 (0%)	2 (100%)	
Student	1 (100%)	0 (0%)	1 (100%)	
Residency Status				
Rural area	10 (63%)	4 (38%)	14(100%)	
Semi-Urban	6 (57%)	3 (43%)	9(100%)	0.809
Past disaster experiences				
Yes	13 (72%)	5 (28%)	18 (100%)	0.034*
No	1 (20%)	4 (80%)	5 (100%)	
Past experiences working as a CPP volunteers				
Less than 1 year	1 (50%)	1 (50%)	2 (100%)	0.029*
2-3 years	0 (0%)	5 (100%)	5 (100%)	
4-5 Years	3 (75%)	1 (25%)	4 (100%)	
6-7years	5 (83%)	1 (17%)	6 (100%)	
Over 8 years	5 (83%)	1 (17%)	6 (100%)	
Received Training				
Yes	12 (86%)	2 (14%)	14 (100%)	
No	4 (44%)	5 (56%)	9 (100%)	0.036*
Attend any awareness campaigns over the past years				
Yes	9 (100%)	0 (0%)	9 (100%)	
No	5 (36%)	9 (64%)	14(100%)	0.002*

Individual equipment's				
Yes	9 (90%)	1 (10%)	10 (100%)	
No	5 (36%)	8 (64%)	13(100%)	0.012*
Drill				
Yes	11 (85%)	2 (15%)	13(100%)	.08*
No	3 (30%)	7 (70%)	10 (100%)	
Insurance Coverage				
Yes	3(100%)	0 (0%)	3(100%)	
No	5 (100%)	0 (0%)	5(100%)	0.019*
No Idea	6 (40%)	9 (60%)	15(100%)	
Recognition of responsibility				
Yes	9 (82%)	2 (18%)	11(100%)	0.04*
No	5(42%)	7 (58%)	12 (100%)	

*The Chi-square test statistic is significant at 0.05

Source: (Created by author)

The differences in volunteering between men and women, it is important to identify the fundamental reasons for these differences and a comparison between genders would be refreshing and useful. One of the major reasons for volunteering as well as the differences between genders could be the values that are important for each individual (Wymer & Samu, 2002). Different values can lead to different types of volunteering behavior and it is possible that volunteers give more importance to certain values. An examination of these specific values for men and women would be able to reveal their role in determining volunteer behavior. In general, both men and women report that helping others is an initial motive for volunteering. However, women are more motivated by internal and personal influences and with social values while men are more motivated by individual values (Wymer & Samu,2002).

A comparison between male and female CPP volunteers to understand whether there are factors that influence female volunteers to perform better or inhibits their motivation or vice versa. The findings are; most of the respondent said male and

female volunteers perform same in warning signal dissemination. Usually, female volunteers disseminate warning messages in indoors and males are in outdoors and disseminate information to remote areas. At the village level, due to Muslim Purdah rituals and cultural sensitivity, male volunteers cannot enter into some houses whereas female volunteers can easily enter and help them to evacuate to a safe place. Females listen well to the female volunteers' more than males and many women do not want to talk to male volunteers (due to Purdah). However, it depends on area-to-area and community-to-community. Both male and female volunteers do not see joint participation as a problem rather they consider it as a strength and complementary to each other. These feelings boost up the volunteers' level of motivation. It is also found that, comparatively male volunteers are more motivated because they have some more social responsibilities than female, because of male dominated society. Overall female volunteers may contribute little less than male in rough weather situation of early warning signal dissemination in the remote areas. It does not mean that they always do not take risk. Female volunteers are better than male in First aid activities especially in providing first aid to the injured female victims because male volunteers cannot touch them due to religious and cultural sensitivity. Female volunteers are used to serve food, cooking and feeding the disaster-affected people, which proved after cyclone Sidr 2007. It is also found that, Female volunteers are comparatively less knowledge about their roles and responsibilities. Many female volunteers are working without receive any training. Gender issues can be addressed by partnering with local women's social welfare associations and NGO's women's empowerment program. It can be significantly increased the level of participation of women in Disaster Risk Reduction and reduce the vulnerability of women.

7.2.8. Socio-cultural factors that affect volunteerism

From the FGD with CPP and different level of community and literature review, it was evident that acceptability of voluntary services is very high in the society. CPP volunteers become highly popular in the society for their voluntary services and get recognition in different ways (Amin, 2012). Because of the

popularity among communities some CPP volunteers become Upazila Chairmen; become Union members etc. Volunteers think that their social dignity and status increase if they work better as volunteer. However, previous studies Amin (2012) also noted that there was a one case of discouragement found in "*Nilganj union of Kalapara Upazila which is 'a male volunteer, who is a Muslim religious leader, took part in a cyclone simulation one year ago. Some community people discouraged him after the simulation is over by saying being a religious leader you should take part in this sort of events where both men and women together play their roles". However, it depends on the society of each area. Otherwise, it was always found that community people encourage this sort of activity*".

Twenty years before religious factor was a problem in the society to working as a volunteers. They think they will convert them into Christian religion. But now-a-days people understand that these voluntary assistances. Cultural and religious facets need to be taken into account to increase the participation of the most vulnerable populations.

CPP volunteers are well integrated and influential in their communities. They work closely with local administrations, different NGOs, sub-district disaster management committees, and educational and religious institutions. However, involving women in conservative Muslim or Hindu communities remains a challenge in Bangladesh. In rural areas women stereotypically are not allowed to attend meetings, but by partnering with local committees and creating local women's associations, the situation changed. The CPP feels that the addition of female volunteers to the CPP program helps address vulnerability and helps women mobilize during a cyclone storm. In 2012, Tiffany found that, currently 33 percent of CPP volunteers in each volunteer group are female. It was observed that women were not involved in resource distribution such as relief work, which involves regulatory issues, with men mostly in control of this realm. Both gender power relations and gender stereotyped work divisions play a vital role in defining the level and engagement of women in any program or project (Mumita & Shannon, 2018). Due to this practice,

during FGDs, women share their incapability and opportunities for less management capacity in community work.

7.2.9. Socio-economic factors affect motivation of volunteers

This research also found that there are differences in the level of dedication of volunteers to their work for various reasons. It has been found that volunteers who are middle class in terms of their socio-economic status are generally more motivated to serve as volunteers than those who are financially strong enough. For example, volunteers who are financially disadvantaged may not be able to volunteer much time because of the work they do with their livelihood activities, even if they are willing to do such work. If they have to go somewhere by rickshaw/van or buy batteries to light the torch, they cannot do that (Amin,2012). The most important thing is that they do not give any opinion and in this case their voice is very low. On the other hand, some financially strong volunteers, they have big voice and take the leadership easily. They have more disaster resistant buildings. Thus, they are not so worried about disasters. Some respondents believe that socially and economically solvent volunteers are more motivated than others because they can devote more time and money than others.

7.2.10. Training affects volunteer motivation and performance

Training/ disaster risk management education for CPP volunteer is one of the most important issues. It is found that a few trainings and seminar have been held, for capacity development but not for the early warning and disaster information system. However, all over disaster risk management is required. Volunteers have reported undergoing refreshers course without having basic training knowledge. In addition, some volunteers have received the same training course more than once. This is a management level problem of the program. Early warning dissemination is one of the most important duties of CPP volunteers while Search & Rescue and First Aid are also very important duties when cyclone hits (Amin, 2012). Early warning topic covers in basic and most of other trainings but only about 10.5 percent volunteers received training on First Aid and practically 96 percent did not have training on Search &

Rescue. It is not realistic that these volunteers will be able to perform their assigned duties without a minimum level of training on the areas of their liability. The trained volunteers are well conversant and seems very active that means their motivation level is higher than untrained volunteers.

There are five groups in each unit those are warning, shelter, rescue, first aid, and relief groups. Warning, first aid and rescue groups get priority when there are any special training programs chalk out from Dhaka office for volunteers whereas Shelter and Relief groups are deprived from specialized types of trainings. Hence, the participation during disaster and motivation level of volunteers who got training and volunteers gear items is better than other two groups. Relief groups conduct damage and needs assessment after disaster and they submit a list of beneficiaries to their respective line management but receive no response. On the other hand, BDRCS, GOB and NGOs distribute their relief materials to disaster-affected people by their staff and separate volunteers. No authorities including BDRCS call CPP volunteers for relief distribution whereas CPP volunteers are known as Red Crescent volunteers in the community. Even socially and financially weak CPP volunteers usually do not get relief from any sources because of attachment with CPP.

7.2.11. CPP Volunteers Motivations (Positive aspects)

There are some causes for being volunteers in CPP. From the survey we have found some causes which have influenced the respondents for being volunteers in CPP. It has been found that one of the main causes is social responsibility. According to the definitions of motivational functions (Clary et al, 1998) CPP volunteer's opinions were categorized into the motivational functions, which provide an in-depth analysis of the strengths and weaknesses of using these functions. Here Value means; to express important values and feeling, it is important to help others. Secondly Understanding meaning; seeking to learn more about the area. Third is social means to be engaged in an activity viewed favorably by important others.

Table 20: CPP Volunteer' Motivations (Positive aspects)

Volunteer Motivations (Positive aspects)	Total 23	
	N	%
I feel it is important to help others (Values)	21	91%
I am genuinely concerned about the CPP group I am serving (Values)	10	43%
I am concerned for my community people (Values)	20	87%
Volunteering lets me learn things through direct, hands-on experience (Understanding)	18	78%
I can learn how to deal with a variety of people (Understanding)	9	39%
Volunteering is an important activity to the people I know in my community (Social)	9	39%
My friends are a volunteer (Social)	2	9%
I feel proud to work as a volunteer (Social)	17	74%
Volunteering is a way to know the community (Social)	11	48%

*Adopted the theory from (Clary et.al. 1998) definitions of motivational functions

Source: (Created by author)

The volunteers who engaged as a volunteer for a long time and saw the devastating scenario of 1970 and 1991 cyclones and died their relatives are more motivated them in volunteerism. Those events touched their spirit. They understood that their past generation died due to a lack of cyclone information. Therefore, they don't want to see the same scenario for their nearest and dearest relatives and neighbors and think that present and future generations should not die without knowing cyclone information. Volunteers think that their social dignity and status increase if they work better as a volunteer. Someone's observation is that socially respected and economically solvent people work better as volunteers.

The effectiveness of volunteer's efforts is important to his or her level of satisfaction, which in turn influences his or her decision about whether to continue volunteering. When volunteers do not see themselves as being effective in helping the

organization to achieve its goal, they are generally not satisfied with their volunteer experience, which may cause them to stop volunteering. Smiths (1994) noted that the duration of a volunteer's participation is determined, in part, by whether his or her value within the group or organization is affirmed. Grube & Piliavin (2000) suggested that volunteer retention is related to the extent to which volunteers perceive their role as important to the success of the organizations mission and whether they see themselves as meeting the expectations of others. Volunteers who develop a specific role identity within an organization, and who receive recognition for their volunteer efforts, are more likely to experience increased self-esteem associated with their volunteer activities and therefore, continue to volunteer.

7.2.12. Opinions from CPP

Comment 1: "I am happy to be work as a volunteer in my community. I can help people as I have family and my business here as well, helping people in the community making people feel proud of you."

Comment 2: "I do not have any money to help my community, but I would like to help the people during disaster. Especially, the vulnerable people who cannot walk long distance to reach to the shelter. Whenever I go anyway, they know that I am happing the community which is the most inspired to me".

Comment 3: "CPP volunteers try to cover almost all the remote areas, we are the first responders for signal dissemination and evacuation than any other organization, even the government. For us, by walk, boat or vehicle it took 3-6 hours to reach to the remote community. If we did not go there, they could not get the warning information and could not prepare and evacuate".

Comment 4: "Me and my family members like volunteering and CPP is the best platform to do that. We have learned a lot of things at the same time and got the opportunity to assist people. This engagement changes our philosophy and values. Family members, neighbors, community people respect us.

Comment 5: "My relatives in my community rely on me in disaster related issues. I teach my neighbors about first aid and things to do during disasters. I encourage my students to become a Volunteer. My husband and I would like to see our children become CPP volunteer in the future."

7.3. Assessment of volunteer's performance of cyclone preparedness program from community point of view

7.3.1. Characteristics of respondents (Community)

The respondents were 59.9% male and 40.1% female from the study areas. Average age of the respondents is 35. Most of respondent's engaged with farmer, fishermen and business occupation, though 21.5% female are housewife. It is also mentionable that the education level of respondents is not high. 41.8% of respondent are not educated. Similarly Primary & Secondary level is 48.0%, college 9.0% and University is just 1.1%. Table 21 shows the socio-economic status of the study area. To analyze the interview data, individual interviewees profiles was developed.

Table 21: Socio-economic statuses of the respondents in the study areas

Variables	Result in Frequency and percentage
Gender (Total 177)	Male 106 (59.9%), Female 71 (40.1%)
Age	20-30 (32.2%), 31-40 (36.7%), 41-50(26%), 51-60 (4.5%), 61+(0.6%),
Occupation	Farmer (22.6%), Day Labor (19.8%), Business/shop owner (11.3%), Housewife (21.5%), Fisherman (6.2%), Job (7.3%), Rearing livestock's (6.8%), Fish dying (4.5%)
Education level	Not educated (42%), Primary & Secondary (48.0%.), Collage (9.0%) University (1%)
Vulnerable people in the family	Yes (56.5%), No (43.5 %)
Housing Types	Wooden or timber (26.6%), Earth (39%), Tin (24.3%), Brick (8.5%), Bamboo with others (1.7%)

Source: (Created by author)

The study areas, all of the respondents are marginalized people and they are well known about their risk of cyclone. Overall, 177 household valid responses

regarding preparedness and awareness status were obtained from the Koyra and Ukhiya Upazila. Of these, 59 % were male and 40.1 % were female respondents. About 32.2 % of the respondents were young age (20-30 years) group. However, the majorities 36.7% of the respondents were of middle age group (31-40 years) and similarly 26% were (41-50), 4.5% were (51-60), and 61+ ages is only 0.6%. Regarding to the occupational status, both areas communities of the households are involved with Day labor, farmer and business profession. In rural area agriculture is the main source of income and most the people of both Upazila are dependent on this profession for their livelihood. In the survey results, about 22.6 percent people are engaged with farming and only a few is working in different NGO's job and their proportion is 7.3 percent. Other sources of income of these Upazila are cover business and shop owner (11.3 percent) and others 17%. Among them 19.8% of them were engaged in day laborer activities; which also mean that majority of them are lower income people. Literacy status plays an important role to understand the attitudes and motivation of respondents. From the study area, results showed that most of the respondents completed primary and secondary level (48%), college education rate is about 9%, only a few respondents from university level 1.1% and rest of them are illiterate 41.8%. The housing condition of the study areas is not suitable to live with a disaster. About 39% of houses are made with earth with bamboo, which is vulnerable due to wind and storm surge. People know that they live in risky area but they did not have any choice to move other places because of their occupation and land.

7.3.2. Disaster awareness among the respondents

Table 22 shows the disaster awareness among the respondents of Koyra and Ukhiya Sub-district on the basis of analysis of the collected data. The table 22 described that all the respondents who were included in the sample have the concept about disaster, about 11% (Koyra) and 19% (Ukhiya) respondents know about the disaster plan. The percentage rate is very low. Also 89% (Koyra) and 81% respondents in Ukhiya do not have any idea about disaster plan in their area. In Koyra 26% and 39% in Ukhiya respondents have knowledge about disaster drills where majority of

74% in Koyra and Ukhiya 61 percent do not have knowledge about disaster drills. That means both areas not enough drill was conducted. Regarding disaster preparedness only 36% in Koyra and Ukhiya 44% respondents that they have knowledge about disaster preparedness because they attend some awareness training from Go and NGO's. However, a huge percent 64% (Koyra) and 57% (Ukhiya) do not have knowledge about disaster preparedness. So according to the results, it shows that not enough disaster drills were conducted both areas, hence the residents of Koyra and Ukhiya sub district are not well aware of disasters preparedness and disaster management plan.

Table 22: Disaster awareness among the respondents

Statement	Sub- District			
	Koyra (87)		Ukhiya (90)	
Questions	Yes (%)	No (%)	Yes (%)	No (%)
Do you have any idea about disaster preparedness?	36%	64%	44%	56%
Do you know what mock drills are?	26%	74%	39%	61%
Do you have any idea about disaster management plan?	11%	89%	19%	81%
Do you involve any kind of disaster awareness program?	26%	74%	44%	56%

Source: (Created by author)

Table 23: Attitude regarding disaster preparedness among the residents

Statements	Koyra (87)		Ukhiya (90)	
	Agree (%)	Don't know (%)	Agree (%)	Don't know (%)
Do you think you need to know about disaster plans?	69%	31%	59%	41%
Drills should be conducted regularly in your area?	91%	9%	86%	14%

Do you think disaster training should be a part of education?	12%	86%	19%	81%

As per the result showed in above table is that, the residents of Ukhiya and Koyra sub–district want to be prepared for disaster and they need proper disaster management plan, regularly conducted disaster training such as practicing drills, seminar, educative programs for disaster management and preparation of proper disaster plans. Moreover, the survey respondents suggested that disaster training should be a part of education by the concerned authorities.

7.3.3. Communities' primary source of early warning Information

Apart from the awareness on disaster risk reduction, community has to be aware of knowledge on early warning and they show where they can easily get sources of early warning. The CPP activities such as using signal flags and sirens were every effective in the coastal area. It is the highest level. The local villagers are almost completely dependent on the CPP for their cyclone early warnings. After that, radio is the main source of early warning to the community people in the coastal areas of Bangladesh. It is found that 43 male and 5 female (figure 36) received the early warning information from Radio. Because unavailability of electricity in remote rural areas and radios can be used with batteries. It can be easily carried when the go farming and fishing. Nearly 25 of all respondents received warnings from family and relatives. Especially women share the information within their community. The coastal people act on evacuation to be together with their family, relatives or another "in-group. "Therefore, they inform evacuation information to each other. A high level of trust in early warning information from the relatives helps them to evacuate to safe places. People also receive warnings from Bangladesh Meteorological Department, NGO's, Elected members, television, religious source etc. Also, seven (7) of women received evacuation information from NGO's officials. However, from NGO's there is a limitation that they only provide information only for their beneficiaries/stakeholders

and those women are the stakeholders from different NGO's.

Early Warning Information n=177
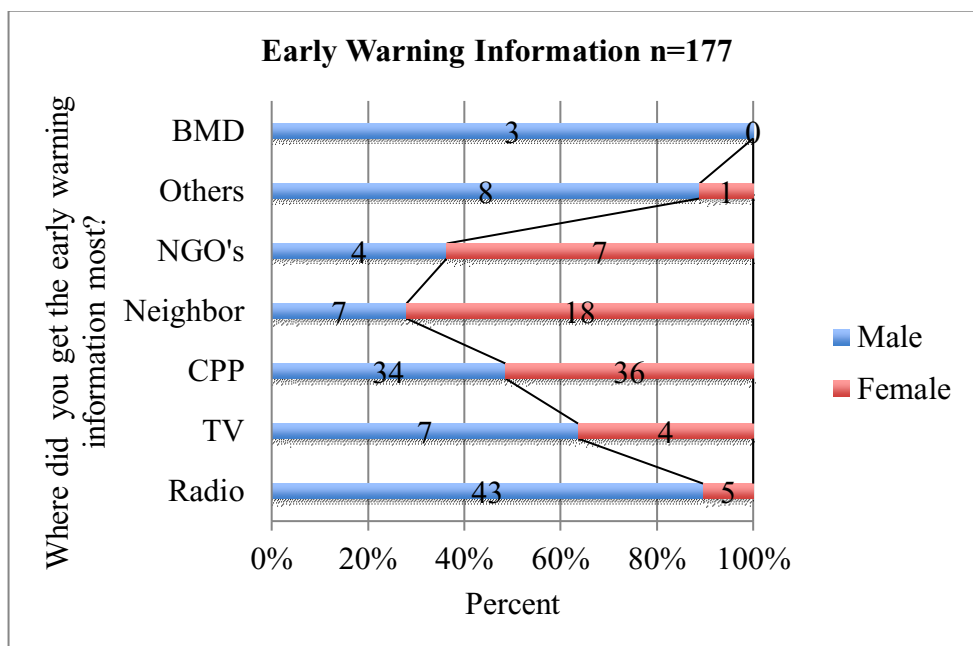
Figure 36: Gender*Early warning information

Cross tabulation Results:

Table 24: Union * Where did you get the early warning information most? Cross tab

Union	Where did you get the early warning information most?							
	Radio	TV	CPP	Neighbor	NGO's	Others	BMD	Total
Koyra	22	7	37	12	7	1	1	87
Ukhiya	26	4	33	13	4	8	2	90
Total	48	11	70	25	11	9	3	177

p-value - .005

The above table 24 cross tabulation results show that, Both Koyra and Ukhiya community group have depends on the CPP's early warning message. After that Radio still is the main source of early warning to the community people in the coastal areas of Bangladesh.
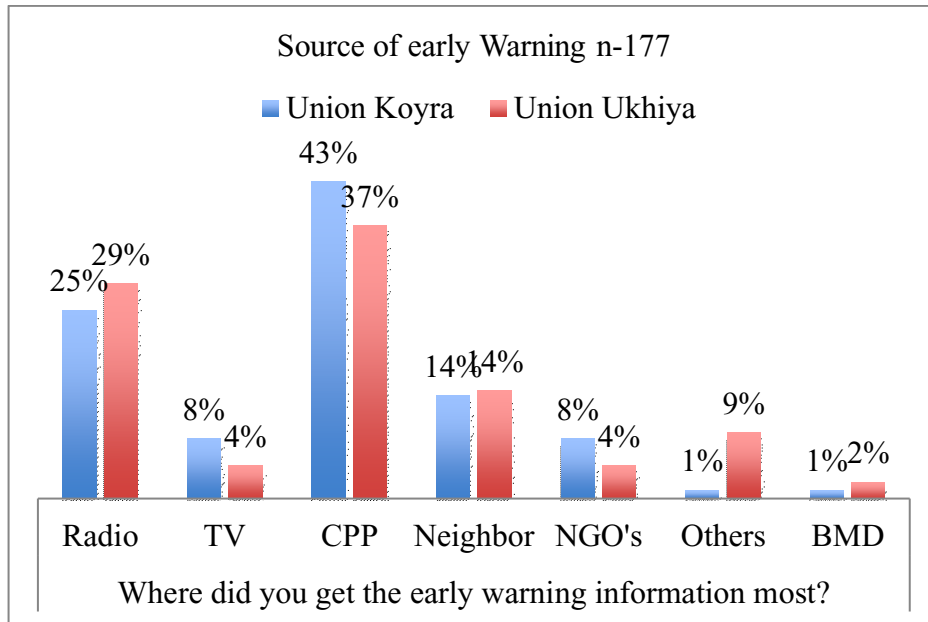
Figure 37: Union* Early warning information

According to the figure 37, in Koyra 43% respondents and 37% in Ukhiya received cyclone warnings and evacuation orders from CPP volunteers, who disseminate the information door to door. The CPP activities such as using signal flags and sirens were every effective in the coastal area. Maximum female respondents followed the CPP activities. Mass media also played an important role to disseminate information. Almost 25% in Koyra and 29% of respondents received evacuation orders from the radio. The remaining evacuation orders were received through mosques, TV, BMD and NGOs staff.

Table 25: Gender * Where did you get the early warning information most? Cross tab

Gender	Where did you get the early warning information most?							Total
	Radio	TV	CPP	Neighbor	NGO's	Others	BMD	
Male	43	7	34	7	4	8	3	106
Female	5	4	36	18	7	1	0	71
Total	48	11	70	25	11	9	3	177

p- value= .000   Source: (Created by author)

Table 26: Age * Where did you get the early warning information most? Cross tab

Age	Where did you get the early warning information most?							Total
	Radio	TV	CPP	Neighbor	NGO's	Others	BMD	
20-30	14	4	19	9	5	4	2	57
31-40	15	2	30	12	3	2	1	65
41-50	16	4	18	3	2	3	0	46
51-60	3	1	2	1	1	0	0	8
65+	0	0	1	0	0	0	0	1
Total	48	11	70	25	11	9	3	177

p- value= .915

Source: (Created by author)

Table 27: Education* Where did you get the early warning information most? Crosstab

Education	Where did you get the early warning information most?							Total
	Radio	TV	CPP	Neighbor	NGO's	Others	BMD	
Not educated	18	3	35	11	4	3	0	74
Primary & Secondary	25	4	34	11	7	4	0	85
Collage	4	3	1	3	0	2	3	16
University	1	1	0	0	0	0	0	2
Total	48	11	70	25	11	9	3	177

p-value= .000   Source: (Created by author)

Table 28: Occupation * Where did you get the early warning information most?

Occupation	Where did you get the early warning information most?							
	Radio	TV	CPP	Neighbor	NGO's	Others	BMD	Total
Farmer	10	1	19	4	2	3	0	39
Day Labor	9	2	15	4	2	4	0	36
Business	11	1	7	1	0	0	0	20
Housewife	3	3	19	12	1	0	0	38
Fisherman	11	0	0	0	0	0	0	11
Job	2	4	1	0	1	2	3	13
Rearing of Livestock's	0	0	5	3	4	0	0	12
Fish dying	2	0	4	1	1	0	0	8
Total	48	11	70	25	11	9	3	177

p- value=- .000

Above table 25-28 cross tabulation results show that, both Koyra and Ukhiya community group socioeconomic and demographic factor education and occupation plays an important significant role to receive the cyclone early warning information. The chi-square test significant p-value is for education and occupation is p-.000. However, demographic factor does not consider as a significant determinant of compliance with receiving the early warning information. Apart from the awareness on disaster risk reduction, people have to be aware of knowledge on early warning, and they should know where they could easily get sources of early warning. According to the Table 28, shows that fishermen received the early warning information from Radio. That means the early warning flag system is not very effective for them.

7.3.4. Understanding of the CPP disseminated signal (Flag System)

CPP volunteers use a '3 flag system' (see below) to communicate the level of danger to the community. Below table shows 74 (41.8%) of community people said that they understand the CPP disseminated flags signals. In Bangladesh cyclone signals ranges from 1 to 10 depending on their location and wind speed. But for easy understanding of community people these 10 signals were divided in the 3 (Three)

flag system. Signal 11 means all communication system has broken. But it is found that still there is 21% people do not have any idea or lack of orientation with this signal system. Education level of the household heads is significantly positively correlated with degree of early warning receiving and understanding the warning flag system (p-.000). The percentage is higher those who are educated and know the cyclone warning flags system. This factor appears as a significant reason that is linked with disaster preparedness and evacuation. It also shows that, socio economic factor occupation plays a significant factor to understanding the Flags early warning system activities by CPP volunteers. This issue is especially for Fishermen. The rate is 100%. It should be noted that fishermen go for fishing in the deep-sea areas. Except radios, the flag's warning system is the only source they get the cyclone early warning information.

Table 29: Understanding Flag warning system

Understanding Flag warning system		Frequency	Percent (%)
Answer	Yes	74	41.8%
	No	65	36.7%
	No idea	38	21.5%
	Total	177	100%

Source: (Created by author)

Data Interpretation:

Table 30: CPP disseminated signal (Flag System)

Understanding of the CPP disseminated signal (Flag System)					
Characteristics	**Yes (%)**	**No (%)**	**No idea (%)**	**N (100%)**	**p-value**
Union					
Koyra	47 (54%)	24 (28%)	16 (18%)	87 (100%)	p-.005*
Ukhiya	27 (30%)	41 (46%)	22 (24%)	90 (100%)	
Total	74 (42%)	65 (37%)	38 (21%)	177	

				(100 %)	
Gender					
Male	58 (55%)	31(29%)	17 (16%)	106 (100%)	p-.00*
Female	16 (23%)	34 (47%)	21(30%)	71(100%)	
Total	74 (42%)	65(37%)	38 (21%)	177 (100 %)	
Education level					
Not educated	16 (22%)	30 (41%)	28 (37%)	74(100%)	
Primary & secondary	41 (48%)	35 (41%)	9 (11%)	85(100%)	
College	15 (94%)	0 (0%)	1(6%)	16(100%)	*p*-.000*
University	2 (100%)	0 (0%)	0 (0%)	2(100%)	
Total	74 (42%)	65 (37%)	38 (21%)	177 (100%)	
Occupation					
Farmer	28 (37%)	30 (40%)	17 (23%)	75(100%)	
Business and Job	23 (70%)	7 (21%)	3 (9%)	33(100%)	
House wife	10 (26%)	15 (40%)	13 (34%)	38(100%)	*P*-.000*
Fishermen	11 (100%)	0 (0%)	0 (0%)	11(100%)	
Others	2 (10%)	13 (65%)	5(25%)	20(100%)	
Total	74 (42%)	65 (37%)	38 (21%)	177 (100%)	

* The Chi-square test statistic is significant at 0.05 levels

Source: (Created by author)

Above table 30 data interpretation results shows that, both Koyra and Ukhiya community group socioeconomic and demographic factor education and occupation plays an important significant role to understand the cyclone early warning

information. The Chi-square test significant p-value is for gender, education and occupation is p- 0.000*.

7.3.5. Understanding the early warning message delivered by CPP by using Megaphone/Hand mike

According to the figure 38, 91(51%) respondents can understand the information announced by megaphone. However, remaining 86 (49%) cannot understand the message clearly. Reasons for not to understand are show below table, 49% community people said that they cannot interpret the CPP volunteers' message by using megaphone.
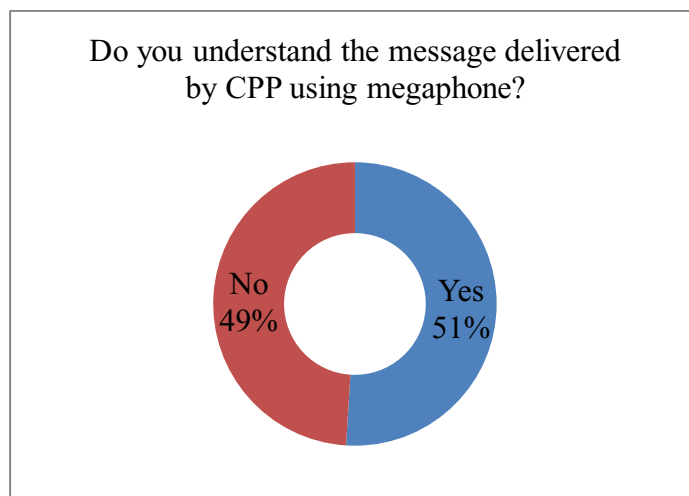
Figure 38: Understanding level of the warning message delivered by Megaphone

Source: (Created by author)

Why community do not understand the warning message delivered by CPP using megaphone the reasons shown are in the below table 31. One of the most important noticeable issues is language problem. The cyclone warnings usually broadcasted in official language (Bangla) of Bangladesh, which was not always understood by the people in the vulnerable community. The people of Ukhiya often use different local dialects that are different from Bangla. Also, different ethnicity and indigenous peoples have their own dialects and cannot understand Bangla language properly. So, those who are not educated well they cannot interpret the warning message. Besides, the message of warning did not always provide with information about the severity of

the events. This could be either due to the lack of knowledge of the community members about the disaster or government did not handle it proper way. Some respondents from community Koyra and Ukhiya noted that sound produced by the megaphones that CPP volunteers used covered only in the direction of the wind; those to the opposite side had a little chance of hearing such warnings.

Table 31: Reasons not to understand

Sub-District	Reasons not to understand				
	Message content is not clear	Sound system	It does not reach to us	Language issue	Total
Koyra	11(31%)	16 (44%)	8 (22%)	1(3%)	36(100%)
Ukhiya	9 (18%)	20(40%)	6(12%)	15(30%)	50(100%)
Total	20 (23%)	36 (42%)	14(16%)	16 (19%)	86(100%)

Source: (Created by author)

7.3.6. Communication with CPP Volunteers

A previous study indicates relatively higher rates among the evacuee households in both the percentage of early warning recipients and the understanding level of early warnings (Ahsan et.al, 2016). In addition, more evacuee households had participated in cyclone preparedness training before Aila. They also reported making more frequent contact with CPP volunteers their counterparts. Aside from this scenario, people's lower degree of contact with CPP volunteers (including communication through a mobile phone) also appeared to restrain them from relying on warning messages significant positive correlation with connection with CPP volunteers, social elites, and evacuation decision.

*Data Interpretation

Table 32: Union* Do you know CPP volunteer in your Area? Cross tab

Questions		Union		Total & %
		Koyra	Ukhiya	
Do you Know CPP volunteer in your Area?	Yes	48 (62%)	29(38%)	77(100%)
	No	39 (39%)	61(61%)	100(100%)
Total		87 (49%)	90 (51%)	177(100%)

Source: (Created by author)

Table 33: Union* any discussion with CPP volunteer on Disaster preparedness

Union	Any discussion with CPP volunteer regarding Disaster preparedness		Total
	Yes	NO	
Koyra	36(75%)	12(25%)	48(100%)
Ukhiya	24(83%)	5(17%)	29(100%)
Total	60(78%)	17(22%)	77(100%)

Source: (Created by author)

Table 34: Gender* Do you know CPP volunteer in your Area? Cross tab

Gender	Yes	No	N=177
Male	52 (49%)	54 (51%)	106 (100%)
Female	25 (35%)	46 (65%)	71 (100%)
Total	77 (44%)	100 (56%)	177(100%)

Source: (Created by author)

According to the above table 32 cross tabulation results it is found that Koyra (62%) community has good communication skill with CPP volunteer rather than the Ukhiya (38%) community. In discussion it is also mentionable that after 2007 many cyclones hit in Koyra. Consequently, community becomes more aware than before. They try

to contact with CPP volunteer regularly, especially during cyclone session time, to know the preparedness program. Also gender variable (table 34), male (49%) has good communication with CPP volunteers rather than women. Due to the cultural and religious issues women does not have frequent access to meet with men. In the study areas also not, enough women are working as a CPP volunteers. That's the reason women communication with CPP volunteer is very less than male.

7.3.7. Disaster Drill

Evacuation drills are not satisfactory in both study areas. Below figures shows that both communities were found to be highly vulnerable to cyclones as they had never received any disaster drills and minimal community awareness about preparedness before and during disaster of how to deal with hazard. In Koyra 67% of respondents and Ukhiya 68% of never participate any disaster drill. The participation rate is very lowest, only 33% and 32% in both areas (figure 39). To be more resilient community, the inhabitants are expected to participate more in disaster drill in order to understand the evacuation process.
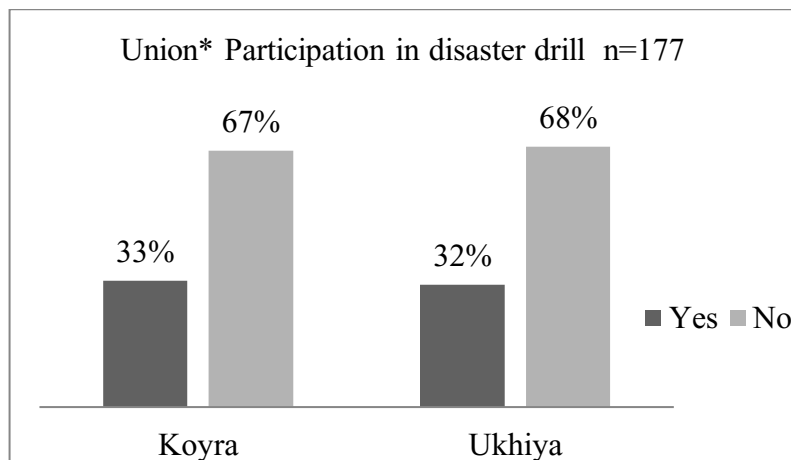
Figure 39: Union* Participation in Drill

Source: (Created by author)
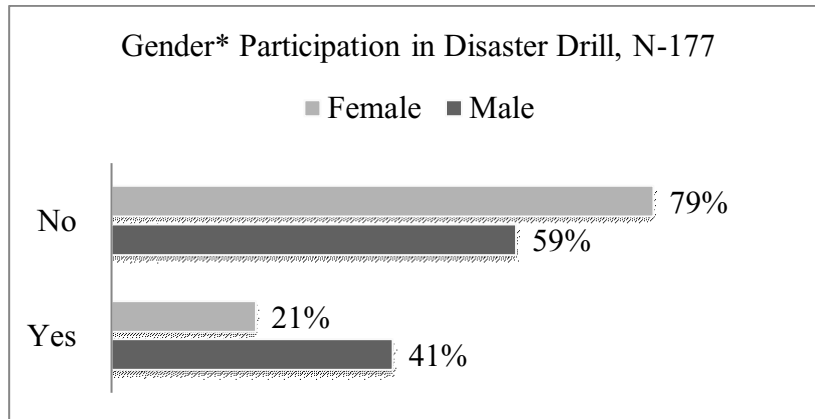
Figure 40: Gender*Participation in Drill

Source: (Created by author)

Above figure 40, it is also found that 79% women never participated any disaster drill. It's indicated that women are more vulnerable than me in case of disaster because of lack of disaster preparedness and awareness. Overall results shoes that, the respondents are not well prepared for disaster. This research table is based on primary data collection at community level and to study the community vulnerability in this research is to understand the community people's awareness and preparedness regarding cyclone disaster.

7.3.8. Safe and easy way to shelter

Community people know where is the shelter and how to go there easily. But in time of emergency, villagers actually decide at the last moment to evacuate their houses and go to cyclone shelter (Fig 41). 34% respondents said CPP volunteers always explain where to evacuate first. So, CPP volunteers also give them an idea how to go the closest cyclone shelter in time of early warning dissemination. However, 37% respond that volunteers give the information sometimes and it depends on how early the give the evacuation order. On the other hand, 7% respond that it not necessary for them because they are live near to shelter or school cum shelter. Remaining 22% those who response that they have no idea or don't know, they are mostly living in the riverine areas. Sometimes CPP could not reach the all areas in time and cannot provide the evacuation information. Therefore, some community people loss the location or

cannot reach at the shelter in time. It is also found that, even though CPP volunteer give the early warning information to community but they decide to go to cyclone shelter at the last moment.
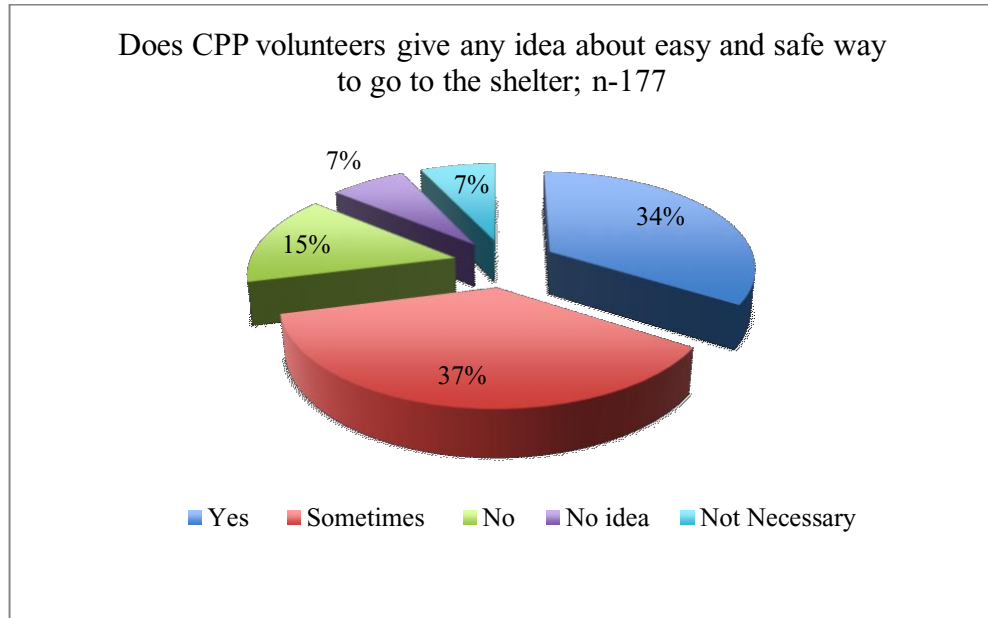
Figure 41: Safe and easy way to shelter

Source: (Created by author)

7.3.9. Communities' reaction towards CPP:

Comment 1: "We are very lucky to have CPP volunteers in our area. They not only give us early warning information and also help to evacuate to shelter provide awareness and preparedness activities of cyclone disaster.

Comment 2: "I would like to have a CPP volunteer in my family. So, we can have the signal message very fast and get more time to prepare. Moreover, we'll be able to inform our neighbor and relatives about it".

Comment 3: "In our community maximum people are fishermen. That's the reason, we used to go to sea to catch fish every day. Even though if the cyclone is form in the Bay of Bengal. Among us some are careful and some are not. During SIDR and cyclone AILA in 2007 & 2009, some fishermen ignore the CPP's announcement of warning signal and some of them could not survived. It is CPP who came to us repeatedly to remind us not to sail during any signal. They are very sincere and active in disseminating signals. If they were not there, we could not get the signals and prepare ourselves."

Comment 4: "I have lived in the area for years, but I have never heard about CPP volunteer's enrollment. I would like to know the process"

Comment 5: "I don't know who is the CPP volunteer in our area. I never attend any kind of drill or simulation organized by CPP and government".

7.4. Organizational issue

7.4.1. Experts' opinions

Organizational structures affect how volunteers experience the organization and their perceptions of it. The level of formalization influences volunteer's involvement. Organizations find it difficult to pass on to volunteer's complicated tasks requiring significant training, such as complex information technologies Expert interviews source of information was a set of meeting at head office and field office based and non-structured questionnaires conducted with CPP and disaster man-agement personnel. The survey questioned the internal and external operational processes (policy, budget etc.), and how the organization was connected to CPP volunteers, local community and other disaster management authorities at national and local level. Finally, interview partners were asked to provide some indication of how the future development of volunteering was planned. All answers were provided under the condition of anonymity.

Table 35: Overarching categories and key concepts emerging from qualitative analyses of the interviews

Category	Concepts	Comments
Policy and Strategies	Standing order on disaster (SOD)	There are law and regulations for volunteers in SOD, however maximum volunteers don't know about these rules and regulation.
	Responsible Authority	Administrative part handle by Local Govt. and Operational part by CPP. So, it's a very clear structural system
	Training	The training has not implemented due to lack of budget. Many volunteers did not aware about revised SOD's Flag warning system.
	Coordination mechanism	Lack of effective coordination between government and BRCDS sometimes volunteers

		failed to play their role in many emergency rescue efforts.
	Operational Manual	There is no operational manual for CPP volunteers. They just follow the higher authority's orders.
	Evacuation drill	Evacuation drills are not fully conducted even in normal times.
	Protection mechanism	Emergency search and rescue operation is very risky, and we do not have any insurance system for CPP volunteers. However, if any CPP volunteers injured during an emergency we provide lump-sum amount for treatment.
	Intensive mechanism	Volunteers generally are given a few honorable rewards, such as certificates and honorary titles. CPP volunteers do not have any opportunity to get involved from where they can be financially benefitted.
Finance	Fund	A lack of funding is the limiting factor in capacity building and enabling CPP volunteers.
	Engagement	Sometimes It is very hard to maintain volunteers' organization with a small amount of funds being given by government.
Resource and Capacity	Equipment	There is not enough equipment for search and rescue.

Source: (Created by author)

7.5. Strengthen Weakness Opportunity Threat (SWOT) analysis

The most important part of analyzing the SWOT analysis is making a strategic planning of disaster management based on the data to reduce the risk disaster in the communities. Based on the data by interviewed 23 CPP volunteers sampled in Koyra and Ukhiya, it can be found a lot of interesting facts, which can be classified in each of the SWOT components. SWOT itself actually includes two factors: internal factors (strength and weakness) and external factors (opportunities and threats). An internal factor is a factor which influence wholly derived from the study object; in this case CPP volunteers themselves can bring a positive influence (strength) and can also bring a negative influence (weakness).

The SWOT analysis is useful to decide the next step of making the concept strategy accurately. After doing the SWOT analysis, every factor in SWOT can be divided into four categories by using the cross tabulate table to identify it. These are: strength and opportunity, strength and threat, weakness and opportunity, and weakness and threat. Each category will produce different plans based on a combination of conditions and problems. The combination of the positive and negative aspects should be combined so that there are positive aspects to overcome the negative aspects that exist in synergy.

Strengthen Weakness Opportunities Threat (SWOT) analysis that can be a useful method for bringing all stakeholders together to participate in disaster management cycle. It is a process where the internal and external factors that will affect the volunteers and communities in future performance.

Table 36: SWOT analysis of CPP explains in the below table (created by author)

Strength	Weakness	Opportunities	Threats
-Highly committed, dedicated and Enthusiastic toward volunteering - Local Volunteers are in a best position to identify immediate needs and support initial preparation. - Volunteers can provide cost and time saving service - They are non-paid Volunteers - Young Generation	-Lack of skill assessment (no orientation or training for all volunteers) -Lack of familiarity with organizational operating procedure. - Lack of coordination between volunteers. -Lack of adequate recognition	Integration of volunteers into the formal disaster planning process. -Conducting free training sessions in the field of volunteerism. -Involvement of women participation as a volunteer -Improvement of legal framework -A strong network of humanitarian organizations working on DM and DRR issues in multi hazard prone areas.	-Lack of legal sustainability - Absence of direct policy option form collaboration at the field level. -Insecure funding. - The economy crisis can affect volunteerism -Accelerating changes in demographics trends and technology

Source: (Created by author)

7.5.1. Strengthen

Over the last four decades, CPP volunteers have played a significant role in disseminating early warning and saving lives. For example, in 2007, on the advice of CPP volunteers and other humanitarian agencies, around 1.5 million people took refuge in cyclone shelters when cyclone Sidr hit Bangladesh. CPP activities result in, decreasing the number of deaths significantly gradually in disaster. For example, in 1970 more than 3, 00,000 people died when in 1991 a total 1, 38,000 died, in 2007 only 3400 died and in 2009 only 113 died. (WMO, 1989) CPP volunteers are the leaders in the grassroots level. They risk their own life during cyclone signal to save people's lives when others are busy only with their own safety. This is a service, which other people cannot do. Besides, they are more disciplined and respectful to law and order of the society. They possess an intention to help people all the time by applying their knowledge and skills gained from their involvement with CPP. Community trusts and relies on them in times of disasters. In normal time they organize mock drill/simulation and awareness raising campaign in every vulnerable area before every cyclone season. They do not receive any monetary incentives, the main benefits gained by CPP volunteers are respect from their peers and communities and the satisfaction that comes from saving disaster-stricken vulnerable people. Respect and trust from the community members are the biggest benefit for CPP volunteers.

7.5.2. Weakness:

Government of Bangladesh pays CPP employees' salary where as there is no program operation cost at the field level for CPP volunteers including their capacity building (Amin, 2012). Bangladesh government does not allocate budget on this program operation cost. So, the program operation fully depends on external funds. Supply and management of logistics like early warning equipment, volunteers' personal gears, and search and rescue materials of such a large-scale program is a challenging task which may have impact on the motivation of CPP volunteers. Because, the equipment and personal gears that the volunteer's use is very old model and poor in condition. Most of the warning equipment likes Hand Siren, Mega Phone,

and Super Megaphone, Radio is more than 15 years old and most of them are out of order. In this situation there may have some limitations to adequately and evenly support the CPP field programs that may affect volunteers' motivation. However, there are some initiatives taken for strengthening CPP volunteers with the support of different donors. These initiatives covered personal gears to 360 units and CPP basic training for 180 units with the support from BDRCS and IFRC. It is also found that, most of the new recruited volunteers are working without any formal training on Early Warning, Search and Rescue, First Aid or other relevant issues. During 1997-2008, there were very few initiatives taken related to capacity building of the volunteers (training and equipment) due to lack of funding and donor support. The factors that put negative impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/ CPP officials, no or inadequate training and equipment for performing their duties, shortage of evacuation shelters, avoiding them by management (government and NGOs) during emergency response especially during relief distribution, political influence and change of social as well as financial status of some old volunteers, and no incentive/ award are offered for their voluntary services. In spite of all the above-mentioned limitation most of the CPP volunteers work without self-interest during the emergencies

7.5.3. Opportunities:

Bangladesh has proactively invested in disaster risk reduction policies, including infrastructure along coastal areas and early warning to mitigate the risk from floods and cyclones, demonstrating tangible results in terms of protecting lives and hard-won economic gains. However, the vulnerability of its urban areas to seismic risk remains an area that is not as well understood, or addressed, in the country's policy framework. The country has a long history and depth of experience in dealing with number of disasters. As a country it has recognized lessons from the past and is showing global leadership to shift from reactive relief to proactive risk reduction, and this shift is encapsulated well in the domestic legal and policy frameworks. Although, with new and emerging challenges, there is continual need to learn and adapt. The

collaborative approaches outlined in the Dhaka Declaration provide an exciting platform for future action between the Government of Bangladesh, BDRCS and IFRC, from parliamentary processes to the grassroots level, to ensure that communities in Bangladesh become even more resilient to the threats and challenges they face. In CPP program one third of the volunteers are female. Yet, they cannot take proper response during disaster time due to problem regarding religious issues and physical strength. But now-a-days people understand that these women voluntary services are beneficial to the community and the volunteers' think that if they do something beneficial for people in this world, they will get reward in the eternal world. So, there is opportunity to engage more women (especially students) as a CPP volunteer. Strengthen volunteerism skills is very necessary for the future progresses of the volunteers. Different institutions can strengthen CPP volunteers by taking some necessary steps. There are some roles of GOs/NGOs, which can take part to improve the strength of volunteers.

7.5.4. Threats:

In many cases, disaster managers prioritize the implementation of time bound projects rather than taking more time and investing it in innovative DRR tools and programs. While the country has developed sound policies and frameworks, it lacks the capacity to implement all aspects of these policies and frameworks. Capacity challenges include: inadequate staffing, financial bottlenecks and a lack of technical resources such as space-based technology.

8. CHAPTER VIII: A Brief Comparative Case Study Analysis of Community Based Volunteer's Practices in Bangladesh and Japan

8.1. Case study of Bangladesh

Bangladesh is considered the most natural disaster-prone country in Asia. Floods, cyclones, storm surges, tornados, and riverbank erosion periodically hit its coastal areas. After the 1991 cyclone, which caused huge damage and loss, the country has realized that the reactive response to disaster is no longer an option for Bangladesh. The country has adopted a paradigm shift from reactive response to a comprehensive disaster management approach that includes a number of strategies and mechanisms/policy decisions the Disaster Management Bureau was created in 1993.

8.1.1. Scenario of Cyclone SIDR 2007, Bangladesh (Case study 1)

On 15 November 2007, Cyclone Sidr struck the southwest coast of Bangladesh with winds up to 240 kilometers per hour. The category 4 storm was accompanied by tidal waves up to five meters high and surges up to 6 meters in some areas, breaching coastal and river embankments, flooding low-lying areas and causing extensive physical destruction. The number of deaths caused by Sidr is estimated at 3,406, with 1,001 missing, and over 55,000 people sustained physical injuries. High winds and floods also caused damage to housing, roads, bridges, and other infrastructure. Most of the destruction and related social and economic losses resulted from the harsh storm conditions and the subsequent failure of an extensive embankment system.

8.1.2. Role of Cyclone Preparedness Programs Volunteer roles during Cyclone SIDR 2007, Bangladesh

The Cyclone Preparedness Programme (CPP) in Bangladesh is a good example of efficient cyclone preparedness, warning dissemination and response system. As of 15 November 2007, an estimated 28,500 men and 14,200 women CPP volunteers actively participated in disseminating early warnings to the community through the hoisting of signal flags, megaphones, hand sirens, microphones and beating drums under the CPP command area. A total of 1,580 cyclone shelters are within the CPP area in 30 sub-districts, and volunteers in the last 24 hours helped people to evacuate.

The fishermen community was also alerted from going into the sea. However, people were impatient and were not willing to stay in the shelters for long hours.

The death toll would have been much higher had the CPP volunteers not been active in evacuating vulnerable people to cyclone shelters and other safe places. As part of their mandate, volunteers disseminate warning signals, alert the population, evacuate them to safe places, rescue marooned people after the cyclone, provide first aid to the injured, and provide a preliminary damage assessment within 12 hours of the disaster. At least five of the CPP volunteers died while helping people go to cyclone shelters and safe places when Sidr hit coastal Bangladesh. As of 15 November 2007, an estimated 28,500 men and 14,200 women CPP volunteers actively participated in disseminating early warnings to the community through the hoisting of signal flags, megaphones, hand sirens, microphones and beating drums under the CPP command area (IFRC, 2007). A total of 1,580 cyclone shelters are within the CPP area in 30 sub-districts, and volunteers in the last 24 hours helped people to evacuate. According to the Bangladesh Red Crescent Society explanation "The death toll would have been much higher had the CPP volunteers not been active in evacuating vulnerable people to cyclone shelters and other safe places". As part of their activity's volunteers disseminate warning signals through mike, sirens, using signal flag, alert the residents, evacuate them to safe places, rescued people after the cyclone, provide first aid to the injured. At least five of the CPP volunteers have died while helping people evacuate to cyclone shelters and safe places when cyclone "Sidr" hit coastal Bangladesh. However, the Cyclone Preparedness Program (CPP) currently appears to face evolving challenges.

Beside CPP, the Bangladesh Air Force immediately mobilized 18 helicopters and five navy ships to deliver food, medicine and other relief supplies. The key activities that the military executed were:

- Transportation of relief goods by Air Force assets (helicopters and fixed wing air craft) from Dhaka Transportation of relief goods to affected districts by road and river routes using Army, Navy and civil assets

- Augmentation of civil health care service by Armed Forces Medical Team

- Clearing of roads and restoration of road communication

- Assisting the restoration of telecommunications

- Provided support to district administration in coordination, needs assessment, assigning location and relief items for NGOs, and security.

8.1.3. Scenario of Cyclone Mora, 2017 (Case Study 2):

The Cyclone 'MORA' formed from a low-pressure area over southeast Bay of Bengal and adjoining Central Bay on 26 May 2017 and concentrated into a well-marked low (WML) in the afternoon of 27 May 2017. It intensified into a Depression at 09 AM of 28 May and further intensified into Deep Depression (DD) at 03 PM of same day and then into a cyclonic storm 'MORA' at Midnight of 28 May 2017. The system intensified further into Severe Cyclonic Storm (SCS) at North Bay and adjoining East Central Bay at 06 PM of 29 May 2017. It moved nearly northeastwards initially, then north-northeastwards and finally crossed Cox's Bazar- Chittagong coast near Kutubdia during 06 AM to 12 Noon of 30 May 2017. BMD utilized all its resources to monitor and predict the genesis, track and intensification of SCS 'MORA'. The forecast of its genesis, track, intensity, time and location of landfall were predicted well with sufficient lead-time. Its movement across the Bay is also predicted well in advance.

8.1.4. Role of Cyclone Preparedness Programs Volunteer roles during Cyclone Mora, 2017

On 28 May 2017 (the eve of cyclone Mora) more than 55,260 CPP volunteers and BDRCS youth volunteers have been deployed to pass the early warning message door to door in the coastal region. The volunteers rushed to the people with microphones/hand mike, megaphones, etc, along with hoisting signal flag and announcing the danger of the approaching cyclone in the local language. They also helped people in evacuating to safe shelters. Cyclone early warning messages were disseminated across a population area covering 11 million people, and almost half a

154

million people were reached in this process and were taken to safe places in less than 24 hours.

Table 37: The essential steps taken by CPP during cyclone Mora

Step 1	Raising community awareness on preparedness activities such as preserving dry food, protecting important documents, going to cyclone shelters and meaning of signal flags through conducting mock drills
Step 2	Disseminating early warning messages through radio stations
Step 3	Search and rescue teams were formed
Step 4	Deploying CPP volunteers to carry the messages door to door
Step 5	Volunteers provided warning announcements through portable microphones/ megaphones in potential areas at risk.
Step 6	Disseminating the warning messages in local languages
Step 57	Helping people to evacuate to safe shelters

Source: IFRC (2017), [Accessed online 19 July, 2020]

Box 5: CPP's experience during Cyclone Mora (Case-1)

Golam Rashid Bacchu (63), CPP Upzila team leader, Cox's Bazar:

"We came to know on 28th May first. Immediately we deployed our volunteers with megaphones to disseminate the message among the people. We did the same thing on 29th as well. More than two-thirds of the whole population went to the shelter centres as soon as we disseminated the early warning message. The total number would be more than a 100K. No one died. But those who were in the boats had some serious trouble. When we disseminate the message, they immediately respond, and go the shelter centres. To be honest, it is difficult to disseminate the message because of the difficult road condition here in my area. We need to walk miles after miles for this as there is no vehicle. We use mobile phones to communicate with the volunteers. Sometimes, we are caught by the storm when we are on road or outside."

Source: IFRC (2017), [Accessed online 19 July, 2020]

Box 6: CPP's experience during Cyclone Mora (Case-2)

> *Nurul Afsar (60), CPP Volunteer, Chakaria, Cox's Bazar:*
>
> *"Since the beginning of the formation of the depression, we were regularly receiving early warning messages through wireless radio and were disseminating them among the community people. On 29 May (2017), when the signal rose to no. 10, immediately we passed it to the volunteers through mobile phones. At first, we passed the message to the 11 union team leaders. The union team leaders then passed it to the unit leaders. I myself moved along the whole area with my motor-bike for monitoring. The community people know who we are, they have great faith in CPP. Whenever we disseminate a message, they trust us and act accordingly. We have acceptance and reliability among most of the people.*
>
> *Last time (during Mora) we had only 10 hours to evacuate the whole area. Still, we could manage to evacuate thousands of people. No one died, but lots of houses and crops were damaged. I think it is time we need to think about the digital signal system rather than the traditional flag. During the night and heavy wind, the flags are not visible most of the time. As well, the shelter centers should be more developed, especially the bathrooms. We stay prepared and wait for when there will be a cyclone and we will dive in to perform our duty.*

Source: IFRC (2017), [Accessed online 19 July 2020]

8.1.5. Lessons learned from the case studies:

CPP is the unique disaster risk reduction mechanism in Bangladesh which has been working well for a significant period of time, in preparing and protecting vulnerable people in coastal regions from cyclone disasters by effectively disseminating early warning messages and undertaking other preparedness activities.

- CPP has wide acceptance among the community people in coastal regions, which depend highly on radio and CPP volunteers for cyclone early warning messages as no other communication source works effectively in case of a disaster.

- One of the major challenges is the traditional flag system to convey cyclone signals. The flags are not visible during night, and are easily adrift during high wind speed. It is recommended by the volunteers that, if flash lights can be used instead of flags, it will be very useful for everyone, in land or at sea. The Red Cross partners are coordinating with the Ministry of Disaster Management and Relief and Cyclone Preparedness Programme in order to improve the early warning system as per recommendations.

- Moreover, sometimes it is difficult to reach the people because of rough weather and lack of transportation system. In a study, "Unseen, Unheard", conducted by the IFRC Asia Pacific regional office, it was found that women and adolescent girls in cyclone shelters are concerned about the lack of lighting and locks in the toilets. Pregnant women avoid coming to shelters due to difficulties in climbing stairs and absence of clean birthing facilities.

- During cyclone Mora we receive the information lately and we do not have enough time for send the information to community. For example: The transfer situation to each organization is as follows. The DDM line was delayed 1.5 hours more than CPP line in normal working hours, and out of the working hours, almost six (6) hours behind CPP (JICA, 2013). This happened in only a part of local governments; however, it was a very important time loss considering information transfer to the community people.

8.1.6. Opinion/ recommendation from CPP volunteers

Red-Crescent Society of Bangladesh has been trained up these volunteers for disaster preparedness. In community mobilization and participation Bangladesh has also achieved success. However, in Bangladesh disaster reduction institutions are not adequate. For example:

- In 1991 cyclone Gorky 23 volunteers, three volunteers in Cyclone Sidr 2007 and one volunteer in Cyclone Amphan, 2020 have dedicated their lives on duty to save the Coastal People.

- Volunteers' life risks could be reduced if they could have well equipped including ultramodern warning equipment (like high power siren which cover

2 km radius), cyclone protected dress, enough personal gears (hardhead/helmet, lifejacket etc.).

- Coordination with professional actor is important for example: Drill and training should be conducted by professional fire fighters and health officials for first aid management.

- After training proving certificate also important. They feel it encourage and motivate them to work as a volunteer.

- There is not enough coordination with CPP volunteer with SDF and Police. However, they said they have good relationship with NGO officials.

The CPP currently appears to face two evolving challenges:

- Today's young people see their lives and livelihoods quite differently than their predecessors, and their motivations for and attitudes towards volunteerism are correspondingly different.

- CPP events, such as refresher training and awareness-raising events, are held under short-term projects funded for specific activities, and keeping CPP volunteers engaged, motivated and committed between hazardous events is a challenge. This limited engagement has a direct impact on the CPP's cyclone preparedness and early warning activities.

8.2. Case Study of Japan

Japan is one of the countries affected by numerous kinds of natural disasters such as earthquakes, tsunamis, floods, landslides and typhoons. Since 1950, many large-scale earthquake, tsunamis and typhoons struck the country, killing a huge amount of people and causing massive damage and great loss of economy. In fact, the development of disaster counter measures has been contributed to the development of a sustainable disaster management system, especially an advanced weather forecasting system and disaster communication system.

8.2.1. Case Study 1: Scenario of the Great Hanshin Awaji Earthquake, 1995

The Great Hanshin-Awaji Earthquake, which occurred at 5:46 a.m. on January 17,

1995, resulting 6,430 dead, 43,792 injured persons, and the property damage had arrived at 84 billion US dollars. Simultaneous fires were one of the Earthquake consequences, which about fires during ten days occurred after the earthquake in Kobe City. 89.7% of these firebreaks were building fires. Too many fires, which were related to the earthquake, occurred after several days after the Hanshin earthquake though it was thought that the fire occurrence rate would decrease by the passage of time. 54 fires occurred during 15 minutes after the Earthquake. This includes 31% of all broken fires and the other 121 fires happened from January 17 6:00 a.m. until ten days later (Kobe Fire Department special report 9 and 10,1996).

Table 38. Number of fire occurrence during ten days after the Earthquake Category

Category Until	Until 6;00	Until 9;00	The 17th	10 days
Total	54	79	109	175
Building Fire	51	75	103	157
Vehicle Fire	0	0	0	5
Others	3	4	6	13

Source: Kobe Fire Department special report 9,10 (1996)
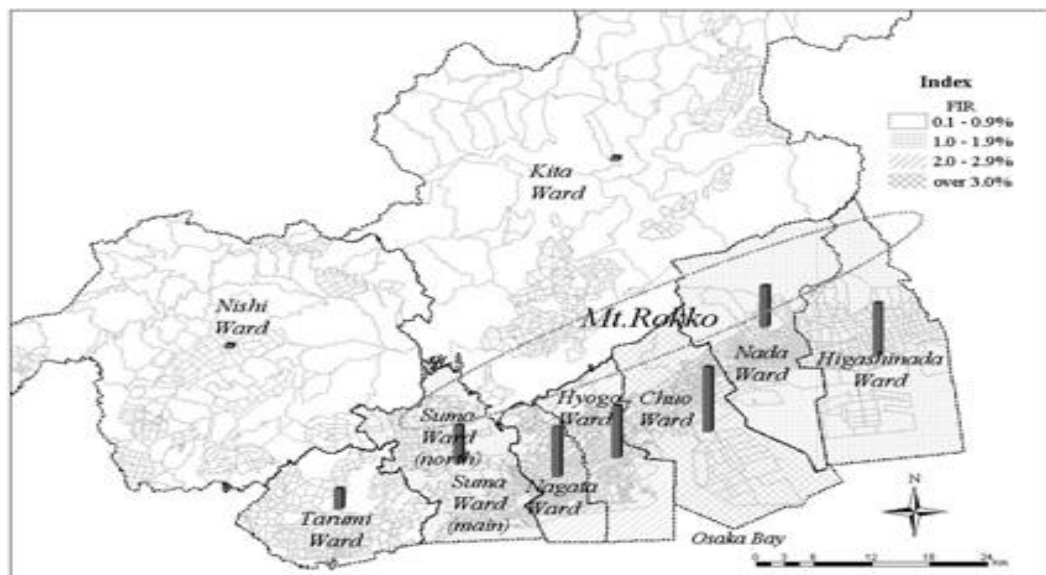
Figure 42. Fires and FIR in Kobe for 10 days after the earthquake

Source: Kobe Fire Department special report 9,10 (1996)

Mainly the fires happened in the built-up areas while firebreak in all regions of Kobe City. Numbers of fire occurrences in regions are as: Higashi-Nada Ward (28 fires), Nagata Ward (27 fires), Nada Ward (22 fires), and Suma Ward (20 fires). The fire occurrences cover 91% of whole residential areas (Figure 42).

8.2.2. Role of Volunteer fire fighters' roles during The Great Hanshin Awaji Japan Earthquake, 1995

The Great Hanshin-Awaji Earthquake drew attention to the importance of local disaster prevention capabilities. Local residents carried out emergency activities immediately after the earthquake struck, and the self-defense firefighting squads of residents and local companies conducted firefighting activities to prevent fires from spreading. During Kobe Earthquake the Shobodan demonstrated its ability as a firefighting team in times of large earthquake occurrence although they had received damage, too. They took an active part in live rescue and firefighting, etc. by January17 morning. Because the Shobodan had been located in the damaged areas, they were well sources of regional information. When the Shobo-dan`s activity after the earthquake was observed, it was like an independent activity that had been done by a local team. Before the Hanshin earthquake the characteristics of the Shobodan in Kobe City were different (Choi et.al; 2004). It had been divided into three parts: the built-up area part, the suburb part, and waterfront part. Because the built-up area part was in the fire department territory fire station expert staffs were able to cover the area completely, the roles of the Shobodan were trainings, and support group of the Kobe Fire Department (Kobe city Fire Department). However, because the suburb area was wide, the firefighting activity could not have been done by only a fire station. Therefore, the firefighting equipment's been prepared so well as the Shobodan in the suburb acted independent fire-fighting group. Moreover, training and patrolling gave priority to the firefighting, too. This means the firefighting power of Shobo-dans in the suburb part is stronger than in the built-up area. However, the earthquake fires mainly occurred in the built-up area. The Shobodan members gathered voluntarily in the center after the Hanshin earthquake. Headquarter of Kobe F.D had instructed its

members by Shobodan Emergency Automatic Operation System or by the telephone. The Shobo-dan in the built-up area showed the average rate of 70% though their houses had damage, too. The Shobodan in the suburb used its least members, and sent the majority members to the built-up areas. The number of the mobilized of Shobodan members were 36,346 people from January 17 until the end of February (Kobe city). The Shobodan took the field rescue while receiving the resident's cooperation, and at the same time was engaged in the life retrieving, fire extinction, the shelter guidance, and the patrolling the damaged areas etc. Because of strong and deep relationship with the residents in the community, the Shobodan in the built-up area could do the rescue operations sufficiently. Therefore, the survival rates of the rescued persons were very high (85.4%).

Table 39: Rescues by Shobodan only

	Built-up area	Suburb	Water front	Total
Rescues	953	4	1	958
Living	814 (85.4%)	4	1	819 (85.5%)
Death	139 (14.6%)	-	-	139 (14.5%)

Source: Kobe Fire Department special report 9,10 (1996)

Table 40: Shobo-dan supports to fire department

Date	Shobo-dan members activities
1.17	Rescue, Fight fires, Escape guiding, Victim support, Traffic control, transporting the aid supplies, Safety confirmation, First Aid support, Support to Fire Department
1.18	Rescue, Fight fires, Escape guiding, Victim support, Traffic control, transporting the aid supplies, Safety confirmation, First Aid support, Support to Fire Department

1.19	Rescue, Fight fires, transporting the aid supplies, First Aid support, Patrol
1.20	Rescue, Fight fires, transporting the aid supplies, First Aid support, Patrol
1.21	Victim support activates, Patrol

* Shobo-dan members support Fire department until 2nd February 1995.

Source: Kobe Fire Department special report 9,10 (1996)

8.2.3. Interview with Shobodan members in Nagata Ward. Kobe city

In 1995, Nagata ward, which suffered massive fires immediately after the earthquake. The area has the highest population density in Kobe. In 1995 earthquake the water was not available from fire hydrants, firefighting was extremely difficult for Shobo-dan members. Although fire brigades from Osaka, Kyoto, Nagoya, Wakayama, and even from Tokyo helped the Kobe city fire brigade, it took more than 30 hours until they succeeded in extinguishing fires using seawater. Nagata Ward has eight (8) branch's fire fighter team and they rescue 391 people, among them 267 alive and 24 dead. Nearly 75 people rescue from 5th branch.

Currently, the total member of Shobo-dan is 140. Before the 1995 earthquake there was no women involve as a fire fighter volunteers in that area. However now they have female volunteer in 1st Branch – 4 women's, 5th – 3 women's 8th – 5 women's (from Nose hospital), In total 12 ladies are working as a volunteer fire fighter at Nagata word (22 June, 2019 interview with Shobodan members).

Opinions and Findings from Shobo-dan members

- Inadequacy in the system to effectively command units,
- Evacuation guidance and activities without information
- Lack of water recourses due to the earthquake, which required long distance pumping from rivers to disaster affected communities
- Fire scale was so large and continued for some days.
- Lack of interchangeability of fire hoses and equipment's

- At that time there was not enough CPR specialist among Shobo-dan members. Only one Shobo-dan member knows the method. At that time, they many people need CPR method to survive. However, the good thing is Kobe city provide the automatic CPR system to Shobo-dan office.

8.2.4. Case Study 2: Scenario of the Great East Japan Earthquake, 2011

On March 11, 2011, the Pacific coast of Tohoku, Japan was severely devastated by a magnitude 9.0 earthquake followed by a tsunami, which had 15,868 fatalities and 2,848 missing (The National Police Agency, August 22, 2012). Of the fatalities, over 90% of the dead drowned due to the earthquake induced tsunami: of the 13,135 fatalities recovered by April 11, 2011, 12,143 (92.5%) died by drowning, 578 (4.4%) by crushing, 148 (1.1%) by fire, and 266 (2%) were unknown. The severity of the disaster was beyond imagination that also caused a massive amount of damage to properties.

8.2.5. Role of Volunteer fire fighters' roles during The Great East Japan Earthquake, 2011

Local communities have been responding to disasters for centuries. According to Ishiwatari (2012), before the creation of Japan's formal state system, local communities carried out disaster- related activities as volunteers; community-based organizations have existed for centuries. During the Great East Japan Earthquake, the Emergency Fire Response Teams rushed to the scene immediately after the earthquake struck, saving the lives of approximately 5,000 people in cooperation with local fire defense headquarters and others. They were actively involved in various different contexts, such as activities to drain water from the Fukushima Daiichi Nuclear Power Plant and firefighting activities for fires at large-scale industrial complexes, which have served to provide residents in disaster-stricken regions with an enormous sense of relief. What is more, immediately after the earthquake struck firefighting personnel from the afflicted region led evacuations and engaged in disaster defense activities that saved a great many lives. At the same time, the loss of nearly 300 lives as a result of the tsunami highlighted the importance of volunteer fire corps, which forms the core

of regional disaster prevention. This has led to enhancing safety management during disaster responses, equipment, and more. Local volunteers Specifically, volunteer fire fighters played a greater role in evacuation and rescue activities than their actual capacities (Koresawa, 2014, Takahashi & Hashimoto,1997).

- Loss of fire Department: Dead 23, Missing 4
- Loss of volunteer's fire fighters: Dead 242, Missing 12

Shobo-dan activities:

The Shobo-dan responded to the Great East Japan Earthquake at the risk of their own lives. Some 254 members were killed or are missing, including 51 in Rikuzentakata City (Ranghieri & Ishiwatari, 2014). Some examples are:

- *The members supported the evacuation of 30 handicapped and elderly persons, and persuaded three other people to move who were insisting on staying at home (Shiogama City).*
- *Members closed the tsunami gates by hand, since they could not be operated automatically because of power failures (Miyako and Ofunato cities).*
- *Members died closing the tsunami gates in Kamaishi and Isihinomaki cities.*
- *One member died ringing a bell to warn people of the tsunami right up until the tsunami hit (Otsuchi City).*
- *Six members, on the way back from closing gates, tried to save a bedridden*

Box 7: Shobo-dan activities

Source: Federico & Ishiwatari (2014)

8.3. Shobodan members experience (Field Study at Iwate & Miyagi prefecture)

The below information was collected at the field survey at Iwate & Miyagi prefecture, in March 8th -12th, 2018.

8.3.1. Otsuchi Town, Kamaishi City

Otsuchi Town in the Iwate Prefecture, which is located north of Kamaishi City on the Pacific Ocean, was one of afflicted areas by the Great East Japan Earthquake. Prior to the earthquake, it had a population of 15,276. The local water utility served 13,961 residents and two small water utilities with a total average daily supply of 6,973 m3 of water. The Great East Japan Earthquake devastated coastal cities due to the associated tsunami, including a long-term disruption to the water supply. The majority of Otsuchi Town residents lived along the coast. The toll included 809 dead, 423 missing, (as of June 1, 2015), and 4,167 houses destroyed (Otsuchi town website). The earthquake itself caused little damage compared to the accompanying tsunami, which caused massive flooding that was responsible for most of the damage.

Meeting with Fire bridged office at Otsuchi:

We had a meeting with fired bridged official and Shobo-dan members at Otsuchi Fire bridged office. They share their experiences at the time of disaster during Great East Japan Earthquake: Here below I summarized the information:

- After the earthquake several areas was electricity was cut. Then 35 minutes later tsunami hit the area. Total 4,167 houses totally damage. The first tsunami wave after 10 minutes later big fire occurred and the cause was not identified. Later they know that the fire start from fisherman boat and speed to mountains area for several days.

- After the tsunami announcement the Shobo-dan members moved to the water gate area to close the water gate. They carry safe jacket, camera. After closing he moved to safe place.

- Those who skipped to mountain area they survived but those who stayed inside the leave area they cannot run out. People died both first and returned wave.

- In Otsuchi, 5 & 9th subdivision of fire service help disable people. Then they skipped to higher places. There are 14 members died all 11 subdivision, 10 female were lost.

- In March 12 they started to clean the debris for easy access. Self Defense Force arrived early morning of 12th March 2011, and also on 13th and 14th SDF's helicopter arrive, performed the transportation of injured people to hospitals. Shobo-dan members explain the situation of evacuation, the damage areas and other urgent needs.

- Shobodan members and SDF's jointly operated the searching and missing people and handle the dead bodies. Clearing and making the route on the mountain for transportation until end of March 2011.

Opinions from the Shobo-dan members

- The impact of Great East Japan Earthquake was greater than anticipated, and Otsuchi Town was not properly prepared.

- Shobo-dan members are prohibited to work in risk areas during disaster. Before tsunami hit coast areas, they have to evacuate to safe places at least 15 min before. However, it depends on area wise. They said it is very difficult for them to maintain the rules because they know each other in the community.

- Overall Iwate prefecture government trying to make close the all-water gate automatically to reduce the life of Shobo-dan members life

- The water gate areas levee is reconstructed again and they make them steep slope, which may reduce the Shobo-dan member's life.

- Police always-helping Shobo-dan members. However, they suggested Shobo-dan need to improve the relation with police.

- In normal time there is no relationship between SDF and Shobodan.

- After the earthquake, government introduce new manual for Shobo-dan

8.3.2. Kirikiri

A mountain separates the town of Otsuchi, in Iwate Prefecture, from Kirikiri, a small fishing community of 1,800 people. Its inhabitants consider themselves "heirs

to the memory of the Great East Japan Earthquake" and have carved in stone the lessons learned from the tsunami: "flee at all cost", "evacuate to high ground" and "protect life". They lost 100 members of their community to the disaster and many others have since left for good (Equal times, 2021).

Meeting with Fire bridged office, Otsuchi

- After the earthquake Kirikiri headquarter was established next day of tsunami. It was decided about the formation and the establish the headquarter. Before the tsunami, there was no disaster prevention plan.

- The divided in eight (8) divisions and it's about general information, food, fuel, shelter, health mater etc.

- They had met every day and invite representative from the town fire bridged office.

- Before SDF come to Kirikiri, Shobo-dan members already clean the debris the road to access will be smoother.

- SDF comes on 13th march. They had a meeting with Shobo-dan members and decided the area where Shobo-dan and SDF will work.

- There are also female Shobo-dan volunteer who handle the kitchen of the elementary school, (The school designated for emergency shelter). They make all the food for the   rescue victims and help them to sharing the information.

Opinions from the Shobo-dan members

- Overall Shobo-dan member are decreasing in that area. There were more than 200 Shobo-dan members before the disaster. Now its 168 members. There is a trend of decreasing of Shobo-dan members and young generation is not involving.

- To avoid the situation, they suggested to established new Branch office but in the longer run it might be difficult because they cannot stop the population-decreasing trend of the society in Japan.

- Government should back up Shobo-dan system, for example; Government should provide subsidies to the company, which allow to their company

employee to become a Shobo-dan members. Or tax exemption for the Shobo-dan members to encourage the young generation. Actually, Nagano prefecture already started these kinds of activity.

- Iwate prefecture also started point based card systems for the Shobo-dan members so they can be treated differently than usual consumers.

- In the past Shobodan members was naturally active but present situation everyone engages with works. They believe governmental intervention is necessary.

- Some of the volunteer's mention, now a days Shobo-dan members are not only firefighting. They also engage with others disaster like landslides, tsunami etc. The fire occurrence also decreasing. So Shobo-dan named should be change. However, Shobo-dan is very tradition and it's from 18th century. Therefore, it's not easy to change. The debate is still ongoing.

8.3.3. Unosumai town, Kamaishi City

The Unosumai district in Kamaishi was attacked by the tsunami during the 2011 Great East Japan Earthquake. Unosumai consists of settlements along the Unosumai River and is adjacent to Kamaishi City, the major city in the Sanriku Coast. The town is within the administrative boundary of Kamaishi City since 1955 and the town center at the mouth of Unosumai River close to the sea became more urbanized. Tsunami 2011 completely destroyed the town center. The death toll in Unosumai Town was 580 persons out of a population of 6630 (Kamaishi city website).

Shobo-dan members share the story of Unosumai towns that town has the miracle and the tragedy story of Unosumai of the Great East Japan Earthquake and Tsunami 2011. There was a very famous story that, in Unosumai, students of Kamaishi East Junior High School immediately ran out of the school to higher ground after the earthquake. Their very quick and resolute response prompted local residents and even the students and teachers in a neighboring elementary school to follow and consequently saved lots of lives. The response of Kamaishi East Junior High School students was based on the three principles of evacuation. The students make their best

efforts in any situation, and to take the initiative of evacuation in the community. It's all about the disaster drill and behind the efforts by Shobo-dan member's awareness contribution in their community. These principles are now highly valued as one of best practice/outcome of disaster education. The response capabilities the children learned at school helped them to overcome a disaster that exceeded all worst-case scenarios.

The tragedy refers to large number of deaths at Unosumai Disaster Mitigation Center. Although this facility was not a city designated evacuation site, the local neighborhood association had been doing evacuation drills at this site because the city designated evacuation site was far away and the attendance rate for training was low. Mislead by the name of the center and the previous drills, many evacuated to this place and only 34 survived.

Meeting with Shobo-dan members at Unosumai Town

- Primary operation was close the gate at Nebama. There are three water gates between ocean and river. Shobo-dan mainly responsible to close the door.

- There are so many died bodies. Their first priority to find the alive people.

- Until March 13th tsunami hit slowly in those areas. They tried to remove the debris to access the road network.

- In Unosumai, most of the Shobo-dan members are government and company staff. Their office is city center of Kamaishi. There was a delay at that time to commute Kamaishi to Unosumai area. Some Shobo-dan members cannot return to Unosumai because sea wall broken.

- Kobe fire bridge emergency group come 13th and 14th March before the SDF come. They helped to rescue operation.

- SDF arrived on 15th March and stay end of July. Shobo-dan members make the SDF helicopters filed so the SDF can easy land on and provide the necessary supplies. SDF provide fuel food, water based on requesting from Shobo-dan. They never refused the request. Just only say "please wait, we will provide".

- Shobo-dan and Police patrolled jointly inside the affected areas after the disaster.

Opinions and findings form the members:

- Before the Kobe earthquake Community members participate in annual disaster evacuation drills conducted by the *Jichikais*. The drills are conducted every year on March 3 to mark the anniversary of the Meiji-Sanriku tsunami of 1896 (Ishiwatari, 2014). Participation rates in the disaster drill vary from neighborhood to neighborhood, with more people participating in the smaller, more cohesive communities. But after the Kobe earthquake govt. announced to ask for drill and different types of training. Now this day's drill like an event so people's seriousness is missing. After 2011, there is no drill was conducted until 2018.

- Shobo-dan members are prohibited to work in risk areas during disaster. Before tsunami hit coast areas, they have to evacuate to safe places at least 15 min before. It depends on area to area. It is very difficult for them to maintain the rules. Because the community knows each other's and cannot ignore them any difficult situation.

- Safety and health care also important due to weather condition at that time.

- Local city official work along with Shobo-dan members. It a positive aspect for them.

- There is no university in this area except college. So young people's involvements are less because they migrate to other places for best opportunity.

- Drill is conducted generally twice a year. Usually, Junior high school students help to elementary school students. Apart from tsunami evacuation drill this two-school cooperation with community.

- Under Unosumai there are six sub-division. Each division has 15/16 members. The number is almost same in the last few years. They cannot recover it.

Challenges they faced during operation:

- Fuel for car for mobilization
- Communication walkie talkie

- List of new community. Because after the disaster population is decrees and old community people may be not returned the original place.

- Small number is not problem in normal time but during disaster operational case number is important.

Positive motivation

- Salary doesn't matter. Saving the family and community is important.

- Traditional culture. They feel pride when they wear the dress.

- Respected by community

- Based on the volunteer spirit, their motivation is there for satisfaction.

8.3.4. Taro Town

The town of Taro is located in northeastern Japan as shown in Figure 58 and the seawall had been constructed in double lines. The March 2011 tsunami with enormous force destroyed and devastated the town of Taro, which had a 10m high seawall, the highest seawall in the world. However, the tsunami overflowed and destroyed the seawall in the town of Taro. Across Taro, 140 residents were killed and 41 remain missing (Ishikawa et.al, 2011).

The town of Taro has a history of typical tsunami protection as it had been hit by huge tsunami twice before. One of major tsunami hit on June 15, 1896, claimed the lives of 1859 people in the town of Taro (total 21953 dead in Japan) and had a tsunami height of 14.6m. The other one, hit on March 3, 1933, claimed the lives of 911 people in the town of Taro (total 3064 dead in Japan) and had a tsunami height of more than 10m. Since then, people had wanted to construct a seawall (dike) and part of a seawall was built at last in 1958. On May 24,1960, the Chile tsunami hit the town of Taro, but there was no damage (0 dead in Taro, but 142 dead in Japan) as it was protected by this seawall (Ishikawa et.al, 2011). The new construction walls are now up to 14.7 meters high and run for over two kilometers.

In Taro city, sea wall reconstruction area still ongoing and we found that in Taro city Shobo-dan has no cooperation with SDF's in disaster prevention drill and no cooperation with SDF and other organizations during Great East Japan Earthquake.

8.4. Lessoned learned from the case studies

The Volunteer Fire Corps is positioned inside the structure of the Fire Department; it also serves as institution for local autonomy of the community. This is related to the fact that the Volunteer Fire Corps is closely bound to local community. Good evidences for this are, firstly. The recognition of the people towards the corps which is formed not through mass media but through the activities of the corps itself, and secondly, the new membership for the corps depends largely on personal relationships in the local community. The research shows that Volunteer Fire Corps has a positive image in the eyes of the citizens. According to the citizens, the city needs the Volunteer Fire Corps. On the other hand, while most of the member of Volunteer Fire Corps point out that contribution to their local community is their motivation of becoming member, they also find that balancing the activities for the corps and their formal job turns to be a difficult task. It is also clear that as the modern life style brings diversity in many parts, it is becoming difficult to balance private life and life as member of Volunteer Fire Corps. In the fast-changing society, the foundation for the existence of Volunteer Fire Corps is being questioned. It is now facing not only the problem of shortage of successor, but also the problem on how to manage fire and disaster prevention in the community, related to various voluntary groups and enterprises. It is important to have a vision for the future on local community and the Volunteer Fire Corps. Although it is difficult to predict how the Volunteer Fire Corps change in the future, the institution itself will certainly maintain its existence as it is now, or turn into a new form of institution.

One of the results for this is the decline of the number of memberships in Volunteer Fire Corps. Furthermore, this decline led to 'top-down' reorganization of the corps with the Wide-area Fire Administration. This is a parallel move with the reorganization of the Fire Department. However, as the Volunteer Fire Corps is being reorganized, its role is being shifted into rear service or the home front of the Fire Department. Accordingly, the long history of fire-fighting culture of the corps is disappearing. The important task for the moment is to revive the firefighting culture,

which can accelerate the development of citizens' autonomy, in relation with reorganization of local community.

In the Great East Japan Earthquake, the fire service, the police, the Japan Coast Guard, the Japan Self-Defense Forces (JSDF) and others carried out dedicated activities. Among them, the firefighters and the many volunteer fire corps members above all continued their activities such as closing the floodgates of seawalls and guiding residents to evacuation areas in the face of the arriving tsunami and the impending danger of losing their precious lives. This is so regrettable and heartbreaking (Robertson, 2012). It is also said that a large number of volunteer fire corps members devoted themselves to firefighting, searching for missing persons, responding to evacuation centers, etc. without sleep or rest for days and days, under serious situations where they had lost persons close to them including family members. Thoughts on the significance and role of the Volunteer Fire Corps as the core of community disaster prevention colleagues, or had persons close to them who were missing, and their homes were washed out or they were victims themselves. Based on lessons learned from the Great East Japan Earthquake, the Fire and Disaster Management Agency requested local governments to reinforce the volunteer groups in October 2011 with equipment, increased allowances up to the level stipulated by law, the recruitment of new members.

There is no doubt that Shobo-dan has contributed to the improvement of disaster prevention ability in the community. However, there are some gaps are shows after the disaster;

- Leadership: The presence of leadership is great help for initial response that may correspond by themselves in times of disaster.
- Coordination: SAR operations with the SDF, which was quite difficult to coordinate for the first week, but gradually as coordination improved. In Taro town, no cooperation with SDF in disaster prevention drill and no case of cooperation with SDF and other organization in GEJE, 2011.

- Logistics: The logistical support food, fuel, latrines and other necessities is essential and an important element in supporting long-term field activities. It was found that fire services were not planned enough for sending personnel for prolong periods of time. So, it is extremely important to further strengthen backup logistics support functions.

- Safety control and Health care: Camping in severe cold weather increased rather than relieved fatigue, which could threat health. Thus, they need necessary to have sleeping bags.

Citizens have many expectations towards the Volunteer Fire Corps to function as the core of community disaster prevention system. However, before adding new activities in the Volunteer Fire Corps such as rescuing senior citizens and the disables, to the basic activities of the Corps include fire-flood disaster prevention, first of all the corps needs to be reactivated. One of the key points in the effort is to build an attractive image of the Volunteer Fire Corps, which also includes admitting women as member, so that the problem of shortage of successor can be solved. This expectation from the citizens can be seen in the findings from survey on the Volunteer Fire Corps in Iwate prefecture.

8.5. A brief Comparative Study of Shobo-dan and CPP volunteers' activities

A comparison of the voluntary organizations for disaster management in the two nations may ultimately contribute to a greater understanding of the nature of disaster management. By learning what others are doing regarding voluntary organizations for disaster management, the effectiveness of disaster management and volunteerism may be further strengthened, especially when dealing with disasters of catastrophic scale. At the same time, such knowledge may encourage people to be more practical and open regarding voluntary activities as they become further exposed to the experiences of other countries. In view of these, the present study investigated how the Japan and Bangladesh have addressed the issue of voluntary organizations for disaster management.

The goal of this study was to compare the role of community based voluntary organizations for disaster management in the two above-mentioned nations toward the ultimate goal of disaster management. The goal of disaster management is to mitigate or reduce human losses and economic damages. The present work systematically compares two approaches, the community-based approach Shobo-dan in Japan, and the coordination approach of community-based volunteerism of CPP program in Bangladesh. The comparison considers three variables: community-based volunteers and their organizations, organizational strategies and financial capacity.

Based on the literature review and field-based interviews and meeting, three common characteristics were taken as comparative variables based on the extensive literature review. Each characteristic has its own justification for inclusion. The first variable, volunteers and their organizations, refers to major players in the field, which are the main subjects of this study. The second variable, organizational strategies, refers to the ways in which the affairs of community based voluntary organizations for disaster management are officially managed. The third variable, financial, means that these organizations financial support from government and other organizations. Among the many lessons drawn from this comparative study, the key finding is that there is a significant similarity and a significant difference between the two nations. That is, each nation has made efforts to improve the role of community based voluntary organizations for disaster management in one way or another. However, the specific developments have been very different and meaningful within the context of each nation.

8.5.1. Shobo-dan, Japan

8.5.1.1. Community based volunteer organization and their activities

Japan is a country, which is prone to natural disasters; community organizations such as volunteer fire corps have assumed a role in preventing disasters. The factor ''Common Objectives'' is strong and positive aspect for the Shobo-dan case. The objective to strengthen community capacity is based on their actual experiences of the major disaster at both the community side and the City

Government side. Community mobilization and strong community to response against any kind of disaster. Every citizen knows the concept of self-help, mutual help/neighbor help and community help during disaster. Shobo-dan activities on awareness and education, which leads to the strong focus on preparedness activities through regular disaster drills. Although Shobo-dan is a semi-public organization, essentially depends on the community participation. The members of the Shobo-dan are civilians who think at higher level can become a semi-public organization at times of disaster occurrence (Robertson, 2012). Meanwhile, with the changes in society and the economy, volunteer fire corps are faced with a decline in members, an increase in the proportion of employee members, a rise in average age, etc. With the low birthrate and the transition to a depopulating society, it is also a concern that the volunteer fire corps may be unable to fully perform their activities. Therefore, appropriate measures need to be taken before it is too late, but the municipalities, residents and communities rather than the volunteer fire corps themselves, should take most of these measures.

8.5.1.2. Strategies

The "Act on Enhancing and Strengthening Volunteer Fire Corps, etc.," which was established by lawmaker-initiated legislation in 2013, is innovative and its purpose seems to be precisely this, but the establishment of a law is the Imperial standard as well as just the beginning (White paper on fire service, 2015). It is essential to utilize the law, promote enrollment in volunteer fire corps, and take every possible measure to enhance and strengthen volunteer fire corps activities to put these measures into action. Particularly if it remains impossible to avoid the situation where only few members are self-employed and have work flexibility while most members are employees and an increasing number of members work outside the jurisdiction, it is crucial for those companies which employ volunteer fire corps members to understand and cooperate in allowing these members to carry out their volunteer fire corps activities comfortably without being affected by their work. For this purpose, while we should appeal further for corporate social responsibility and community contribution, with the proliferation of the Volunteer Fire Corps Office Symbol

System and the expansion of municipalities' support measures for such companies, from a future perspective although a lot of trouble and not at all easy, if required in light of the role of the volunteer fire corps, some consideration or compensation for employee members' main activities, especially for dispatch to the scene of a fire or another disaster during working hours, to both the company and the member should be taken into consideration while considering the examples of ready-reserve self-defense forces. In modern society, people's lives are isolated by their lifestyles. Newcomers to an area do not know the history of local disasters and, not knowing who lives where, they are unable to build relationships of trust. If alternative ties are to be created under such circumstances, there is a need for a new type of cooperation that enables people who are engaged in different types of activities to build ties with one another (Robertson, 2012).

8.5.1.3. Financial

Volunteer's fire fighters proposing free work to their communities; the services they supply do not come without costs. There are generally two kinds of financial support that the government or social institutions can give to the volunteers and their organizations. The first is direct funding, money, or equipment. The second is through indirect means by offering services that the volunteers would have to purchase elsewhere if they were not provided such as insurance benefits or meeting space (Haddad, 2004, Suzuki, 1999). The Japanese government has given significant direct funding to volunteer fire departments; municipalities cover the majority (90% to 100%) of costs with some help from the central government. Although the amount of funding varies by Fire Service Department, the city usually provides the firehouses, trucks, hoses, uniforms, and other necessary equipment. The volunteer units may also receive small, additional funds for extra hoses and other equipment from their local neighborhood association, but the amount of these extra funds is usually 10% or less of the total budget (Haddad, 2004). In addition to equipment, the volunteer units also receive cash to cover maintenance and entertainment costs. The Fire Bureau of the national government sets guidelines for the allowances, but municipal law determines

the actual amount and it varies widely (Interview data from Shobo-dan). Although this money appears in budgets as allowances given to individual firefighters, the money is usually pooled for use by the unit as a whole for such purposes as cleaning supplies for the firehouse or going out for food and beer together after a drill session. In addition to direct funding for equipment, municipalities also provide insurance benefits for volunteer firefighters.

8.5.2. CPP program, Bangladesh

8.5.2.1. Community based volunteer organization and their activities

Bangladesh has a dedicated cyclone preparedness mechanism, called the Cyclone Preparedness Programme (CPP), which works to spread cyclone early warning message to all the people living in the 710 km long coastal region of the country. CPP has been the main responsible agency or mechanism to handle any potential threat of cyclone in the coastal areas of Bangladesh. CPP undertakes all its operation through its dedicated volunteers and technical skills. CPP volunteers go door to door to the community people during any emerging cyclone to disseminate early warning messages with megaphones, hand sirens, whistles and public addressing. This enables the community people to have significant time to move to the safe houses or shelter centers before the hazard comes to greet the land. Bangladeshi community supports volunteerism. The CPP volunteers and community people realized that volunteerism is beneficial for both the parties. The factors that positively affect volunteerism are their firm belief on religious and social responsibilities, their past experience of cyclone 1970, 1991 and 2007, appreciation from community people, enhancement of their social dignity, positive behavior of CPP officials The factors that put negative impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/ CPP officials, no or inadequate training and equipment for performing their duties, shortage of evacuation shelters, avoiding them by management (government and NGOs) during emergency response especially during relief distribution, political influence and change of social as well as financial status of some old volunteers, and no incentive/ award are offered for their voluntary

services. In spite of all the above-mentioned limitation most of the CPP volunteers work without self-interest during the emergencies.

8.5.2.2. Strategies

The Standing order on Disaster (SOD) placed the various activities of CPP organizations for disaster management under the Disaster Management Act in 2012. At the legislative level, amendments of the National Plan for Disaster Management and the Standing Orders on Disaster (SOD) were formulated in 2010. In September 2012, the Disaster Management Act was enforced, and the Ministry of Food and Disaster Management was divided into the Ministry of Food and the Ministry of Disaster Management and Relief. The Department of Disaster Management was newly established. The government plans to formulate the National Disaster Management Policy in 2013. Since the SOD was revised in 2010, the government has made efforts to establish a six (6)-level warning which residents can easily get used to. However, the new signal level system has not been recognized yet. There must be great confusion between CPP and residents for the revision of the existing ten levels of warning signals.

The exhaustive development of legislation, the implementation system is facing challenges. Multiple organizations are involved with the disaster information system (for example, organizations for climate and hydrological observations, decision making organizations for early warning and organizations for disaster information transfer to the local governments and community people). Their functions are overlapping, and a communication system among the organizations needs to be developed. Another problem is the speed of disaster information transfer. There is also a problem with community people, who are the receivers of disaster warnings. The relationship between BDRCS organization for disaster management and the government has been widely regarded as quite cooperative. During the phase of disaster response, CPP volunteers are willingly complied with government orders and have successfully participated in mitigating the impacts of disaster. Nevertheless, it is important to review the activities of DMC/ CPP during normal and warning Times in the SOD, to make it more practical. The SOD was developed by UNDP. It is found

that explanation of the warning was deleted in the revised SOD. The CPP organizations do not have enough opportunity for education and training. Capacity enhancement to implement the SOD is important.

8.5.2.3 Finance

CPP organizations for disaster management receive minimal amounts of funding from emergency operations. Although membership fees raise a significant amount for voluntary organizations, the bulk of their funding still comes from donations. Having sufficient funding allows many voluntary organizations for disaster management some flexibility in the disposition of their finances.

Government of Bangladesh pays CPP employees' salary where as there is no program operation cost at the field level for CPP volunteers including their capacity building. Due to long time gap to provide volunteer's training & equipment supply, Bangladesh Government came forward to assist volunteer for their training & equipment. Previously this program operation cost was mainly borne by Bangladesh Red Crescent Society but now a day it becomes irregular and sometimes no support due to non- availability of fund. On the other hand, Bangladesh government does not allocate budget on this program operation cost (Amin, 2012). The program operation fully depends on external funds. Supply and management of logistics like early warning equipment, volunteers' personal gears, and search and rescue materials of such a large-scale program is a challenging task which may have impact on the motivation of CPP volunteers. In this situation there may have some limitations to adequately and evenly support the CPP field programs that may affect volunteers' motivation. Still a good number of volunteers are serving in the field at the time of cyclone. Therefore, this study attempted to explore the factors that positively and negatively affecting motivation of CPP volunteers in the study areas.

Table 41: A brief comparative study of Shobo-dan and CPP

Variables	Indicators	Shobo-dan	CPP
Community based Volunteers their organizations	Goals	Community mobilization and strong community to response against any kind of disaster. Every citizen knows the concept of self-help, mutual help/neighbor help and community help during disaster. (+)	Community mobilization and community volunteers expanding gradually. (+)
	Rapid Response	Strong activities voluntary organization for disaster response. Can start firefighting/rescue activities even before professionals attend the incident scene, because of undergoing high-level trainings. (+)	Strong activities voluntary organization for disaster response. In favor of Government, CPP is the only organization that is responsible to disseminate warning signals in the coastal area of Bangladesh (+)
	Close to Community	Have known their own communities and its situations better than professional firefighters. (+)	Have known their own communities and its situations better than another professional like; NGO's (+)

	Robust Mobilization	Have five times more members than professionals (Volunteers: 840k > Professionals: 160k) (+)	49,365 enthusiastic, dedicated and committed volunteers among which 16,455 are female and 32,910 are male. (+)
	Women participation	Women participation is less than men. However, the number is increasing in recent years. Women volunteer fire fighters are 25,962-around 3.1% of all and increase 1,015 in 2018 (+) (-)	Women participation is less than men. However, government trying implement education and women empowerment program with the partnership with NGO's (+) (-)
	Regular interaction	Regular interaction with communities (+)	Irregular interaction with communities (-)
	Ageing society/Less participation by young people	In 1965, more than 1.3 million volunteers were enrolled in local fire corps. By 2018, that number had dropped around 844,000. (-)	The number of volunteers increased than before (+).
Strategies	Law	Strong law and act and operational manual. Revised after big disaster (+)	In SOD there is a guideline for CPP which mention Rule and responsibilities g for CPP

			program but not for the volunteers (+) (-)
	Position	Shobo-dan members treated as part-time local government official (+)	CPP volunteer remain as community. Government officials cannot be a member of CPP volunteer (+) (-)
	Equipment's	Shobo-dan members have enough firefighting Equipment. However, in the large case of disaster is not enough sometimes (+) (-)	Not enough equipment's for search and rescue and individual PPE (-)
Financial Independence	Finance	Sufficient Budget for DRR. Shobo-dan members received the money for operation from Local fire department (+)	Insufficient budget allocation of DRR. No transparent data related to budget (-)

*(+) are positive aspects   *(-) is Negative aspects

Source: (Created by author)

8.6. Similarities and dissimilarities

This paper also gives a brief description of the Shobo-dan and CPP volunteers activates in DRR process that meets the goals of disaster risk reduction in Japan. In comparison with the Japan and Bangladesh, it can be found that most of the interventions have been taken place in the local and neighborhood levels and in various phases of disaster management cycle. However, the type of disasters, country laws and legislations, and the disaster management system has affected the community

participation. Based on the literature review and field-based interviews It is observed that many negative and positive aspects of Shobo-dan and CPP organizations for disaster management, as well as the lessons learned from the cases, were discussed above chapters eight. However, the key finding of the comparative case study is that there is a major similarity and a major difference among the disaster management efforts between the two nations. These community-based groups increase knowledge of the diversity of ways that volunteers work in their communities and interact with the government. The research has led to the following major findings from these study case studies:

8.6.1. Social Value of volunteering

Volunteering is an important form of social capital. Volunteers join networks with others, which reinforce norms of cooperation and helping and develop trust. They provide essential social services, create and promote arts and culture, and contribute to associational life. In the rural coastal areas of Bangladesh social capital (bonding network) is strong the study found that most of the respondents (68.6%) trust their neighbors during a disaster. However, social capital (bridging network) is not so strong. The main reason is the information gap between community organization and the Local government, the national government and NGOS, etc. Some of the major impacts and benefits of CPP volunteering in the community level are: volunteerism benefits volunteers and their family in many ways. During the group interview and individual discussion with volunteers the following issues came up as the major benefits for volunteers and their family. Enhancement of life saving skills in the area of first aid, search and rescue, disaster preparedness etc. *"Earlier, we didn't know anything about family preparedness in the face of any cyclone. But CPP teaches us what to do to save valuables during disaster which we can apply to our family and to the neighbors as well*" as said by one community member. Apart from cyclone preparedness, CPP volunteers take lead in different social movement and welfare activities for betterment of community including raising funds for helping poorest, distribution of winter clothes, support to poor students etc. with the help of local

administration (as they have the access).

Similarly in Japan local community volunteers have been responding to and managing disaster risk for centuries. Before the creation of Japan's formal state system, local communities carried out disaster related activities as volunteers; community-based organizations (CBOs) have existed for centuries. They include: Suibo-dan for flood risk dating from the 17th century, Syobo-dan for firefighting from the 18th century. In the Unosumai town of Kamaishi city, the local community has a very strong relationship with the elementary school to educate people in disaster preparedness. At the initiative of the Shobo-dan, regular drills were conducted in cooperation with the schools. The miracle story of students of Kamaishi East Junior High School immediately ran out of the school to higher ground after the earthquake. Their very quick and resolute response prompted local residents and even the students and teachers in a neighboring elementary school to follow and consequently saved lots of lives. The response of Kamaishi East Junior High School students was based on the three principles of evacuation. It's all about the disaster drill and behind the efforts by Shobo-dan member's awareness contribution in their community. From the case studies in Kobe and Great East Japan earthquake, social capital in can be summarized as follows. Bonding Social Capital: 1) Strong trust among community members 2) Strong trust to community volunteer's 3) High level of participation of people in community activities. Finally, Bridging Social Capital, interaction with various stakeholders during and after disaster such as coordination with government, SDF and other neighbors' associations, etc.

8.6.2. Participation and Communication

In the case of Bangladesh, it was observed that Koyra Upazila community has the highest trust in CPP volunteers and their Unit leaders; while Ukhiya has the lowest trust. People's lower degree of contact with CPP volunteers also appeared to restrain them from relying on warning messages significant positive correlation with connection with CPP volunteers, social elites, and evacuation decision. It is found that Koyra community has good communication skill with CPP volunteer rather than the

Ukhiya community. In discussion it is also mentionable that after Cyclone SIDR in 2007 many cyclones hit in Koyra. For example; Cyclone Aila (2009), Cyclone Bulbul (2019) and Cyclone Amphan (2020). Therefore, community becomes more aware than before. They try to contact with CPP volunteer regularly, especially during cyclone session time, to know the preparedness program. In contrast, Ukhiya has relatively lower rate of participation in community activities, in spite of the high economic levels within the chosen communities. Lack of participation really affects the performance in responding to disaster as well as any issue within their community.

The concerns of volunteerism are quite similar to in Otsuchi in Iwate Prefecture. One Shobo-dan member share that before the Kobe earthquake Community members participate in annual disaster evacuation drills conducted by the *Jichikais*. The drills are conducted every year on March 3 (three) to mark the anniversary of the Meiji-Sanriku tsunami of 1896. Participation rates in the disaster drill vary from neighborhood to neighborhood, with more people participating in the smaller, more cohesive communities. But after the Kobe earthquake govt. announced to ask for drill and different types of training. Now this day's drill like an event so people's seriousness is missing. After 2011, there is no drill was conducted until 2018. They also feel that they may be lost the commination within their community. Since they do not have the list of new community. After the disaster population is decrees and old community people may be not returned the original place. They think partnering with community-based social networks increases community participation. The deployment of local volunteers who have a sound knowledge of the culture, religion and language of the region helps volunteers to gain the community's trust. Communities need to be prioritized based on their need for assistance and encouraged to contribute toward and support extremely vulnerable individuals. Cooperation among volunteers, local authorities and NGOs enables national authorities to bridge the gap with communities and respond to their needs.

8.6.3. Coordination with other Organizations

The case studies show that of Japan and Bangladesh show that although the local

socioeconomic and cultural backgrounds are different in these two countries however, the response process of volunteers is quite similar. At every stage of the disaster cycle (rescue, relief and rehabilitation), the volunteers played very critical roles among other concerned stakeholders. From the case studies it is reflect that the communities with high social capital were found to be efficient in rescue and relief. The most challenging part was during the actual coordination after disaster. Shobo-dan volunteer share that Search and Rescue (SAR) operations with the SDF, which was quite difficult to coordinate for the first week, but gradually as coordination improved. In Taro town, no cooperation with SDF in disaster prevention drill and no case of cooperation with SDF and other organization in GEJE.

On the other hand, Bangladesh cases there was no coordination was found with CPP volunteer and SDF and Police. However, they said they have good relationship with NGO officials. Besides CPP, the Bangladesh Armed Forces Division (AFD), including the Army, Navy and Air Force also conducting emergency search and rescue operations and providing medical assistance in the areas affected by the cyclone. Additionally, the Bangladesh Army began coordinating with the local government to determine overall damage as part of their immediate post-disaster activities. Both CPP and AFD officials they work separately and they do not have any coordination. It should be noted the community members are the first to respond when a crisis strikes and CPP and Shobo-dan members both groups are come from the community and remain in the community. They perform search and reuse before any governmental organization response. After that SDF or AFD arrived for search and rescue. Traditional volunteers and the defense force are the main responsible group for search and rescue after any disaster. Therefore, Shobo-dan and CPP volunteers feel that involving all stakeholders in every phase of the disaster enables successful collaboration. Good collaboration ensures that all partners understand the benefits of their participation and cooperation. Collaborating partners each bring comparative advantages, experiences and perspectives into the process of achieving common goals, and complement each other's efforts.

8.6.4. Gender issues and volunteering

The study also highlighted that the increasing visibility of women as community volunteers in the CPP program had a positive impact for women, adolescent girls, and children who take shelter in the evacuation or cyclone centers. Positive changes have been noticed among other local women regarding disaster awareness because of the CPP. Female members of the CPP team played a significant role in raising awareness of local women and encouraging them to move to safe places after receiving a disaster warning. As a result, women's involvement in the program has created a positive space to address women's issues effectively, as one volunteer observes. Volunteers have partnered with local committees in creating local women's associations and have organized workshops with religious leaders in order to tackle this issue. As a result, an increasing number of women are volunteering with the Bangladesh Red Crescent and are becoming more involved in their communities.

Similarly in Japan people in the community actually like women taking part in firefighting activities because of their sensitivity and caring method. In Great East Japan Earthquake female volunteers were also responsible for sorting through and distributing the many blankets and relief items that were donated by local citizens and businesses. Women who were members of local and community organizations—such as local women's groups, women's fire prevention clubs, Red Cross volunteers—that operate regular community-based activities, were able to carry out catering and goods distribution activities in evacuation sites either autonomously or under the direction of local authorities (Source; Volunteer Fire Corps: The Fight after the Great East Japan Earthquake (March 11), Japan Firefighters Association, 2012). According to the Hiroko Ozawa Assistant Chief of Tokyo Akabane Volunteer Fire Department; state that, *"in order for us to develop we need to win the trust and the understanding of local communities. That is why we are taking part in the various forms of the media marketing and advertising to try to promote our activities and ourselves. Women firefighters have households to take care of their family and kids and without their understanding their jobs will not be completed. And people in the community actually*

like women taking part in firefighting activities because of their soft touch or their sensitivity. We all share the same common goal that it is to protect and safeguard our home. And to this end, by involving more women firefighters we can meet this goal and achieve this goal".

8.6.5. Strategic Improvement

The research found that in Shobo-dan cases; volunteer fire service from various aspects to encourage improved treatment of the members, advanced equipment provisions, and enhanced education and training so that the members can perform their duties while guarding their own lives. Various strategies are being introduced in a bid to arrest this decline in numbers. Examples of these strategies include the setting up of a new category of volunteer firefighters in prevention campaigns, retired volunteer firefighters being encouraged to become involved in other capacities and awards being presented to companies that encourage their employees to volunteer as firefighters. These initiatives are part of a broader community-based approach as a result of the efforts, the number of women volunteer firefighters increased a little. It is obvious that the frequency of the disaster drill increases the city all areas comparing with before Hanshin earthquake.

On the other hand, Bangladesh is still progressing. The Disaster Management act is almost new and lack of human resources and technical knowledge it is difficult to response disaster on right time. By the assistance of Climate Change Trust Fund Project Govt. will provide volunteers training, warning equipment and Volunteers gears to 13 Upazilas for 14205 volunteers of CPP Command area. Government also considering enhancing the CPP commands areas in the coastal belt of areas with the help of UNDP-CDMP project.

In conclusion, each country has its own culture and socio-economic context. Community activity is connected to certain basic issues and norms, which are widely applicable without any geographic limitations. The current study shows that social capital and leadership in the community are basic attributes that are universal in nature, irrespective of the development stage of the country. Needless to say, there are

several other factors that affect volunteers, such as government policy or intervention of NGOs or consultants, which were quite different in Japan and Bangladesh. This paper also reflects the links between disaster risk reduction and development in the context of 2030 Agenda for Sustainable Development. For example; Volunteerism. The volunteers are the renewable resource for sustainable development. The community volunteers help to the people, including marginalized group. Syobo-dan and CPP volunteers are played the greatest role in preparedness and disaster response. Their involvement in disaster risk reduction has helped save many people's lives during cyclone Sidr and the Great East Japan Earthquake. They have also worked with the government to disseminate early warning information for secure evacuation. Through volunteering, community enhances their knowledge and takes the responsibility to build their own resilient community. Additionally, both countries adopted "Community Based Disaster Risk Reduction" that engages the community in the disaster management cycle that can be led preparedness to the recovery process and forms community resilience. Ultimately, a comparison of a developed country like Japan and developing country Bangladesh is not rational. Both countries are facing frequent natural hazards because of geographical, topographical and meteorological conditions. This study explores the relationship between people individual characteristics including socio-cultural factors and peoples past experiences which influences them in volunteering. However, the community volunteers have conducted countless activities to save the peoples life, such as dissemination of early warning information, assisting evacuation to shelters, rescuing etc. This outcome indicates the effectiveness of community participation on disaster risk reduction. In observing Bangladesh with its progress in the disaster management system, the Disaster Management Act is almost new and lack of human resources and technical knowledge it is difficult to response disaster on the right time. On the other hand, techniques of community mobilization in Japan for successful implementation of disaster preparedness planning, evacuation and recovery from post-disaster situations. Japan Government's initiative minimizes the damage and loss from Disaster. Japanese

experience in Shobo-dan volunteer's involvement in disaster in the Hanshin Awaji earthquake and the Great East Japan Earthquake had been a proven good example. So, it is essential to raise awareness of disaster at community levels to prepared and respond effectively. As a result, building disaster-resilient communities, it is possible to enhance human security.

9. CHAPTER IX: Discussion, Findings and Recommendations

9.1. Discussion

The early warning cyclone forecasting system in the country has been improved significantly over time with the existence of the cyclone preparedness programme, which ensures disseminating warnings among coastal communities. Even though, there have been some concerns regarding the language of the warning messages, number of signals for river and maritime, response of the communities to the signals etc. The problem that exists in the receivers' side is they wait until the last minute to evacuate, and when they make the decision to evacuate, the level of inundation is too high, and it leads to a high percentage of casualties (Paul, 2009, Ikeda 1995). When the flags are shown, people may use their perception to understand that the intensity and severity of the hazard event is increasing but they don't know the depth of the signals. When the signals are provided, it is sometime very technical for coastal people to understand because knowing the wind speed doesn't help them much. The signals don't give them proper indication of when to evacuate, when to take shelter or when to stay inside their houses. These clarifications are required to make a warning system more effective.

In the SOD assigns roles of each stakeholder at each level of the process. The order also defines the relationship of the stakeholders. However, related organizations tend not to follow the order, and community people do not receive adequate support during the process (Tiffany, 2012). CPP organize meeting at unit, union and Upazila committee levels but not regular. It is also found that, there is no specific monitoring and evaluation of CPP program volunteer's activities form BDRCS and Local Government. The CPP is effective at warning dissemination; average volunteer participation averages around two-thirds during any cyclone storm. Volunteers will choose to evacuate themselves and their families, instead of disseminating warnings, during a storm, or they will be frustrated with the lack of proper equipment or batteries to power the equipment which will cause complacency among volunteers The number of CPP volunteers is also not adequate to cover all of the coastal communities. CPP

volunteers send the warning messages and evacuate people to the safe shelters. But sometimes it is difficult to reach the people because of rough weather and lack of transportation and communication system. The flags are not visible during night and are easily adrift during high wind speed.

9.2. Conceptual framework for factors associated the scope of volunteer involvement and motivation

The conceptual framework shown in figures 43, highlight important factors that influences the scope of CPP volunteer's involvement. These broad factors encompass volunteers' individual factors, community factors and organizational characteristics of volunteer management. Next page shows the proposed Framework for factors associated the scope of volunteer involvement and motivation.
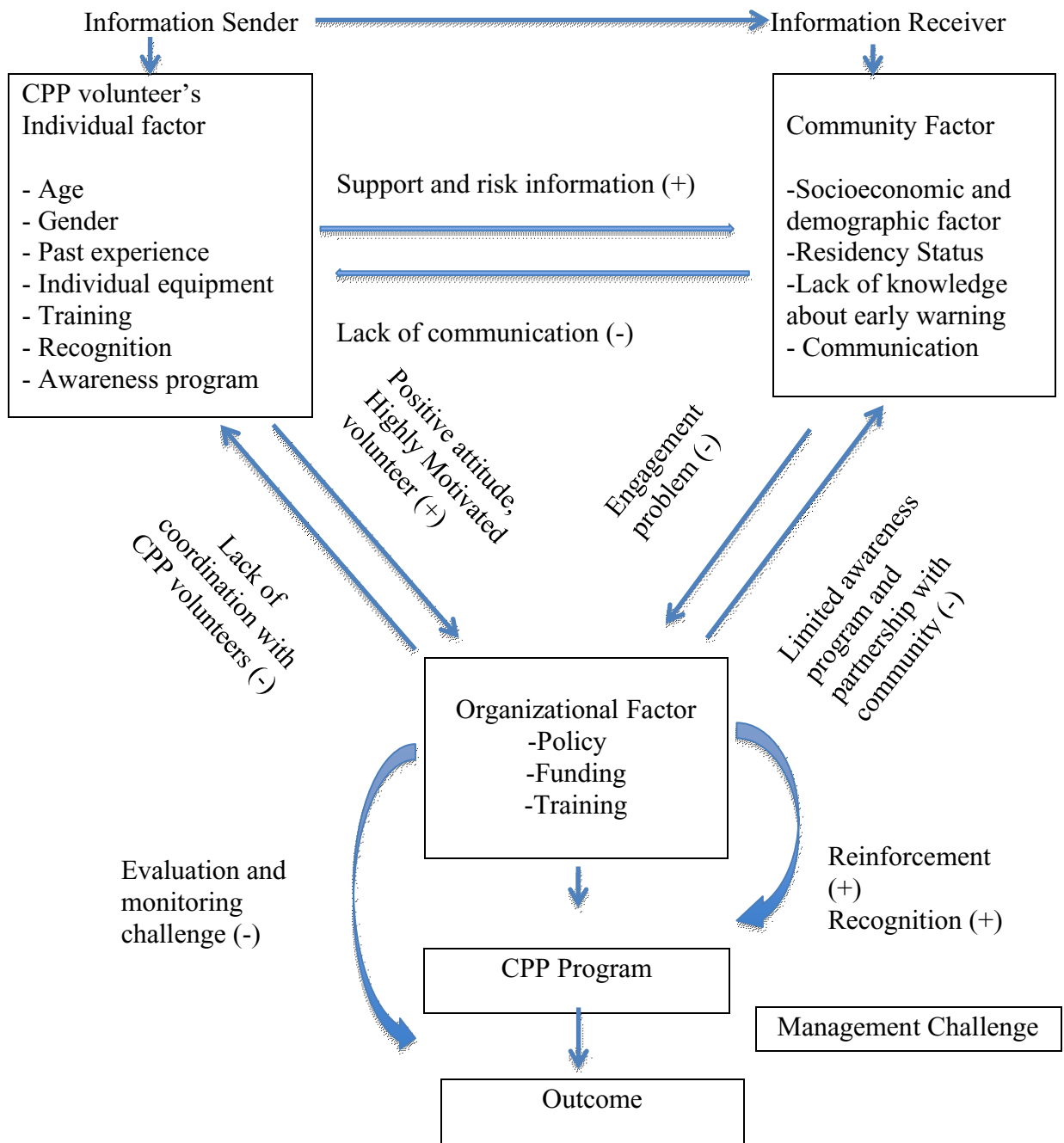
Figure 43: Conceptual Framework for factors associated the scope of CPP volunteer involvement and motivation

Source: (Created by author)

9.2.1. CPP volunteers' Individual factors

In this study, it is found that people with a better knowledge of emergencies are more likely to be willing to volunteer. Indeed, knowledge and skills are deemed as key factors in influencing human behaviors in several behavioral investigations. Training and education are perhaps the most commonly used strategy for improving knowledge and awareness (Shi.M. et.al; 2018). Evidence shows that age is the most consistent and strongest determinant of CPP volunteer's participation; emergency awareness campaigns appeared to be a significant factor influencing volunteering participation. But only nine male respondents had been exposed to emergency awareness campaigns over the past year. This level is very low. Those who did not received any training on search & rescue and first aid; they are still performing as a search and rescue member. So, it is not credible that these volunteers will be able to perform their assigned duties without a minimum level of training on the areas of their liability. In the USA, for example, the CERT programme was established in 1985, recognizing the fact that disaster survivors are likely to be on their own at the early stage of a disaster and they need to be prepared to help themselves (CERT, 2020). Developed country like Germany, Australia and some other countries have also established an emergency training system on emergency volunteering services. Emergency preparedness training can result in knowledge gains and shifts attitudes towards volunteering (Johnson, 2014). Therefore, training is one of the options for improving motivation of the volunteers. CPP volunteers suggested that, sharing practical experiences of old/experienced volunteers and arranging documentary film show of the past devastated cyclone scenarios through multimedia during training can enhance motivation of new volunteers.

Also volunteers past experience of emergencies is associated with higher willingness to volunteerism. This is perhaps because these people have developed a better understanding of the need for community. Emergency experience may prompt people to become more proactive in acquiring the knowledge and skills associated

with an emergency response. Previous studies identified 30–50 years as the most active age for volunteering. Smith argues that this may be due to the rising socioeconomic status of middle-aged people. The results of this study showed that participation in emergency volunteering is higher for men and a positive aspect that young generation (male and female) involvement in CPP program is higher. Volunteers who have positive perceptions of the supervision, communication, and support they receive from the organization volunteer more hours and are more likely to continue volunteering operational time. The commitment of CPP volunteers to help others was an ultimate sacrifice that took the lives of 26 volunteers at the height of their mission. The tragedy was a lesson learnt for the BDRCS and the volunteers to put top priority the safety and security of their own ranks for their protection. In Bangladesh CPP program male volunteers are more responsible to visit every individual household to provide person-to-person evacuation order information. In the focused group discussion, it is also found that female volunteer volunteers were not given the raincoats or any safety equipment's during early warning dissemination and rescue operation. That's a one-reason female volunteer performance is less than the male volunteers in operational time. The CPP volunteers feels that the addition of female volunteers to the CPP program helps address vulnerability of women and helps them to mobilize during a cyclone.

In this study, it is found that recognition of responsibility is a significant predictor of willingness to participation in volunteering. Amin paper also claim that in the past there was a provision of providing certificate, medal and honorarium to the best volunteers, which encouraged other volunteers to perform, better. Few CPP volunteers receive some recognition and rewards/awards for his outstanding efforts to save people. However, this is not the usual practice. CPP volunteers think that the issuing Identification card/ dress code would enhance their motivation because and people can easily recognize them.

9.2.2. Community Factors

Development of a disaster risk management plan at community level is also important to clarify the role of each actor in both normal occasion and emergency time. The CPP volunteers and community people realized that volunteerism is beneficial for both the parties. The factors that positively affect volunteerism are their firm belief on religious and social responsibilities, their past experience of cyclone 1970, 1991 and 2007, appreciation from community people, enhancement of their social dignity, positive behavior of CPP officials. Previous studies conducted in several western countries showed that people who have a strong consciousness of neighborhood and a sense of belonging to community are most likely to participate in community volunteering activities. (Taniguchi, 2014). Social relations based on trust and solidarity can encourage emergency volunteering (Hofferth, 1998). Studies have found that people's lower degree of contact with CPP volunteers also appeared to restrain them from relying on warning messages. Demographic factor education level of the household heads is significantly positively correlated with degree of early warning receiving and understanding the warning flag system. The percentage is higher those who are educated and know the cyclone warning flags system. ($p>0.05$, Table 19). It is also mentionable that rural residents are more likely to be willing to volunteer and participate in volunteering than their urban counterparts. It has been widely accepted that rural residents have a stronger bond and sense of community than their urban counterparts (Shi.M. et.al; 2017). This is no exception in Bangladesh. About half of the respondents of the community questionnaire survey responded there was no evacuation drill. Even if there were evacuation drills, the frequency was about once a year in many cases Community also recommended conducting evacuation drills based on the plan along with multiple possible scenarios.

These two communities somehow have the knowledge and capacity of early warning system and coping strategy but accessing to the information is quite a challenge for them. Nowadays, the information is widespread through social media as well as internet especially in the case of disaster, which at times due to climate change

that caused frequent cyclone or flood. They could get the information until it had been translated to the local language while the information sharing in Bangladesh delivered primarily in Bangla and English. The knowledge of local people to understand and access the information through technology is very important yet, their knowledge to access the technology is either still limited or none. The informal talk with one of the housewives in Koyra community, she said:

"I do not have phone to access Internet and understand about what happen in the world, until it happened. Even though I have, I do not think I know how to use it as I'm only educated until 2nd Grade. Mainly, I get information through radio or announcement from village CPP volunteers".

Even though, they have some knowledge of early warning system, yet it is found that the local capacity and knowledge in these two communities is uneven. Regarding to the interview with local authorities including community elected person, and relevant people, the coping abilities is still limited. In this scenario, meaning that even people knew that in that area's cyclone happened every year but they do not give important about evacuation in order to reduce risk once the cyclone hit.

9.2.3. Organizational Factors

Organizational features affect volunteers' structural behavior and their experience in the organization (Pearce 1993). Many researchers agree that most volunteers find heavily bureaucratic structures rigid and alienating, and volunteers tend to thrive in more adaptive structures. Yet volunteers need some well-defined organizational structures (Nesbit et, al. 2018) to reduce role ambiguity. The financial ability and resources of the organization's capacity to deliver services affect decisions about volunteer involvement and sustain the program. Fiscal pressures can impel leaders to find low-cost alternatives for service delivery. The factors that put negative impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/CPP officials. Inadequate training, capacity building and equipment for performing their duties. The CPP stated that the government has their own disaster management policies and they own objectives in line with

government policies. The recent policies, as outlined by the CPP, include educating school children, religious leaders and village leaders. The government wants to disseminate information and empower people to decrease life/property loss. However, the CPP feels that the current early warning system does not adequately address local vulnerability, as the warning system is a 100-year-old British system that emphasizes boats and ships rather than coastal people (Amin, 2012). The CPP does acknowledge that there is a new system being formulated, although it is being implemented in the field level. This new system will be more human oriented and will state information regarding tidal surge, the areas that will be affected and what those villagers should do in response. Community sustainable living and they need capacity building, as increased capacity will decrease loss. The vulnerability of communities is the main problem. This vulnerability stems from people being poor and staying on the land, or settling in areas beyond the embankments, because they cannot afford land in a better area (Tiffany 2012). There are no shelters or embankments. CPP participation is also hindered by the lack of proper individual equipment and safety issues. Volunteers become discouraged when they are provided with megaphones, but are expected to purchase the batteries for these megaphones with the limited resources they have for personal use. A lack of functioning equipment makes it difficult for volunteers to disseminate warnings, and can sometimes cause them to choose to leave with their families, rather than stay and help out. Proper equipment is needed, not only to increase volunteer participation, but also to ensure complete and timely dissemination of the early warnings. Unfortunately, equipment maintenance is one more issue that needs to be addressed by an increase in budget, although there are no resources available to fulfill this need. It is also found that there is no specific monitoring and evaluation system of CPP program. Evaluating the Program provides the ultimate justification for a volunteer program. Brudney (1996) defines evaluation as *"collecting systematic information on the processes and results of the volunteer program and applying these data toward program assessment and, hopefully, program improvement." To evaluate the effectiveness of volunteer involvement, it is import to*

focusing on three target audiences: the clients or intended beneficiaries of the volunteer program, internal constituencies, and the volunteers themselves". The BDRCS society officials also mention that sometimes, it is very hard to maintain volunteers organization with a small amount of funds being given by government. Another organization BCAS states that while there is union disaster management committee within each village, designed to disseminate cyclone early warnings, they are generally, actually not functional. There is a lack of accountability, as well as a lack of finances, logistics and training. They state that "everyone's responsibility is no ones' responsibility" (Tiffany, 2012). It is also found that CPP unit leaders have a wireless set, many of them are not functional.

It is necessary to engage local government and community in disaster risk reduction. If local stakeholders are not engaged in the disaster risk mitigation design, implementation and management of disaster risk reduction then the resulting policies, strategies and plans have limited chance to suit with the local conditions. Similarly, if local community and organizations are not considered as stakeholders in the management of facilities and infrastructure then there is little chance to be implemented. For example, if the local community is not involved in post disaster situation in Great Hanshin-Awaji Earthquake, Kobe, Japan in 1995 smooth recovery and reconstruction of the total area would not have been possible (Khan & Rahman, 2007).

9.3. Findings

Based on findings it is evidence that CPP volunteers (male and female) performance and motivation depend on the factors like their age, individual experiences, social responsibilities (p-value is 0.05). The factors that put a negative impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/ CPP officials, no or inadequate training and equipment for performing their duties. It has also been found that volunteer's satisfaction has been related to Bangladesh Red Crescent society's involvement. Usually, during normal time there is no communication between BDRCS and CPP

volunteer. It is observed that male volunteers are received training rather than female. Some of the CPP volunteers working as a volunteer without received any training. There is a good number of male volunteers getting the recognition for their relief work, however female volunteers expressed their powerlessness and opportunities for less management capacity in public work.

This study showed that female volunteers are less likely to deploy in the event of a disaster. That indicate that male volunteers are more willing to participate to disseminate the early warning information. It is also found that, female volunteers did not receive any safety equipment from BDRCS; for example (Gumboot, Lifesaving jackets). Consequently, it indicates the gender discrimination.

The socioeconomic factors occupation also affects volunteer's motivation. It has been found that volunteers who are lower class in terms of their socio-economic status have a lower voice and cannot take the lead.

The research found that socio demographic factors such as education, occupation impact the awareness of the risk and the ability to prepare for the risk reduction. Especially education levels have a significant influence on understanding the flag system. It also shows that demographic factor gender has a significant influence on understanding the flag system and take the decision for safe places. (p-value is 0.00 It is an important factor in disaster risk reduction). Those who educated they are more likely to have a positive attitude toward damage prevention.

Another factor gender variable women do know about the cyclone early warning signal dissemination. But unfortunately, they cannot interpret them due to lack of proper knowledge. About 58 people, those are illiterate do not know anything about warning flag system signals. Correlation between lack of education and lack of knowledge about early warning signal is highly significant (p-value is 0.00). Finally, they had to wait for someone who will tell them about the existing early warning and preparation need to be taken.

Socio economic factor occupation plays a significant factor to understanding the flags early warning system activities by CPP volunteers. This issue is especially

for Fishermen. The rate is 100%. It should be noted that fishermen go for fishing in the deep-sea areas. Except radios, the flag's warning system is the only source they get the cyclone early warning information.

One of the important aspect's evacuation drills is not satisfactory in both study areas. The results shows that both communities were found to be highly vulnerable to cyclones as they had never received any disaster drills and minimal community awareness about preparedness before and during disaster. In Koyra 26% and 39% in Ukhiya respondents have knowledge about disaster drills where majority of 74% in Koyra and Ukhiya 61 percent do not have knowledge about disaster drills. That means both areas not enough drill was conducted.

It is found that most of the existing access roads are made of earthen materials, which became muddy and slippery during rainy seasons and people especially vulnerable women and children face very difficult to reach the nearby shelter by using them. It is also noticed that most of the household is located in such a place from where it will take around 30/40 minutes to reach to a nearby shelter, however, sometimes it takes more time due to unfavorable condition of road and weather during the cyclone.

9.4. Theoretical Implication

The findings of this study add to the literature on community-based volunteers' leadership, communication with communities in the context of community-based disaster management. On the basis of the findings, this study makes several specific theoretical contributions. The study highlights that, regular contact with CPP volunteers appeared to restrain community from relying on warning messages. In other words, a connection/communication with CPP volunteers makes households with preparedness, an understanding of early warning messages, reliability on the received warning signal.

The thesis also highlighted the importance of volunteers. Regardless of CPP volunteers' status, individuals can face various life cycle risks (e.g., poverty, injury). The analytical challenge that we must thus address is how volunteers face life events such as poverty, retirement which can affects their motivation and participation.

CPP program identity acts as a mediator between local government and community in terms of receiving the early warning information. The study leads to the conclusion that volunteer organization like CPP could also significantly contribute higher evacuation rate in the coastal belt of Bangladesh by networking with community, government and NGO.

9.5. Recommendations

The research founds that the Bangladesh Meteorological Department works very conscientiously at continually providing forecasts and early warnings through TV and radio. However, present survey data shows that dissemination of cyclone early warnings information did not reach to all vulnerable populations. There are still some critical issues in evacuation response. Firstly, in some areas, Cyclone Preparedness Program volunteers are unable to disseminate warning information timely because of their limitation, such as; lack of human resources, lack of modern gears, and have a poor transport system to reach remote areas. Secondly, as most residents in coastal areas of Bangladesh are low-income people and have limited access to radio or television. Therefore, they have to totally depend on CPP volunteer's information. To improve the situation the specific suggestions made are detailed below:

9.5.1. Improve the early warning communication system

The Standing Order on Disaster (SOD) is the main pillar of cyclone disaster policies at all levels of government. The SOD mandates all responses by all involved parties at every part of pre disaster response to during cyclone actions. According to the SOD, during great danger, BMD should issue warnings at least 10 hours before for the signal recognized as "Great Danger". Based on the results of the survey, most of CPPs reported it took 3-6 hours to disseminate warnings to community people. Therefore, a lead-time of 10 hours is adequate for warning dissemination. In order to disseminate warnings to isolated and remote areas, the lead-time should be longer or the rate of warning dissemination should be shortened.

9.5.2. Need to disseminate accurate disaster information of BMD

Cyclones and storm surges are recurrent hazards in coastal Bangladesh,

causing significant property damage and total disruption of development activities of the country almost every year. The signaling system was made for maritime ports to let them know about the weather events; as a result, it is difficult for general people to understand. When the flags are shown, people may use their perception to understand that the intensity and severity of the hazard event is increasing but they don't know the depth of the signals. When the signals are provided, it is sometime very technical for coastal people to understand because knowing the wind speed doesn't help them much. The signals don't give them proper indication of when to evacuate, when to take shelter or when to stay inside their houses. These clarifications are required to make a warning system more effective. It must be appreciated that Cyclone Preparedness Programme (CPP) is doing an excellent job in making people understand the cyclone early warning system. They provide the information and orient people about the cyclone signals and warning flags, which make people more familiar with the system. Even then, it must be noted that, not everyone is a recipient of the orientation and thus confusions shall remain as long as it is not generalized for random people reaching a wider population. On top of that the entire coastal community is not under the CPP coverage. The number of CPP volunteers is also not adequate to cover all of the coastal communities. CPP volunteers send the warning messages and evacuate people to the safe shelters. But sometimes it is difficult to reach the people because of rough weather and lack of transportation and communication system. The flags are not visible during night and are easily adrift during high wind speed.

9.5.3. Capacity Building/Training

Most of the new recruited volunteers are working without any formal training on Early Warning, Search and Rescue, First Aid or other relevant issues. Those who have received are also before more than 15 years and meanwhile many of them have forgotten the learning. In fact, during 1997-2008, there were very few initiatives taken related to capacity building of the volunteers due to lack of funding and donor support (IFRC, 2017). Both study areas some of CPP volunteers working without receive any training. However, Bangladesh Red Crescent Society at least needs to train the CPP

unit leaders so that they can cope with difficult situation.

9.5.4. Operational Manual

The interview survey with government and CPP, it is revealed they faced some remaining challenges related to volunteer activities. First, it was difficult to take appropriate and prompt action in an emergency situation where no operational manual was available and unexpected events occurred one after another. That's the one reason some people receive evacuation information early and some people not. CPP volunteer's just follow the upper level authorizes decision. So, government should introduce an operational manual for CPP volunteers.

9.5.5. Operational equipment and individual equipment's for CPP

CPP provided early warning equipment (megaphone, siren, etc.), gears for volunteers for disseminating early warning signals and other materials for first aid and rescue operations. CPP provides priority to warning, rescue and first aid groups for volunteers' gear (personal items like hardhead/helmet, gumboot, raincoat, life jacket, torch light etc.) distribution due to resources limitation than demand. So again, shelter and relief group volunteers are deprived. The participation during disaster and motivation level of volunteers who got training and volunteers gear items is better than other two groups. The volunteers and the CPP officials informed that the Government of Bangladesh has decided to provide life jacket to all volunteers which will help to increase motivation on the volunteers. Following are the current status of materials and equipment of CPP volunteers. The amount of equipment for CPP volunteer is not sufficient. Local CPP volunteer require necessary equipment's like mike, siren, bicycle. It is needed to equip the local CPP volunteer well with these equipment's for timely and effective cyclone early warning signal dissemination. HF and VHF radio station need to activate on 24/7 basis so that timely cyclone early warning signal dissemination will be succeeded with proper support from CPP volunteer

9.5.6. Involvement of CPP volunteers in planning

Local government should conduct regular workshops and training for all CPP unit leaders on the importance of community volunteers and the importance of their

participation in Bangladesh Red Crescent Society projects, so that volunteers may get maximum support from other stakeholders. Maximum support for volunteers would ensure their motivation, commitment and dedication towards community work. CPP volunteers should be consulted and involved in decision making, especially on issues that affect them, and also increase their autonomy and control over their work in order to motivate them to become more productive, show commitment and draw satisfaction from their work. This will assist in retaining volunteers to the organization.

9.5.7. Networking with other organizations

There is many NGO's working at Koyra and Ukhiya Upazila in DRR projects and they have their own volunteer. Through, building cooperative relationships among various local resources in normal times, activities in times of disaster can be carried out more smoothly and long-term assistance can be provided to affected areas. The acquired disaster experience and knowledge it will be necessary to create regional cooperative relationships with outside organizations and group.

9.5.8. Introduce skill-based volunteerism

CPP events, such as refresher training and awareness-raising events, are held under short-term projects funded for specific activities, and keeping CPP volunteers engaged, motivated and committed between hazardous events is a challenge. To face these challenges, need to introduce an innovative approach called "skilled volunteerism". In this approach a person will skilled both in disaster management and in a livelihood option. The skilled volunteer provides voluntary service during emergencies and disasters. In non-disaster periods, the same individual provides technical services to their community. As a result, volunteers are involved in year-round engagement, enhance their bonds with the community and improve their own and their community's resilience. The skilled volunteer model needs to be customized to match the CPP's current vision, mandates and values. The governments of the cyclone preparedness programme and union disaster management committee should give priority this type of approach to increase volunteerism in the coastal areas.

9.5.9. Recognition of CPP volunteers

In this study, it is found that recognition of responsibility is a significant factor of willingness to volunteer and participation in volunteering. Recognition of responsibility refers to the individual's understanding, emotion and belief of social responsibility as well as their subconscious attitude to assume obligation and responsibility, which can help volunteering to become a normalized activity. However, a low level of recognition of responsibility (82% male and 18% female volunteer) was showed among the study participants. Bangladesh Red Crescent society or local government can recognize volunteers by acknowledging their individual contribution.

10. CHAPTER X: Conclusions

10.1. Conclusion

In Bangladesh, Cyclone Preparedness Programme (CPP) volunteers are gradually being the most reliable source of gets warning information and helping hand for communities to evacuate the cyclone shelter. The Upazila level government is responsible for organizing, opening the local control room, and ensuring that local CPP is properly informed of the level of warning. CPP has wide acceptance among the community people in coastal regions. They provide door-to-door information and can reach the community before any other organizations. According to the data, in Koyra Upazila 43% and 37% of respondents in Ukhiya Upazila received cyclone warnings and evacuation orders from CPP volunteers, who disseminate the information door to door. Approximately 25% in Koyra and 29% of respondents received evacuation orders from the radio. The remaining evacuation information was received through mosques, TV, BMD, and NGO staff.

The study also revealed that the community did not understand the cyclone early warning signal system properly. Still, there is a gap between from provider and receiver sides. One of the most important noticeable issues is the language problem. The cyclone warnings are usually broadcasted in the official language (Bangla) in Bangladesh, which was not always understood by the people in the coastal belt's areas. The people of Ukhiya 30% of respondents answer that they cannot interpret the language announced by CPP. Because the ethnic community has its dialects. Also, those who are not educated well cannot interpret the warning message. This could be either due to the lack of knowledge of the community members about the disaster or the government did not handle it the proper way.

It is found that the volunteer's activities varied by their age, education, individual experience, training, individual equipment, awareness campaign, recognition of responsibilities, and insurance coverage. The factors that put a negative impact on their motivation are lack of coordination meetings among the general volunteers and volunteer leader/ CPP officials, no or inadequate training and equipment for performing their duties. Both Koyra 58 % and Ukhiya 42% of

volunteers mention that because of poor road network; it takes longer time to dissemination the information. According to the volunteer's explanation, the Koyra sub-district road network is worse than the Ukhiya sub-district. CPP volunteers generally walk to every household to give the evacuation information and suggest evacuating to the nearest public cyclone shelters. During cyclone Mohasen, an issue from the district level is delayed for 2-3 hours than CPP to Upazila level due to time for getting the permission of delivering information in each level. Both 57% in Koyra and 43% in Ukhiya sub-district volunteer state the number of equipment is insufficient during an emergency. Some of the equipment's are very old and unusable during search and rescue. The study also reveals that, those who did not received any training on search & rescue and first aid; they are still performing as a search and rescue member. So, it is not credible that these volunteers will be able to perform their assigned duties without a minimum level of training on the areas of their liability.

A conceptual framework (figure 44) of the local network has been developed to find out the relation between among the groups.
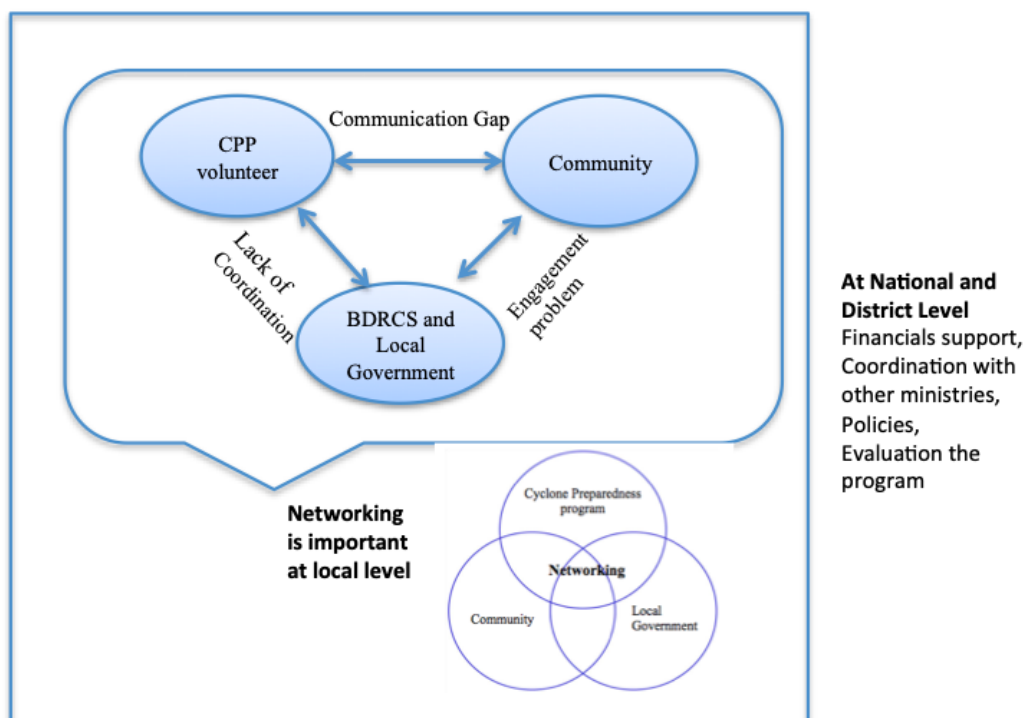

Figure 44: The relationship among CPP volunteer, Community and Organization
Source: (Created by author)

The above framework suggests that networking at the Upazila level among CPP, Community, and local government plays an important role in the success of the program. Individual stakeholders (Community, CPP & local government) continue to make significant contributions but multiplier effects are still missing. The networking process, especially during normal periods, is expected to results in the shift of pre-disaster risk management. CPP program is mainly active at Upazila level. Each Upazila have unit team leader and five groups for warning, rescue, first aid, shelters and relief. Upazila office control entire voluntary system become more functional and help to sustain volunteers' motivation. CPP organize meeting at unit, union and Upazila committee levels but not regular. Organize periodic trainings for volunteers, and also organize rally and demonstration/ cyclone simulation by volunteers for raising awareness at the community level. Based on the findings about 70% CPP male and female volunteers received the basic training. However, 30% have not received any training at all. They are working as a volunteer without any training. Systematic training is essential for persons in charge of unit leader in the Upazila level. Establishing an information transmission system needs improvement of reliability. As a challenge for information dissemination, it is needed to develop the capacity of local CPP leaders at the Upazila level in order to properly understand the meteorological information provided by BMD, and disseminate accurate information to all residents.

It is found that both Koyra and Ukhiya Upazila, there is no strong communication between the different local government and community in disaster preparedness. Evacuation drills are not satisfactory in both study areas. In Koyra 67% and Ukhiya 68% of respondents said they never participate any disaster drill. Regarding disaster preparedness program, 64% in Koyra and 56% in Ukhiya Upazila respondent do not have any idea about this. On the other hand, studies have found people's lower degree of contact with CPP volunteers also appeared to restrain them from relying on warning messages. It has been found that Koyra (62%) community has good communication skills with CPP volunteers rather than the Ukhiya (39%) community. It is mentionable that after 2007 many cyclones hit Koyra, hence the

community becomes more aware than before. They try to contact CPP volunteers regularly, especially during cyclone session time, to know the preparedness and awareness program. More frequent contact with CPP volunteers than their counterparts. In other words, a communication with CPP volunteers makes households with preparedness, an understanding of early warning messages, reliability on the received warning signal. The weakness in these areas lies in the fact that not all vulnerable communities receive an early warning. This is not only due a lack of partnerships, but more accurately, early warning information access to during a cyclone. It should be recommended that roads and local infrastructure need strengthening, not the partnerships that create the initial warnings.

It has also been observed that there is no specific monitoring and evaluation process of CPP program volunteer's activities from BDRCS and the Local Government. A lack of funding is the limiting factor in capacity building and enabling CPP volunteers. It is important to ensure accountability of volunteers to the next higher level through monitoring at all levels from head office to village level CPP units, which help to sustain the program.

CPP program identity acts as a mediator between local government and community in terms of receiving the early warning information. From the discussion, the CPP has introduced wide-ranging programs, and integrated approach in disaster management in their course of action. But in the absence of proper coordination, ensure the early warning information to all vulnerable community still remains. The existing condition of the both study area is not fit for proper preparedness activities and incapable of reduce the impact of devastating cyclone in significant amount due to lack of knowledge, awareness and capabilities. The study area Koyra and Ukhiya needs a Upazila level community-based disaster preparedness plan with coordination between CPP program and community. If the communities are mobilized and capable of accessibility their own risk through participatory work with local government, and might be set up their own preparedness and evacuation plans. This could then be managed with significant reduction of loss of life. After ensuing large scale

awareness program among locals along with capacity building of the responsible authorities as well as increasing facilities for vulnerable groups can only change the current scenario and finally it can be expected to have a disaster resilient community at both study areas. An educational campaign by government is needed in the coastal areas to understand the early warning message properly. The Bangladesh government in cooperation with other related ministries should initiate large-scale projects for infrastructural development in the coastal areas.

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Annex - A

Identifying the factors, challenges and limitations that enable CPP volunteers to perform best in early warning dissemination time

Questionnaires for CPP volunteer

Date:

Upazila: …   Union:………

Part 1: General Information

1. Name: ………………………………………………………………

2. Gender: □ Male   □ Female

3. Age: …………………………………Years old

4. What is the occupation?

    □ Fisherman   □ Day labor   □ Teacher

    □ Farmer   □ Small Business   □ Students

    □ Unemployed   □ Housewife   □ Others

5. What is your education level?

    □ Illiterate   □ Primary School   □ Secondary

    □ Higher   Secondary   □ College   □ University

6. How many years you are working as a CPP volunteers?

    ………………………………………………………………………………..

Part 2: Disaster experiences and current activities

7. Would you kindly share your experiences working as volunteer during recent/last disasters?

    i)   ………………………………………………………………….....

    ii)   …………………………………………………………………………

8. How did you and other volunteers disseminate messages to the community? (Multiple Ans)

    □ Door-to-Door   □   Miking   □ Provide relief

    □ Help to evacuate   □   Provide Frist aid   □ Others

9. Which equipment's and network were used?

………………………………………………………………………………

10. Does the flag system function for the Community? If yes, how is it working and how could we make it more effective?

………………………………………………………………………………

11. If No, why

………………………………………………………………………………..

12. Are there any risks/ threats of volunteers during their performance?

□ Yes   □ No

13. If yes, what are they?

i)…………………………………………………………………………..

14. What are the ways to reduce those risks/ threats?

…………………………………………………………………………….

15. Whether CPP volunteers maintain the cyclone shelter?

□ Yes   □   No

16. What are challenges CPP volunteers faced during disaster?

□ Lack of equipment's (Mike, Siren, Boat etc)   □ Lack of Manpower's

□ Lack of Communication & transports   □ Mobile network

□ Road network   □ Others

Part 3: Capacity Building/ Awareness

17. What are the reasons for being volunteers in CPP

□ Social responsibility   □ Honorable activity

□ To protect my community   □ Humanity purpose   □ Others

18. What is your role in terms of early warning messaging and information dissemination for cyclone preparedness?

i)…………………………………………………………………………

19. What do you do if there is no cyclone signal/normal time as a CPP volunteer?

□ Communication with other CPP member's   □ Drill

□ Training   □ Hazard mapping   □ No communication

20. Do you have the list of vulnerable people in your area?

□ Yes   □ No

21. How many times do you meet with others members?

    □ Once a week   □ 1-3 months   □ 3-6 months

    □ During disaster time   □ Never

22. Do you understand signal & flag system properly?

    □ Yes   □ No

23. Do you get any training from Government office or BDRCS?

    □ Yes   □ No

24. If yes, what kind of training?

    □ Basic   □ Capacity building   □ First aid   □ Others

25. Do you follow any manual?

    □ Yes   □ No

26. Do you involve any kind of decision-making process? (ex: Planning for drill, simulation, framework etc)?

    …………………………………………………………………………

27. What is your practical experience about the strength and challenges of the existing communication mode(s) (please provide specific examples)?

Early Warning Related		
Methods	Advantages	Limitaion
Displaying the warning flags		
Disseminating warning through CPP volunteers		
Announcement from Mosque's mike		
Using Hand Siren		
By Hand Mike announcement		
Route direction to cyclone shelter		

Part 4: Internal and external Issues

28.   Are there any differences between the roles of male and female volunteers? If yes, what are they?

………………………………………………………………………………

29.   What are the internal (organizational–CPP) factors that affect your volunteerism?

………………………………………………………………………………

30.   What are the external (social) factors that affect your volunteerism?

……………………………………………………………………………….

31.   Do you get any intensives or compensation from Government?

□ Yes   □ No

32.   Are there any GO/NGO volunteers except CPP in this area? If yes, what are the differences between CPP and other GO/NGO volunteers, if any

………………………………………………………………………………

33.   Challenges for CPP (Multiple Ans)

□ Lack of Manpower   □ Lack of regular training   □ Budget

□ Lack of equipment's   □ Social problem

□ Lack of communication □ Lack of others support   □ Others

34.   Any coordination with other origination?

i)………………………………………………………………….

35.   What is your suggestion to improve further motivation of volunteers that affects volunteerism?

…………………………………………………………………..

36: Share your experience (Optional)

Annex - B

Graduate School of International Cooperation Studies
Kobe University, Japan

Analysis on whether disaster-prone communities receive weather forecasting and early warning in a timely manner by CPP Volunteers

Questionnaires for Community:

Date:

Upazila:…………………   Union:………

1. Household information
   Name of Interviewee:..

Code No.	Name	Relation with HH	Age	Sex	Marital status	Education	Working Status
I	II	III	IV	V	VI	VII	VIII

III Relations	**V Sex**	**IV Marital Status**	**VII Education**	**VIII Working Status**
1=Husband/Wife 2=Father 3=Mother 4=Son 5=Daughter 6=Grandson 7=Granddaughter 8= Others	1=Male 2=Female	1=Unmarried 2=Married 3=Divorced 4=Widow 5=Separated	1=Illiterate 2=1-10class 3=SSC 4=HSC 5=Honors 6=Masters 7=Other (Specify)	1=Earning member 2=Housewife 3=Household work 4=Student 5=Old 6=Disable 7=Infant 8=Unemployed

2. Road Condition of your area:

   ☐ Paccka   ☐ Kaccha   ☐ Semi Paccka

3. Types of House

   ☐ Earth   ☐ Brick   ☐ Wood   ☐Bamboo

   ☐ Tin   ☐ Tally   ☐ Leaf   ☐ Others

4. Do you know about cyclone early warning signals?

    ☐ Yes   ☐ No

5. What are the preparations do you take after get the early warning signal?

  i)…………………………………….

6. What is the source of you getting early warning/ signal information about Cyclone?

Medium of receiving information	Remarks
TV	
Radio	
CPP Volunteers	
NGO's volunteers	
Others	

7. Do you understand the meaning of early warning signal declared by CPP volunteer using by megaphone?

             ☐ Yes   ☐ No

8. If No. Why

     (Specify)…………………………………………………………………..

9. Do you know the flag system and signal system understandable for you?

        ☐ Yes   ☐ No   ☐ No idea

10. Does everyone in your community understand this?

…………………………………………………………………………………………..

11. Do you know who is the CPP volunteer in your community/area?

      ☐ Yes   ☐ No

12. Do you have contact with CPP volunteers? How frequent?

      ☐ Yes   ☐ No

13. If Yes, then how many times…………………………

Contact	Contact every month	Contact 2-6 months	4-6months	Yearly once	Never Contact
Count					

14. Any discussion with CPP volunteer regarding disaster preparedness?

   ☐ Yes   ☐ No

15. How many hours before usually CPP volunteer delivered pre-disaster warning information?

	Never	24-48 hours Before	16-24 hours Before	8-16 hours Before	Less than 8 Before
% Yes					

16. Level of satisfaction or dissatisfaction of CPP volunteer's activities during disaster?

□ Fully Satisfied   □ partially satisfied   □ Not satisfied at all

17. If Not Satisfied (Why)?

………………………………………………………………………………………

18. What is your practical experience about the strength and challenges of the existing communication mode(s) by CPP (please provide specific examples)?

Early Warning Related		
Methods	. Advantages	. Limitation
Displaying the warning flags	.	. .
Disseminating warning through CPP volunteers		
Announcement from Mosque's mike	. .	…
Using Hand Siren		
By Hand Mike announcement		
Route direction to cyclone shelter		

19. How many times disaster drill organized by CPP in your locality?
     □ Yes   □   No

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If yes ....

	Once a month	Once every two months	Once every 6 Months	Once a year	Irregular	Never
% Yes						

20. Do your children know about cyclone preparedness and CPP members?

☐ Yes   ☐   No

21. Whether CPP volunteers give any idea about easy and safe way to go to shelter?

☐ Yes   ☐   No   ☐ Sometimes   ☐ No idea   ☐ Not necessary

22. How much time to reach nearby Shelter?
         ☐ 0-10 min   ☐   11-20   ☐ 21-30   ☐ 31-40
         ☐ 41-50   ☐   51-60   ☐ Over 60

23. How do you see the CPP male and female volunteers' work in disasters keeping their lives at risk?
     …………………………………………………………………………………

24. What more CPP volunteer can do for you during cyclone?

     ……………………………………………………………………………………………
25. What are the differences between CPP volunteers and other GO/NGO volunteers, if any?

………………………………………………………………………………………
26. How did you/ community be benefitted from the voluntary services during non-disaster period?

     …………………………………………………………………………………

27. Did you see any measures adopted in the last five years in enhancing awareness on DRR in your locality by CPP?
……………………………………………………………………………………….

28: Share your Experience (Optional)

29: Opinion:………………

Glossary

District: An administrative unit comprising a number of thanas under of a Deputy commissioner.

Upazila (Sub-District): Administrative unit under a district comprising several unions under a district (BBS, 2011).

Thana: Administrative area within metropolitan city.

Union Parisad: Local government at Union level

Village: Lowest rural geographic unit either equivalent to a mauza or port of mauza.

Mauza: Smallest revenue geographic unit having jurisdiction list number

Shobo-dan: A typical community–based fire brigades' organization in Japan is called "Shobodan" (volunteer fire corps).