

Duck, Cover and Hold: Risk Communication of the National and Local DRRM for Earthquake Preparedness on West Valley Fault in Marikina City

GARY ANTONIO C. LIRIO

Faculty, College of Science
Polytechnic University of the Philippines
Philippines

RACIDON P. BERNARTE

Faculty, College of Communication
Polytechnic University of the Philippines
Philippines

JESSICA A. EVANGELIO

RINA F. FENELLERE

CAMILLE L. SANTOS

CHERRY MAE A. SIBAYAN

Abstract:

The study aimed to know the action plan of PHIVOLCS, NDRRMC and LGU of Marikina and the process of communication between these risk assessors; and how the Barangay Disaster Risk Reduction and Management Council of Tumana, Barangka, Malanday and Industrial Valley Complex relay knowledge acquired from national agencies and local government among residents. The researchers used Descriptive Design and employed Qualitative Approach to know how coordination works from the very source of information to the affected ones; including the formulation of the necessary action plan and the execution of projects and programs. Primary data was collected through In-Depth Interview of the risk assessors and Focused Group Discussion consisted of eight participants from the affected residents. The informants and participants were selected using Expert Sampling under Purposive Sampling and Snowball Sampling. Results revealed that the communication started from PHIVOLCS when the West Valley Fault was discovered and relayed the information to the NDRMMC to

formulate the necessary action plan. PHIVOLCS then coordinated with the LGU of Marikina to turn over the hazard map. The projects and programs of these risk assessors were introduced to the Barangay DRRMCs through seminars and trainings, and the BDRRMCs are asked to disseminate the information to the residents. NDRRMC, aside from coordinating with Marikina City DRRMO, coordinates directly with the BDRRMCs and penetrate even the Homeowners Associations; MCDRRMO also coordinates with other concerned departments in the city. PHIVOLCS produces and distributes Information Education Campaign (IEC) materials to the LGU that they distribute to the residents. The BDRRMCs utilized different strategies for information dissemination including earthquake drills, distribution of IEC materials, and through social media; but only Barangay Tumana conducts seminars and exercises among residents. The researchers recommend the future researchers to utilize Participatory Action Research (PAR). The researchers may identify the general stance of the residents on the phenomenon and their involvement on the planning process, and if they acquire the recommended behavior after the implementation of the action plan.

Key words: Risk communication, earthquake, West Valley Fault, action plan, risk assessors, strategies, Marikina City, Philippines

Introduction

Belonging to the Pacific Ring of Fire, Philippines has been very prone to disasters. Marikina City, being a catch basin and one of the cities in Metro Manila sitting atop the West Valley Fault, is always at risk. It is the national government's assignment to look after the welfare and safety of the general public. That's why this study aims to answer the question, "How do the risk assessors (PHIVOLCS, NDRRMC and Marikina City LGU) communicate the risk of earthquake among transected Barangays of West Valley Fault in Marikina City to prevent worse outcome?"

Risk Communication is defined as the “process of exchanging information among interested parties about the nature, magnitude, significance, or control of a risk” (Covello, 1992). As used in the study, risk communication pertains to the communication process of the risk assessors, from PHIVOLCS and NDRRMC to the local government of Marikina City. That is to reduce the hazards of earthquake by properly coordinating with one another and coming up with a mitigation plan. The action plan is made to inform the public of the danger they face and what they could do to mitigate it.

This study can be a learning and helping tool for both the residents and the local government of Marikina in addressing the awareness of the people about disaster preparedness. More so, the study is a review on the risk communication management that the national and local government has done and been doing.

For further understanding, the researchers used the Theory of Diffusion of Innovation by Rogers Everett. The researchers supposed that the residents will eventually have to face their innovation-decision based on the messages delivered. The Diffusion of Innovation Theory attempts to explain the idea that, for good or bad, change can be promoted rather easily in a social system through a domino effect. Rogers developed a model as a tool for better understanding on how the residents decide on the innovation based on the strategies used by the risk assessors in the process of disseminating information.

Calamity like earthquake is unpredictable but if there is an organized and cooperative way of communication and approach between the local government and the citizens, the casualties may lessen or better yet, prevented. Moreover, this is what the study is most aiming for.

The prevention of natural phenomenon like earthquake is inevitable especially now that specialists have not yet invented equipment that can determine when it will occur.

However, the risks or damages that can be brought by this phenomenon could still be remedied and reduced. Studying this invaluable occurrence, the researchers highlighted the capacity of the authorities and even the general public to be vigilant, alert and attentive to this kind of event.

Methods

The study employed Qualitative Approach for the research design and Case Study as the tradition of inquiry. It was used to develop a deeper understanding of the West Valley Fault, earthquake occurrence, the need for disaster preparedness action plan and information dissemination strategies.

The researchers utilized In-depth Interview and Focus Group Discussion for the data collection. They conducted a comprehensive interview among informants from PHIVOLCS, NDRRMC, MCDRRMO, and Public Information Officers and Barangay Captains and BDRRMC Officials. They also performed a Focus Group Interview among the residents of Brgy. Tumana (8 participants) to validate the answers of their BDRRMC. These primary methods led to discussions that created an extensive and deeper understanding of the projects and programs for earthquake preparedness and the process of disseminating information to the residents.

Expert Sampling under Purposive Sampling and Snowball Sampling are the techniques used to determine the informants and the participants of the study. The informants, who are the risk assessors, have expertise in disasters and disaster/earthquake preparedness. The participants are residents in Barangay Tumana for not less than 20 years to assess their input on the information dissemination strategies and activities of the Barangay.

The researchers used an interview guide as the instrument for the study. With the consent of the informants

and participants, the researchers also used voice recorder, video camera and field notes to quickly and systematically document and record the information and responses shared by the informants and participants.

Results and discussion

Better Safe than Sorry: Action Plan of PHIVOLCS, NDRRMC and MCDRRMO

Programs and activities regarding disaster preparedness and risk reduction are made to exhibit the capacity of people, together with the government, in the community.

An action plan is created to protrude the conceptualized plan. It is composed of first, identifying humanitarian partners wherein they get to look at people or group and agencies for a series of activities about disaster. Second, review existing documents for preparedness and contingency plan. Third, organize meeting with partners and followed by organizing the final workshop then the disaster preparedness and awareness plan. Lastly, is the implementation of the action plan (Guidance Note Disaster Preparedness and Response Planning, 2011).

The Action Plan as made by Washington State Emergency Management Division (2009) is composed of different strategized activities. Seminars and lectures regarding disaster preparedness and awareness are held and attended by each representative of disaster agencies. They also cater the information through the use of information education campaign materials.

All national agencies have several different duties to fulfill. The PHIVOLCS and the NDRRMC are two of the national agencies responsible for taking care of the people's welfare in times of disasters and other disturbances. They formulate action plans to mitigate hazards and risks. Though disasters are products of the environment and uncontrollable by

human, its effects could still be reduced and minimized. Moreover, that is one enormous task for these national agencies to actualize and put into action.

Table (1) action plan of PHIVOLCS, NDRRMC and MDRRMO

Risk Assessors	Statement(s)
Dr. Arturo S. Daag (Philippine Institute of Seismology and Volcanology)	<p>Projects and Programs</p> <p><i>“...we have Walk the Fault activities in which we explain where the fault is, the damage estimation, vulnerability of the building. We coordinate with LGUs of different cities, and we conduct risk assessment.”</i></p> <p><i>“(We conducted) the Active Fault Mapping of Valley Fault, 1:5000 scale; Microtremor Study of Metro Manila which the study area is the entire Metro Manila; the Metro Manila Earthquake Impact Reduction Study by JICA; and the READY-GMMA Earthquake Risk Assessment.”</i></p>
	<p>Seminars and lectures; drills, exercises, and trainings</p> <p><i>“It is us (who conduct seminars/lectures) together with the technical team and the regional director when we do project based activities.”</i></p>
	<p>IEC Materials</p> <p><i>“Ah, we conduct earthquake drills and then IECs, and then our big partner there is OCD, Office of Civil Defense.”</i></p>
Ms. Romina Marasigan (National Disaster Risk Reduction and Management Council)	<p>Projects and Programs</p> <p><i>“...we were able to come up with Project DINA – Disaster Information on Natural Awareness. Why? It was conceptualized because we would like to tell people on what they are supposed to do in a very simple way.”</i></p> <p><i>“...our mobile application “ BATINGAW” . So that is what we did; the office was able to develop an application wherein right at your fingertips; you already have information on what you are supposed to do. You can see the information on disaster preparedness. It also has tools that you can use like siren, flashlight, strobe lights, and compass. You can also use that to text your family (in times of disaster).”</i></p>
	<p>Seminars and lectures; drills, exercises, and trainings</p> <p><i>“We bring experts coming from PHIVOLCS during lectures about disaster to be able to address inquiries with science-based answers. Moreover, at least, there would be experts to orient.”</i></p>

**Dr. Val Barcinal
(Marikina City
Disaster Risk
Reduction and
Management Office)**

IEC Materials

“Our disaster information campaign is regularly conducted. So far, every instance we have a chance, we distribute flyers, posters...”

Projects and Programs

“So the Contingency Plan was approved by the council. Our office is tasked to implement it. We also developed the Contingency Plan together with the offices within the city. Because there was a Technical Working Group formed in the city (Mayor), with Engineering and Planning (department), and all the parties involved in disaster planning for earthquake. So we called it the “Earthquake Contingency Plan” . So this is the backed-up by many city ordinances, not just one but plenty.”

Seminars and lectures; drills, exercises, and trainings

“The best way to communicate is by doing a drill, earthquake drill.”

IEC Materials

“The easiest way is to provide IEC materials. So that is Risk Communication.”

Action Plan of PHIVOLCS

PHIVOLCS has been mandated to study geotectonic phenomena like earthquake, predict its occurrence and determine the areas transected by different faults; they are also tasked to formulate disaster preparedness and awareness activities. PHIVOLCS has several projects and programs that are functional and conducted all year round.

Here are the major programs PHIVOLCS is implementing since 2011:

- (a) National Earthquake Monitoring and Information
- (b) Earthquake Hazards and Risk Assessment
- (c) Earthquake Generation Potential of Active Faults and Trenches
- (d) Volcano, Earthquake and Tsunami Disaster Preparedness and Risk Reduction

Under these major programs are several projects but there are some specially made and conducted for the West Valley Fault:

- (a) Active Fault Mapping of Valley Fault System
- (b) Microtremor Study of Metro Manila
- (c) Metro Manila Earthquake Impact Reduction Study (MMEIRS)
- (d) Earthquake Risk Assessment with (GMMA READY) and Risk Analysis Project (RAP)
- (e) Walk the Fault Project

PHIVOLCS regularly conducts seminars and lectures about the technical aspect of earthquake. PHIVOLCS also does earthquake drills and produces IEC materials such as flyers, leaflets, pamphlets, comics and posters which they distribute to people through the government of cities from different regions.

Action Plan of NDRRMC

As mandated by the Philippine Disaster Risk Reduction and Management Act of 2010, NDRRMC is empowered with policy-making, coordination, integration, supervision, monitoring, and evaluation functions.

One of NDRRMC's action plans for earthquake preparedness is the ***Disaster Information Campaign***. They get to distribute flyers and posters in every instance available to maximize the opportunity of information dissemination.

Next action plan is the ***Quarterly Simultaneous Earthquake Drill***. It is done among Elementary and high schools nationwide as required and coordinated with PHIVOLCS.

They also created the ***Project DINA*** (The Disaster Information for Nationwide Awareness). Project DINA paves the way for the public exposition and access of disaster risk reduction and management (DRRM) information materials. The project showcases a number of audio-visual presentations

(AVPs) which discuss DRRM topics, enabling the public to undergo online DRRM-related instruction. (Retrieved from: <http://ocd.gov.ph/index.php/project-dina>)

The NDRRMC also created mobile application named **“BATINGAW”**. It is downloadable and free of charge intended for the public and focuses on disaster awareness and management. It is linked to different national agencies including PAGASA, MMDA, DSWD, DOTC, LRTA, PNR, Philippine Red Cross, PHIVOLCS, and of course, NDRRMC.

The NDRRMC conducts seminars and drills together with PHIVOLCS. They also made a database that is intended to determine the total number of disaster managers in the country and gathered all their contact numbers to update them quickly if there are advisories and warnings about disasters. If ever there will be expected tsunamis, storm surges, typhoons and flooding, the NDRRMC could immediately relay the message to the disaster managers so that they could prepare beforehand.

Action Plan of MCDRRMO

The city of Marikina, through MCDRRMO, has its own ***“2011 Contingency Plan for Earthquake”*** in compliance with the City Ordinance No. 109 Series Of 2005. Ordinance Adopting a Comprehensive Earthquake Disaster Reduction (CEDR) Program and Action Plan in the City of Marikina.

It is an 88-page contingency plan which consists of the *Ecological and Risk Profile* of Marikina City.

Ecological Profile:

- (a) Geo-Physical Environment
- (b) Population and Social Services
- (c) Local Economy, Infrastructure, and Physical Base
- (d) Environmental Management and Natural Resources
- (e) Institutional and Local Policies Related to DRRM

Risk Profile:

- (a) Hazard Maps (Valley Fault System)
- (b) Ground Shaking Hazard
- (c) Flood and Landslide Map and Liquefaction Hazard Map
- (d) Facts and Damaged Estimation (Land Damage Area and Building Damage and Casualty)

Part of the *2011 Contingency Plan for Earthquake* are the existing and proposed programs, and the funding of those.

LGU of Marikina has their ***Incident Command System (Command Center)***. The Command Center is where all the CCTVs in the entire city are being monitored and supervised. Twenty-four (24) hours every day, one (1) representative from the Bureau of Fire, Police, and Traffic are always on duty. So that whenever there's an emergency that needs Fire, Police, and Traffic responders, the representative present in the center will call their central office and relay the message to respond quickly. So it is operational and functioning.

The MCDDRMO also conducts **earthquake drills** and conducts **trainings and seminars** among BDRRMC officials and staff. They also train 300 personnel from different concerned departments that hold responsibilities for people's safety as well.

Bridging Gaps, Making Pacts: Coordination among Risk Assessors

Communication is a two-way process of giving and receiving of information about one's need and feelings. Verbal and non-verbal approaches are used to convey messages (National Joint Committee for the Communicative Needs of Persons with Severe Disabilities, 1992). It is a process primarily composed a sender, message, medium, receiver and feedback (U.S. Army, 1983).

Coordination is an integral part of a proper communication process among organization for it handles the message of the plan. Coordination plays a crucial role in message strategy in any crisis of any organization or group.

The government allocated the responsibility for any situation regarding disaster in the country to the Office of Civil Defense. OCD is the national agency concerning the safety of people and the state of any disaster matter. OCD conceptualizes plans, coordinates and bridges the gap among its sub-agencies for an effective communication. The OCD has different sub-agencies depending on the specialization.

One of these is the NDRRMC. The NDRRMC concerns the people during calamities nationwide. It forms precautionary measures and plans for any disaster to be distributed by different agencies concerning their field of expertise and in terms of earthquake; Philippine Institute of Volcanology and Seismology takes the responsibility for that.

Table (2) coordination among risk assessors

Coordinating bodies	Statement(s)
PHIVOLCS and NDRRMC	<i>“PHIVOLCS is also the one asserting that this kind of earthquake has a possibility of an aftershock, and if that would cause damages. Moreover, also, in every preparedness activities, PHIVOLCS is with us. When there are lectures and drills, PHIVOLCS is well represented with experts to discuss matters (about earthquake) based on science.”</i>
PHIVOLCS and LGU of Marikina	<i>“So after making a (hazard) map, we arrange (lectures) in provinces up to the barangay levels. We invite the residents to hear out what we have to explain about the (hazard) maps, and discuss what could be done on those.” “Initially, we will train first the city government because the Mayor and other city officials needed to be familiar as well with their responsibilities when it comes to DRM for their locality.”</i>
NDRRMC and LGU of Marikina	<i>“As local leaders, they should be the one to lead because they are the most acquainted. The national government is just providing guidance and policies. Moreover, at the local level, they will implement (action plan) because they know more what the experience is about and how it feels</i>

	<i>to experience such.”</i>
NDRRMC and Barangay Units	<i>“From the city, we move now to the local leaders. These are the Barangay officials. So we involve the Barangay Captain with his council in the planning process that always comes first, followed by the implementation of their activities. In the drills, (we) teach them the need to use indigenous materials, the necessary preparations, what are the needed equipment, and also the warning system.”</i>
NDRRMC and Homeowners Association	<i>“So now we are moving deeper. Barangay Captain might be too busy, so we go down to the homeowners this time. Through this, the homeowners and leaders will be able to conduct even house-to-house household campaign. Because recently, the local leaders in Marikina showed the intention that they want households to be informed and aware of what they need to do. Because we want them to be ready and prepared.”</i>
MCDRRMO and Barangay Units	<i>“We train them. So we use standards set by PHIVOLCS so that there will be consistency in the information provided.”</i>
MCDRRMO and Engineering Department	<i>“There should be periodic inspection of buildings. However, it is not our (MCDRRMO) task (to do inspections) but the Engineering department.”</i>
MCDRRMO and DepEd	<i>“The city coordinates with DepEd in the evacuation (plan/procedure). Because we are using the schools as the evacuation center.”</i>
MCDRRMO and Other Concerned Departments	<i>“So all of these are offices within the city government. All of them have different tasks to do. So whenever there are emergencies, they already know what to do. Moreover, above everyone else is the city Mayor, who is the overall commander.”</i>

Coordination between PHIVOLCS and NDRRMC

Whenever there is earthquake information, initially about the epicenter of the fault, the PHIVOLCS immediately reports it to the NDRRMC. Through this coordination, the NDRRMC will be aware of the predicted earthquake occurrence and will start working on their action plan. Then they prepare the local leaders of the affected areas with the necessary pre-emptive strategies they need to know. Also, in every seminar or lecture that the NDRRMC organizes, a representative from PHIVOLCS is always present. It is to explain the science-based

concepts of earthquake and fault, especially the technical terms, clear, simple and concise.

Coordination between PHIVOLCS and Marikina City Government

After making the hazard maps or geological works, PHIVOLCS turns it over to the local government units – and these maps are specially designed for that particular city affected by a fault. PHIVOLCS also conducted city-based workshops few months after they generate sufficient data on the mapping project.

PHIVOLCS did their “Walk the Fault” activity with the cooperation of Marikina City DRRMO and PIO, and with the participation of the BDRRMCs affected by the WVF. The GGRDD of PHIVOLCS is also doing periodic inspection of buildings and other infrastructures in the city.

Coordination between NDRRMC and Marikina City Government

NDRRMC educates the local disaster managers on various aspects of disaster risk reduction and on tools that can help them address DRRM issues on their level. They organize seminars and trainings for the city leaders wherein the Mayor, and his officials are ought to attend and participate. In the lectures, the NDRRMC emphasizes the city government’s functions and responsibilities in the mitigation process for earthquake and how the Local Disaster Risk Reduction and Management Council (LDRRMC) work in their locality.

Moreover, after having the full grasp of what they are intended to do in their LDRRMC, DRRMO for Marikina City, that is when the NDRRMC presents their implemented plans and programs for earthquake preparedness. It is now the local

government's job to disseminate the information to the public that they learned by attending seminars and trainings organized by the NDRRMC.

NDRRMC coordinates with Barangay Units

NDRRMC involves the Barangay Captain, together with his officials, in the planning process. They invite the BDRRMC officers to attend their seminars and trainings. They discuss the basic preparations for disasters and the equipment they need. They teach them how the warning system works and the need for indigenous materials. Through all these, there will be an interaction between two (2) different groups of disaster managers, one from the national agency (NDRRMC) and one from the Barangay (BDRRMC).

NDRRMC coordinates with Homeowners Associations

The NDRRMC does not settle until Barangay units only. They move deeper and coordinate with homeowner's associations as well. The officers of the homeowners associations in Marikina City also participate in the seminars of the NDRRMC. The NDRRMC then asks the officers of the homeowner's associations to conduct household campaigns. Through this coordination, the homeowners will have interaction and even form camaraderie with other homeowners. Moreover, since they are part of the general public, they know how they will relay the message to their co-residents effectively.

Coordination between MCDRRMO and other concerned departments for disasters

MCDRRMO coordinates with the Engineering Department for the periodic inspection of buildings, and conduct utility check to

prevent accident and property damage. MCDRRMO is also the one coordinating with DepEd for administering the schools (elementary and high school) used as evacuation centers. The Marikina Fire Station, Marikina Police Station, City Transportation Management and Development Office and other activated rescuers are trained to prepare for the worst case scenario that may happen.

From Top to Bottom: National and Local to the Masses: Strategies of Information Dissemination of NDRRMC and MCDRRMO among Affected Residents

In 2005, The Philippine Disaster Risk Management Profile reports that the following bodies that were said to have contributed to increase the awareness of Filipinos in relation to disasters were the national press, radio, and television media. Information dissemination according to UNESCO.Org is a “proactive information service designed to educate and inform focused groups of users on social, economic and educational issues, problems, and opportunities of interest to them.” It requires systematic planning, collection, organization, and storage of information for its delivery to the target audience using different media and communication means.

Authorities convey information through Formal and Informal approaches. They employ Formal approaches in the forms of seminars, workshops, or trainings and symposiums. On the other hand, they use Informal approaches in the form of Information and Education Campaign (IEC) materials, drills, and through social media and tri-media (TV, radio, and print).

By actively sharing information, government can bring education closer to their local communities in order to increase understanding and participation, and to mobilize their support to encourage a communal sense of All for Education (UNESCO.org).

Table (3) dissemination of information from the risk assessors among affected residents

Risk Assessors	Strategies for Information Dissemination
Dr. Arturo Daag (PHIVOLCS)	<i>“Ah, we do conduct earthquake drills and then IECs and then we are in partnership with the OCD, Office of Civil Defense.”</i>
Ms. Romina Marasigan (NDRRMC)	<i>“Okay, one is by conducting simultaneous earthquake drill quarterly. So we do that quarterly. What we do quarterly is that we focus on different venues where possible disaster might occur.”</i>
Ms. Ma. Lourdes Navarro (Marikina City LGU)	<i>“We have a Facebook (page), Twitter (account), AM stations to report to, Abiso Marikenyo – free public service announcement, Text Blast or a mobile number scanner to keep the public informed and calm. Moreover, sometimes we contact the news desk if needed.”</i>

NDRRMC’s strategies of information dissemination among affected residents

The NDRRMC assessed that most of the people are visual learners; that policies and activities should be clear and precise to easily comprehend the message and its significance. NDRRMC produces audio-visual presentations about different hazards made for the awareness of the audiences. They clearly emphasize the message of these videos for it can easily be implied to the minds of people.

MCDRRMO and PIO’s strategies of information dissemination among affected residents

The Marikina City DRRMO and PIO use Information Education Campaign materials and social media to reach a vast number of people. To amplify the propagation of information, they conduct lectures and seminars as part of the contingency plan. They also utilize Del Radio and other AM stations, Two-

way Radio, “Tinig” (official newspaper in Marikina City) and Text Blast in informing the people. MCDRRMO held seminars and lectures about the 2011 Contingency Plan for Earthquake among the Association of Barangay Captains (ABC) and BDRRMC officials.

Together We Stand, Divided We Fall: Disaster Preparedness Activities of the BDRRMCs

Everyone can be an agent of change, but not everyone has bought into preparedness. The emergency responders, especially the barangay units who are closest to people do an incredible job of keeping everyone safe, but they cannot do it alone.

Each Barangay has their own Barangay Disaster Risk Reduction and Management Council (BDRRMC) as mandated in Republic Act No. 10121: An Act Strengthening the Philippine Disaster Risk Reduction and Management System, Providing for the National Disaster Risk Reduction and Management Framework and Institutionalizing the National Disaster Risk Reduction and Management Plan, Appropriating Funds Therefor and for Other Purposes.

Table (4) disaster preparedness activities of the BDRRMCs

Informants BDRRMCs	from Statements
Mr. Meliton “Paul” Endaya (Brgy. Tumana)	<i>“The seminars and lectures are continuous. After the seminar and lectures, the actual drill will be followed. Most of our participants there were the Block Chairman. It started since 2011.”</i>
Brgy. Capt. Efren “Bulik” Managuit (Brgy. Barangka)	<i>“This is our training from the city government. We have that in school maybe quarterly both for primary and secondary level. The standard is four times a year depending on the need to conduct a drill. The recent drill happened last July 5.”</i>
Brgy. Capt. Joseph “Erap” Briones (Brgy. Malanday)	<i>“We target the families/households. We conduct forum for that (disaster) and distribute flyers and posters from NDRRMC.”</i>

**Brgy. Sec. Darren Villareal
(Brgy. Industrial Valley
Complex)**

“Social media are our best medium for information dissemination. The Barangay has Facebook page wherein most of its members came from this Barangay. What we did, we created our page, and that is where we post and share advisories and announcements. It is the fastest way.”

Barangay Tumana

Tumana's BDRRMC imposes Community Disaster Preparedness under Information Education Campaign and Barangay Information for Disaster Awareness (BIDA). Under BIDA, they conduct seminars and lectures among Chairman of each 62 blocks in Proper Tumana (excluding Loyola Grand Villas). Then it is followed by drills and exercises afterward.

They are also coordinated with the Philippine Red Cross and MCDRRMO whenever they conduct Barangay-wide activities. They use IEC materials, specifically flyers and posters that are also given to households, as a strategy for spreading awareness. They started initiating these seminars since 2011, and it is being done annually according to Mr. Endaya.

Barangay Barangka

Barangka's BDRRMC, on the other hand, conducts general assembly in their Barangay hall every March and August of the year. They have their paging system to announce updates on upcoming general assembly or meeting, and it is also used to broadcast announcements, most are about typhoons and flooding, among the residents of the Barangay. Through their general assembly, the residents will be gathered altogether, and the BDRRMC will get to inform them their programs and projects so that the residents could also voice out their suggestions.

Barangay Malanday

Malanday's BDRRMC conducts forums and drills as well according to Brgy. Capt. Briones. Their primary target is the families/households because they are the most fundamental unit of the society and preparedness should be imposed and exercised in the family. Barangay staffs do the house-to-house distribution of flyers to spread better awareness, though he believes that people also learn from what they see on the television and what they read from newspapers.

Barangay Industrial Valley Complex

Because of the conflict with the past administration, no projects were turned over to the new administration. However, they are starting to conduct some, though not particular to earthquake, but for disasters in general. Barangay Secretary Darren Villareal said they distributed IEC materials among the residents, and he confirmed that they conducted seminars and drills. They have a Facebook page where their residents are members of it, which they utilize to post advisories and announcements about disasters.

Conclusion

The researchers conclude that PHIVOLCS' correctly implements and execute nationwide and city-wide projects and programs – proofs are based on the articles and reports posted on their official website and validated by the MCDRRMO. The NDRRMC also presented and provided the researchers their official gazette which covers all the events and activities they have conducted for the past years and months, and they are still eyeing to improve all their other projects. The

MCDRRMO's "2011 Contingency Plan for Earthquake" is a working in progress for the city of Marikina to exhibit fully.

The researchers conclude that the process of coordination from PHIVOLCS to Barangay Units works well, and the needed information is being fed up to the BDRRMCs. However, there is no strict implementation applied that is why the problem arises from the BDRRMCs.

The information for disaster preparedness and awareness is being disseminated through various strategies. The local government of Marikina, its MCDRRMO and PIO, utilize social media in the form of Facebook and Twitter. They also distribute IEC materials such as posters and flyers and operate their official radio station – Del Radio. They use Text Blast and coordinate with news desk and conduct seminars and lectures in communicating information to people. On the other hand, NDRRMC propagates information through the use of IEC materials (e.g. flyers and posters) and seminars with members of PHIVOLCS. They also conduct preparedness drills and exercises and a series of activities that ensure the safety of people. The risk assessors continuously implement policies and activities for earthquake readiness.

BDRRMC of Tumana, Barangka, Malanday and IVC have different ways and strategies of disseminating information to the residents according to their assessment of how most people will be reached by the information they need to acquire. Among all these four (4) Barangays, only Brgy. Tumana got to actualize what they learned from the seminars and trainings conducted by the MCDRRMO. The other three (3) Barangays depend solely on the help of flyers and posters that they receive from PHIVOLCS. They also use assistance from social media (IVC), paging system and general assemblies (Barangka), and house-to-house broadcast of advisories and distribution of flyers (Malanday). The common denominator among all these Barangays is they conduct earthquake drills in elementary and

high schools accordingly. However, at the end of the day, their top priority is still flooding since that is what they often experience.

Recommendation

The researchers had extended their advices and recommendations to the following: 1) To the Future Researchers who can utilize Participatory Action Research (PAR). Also, they may identify the general stance of the residents on the phenomenon and their involvement in the planning process, and if they acquire the recommended behavior after the implementation of the action plan; 2) to the Marikina LGU which can utilize the study in improving and embarking more strategies used in disseminating the information for the welfare of its constituents. The MCDRRMO and the BDRRMCs seemed to have minimal focus on being able to persuade all the community members to follow their messages. It can also help in assessing the impacts of these approaches in the minds of the affected residents; 3) to PHIVOLCS and NDRRMC, as the leading national agencies concerning disasters and disaster preparedness, are reliable sources of information that the public will surely believe in. They need to improve their information dissemination strategies further and look for more ways in spreading awareness among the people. As part of the assessment of the efficiency and effectiveness of their action plan, PHIVOLCS and NDRRMC should also identify the factors affecting the understanding and participation of the people so they could resolve it; and 4) to the residents of the affected areas of fault who are the primary targets of information dissemination. If only they will know about the risk of earthquake and the damages it can bring to people and property, they might want to attend seminars, lectures and meetings and might

participate in the exercises and drills that the risk assessors are conducting, and they might read the content of the IEC materials given to them. They could be more than willing to open themselves from acquiring recommended behavior if provided enough information.

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