Hazard Experiences and Risk Reduction and Mitigation Initiatives of Residents in Barangay 843 – Zone 92 in Pandacan, Manila

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Abstract. Hazards brought about challenges to the local residents on how they would eventually recover from these tragic and traumatic experiences. This includes the development of better and more effective ways of mitigating hazards to ensure that there are minimal damages to lives and properties. Based on fieldwork survey and semi-structured interviews involving fifty-eight (58) barangay residents, this study described the hazard experiences and risk reduction initiatives of residents of in a barangay in Pandacan, Manila. The findings of the research suggest that residents have developed risk reduction and hazard mitigating practices through the years of their exposure to hazards. Some of the local residents had a vivid recollection of their encounter with hazards, while some are ambivalent. Their individual experiences and collaborative or community effort helped the residents to have organized and coherent actions of mitigations against such hazards in the future. The production of hazard maps is touted to be one of the biggest contributions of the study that is drawn based on the survey and interviews with local officials and residents. Such maps will empower the local barangay council in identifying the hazard-prone areas and in turn will inform, create hazard awareness activities for the residents.

1. Introduction

“No country is immune from geo-hazards and disasters.” Former United Nations Secretary General Ban Ki-moon has uttered this grim reality during the post-Fukushima conference on disaster risk in May 2011. This “grave warning” is not actually new to humankind since time immemorial. People learned to live with calamities and hazards as evidence of modern culture and civilizations. In any part of the globe governments, advocacy groups, and citizens find way to deal, mitigate, and cope with the onslaught of hazards.

The Philippines ranked number one (1) for having the greatest number of natural hazards in the world from 1900-1998, according to a research group based in Brussels, Belgium [1] The ranking improved a little in 2006 as world’s fourth to China, India, and Iran in terms of disaster-prone country, according to the Center for People Empowerment in Governance. At least five (5) percent of the total population of Filipinos died from natural and man-made calamities between 1992-2001 (PDI : October 15, 2006).
During times like these, the marginalized groups and communities are usually the ones who are greatly affected. Take the case of New Orleans, which did Hurricane Katrina hit in August 2005. It served as a polarizing factor in the social geography of the landscape because the poorest neighborhoods received help last from the local government as compared to that of the affluent communities (The Economist, 2005). The marginalized people had no choice but to remain in their destroyed houses.

This morbid scenario was earlier affirmed by the United Nations (Manila Standard : November 12, 2000) [2] when it claimed that least developed countries and places as highly or strongly vulnerable to shocks and disasters. According to the UN, despite increases in the growth rates, the poorest of the poor countries of South Pacific remain extremely vulnerable to external economic and social shocks, and natural disasters. The likes of Bhutan, Laos, Bangladesh, Cambodia, Myanmar, and Nepal were cited in the study. Same is true with the case of the Philippines. [3,4,5,6] seemed to agree with the growing social and geographic phenomenon that the marginalized people are worst hit by disasters caused by Sendong in Cagayan de Oro, landslide in General Nakar, Quezon, “Wowowee” Stampede, and frequent fires in depressed areas from December to May. According to the National Disaster and Coordinating Council [7], disasters and their destructive effects can be mitigated, anticipated, controlled, and coped with. Peoples and communities now have learned a lot from their direct and vicarious experiences in dealing with disasters.

Such is the case of Barangay 843 – Zone 92 in Pandacan, Manila that has experienced episodes of disasters for the past decades. What are their narratives regarding their experiences with geo-hazards? What are the effects of these hazard episodes to their lives, properties, and psychological make-up? How did they recover or move on? What are their risk reduction and mitigation initiatives or practices individually and as a community? These questions need answers. Hence, this study

2. Area of Study
The research was conducted at Barangay 843 Zone 92 – Pandacan during the Summer Term, 2012. This humble output was part of the PNU’s extension services at the said barangay, identified by the Families and Children for Empowerment and Development Foundation, Inc. (FCED) as co-partner of PNU. Barangay 843 being the focal community that was adopted by PNU thru FCED, is one of the marginalized barangays in Districts V and VI in Manila that needs support from the city government (BIR Zonal Valuation, 1996). It is the vision of FCED to empower the said community by implementing relevant projects and services that will maximize the productivity, uplift the dignity of the marginalized people thru literacy programs. The PNU, for its part, will deliver various literacy programs for children and adult citizens of Barangay 843. PNU’s College of Arts and Social Sciences through the extension council has decided that CASS’s extension role in Pandacan led by the department-based organizations (DBOs). PNU-Geografika was tasked to initiate an environmental literacy project on hazard awareness and risk reduction and mitigation.

This project officially commenced during the Second Semester of AY 2011-2012 upon signing the memorandum of agreement between PNU and FCED. Hazard mapping and distribution of flyers on hazard (also produced by the club) were the first activities in the environmental literacy project of PNU-Geografika. To further assess the needs of the community in terms of environmental literacy, PNU-Geografika’s officers and members decided to do a fieldwork research on the community’s experiences, effects, and risk reduction initiatives.

The locale is a relatively small barangay with more than 6,000 as population. This is according to the barangay captain, Mr. Tito Arispe. Barangay 843 Zone 92 evolved from swampland and later dumpsite into an informal settlement before the end of World War II. By 1953, the place was under the jurisdiction of J. Zamora and Bagong Barangay. By virtue of Presidential Decree No. 86 in 1973, former President Ferdinand Marcos created Barangay 843 and other nearby barangays during the Martial Law era.
After experiencing two (2) fire episodes, the houses’ materials and structures gradually turned from wood shanties into cemented/concrete slabs as high as three (3) to four (4) storey abode.

3. Methodology
The research utilized a non-experimental design employing the descriptive method of research. The researchers utilized fieldwork survey and interview in creating geo-hazard maps of the area, and in narrating the respondents’ experiences, effects of disasters, and their disaster-mitigating initiatives and practices.

The club officers and members, along with their adviser first toyed the idea of writing a research on the experiences of residents of Barangay 843 during the Second Semester of AY 2011-2012. However, it was only during the summer term when the club finalized the purpose of the research. Preparatory to the actual fieldwork survey and mapping of the area, the graduate members created four (4) flyers on hazards namely: fire, flood, earthquake, and riots/mob rules on April 11, 2012 during the summer term.

Actual mapping of the barangay took place on April 17, 2012 with the guidance of Barangay 843 Captain Tito Arispe who shared his general knowledge on mapping of the place. The four (4) groups in-charge in the production of flyers were also tasked to create hazard maps on the same risk or hazard. The researchers conducted the fieldwork survey and interviews on April 27, 2012. Results of the fieldwork interviews were tabulated, analyzed and submitted on May 4, 2012.

The actual writing of the final research report commenced on May 4, 2012. The researchers gathered related literatures and maps of the barangay and finalized the write-up on May 18, 2012.

The researchers used descriptive statistics to analyze the raw data. Frequency and percentage gauged the responses of the resident-respondents in question number two (2), three (3), and four (4) regarding their experiences with hazards, effects of hazards, and their risk reduction and mitigation practices or initiatives.

4. Results and Discussions

4.1. The Creation of Selected Hazard Maps
The need to rush in the production of hazard maps was ordered by former President Gloria Macapagal-Arroyo as she led the Earth Day celebration in 2006 [8]. Due to the slow process of the National Mapping and Resource Information Authority (NAMRIA), President Arroyo felt that the Department of Environment and Natural Resources (DENR) could help in fast tracking the production of hazard maps. It was found out that the former hazard maps of forty-seven (47) provinces across the country were already outdated, according to Glenn Rabonza, former head of National Disaster Risk Reduction and Management Council (NDRRMC) [9]. When former Defense secretary Gilbert Teodoro took his oath of office, he felt that each town, down to the smallest barangay, must create evacuation maps, hazard maps, and establish adequate evacuation plan [10]. According to Mrs. Pamela G. Valezuela, a DSWD Supervisor who helps in the creation of geo-hazard maps, usually the Office of Civil Defense (OCD) Regional Director facilitates the development of hazard maps in local communities. Only the identified hazard-prone provinces and communities have the updated hazard maps so far. It is in this context that PNU-Geografika, in its humble effort, wanted to help the adopted community to commence the noble project on hazard awareness by producing simple hazard maps.
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FCED and Barangay 843 Chairman Tito Arispe welcomed the need to produce hazard maps in the local community since at this level, they have an on-going hazard awareness and risk reduction project managed by the Manila City Council. Captain Arispe initially facilitated the mapping activity. Based on the map by [11], the said barangay used to be a dumpsite in 1945.

4.1.1. Fire-Prone Hazard Map

Through the guidance of Mrs. Leah Arispe, the wife of the barangay captain, the group in-charge of fire-prone area hazard map conducted the ocular visit. The fire-prone hazard map below (Figure 1) was created based on the map drawn by Barangay Captain Arispe who had the visual map of the place. The group found the shaded part/area and streets as deemed fire-prone because the yellow houses are made of concrete cement but the firewall is not evident and there is no fire exit especially houses that have two (2) or three (3) storeys (Figure 2). Some houses are made of light materials like worn-out wood that are prone to fire and near electrical wiring (Figure 3). The shaded pathways shows that it would be difficult to enter or pass through whenever there is fire because they are too narrow (Figure 4). The shapes of blocks are irregular and some houses are crowded with two or more families residing.

4.1.2. Earthquake-Prone Hazard Map

Some people in the community were paranoid and curious with the mapping activity, according to one of the members of the “Earthquake Group”. One man remarked “Ma’am, para saan po yung mga pictures na iyan? Kasi allergic kami sa mga camera”. Barangay Captain Arispe interpreted the remark
as a sign of paranoia of people who’s into illegal or clandestine activities like gambling and wire tapping. Based on the map by DOST-Philippine Institute of Volcanology and Seismology (PHIVOLCS) on the distribution of faults and trenches in the Philippines, Manila has no faults, not unless “blind fault lines” will manifest later. In case of strong earthquake, it will create devastating effects to the residents who might be trapped since the barangay has limited open spaces. Some tall houses are apparently not safe in terms of structural design. There were even electrical posts that were already in a sliding position that are utterly dangerous in times of seismic activity. (Figure 5)

4.1.3. Flood-Prone Hazard Map
For the “Flood-Prone” group, Mr. Gil Jaradal volunteered to come up with the final copy of the “Flood-Prone Hazard” map since he has the software application program. Remarks like “Anong meron?”, “Malapit na kasi eleksyon”, “Bakit ba kayo nandito?”, “Paalisin niyo na ba kami?” were overheard by the group as they started mapping the area. Based on Map 4 on the next page, the most flood-prone areas are located near the Estero de Pandacan (east side) and “Barrio Banana”. This is according to the residents who actually experienced the flood episodes during the strong typhoons in the seventies (70s) and during Ondoy. The “High Tide” can inundate the area with overflow from Estero de Pandacan while Barrio Banana has a low ground. (Figure 9, 10, and 11).
4.1.4. Riots/Mob Rule-Prone Hazard Map

It was Mr. Timothy James Cipriano, a club officer and co-writer of this research, who volunteered to finalize the map for the “Riots/Mob Rule” group. He noticed that some parts of the drainage system are widely open that can pose imminent danger in case of riots or mob rules. Many “Orocan” drums are present in washing areas (usually in the narrow alleys/streets) which make the spaces more congested especially in numbers 3, 4, and 5 (Figure 12, 13 and 14). According to the respondents, riots are more common in the area than stampede incidence. The researchers noticed that during the interviews conducted in the roads or alleys, it was difficult for the residents to pass through the narrow alleys in the barangay.
4.2. Narration of Residents’ Experiences during Selected Hazard Episodes

4.2.1. Fire

Table 1 on the next page indicated that fifty-three (53) or 36.8% of the respondents experienced fire episodes in the late seventies (70s) or eighties (80s) and/or in the year 1995. However, some of the fieldworkers noted the inconsistencies on when the first fire episode occurred, the number of barangays affected by this catastrophic event, and where it really started. In fact, one report showed that three (3) respondents mentioned five barangays were wiped out by fire, while only one (1) respondent said four barangays were only damaged. Both statements refer to the 1995 fire episode.

These inconsistencies can be attributed to the age factor of the residents. They may be too young or too old when the fire altered the landscape of Barangay 843. This case is also parallel [12] writings on coping with disasters. He said that the responses of the elderly regarding their disaster experiences are inconsistent. Disorientation, memory loss, distractibility, and other stressors are the key bases on why
these discrepancies on recounts happen among the elderly. Another contributing agent is the respondents’ immediate reliance on what they only remember. Or maybe, they are not in the mood to reminisce when this bizarre incident took place, as four (4) or 2.8% of the respondents narrated that “their safety is their utmost priority”.

Also in the table below, ten (10) or 6.9% of the respondents noted that fire spread swiftly due to light materials such as wood were used in constructing houses, and the streets’ space distance were too narrow. These recounts were also supported by the researchers’ interview and with Barangay 843 Captain Tito Arispe during the first visit to the community, and a senior citizen in the community. But despite the fact that alleys or “eskinitas” in the barangay were too narrow unlike in the current landscape, the researchers were surprised and happy due to the fact that most of the reports indicated that there were no reported major casualties during this unfortunate incident.

In an interesting note, the researchers have noticed that despite experiencing fire episodes in the late seventies (70s) or eighties (80s) and in 1995 – that eighteen (18) or 12.5% of the respondents cited as “the most destructive and memorable catastrophe ever experienced”, – seven (7) respondents (4.9%) did not mention any of their experiences during the fire episodes that occurred. The primary assumption to this, maybe, is the psychological effects of this strange casualty to the residents. More of this will be discussed on Table 7.1. In contrary, one fieldworker asserted that one (1) respondent showed courage while sharing her experiences when they felt the fire’s wrath. Despite of having a scar in her right foot, she became resilient and perceived that fires are “just a normal disaster”. (See Table 1 below)

| EXPERIENCES                                                                 | f   | %   |
|------------------------------------------------------------------------------|-----|-----|
| a. Experienced fire episodes (during late 70s or 80s and/or 1995)            | 53  | 36.8|
| b. Residents went out of their houses, trying to look for secured places/evacuation centers | 6   | 4.2 |
| c. Four to five barangays were affected during the 1995 fire episode         | 4   | 2.8 |
| d. Attempted to save few belongings                                        | 1   | 0.7 |
| e. The fire occurred at 11:00PM and it lasted for six hours. The place was so dark due to the lacking of street lights, so people were not able to save their belongings (1995 fire episode) | 19  | 13.1|
| f. Tried to extinguish the fire                                            | 1   | 0.7 |
| g. All the properties, belongings, and/or valuables including houses were burned | 10  | 6.9 |
| h. Fire spread out in the barangay swiftly due to light materials used in constructing houses and narrow space distance between houses | 10  | 6.9 |
| i. Family members’ safety is the utmost priority                           | 4   | 2.8 |
| j. People were shouting, screaming for help, and others were just caught in dilemma/confusion | 5   | 3.5 |
| k. The fire in 1995 was the most destructive and memorable catastrophe experienced by the residents | 18  | 12.5|
| l. Firefighters were unable to penetrate the area due to its narrow space    | 5   | 3.5 |
| m. Perceived fire as a normal disaster occurrence                          | 1   | 0.7 |
| n. No experiences mentioned by resident-respondents                        | 7   | 4.9 |
4.2.2. Flood

According to Table No. 6.2 below, twenty-six (26) or 18.3% of the residents cited only their experience with Typhoon Ondoy which greatly affected Metro Manila and nearby provinces in 2009. The same number of resident-respondents quoted this happening as “the worst catastrophe experienced”. On the other hand, only five (5) or 3.5% of the residents experienced both Ondoy and Dading (which occurred in the late sixties, according to them). In contrary to the mentioned about Ondoy being the worst typhoon, one (1) respondent narrated that Dading is more disastrous than the latter. Age factor can be attributed to this comparison as one fieldworker quoted “experience becomes more vivid as the person ages”.

The researchers were surprised on the report of one fieldworker which bears the data on the “Frequency of Flooding Episodes”. While majority of the respondents have only experienced one (1) or two (2) flood episodes, a certain Mang Romeo, a senior citizen who resided in Barangay 843 for more than seventy (70) years, claimed he had witnessed four (4) different flood episodes! He further talked about how extreme his recount was.

When asked about the volume of floods, majority of the respondents’ answers were mostly different. Twenty-two (22) or 15.5% of them remembered that the floods were at the waist level, while others claimed that it reached until knee, leg, chest, hips, neck, and the most extreme: above the head! These inconsistencies on what level did the floods extended are accounted to the geographic references of the areas in the barangay. Possibly, the land elevations are varied, hence, data on flood levels are different.

Another fascinating observation by one fieldworker which stated that one (1) respondent considered flooding as a normal geographic phenomenon. The narration goes: “This respondent seemed to have a very optimistic view in terms of facing disasters and hazards”. The researchers only found out, in astonishment, that the resident is a former active member or volunteer of the barangay. The background proved her resilience in confronting geo-hazards such as floods.

Just like the previous discussion on Table 1, there are respondents – in fact, six (6) or 4.2% of them – who have not shared their experiences on floods or typhoons. This is again due to the psychological effects brought by this disastrous occurrence. (See Table 2 below)

| EXPERIENCES                                                                 | f   | %  |
|----------------------------------------------------------------------------|-----|----|
| a. Experienced both Dading (late 60s) and Ondoy floodings (2009)           | 5   | 3.5|
| b. Experienced Ondoy flooding (2009) only                                  | 26  | 18.3|
| c. Floods brought by aforementioned typhoons don’t make much impact to properties or houses | 5   | 3.5|
| d. Ondoy is the worst catastrophe experienced                              | 26  | 18.3|
| e. The high flooded areas forced residents to stay on the rooftop of their houses | 1   | 0.7|
| f. Appliances/belongings/valuables/some parts of the housed were damaged or wet | 5   | 3.5|
| g. Floods did not penetrate inside the house                               | 1   | 0.7|
| h. Perceived floods as a normal geographic phenomenon                      | 1   | 0.7|
| i. Worried about the situation/whereabouts of tenants/relatives/friend who were in travel during the heavy rains brought by Ondoy | 3   | 2.1|
 Residents were so confused, having dilemmas on where to sleep, what to eat, and other concerns during the typhoon.

k. Experienced different flood levels in their areas
   - k.1 above waist: 5, 3.5
   - k.2 waist: 22, 15.5
   - k.3 knee high: 8, 5.6
   - k.4 leg: 1, 0.7
   - k.5 above head: 2, 1.4
   - k.6 neck level: 6, 4.2
   - k.7 hips level: 9, 6.3

l. Prayed for the safety of the family and the entire barangay to be spared from further danger brought by heavy rains.

m. Attempted to evacuate the area by using improvised water transportation such as rafts, or by walking amidst dangers brought by flash floods.

n. No response/no experiences shared.

4.2.3. Earthquakes
A good number of respondents (50.8%) have not experienced or recalled mild or tremendous earthquake tremors. This can be treated in a positive way because the resident-respondents’ daily living were not hampered by the destruction brought by earthquakes, and this serves as an opportunity for them to execute preventive measures to abate the impact of the aforementioned hazard episode.

On the other hand, sixteen (16) or 25.4% of the respondents have experienced or recalled tremendous earthquake tremors which resulted to the collapse of Rubi Tower (during the 60s) and Hyatt Tower [13]. According to the mentioned number of respondents, this is the incident that they will never forget. In fact, one fieldworker underscored the awareness being developed among the residents on what had happened to the other parts of the country as a result of this disastrous episode, which is considered to be a good sign according to the research writers. Seven (7) or 11.1% of the residents have experiences or recalled mild earthquakes tremors in the area which, according to them, did not bring much impact on their houses or properties.

Also in Table 3 below, the writers were astonished to learn that despite of knowing or being aware that there is an earthquake episode, one (1) respondent did not remember anything that happened when residents were greeted by earthquake tremors. Psychological make-up of the residents could be a big factor to this. He/she may have experienced state of confusion, anxiety, and other behavioural manifestations during that time, which is “natural and normal” among human beings.

In the totality, it was observed that as compared to the experiences of residents during fire and flood episodes mentioned in Tables 6.1 and 6.2, respectively, there are only few narrations by respondents on earthquake occurrences. One fieldworker indicated that the senility or seniority of residents could be a factor on why the “know-hows” during the episodes were not only vividly elaborated. (See Table 3 on the next page)

Table 3. Frequency Distribution on Experiences During Experiences –Seismic Activity/Earthquake

| EXPERIENCES                                                                 | f   | %    |
|----------------------------------------------------------------------------|-----|------|
| a. Recounted/experienced tremendous earthquakes that resulted to the collapse of Rubi Tower (during the 60s) and Hyatt Tower (1991) | 16  | 25.4 |
b. Recounted/experienced mild earthquake tremors which lasted only for few seconds. It brought no damage/effect to the residents and their houses or properties  7  11.1

c. Secured self by staying under the bed, table, etc.  4  6.4

d. Earthquake movements brought fear, anxiety, and confusion to the residents  3  4.8

e. Couldn’t remember what happened when residents were greeted by earthquake  1  1.6

f. Have not experienced or recalled of mild or tremendous earthquake tremors  32  50.8

4.2.4. Riots/Mob Rule

Out of fifty-eight (58) respondents interviewed, forty-eight (48) or 81% of them have not experienced or remembered mob rule/riot episodes. This is a big, yet good number to say the least as these hazard episodes don’t thwart on residents’ “everyday rituals.” In fact, one fieldworker noted that the respondents claimed their area to be “peaceful” at night time.

On the contrary, a combination of eleven (11) or 18.9% of the respondents has collectively recalled their experiences on mob rules and/or riots. In a very notorious landscape of the community, these episodes are “normal” or common. Six percent (6%) of the resident-respondents said that riot occurs when both parties involved are under influences of alcohol, drugs, and other vices. Observing the background profile of the residents and the neighborhood, idleness could be a contributing factor on why the residents as “riot participants” are trying other vices. Others would claim this is a “scapegoat” from problems faced in everyday life. Three (3) or 5.2% of the respondents said these episodes are perceived or treated to be part of “entertaining” themselves. Riots/mob rules serve as their amusement! The same case is parallel to an article by Tan (2009). He posited that sense of humor is prevalent among Filipinos, especially when disasters struck the country. This is evident in photographs and videos published all over the social networking sites. Those galleries, according to the author, try to project that “Filipinos are resilient, happy people, and survivors.” Barangay 843 residents, just like among Filipinos, see cheerfulness as one of their post-disaster coping mechanisms and form of cultural adaptation that has evolved through time. This is the way on how they survive vulnerability in socio-economic status and catastrophic hazards.

Experiences on aforementioned episodes reveal that not only men are main participants or play an active role to these circumstances. Even women are also involved in these circumstances. One respondent stated that women have also confrontations due to “gossips” or hearsays maybe about their private life.

Based on the respondents’ narrations or recounts on riots/mob rules, the researchers were happy to notice that these situations don’t bring much impact to the neighborhood in terms of casualties, properties, and psychological make-up. However, necessary actions or measures should be implemented to “riot participants” so as not to aggravate the situation in the community/barangay. (See Table 4 on the next page)

Table 4. Frequency Distribution on Experiences During Hazards –Riots/Mob Rules

| EXPERIENCES                                                                 | f  | %   |
|-----------------------------------------------------------------------------|----|-----|
| a. Occurs (riot/mob rule) if both parties are under the influence of vices such as alcohol, drugs, etc. and had some misunderstanding which sometimes lead to the emergence of weapons that resulted to anxiety or fear among residents | 6  | 10.3 |
b. Occurs to settle differences between gangs/fraternities | 1 | 1.7%
c. Mob rules/riots are perceived to be normal. Sometimes, residents treat these circumstances as part of “entertainment” and fond to watch or witness it until someone’s laid to rest | 3 | 5.2%
d. Women are also involved in riots/mob rules due to hearsays or gossips about their private life | 1 | 1.7%
e. Haven’t experienced mob rule/riot episodes | 47 | 81%

4.3. Residents’ Risk Reduction Practices/Measures on Selected Hazard Episodes

4.3.1. Fire

Since majority or almost all of the respondents have experienced fire episodes, they offered their risk reduction and mitigation practices in case these hazards occur. Sixteen (16) or 17.6% of the resident-respondents said that preventive measures must be observed and executed to avoid such jeopardy to take place. Based on this, one can say that Barangay 843 residents became alert and cautious after enduring this huge onslaught. One fieldworker noted a quotation that best describes the mentality of residents in the community: “Experience is the best teacher.” On the other hand, thirteen (13) or 14.3% of the resident-respondents considered both prevention and mitigation schemes should be done so as not to be affected by the wrath of fires.

After the two (2) fire episodes, as mentioned by the people in the community, the researchers - as well as fieldworkers - observed the impact of these bizarre geo-hazards to the landscape of the vicinity. In fact, fifteen (15) or 16.5% of the residents mentioned that houses undergone necessary constructions/repairs/renovations such as concretizing walls, and among others. Almost every household have their houses erected with concrete fire walls to avoid too much damage to the structure in case fires occur. Some fieldworkers indicated this move as “an important role in fire prevention.” In addition to structural fabrications, it was also noticed by the residents that pathways/roads/alleys were widen, as compared to before the 1995 fire episode.

Another initiative that most residents observe is the water reservoir. Fourteen (14) or 15.4% of them inferred that there must be storage of water in case of emergency. It was observed during the ocular inspection of officers with adviser and research co-writer Dr. Enrico Garcia, Geo-Hazard mapping, and interview with the neighborhood that large “drums” of water (drums used is originally a glue container) are scattered all over the place in preparation if another fire episode occurs. These “drums” have become the “trademark” in the community’s “notorious, yet peaceful” landscape [14].

In an interesting note, the research writers have recognized that nine (9) or 9.9% of the respondents have not given their insights on fire prevention and mitigation. Is it possible that these people do not have any knowledge on the “know-hows” of hazard reduction/prevention? (See Table 4 on the next page)

| INITIATIVES                                                                 | f  | %     |
|---------------------------------------------------------------------------|----|-------|
| a. Necessary house constructions/renovations must be done such as the erection of concrete fire walls, with the usage of lights materials like wood being prevented | 15 | 16.5  |
| b. Infrastructure projects such as road widening must be initiated by the barangay officials | 7  | 7.7   |
| c. Must have enough water reserve/source                                   | 14 | 15.4  |
d. Preventive measures must be executed such as double checking of electrical/cable wirings, electrical outlets and switches, gas tanks, lighted candles, etc. & 16 & 17.6 \\

e. Mitigation initiatives should be done to lessen the impact of fire hazards & 1 & 1.1 \\

f. Be alert at all times & 3 & 3.3 \\
g. Show concern to the neighborhood, “bayanihan” spirit or unity must be present & 4 & 4.4 \\
h. Saving family members/relatives/loved ones is the top priority & 4 & 4.4 \\
i. Evacuate to a safe area & 3 & 3.3 \\
j. Put up tents/fortification of temporary shelters in case the affected area is still under “permanent danger zone” & 1 & 1.1 \\
k. Installation of public warning signals such as the “horn” & 1 & 1.1 \\
l. Did not mention anything on fire prevention and/or mitigation initiatives & 9 & 9.9 \\
m. Both prevention and mitigation initiatives should be done & 13 & 14.3 \\

4.3.2. Floods

Majority of the respondents have mentioned their recounts on flood episodes (95.8%) which they believe altered not only the barangay’s landscape, but also in their everyday lifestyle. Socio-economic status and individual psychological make-up are among factors that have been stirred by this bizarre incident. As a result, preventive and mitigating measures have been drawn to avoid or lessen the impact of these catastrophic occurrences. Seventeen (17) or 19.8% of the resident-respondents mentioned that there is a need for “clean and green” implementation drive such as regular declogging/cleaning of canals or drainage systems, waste segregations, etc. According to some fieldworkers, some respondents placed the blame on congested canals/man holes as a culprit of floodings in the barangay, especially when heavy rains poured down during Typhoon “Ondoy’s” destruction in 2009.

In terms of preparing for the possible ravaging impacts of flood occurrences, eleven (11) or 12.8% of the respondents remarked that they will elevate important belongings/appliances/valuables/documents to high places in case huge rains lead to destructive flashfloods. Fifteen or 17.4% of the people in the community said they will prepare emergency kits, clothings, food and water stocks, candles, matches, and other things needed during typhoon’s “wreck of terror.” These figures were welcomed positively by the researchers as this is a “jumpstart” to the requirements. Also, some fieldworkers noted that respondents are “a bit confident now flooding would not be much of their concern as compared to other hazards.” The residents’ expression of confidence can be attributed to their initiatives on making necessary house repairs or renovations such as floor additions, wall fabrications, and among others; the presence of Pandacan Flood Control Station (located at Jesus Street); clear pathways, etc. While Barangay 843 residents are practicing individual preventive and/or mitigating measures during flood episodes, Melican mentioned about Taguig Rescue Teams’ procurement of new lifeboats, sonar gadgets, and other state-of-the-art equipments which is part of Mayor Lani Cayetano’s disaster preparedness program. These disaster harness beef-up is a must especially the city has fifteen (15) barangays which are flood-prone areas due to its proximity location along Laguna de Bay. In connection, another outstanding disaster plan was featured in an article by Nasol which aimed to achieve zero (0) casualties. As stated by Albay Provincial Safety and Emergency Management Office (APSEMO) Chief Cedric Daep, pre-emptive evacuations are being implemented depending on PHIVOLCS’ and PAGASA’s issuance of level of damage that can be brought by earthquakes, typhoons, and other geo-hazards. He also toyed the idea of having a “permanent disaster risk management headquarters.” As a result of their humble efforts to achieve zero (0) casualties during disasters, the Albay province was awarded with the “Galing Pook Award”, besting other eighteen (18) chosen local government units (LGUs) from one hundred
thirty-eight (138) nominees nationwide. In a separate article in Philippine Star [18], the province was heralded as the “Global Disaster Response Champion.”

However, even though almost all of the interviewees have offered their initiatives on flood prevention and mitigation, there were three (3) respondents who affirmed that they don’t make any preparations in the event these hazards occur. This is due to their perception of floods as a “normal geographic phenomenon.” The rest of the twelve (12) resident-respondents did not mention anything regarding this matter. Is it possible that lack of education can be a contributing factor on why these residents made such remarks? In the international scene [19] revealed in their research entitled “Is your household prepared for a disaster such as fire, flood, earthquake, blackout, or a terrorist attack in your community?” that 59% of 414 respondents have no knowledge on home disaster planning. The study is seemed to be parallel with the situation among the residents in Barangay 843. They are in a considerable risk if necessary actions such as seminars on hazard awareness will not be made. (See Table 6 below)

Table 6. Frequency Distribution on Residents’ Risk Reduction and Mitigation Initiatives – Floods

| INITIATIVES                                                                 | f   | %     |
|----------------------------------------------------------------------------|-----|-------|
| a. Initiate infrastructure projects in the barangay such as road elevation,  | 3   | 3.5   |
|     etc.                                                                    |     |       |
| b. Elevate necessary belongings/appliances/valuables to higher places in    | 11  | 12.8  |
|     case heavy rains pour                                                   |     |       |
| c. Implement “clean and green drive” such as regular cleaning/declumbing    | 17  | 19.8  |
|     of canals or drainage systems, waste segregation, providing trash bins  |     |       |
|     in every area of the barangay, etc.                                     |     |       |
| d. Prepare emergency kits, clothings, food and water stocks, candles,      | 15  | 17.4  |
|     matches, flashlights, and other equipments                             |     |       |
| e. Watch television for up-to-date weather report and further announcements | 2   | 2.3   |
| f. Familiarize selves with evacuation centers located in the barangay      | 3   | 3.5   |
| g. Relief operations by NGOs, barangay and city government officials,      | 4   | 4.7   |
|     other organizations or groups                                          |     |       |
| h. Put up tents/fortification of temporary shelters in case the affected    | 2   | 2.3   |
|     area(s) is still under “permanent danger zone”                         |     |       |
| i. Make necessary house renovations/repairs/cleaning such as adding another | 6   | 7.0   |
|     floor(s), concretizing walls, disinfecting floorings after floods have  |     |       |
|     subsided                                                               |     |       |
| j. Safety of the children/relatives/siblings/other family members is the   | 3   | 3.5   |
|     utmost priority                                                         |     |       |
| k. Stock boiled water for drinking purposes                                 | 2   | 2.3   |
| l. Mitigation initiatives were only done – lessening the impact of the     | 3   | 3.5   |
|     hazards                                                                 |     |       |
| m. No preparations done/needed                                             | 3   | 3.5   |
| n. Did not mention anything on flood prevention and/or mitigation measures  | 12  | 14.0  |
|     or initiatives                                                          |     |       |

4.3.3. Earthquakes
Table 6 below revealed that majority of the respondents (9 or 13.6%) mentioned that when earthquakes occur, they will remain inside the house and hide beneath the bed and tables. The researchers expressed their optimism that these respondents have schema on basic actions or “what-to-dos” during earthquakes. However, six (6) or 9.1% of the respondents opted to rely onto the Creator for the safety of the family and neighborhood. They showed enriched spiritual values as viewed that trust in the Almighty Creator as people’s refuge and strength in the midst of disasters is the key to be spared from the destruction brought by these hazards. Other than that “faith and religiosity are strong recourse for disaster survivors with acute stress reactions.” She said that Filipinos turn their attention to God when disasters struck the country [21, 22]. The reason for this, according to Tan (2009), is that this character of Pinoys has developed over the centuries back to the Spanish colonization of the Philippines which lasted for more than three hundred years. He mentioned that one of the teachings of the Church that time involves the theme of “suffering-as-redemption”, where people must submit themselves to these sufferings and accept it as a “way of life.”

In an interesting note that came across the mind of the researchers was while four (4) respondents told that they have to be alert all the time in case of emergency, the same number of resident-respondents will just only rely on instincts when earthquake episodes occur! This might be a manifestation of not being informed regarding earthquake awareness, as compared to two (2) respondents who claimed they are well-informed about this due to watching television news and, according to one fieldworker, one (1) respondent was a former member/volunteer of the barangay.

Another astonishing statement noted by the writers was that three (3) respondents did not initiate any preparations to be done when the community was greeted by quakes, and twenty-nine (29) or 43.9% of them did not mention anything about earthquake prevention and/or mitigation initiatives, measures, or practices. This figure is really alarming. Lack of education can be a contributing factor to this. Other remarks from fieldworkers are: “they have not experienced earthquake episodes”, “since earthquake is unpredictable, the respondents did not give concrete initiatives.”

In rich countries, a “surveillance hummingbird” was invented to monitor what happened after earthquake occurred. The Nano Air Vehicle (NAV) – which looked like a hummingbird – is a surveillance prototype that is designed to “mimic a hummingbird’s flight.” It has the ability to “spy, scout out safe spots in combat zones, hunt for survivors after earthquake tremors, and even locate areas with chemical spills.” [23]. Unfortunately, due to its expensive price of four million US dollars ($4,000,000), it would take a long time to procure this kind of technology for the Philippines. (See Table 7 below)

| INITIATIVES                                                                 | f  | %  |
|---------------------------------------------------------------------------|----|----|
| a. Watch television for further warnings or announcements about earthquake | 1  | 1.5|
| b. Stay inside the house, hide beneath the bed, table, etc.               | 9  | 13.6|
| c. Proceed to higher floors/rooftop of the house                         | 2  | 3.0|
| d. Pray for the family’s and neighborhoods’ safety                       | 6  | 9.1|
| e. Being alert at all times                                              | 4  | 6.1|
| f. Should be well-informed on basic safety measures during earthquake episodes | 1  | 1.5|
| g. Just rely on “instincts” for survival                                 | 4  | 6.1|
| h. Children and other family members'/relatives’ safety is the utmost priority | 4  | 6.1|
4.3.4. Riots/Mob Rules

Table 8.4 below showed that forty-seven (47) or 74.6% of the respondents did not mention anything about riot/stampede prevention and/or mitigation initiatives or measures. This big number of respondents – as noted by some fieldworkers – have not experienced, witnessed, or recalled anything that has something to do with the aforementioned hazard(s). To support the claim, one fieldworker underscored that the barangay’s environment is very “peaceful”, especially at night.

For some respondents who have experienced riots or mob rules, they only recounted few of those encounters. Seven (7) or 11.1% of them mentioned that when these stunts/confrontations/petty quarrels occurred, they would rather stay at home and do nothing. The reason of this, maybe, is they perceive or express confidence that these “intense” showdowns will be over soon. Or possibly, they don’t want to be a “burden” to the community or to get into other people’s skin since some fights lead to “killing spree scheme.” The same number of respondents is in conflict with each other. Instead of keeping themselves idle or ignorant to their surroundings, they rather watch the fight and intervene when necessary. When these circumstances being “normal” or common in this particular/kind of landscape, resident-respondents serve this as part of their “leisure or recreation” or “entertainment time.” But it is in the nature of some people in the community to take action in stopping the “showdown” between people under the influence of vices such as alcohol or drugs, etc. so as not to hamper other people’s daily routines and turn this “petty struggle” to a “bloody battle.” (See Table 8 on the next page)

Table 8. Frequency Distribution on Residents’ Risk Reduction and Mitigation Initiatives – Riots/Mob Rules

| INITIATIVES                                          | f  | %   |
|------------------------------------------------------|----|-----|
| a. Initiate reconciliation scheme between two parties involved in a “heated confrontation” | 1  | 1.6 |
| b. Ignore and just stay inside the house, and do nothing | 7  | 11.1|
| c. Watch the fights/riots/mob rules and/or intervene when necessary | 7  | 11.1|
| d. Barangay officials should maintain “peace and order” | 1  | 1.6 |
| e. Did not mention anything about riot/mob rule prevention and/or mitigation measures or initiatives | 47 | 74.6|

5. Conclusions and Recommendations

Based on the findings of the study, the following conclusions were arrived at:

1. The geo-hazard mapping activities were challenging for the fieldworkers and volunteers since there are very few maps that show the details of the landscape. But the fieldworkers felt satisfaction that they have created very important contribution to the barangay with the production of geo-hazard maps and flyers for hazard awareness. The fear of being evicted from the area, fear of being discovered with their clandestine activities are seemed to be the cause of
some residents’ doubt who were distrustful on the activities held by the fieldworkers and volunteers.

2. Confusion, senility, forgetfulness seem to cause the inconsistencies on accounts of their experiences with geo-hazards. Nobody died during various hazard episodes because the fires originated from other barangay as the respondents have narrated.

3. The hazard episodes have had effects on their properties, caused casualties, and left imprints to their psychological make-up but on the other hand, housing materials and structures have radically changed as a result of two fire incidence, and the residents have developed coping mechanisms for them to recover from the onslaught of geo-hazards.

4. “Man is a geographic animal” so to speak. His awareness and deep understanding of environment has led him to develop risk reduction initiatives to survive an ever changing landscape brought about by physical, natural, and man-made hazards. Same is true with the people of Barangay 843, real survivors indeed.

The following recommendations are being offered:

1. More hazard maps on areas vulnerable to landslides, ground rapture, sinkholes, faults, and other geographic maps on ethnicity, medical, linguistic, social, cultural, hydrologic, physical, biological, political, economic, historical, demographic, etc. as well as evacuation maps of Barangay 843 should be drawn for practical use by the local government units to better serve the community. The hazard maps created initially by the PNU-Geografika organization can also be digitized to be utilized fully by the barangay to effectively develop disaster-mitigating plans.

2. The local barangay leaders should initiate round table discussions and dialogues to process the experiences of resident/victims of hazards. Such intervention is fruitful for empowerment of systems in barangay.

3. The barangay should develop evacuation centers or open spaces in the event that hazards will happen again. There is a need to improve efficient warning system, produce adequate evacuation centers, purchase adequate firetruck and rescue equipment.

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