

June 23, 2017



PROCESS BOHOL INC.

INTERNSHIP ASSIGNMENT ON THE 2013 EARTHQUAKE, BOHOL

Laura van Lieshout (7024)
Disaster Recovery Management
Van Hall en Larenstein, Velp

PROCESS-BOHOL INC.
Esabo Road, Tiptip district, Tagbilaran City
Bohol, Philippines 6300

February 6, 2017- June 23, 2017

Executive Summary

On October 15, 2013 Bohol experienced a 7.2 magnitude earthquake. The epicentre was situated in Sagbayan, a municipality in the West of Bohol. A state of emergency was declared by the officials of Bohol, and said that this quake was monitored as the strongest tremor felt in the area for 23 years (BBC, 2013). After the earthquake several organisations were present in order to respond and rehabilitate the most affected communities. Although, several actors mention that Bohol has recovered and Built Back Better after the earthquake, many issues still remain. Therefore, there is a need for an evaluation on the most affected communities by the earthquake of 2013. This report is written on behalf of PROCESS Bohol Inc., a non-profit organisation situated in Tagbilaran City, the capital of Bohol Island. The organisation mentioned that no follow up has been done on the most affected communities by the earthquake in 2013 within Bohol Province.

This report consist of primary and secondary data. Field research has been conducted among the barangays within the municipality of Maribojoc. During the field research, 227 participants in the sectors of farmers, fishers and households relying on tourism as an income have been interviewed with the use of a questionnaire. Moreover, a Focus Group Discussion was organised in which 11 Barangay Captains participated. To fill the gaps within the desk research, interviews with several stakeholders, such as the Disaster Risk Management Units and Government Departments, have been conducted.

Bohol will remain susceptible to future earthquakes due to its location within the Pacific Ring of Fire. Not only the geological location makes the population within Bohol vulnerable to earthquakes, also the socio-economic issues pose challenges in addressing the risks regarding to earthquakes and other natural hazards. Although, the Philippines is growing economically, the benefit is not equally divided due to the strong presence of corruption and political interests. Moreover, pressures such as urbanization, population growth, deforestation, poor settlements, lack of livelihood options and the recent conflict with the Abu Sayyaf is affecting the resiliency of the communities within Bohol.

During the 20th century, a paradigm shift to more pro-active interventions has been noticed in the Philippines concerning Disaster Risk Management (DRM). Nowadays, many institutions and organisations related to DRM are present within the Philippines with the main goal to build capacity on local levels. The Republic Act. 10121, otherwise known as the Philippine Disaster Risk Reduction and Management Act of 2010 has been the major driver for the establishment of Municipal Disaster Risk Reduction Management Councils (MDRRMCs). However, due to a high set of requirements and the lack of funds and investments by several municipalities, the capacity of the MDRRMC is still weak. Moreover, the relationship between the several actors involved in DRM planning are not favourable. Especially, a clash between the Local Government Units (LGUs) and the International Organisations has been noticed, which left the population with many unfinished houses. Another issue identified is the enforcement of No Build Zones. Although, several households situated in dangerous locations have been relocated, challenges occurred when only after few weeks these households resettled again within their original area.

In order to create sustainability and resilient communities the following themes have to be addressed: creation of several livelihood options; unfinished housing projects; establishment of resilient public infrastructure including evacuation centers; and, the preparedness of the municipality and the local population. According to the capacity of PROCESS Bohol, the relocation project, including advocacy and livelihood assistance is identified as most suitable. Through this intervention the challenges within the relocation project are addressed to secure successful implementation of the programme. However, considerations such as political interests and gender sensitivity have to be taken into account in order to reach sustainability.

Abbreviations

ACDM	ASEAN Committee on Disaster Management
ADB	Asian Development Bank
ADDMER	ASEAN Agreement on Disaster Management and Emergency Response
AID	Project Action Identification for Development of landless rural workers
ADPC	Asian Disaster Preparedness Centre
AFP	Armed Forces of the Philippines
AusAid	Australian Aid
Barangay	Village within a municipality in the Philippines
BEA	Bohol Earthquake Assistance
BIDEF	Bohol Integrated Development Foundation, Inc.
BLECS	Bohol Law Enforcement Communication System
BLDF	Bohol Local Development Foundation, Inc.
BLGU	Barangay Local Government Unit
CC	Climate Change
CCA	Climate Change Adaption
CDRN	Citizens' Disaster Response Network
COA	Commission of Audit
CDP	Comprehensive Development Plan
CLUP	Comprehensive Land Use Plan
CSOs	Civil Society Organizations
DBM	Department of Budget and Management
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DILG	Department of Interior and Local Government
DIPECHO	Disaster Preparedness ECHO Programme
DND	Department of National Defence
DOF	Department of Finance
DOH	Department of Health
DOST	Department of Science and Technology
DPWH	Department of Public Works and Highways
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRRMCs	Disaster Risk Reduction and Management Councils
DSWD	Department of Social Welfare and Development
EC	The European Commission
EU	European Union
FGD	Focus Group Discussion
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HFA	Hyogo Framework for Action
IFRC	International Federation of Red Cross and Red Crescent Societies
ILO	International Labour Organization
IOM	International Organisation for Migration
JICA	Japan International Cooperation Agency
LDRRMF	Local Disaster Risk Reduction Management Fund
LEAD	Leadership Enhancement and Development
LGUs	Local Government Units
LMP	League of Municipalities in the Philippines
MDGs	Millennium Development Goals
MDPC	Municipal Development and Planning Council
MDRRMC	Municipal Disaster Risk Reduction Management Council
M.E.R.U.	Municipal Emergency Response Unit
MSWD	Municipal Social Welfare and Development

NAMRIA	National Mapping Resource and Information Authority
NDCC	The National Disaster Coordinating Council
NDDRMP	National Disaster Risk Reduction and Management Plan
NDRRMF	National Disaster Risk Reduction Management Fund
NGOs	Non-Governmental Organizations
NHA	National Housing Authority
NOAH	Nationwide Operational Assessment of Hazards
MGB	Mines and Geosciences Bureau
OCD	Office of Civil Defence
OCHA	Office for the Coordination of Humanitarian Affairs
ODA	Official Development Assistance
PAGASA	Philippine Atmospheric, Geophysical, Astronomical and Services Administration
PAR Model	Pressure and Release Model
PASCRES, Inc.	People's Alternative Study Centre for Research and Education in Social Development, Inc.
PCCC	Philippine Climate Change Commission
PDCC	Provincial Disaster Coordinating Council
PDRF	Philippine Disaster Recovery Foundation
PDRRMC	Provincial Disaster Risk Reduction Management Council
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PIA	Philippine Information Agency
PNP	Philippine National Police
PNRC	Philippine National Red Cross
POs	People's organisations
PPDO	Provincial Planning and Development Office
PPP	Purchasing Power Parity
PROCESS Bohol	Participatory Research, Organization of Communities and Education towards Struggle of Self-reliance
READY Project	Hazard Mapping and Assessment for Effective Community-based Disaster Risk Management
REDAS	Rapid Earthquake Damage Assessment System
SHRMD	Strategic Human Resource Management and Development
SDC	Swiss Agency for Development and Cooperation
SDGs	Sustainable Development Goals
SNAP	Philippine Strategic National Action Plan for Disaster Risk Reduction
SPADE	Strategic Performance Assessment and Development for Excellence
T.a.R.S.I.E.R. 117	Telephone and Radio System Integrated Emergency Response 117
UN	United Nations
UNDP	United Nations Development Programme
UNCHR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Emergency Fund
UNISDR	United Nations Office for Disaster Risk Reduction
WHO	World Health Organisation

Table of Content

Executive Summary	1
Abbreviations	2
1. Introduction.....	5
2. Background.....	7
3. Situation Analysis	10
3.1. Risk Landscape.....	10
3.1.1. Hazard Profile	11
3.1.2. Root Causes	12
3.1.3. Dynamic Pressures	13
3.1.4. Unsafe Conditions	14
3.2. Institutions and Governance Context.....	14
3.2.1. Risk Perceptions	15
3.2.2. Institutions and Agendas.....	16
3.2.3. Policies and Laws.....	25
3.3. Stakeholders Relationships.....	25
4. Case Study: Maribojoc.....	28
5. Barriers and Opportunities.....	39
6. Identification of Response Options	40
7. Relocation and Livelihood Assistance Project	41
8. Conclusion	47
References.....	48
Annex 1. Hazard Profile: Facts and Figures	56
Annex 2. Sendai Framework.....	60
Annex 3. Hazard Mapping Institutions	61
Annex 4. PDRRMP 2014-2016: Objectives and Plans.....	62
Annex 5. Stakeholder Map	64
Annex 6. Questionnaire.....	65
Annex 7. Focus Group Discussion Design.....	67
Annex 8. Interviews.....	69
Annex 9. Budget Field Research	71
Annex 10. Maribojoc: Facts and Figures	72

1. Introduction

On October 15, 2013, an earthquake struck Bohol. Although, there has been major damage and many casualties were reported, little research has been conducted on the living conditions of the most affected communities nowadays. This research is carried out as part of the internship assignment by Laura van Lieshout, a third year Disaster Risk Management student at Van Hall en Larenstein, Velp. This report is written on behalf of the internship provider: PROCESS Bohol Inc., a non-profit organisation situated in Tagbilaran, Bohol. PROCESS Bohol seeks to gain a better insight in the situation of the most affected communities by the earthquake of 2013 in Bohol.

The research objective of this project is to make a contribution to PROCESS Bohol and their research on the most affected communities by the earthquake of 2013. The aim is to seek better insight on the impact and overall situation after the earthquake in Bohol. Moreover, to identify interventions to improve the livelihoods of these communities and will answer the following research question:

“Which interventions are suitable for improving the living conditions of the most affected communities by the earthquake in 2013 within the Province of Bohol?”

This report consists of background information elaborating on the context of the research and a comprehensive situation analysis. After, a closer look will be given into the case study on the situation of the population within the municipality of Maribojoc. At the end, response options are identified and recommendations are provided.

Target Audience

The target audience of this report is PROCESS Bohol, by identifying options for new interventions to improve the livelihoods of the most affected communities. Moreover, will provide recommendations towards the municipal and provincial government for improving the risk reduction measures.

Study Area

The Province of Bohol is the main study area of this research. To clarify on the impact of the earthquake in 2013, a case study on the municipality of Maribojoc is conducted. Maribojoc is a coastal town within the Province of Bohol. This area was chosen since the earthquake of 2013 had a major impact and caused many disruptions within the livelihoods of the population. The municipality experienced a coastal uplift due to the earthquake which is very rare in the history of ground shaking. Due to the Maribojoc Fault, the municipality will be vulnerable to future earthquakes including secondary hazards. Moreover, Maribojoc is close to the internship provider and PROCESS Bohol Inc. worked within this municipality over the years which makes it accessible. Maribojoc is diverse including rural and urbanized areas comprising the coast but also inland barangays (village within a municipality).

Target Group

The overall target group within this research are the communities located within the Province of Bohol, with special focus on Maribojoc. Within the field research, the focus was on households relying on fishery, farming and tourism activities since these are the main livelihoods within Bohol and were greatly affected by the earthquake of 2013. Moreover, PROCESS Bohol has a history of working together with the population within these sectors.

Methodology

To answer the main question and reaching the aim of the research, desk study and field research has been conducted as follows:

Desk Study

As preparation for the field research, desk research has been utilized during the time at the placement organisation. The desk study is focussing on the Philippines in general and the island of Bohol on which PROCESS Bohol and the targeted municipality are situated. Moreover, the study has been guided by the book: *Reaching Resilience 2.0*. with Annelies Heijmans as lead author. This book provided action points for making a comprehensive situation analysis of the people living in the Province of Bohol. To answer these action points, several sources have been used including:

- Hazard maps and data;
- Reports of PROCESS Bohol;
- Websites and Reports of the local governments; and
- Websites and Reports of humanitarian agencies and other non-governmental organisations.

Field Research

Prior to the field research, the municipality of Maribojoc has been visited, to get familiar with the context. To fill the gaps after using the above mentioned sources within the desk study, interviews have been conducted with several institutions and organisations. More information on the interviews that have been utilized can be found in annex 8.

In order to gather more information on the risk perceptions of the Barangay Captains and the impact on the different barangays within the municipality of Maribojoc, a Focus Group Discussion (FGD) has been carried out. A group discussion is an informal and voluntary gathering of individuals to exchange ideas, information, and suggestions on needs, problems, subjects, etc., of mutual interest (Business Dictionary , 2017). During the FGD, the Officials of 11 barangays joined two activities: Risk and Resource Mapping and the Discussion Diagram. More information on the group discussion design, the rationale, time table and outline can be found in annex 7.

Moreover, a questionnaire has been conducted among the communities living in the municipality of Maribojoc. The questionnaire can be found in annex 6. and gives a short overview on the living circumstances of the people concerning the risks of earthquakes in the selected municipality. The results are processed in SPSS (Statistical Package for the Social Sciences) to archive data and to give a comprehensive overview on the outcomes of the questionnaire.

Timeline

The table below gives an overview of the tasks and activities conducted per month.

	February	March	April	May	June
Formulation of Research					
Desk Research					
Transect and Observations					
Preparation Field Research					
Interviews					
Questionnaires					
Group Discussion					
Processing Data					
Finalizing Report					
Presentation					

Table 1 Overview Tasks and Activities

2. Background

The Participatory Research, Organization of Communities and Education towards Struggle for Self-reliance (PROCESS) is a non-profit organization established on October 2, 1982 in Manila, the Philippines. PROCESS Bohol is rooted in the Project Action Identification for the Development of Landless Rural Workers (AID) undertaken by the Rural Workers' Office in 1979 in the provinces of Antique and Batangas. This first project envisioned the use of participatory methods to measure the living conditions of the landless rural workers who would actively participate in formulating solutions. In 1985 PROCESS (named in 1982) came to Bohol, with Tubigon and later Tagbilaran, as the centre of its operation (Bohol Philippines, 2017) & (PROCESS-Bohol, 2010).

The Philippines is a country in South-East Asia, counting more than 7000 islands, bordered by the South China Sea and the Pacific Ocean. The country has three major island groups starting with Luzon, which is the largest island. Manila, the capital of the Philippines is located on this island and counts 1.7 million people. The other two island groups are the Visayas, including Bohol, and Mindanao (Philippine Consulate General, 2017). These are further distinguished in 18 regions, 81 provinces and 1490 municipalities (Philippine Statistics Authority, 2016). The total land area is 298,192 km², and the country counts around 103 million people in 2017 from which 44.8% live in urban areas. (Worldometers, 2017). The Philippines is characterized by mountains with narrow to extensive coastal lowlands. Moreover, 25% of the land is covered by forests and 41% used for agriculture (Caritas Manila Emergency Aid, 2013). The main agricultural products are rice, corn, coconut and sugar. Also the manufacturing sector contributes to the income of the Filipinos. (Philippine Consulate General, 2017). The Philippines is rich in mineral sources, such as gold, copper and nickel (Philippine History, 2017). The climate is characterized by a dry and wet season. The dry and hot seasons run from March to May, on the other hand the wet season, which is also the typhoon season, runs from June to October (Philippine Consulate General, 2017).

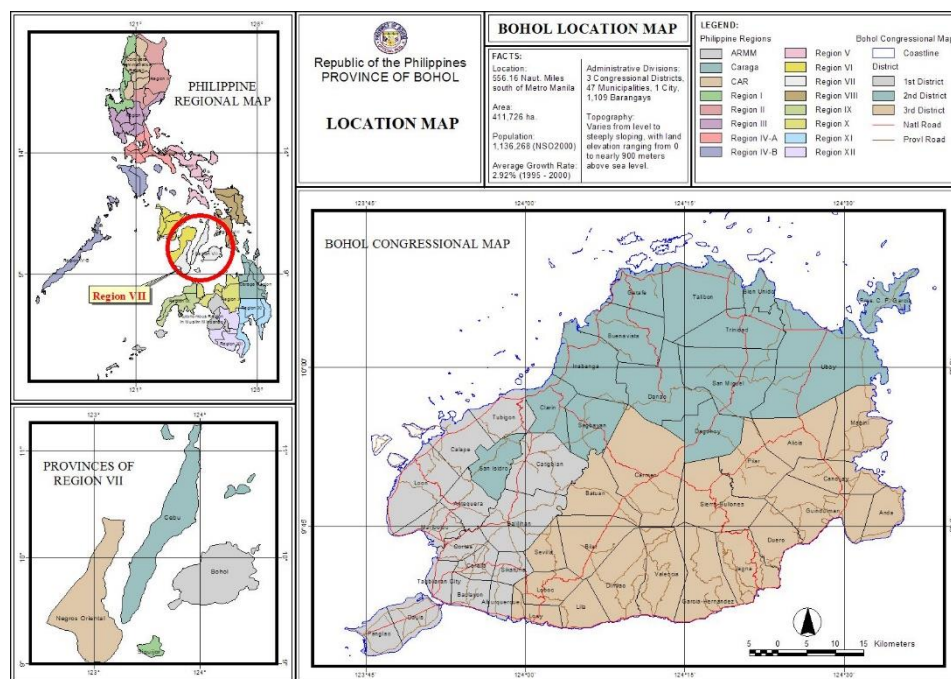


Figure 1. Map of the Philippines and Bohol (PPDO-Bohol, 2017)

Bohol Province is centrally located in the Philippines, and belongs to the four provinces of Region 7. Bohol province is composed of mainland and 81 offshore islands. The population of the province ranked 17th highest among the 78 provinces in the Philippines, and reached over a million people and is growing with 2.92 percent per year. The province has one city serving as the capital: Tagbilaran. Furthermore, Bohol is composed out of 48 municipalities and 1,109 barangays. Of the 48 municipalities, 30 are considered coastal areas including the capital. The landscape varies from steeply sloping with land elevation ranging from 0 to 900 meters above sea-level. Around 73% of the vegetation cover is dominated by grassland, coconut trees and forest, including 32 mangrove species. The climate is characterized with rainfall evenly distributed over the year and with an annual temperature of 27 degrees. Bohol is endowed with agricultural, fishery and mineral resources. Around 54 percent of the total employed population is working in the agricultural sector. Only 16 percent is working in the industry, dominated by the handicraft industry. Another 30 percent is working in the service sector, including touristic attractions with emphasis on ecological and cultural sites (PPDO, 2017).

On October 15, 2013 Bohol experienced a 7.2. magnitude earthquake. The epicentre was situated in Sagbayan, a municipality in the West of Bohol. A state of emergency was declared by the officials of Bohol, and said that this quake was monitored as the strongest tremor felt in the area for 23 years (BBC, 2013). The earthquake took 227 lives and left 368,691 people without houses. Houses, roads, bridges and historic churches dating back to 16th and 17th century were damaged. Due to the damaged infrastructure, especially the bridges, aid was difficult to deliver. The Philippine Institute of Volcanology and Seismology (PHIVOLCS) mentioned that the earthquake was triggered by an unknown fault. A ground rupture created a wall of rock above the epicentre and caused many displacements within several municipalities (PPDO, 2014) . Moreover, many earthquake induced landslides were recorded, killing 20 people and damaged infrastructure. For a month the affected communities had no access to electricity and drinking water. On October 29, 2013, a sinkhole was indicated with a high susceptibility of a landslide in Tagbilaran city, and people were advised to take immediate action and to evacuate (EDIM, 2013)& (NDRRMC, 2013).

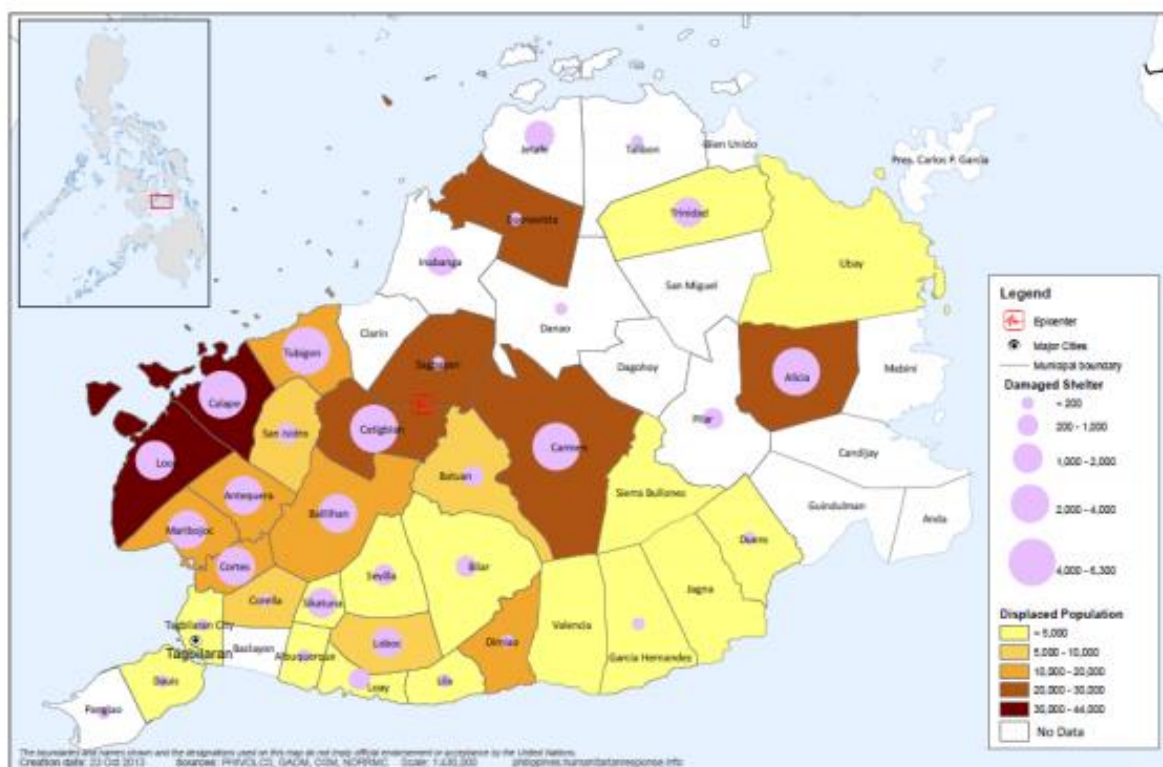


Figure 2. Displaced people and damaged houses after Earthquake in 2013 (UNICEF, 2014).

PROCESS Bohol assisted communities in direct needs by emergency relief and shelter assistance in 13 municipalities. The organization delivered packs of goods, water, tents, medicines and other defined needs (PROCESS Bohol, 2013). Moreover, PROCESS collaborated with the International Labour Organization (ILO) for emergency employment through cash for work concerning 3 projects. The first project was the construction of 10 transitional houses in the municipality of Loon. Secondly, the Provision of Immediate Income for Families through Clearing and Management of Debris in the Abatan River. Lastly, Livelihood Recovery for Communities along Abatan River through Restoration of the River's Navigability and Repair of Ecotourism Facilities Damaged by the 2013 Earthquake. In order to achieve the third project, PROCESS took lead in cleaning up 10km of the Abatan River and stabilizing the riverbanks. Moreover, rehabilitation of the swimming area at the Karawasan Falls and reconstruction of the hanging bridge in Loreto have been realised (PROCESS Bohol, nd.).

Also, the United Nations Development Programme (UNDP) asked for assistance in providing supplements to the victims with the Cash for Work approach including debris clearing. PROCESS was tasked to implement the project particularly in the 3 municipalities of Loon, Antequera and Maribojoc. Mostly day care centres, school buildings, health centres, police stations and chapels were damaged and 259.4 tons of debris were collected in the 3 municipalities. A total of 924 workers were targeted including 184 women (PROCESS Bohol (a), 2013).

The World Health Organisation (WHO) mentioned that after one year the health facilities have been repaired or rebuilt, but some remain WHO tents and the work in Bohol continued. The WHO remained restoring health services and trained local staff to ensure the best possible preparedness in case of future emergencies (World Health Organisation, 2014).

Also the Provincial Planning and Development Office (PPDO) and the Provincial Disaster Risk Reduction Management Council (PDRRMC) made efforts in the response and rehabilitation process. The report on *"Post-Great Bohol Earthquake Rehabilitation Plan"* states that just within minutes after the earthquake stroke, the PDRRMC came in immediate action. The emergency responses focused on the search and rescue of the affected people including retrieval of dead bodies under the rubble. After mainly financial resources and goods were distributed. For the long term a reconstruction and development plan was created, which took into account disaster-resistant and climate resilient measures to rehabilitate communities and natural ecosystems (PPDO, 2014).

As a response to the earthquake, the Department of Interior and Local Government (DILG) implemented the Bohol Earthquake Assistance (BEA) program in 2014 in order to facilitate the recovery and rehabilitation of the most affected communities within in Bohol. This was done through provision of technical and financial assistance to the LGUs in order to repair facilities such as barangay halls, schools and other public infrastructure. This was only possible through the certification provided by the Commission of Audit (COA). However, the rejection by COA in several projects posed delay and still problems are unaddressed within the LGUs nowadays (MPDC, 2017)& (DILG, 2014). Also the lack of man-power within the LGUs is a cross-cutting issue concerning the execution of the BEA projects. Although, these issues occurred, DILG mentioned that of all the projects proposed 91% are completed nowadays (Lucino, 2017).

Moreover, the Department of Environment and Natural Resources (DENR) mentioned that after two years Bohol recovered from the earthquake. Although, the churches were badly hit, it now seems to attract many tourists, as does the geologic changes that occurred after the earthquake. For example, the sinkholes that were created and the fault rupture, which is called the Great Wall of Bohol (Department of Environment and Natural Resources, 2015).

3. Situation Analysis

Before looking into the case study on Maribojoc, it is of importance to understand the environment in which this municipality and communities are acting. These factors will be described according to the handbook of *Reaching Resilience 2.0*. with Annelies Heijmans as lead author. This handbook is designed to encourage thinking and provide insights and ideas about how to design well-integrated step by step actions. Thereby, this handbook provides actions points and steps that need to be undertaken to get a snapshot of reality and to design interventions accordingly (Heijmans, 2013). Guided by the action points, this section will provide a view into the Risk Landscape, by undertaking the Pressure and Release (PAR) Model. After, the institutions and governance context are described, looking into different risk perceptions, and policies and laws concerning Disaster Risk Reduction (DRR). Lastly, a list of important stakeholders will be provided and examined how these actors act amongst each other within this field.

3.1. Risk Landscape

People's risk landscape refers to the wide range of risks to which people are exposed (Heijmans, 2013). To evaluate these risks, also the social production of vulnerability needs to be considered and must be seen as a cross-cutting combination of vulnerability and hazards. In order to do this, the *Pressure and Release Model* is used based on the idea that an explanation of disasters requires to trace connections between the impact of the hazards on people and the series of social processes that generate vulnerability (Wisner, et al., 2003).

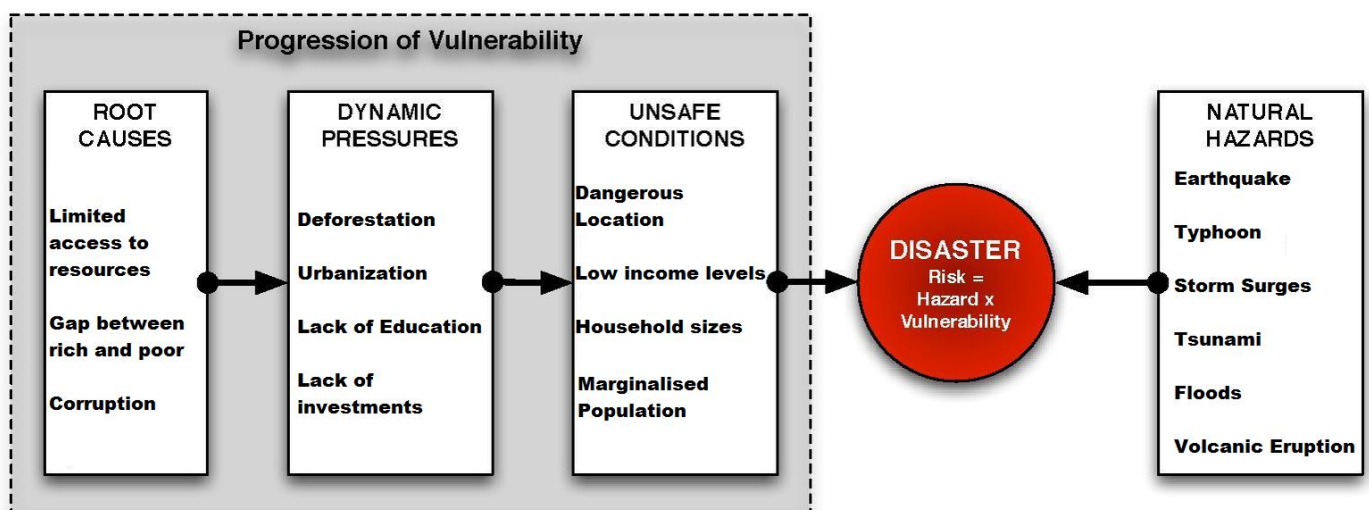


Figure 3. Pressure and Release Model, the Philippines: Bohol

Root causes: Root causes are characterized by the economic, demographic and political processes. These are also connected with (dis)function of the state and governance.

Dynamic Pressures: These are processes and activities that translate the effects of root causes into temporally unsafe conditions. Examples of dynamic pressures are epidemics, rapid urbanisation and violent conflicts.

Unsafe Conditions: Unsafe conditions are defined as the specific forms in which vulnerability of a population is expressed during time and space in conjunction with a hazard, such as living in a hazardous location (Wisner, et al., 2003).

3.1.1. Hazard Profile

This section will describe the hazard profile and will elaborate more on the hazards faced by the Philippines with special focus on Bohol. Note that although the Philippines faces many hazards, the focus of this report is on the risks of earthquakes. More information and figures can be found in annex 1: Hazard Profile: Facts and Figures.

According to the United Nations (UN), the Philippines was the fourth among countries in the world hit by the highest number of disasters over the past 20 years, and therefore makes the Philippines one of the most disaster prone countries. Moreover, the report found that 90 percent of the major disasters were caused by weather-related events, and affecting 130 million people over the last 10 years (Montenegro, 2015). The Basic Country Statistics show that the Philippines is prone to earthquakes, typhoons, storm surges, tsunamis, floods and volcanic eruptions (PreventionWeb, 2014).

Over the past 20 years the Philippines recorded 27 destructive earthquakes, causing 365 deaths and a total of 3,646,442 people were affected (EM-DAT, 2017). The Philippines is highly susceptible to earthquakes due to its geographical location: situated in the Pacific Ring of Fire. The Pacific Ring of Fire is an area encircling the Pacific Ocean where frequent earthquakes and volcanic activity result from the movements of the tectonic plates. Not only are earthquakes triggered by the movement of tectonic plates, also human activity can induce earthquakes. For example, storing large amounts of water by a dam construction, building extremely heavy buildings, injecting liquid into wells, by coal mining and oil drilling (Orallo, 2011).

The province of Bohol is vulnerable to natural disaster such as drought, storm surges, tsunami, flooding, earthquake, typhoons and landslides. Moreover, Bohol is ranked as the 9th of the top 20 provinces that are vulnerable to a one-meter sea level rise due to Climate Change (PPDO, 2014). From October 2004 to December 2013, 72 disaster incidences were reported causing a total damage of PHP 68, 978 million. From 2006-2008 a total of 100 earthquakes were measured, however only 23% were perceptible and felt by the population (Provincial Government of Bohol, 2014).

The earthquakes are induced due to the presence of the East Bohol Fault, the North Bohol Fault and another fault located in the Bohol Sea going to the Mindanao Sea facing the southern part of Bohol. Also the presence of the Negros Trench and the Central Leyte faults contribute to the susceptibility of earthquakes (Provincial Government of Bohol, 2014).

Earthquakes can induce secondary hazards such as ground rupture, tsunamis, liquefaction, landslides, fires and floods. Liquefaction and landslides can be experienced still at a distance of 100km from the epicentre. The Risk and Vulnerability Assessment Report of the Provincial Government estimated 215 barangays highly susceptible to earthquake-induced landslides (Provincial Government of Bohol, 2014). Not only do earthquakes cause environmental damage, also the impact on human life can be tremendously, varying from the intensity of the earthquake itself, causing casualties and short to long term socioeconomic disruptions. Due to the intense ground shaking and vibration, low and tall buildings, towers and posts may tilt or collapse and foundations of roads and bridges may break (Orallo, 2011).

Earthquakes are recorded by seismometers and can even be measured up to great distances (Orallo, 2011). In the Philippines, PHIVOLCS is the main actor in recording and predicting earthquakes. In 2014, PHIVOLCS developed a wide-area disaster prevention system to detect seismic activity by using seismic intensity meters and tide indicators, as well as offering disaster countermeasures. This system enables the institute to promptly convey the information to the relevant ministries and agencies in the event of an earthquake (UN, 2014). During the early warning phase, radio and social media are important tools for reaching people in the affected areas.

3.1.2. Root Causes

Socioeconomic Situation

The Philippines has developed itself as one of the major economies in the region, in 2015 the Philippines was behind China and Vietnam only (World Bank, 2016). The growth of economic development has been because of high government spending. Also, millions of Filipinos are working abroad and send remittances to their families. The economy of the Philippines is highly depended on industry (wood products, electronics, etc.) and agricultural incomes (EconomyWatch, 2010). The key risks on the economic growth are uneven recovery of high economies, but also the El Niño in 2016 posed delays in the Purchasing Power Parity (PPP) projects (World Bank, 2016). In Bohol, agriculture and fishery are the main income. Although great development has been achieved, further improvements on irrigation facilities and agricultural technology are needed (PPDO, 2017).

The main focus of the Philippines is to develop job opportunities and reduce poverty. Long term economic development is only possible if these areas are properly addressed. Only a small number of the population is benefitting of the economic development due to unequal distribution of income (EconomyWatch, 2010). Although, the government is investing in reduction of extreme poverty, structural poverty remains, especially among households depending on agriculture, fishery and urban populations (World Bank, 2016). The Philippine Statistics Authority reports that in the Central Visayas the population has an average income of PHP 239 000 (Philippine Statistics Authority, 2015), however this number is dominated by high income classes. In 2016, OXFAM released a report stating that the global inequality crisis has become worse and was reaching new extremes. This means that over the years the gap between rich and poor is becoming bigger, including in the Philippines (Cruz, 2016). Poverty in Bohol remains high, due to seasonal employment and minimal off-farm job opportunities (PPDO, 2017).

Political Situation

In the last years, the government preserved macroeconomic stability, promoted transparency and directed to better infrastructure and social services (World Bank, 2016). However, challenges against weak public institutions and inadequate accountability mechanisms on national and local levels, reduce the quality of governance and if left unaddressed, will pose risks to effective Disaster Risk Management (Asian Development Bank, 2014).

On June 30th, 2016, a new president has been elected: Rodrigo Duterte. Duterte is world known for his vow on ending the illegal drugs trade and corruption (Nicolas, 2017). Thousands of people related to drugs trade have already died since Duterte took office. Right groups are warning police who are carrying out extrajudicial killings not just to fight crime but also their own corrupt activities (Newsinfo, 2017).

The politics are characterized by the strong roles of money, media, and personal influence, as well as the violence that coexists with competitive elections (Asian Development Bank, 2014). Although, Duterte vowed to end corruption, many people show concern that the Philippines will even get more corrupt (Mourdoukoutas, 2017). The Corruption Index 2016, indicates that the Philippines is ranking 101 among 176 countries. With only a score of 35, the population perceives their country moderate to highly corrupt (Transparency International, 2016). Especially while delivering aid, there is a concern as millions of dollars in cash and goods rush in from around the world (Teves & Perry, 2013). Sources mention that corruption within the public sector will remain one of the biggest challenges and will lead to manifest problems in future efforts to respond to climate change and extreme poverty (Sustainability in Global Statistics, 2017).

3.1.3. Dynamic Pressures

Urbanization

The Philippines is highly urbanized, with 44.8% of the population living in urban areas. Although, the urbanization level has been stable over the last years, there has been an increase in the total population. Due to population growth, the national population grew from 60 million in 1990 to 103 million in 2017 (Worldometers, 2017)& (Asian Development Bank, 2014). Rapid urbanization of the Philippines poses great threats to the country. Without sustainable urban development plans and policies, cities will fail to create economic opportunities and protection from environmental risks (UN, 2017). Urban areas are posed to higher risks due to the densely populated areas, limited escape routes and poverty (Donner & Rodriguez, n.d.).

Deforestation

Economic activities pressure the environment of the Philippines and Bohol Island. Due to high demand for infrastructure and goods, this pressure will only increase in the coming years (Provincial Government of Bohol, 2014). The total tree cover loss in the Philippines from 2001 to 2013 was around 700,000 hectares. Bohol Island lost 0.13% of its total forest cover from 2001 to 2015. Not only does loss of forestry encounter a loss of biodiversity and contribute to climate change. In case of earthquakes natural vegetation is of importance, and loss of forestry increases the risks of earthquake-induced landslides (Salas, 2015).

Lack of Education

In the Philippines half of the children are not enrolled in school. Although the government mandates free education, poverty remains the primary reason for non-enrolment and drop-outs. Moreover, disabled, working, indigenous and street children experience high barriers to access of education. Boys are also more likely to quit school earlier, due to expectation of man providing for the family (UNICEF, 2012). Not only gives education prosperity of a better paid job and diversifies the possible livelihood options. It also gives children the opportunity to learn about disaster management, and therefore reduces the vulnerability of the future generation (PreventionWeb, 2015).

Lack of Investments

During emergency responses there is a big difference in the extent to which Local Government Units (LGUs) are able to respond. In the majority of the LGUs the enforcement of land-use planning and building codes is not yet put into practice. Also the integration of Disaster Risk concerns in local government development plans are still missing (Caritas, 2014). Moreover, the DILG Officer on Provincial Level mentioned that regarding to the BEA project, some LGUs did not submit proposals in order to improve the damaged constructions. As reaction on this matter one of the mayors mentioned to rather invest in attractive public sites. The fail of local governance and the perception of several mayors is still a remaining issue in making Bohol a disaster resilient province (Lucino, 2017).

Conflict

On April 11, Abu Sayyaf entered Inabanga, a municipality in the Province of Bohol. The Abu Sayyaf are the most violent jihadist group in the Southern part of the Philippines, on the island of Mindanao. Moreover, this group has a history of kidnapping mostly tourists. The invasion resulted in a gun fight with the military group of Bohol, which caused a lot of unrest within the province. The population in Inabanga and the neighbouring municipality of Clarin stayed nights in an evacuation centre, refusing to stay at home due to fear (Bohol Chronicle, 2017). This fear was also translated to the tourists planning to come to Bohol Province. Due to the invasion, several tourist activities have been cancelled and poses threats against the economic developments since a lot of income has been lost.

3.1.4. Unsafe Conditions

Poor settlements

Mostly the poorest are forced to live in dangerous locations, for example next to riverbanks, along the coast or on steep slopes. This is mainly due to rapid urbanization, which led to a large number of unplanned and overcrowded settlements (Caritas, 2014). People live in mountainous areas and near the shoreline due to their livelihoods. In case of an earthquake, these locations pose greater risks regarding to earthquake induced landslides and floods. Moreover, due to poverty the gross of the population of Bohol is not owning the lot. Problems occurred during the time of rehabilitation since one of the requirements of receiving funds for building back the houses, was that the people had to own the lot. Therefore, many people are still not rehabilitated after the earthquake (Saco, 2017).

Low income levels

As mentioned before, the poverty rates in the Philippines remain high. The average income for all private workers and employees involved in agricultural activities in Bohol is PHP 180 (3.36€) and for non-agricultural workers about PHP 200 (3.73€) a day. However, this is conflicting with the prescribed minimum wage set by the national government. As for Bohol, the employees within the non-agricultural sector are supposed to earn PHP 323, and in the agricultural sector 303 PHP a day (Department of Labour and Employment, 2017). Due to low income levels, people have no financial resources to invest in concrete and earthquake resistant houses and a bigger part of the population is forced to live in make-shift housing (PPDO, 2017).

Marginalised people

Especially women, children, elderly and disabled people are highly vulnerable to the effects of earthquakes (Government of Canada, 2014). The main reason why women are particularly vulnerable during an earthquake is that, women households are generally poorer than men, are often less mobile due to cultural reasons and are less likely to have a background of education. Women are held responsible for the children, so also during an earthquake. (Thomson Reuters Foundation, 2013). Overall, in the Philippines, the household sizes are also bigger, which means more children to take care of. The average household size recorded in Bohol is 5.3 persons in the same census. Almost half of the women in Bohol belong to the childbearing age group from the age between 15 to 49 years old. Households in the Philippines are often of bigger size due to religious influences on the non-use of anti-conception (PPDO, 2017). Moreover, the Provincial Officer of the Social Welfare and Development Department mentioned that after a disaster strikes special attention has to be given to women and children concerning safety and gender based needs (Tecson, 2017).

3.2. Institutions and Governance Context

This section aims to understand the different risk perceptions, Disaster Risk Management (DRM) institutions and their agendas, and policies in law in place. Moreover, to find disconnects between institutions, policies, plans and funding, and the local realities. These disconnects limit the cooperation between different actors in integrating policies and DRR plans. The governance context refers to: *“the diversity of institutions, actors, institutional relations and structures and to interactive processes where local authorities, private and voluntary organizations exercise their power and/or rights to achieve favourable outcomes* (Heijmans, 2013).”

3.2.1. Risk Perceptions

As part of the Institutions and Governance Context, the risk perceptions of different actors are discussed. This point elaborates on how actors at several institutional levels frame and explain disaster risks. These explanations give meaning on how these actors act and set priorities within DRR. The actors are divided in the government; Civil Society Organisations (CSOs) and Non-Governmental Organisations (NGOs); private sector; and the local population (Heijmans, 2013).

Viewpoint of the Government

In general, the Philippines has made developments regarding to the disaster perspective which shifted from reactive to more proactive actions. Until the 20th century the disaster management of the Philippine government started by focussing on the provision of assistance immediately after a disaster stroke and concentrated more on technical interventions. This approach shifted towards a developmental approach where disasters are seen in a growing manner of development concern and the result of unsustainable development practices. Instead of modifying hazards, the focus is now on modifying vulnerabilities in which measures as community-based disaster preparedness, early warning, indigenous knowledge and land-use planning are included. Moreover, the practice of a single hazard approach switched to a multi-hazard approach, where multiple hazards are interlinked in interventions (Orallo, 2011). Although DRR has been gaining attention among governments, the total paradigm shift has not yet fully happened and still remains a challenge in both understanding how DRR and Climate Change Adaption (CCA) is mainstreamed into plans and policies. This issue was also noticed during the interviews with the several departments within the Provincial Government. Regarding to earthquakes these departments only mentioned the fault lines and cave systems as the major driver of vulnerability, and socio-economic aspects were left out.

In addition, gaps in terms of knowledge, understanding and capacities are still perceived as a challenge for the country (NDRRMC, 2011). The Telephone and Radio System Integrated Emergency Response 117 (T.a.R.S.I.E.R. 117) mentions the lack of technology compared to for example Japan, and the lack of earthquake resistant structures as great threats to the population (Gatal, 2017).

Also, the lack of the enforcement of the No Building Zones was addressed by the DENR. Over the years, the people were relocated from dangerous areas, however after a couple of weeks these people are settling again in these locations, mainly due to lack of knowledge considering different livelihoods options (Penro, 2017).

Viewpoint of CSO's/NGO's

The Red Cross Officer within Bohol considers the fault lines as the most important reason for the occurrence of destructive earthquakes. Also, the mentality and laziness of the local population are challenges in reaching sustainability concerning DRR, which is especially visible during trainings and drills (Batoy, 2017). In contrast to the Red Cross which recognizes problems within the local population, the foundation 'Give to Asia' mentions social forces such as urbanization, high poverty, environmental destruction and illegal mining and logging as the main complications in addressing disasters (Give2Asia, 2017).

PROCESS Bohol recognizes the fact that governmental buildings within Bohol are Build Back Better, however that the living conditions of the communities did not improve. According to the executive director Bohol Province will be susceptible for future earthquakes due to the present faults and the social pressures such as poverty (Roslinda, 2017).

Viewpoint of the Private Sector

In the aftermath of typhoon Haiyan, there has been a shift in the role which businesses are playing in humanitarian relief. The Philippine Disaster Recovery Foundation (PDRF) is composed mostly of executives of the private sector for disaster management. PDRF activities include preparedness, relief, recovery and reconstruction. However, this was only possible on the condition to include these businesses into the decision-making and design processes of the country (Caritas, 2014). Currently, malls such as Alturas, Bohol Quality and the Island City Mall are trained by T.a.R.S.I.E.R. 117 on DRR and evacuation measures (Gatal, 2017).

Viewpoint of the Local Population

Also the local population is very much aware of the risks of earthquakes and Bohol's location within the Pacific Ring of Fire. However, due to the strong catholic presence within Bohol, some of the locals perceive earthquakes as an act of God. Moreover, the lack of different livelihood options are considered as an issue, since many people live among the coast lines and landslide prone areas due to their livelihood. The priest of Maribojoc mentioned the Maribojoc fault as one of the major factors increasing the risks of the people within the municipality (Saco, 2017).

3.2.2. Institutions and Agendas

This step aims to identify institutions and the current DRR plans in place at international, national, provincial and local level regarding to earthquake preparedness (Heijmans, 2013). In the Philippines, the local government administrative system is three-tiered: provinces and highly urbanized cities; cities and municipalities; and barangays (villages) as the smallest unit (Caritas, 2014). In annex 5. a short overview on the most important stakeholders is provided.

International Level

Sendai Framework

During the third UN World Conference in Sendai, Japan, on March 8, 2015, *The Sendai Framework for Disaster Risk Reduction 2015-2030*, was adopted as a follow-up on the Hyogo Framework for Action (HFA) which was introduced in 2005. The Sendai Framework, which can be found in annex 2., is built on the elements of the HFA to ensure continuity of the work that has been done by the states and other stakeholders who were involved in the process. According to the Framework there is a need for improved understanding of disaster risk, vulnerability and hazard characteristics, strengthening disaster risk governance, preparedness, to Build Back Better, the recognition of which stakeholders are involved and their roles, strengthening national cooperation, and risk-informed donor policies and programmes. This resulted in the following four priorities which should be achieved on global, national, regional and local level (UNISDR, 2015):

1. Understanding disaster risk;
2. Strengthening disaster risk governance to manage disaster risk;
3. Investing in disaster risk reduction for resilience; and
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

Besides these priorities, the Sendai Framework puts emphasis on a multi-stakeholder approach and efforts to work together from global to local levels. If followed, the Sendai Framework will lead to the ultimate goal:

“Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience (UNISDR, 2015).”

Sustainable Development Goals (SDGs)

In 2016, the Millennium Development Goals (MDGs) were assessed and replaced with the Sustainable Development Goals (SDGs) which provides guidelines for many organisations in the next 15 years. The SDGs are a universal call to action to end poverty, protect the planet and improving the quality of people’s life. The 17 goals, presented below, are built on the MDGs, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, and peace and justice. In order to tackle these goals, it is of importance to take Disaster Risk Reduction into account to achieve sustainable development within the majority of the goals. Although, these priorities are set up independently, for achieving the goals there is a need for addressing issues more commonly associated with another. Over the years, the indicators will be refined and improvement, since methods and data are still collected (UN, 2016).



Figure 4. The 17 Sustainable Development Goals (Nwakaegho, 2016).

Asian Disaster Preparedness Centre (ADPC)

The Asian Disaster Preparedness Centre (ADPC) was established in 1986 as an independent regional organisation, working in a number of countries in Asia including the Philippines. ADPC deploys disaster risk management information and systems in order to reduce risks on local, national and regional level in Asia. The ADPC is mainly focussing on DRM capacity building, improving DRM for cities and climate change, and mainstreaming DRR into national and local government. In order to achieve its aim, ADPC works together with several stakeholders including government line agencies, regional organizations, development agencies and donors. The ADPC has several departments including: Climate Change and Climate Risk Management; Disaster Risk Assessment and Monitoring; Disaster Risk Management Systems; Public Health in Emergencies; Resilient Cities and Urban Risk Management; and Safer Development Planning and Implementation (ADPC, 2017).

ASEAN Committee on Disaster Management (ACDM)

The ASEAN Committee on Disaster Management (ACDM) was established in 2003, and consist of national agencies responsible for disaster management of the Member countries. The Philippines is an active member of ACDM. The ACDM has the overall responsibility for coordinating and implementing regional activities concerning DRR (ASEAN, 2017). Moreover, established regional systems for risk identification and assessment, and early warning and monitoring, with the intention to connect national early warning and monitory systems with regional hazards (Caritas, 2014).

ASEAN Agreement on Disaster Management and Emergency Response (AADMER)

The ASEAN Agreement on Disaster Management and Emergency Response (AADMER) has been ratified by ten Member States, including the Philippines, and entered into force in December, 2009. AADMER introduced a proactive regional framework for cooperation, coordination, technical assistance, and resource mobilisation including all aspects of Disaster Management (ASEAN, 2013). The objective of this agreement is to provide effective mechanisms to achieve reduction of disaster losses on social, economic, human and environmental aspects. Moreover, to jointly respond to disaster emergencies and to improve national effort and intensify regional and international cooperation, to achieve sustainable development (ASEAN, 2005).

Hazards Mapping and Assessment for Effective Community-based Disaster Risk Management (READY Project)

The READY project is in line with the priorities for disaster preparedness, mitigation and response of the national government and is implemented together with the technical assistance of the UNDP (Caritas, 2014). This project aims to develop a systematic approach to community based disaster risk management through scientific multi-hazard mapping, community based preparedness and actions for those affected by climate change and promotion of mainstreaming disaster risk reduction into development planning of local governments. At national level, the project tries to institutionalize and standardize Disaster Risk Measures and processes with different organisations involved. At community level, the READY project aims to address the non-availability of hazard maps and the lack of community based hazard monitoring and warning systems. Moreover, addresses the need to build up capacity of community leaders to implement activities and measures concerning DRM, and therefore to empower the most vulnerable municipalities and cities to develop effective disaster risk management plans. Capacity Building of the municipalities takes place through training and workshops on the use of hazard and risk assessment software, which is developed by PHIVOLCS. The Rapid Earthquake Damage Assessment System (REDAS) provides hazard simulations for potentially destructive earthquakes and contains a database of the critical facilities within the municipality (Orallo, 2011).

International Organisations active in the Philippines

- United Nations of Development Planning (UNDP);
- United Nations Office for Disaster Risk Reduction (UNISDR);
- United Nations International Children's Emergency Fund (UNICEF);
- World Health Organisation (WHO);
- International Labour Organization (ILO);
- International Federation of Red Cross and Red Crescent Societies (IFRC);
- Oxfam International;
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ);
- Care International;
- Christian Aid;
- World Vision;

- Japan International Cooperation Agency (JICA)
- Plan International; and
- Swiss Agency for Development and Cooperation (SDC).

Finance and Funding

With a share of 30% of the total funding, Japan is the largest donor to the Philippines, followed by the United States and Australia (Caritas, 2014). Donors who funded disaster preparedness and mitigation in the Philippines over the years are:

- Office for the Coordination of Humanitarian Affairs (OCHA);
- Disaster Preparedness ECHO programme (DIPECHO);
- Official Development Assistance (ODA);
- World Bank;
- Asian Development Bank (ADB);
- Global Fund;
- European Union (EU);
- Give2Asia;
- Caritas;
- Australia Aid (AusAid); and
- The European Commission (EC).

National Level

The government of the Philippines has several departments which are responsible for one particular part in Disaster Risk Management and earthquake mitigation and preparedness. The Department of Interior and Local Government (DILG) is responsible for public safety and the enforcement of the Philippine National Police (PNP). Moreover, this department has its duty to strengthen local government capabilities to deliver basic services to the population. The Department of Environment and Natural Resources (DENR) has responsibility for governing and supervising exploration, development, utilization, and the conservation of the country's natural resources. The National Mapping Resource and Information Authority (NAMRIA), is an agency providing the public with natural resource data, as a part of the DENR. Another agency working under the DENR is the Philippine Climate Change Commission (PCCC), which is attached to the Office of the President. The coordination of science and technology-related projects is done by the Department of Science and Technology (DOST). Moreover, the Department of Education (DepED) is active in awareness raising in schools in hazard prone provinces and municipalities. This Department also integrates DRR and Climate Change (CC) into the curricula of Primary and Secondary schools. Also the Public Works and Highways Department (DPWH) is involved in Disaster Management, including the maintenance of road networks and irrigation systems. The Department of Social Welfare and Development (DSWD) is responsible for the protection of the rights of the Filipinos. The National Economic and Development Authority is one of the agencies working beneath the DSWD and is responsible for the economic development and planning (Caritas, 2014).

After the major earthquake on July 1990 in Luzon, the Inter-Agency Committee on Documenting and Establishing Database was established and is chaired by the Department of Environment and Natural Resources and the Department of Science and Technology. This agency was tasked to undertake unified, systematic and scientific documentation on earthquakes and is taking steps to mitigate the effects of future major earthquakes (Orallo, 2011).

Philippine Strategic National Action Plan for Disaster Risk Reduction 2009-19 (SNAP)

The Philippine Strategic National Action Plan for Disaster Risk Reduction 2009-2019 (SNAP), was conducted with the support of the UN, and functions as a road map indicating the vision and strategic objectives of the Philippines in compliance with the strategic goals of the HFA, the international framework prior to the Sendai Framework (Caritas, 2014). SNAP is based on the assessment of disaster risks, vulnerabilities, capacities, and a gap analysis which identifies and maps out significant on-going activities based on the HFA that were considered as achievable for the Philippines regarding to the resources and capacities. Moreover, SNAP was developed by using a set of assumptions, scenarios and related information up to the year 2006. Furthermore, its development and implementation is based on two guiding principles (NDRRMC, 2011):

1. DRR is directly linked to poverty and sustainable development.
2. DRR entails the participation of various stakeholders in order to mainstream DRR in sectors.

The priorities and objectives of the Philippine Strategic National Action Plan for Disaster Risk Reduction has been conducted within the National Disaster Risk and Management Plan (NDRRMP) 2011 to 2028 which will more elaborated on below (NDRRMC, 2011).

The National Disaster Coordinating Council (NDCC)/ The National Disaster Risk Reduction and Management Council (NDRRMC)

The National Disaster Coordinating Council (NDCC) or The National Disaster Risk Reduction and Management Council (NDRRMC) is leading the collaborative efforts in disaster preparedness planning, mitigation, response and rehabilitation in the government and the private sector. Therefore, the NDCC is the highest policy making institution regarding to disaster risk management and is the coordinating and supervising body at national level. Moreover, the NDCC is responsible for advising the President on the status of national disaster preparedness programmes and management plans, and recommends if a declaration of a state of calamity or funds are needed. The NDCC is chaired by the Secretary of National Defence within in the Office of Civil Defence, on which will be elaborated more below. Moreover, this council has the task to establish priorities in the allocation of funds, services, and relief supplied and plays an advisory role to other Disaster Risk Reduction Management Councils (DRRMCs) through the OCD by issuing policy guidelines on emergency preparedness and disaster operations (Orallo, 2011). The NDRRMC has the overall responsibility for approving the National Disaster Risk Reduction and Management Plan (NDRRMP) and is responsible for monitoring of the utilization on the Local DRRM Fund (LDRRMF) (Caritas, 2014). The NDRRMC has 39 members, including fourteen line departments, and twelve government agencies. Moreover, the NDRRMC has connections with Governmental Financial Institutions, the Philippine Red Cross, the LGUs, the League of Municipalities of the Philippines (LMP), the private sector and civil society organizations (Orallo, 2011).

The Office of Civil Defence (OCD)

The Office of Civil Defence was established in 1973 and serves as the executive arm and secretariat of the NDCC. Moreover, is the centre for alert and monitoring, resource mobilization, response coordination and information management, with the primary task of coordinating activities and functions of several government agencies, private institutions and civic organisations during emergency responses (Orallo, 2011). At regional and local level, the OCD reviews and evaluates the local DRRM plans, and facilitates the integration of the measures into the local Comprehensive Development Plan (CDP) and the Comprehensive Land Use Plan (CLUP) (Caritas, 2014). The OCD has 17 fully operational regional centres operating 24/7, together with the member agencies such as DSWD, DOH, Armed Forces of the Philippines (AFP), DPWH and the Philippine National Red Cross (PNRC) (Orallo, 2011).

National Disaster Risk Reduction and Management Plan (NDRRMP) 2011 to 2028

The National Disaster Risk and Management Plan (NDRRMP) serves as a national guide for sustainable development. Moreover, it takes into account inclusive growth while building the adaptive capacities of communities and therefore increases the resilience of vulnerable sectors and optimizes disaster mitigation opportunities of all people. The NDRRMP outlines the activities which are needed to strengthening the capacity of the national government and the LGUs, in collaboration with stakeholders to build resilient communities. This includes, policy formation, socio-economic development planning, budgeting and governance. The NDRRMP therefore included four priority areas along with four long term goals, which are divided in 13 objectives, 24 outcomes, 56 outputs and 93 activities. The table below will give a summary of what this plan entails (NDRRMC, 2011) .

Priority Area	Long Term Goals	Objectives
Prevention and Mitigation	Avoid hazards and mitigate their potential impacts by reducing vulnerabilities and exposure and enhancing capacities of communities	<ol style="list-style-type: none"> 1. Reduce vulnerability and exposure of communities to all hazards 2. Enhance capacities of communities to reduce their own risks and cope with the impacts of all hazards.
Preparedness	Establish and strengthen capacities of communities to anticipate, cope and recover from the negative impacts of emergency occurrences and disasters	<ol style="list-style-type: none"> 3. Increase the level of awareness of the community to the threats and impacts of all hazards, risks and vulnerabilities. 4. Equip the community with the necessary skills to cope with the negative impacts of a disaster 5. Increase the capacity of institutions 6. Develop and implement comprehensive national and local disaster preparedness policies, plans and systems
Response	Provide life preservation and meet the basic subsistence needs of affected population based on acceptable standards during or immediately after a disaster.	<ol style="list-style-type: none"> 7. To decrease the number of preventable deaths and injuries 8. To provide basic subsistence needs of affected population 9. To immediately restore basic social services
Rehabilitation and Recovery	Restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduced disaster risks in accordance with the “building back better” principle.	<ol style="list-style-type: none"> 10. To restore people’s means of livelihood and continuity of economic activities and business 11. To restore shelter and other buildings/installation 12. To reconstruct infrastructure and other public utilities; 13. To assist in the physical and psychological rehabilitation of persons who suffered from the effects of disasters.

Table 2. Summary of the NDRRMP Action Points (NDRRMC, 2011).

The lead agencies in achieving these objectives are: the Office of Defence (OCD); DENR; DPWH; DOF (Department of Finance); DOST; Philippine Information Agency (PIA); DILG; DSWD; Disaster Risk Reduction and Management Councils (DRRMCs); Department of National Defence (DND); Department of Health (DOH); LGUs; and National Housing Authority (NHA) (NDRRMC (b), 2011).

Hazard Mapping Institutes

PHIVOLCS is the national institution providing information on the recent and past activities of volcanoes, earthquakes, and tsunamis and issues warnings if necessary. Moreover, is mandated to mitigate disasters that may rise on geophysical aspect. Monitoring is done with the use of a digital seismic network consisting of 66 stations. Furthermore, PHIVOLCS implemented a community-based system for tsunamis in several high risk barangays within the country (Caritas, 2014). PHIVOLCS is operating in the following programmes and projects regarding earthquakes (PHIVOLCS, 2017):

- National Earthquake Monitoring and Information;
- Earthquake Hazards and Risk Assessment;
- Earthquake Generation Potential of Active Faults and Trenches;
- Volcano, Earthquake and Tsunami Disaster Preparedness and Risk Reduction;
- Strategic Human Resource Management and Development (SHRMD);
- Leadership Enhancement and Development (LEAD); and
- Strategic Performance Assessment and Development for Excellence (SPADE).

Other hazard mapping institutes include:

- Philippine Atmospheric, Geophysical, Astronomical and Services Administration DOST (PAGASA-DOST);
- Mines and Geosciences Bureau (MGB);
- Department of Environment and Natural Resources (MGB-DENR); and
- National Mapping Resource and Information Authority – DENR (NAMRIA-DENR).

In annex 3. more information can be found on the scope of which these institutions are working.

The Nationwide Operational Assessment of Hazards programme (NOAH) was launched by the Department of Science and Technology in 2012 with the aim to use advanced technology for timely and accurate hazard information through several communications platforms. Therefore, the programme aims to improve the early warning system and disaster management capacities of Local Governments (Caritas, 2014).

Organisations

- Philippine National Red Cross (PNRC);
- Citizens' Disaster Response Network (CDRN);
- Andres Soriano Foundation Inc.;
- Geological Society of the Philippines;

Funding and Finance

The below mentioned financial resources are funds provided by the government and private institutions (Caritas, 2014).

- The National DRRM Fund (NDRRMF);
- Quick Response Fund; and
- The Philippine Disaster Recovery Foundation (PDRF) (Caritas, 2014).

Provincial Level

The provincial government is headed by the Governor Edgardo Migriño Chatto, who is also the chairman of the Provincial Disaster Risk Reduction Management Council (PDRRMC). The government includes several departments of which the Provincial Planning and Development Office, DENR, DILG and DSWD are the most important agencies regarding to DRR and further development within Bohol. The provincial government envisions to make Bohol an eco-cultural tourism destination and a strong, balanced agro-industrial province. Moreover, the mission is stated as follows: *“To enrich Bohol’s social, economic, cultural, political and environmental resources through good governance and effective partnerships with stakeholders for increased global competitiveness”* which includes the following goals: to enhance environmental protection and management; social equity; delivering quality services; local/regional economic development and strategic wealth generation; and responsive, transparent and accountable governance (Provincial Government of Bohol, 2017).

Provincial Planning and Development Office (PPDO)

The Provincial Planning and Development Office (PPDO) envisions to provide timely, relevant and quality socio-economic and physical planning advice, including the provision of services to clients and stakeholders to ensure sustainable development. Therefore, the PPDO is active in conducting studies, researches, and integrating economic, social, physical, and other development plans to advise the Provincial Development Council. Moreover, the PPDO monitors and evaluates the implementation of the different development programs and analyses income and expenditure patterns, and policies of consideration for the LGUs. The institution is divided in several sectors such as the economic, environmental and social sector. Moreover, has published several reports and conducted many researches over the years concerning: Development Plans; Disaster Risk Reduction Management; Environment Assessment Reports; Monitoring and Evaluation Report; and Provincial Annual Reports (PPDO, 2017).

Provincial Disaster Coordinating Council (PDCC)/ Provincial Disaster Risk Reduction Management Council (PDRRMC)

The Provincial Government of Bohol created the Provincial Disaster Coordinating Council (PDCC) to promote and coordinate DRR measures with the ultimate goal to protect human lives and properties during unforeseen disaster events. The PDCC is chaired by the Governor and further supported by 62 government offices and private establishments (Provincial Government of Bohol, 2014). The PDCC envisions: *“A disaster-resilient, climate change adaptive and safe Boholano community with a strong spirit of stakeholder commitment guided by effective local governance ensuring social protection, economic security and socially-inclusive disaster management towards sustainable development.”* (Provincial Government of Bohol, 2014) The PDRRMC consist of more than 130 employees, who train MDRRMCs and Barangay Officials on preparedness, mitigation, response and rehabilitation.

Provincial Disaster Risk Reduction Management Plan (PDRRM Plan)

For 2014-2016, a Provincial Disaster Risk Reduction Management Plan (PDRRMP) was designed in line with the goals and objectives of the NDRRMC, including the four thematic areas: Disaster Prevention; Disaster Preparedness; Disaster Response; and Disaster Rehabilitation and Recovery (Provincial Government of Bohol, 2014). The objectives and projects per thematic area are defined in annex 4.

The PDRRMP is coordinated through the following actors:

- The Philippine Disaster Management System from the Office of Civil Defence – National Disaster Coordinating Council (OCD-NDCC);
- The plan was approved in compliance of the directive from the Department of Interior and Local Government (DILG);

- Local Government Units (LGUs);
- Department of Interior and Local Government (DILG);
- Department of Budget and Management (DBM).

Moreover, the Provincial Council is working together with the Hazards Mapping and Assessment for Effective Community- Based Disaster Risk Management (READY) project and PHIVOLCS in terms of the establishment of hazard maps. In case of an emergency, PDRRMC collaborates with the Philippine National Police, Bohol Law Enforcement Communication System (BLECS) and radio stations (Provincial Government of Bohol, 2014).

Since the PDRRMP was only applicable until the year of 2016, a reassessment has been carried out in December, 2016 to establish new plans. On June 2, 2017, the new plans were presented by the PDRRMC to the stakeholders involved such as DSWD, DILG and PHIVOLCS. Moreover, a Climate Change Adaption (CCA) programme was introduced, including agriculture, water issues, and renewable energy. However, these programmes within CCA and DRR were still very broad and there is a need for a detailed clarification. As for the budget, most of the financial means are prepared for rehabilitation and response.

The Telephone and Radio System Integrated Emergency Response 117 (T.a.R.S.I.E.R. 117)

The Telephone and Radio System Integrated Emergency Response 117 is established in 2011 after the RA 10121 was implemented and is part of the PDRRMC. T.a.R.S.I.E.R. 117 has direct links with local and national response units and has partnerships with the private sector and voluntary organisations. T.a.R.S.I.E.R 117 has a standby ambulance, a Rescue Retrieval Team and a call and command centre. Moreover, the unit facilitates police and fire assistance, medical emergencies and weather monitoring. T.a.R.S.I.E.R 117 consists of three units (TaRSIER 117, 2017):

- Communications Unit;
- Emergency Medical Unit; and
- Rescue and Retrieval Team.

At the moment, the organisation is mainly providing trainings to the private sector, LGUs and the local population. However, mentions that the conducted trainings are perceived different than what happens in reality and unforeseen challenges still need to be addressed. During the emergency response, T.a.R.S.I.E.R 117 is collaborating with the Red Cross in the relief distribution (Gatal, 2017).

Organizations

- PROCESS Bohol;
- People's Alternative Study Centre for Research and Education in Social Development, Inc. (PASCRES, Inc.);
- Bohol Local Development Foundation, Inc. (BLDF);
- Bohol Integrated Development Foundation, Inc. (BIDEF); and
- Bohol Community Assistance Program, Inc.;

Local Level

Municipalities

The municipalities are responsible to ensure that the DRRM is mainstreamed into their Comprehensive Development Plan (CDP), Comprehensive Land Use Plan (CLUP) and other local plans, programs and budgets. These plans should not only be comprehended at the municipal level, but also at the Barangay level and coordinated with the Barangay Local Government Unit (BLGU) (Caritas, 2014). Moreover, LGUs have the duty to participate in trainings, inform the barangays about the disaster risk management and disaster planning within the municipality, lead local disaster emergencies and relief services (Orallo, 2011).

Funds and Finance

Local governments are required to provide five percent of the estimated revenue from regular sources to the Local Disaster Risk Reduction and Management Fund (LDRRMF). These funds are to support disaster risk management activities such as trainings and rescue equipment. Furthermore, the Quick Response Fund (QRF) is for 30% covered by the LDRRMF (Princess Alma, et al., 2014).

3.2.3. Policies and Laws

In this part of the Institutions and Governance Context, the policies and laws concerning DRR related to earthquakes are described.

Basic Policy

This policy concerns the mandate of the government to serve, protect and promote the right of the people to ensure a safe environment. Therefore, the State has to maintain peace and order and promote general welfare of the people. Moreover, the state has the responsibility to uphold people rights to life by addressing the root causes of vulnerabilities to disasters and strengthening the country's institutional capacity for disaster risk reduction and management (Government Departments, 2014) .

Republic Act (RA) 10121

In 2010 the Republic Act 10121 otherwise known as the Philippine DRR and Management Act of 2010 was established with the aim to strengthen the Philippine disaster risk reduction and management system by providing a national disaster risk and management framework and institutionalizing the national DRRM plans (Congress of the Philippines, 2009). The Philippine government mentioned that the disaster preparedness including disaster risk has been strengthened through the passage of this Act and supported implementing rules and regulations. Mainstreaming these principles requires the institutionalization and organization on all levels within the government (Orallo, 2011). Moreover, the Act empowers local governments and communities to enforce DRR measures and to address their respective risks and mandates these LGUs to establish Local Disaster Risk Management Offices (Caritas, 2014).

The Forestry Code of the Philippines

The Forestry Code states that forests may not be removed in case the slope is above 18%; 20 meter of the edge along high waterlines of rivers and streams; and mangrove and swamplands along shorelines and other water bodies (Government Departments, 2014).

The National Building Code of the Philippines

This Code states in case the land is used for buildings, it should be at a safe distance from: streams or bodies of water; sources to be polluted; from volcano or volcanic site; and other potential source of fire or explosion. To summarize houses cannot be placed in No Build Zones and only in Safe zones which are defined as non-hazard prone areas (Government Departments, 2014).

3.3. Stakeholders Relationships

An analysis of the stakeholders' interests, values and capacity, as well as understanding of the political spaces for interaction will increase the opportunities in designing DRR strategies. Negotiating differences and working together in fostering resilience will only improve the current strategies. The balances or imbalances are visualized through the stakeholder map including the nature of relationships.

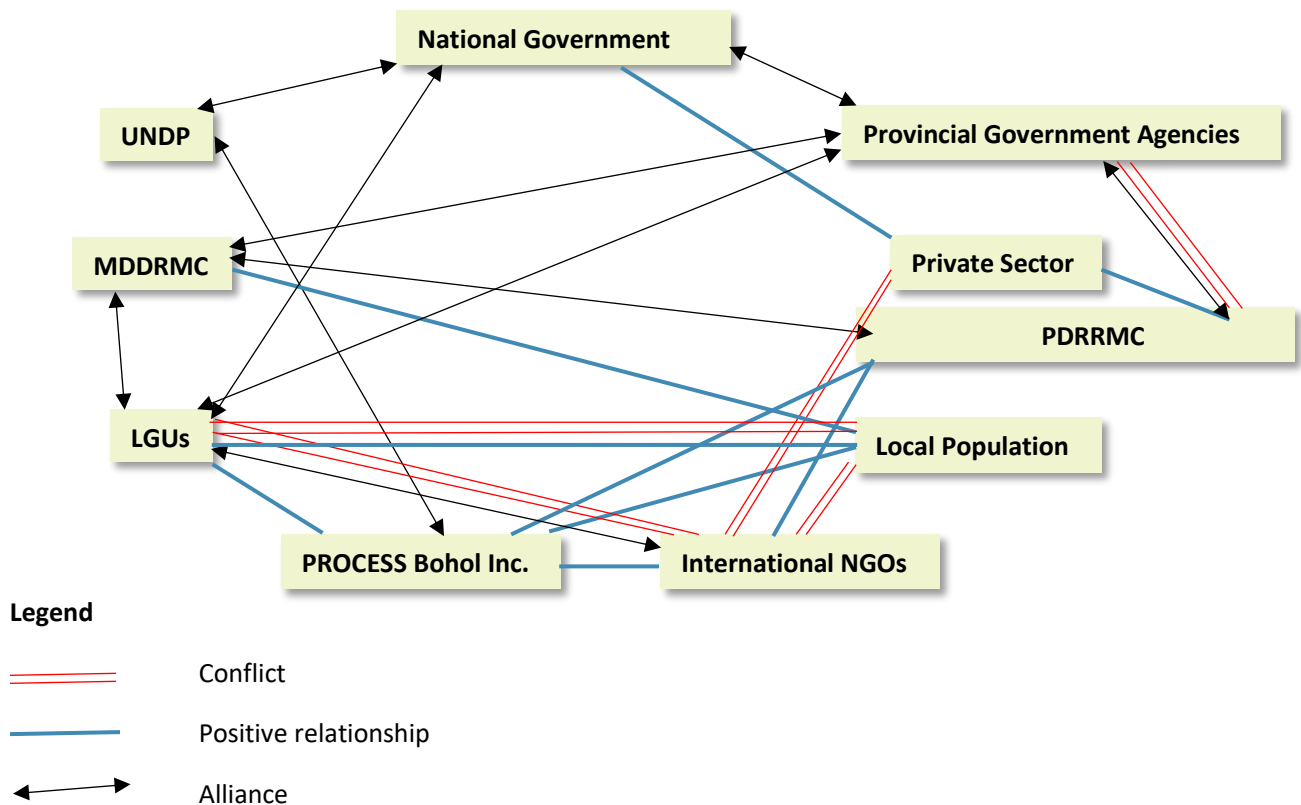


Figure 5. Stakeholder relationships

Overall, the relationship between humanitarian agencies and the private sector has been challenging in the past. This was mostly because of the culture clash between these actors. There are still deep-rooted connections between the government and the most well-known American companies, such as Coca-Cola and Chevron which makes the Philippines a breeding ground for public-private sectors who are not so much interested in DRR (Caritas, 2014). However, as mentioned before, several malls within Bohol Province are now conducting trainings concerning evacuation and preparedness organized by T.a.R.S.I.E.R. 117, which shows that a shift is happening in the disaster perceptions within the private sector (Gatal, 2017).

As for PROCESS Bohol Inc., the relationship with the LGUs is perceived as very favourable. This is mainly due to the long presence of the organisation within these municipalities. Also the mandate of PROCESS Bohol Inc. is to work on grass-root level which has built trust of the local population, especially among the farmers, fishers and women sector. Furthermore, the relationship regarding to the Provincial government has been strong over time.

The relationship between the LGUs and the local population is variable. Due to the strong roles of money in the Philippines, the local population has in general no trust in the intentions of the government and believe that in time of rehabilitation the political issues resulted in the non-providence of relief goods and other necessary materials. Also the PDRRMC Officer mentioned that politics is a major driver for the vulnerability of the LGUs and the local population. Due to the reassignment of the political leaders every 3 years, again trainings on Disaster Risk Management have to be conducted. Also the perspective and priorities set by the several mayors pose threats towards sustainable development. Therefore, the relationship between the PDRRMC and the LGUs is changing from favourable to conflicting over the course of time (Damalerio, 2017).

The relationship between the DILG and the LGU is considered as very positive and on a trust-based understanding. Within programmes the several governmental departments are working together however have divided tasks. Nevertheless, during the meeting on Women and Child Protection it was noticed that although these departments are working with a mutual understanding, if an issue is raised, the blame is always within another department which causes conflicts and delays in projects.

The Municipal Social Welfare and Development (MSWD) Officer mentioned that the LGU and international NGOs such as Habitat and the International Organisation for Migration (IOM) clashed due to unfinished or inaccurate data processing on both sides (Laguna, 2017). Also the Municipal Development and Planning Officer confirmed this issue. In the first place, the international organisation of Habitat was implementing rehabilitation within the municipalities, however the LGU decided to not further collaborate with this organisation for yet unknown reasons. Next, IOM was implementing interventions regarding to reconstruction, however with-drawled after a couple of months. This left also the local population unsatisfied, due to unfinished houses or late arrival of materials (MPDC, 2017).

On the other hand, the UNDP as international organisation perceived the collaboration with the LGUs as very successful and mentions that the close coordination with the LGU in all phases of the implementation resulted in the completion of the activities during the projects direct after the earthquake stroke. Moreover, the final report states that the engagement with PROCESS Bohol Inc. has contributed in ensuring the efficiency and timely implementation of the activities (UNDP, 2014).

The Municipal Disaster Risk Reduction Management Council (MDRRMC) is closely working together with the PDRRMC in conducting trainings within Bohol and the targeted communities. The meetings between the PDRRMC and the MDRRMC from several LGUs are characterized by shared values and norms (Fuertes, 2017). Also the collaboration between the PDRRMC and the international and local NGOs is perceived as favourable, especially with the Red Cross. In case of emergency, the Red Cross and PDRRMC are working together and is mentioned that the relief work is equally divided and discussed during regular council meetings. Moreover, the PDRRMC is working together with the private businesses such as malls within the Province of Bohol on the providence of relief goods and services. However, these relief goods are only available on a credit agreement (Damalerio, 2017).

Although, the PDRRMC and the Provincial Government Agencies such as DSWD, DENR and DILG are working together on the new plans and the execution of the set programmes, some conflicts have been noticed. For example, during the meeting on the new DRM plans on June 2, the PSWD Officer mentioned not to be consulted on the proposed interventions and the set meeting was a surprise for most stakeholders involved (Tecson, 2017).

4. Case Study: Maribojoc

This section concerns the case study that has been conducted within Maribojoc, one of the municipalities hardest hit by the earthquake in 2013. During the course of the case study, interviews, surveys and a group discussion with the Barangay Captains has been utilized. More information about Maribojoc, the figures and pictures made during the implementation phase can be found in annex 10.

Sample Profile

During the Focus Group Discussion (FGD) a total of 11 Barangay Captains out of the 22 barangays within the municipality of Maribojoc participated. The participants were from the barangays: Pagnitoan; Toril; Agahay; Punta Cruz; Lagtangan; San Vicente; Bayacabac; Lincod; Poblacion; San Isidro; and Dipatlong. During the survey implementation, the Barangay Captains of Cabawan and Bood were approached and filled in the questionnaire which is also taken into account in the results of the FGD.

Moreover, during the implementation of the survey questionnaire a total of 227 participants were reached. Out of these 227 participants, 59 were fisherman, 142 were farmers, 16 households are relying on tourism activities and 9 households make a living out of mostly combining fishery and farming. Although, these people are engaged in a livelihood, only 34.7% mentions to generate enough income to provide for their families, as the figure below shows. In total, 108 men and 119 women were targeted, and therefore reaches gender equality within this research. The youngest participant within the survey is 19 years old and ranges to the age of 89. As for the marital status, most of the respondents mentioned to be married. Moreover, 43.1% reached an educational level of high school and 34.7% have a college degree. The average household size of the sample is 5 members within one census.

I generate enough income to provide for my family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally disagree	14	6,2	6,2	6,2
	Disagree	55	24,2	24,4	30,7
	Neutral	78	34,4	34,7	65,3
	Agree	69	30,4	30,7	96,0
	Totally agree	9	4,0	4,0	100,0
	Total	225	99,1	100,0	
Missing	System	2	,9		
Total		227	100,0		

Table 3. Results on the income generation among the targeted households

Study Area

Maribojoc is a coastal town situated in the southwestern part of the province of Bohol, bounded with the municipalities of Cortes, Antequera and Loon. The municipality is divided in 22 barangays over a total of 6,956 hectares. In 2015, a population of 20,688 was reported with an annual growth of 1.79%. Moreover, the municipality consists of 4,494 households with an average household size of 4.6 members. Of the 22 barangays, six are classified as urban areas and the urban population constitutes out of 44,68%. The main religion practiced is Roman-Catholic, counting 98.5% of the population (Municipality of Maribojoc, n.d.).

The land formation ranges from very steep slopes and undulating to rolling terrain. The highest elevation within the municipality is 304m above sea-level. Of the total area, only 18.99% have no apparent erosion. Furthermore, 1.808 hectares are classified as agricultural area, cultivating coconut, rice, corn, root crops

and vegetables. Out of the total number of households, 42.8% is engaged in farming and 500 households have fishing as major source of income. Other households are engaged in business, sari-sari stores, transportation, services and basket/mat weaving. As for the tourism sites, the Cultural Heritage, SAVIMA Boardwalk and the Organic DEMO Farm are the most popular. Currently, the municipality is also investing in a swimming pool and boardwalk along the coast-line of the barangay of Punta Cruz (Municipality of Maribojoc, n.d.). Despite the fact that the livelihoods within Maribojoc are diverse, still 56.61% of the households are earning below income threshold and 41.77% are below food threshold (PROCESS Bohol, 2013) & (PPDO, 2007).

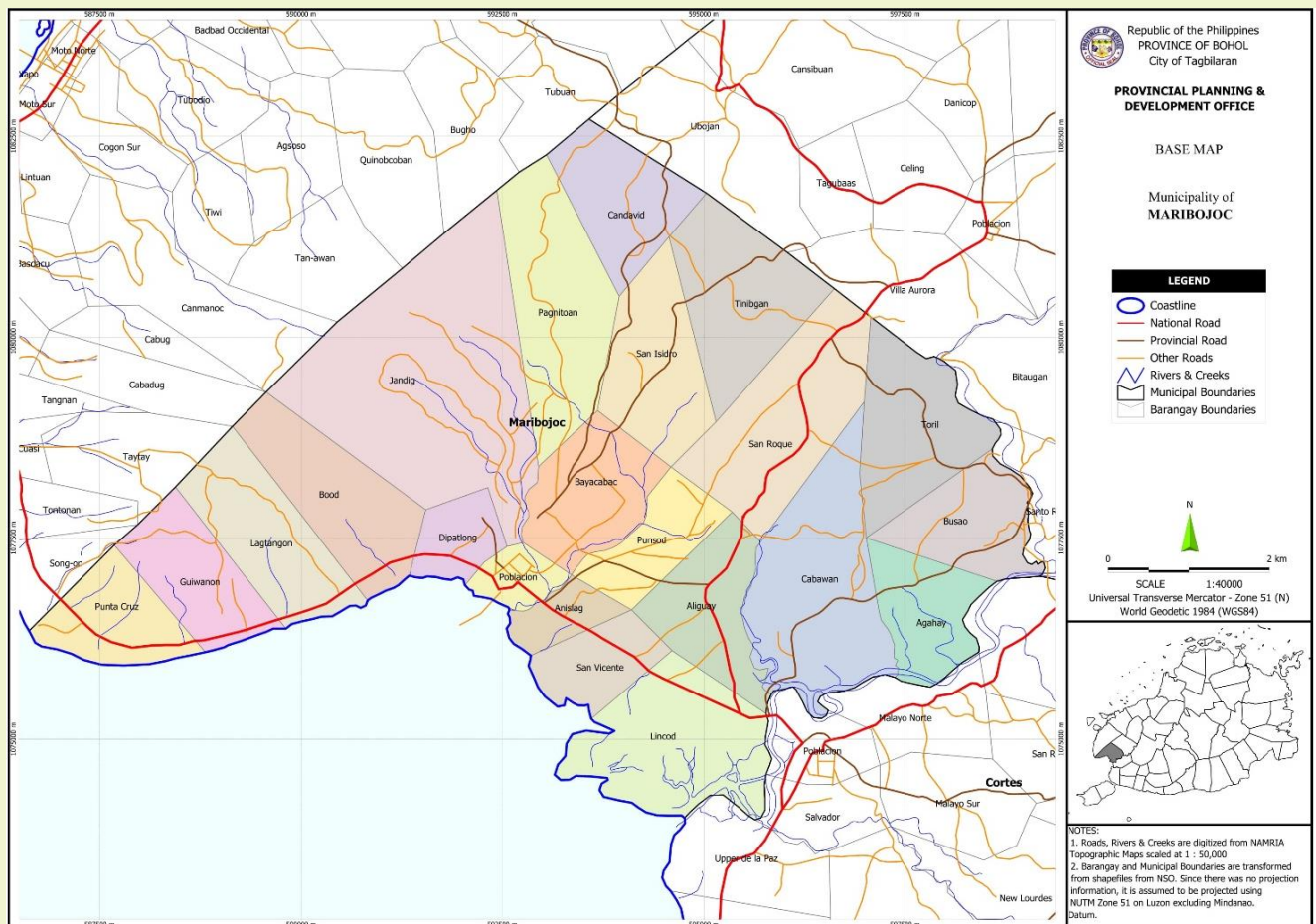


Figure 6. Map of Maribojoc, Bohol (PPDO, 2017).

The current Mayor of Maribojoc is Gumersindo M. Arocha who was elected in 2016. The LGU is made out of eighteen offices of which Sangguniang Bayan is the highest policy-making body, including members such as the Vice Mayor and eight elected municipal councillors, the President of the Association of Barangay Councils, and the President of the Federation of the Sangguniang Kabataan (PROCESS Bohol , 2013).

Maribojoc LGU is responsible for the management of the entire municipality. The LGU mandates to provide basic services to the population such as:

- Civil Registry Services;
- Real Property Assessment;
- Health Services;
- Social Welfare Services;
- Agricultural and Fishery Services;
- Water Supply Services;

- Public Infrastructure Services; and
- Economic Services (PROCESS Bohol , 2013).

Vision:

“A socially vibrant, economically efficient and ecologically sustainable community.” (PROCESS Bohol , 2013)

Mission:

“To educate, unite and mobilize the people towards urbanization and modernizing agriculture, protecting and improving the natural resources and ecological system, its historical and cultural heritage, developing its human resources and promoting participatory governance, safety and health.” (PROCESS Bohol , 2013)

Goals within:

1. Economic Development.
2. Social Development.
3. Environmental Protection.
4. Governance and Administration (PROCESS Bohol , 2013).

Disaster Risk Management

The main actor in DRM within the municipality of Maribojoc is the Municipal Disaster Risk Reduction Management Council (MDRRMC). The MDRRMC was established in 2010 as a response to the Republic Act 10121, with the main goal to address the root causes of vulnerabilities considering disasters, strengthening the municipal institutional capacities, and building resilience of the local communities to disasters and climate change. Moreover, recognizes the evolving capacities of children and therefore have an active role within the community disaster preparedness (MDRRMC, 2016).

The Council is composed out of several members within the municipality, including the different Departments such as DILG on municipal level, the Philippine National Police (PNP), a Barangay representative, school supervisors, People’s Organisations (POs) and a NGO. Currently, the MDRRMC consist of 18 staff members, guided by the officer Herculino M. Fuertes. Furthermore, the MDRRMC works closely together with the PDRRMO (MDRRMC, 2016)& (Fuertes, 2017). In 2015 the M.E.R.U. (Maribojoc Emergency Rescue Unit) was established in order to act directly as soon as a calamity will occur (M.E.R.U., 2017).

In 2016, the Maribojoc Disaster Risk Reduction Management Code was enforced. This code explains the several roles that the above mentioned actors are playing within DRR. Moreover, the critical activities within preparedness, mitigation, response and rehabilitation are explained. The main activity of the MDRRMC is training the local population about climate change, disasters and waste management, with special regard to the most vulnerable groups. However, this is still challenging due to the lack of motivation and the mentality of the local population. Moreover, the code explains the measures to be taken in case of a calamity and determines the evacuation centers. Nevertheless, these assigned evacuation centers such as the public market, barangay halls and schools are not officially assigned as earthquake resistant which poses great problems recognized by the DILG Officer, the MDRRMC Officer, as well as by the Municipal Planning and Development (MPDC) Officer (MDRRMC, 2016), (Halasan, 2017)& (Fuertes, 2017).

Not only the MDRRMC is active in DRR, also the MSWD is mainly working together with the most vulnerable groups such as senior citizens, women, children, youth and people with disabilities. Currently, the main activities are monitoring the projects such as the establishment of POs within these sectors. The MSWD Officer aspires to work on bottom-up level, where the POs are responsible for their own manner to motivate people to take action and write proposals for improved living conditions including DRR and CCA. In order to

make these projects successful the MSWD works closely together with the line-departments on municipal and provincial level such as DILG and with NGOs (Laguna, 2017)& (Halasan, 2017).

The impact of the earthquake on Maribojoc

Maribojoc is among the municipalities that felt the strongest ground shaking during the earthquake of 2013 (PPDO, 2014). Among the population 18 death casualties were reported and more than a hundred were injured. Moreover, secondary hazards were reported such as landslides in 5 barangays and also cracking of the ground which caused many displacements. These cracks were experienced along river banks, seashores, water ways and hill sides and are still visible today. After the earthquake, there has been a coastal uplift observed along the coast lines and shifted approximately 50 metres seawards (Karlsruhe Institute of Technology, 2017). According to the PDRMC, sixteen barangays within Maribojoc are vulnerable to future earthquakes (Provincial Government of Bohol, 2014).

During the earthquake most of the people ran out of their houses, hid under tables or some did not know what to do and stayed inside their homes. Some were even on the sea while the earthquake stroke. Moreover, the participants mentioned that the earthquake was perceived as the end of the world and the population was shocked and traumatised. After the earthquake, the gross of the population went into the mountains due to the tsunami warning that was released. At that point, only some schools or barangay halls served as an evacuation centres, due to the lack of guidelines given before the earthquake. For example, the Elementary School building of the barangay Bayacabac served as emergency shelter, however this building was partially damaged and the stability during an aftershock was not ensured. Due to the lack of evacuation centers, most people made shelters in an open area or evacuated to other municipalities and were afraid to go back into their houses.

Most of the basic community services and infrastructures either collapsed or had been badly damaged (PROCESS Bohol (a), 2013). Especially the damaged bridge that connected Maribojoc with Tagbilaran was a major issue, since aid had now to be delivered by sea. Also the 400 years old church was totally destroyed, however is now in progress to being repaired in its old state (Saco, 2017). Moreover, 1360 houses were damaged and no longer habitable. Also, the water supply system was greatly affected, leaving many households without water access and affected the public health, hygiene and irrigation systems. Not only the lack of irrigation posed stress on the farmers within Maribojoc, also a total agricultural area of 31.115 hectares was damaged. Furthermore, the fisherman were economically hit, losing P51.000 of income due to the displacement of the shoreline and the lack of access towards the sea. Due to these events, student were feared to drop-out of school to support their families financially (Municipality of Maribojoc, n.d.).

“My family decided to sleep outside because there are still aftershocks after the big one. No current, no water and short supply of food and the main bridge going to the city was down. So basically, the routinely way of living was totally disrupted and the surrounding just looked so disconnected (Quote of Participant).”

During the FGD the Barangay Captains identified several landmarks that were damaged by the earthquake. The figure below represents the findings during the Risk and Resource mapping. Remarkable are the damaged infrastructures especially along the coast-line and in mountainous areas. These include mostly chapels, schools, barangay halls, health centres, houses, bridges, water sources and the main road. Some of the water sources that were damaged, were not possible to rehabilitate and the water supply has to be delivered from neighbour barangays. However, the MDPC Officer mentioned that this caused many problems among the farmers because of irrigation and water tenure. Moreover, 5 schools who served as evacuation centres were identified, however some of these schools were also partially damaged. The main distribution of goods was delivered in the public market. The red mark around the coast-line represents the

coastal uplift after the earthquake. Especially, the Cultural Heritage Site including the Punta Cruz tower was damaged and resulted in less tourists over the last couple of years. Since earthquakes induce secondary hazards such as floods and landslides, these landmarks were also taken into account. Especially the area among the Abatan River is flood prone. Moreover, during the earthquake 5 landslides were identified by the Captains, including the barangays of Busao and Toril.

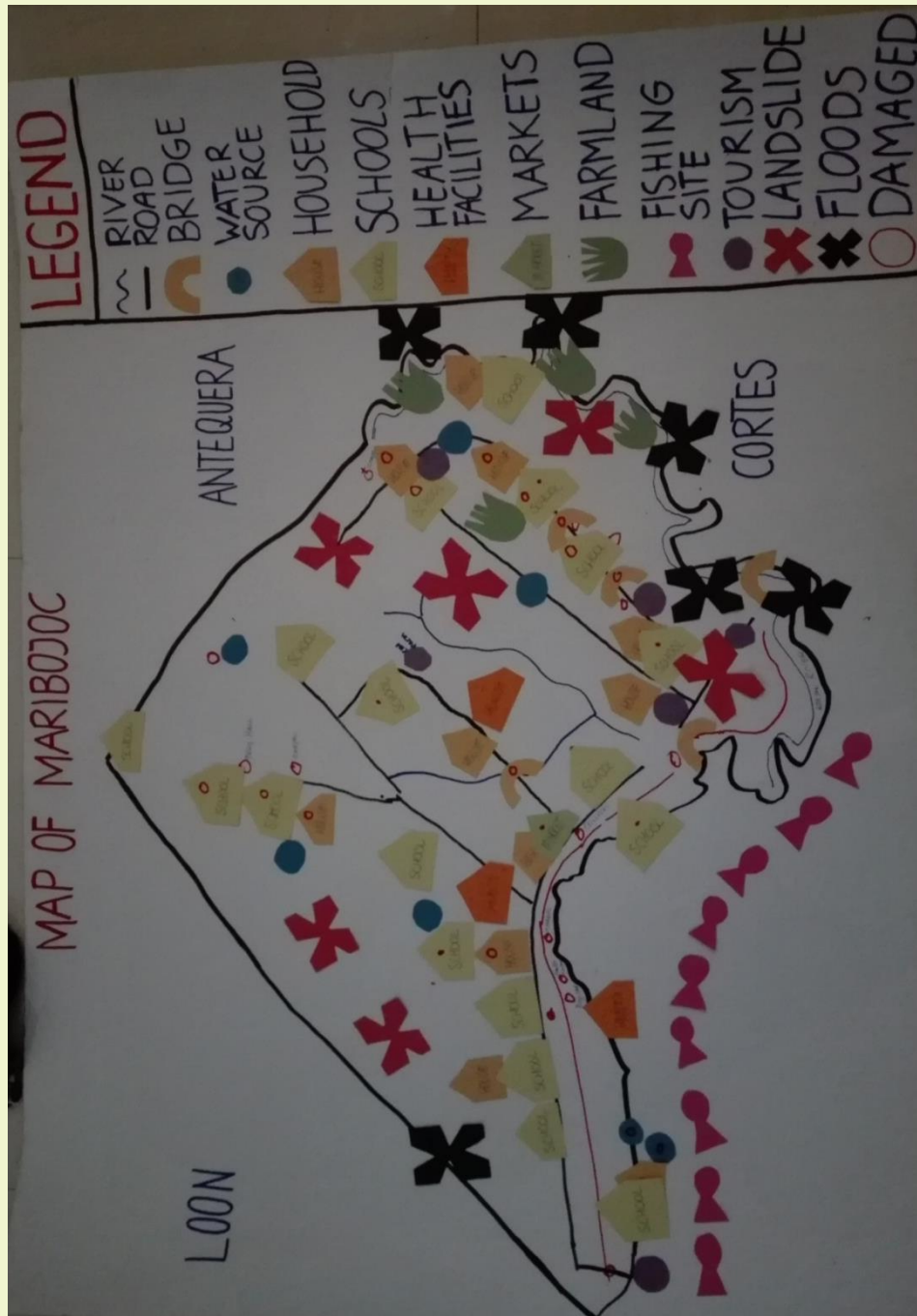


Figure 7. Outcomes of the Risk and Resource Mapping Activity

As mentioned before, the impact on the local population was great. Most of the participants did not have water supply up to 6 months. Moreover, fault lines and sinkholes near to the houses were identified. Especially the households relying on fishing and farming were left with many issues such as damaged fishing

equipment, cracks in farmland and the damaged irrigation systems. Moreover, some of the farmers noticed that the coconut trees are giving less fruits than before the earthquake. Due to fear and the loss of livelihoods most of the households did not have an income for almost one month and were only relying on relief goods. The graph below shows that most of the participants replied that the earthquake had an impact on their occupation.

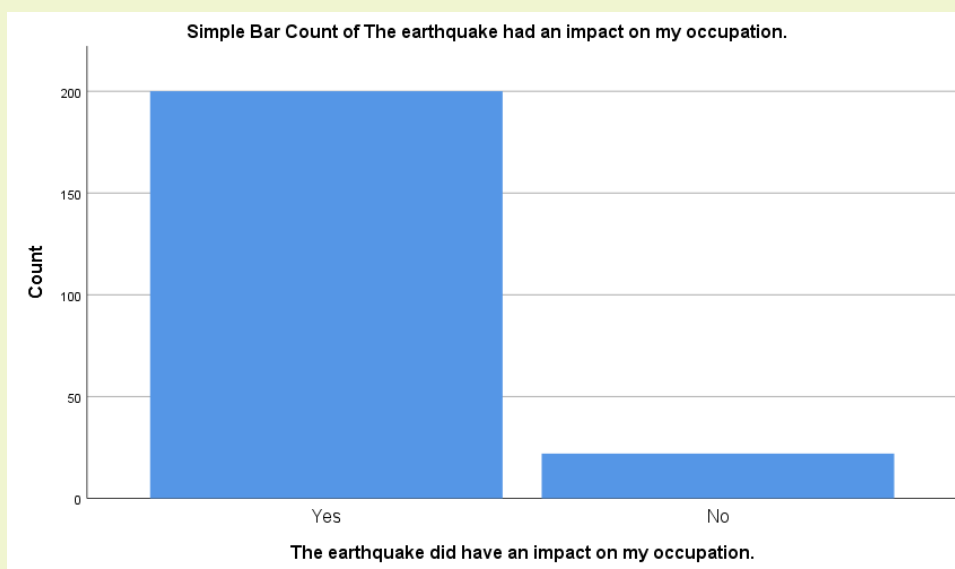


Figure 8 Results on the earthquake impact on occupation

The PO president of the fishermen in Punta Cruz, mentioned that the earthquake has a major impact on the amount of fish that is caught. Before, the fishermen were able to catch 10 kilos, however after the earthquake this declined to only 2 kilos a day. Therefore, the fishermen are forced to take a second job in order to make a living (Meguillo, 2017).

“No one knows that an earthquake will destroy our houses, places and lives (Quote of Participant)”

Response and Rehabilitation

After the earthquake several NGOs were present within the municipality, including PROCESS Bohol, the Red Cross, UNDP, Habitat, World Vision, All Hands Foundation and IOM. In the first place, relief goods were provided to the victims of the earthquake. Responses and rehabilitation projects included the restoration of water supplies and other public services, provision of houses and materials for reparation, food and shelter, medical assistance, assistance for fisherman such as boats and rebuild of docking area, farming tools, cash for work and psychological assistance.

During the response phase, a direct needs assessment has been carried out, however due to many casualties the data was sometimes mixed-up and lacked accuracy. This was mainly due to the fact, that before the earthquake main attention was given to natural disasters that are occurring on a regular basis such as typhoons. Some houses were listed as partially damaged, however the population concluded the houses totally damaged. Moreover, due to a lack of man-power, the relief and also the rehabilitation of the municipality was difficult and on a slow pace. Before the earthquake the MDRRMC only took part in advocacy regarding to earthquakes without making any plans for direct action when an earthquake would occur. In the time of the earthquake the MDRRMC was not yet fully operational and therefore did not have the capacity to respond to such a calamity. Only after the MDRRMC got more attention and was strengthened. Although, the municipal government mentions that Maribojoc has Built Back Better, problems still remain concerning the reconstruction of housing due to the lack of communication between

the NGOs in place and the local government. Within the municipality of Maribojoc, a total of 1,188 of the households are not owning the lot. This issue was also recognized by the municipality and local population, since donors set this requirement in order to receive support (Laguna, 2017). The survey shows that 30% of the households who are not owning the lot did not receive any support, whereas only 19.26% of the households who are owning the lot mentioned that no support has been given.

After the earthquake, the news released an article that the mayor of Maribojoc resisted the help delivered by the Red Cross. The mayor of Maribojoc in 2013 mentioned *“With or without the Red Cross we have to move on. We have to survive. We don’t have any trouble here (on relief distribution). There are donors who went here and we understood each other. What we are asking from them is just a little respect. Please understand us in our time of distress,”* Although Evasco (the municipal mayor) claimed to not being against the Red Cross, he classified their work as chaotic and mentioned the arrogant behaviour of the representatives. The municipal officer of DILG confirmed this issue and said: *“all what the mayor wanted is an equal distribution of goods and from one place so it could be coordinated.”* (Halasan, 2017)& (Laude, 2013).

The implementation of the Cash for Work by PROCESS Bohol Inc. and UNDP however was perceived as successful. Within Maribojoc 300 participants were targeted of whom 21% were women. In overall, the implementation was smooth which resulted in an early completion of the programme. This was mainly due to the proper planning and presence of mechanisms established by the Local Government Unit (LGU) (PROCESS Bohol (a), 2013) .

Overall, as the chart below shows, around 50% of the respondents mentioned to be satisfied with the support of the municipality and other organisations that were present during the response and rehabilitation phase.

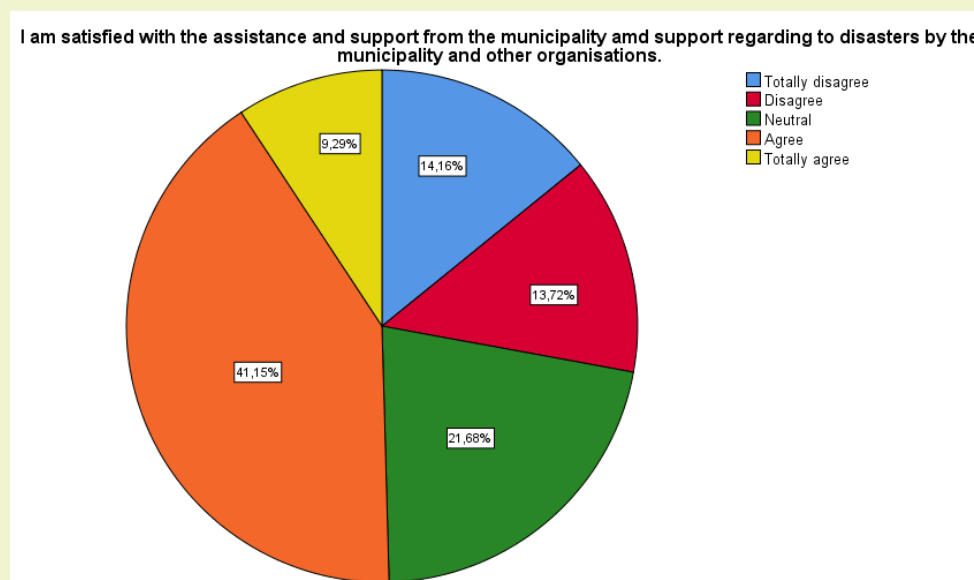


Figure 9 Respondents on the satisfaction of the support by the municipality and other organisations.

The households were either given materials or a new house. Nevertheless, most of the people explain that the materials arrived late or were not enough to rebuild their homes, therefore had to rely on own financial input. Especially the houses provided by Habitat are unfinished and not earthquake resistant. The Barangay Captain of Bayacabac mentioned that if an earthquake with this magnitude would strike in the future, these people will be again in need. Moreover, several participants mention the unequal distribution of relief goods. Striking is that some of the households did not receive any relief goods or materials, and some households were provided with 2 houses, which is mainly due to the lack of monitoring and not properly

managed aid assistance. Another issue addressed by the Social Welfare Officer on provincial level is that only core shelters with one room and bathroom were provided which poses threats to child and women safety due to the non-provision of separate rooms (Tecson, 2017).

“The financial aid was not felt by the local population due to political intervention (Quote of Participant).”

The perceptions on the relief by the municipality are mixed. Some households relying on fishing received free boats from the government and docking areas were provided. However, the members of the Punta Cruz PO for fisherman mentioned that there is a lack of support regarding to the fishing issues faced today. Regarding to housing, some say that the houses given by the government are more reliable than the ones given by the NGOs. Also, the irrigation system and other water sources were only fixed after 4 years. Some farmers started in 2016 again with planting rice due to this issue and some rice fields are not yet cultivated due to the damages caused by the earthquake and landslides. Another issue that was left unaddressed is the distribution of animals which were lost after the earthquake. Although, governmental institutions mention that Maribojoc has totally recovered, only 19,47% of the interviewees noticed improvements within their daily situation after the earthquake.

“If there any calamity would come again, I hope that the government will address all the problems in the lower part of the society (Quote of Participant).”

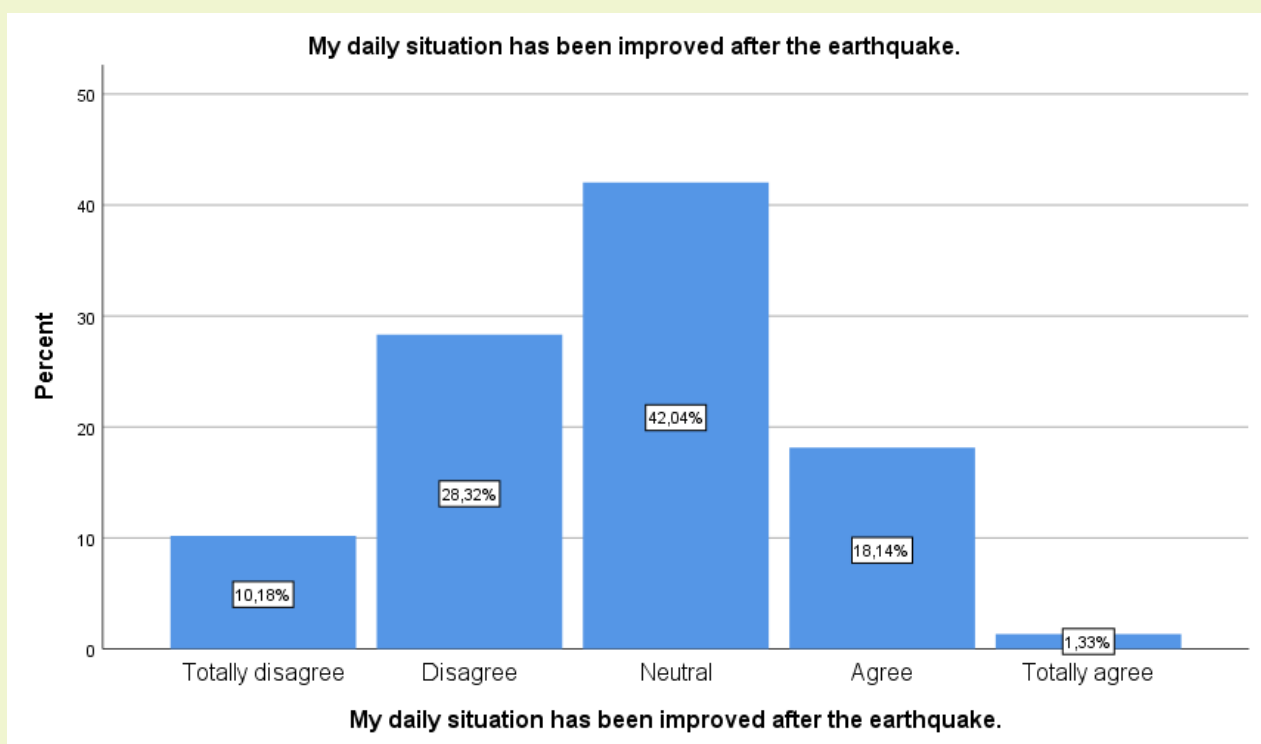


Figure 10. Respondents of the improvement of the daily situation

Preparedness and Mitigation

Maribojoc will be vulnerable to future earthquakes due to the Maribojoc Fault, and the other 3 identified faults within Bohol Province. Moreover, the cave system poses threats due to the susceptibility of sinkholes. Especially the barangay of Candavid, which was hardest hit, is vulnerable to future earthquake-induced landslides due its location in a mountainous area (Fuentes, 2017). Therefore, it is of great importance to strengthen the capacities of the MDRRMC, the municipality, the barangays and the local population.

Trainings for the local population are provided by the MDRRMC, especially within schools and on barangay level. However, the DILG Officer mentions that the perception and motivation of the locals is still a challenge to overcome. When trainings are given, some of the households do not show or the lack of participation during the workshop has been noticed. On the other hand, the Barangay Captain of Bayacabac explained: *“People are not able to come to the trainings. They have to make a choice in generating an income for that day or participating in the training.”* Also during the survey several participants suggested for better response and more preparedness concerning trainings and drills. Still 36,1% of the respondents did not participate in trainings, however only 9 of these respondents explain to have a lack of knowledge on the response to earthquakes.

“I believe that we are all capable of doing things to overcome the dilemma that happened during the earthquake. I want to recommend that even nowadays, we still need trainings and seminars regarding earthquake drills (Quote of Participant).”

		I know what do when an earthquake strikes.	
		Yes	No
		Count	Count
Did you participate in trainings, drills or did you get education about earthquakes?	Yes	133	8
	No	73	9

Table 5. The relation between the received trainings and preparedness

Also, the establishment of evacuation centers was again highlighted. Still, some evacuation centers are not yet built or unstable public structures serve as evacuation centers nowadays. These mostly include schools, the public market and the barangay halls. Especially, Punta Cruz and Candavid were asking special attention to this matter. Although, the DILG Officer is advocating for evacuation centres, the necessary funds are still missing (Halasan, 2017). Moreover, there is a need for proper and disaster resistant health clinics.

Another important aspect of resiliency against future earthquakes is the stability and location of the houses of the local population. As the figure below shows, most of the people are not agreeing with the statement: *“My house is resistant against earthquakes”*. The respondents who answered neutral were mostly not sure if their house would resist a future earthquake. Most of the houses that were made of concrete were down, while the houses made of wood were resilient (PROCESS Bohol, 2013) & (PDDO, 2007).

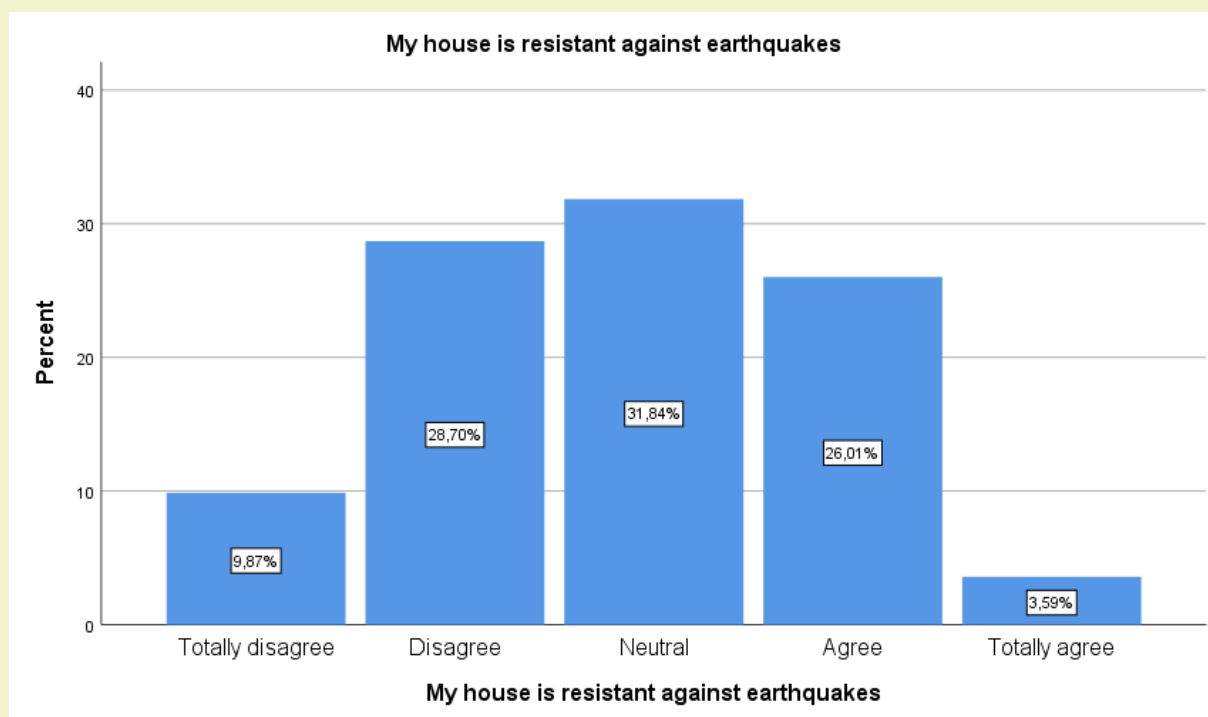


Figure 11. Respondents on the resistance of their houses

Although, most of the respondents state that their house is situated in a dangerous location, people still refuse to leave their houses due to their livelihoods. Relocation sites have already been identified within the municipality, however the issue remains that after relocation, the households mostly return to their original area. This is mainly due to the lack of knowledge on disasters and the limited livelihood options. Furthermore, some of the respondents mentioned that their houses are not being situated in a dangerous location, however the observations were different. These people lived on a cliff, in a landslide prone area, or next to the shoreline which poses great threats to future hazards. This also shows that although 64,29% mentioned to be aware about the risks of earthquakes, there is still lacking information on risks of settlements within dangerous locations.

Discussion Diagram Results

The table below represents the outcomes of the Discussion Diagram during the FGD. In general the Barangay Captains came up with the same results as the respondents during the survey questionnaire. In addition to the responds answered by the local population, the Barangay Captains recognized that before the earthquake the number of the total households within the municipality were smaller. After the earthquake, several members in one household applied for a house, which resulted in more registered households. One of the major damages that has not yet been mentioned is the destroyed Pantalan in Poblacion, which served as the main wharf in the municipality. Nowadays, the wharf has not been repaired and the displacement of the Pantalan is still visible. Furthermore, the gap within the responses mentioned was the non-reconstruction of the public structures and buildings due to the unwell managed funds. In order to prepare for another earthquake, the Barangay Captains came up with several actions points including the provision of survival kits. However, the MPDC Officer mentioned that the survival kits were denied by COA for unknown reasons (MPDC, 2017). Moreover, the communication and coordination has to be improved in order to respond efficiently to future disasters. In order to achieve this, the Barangay

Captains suggested to have one vocal person during disasters to avoid miscommunications. At last, the financial reserves on barangay and municipal level in case of another hazard is lacking.

Before Earthquake	High or Low Impact	Responses after Earthquake	Gaps within Responses	Action Points for Improvements
<ul style="list-style-type: none"> • Main livelihoods are fishing and farming, tourism not yet developed; • Many sources of water available; • Many roads are not concrete; • Many families in one household. 	<ul style="list-style-type: none"> • Bridges and roads were damaged; • Public structures such as barangay halls damaged; • Houses totally/partially damaged; • Pantalan (main wharf) damaged; • Cracks in the lands; • Uplift of coast-line; • No source of water or electricity; • Psychological effects; • Loss of livelihoods; • Death casualties; • Injured persons; • More registered households. 	<ul style="list-style-type: none"> • Restore water supply; • Provision of houses/materials for repair; • Provision of relief goods; • Medical assistance; • Assistance to fisherman; • Provision of Docking Area; • Provision of Farming Tools; • Cash for Work; • Rehabilitation of public structures; • Psychological assistance. 	<ul style="list-style-type: none"> • Not all households received houses or are still unfinished; • Some roads are not restored; • Some chapels, schools are not yet restored; • Funds were not well managed. • San Vicente: Docking Area not yet repaired. 	<ul style="list-style-type: none"> • Strengthening disaster preparedness including survival kits; • Improved construction of buildings; • Vocal person; • Improved communication and coordination; • Rehabilitation of houses; • Establishment of Evacuation Centers; • Financial reserves in case of calamity.

Table 6. Results on the Discussion Diagram

5. Barriers and Opportunities

This sections provides an overview of the issues identified within the research.

- The Republic Act 10121 has made a difference according to DRM within the Philippines and addresses “Strengthening Disaster Risk Reduction Governance” stated as a priority within the Sendai Framework. Although, Bohol Province and the LGUs have made changes within the Disaster Risk Reduction Measures by establishing the PDRRMC and the MDRRMC, at the local level structures and capacities are still weak. Factors such as the availability of evacuation centers and appropriate technology still contributes to the vulnerability of the local population. The implementation of DRR activities are highly influenced by political agendas and corruption is still visible (Caritas, 2014). Moreover, the lack of investments and funds by the LGUs in DRR will pose greater risks in future calamities.
- In the Provincial Plan for Disaster Risk Reduction is stated that the implementation of laws and regulations has to be strict. However, the act on No Build Zones is still not enforced. Although, relocation sites have been assigned and resettlement projects were also implemented among the households living in dangerous locations, the minimum opportunities and knowledge about several livelihoods is a challenge to overcome. Moreover, the PDRRMP had the objective to provide adequate roads and other infrastructure facilities. Still, some roads have not been reconstructed and result in a barrier of providing relief goods during a calamity.
- Communication between the MDRRMC and the local population has to be improved for effective preparedness concerning hazards. Disconnects have been observed according the willingness and motivation of the local population and the trainings that have been given by the MDRRMC. Although, the MDRRMC as well as the municipal DILG perceive the perception of the population as an issue, several respondents requested more trainings and better preparedness on future disasters.
- Moreover, the issues concerning the collaboration between the LGUs and International Organisations has been poor and resulted in several unfinished houses and lack of materials. After the International Organisation for Migration (IOM) left, no new NGO has been assigned to finish the construction of the houses and leaves many households still in need for appropriate housing and shelter. Also the PDRRMP mentioned the rebuild of houses as one of the priorities and strives for disaster resistant constructions. However, the build back Barangay Halls and houses are not assigned as earthquake resistant. Also the requirement of donors regarding to the ownership of the lot is still a challenge.
- Still some issues concerning the rehabilitation of households relying on farming and fishing as an income remain. Especially, San Vicente raised concerns on the docking area which has not yet been rebuild. Moreover, some of the farmlands are not yet recovered which means a loss of income for the households.

6. Identification of Response Options

The proposed interventions are developed in order for PROCESS Bohol Inc. and the municipalities to contribute to the sustainability and resilient communities within Bohol Province and the most affected communities concerning four themes: increase of livelihood options; resilient houses; establishment of disaster resilient public infrastructure; and preparedness of the local population.

Livelihoods

Many people are living in flood and landslide prone areas due to their livelihoods. This is still a great concern as well as of the government as of the local population. The main reason identified is the lack of knowledge and options of income generating activities. This is still a challenge that has to be addressed especially during relocation projects. In order to make these relocation projects successful it is of importance that the targeted population is trained in different livelihoods. Over the years, PROCESS Bohol Inc. has gained experience on livelihood workshops among several groups of people. In collaboration with the municipalities and the Department of Environment and Natural Resources who enforce the No Building Zones and relocation of households living in dangerous locations, PROCESS Bohol could make a contribution to the successful implementation by training and the provision of workshops. Moreover, it is recommended to generate funds for micro-credits for the relocated population through which these people can build new livelihoods.

Furthermore, some issues of the farmers and fishers are not yet addressed. For example, the rebuild of the docking area in San Vicente or farmlands that have not yet been recovered which greatly affects the income of the households. PROCESS Bohol Inc. could give assistance to these affected households by providing improved technologies concerning irrigation and fishing equipment or by advocating on the rebuild of the farmlands and fisher areas.

Housing

The lack of communication and coordination between the municipality of Maribojoc and the International NGOs resulted in many houses left unrepaired at this point of time. The instability of the unfinished houses poses great threats for the households in case of future hazards. In order to avoid any more delays within these projects, new partnerships have to be generated as soon as possible. Although, PROCESS Bohol Inc. has no expertise in the establishment of resilient housing, due to the favourable relationship between the NGO and the municipalities, PROCESS Bohol Inc. would be a possible integrating partner in the rehabilitation of the houses and would demolish any more delays. Through advocacy and proposals, funds can be generated as well from the government and international donors. Moreover, a redesign of the shelters and houses have to be integrated regarding to child protection and gender sensitivity.

Public Infrastructure

As for the municipalities it is strongly recommended to invest more in the resiliency of public infrastructure such as roads, barangay halls, clinics and schools. This will especially improve the response and relief activities after a calamity would occur. The established resilient barangay halls, clinics and schools can serve as emergency centers and better relief can be provided. Moreover, improved road construction will increase the efficiency of the distribution of relief goods, especially to the remoted barangays.

Preparedness

In order to effectively prepare the local population on earthquakes and other hazards, the disconnects between the government including the MDRRMC and the local population has to be addressed. The survey resulted that many households would prefer more trainings and workshops and see this as a cross cutting theme to prepare for future calamities. Therefore, the MDRRMC could work together with the Barangay

Captains to give trainings and exchange information about disasters for example during the monthly assembly meetings.

Furthermore, investments have to be made in the preparedness of the MDRRMC, including materials and technologies. Especially, survival kits have to be provided not only within the MDRRMC, but also to be present within the barangay halls, so fast and efficient relief distribution is ensured. Also, the barangay captains of Maribojoc recommended one vocal person during disasters for questions and updates regarding to the emergency response. Another suggestion made, was the availability of financial resources only meant for the rehabilitation after a disaster strikes.

7. Relocation and Livelihood Assistance Project

Since the main audience of this research is PROCESS Bohol, the identification of the selected response option is linked to the capacities of the organisation. The project described is mainly focussing on the municipality of Maribojoc where the survey was conducted. However, this will also be applicable for other municipalities within the Province of Bohol, since these are expected to face the same issues regarding to relocation and housing projects.

As for now, the priority of the LGU within Maribojoc concerning relocation, is the resettlement of the households within the area of the Pantalan in the barangay of Poblacion. This area is considered to be at high risk due to its location next to the sea and therefore is highly vulnerable to storm surges and flooding. The red encircled location on the map below, represents the Pantalan (MPDC, 2017).

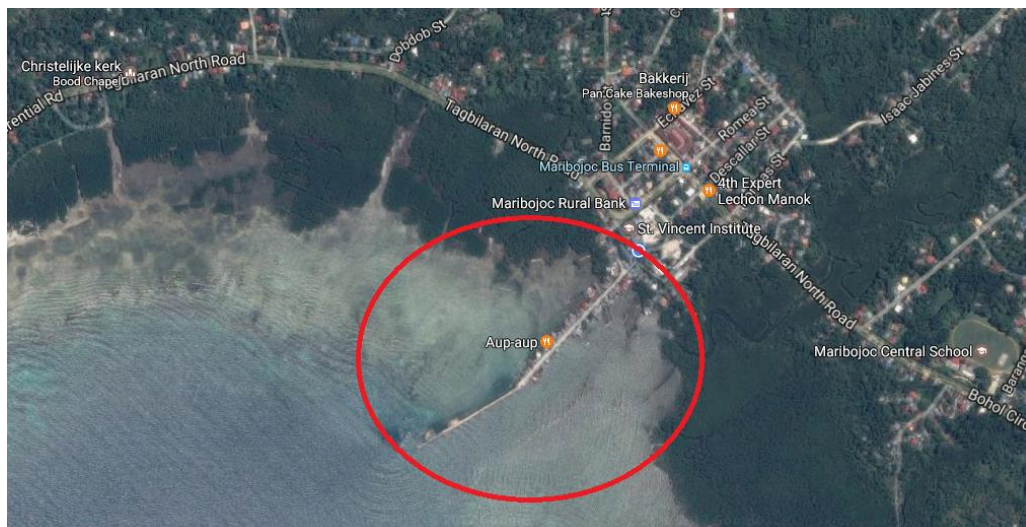


Figure 12. The Pantalan within the Municipality of Maribojoc

Not only are the households among the Pantalan at high risk concerning storm surges and flooding, also the population was greatly affected by the earthquake of 2013. Several houses were totally damaged and the wharf was displaced as the pictures below show. Figure 12 represents the Comfort Room of one of the houses which was totally destroyed. Figure 13 and 14 show the cracks and the displacement of the boardwalk of the wharf.



Figure 13. Displacement of Comfort Room due to the Earthquake in 2013.



Figure 14. Cracks within the boardwalk created by the Earthquake.



Figure 15. Displacement of the wharf due to the Earthquake in 2013.

The project involves the Municipal DSWD, DILG, technical engineers and the MPDC. Moreover, the Holy Cross Parish is encountered as one of the stakeholders concerning the implementation and advocacy regarding to the relocation of the households within the Pantalan. In the process, two potential relocation sites within the barangays of Bayacabac and Jandig have been identified. However, due to land tenure issues and the lack of funds these areas are not yet available. Since the LGU is the one purchasing the land, lower prices have to be ensured as one of the requirements by COA, therefore land owners prefer to sell their plots to private buyers. Moreover, the LGU prefers the site within Bayacabac due to the available access to the river, concerning the livelihoods of the fishers (MPDC, 2017).

Challenges

Over the years, several relocation projects have been implemented all over the world. Before the creation and implementation of these projects, it is of importance to understand the challenges faced in past projects to avoid issues. The World Bank (2010) explains several lessons learned such as:

- **Inadequacy of new sites:** relocation of the population underlies the protection from risk areas, however the new location may pose new risks concerning lack of services, hazards or high crime rates.
- **Distance from livelihoods and social services:** the lack of affordable sites close to employment and social services are posing threats to the welfare of the relocated population.
- **Socio-culturally inappropriate settlement layouts:** housing design, inadequate access to infrastructure and lack of knowledge about land-use are underlying factors of rejection of relocation projects.
- **Lack of community participation:** involving the targeted community in the planning and understanding their needs can help in reducing the relocation risks.
- **Under budgeting relocation costs:** the financial resources pose great risks in the successful implementation of relocation projects due to the under estimation of costs such as infrastructure and social assistance (World Bank, 2010).

Also the United Nations High Commissioner for Refugees (UNHCR) recognizes the importance of consultation with the communities by assessing the needs and vulnerabilities with particular attention to livelihoods and the need to preserve social capital as much as possible. In addition, the UNHCR states that there is a need for integration with the host communities in order to avoid conflicts (UNHCR, 2014).

In the aftermath of typhoon Haiyan, which hit central Philippines, OXFAM realised a research on the priorities set by the communities that were displaced regarding to resettlement. Soon after the typhoon, the government declared a no build zone within 40 metres of the affected coastlines in Samar, Leyte and the North of Cebu. The survey done by OXFAM resulted that the most important aspects that should be considered concerning relocation sites are the provision of livelihood opportunities and the safety regarding to future disasters (OXFAM, 2015).

Interventions

As mentioned before, the interventions proposed are linked to the capacities of PROCESS Bohol and tackles the challenges explained above in order to secure the successful implementation of the relocation project executed by the municipality of Maribojoc. PROCESS Bohol is considered as the most reliable partner in integrating these interventions due to the experience and the trust-based relationship with the LGU and the local population within Maribojoc. Moreover, these proposed interventions consider more facets within the identified response options such as housing projects and livelihood assistance. The proposed intervention within the relocation and livelihood assistance project are: advocacy and workshops on different livelihoods including the provision of micro credits. These are explained in chronical order according to the implementation of the programme.

Advocacy Plan

In order to address the challenges on budgeting and to ensure that all basic services are provided, this intervention is of importance to allocate all the necessary funds. As the LGU is only able to deprive funds from national and provincial government, PROCESS Bohol plays an important role, since the organisation can apply for funds from governmental agencies as from international and national donors. Therefore, this intervention tries to secure the increase of financial resources and supply of materials in order to ensure the successful implementation of the relocation and livelihood assistance project.

Statement

The Philippine government, including national, provincial and municipal level are responsible for the protection of the local population and therefore should address the vulnerabilities regarding to natural and man-made disasters. In the past, natural disasters such as earthquakes and storm surges have had a great impact on the livelihoods of the community within the Pantalan due to its location next to the sea. Due to the Maribojoc fault and the changing weather patterns, the community is posed to future threats. To maximize the capacities of the population and to reduce the vulnerabilities and the costs regarding to disasters within the future, it is of necessity that the LGU and other important stakeholders take action in relocating these households to a safer place.

Goal and Objectives

Goal	Objective	Included	Stakeholders
Advocate to generate necessary funds in order to implement the relocation and livelihood assistance project executed by the LGU of Maribojoc and PROCESS Bohol.	To ensure the successful implementation of the project and the provision of the basic needs.	<ul style="list-style-type: none"> • The purchase of relocation sites. • Technical expertise, risk assessments and needs assessment. • Design of the plot, infrastructure and housing. • Provision of basic services such as housing, infrastructure etc. 	MSWD, DENR, DILG, Holy Cross Parish, PROCESS Bohol, MPDC, International Donors (UNHABITAT, AusAid), Provincial Government, PDRRMC, MDRRMC, National Government, COA, Engineers and Technical expertise, Representative of Community within Pantalan, Representative of Host

		<ul style="list-style-type: none"> • The provision of livelihood assistance workshops. • The provision of micro-credit. • Financial resources for monitoring and evaluation processes. 	Community, Barangay captains of both Poblacion and host community.
--	--	---	--

Table 7. Goals and Objectives within the Relocation Project.

Evidence

As evidence the DRM plans of the National and Provincial government can be used to gain attention on the responsibilities of these actors. Moreover, the Sendai Framework could be used as back-up especially concerning international donors.

Both the National and Provincial DRM plans state the necessity to reduce the vulnerabilities and exposure to hazards and therefore has the core responsibility to mitigate the risks to which the community within the Pantalan is exposed. Especially, since the constructions of the houses lack quality and are damaged, the guarantee of zero preventable deaths, stated within the response objectives of the PDRRMP, during a calamity is not ensured (NDRRMC (b), 2011)& (Provincial Government of Bohol, 2014).

Also, the evidence collected during the course of the research regarding to the PAR-model can be used to support the statement. For example, the vulnerability caused by poor settlements due to low income levels especially among fishers. Also, the high susceptibility of future hazards is a concern that has to be taken into account.

The relocation and livelihood assistance programme addresses three priorities for action within the Sendai Framework. Also, the Sendai Framework emphasizes strengthening disaster risk governance within priority 2 and the implementation of the plans made within national and regional governments, and therefore pressures governance to perform. Moreover, Sendai prioritizes the understanding of vulnerability within several dimensions such as exposure to environmental risks, including the location in which the population is situated. At last, priority 3 highlights the importance on investing in disaster risk reduction for resilience to enhance the social, health and environmental conditions to prevent and reduce losses regarding to livelihoods (UNISDR, 2015).

Action Points

In order to advocate for the necessary funds, it is of importance to create cooperation between the several stakeholders mentioned in table 7. and the following steps have to be undertaken:

1. Raising awareness on the relocation project and create a common understanding by all stakeholders involved. Moreover, roles and responsibilities have to be clear.
2. A risk assessment has to be carried out in order to define the relocation site as suitable.
3. Organizing a workshop to discuss the inventory, design and needs of the communities.
4. Agreement on final design on land use, housing and infrastructure.
5. Discuss strategy options and set up of the budget.

Livelihood Training and Workshops

The households within the Pantalan are mostly relying on fishing as a livelihood, however the resettlement to a different location does not ensure the availability of access to rivers or the sea. Therefore, the livelihood assistance project is initiated with the ultimate goal to enhance the capacities of the resettled communities by diversifying their livelihood options through skills trainings and workshops. Moreover, addresses the concerns on the lack of community participation and the distance from the livelihoods, which poses threats to the integration of resettlement programmes. Concerning the SDGs, this intervention addresses the goals on no poverty, zero hunger and decent work and economic growth. Moreover, due to income generation the other goals such as health, wellbeing and education will be indirectly addressed.

Stakeholders

The most important stakeholders within the livelihood workshops and trainings are:

- **PROCESS Bohol:** PROCESS Bohol will be the executive organisation within the programme and will be present during all the activities and steps that have to be undertaken concerning the implementation. In the past, PROCESS engaged in a project on Gender Development in which women on the island of Cabilao were trained in diversifying their livelihoods and therefore makes PROCESS Bohol an essential partner.
- **Technical Expertise:** In order to define the possible livelihood options within the new area, technical experts have to be consulted especially concerning farming opportunities.
- **Community within Pantalan:** The community is the most important stakeholder within this project by addressing their needs and issues regarding to livelihood options. Therefore, it is recommended to form a People's Organisation as a central point for raising concerns and to ensure the participation of the community. The creation of the PO is also of importance concerning the next intervention on the Micro Credits.

Action Points

The following steps have to be taken to put the trainings and workshop into practice:

1. Formation of People's Organisation involving the households within the Pantalan and identifying at risk households of losing income generating activities.
2. Identifying livelihood options that are possible regarding to the new location.
3. Organizing a workshop to discuss the needs and expectations concerning livelihood strategies and options.
4. Draft plan and design the outline of the workshops and trainings.
5. Meeting on the approval of workshop design and dates.
6. The performance of the workshops on the selected dates.
7. Monitoring and evaluation on the workshops and trainings.
8. Address issues and concerns raised during the monitoring and evaluation process.

In addition to the livelihood trainings and workshops, micro credits should be provided to ensure the income generating possibilities of the affected community. As mentioned before, through relocation the community loses its assets, therefore there is a need for financial compensation to rebuild their livelihoods. In the Combating Child Labour project of PROCESS Bohol, the organisation already gained insight in the effective distribution of micro credits. The essential part of this project is that the POs take over control on the project, however is still monitored by PROCESS.

Considerations

In order to secure the successful implementation of the relocation project, the following aspects need to be considered:

- The inclusivity and involvement of all household members involved: the households have to be consulted and participate during the implementation of the project. The concerns raised have to be taken seriously and act upon in order to avoid issues. Moreover, the involvement of the host community is of importance.
- Special attention has to be given to the integration within the host community.
- All the social services such as water, public transport, health services, schools etc. have to be present on the relocation site.
- All the members of the community have to be resettled together to a new site to not disrupt social networks and create coherence.
- A proper risk assessment has to be conducted to ensure the safety of the new area concerning natural and man-made risks.
- The housing design has to be gender sensitive and safe for children.
- The communication with the target group should be frequent and based on transparency to ensure a trust-based relationship between the implementing partners and the local population. This can be achieved through regular updates on the status of the project and monthly meetings.
- Visiting successful relocation projects will give input on the strengths and weaknesses.
- A new destination for the Pantalan has to be assigned to avoid future settlements within the area.
- There needs to be a close cooperation with all partners, including the DENR who enforces the No Build Zones.
- Several sources within the research mentioned the lack of monitoring as one of the issues concerning the effectiveness of the projects. Therefore, the establishment of monitoring and evaluation guidelines are a necessity. Especially, during the first year it is advised to do regular monitoring sessions with the involved communities and stakeholders.
- Political interests have to be avoided at all times through the presence of a neutral organisation during the implementation, meetings, evaluation etc.

Expected Resilience Outcomes

The interventions mentioned above are expected to result in the following resilience outcomes:

- The community within the Pantalan is resettled to an area which includes the provision of the basic services, gender sensitive housing and appropriate infrastructure through the generation of adequate funds.
- The community is relocated to a low risk area concerning natural and man-made hazards.
- The community is directly involved within the decision making processes and are increasingly taking over the project through the establishment of a PO.
- The community has developed skills on several livelihoods which will ultimately increase the options on generating activities and increase the quality of life.
- The households have access to financial resources to build new livelihoods, which will decrease the susceptibility of reintegration within the Pantalan.

8. Conclusion

To conclude, the report shows that still many issues are left unaddressed regarding to Disaster Risk Reduction Measures. Especially, the location within the Pacific Ring of Fire and the socio-economic pressures will pose threats to the local communities regarding to future calamities. Although, the Philippines has strengthened their institutional capacities after the Republic Act 10121 was enforced, still the capacities and preparedness on local level is missing.

Based on the extensive context analysis of the circumstances of the communities within the Province Bohol with special regard to the municipality of Maribojoc, several interventions were identified. Especially the relocation and livelihood assistance project will enhance the resilience of the community within the Pantalan of Maribojoc, however also will be applicable to other sites. Moreover, PROCESS Bohol gains many opportunities regarding to the proposed engagement within the relocation of the households within the Pantalan. This report can be used as a guideline for further project development, since the research highlights the most important issues that the communities within Bohol Province are still facing after the earthquake of 2013. However, additional information has to be gathered to secure the successful implementation of the project, such as the recommendation on visiting existing resettlement programmes. Moreover, the collaboration with the community and the involved stakeholders is highlighted in order to avoid miscommunications. Nevertheless, the main research question: *“Which interventions are suitable for improving the living conditions of the most affected communities within the Province of Bohol by the earthquake in 2013?”* has been answered and therefore reaches the aim of the research.

References

ADPC, 2017. *ADPC: About us*. [Online]

Available at: <http://www.adpc.net>

[Accessed 16 March 2017].

ASEAN, 2005. *ASEAN agreement on disaster management and emergency response*, Vientiane: ASEAN.

ASEAN, 2013. *Reliefweb: ASEAN Agreement on Disaster Management and Emergency Response (AADMER) Work Programme for 2010-2015*. [Online]

Available at: <http://reliefweb.int/report/world/asean-agreement-disaster-management-and-emergency-response-aadmer-work-programme-2010>

[Accessed 15 March 2017].

ASEAN, 2017. *Association of Southeast Asian Nations: ASEAN Ministerial Meeting on Disaster Management (AMMDM)*. [Online]

Available at: <http://asean.org/asean-socio-cultural/asean-ministerial-meeting-on-disaster-management-ammdm/>

[Accessed 15 March 2017].

Asian Development Bank , 2014. *Republic of the Philippines national urban Assessment*, Mandaluyong City: Asian Development Bank.

Batoy, M. G., 2017. *Red Cross Bohol* [Interview] (8 May 2017).

BBC, 2013. *BCC: Deadly Philippine quake hits Bohol and Cebu*. [Online]

Available at: <http://www.bbc.com/news/world-asia-24530042>

[Accessed 22 February 2017].

Bohol Chronicle, 2017. *Bohol Chronicle: Inabanga folks flee homes*. [Online]

Available at: <http://boholchronicle.com.ph/2017/04/17/inabanga-folks-flee-homes/>

[Accessed 5 May 2017].

Bohol Philippines , 2017. *Bohol Philippines- Geography of Bohol*. [Online]

Available at: <http://www.bohol.ph/article16.html>

[Accessed 10 February 2017].

Bohol Philippines, 2014. *Bohol Philippines: Municipalities- Maribojoc*. [Online]

Available at: <http://www.bohol.ph/mun33.html>

[Accessed 8 March 2017].

Business Dictionary , 2017. *Business Dictionary: Group Discussion*. [Online]

Available at: <http://www.businessdictionary.com/definition/discussion-group.html>

[Accessed 14 February 2017].

Caritas Manila Emergency Aid, 2013. *CENTRAL VISAYAS Philippines on BOHOL TECTONIC EARTHQUAKE , -:* Caritas Manila Emergency Aid.

Caritas, 2014. *Disaster Risk Reduction and Management in the Philippines*, Luzerne: Caritas.

CIA, 2017. *Central Intelligence Agency: The World Fact Book-The Philippines*. [Online]

Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/rp.html>

[Accessed 15 February 2017].

- Congress of the Philippines, 2009. *Republic Act No. 10121*, Manila: Congress of the Philippines.
- Cruz, E., 2016. *The Philippine Star: Income inequality getting worse*. [Online]
Available at: <http://www.philstar.com/opinion/2016/01/21/1544774/income-inequality-getting-worse>
[Accessed 1 March 2017].
- Damalerio, A., 2017. *PDRPMC* [Interview] (2 June 2017).
- Daniell, J., Vervaeck, A., S.A, B. & Schumann, L., 2013. *CEDIM Forensic Disaster Analysis - Bohol Earthquake - Report No. 6*, nd.: ResearchGate.
- Del Bello, L., 2016. *SCIDEVNET*. [Online]
Available at: <http://www.scidev.net/global/disasters/multimedia/earthquake-ecuador-pacific-ring-fire.html>
[Accessed 22 February 2017].
- Department of Environment and Natural Resources, 2015. *Department of Environment and Natural Resources: Post Earthquake Bohol*. [Online]
Available at: <http://www.denr.gov.ph/news-and-features/features/2242-post-earthquake-bohol-silver-lining-after-the-disaster.html>
[Accessed 22 February 2017].
- Department of Labour and Employmen, 2017. *National Wages and Productivity Commission: CURRENT DAILY MINIMUM WAGE RATES*. [Online]
Available at: <http://www.nwpc.dole.gov.ph/pages/rb-7/cmwr.html>
[Accessed 9 June 2017].
- DILG, 2014. *Guidelines in the Implementation of the Bohol Earthquake Assistance (BEA) DILG fund for affected LGU's in the province of Bohol*, Tagbilaran: DILG.
- Donner, W. & Rodriguez, H., n.d.. *PRB :Disaster Risk and Vulnerability: The Role and Impact of Population and Society*. [Online]
Available at: <http://www.prb.org/Publications/Articles/2011/disaster-risk.aspx>
[Accessed 2 March 2017].
- Earth Observatory of Singapore, 2017. *Earth Observatory of Singapore: Maps-Ring of Fire*. [Online]
Available at: <http://www.earthobservatory.sg/resources/maps/ring-fire>
[Accessed 28 February 2017].
- EconomyWatch, 2010. *EconomyWatch: Philippines Economic Development*. [Online]
Available at: <http://www.economywatch.com/economic-development/philippines.html>
[Accessed 1 March 2017].
- EDIM, 2013. *Center for Disaster Management and Risk Reduction Technology: Philippines (Bohol) Earthquake*. [Online]
Available at: <https://www.cedim.de/english/2442.php>
[Accessed 22 February 2017].
- EM-DAT, 2017. *EM-DAT: The International Disaster Data Base: Country Profile: The Philippines*. [Online]
Available at: http://www.emdat.be/country_profile/index.html
[Accessed 22 February 2017].
- Fuertes, H. M., 2017. *MDRRMC* [Interview] (9 May 2017).

- Gatal, N. F., 2017. *T.a.R.S.I.E.R 117* [Interview] (12 May 2017).
- Give2Asia, 2017. *Give to Asia: DISASTER PREPAREDNESS AND RESILIENCY: THE PHILIPPINES*. [Online]
Available at: <http://www.give2asia.org/disaster-preparedness-and-resilience-philippines/>
[Accessed 16 June 2017].
- Gonzalez, M., 2005. *Map of Maribojoc*. [Art].
- Government Departments, 2014. *Adoption of Hazard Zone Classification in Areas affected by typhoon Yolanda and providing Guidelines for Activities Therein*, Manila: DENR-DILG-DND-DPWH-DOST.
- Government of Canada, 2014. *Government of Canada: Project profile — Earthquake in Bohol, Philippines - Humanitarian Response - CECI 2013*. [Online]
Available at: <http://w05.international.gc.ca/projectbrowser-banqueprojets/project-projet/details/d000471001>
[Accessed 13 March 2017].
- Halasan, F. V. J., 2017. *Municipal DILG* [Interview] (9 May 2017).
- Heijmans, A., 2013. *Reaching Resilience: Handbook Resilience 2.0. for aid practitioners and policymakers*, Wageningen: Wageningen University .
- Karlsruhe Institute of Technology, 2017. *Karlsruhe Institute of Technology-Philippines (Bohol) Earthquake*. [Online]
Available at: <https://www.cedim.de/english/2442.php>
[Accessed 25 March 2017].
- Lagmay, A., 2014. *Brief Communication: On the source characteristics and impacts of the magnitude 7.2 Bohol earthquake, Philippines*, s.l.: Natural Hazards and Earth System Sciences.
- Laguna, D. E., 2017. *Municipal Social Welfare and Development Officer* [Interview] (3 May` 2017).
- Laude, J., 2013. Bohol mayor to Red Cross: We don't need you. *The Philippine Star*, 25 October, p. 1.
- Lucido, L., 2014. *ThePalladium: DRRM Act: The law in times of disasters*. [Online]
Available at: <http://thepalladium.ph/legal/drrm-act-law-times-disasters/>
[Accessed 17 March 2017].
- Lucino, M. L., 2017. *DILG* [Interview] (31 May 2017).
- M.E.R.U., 2017. *Facebook: M.E.R.U..* [Online]
Available at: <https://www.facebook.com/MERU2016/>
[Accessed 16 March 2017].
- MDRRMC, 2016. *The Maribojoc Disaster Risk Reduction Management Code*, Maribojoc: Municipality of Maribojoc.
- Meguillo, N., 2017. *PO President Punta Cruz* [Interview] (19 March 2017).
- Montenegro, B., 2015. *GMA News Online*. [Online]
Available at: <http://www.gmanetwork.com/news/story/545760/scitech/weather/philippines-4th-most-disaster-prone-country-in-the-world-un-report>
[Accessed 23 February 2017].

Mourdoukoutas, P., 2017. *Forbes: Duterte's Philippines Is Getting More Corrupt*. [Online]
Available at: <https://www.forbes.com/sites/panosmourdoukoutas/2017/01/26/dutertes-philippines-is-getting-more-corrupt/#7512bcf85a7f>
[Accessed 2 March 2017].

MPDC, 2017. *MDPC* [Interview] (15 May 2017).

Municipality of Maribojoc, n.d.. *The earthquake in Maribojoc*, Maribojoc: Municipality of Maribojoc.

NDRRMC (b), 2011. *National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028 Draft*, Philippines: NDRRMC.

NDRRMC, 2011. *The National Disaster Risk Reduction and Management Plan*, Philippines: NDRRMC.

NDRRMC, 2013. *Final Report on Effects Magnitude 7.2 Sagbayan, Bohol Earthquake*, Quezon City: National Disaster Risk Reduction and Management Council.

Newsinfo, 2017. *Inquirer: Duterte extends deadly drug war*. [Online]
Available at: <http://newsinfo.inquirer.net/866493/duterte-extends-deadly-drug-war#ixzz4a87UNJUr>
[Accessed 2 March 2017].

Nicolas, F., 2017. *CNN Philippines: Duterte to diplomats: Vow to end drugs, corruption, criminality remains unchanged*. [Online]
Available at: <http://cnnphilippines.com/news/2017/01/11/Duterte-diplomats-vin-dhonneur-drugs-corruption-criminality-robredo-invite-retracted.html>
[Accessed 2 March 2017].

Nwakaegho, T., 2016. *Daily Times: Innovations in new digital technology, critical to achieving UN's SDGs-Report*. [Online]
Available at: <https://dailytimes.ng/business/innovations-new-digital-technology-critical-achieving-uns-sdgs-report/>
[Accessed 15 March 2017].

Orallo, A., 2011. *Study on Earthquake Risk and Vulnerability Management and Lessons Learned*, nd. : ARDC.

OXFAM, 2015. *Typhoon Haiyan: Community research into the relocation of internally displaced people in the Philippines*, Philippines: OXFAM.

PDDO, 2007. *PPDO: Maribojoc*. [Online]
Available at: <http://www.ppdobohol.lgu.ph/municipal-links/1st-district/maribojoc/>
[Accessed 3 March 2017].

Penro, E. S., 2017. *DENR* [Interview] (15 May 2017).

Philippine Consulate General, 2017. *Philippine Consulate General: General Information*. [Online]
Available at: http://www.philcongen-toronto.com/general/general_basic.php
[Accessed 15 February 2017].

Philippine History, 2017. *Philippine History: About the Philippines*. [Online]
Available at: <http://www.philippine-history.org/about-philippines.htm>
[Accessed 15 February 2017].

Philippine Statistics Authority, 2015. *Philippine Statistics Authority: Family Income and Expenditure Survey Final Results*. [Online]

Available at:

<https://psa.gov.ph/sites/default/files/attachments/hsd/article/TABLE%201%20%20Number%20of%20Families%20C%20Total%20and%20Average%20Annual%20Family%20Income%20and%20Expenditure%20by%20Region%202015.pdf>

[Accessed 1 March 2017].

Philippine Statistics Authority, 2016. *Philippine Statistics Authority: PSGC - List of Regions*. [Online]

Available at: <http://nap.psa.gov.ph/activestats/psgc/listreg.asp>

[Accessed 15 February 2017].

PHIVOLCS, 2017. *PHIVOLCS: Strategic Initiatives*. [Online]

Available at:

http://www.phivolcs.dost.gov.ph/index.php?option=com_content&view=article&id=34&Itemid=64

[Accessed 15 March 2017].

PPDO Bohol, 2016. *PPDO Bohol- Hazard Maps*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/maps/hazard-maps/>

[Accessed 28 February 2017].

PPDO, 2007. *PDDO: Maribojoc Poverty Profile*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/municipal-links/1st-district/maribojoc/>

[Accessed 5 April 2017].

PPDO, 2014. *POST-GREAT BOHOL EARTHQUAKE REHABILITATION PLAN*, Tagbilaran: PPDO.

PPDO, 2017. *PDDO: Socio-economic Situationer*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/profile/bohol-facts-and-figures/bohol-an-area-profile/socio-economic-situationer/>

[Accessed 13 March 2017].

PPDO, 2017. *PPDO: About us*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/about-2/>

[Accessed 26 May 2017].

PPDO, 2017. *PPDO: Bohol an area profile*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/profile/bohol-facts-and-figures/bohol-an-area-profile/>

[Accessed 7 March 2017].

PPDO, 2017. *PPDO: Infrastructure*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/profile/bohol-facts-and-figures/bohol-an-area-profile/infrastructure/>

[Accessed 13 March 2017].

PPDO, 2017. *PPDO: Population & Human Development*. [Online]

Available at: <http://www.ppdobohol.lgu.ph/profile/bohol-facts-and-figures/bohol-an-area-profile/population-human-development/>

[Accessed 13 March 2017].

- PPDO, 2017. *Provincial Planning and Development Office- Map Municipalities: Maribojoc*. [Online]
Available at: ppdobohol.lgu.ph/municipal-links
[Accessed 25 March 2017].
- PPDO-Bohol, 2017. *PPDO-Bohol Interactive mapping- Municipal Boudaries*. [Online]
Available at: <http://www.ppdobohol.lgu.ph/interactivemap/map.html>
[Accessed 23 February 2017].
- Prevention Web, 2017. *Prevention Web: Philippines- Disaster & Risk Profile*. [Online]
Available at: <http://www.preventionweb.net/countries/phl/data/>
[Accessed 15 February 2017].
- PreventionWeb, 2014. *PreventionWeb: Basic Country Statistics and Indicators-Philippines*. [Online]
Available at: <http://www.preventionweb.net/countries/phl/data/>
[Accessed 23 February 2017].
- PreventionWeb, 2015. *PreventionWeb: Poverty and Inequality*. [Online]
Available at: <http://www.preventionweb.net/risk/poverty-inequality>
[Accessed 3 March 2017].
- Princess Alma, A., Rookie, C. & Aquino, A., 2014. *Republic Act 10121: An Approach in Strengthening Disaster Risk Reduction and Management in the Philippines*, s.l.: FFTC Agricultural Policy Articles.
- PROCESS Bohol (a), 2013. *Debris Clearing and Management Initiative for the Municipalities of Antequera, Maribojoc and Loon Project*, Tagbilaran: PROCESS Bohol.
- PROCESS Bohol , 2013. *Maribojoc Profile* , Tagbilaran: PROCESS Bohol.
- PROCESS Bohol, 2013. *RELIEF OPERATIONS UPDATES*, Tagbilaran: PROCESS Bohol.
- PROCESS Bohol, nd.. *LIVELIHOOD RECOVERY FOR COMMUNITIES ALONG ABATAN RIVER THROUGH RESTORATION OF THE RIVER'S NAVIGABILITY AND REPAIR OF ECOTOURISM FACILITIES DAMAGED BY THE OCTOBER 15, 2013 EARTHQUAKE*, Tagbilaran: PROCESS Bohol.
- PROCESS-Bohol, 2010. *Journey to Empowerment: PROCESS-Bohol@25*, Tagbilaran: PROCESS-Bohol.
- Provincial Government of Bohol, 2014. *Provincial Disaster Risk Reduction Management Plan*, Tagbilaran: Provincial Government of Bohol.
- Provincial Government of Bohol, 2017. *Provincial Government of Bohol: Mission and Vision*. [Online]
Available at: <http://new.bohol.gov.ph/about-bohol/vision-mission-goal/>
[Accessed 31 March 2017].
- PSA, 2015. *PSA: Highlights of the Philippine Population 2015 Census of Population- Region 7*. [Online]
Available at: <http://www.psa.gov.ph/content/highlights-philippine-population-2015-census-population>
[Accessed 5 April 2017].
- Roslinda, E., 2017. *PROCESS Bohol* [Interview] (19 June 2017).
- Saco, F., 2017. *Interview about the earthquake of 2013* [Interview] (5 April 2017).
- Salas, E. A. L., 2015. *EAL Salas: Which Province in the Philippines Has The Highest Deforestation Rate And Carbon Emission?* Sa. [Online]

Available at: <http://eric-salas.com/2015/12/08/philippines-highest-deforestation-rate-carbon-emission/>
[Accessed 2 March 2017].

Schoonmaker Freudenberger, K., n.d. *Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA)*, Baltimore: CRS.

SMS Tsunami Warning, 2017. *SMS Tsunami Warning- Earthquakes: seismology & measurement*. [Online]
Available at: <http://www.sms-tsunami-warning.com/pages/seismology-measurement#.WLVouPnyjIU>
[Accessed 28 February 2017].

Sustainability in Global Statistics, 2017. *Sustainability in Global Statistics: Corruption threatens Philippines aid*. [Online]
Available at: <http://freightweek.org/~freightweek/index.php/latest-news/89-humanitarian/157-corruption-threatens-philippines-aid>
[Accessed 2 March 2017].

TaRSIER 117, 2017. *TaRSIER 117: About us*. [Online]
Available at: <http://www.bohol.gov.ph/tarsier/about.html#>
[Accessed 31 March 2017].

Tearfund, 2003. *"Risk Mapping."*, s.l.: World Bank.

Tecson, C. M. T., 2017. *PSWD* [Interview] (7 June 2017).

Teves, O. & Perry, N., 2013. *TheStar*. [Online]
Available at:
https://www.thestar.com/news/world/2013/11/18/philippine_typhoon_corruption_fears_complicate_relief_efforts.html
[Accessed 2 March 2017].

Thomson Reuters Foundation, 2013. *Thomson Reuters Foundation :Women in disasters*. [Online]
Available at: <http://news.trust.org//spotlight/Women-the-poorer-half-of-the-world/?tab=briefing>
[Accessed 13 March 2017].

Transparency International, 2016. *Transparency International: Corruption Index 2016*. [Online]
Available at: http://www.transparency.org/news/feature/corruption_perceptions_index_2016
[Accessed 2 March 2017].

UN, 2014. *United Nations Office for Outer Space Affairs- Philippines: Sensors for Volcano and Earthquake Early Warning*. [Online]
Available at: <http://www.un-spider.org/news-and-events/news/philippines-sensors-volcano-and-earthquake-early-warning>
[Accessed 28 February 2017].

UN, 2016. *The Sustainable Development Goals Report 2016*, s.l.: UN.

UN, 2017. *UnHabitat: Programmes Urbanization*. [Online]
Available at: <http://unhabitat.org.ph/programmes/urbanization/>
[Accessed 2 March 2017].

UNDP, 2014. *Debris Management and Livelihood Support*, Japan: UNDP.

UNHCR, 2014. *Planned relocations, disasters and climate change: Consolidating good practices and preparing for the future*, n.p.: UNHCR.

UNICEF, 2012. *Disaster Risk Reduction and Education* , New York: Unicef.

UNICEF, 2014. *Philippines Humanitarian Situation Report*, Philippines: UNICEF.

UNISDR, 2015. *Sendai Framework for Disaster Risk Reduction 2015-2030*, Sendai: UNISDR.

Wisner, B., Blaikie, P., Cannon, T. & Davis, I., 2003. The Disaster Pressure and Release Model. In: *At Risk: Natural hazards, people's vulnerability and disasters Second Edition* . s.l.:Routledge, pp. 49-86.

World Bank, 2010. Chapter 5: To relocate or not to relocate. In: *Safer Homes, Stronger Communities: A Handbook for Reconstructing after Natural Disasters*. n.p.: World Bank , pp. 77-91.

World Bank, 2016. *World Bank: Data- Philippines*. [Online]
Available at: <http://data.worldbank.org/country/philippines>
[Accessed 15 February 2017].

World Bank, 2016. *World Bank: Philippine Economic Update – April 2016*. [Online]
Available at: <http://www.worldbank.org/en/country/philippines/publication/philippine-economic-update--april-2016>
[Accessed 1 March 2017].

World Health Organisation, 2014. *World Health Organisation: Bohol Earthquake: One year on*. [Online]
Available at: http://www.wpro.who.int/philippines/mediacentre/features/bohol_oneyear/en/
[Accessed 22 February 2017].

Worldometers, 2017. *Worldometers: Philippines Population*. [Online]
Available at: <http://www.worldometers.info/world-population/philippines-population/>
[Accessed 15 February 2017].

Annex 1. Hazard Profile: Facts and Figures

Disaster type	Disaster subtype	Events count	Total deaths	Total affected	Total damage ('000 US\$)
Drought	Drought	1	0	181687	84399
Earthquake	Ground movement	5	344	3575409	63603
Epidemic	Viral disease	1	33	6778	0
Epidemic	Bacterial disease	3	53	3975	0
Flood	Flash flood	11	48	686811	182047
Flood	Riverine flood	20	349	10750818	2330858
Landslide	Landslide	4	104	912	0
Storm	Tropical cyclone	54	11720	52718214	14593297
Volcanic activity	--	8	71	1605056	9520
Volcanic activity	Ash fall	2	0	33931	0

Table 1. Disasters in the Philippines from 2011 to 2017 (EM-DAT, 2017).

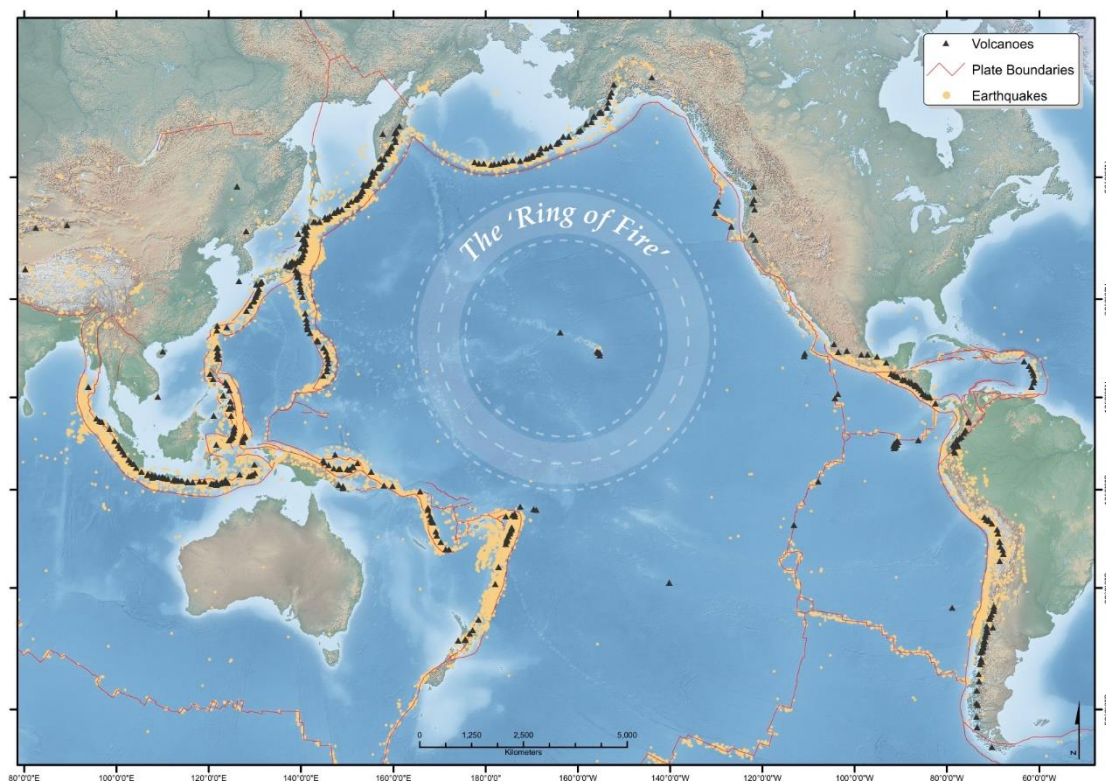


Figure 1. Pacific Ring of Fire, World (Earth Observatory of Singapore, 2017).

Richter Magnitude	Earthquake effects
0-2	Not felt by people
2-3	Felt little by people
3-4	Ceiling lights swing
4-5	Walls crack
5-6	Furniture moves
6-7	Some buildings collapse
7-8	Many buildings destroyed
8-Up	Total destruction of buildings, bridges and roads

Figure 2. Earthquake Severity- Richter Scale (SMS Tsunami Warning, 2017).

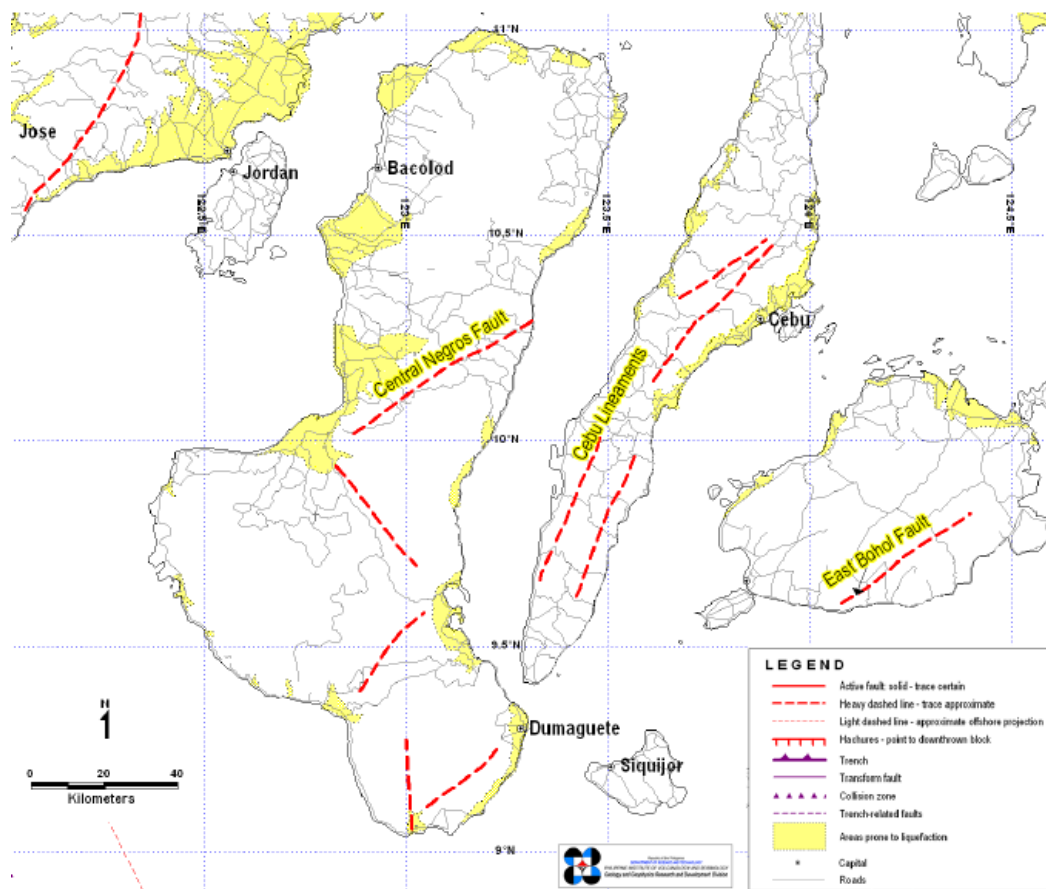


Figure 3. Active Fault Map- Bohol and surrounding (Lagmay, 2014).

Description	Population/Areas Affected	Impacts
October 15, 2013 Earthquake	17 hardest municipalities: North and south-western part of Bohol; Maribojoc, Loon, Tubigon, Calape, Clarin Inabanga, Buenavista, Danao, Sagbayan, Catigbian, San Isidro, Antequera, Balilihan and Cortes; Southern municipalities of Loboc, Carmen, Lila, Valencia, Loay Albuquerque, Baclayon and Tagbilaran City	Intensity 7.2 211 dead persons 877 injured and 8 missing persons PHP 7.4 Billion damaged to major infrastructures, houses, government buildings, tourism facilities, properties and other businesses
July 18, 2011 Earthquake	09.64°N, 124.58°E - 17 km S 36° E of Guindulman (Bohol) 03:10 PM 09.61°N, 124.53°E - 17 km S 15° E of Guindulman (Bohol) 05:02 PM	Intensity II No damage
June 11, 2011 Earthquake Magnitude 3.3	Loboc, Bohol Tagbilaran City Cortes, Bohol	Intensity III Intensity II No damage
August 28, 2010 Earthquake	Brgy. Tabahan, Brgy. Bulawan, Guindulman, Bohol	No damage
June 21, 2010 Earthquake	Dauis, Bohol	No damage
May 7, 2010 Earthquake	Jagna Garcia-Hernandez Duero Tagbilaran City	Intensity - III Intensity – III Intensity – II No damage
March 26, 2010 Earthquake	Tagbilaran, Dauis, Corella	No data
January 8, 2009 Earthquake	Anda, Bohol	No damage

Table 2. Matrix for Past Earthquakes Events in Bohol (Provincial Government of Bohol, 2014).

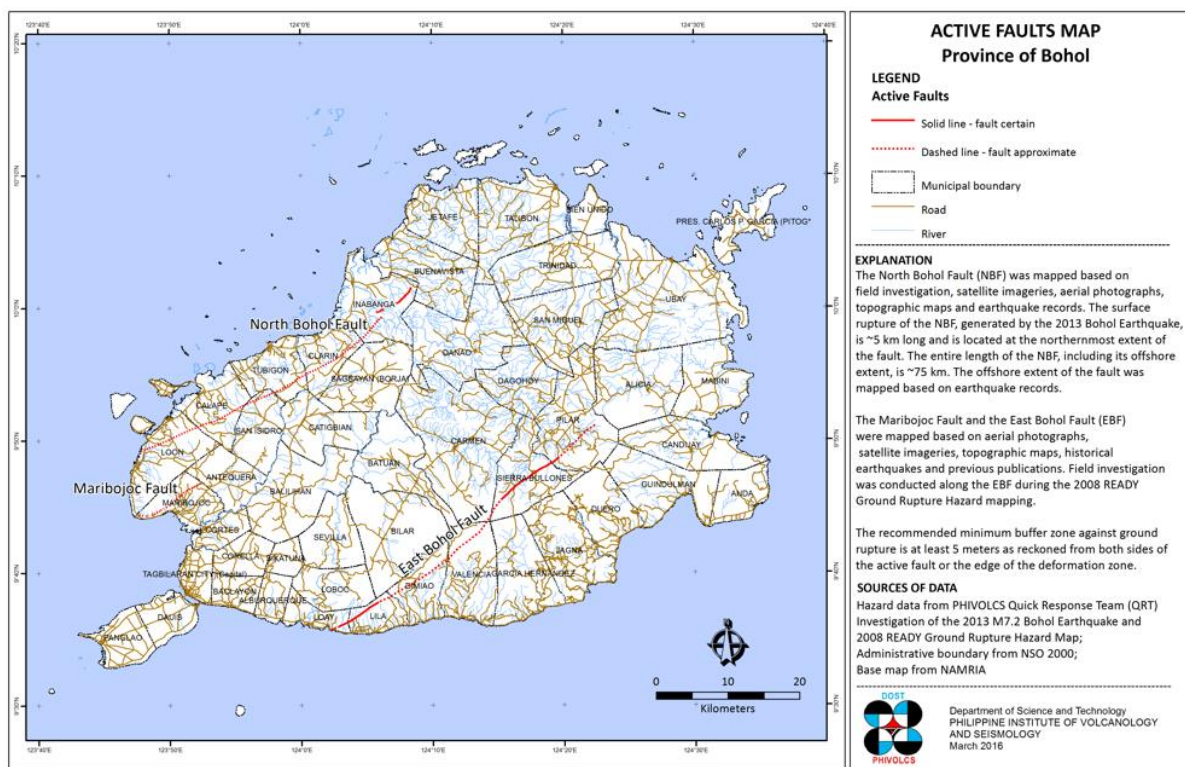


Figure 4. Active Faults Map, Bohol Province (PPDO Bohol, 2016).

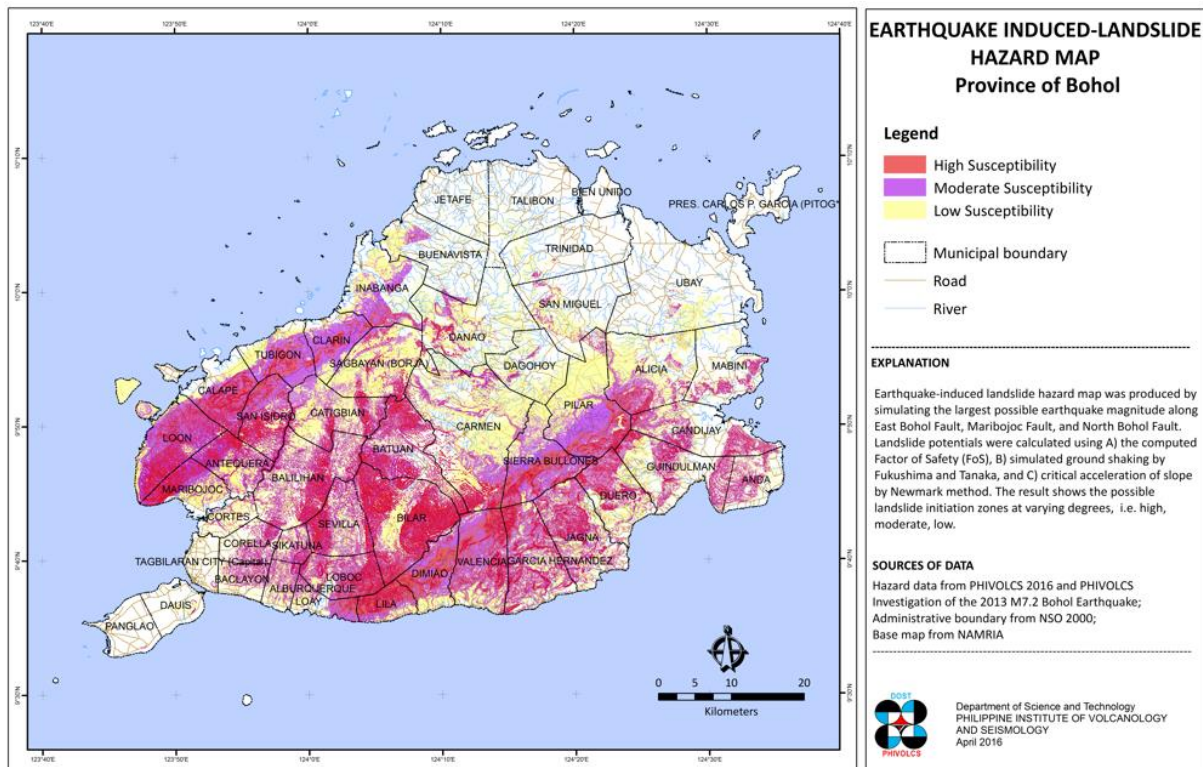


Figure 5. Earthquake Induced-Landslide Hazard Map, Bohol Province (PPDO Bohol, 2016).

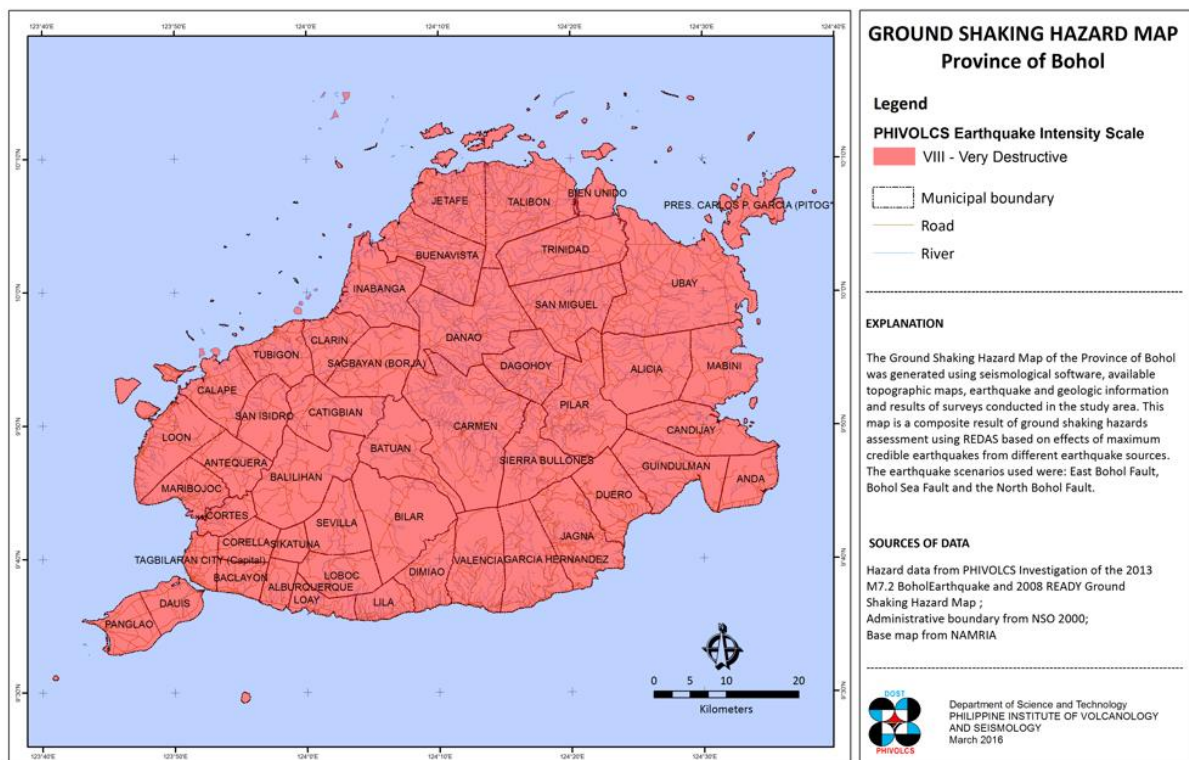


Figure 6. Ground Shaking Hazard Map, Bohol Province (PPDO Bohol, 2016).

Annex 2. Sendai Framework

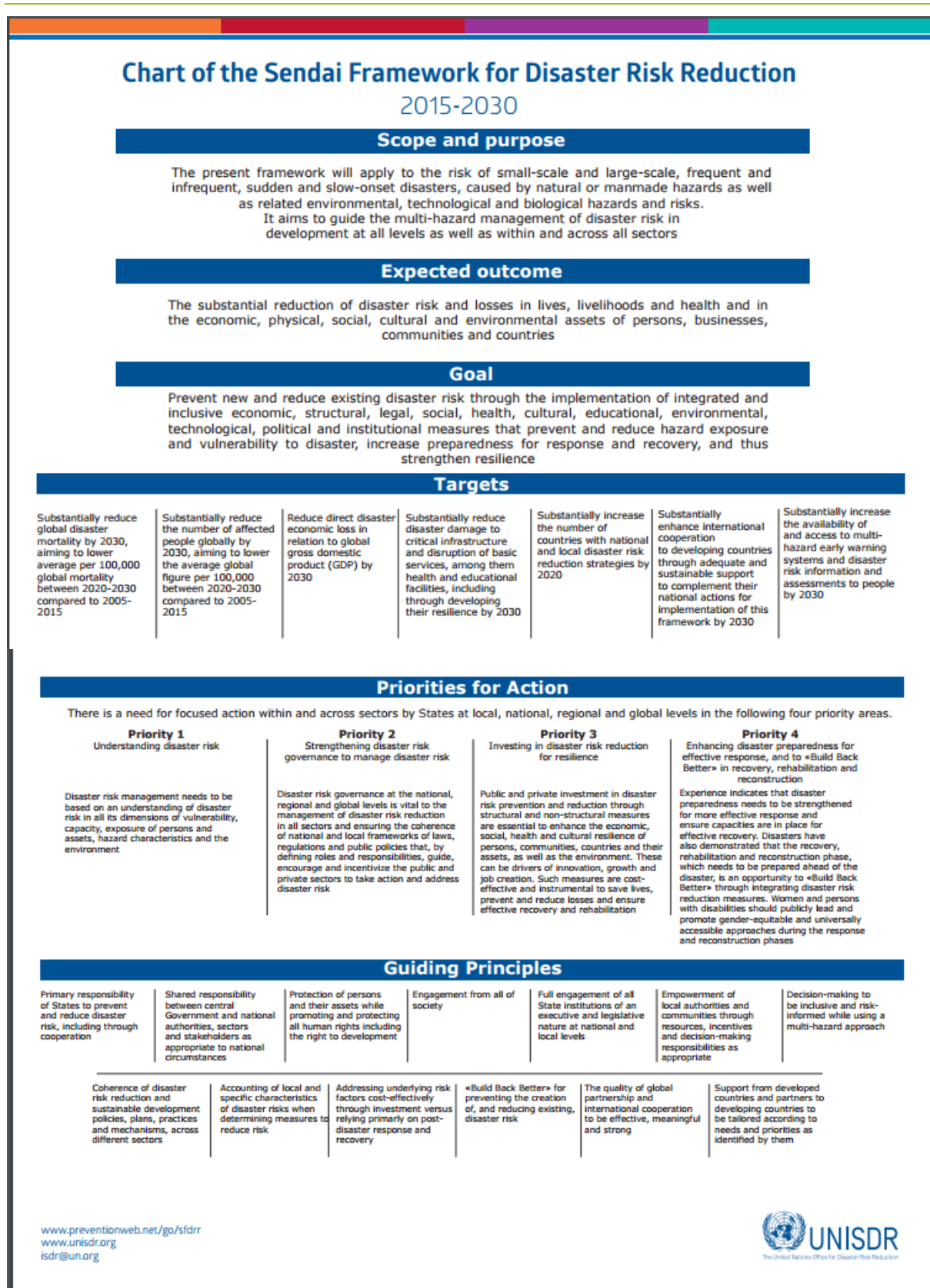


Figure 7. Sendai Framework, (UNISDR, 2015).

Annex 3. Hazard Mapping Institutions

Map provider	Hazard/Risk	Scale/Location	Disaster Phase	Weblink / Source:
GlücksKette . (Choose Philippines from the filter function)	Overview of Aid Projects in the Philippines.	National	Response / Recovery	
International Panel for Climate Change	Climate Change	Global	Prevention	http://www.swiss-solidarity.org/en/projects/map.html
Department of Science and Technology (DOST) Philippines Project NOAA	Typhoon, Storm Surge, Flood	National	Preparedness/Early Warning/Response	http://noah.dost.gov.ph/
Manila Observatory	Typhoon, Socio economic factors	National	Intervention/Response	http://www.observatory.ph/Publications/maps?page=1
Mines and Geosciences Bureau	Multi Hazard	National	Prevention / Recovery	http://gdis.denr.gov.ph/mgbviewer/
Munich Re		Global	Prevention	http://www.munichre.com/site/corporate/et/documents/mr/assetpool/shared/Documents/0_Corporate%20Website/_Publications/302-05972_en.pdf
Philippine Institute of Volcanology and Seismology	Seismological	National	Prevention / Recovery	www.phivolcs.dost.gov.ph
Philippine Maps	Multi Hazard	National, Local	Prevention	http://www.maps.nfo.ph
Preventionweb	Tsunami, Multi Hazard	National, Manila	Prevention / Recovery	http://www.preventionweb.net/english/professional/maps/?cid=135
READY Project	Volcanic, Tsunami, Storm Surge/Typhoon, Rain induced Landslide, Liquefaction, Ground Shaking, Ground Rupture, Flood, Earthquake, Earthquake induced landslide	Leyte, Southern Leyte, Surigao del Norte, Bohol, Eastern Samar	Prevention / Recovery	http://ndcc.gov.ph/index.php?view=category&catid=1&option=com_joomgallery
Reliefweb	Multi Hazard	National, Regional	Intervention / Response	http://reliefweb.int/updates?ffo[]=field_country%3A188&ff1[]=field_content_format%3A12
Swiss NGO's	Overview of ongoing DRR Projects of Swiss NGOs working in the Philippines	National	Response / Recovery	https://mapsengine.google.com/map/edit?mid=zhEYVSL6JZe0_kda7RLWI_UZE
The Philippine Geoportal	Multi Hazard	National	Prevention / Recovery	http://www.geoportal.gov.ph/

Figure 8. Hazard Mapping Institutes (Caritas, 2014).

Annex 4. PDRRMP 2014-2016: Objectives and Plans

	Preparedness	Mitigation	Response	Rehabilitation and Recovery
<i>Objectives</i>	<ul style="list-style-type: none"> • Ensure strict implementation of existing laws & ordinance & other related issues. • Reduce vulnerability & exposure of communities to all hazards. • Enhance capacities of communities/ DRRM councils to reduce their own risks& cope with the impacts of all hazards. • Establish and institutionalize PDRRM-CCA governance centre/office. 	<ul style="list-style-type: none"> • Ensure strict implementation of existing lawd ordinance & other related issuances. • Reduce vulnerability & exposure of communities to all hazardsds. • Enhance capacities of communities, DRRM councils to reduce their own risks & cope with the impacts of all disasaters. • Increase disaster conciousness and responsibilities of communties. • Establish and institutionalize PDRRM-CCA governance center/ office 	<ul style="list-style-type: none"> • Deploy SAR teams and security forces to scene with 8 hours. To conduct rapid damage and needs assessment by the LDRRMC. • Conduct immediate relief operation within 25 hours. • Provide immediate medical services to disaster victims including psychological first aid. • Conduct pre-emptive/ timely evacuation of vulnerable families/ families at risk. 	<ul style="list-style-type: none"> • Rehabilitate people, means of livelihood& sustain economic activities and business. • Enhance the skills and capacity on livelihood related activities. To restore install shelter and other vertical structures/buildings. • To provide safer location appropriate engineering that can withstand DRR/CCA. To reconstruct infrastructures & other public utilities. • To provide adequate road network & other infrastructure facilities. • To provide assistance, physical and psychological depressed persons suffered from effects of disasters.
<i>Outcomes</i>	<ul style="list-style-type: none"> • DRRM compliant and climate change adaptive LGUs and communities. • Disaster-resilient roads and infrastructures. • Reduced risks and vulnerabilities of people and communities to all hazards. • Increased capacities of local communities to reduce and manage risks. • Response-ready and capacitated LGUs and DRRM Councils. • Green and adaptive agricultural and 	<ul style="list-style-type: none"> • DRRM compliant and climate change adaptive LGUs and communities. • Disaster-resilient roads and infrastructures. • Reduced risks and vulnerabilities of people and communities to all hazards. • Increased capacities of local communities to reduce and manage risks. • Response-ready and capacitated LGUs and DRRM Councils. • Green and adaptive agricultural and industrial technologies. 	<ul style="list-style-type: none"> • Zero preventable deaths. • Low disabilities secondary to injuries. • Crimes prevented. • Timely and appropriate responses are provided and immediate relief for the affected families. 	<ul style="list-style-type: none"> • Stable and economic activities provided. Damages, losses & needs properly assessed & analysed. • Shelter/buildings and living condition back to normal. Houses/ buildings rebuilt or repaired to be more resilient to hazard with safer sites for housing. • Disaster & CC resilient infrastructure constructed/ reconstructed or rehabilitated. • Psychological safe and secure populace protected from the effects of disasters is able to restore to normal functioning. • Restored to normal, physical and

Outputs	industrial technologies.			psychological condition of affected people.
	<ul style="list-style-type: none"> • Compliance reports and findings. • Approved local ordinance for quality assurance and quality control in building and construction of infrastructures. • Draft ordinance for earthquake Trust Fund. • Installation of early warning devices and forecasting systems. • Risk Analysis and Vulnerability Assessment Reports as basis for production of hazard maps at all levels. • Disaster Response Manual. • Implemented and Monitored DRRM Plans and functional Office/ Committees at all LGU, including Purok level. • Evacuation centers and relocation sites well-identified and established. • DRRM/CCA Database established and functional. • Scaling up use of solar panels, rain water collectors, climate change resistant seed etc. 	<ul style="list-style-type: none"> • Compliance reports and findings. • Approved local ordinance for quality assurance and quality control in building and construction of infrastructures. • Draft ordinance for earthquake Trust Fund. • Installation of early warning devices and forecasting systems. • Risk Analysis and Vulnerability Assessment Reports as basis for production of hazard maps at all levels. • Disaster Response Manual. • Implemented and Monitored DRRM Plans and functional Office/ Committees at all LGU, including Purok level. • Evacuation centers and relocation sites well-identified and established. • DRRM/CCA Database established and functional. • Scaling up use of solar panels, rain water collectors, climate change resistant seed etc. 	<ul style="list-style-type: none"> • Rescue teams deployed, affected persons rescued and retrieved. • Data validators/volunteers, medical teams deployed. • Volunteers mobilized for relief operations and data gathering/validation/assessment/ • Relief goods delivered timely and appropriately. • Amount of donations generated. • Data on Damages accessible to all concerned like, casualties (death, injured & missing), priority needs. • Camp management committees organized. • LGU ordinance mandating pre-emptive evacuation of vulnerable families. 	<ul style="list-style-type: none"> • Crops, livestock assistance provided. • Number of POs member trained/ capacitated. Number of heads of livestock, poultry restocked. • Totally damages houses constructed, partially damaged houses repaired and restored; classrooms constructed; temporarily learning spaces and schools provided/ installed. • Post-harvest support facilities established/ • Number of children and adult provide with awareness on child protection. Number of social workers provided with physiological assistance.

Table 3. Outcomes and Objectives within the Disaster Pillars (Provincial Government of Bohol, 2014)

Annex 5. Stakeholder Map

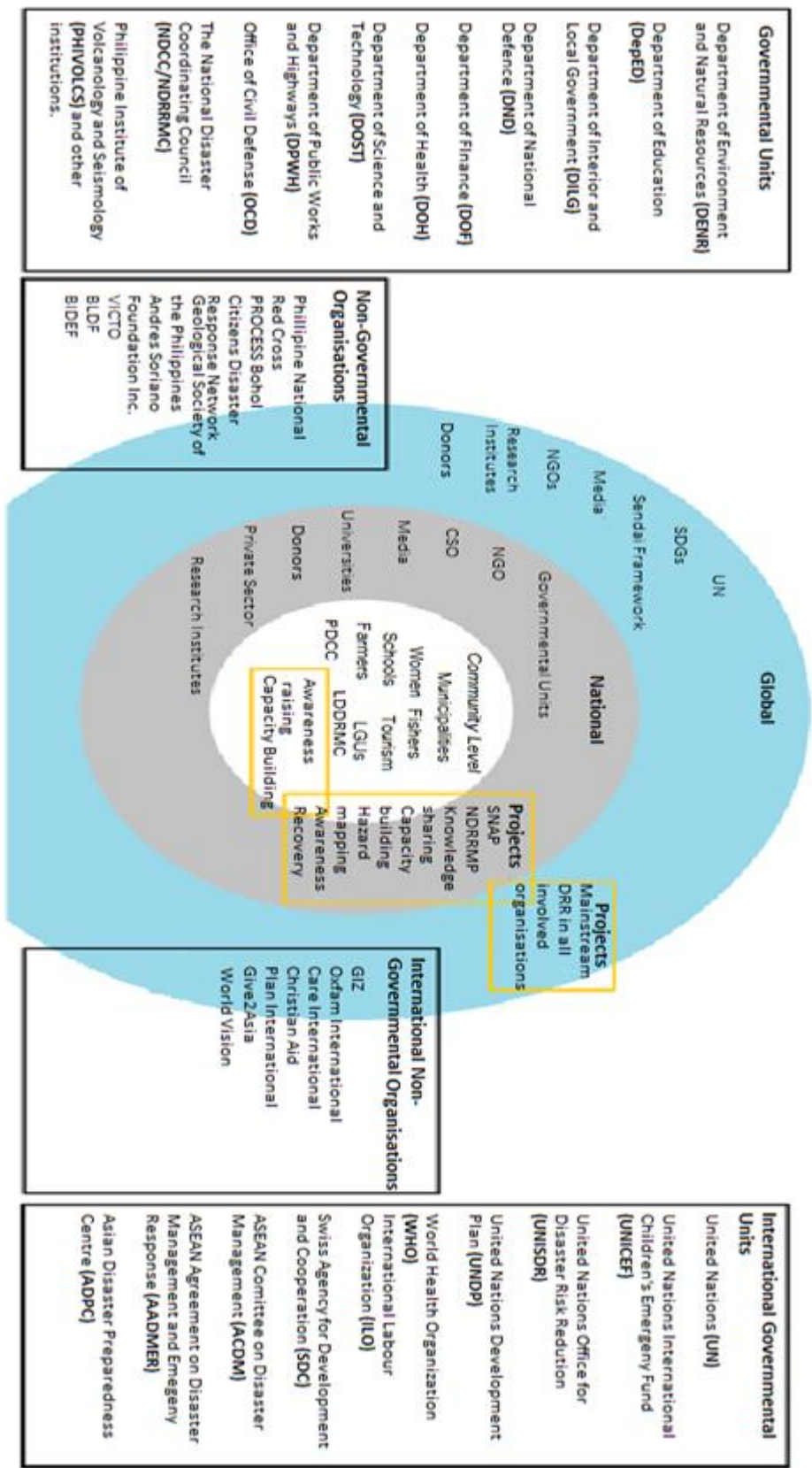



Figure 9. Stakeholders within Disaster Risk Reduction Management in the Philippines.

Annex 6. Questionnaire

QUESTIONNAIRE ON THE BOHOL EARTHQUAKE IN 2013									
<p>Note: Your participation will be treated confidently and your name will not be shared with third parties. This questionnaire is made by Laura van Lieshout, a Disaster Risk Management student, currently volunteering at PROCESS Bohol. The questionnaire aims to collect information about the responses and rehabilitation of the Bohol earthquake of 2013. Moreover, to gain better insight into the preparedness regarding earthquakes of the villagers in Maribojoc. Your participation gives the opportunity to develop new interventions according to your needs with reducing the risks of earthquakes.</p>									
									
Surname			Name						
Age		Gender		Male		Female			
Municipality				Barangay					
Status		Married		Seperated		Widowed		Single	
Household size				Occupation					
Level of Education			Primary School		High School		College		
I am prepared for another earthquake.									
		Yes		No					
I know what to do when an earthquake strikes.									
		Yes		No					
Did you participate in trainings, drills or did you get education about the risks of earthquakes?									
		Yes		No					
Did your household receive funds or support?									
		Yes		No					
The earthquake had an impact on my occupation.									
		Yes		No					
Are you concerned about earthquakes?									
		Yes		No					
I do own the lot.									
		Yes		No					
My house is situated at a dangerous location.									
		Yes		No					
I am aware about the risks of earthquakes.									
	1	2	3	4	5				
I am satisfied with the assistance and support regarding to disasters by the municipalities and other organisations.									
	1	2	3	4	5				
My house is resistant against earthquakes.									
	1	2	3	4	5				
Earthquakes are a part of our daily lifes.									
	1	2	3	4	5				
My daily situation has been improved after the earthquake.									
	1	2	3	4	5				
The municipality puts effort in the awareness raising on earthquakes.									
	1	2	3	4	5				
I generate enough income to provide for my family.									
	1	2	3	4	5				
1= totally disagree 2=disagree 3= neutral 4= agree 5= totally agree									

What was your response during the earthquake?

What was the impact of the earthquake on your household, occupation and your direct environment?

Which problems were left unaddressed after the earthquake?

Any additional information you would like to share?

Thank you very much for your time and participation! Gob Bless!

Annex 7. Focus Group Discussion Design

Risk and Reflection on the Earthquake of 2013 in Maribojoc

Date:

May 10, 2017

Location:

Conference Hall in the Municipal Building of Maribojoc

Rationale:

In order to create interventions according to the needs of the people, it is of importance to collect primary data from the villagers. Therefore, this group discussion is designed to gather more information on the impact of the earthquake in 2013 in Maribojoc, Bohol. Also, more information is gathered about the preparedness of the villagers regarding to earthquakes and the efforts made by the municipalities and other related organisations. Moreover, this will give the barangay officials the chance to raise concerns and issues regarding to the risks of earthquakes.

Target group:

The target group of the group discussion are the barangay officials. The municipality of Maribojoc has a total of 22 barangays. This means 22 barangay officials are requested to join the activity. The FGD is conducted among the barangay officials since these have an overview on the impact and risks within their barangay.

Objectives:

- Create an environment of sharing information between barangay officials and PROCESS;
- Give the barangay officials the possibility to raise concerns and issues;
- Collect information on villages/settlements, physical infrastructure and land use;
- Identify and address hazards and risks;
- Collect information on the situation before and after the earthquake;
- Understand the gaps of responses during and after the earthquake;
- Come-up with several action points for improvement;
- Identify areas, buildings, or people that face different types and levels of risks;
- Understand local perceptions of high risk areas of earthquakes; and
- Understand local perceptions on high risk areas concerning earthquake induced hazard.

Tools:

In order to meet the above mentioned objectives two tools are used.

Risk Mapping: This is an exercise that uses spatial analysis to gather data about issues and concerns (Schoonmaker Freudenberger, sd). Moreover, it will give insight in the local perceptions of areas or people within a community that face several levels and types of risks (Tearfund, 2003). In order to do this, a map of the village is designed with only showing the boundaries of the barangays and the municipality. After the participants are asked to point out places of livelihood resources and risky areas. Moreover, a legend of the landmarks is made, including:

- Earthquake prone areas;
- Areas prone to earthquake induced hazards (landslides, group rupture, fires, floods, liquefaction);
- Household settlement;
- Natural resources – spring, river, water source;
- Farmland or occupational site;

- Markets; and
- Infrastructure- roads, rivers.

Discussion Diagram: In order to identify the situational changes within the households and communities regarding to the earthquake of 2013, a discussion diagram is used. Everybody gets 5 flashcards to answer the headings stated below in the diagram. First, it will look into the situation of the community before the earthquake. After, the participants will identify if the earthquake had a high or low impact on their barangay and on which aspects the earthquake had an impact. Then will be looked into the responses after the earthquake by the municipality and other related organisations. Through this, gaps within the responses will be identified and will lead to action points of improvement.

Before Earthquake	High or Low Impact	Responses after Earthquake	Gaps within Responses	Action Points for Improvements

Time table:

13.00-13.15: Welcome and introduction (student)

13.15-14.15: Start activity (1 or 2) (Co-Facilitator and student)

14.15-14.30: Break time for snacks.

14.30-15.30: Start activity (1 or 2) (Co-Facilitator and student)

15.30-15.45: Thanking and end (student)

Outline:

To start, an introduction will be given about: the persons involved, PROCESS, the subject and the planning of the session. Next, the group will be divided in 2 groups working both on the different activities: the Risk Mapping or the Diagram Discussion. In this time, the participants are busy with filling in and discussing different aspects concerning the activity. To rest and ease the mind, there will be a break with snacks and drinks after finishing the first activity. After the break, the participants will change from activity. At the end of the session, the group is asked for any additional comments or feedback and thanked for their participation.

Needs and Materials:

- Translator;
- Extra person for guiding group discussion;
- Pens and colours;
- Flashcards;
- Map of community with legend;
- Coloured cards according to the legend;
- Snacks and drinks; and
- Chairs.

Annex 8. Interviews

Interviewee	Rationale
Municipal Development and Planning Officer: <i>Maria Nenita R. Chiu</i>	The Municipal Development and Planning Office (MDPO) has a total overview on the current projects in the municipality. Moreover, is responsible for writing proposals regarding to new projects and monitoring the implementation.
Municipal Social Welfare and Development Officer: <i>Dean E. Laguna</i>	The Municipal Social Welfare and Development department is present in Disaster Risk Management and responsible for the overall welfare of the population.
Municipal DILG Officer: <i>Florencio V. Halasan Jr.</i>	The Municipal Department of Interior and Local Government is also a member of the MDRRMC and implements its own projects concerning DRR.
Philippine Red Cross: <i>Merlinda G. Batoy</i>	An interview with the Philippine Red Cross will give more insight in the emergency plans and there perspectives on the risks of earthquakes in Bohol. Moreover, questions can be asked such as what their role was in the response and relief phase of the earthquake in 2013. Also, interesting would be to know what their plans are regarding to preparedness of disasters.
School Heads: <i>Bayacabac and Lincod Elementary School</i>	Children are highly vulnerable to disasters and therefore it is of importance to know what schools do regarding to the preparedness of earthquakes. Moreover, this will give a chance to understand better why people are dropping out of school and why these people experience higher risks.
Provincial Disaster Risk Reduction Management Council: <i>Anthony Damalerio</i>	As the main actor addressing DRR within the province, the PDRRMC is an important actor. From 2014 till 2016 plans have been made in reducing the risks of the Boolean people. Therefore, the question on which of these plans have been accomplished and what the new plans are, are of great importance in designing new interventions. Moreover, linkages could be made with PROCESS Bohol, in a maybe future partnership in implementing these interventions.
Municipal Disaster Risk Reduction Management Council: <i>Herculino M. Fuertes</i>	The MDRRMC will give insight in the new DRR plans within the municipality and the linkages between the MDRRMC and the PDRMMC. Moreover, interesting would be to know which past efforts have been made regarding DRR.

PROCESS Bohol Inc. : <i>Emilia Roslinda</i>	As an active NGO in Bohol and the municipalities, it is of importance to understand the risk perceptions on earthquakes and the risks of people of the internship organisation. Furthermore, questions are asked as what this organisation is capable to do within the interventions and what they would like to change.
Priest of Maribojoc: <i>Father Saco</i>	Since the population is mostly catholic the priest is essential to interview. The priest has an overview on the municipality and probably can tell more about the households that were affected by the earthquake and the total impact of the municipality. Moreover, questions such as what are still remaining challenges and what the church did to help the people can be asked.
Department of Environment and Natural Resources: <i>Eusalem S. Quiwag</i>	Since the Department of Ecosystems and Natural Resources is partly responsible in reducing the risks of disasters, it is of importance to interview this department in order to get a clear view on their ongoing projects and risk perceptions. On provincial and municipal level.
Department of Social Welfare and Development: <i>Carmelita M. Tecson</i>	Since the Department of Social Welfare and Development is partly responsible in reducing the risks of disasters, it is of importance to interview this department in order to get a clear view on their ongoing projects and risk perceptions.
Department of Interior and Local Government: <i>Maria Loisella Lucino</i>	The Provincial DILG implemented the BEA (Bohol Earthquake Assistance) project and is therefore essential within this research concerning the ongoing projects and challenges that were countered during the implementation.
T.a.R.S.I.E.R. 117: <i>Neimann Flint Gatal</i>	T.a.R.S.I.E.R. 117 is the main organisation that responds directly after a disaster strikes. Moreover, provides trainings for the local population and private organisation. During the time of the earthquake this organisation was already present.

Annex 9. Budget Field Research

Subject	Explanation	Estimated	Costs
Translator	In order to do the group discussion and conducting the questionnaire, a translator is needed, since most people do not speak English or might not understand it completely. This can either be staff from PROCESS Bohol or a person from outside the organisation. This person is needed for 16 days, 300 PHP a day, excluding lunch, drinks and snacks. This is the maximum, since the days Maribel is joining, no translator is needed.	4.800 PHP	4.800 PHP
Travelling Costs	Travelling costs are made by visiting Maribojoc and other organisations that are being interviewed.	576 PHP	200 PHP
Supplies	These comply the supplies for the group discussion. Including: flashcards, big sized paper, pen and colours.	500 PHP	444 PHP
Snacks	During the group discussion, 22 barangay officials are expected to join. Snacks will include coconut or other sorts of breads that cost 5 PHP each. Including also, helper, translator and myself. Drinks will include bottles of water or juice, which will cost 5-10 PHP each. Including also co-facilitator, translator and myself.	250 PHP	250 PHP
Printing Costs	The printing costs include: the letters to inform the municipal leaders and barangay offices, in which they are also invited to join the group discussion; the questionnaires for the barangay officials as preparation for the group discussion; and extra questionnaires (total of 300)	300 PHP	300 PHP
10% Contingency		642.6 PHP	390 PHP
Total		7.068,60 PHP	6.384 PHP

Annex 10. Maribojoc: Facts and Figures

NAME OF MUNICIPALITY:	Maribojoc
PROVINCE:	Bohol
REGION:	VII
LAND AREA:	6.956 ha.
POPULATION:	20.688
NO. OF HOUSEHOLDS:	4.495
NO OF BARANGAYS:	22
MAJOR ECONOMIC ACTIVITIES:	Agriculture (Fishery and Farming), Services, Tourism
INCOME CLASSIFICATION:	4 th Class
ANNUAL INCOME:	Php 72.373.752.88

MARIBOJOC	20.688
San Roque (Aghao)	1.256
Agahay	625
Aliguay	971
Anislag	988
Bayacabac	1.835
Bood	426
Busao	537
Cabaw an	1.626
Candavid	498
Dipatlóng	1.495
Guiwanon	532
Jandig	1.032
Lagtangon	232
Lincod	1.726
Pagnitoan	630
Poblacion	2.103
Punsod	657
Punta Cruz	737
San Isidro	605
San Vicente	1.097
Tinibgan	576
Toril	504

Table 4. Population of the Barangays within Maribojoc, (PSA, 2015).

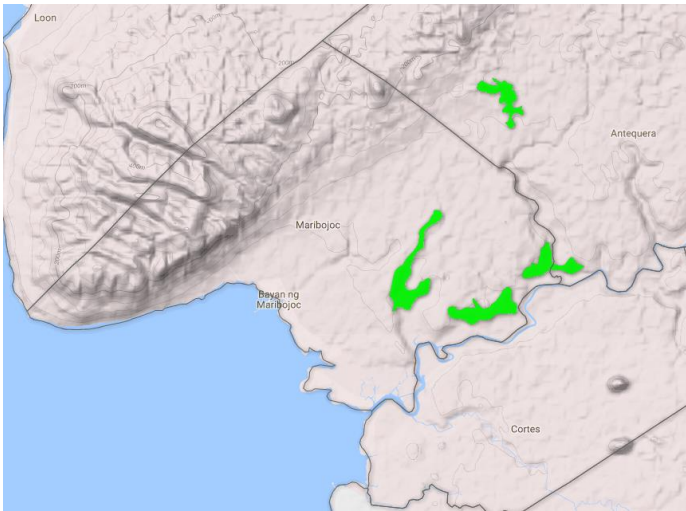


Figure 10. Irrigated Rice Paddies in Maribojoc (Green) (PPDO-Bohol, 2017)

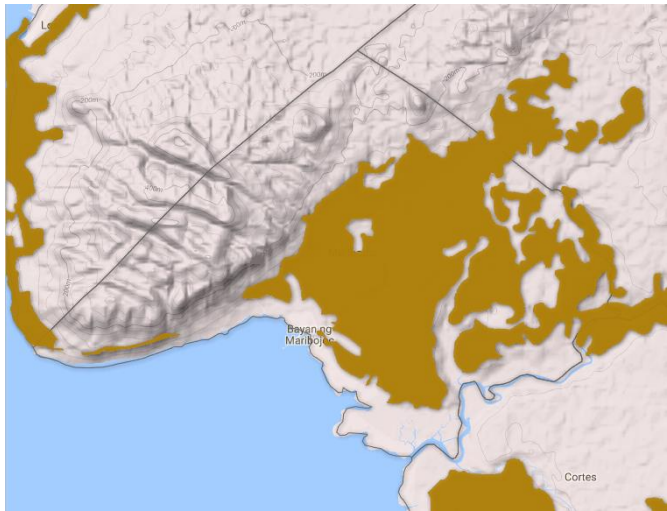


Figure 11. Cultivation of the Coconut Crop in Maribojoc (Brown) (PPDO-Bohol, 2017)

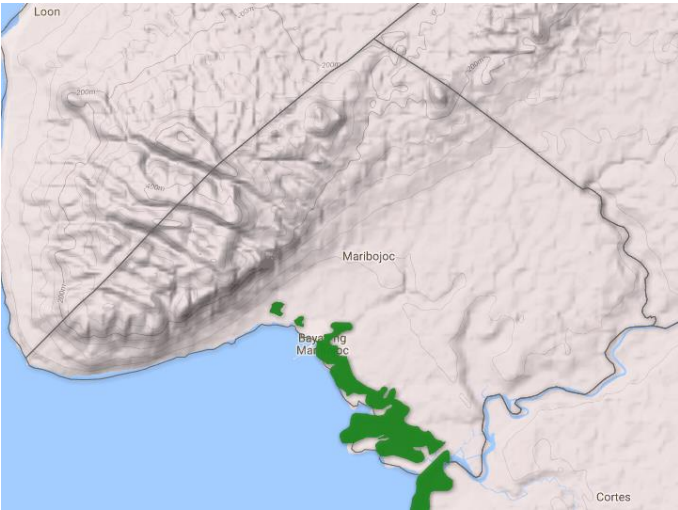


Figure 12. Mangrove vegetation in Maribojoc (Green) (PPDO-Bohol, 2017)

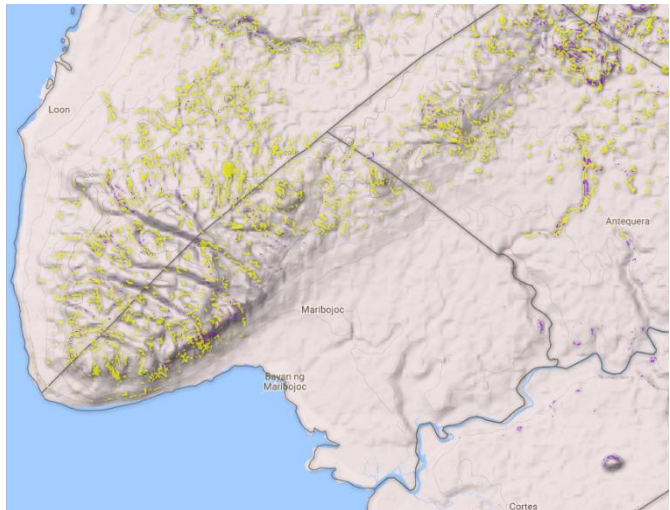


Figure 13. Susceptibility of Earthquake induced Landslides in Maribojoc (Yellow) (PPDO-Bohol, 2017)

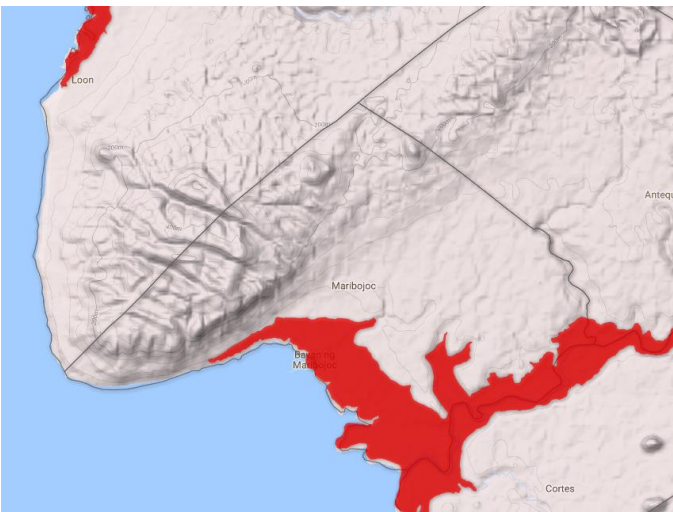


Figure 14. Susceptibility of Liquefaction in Maribojoc (Red) (PPDO-Bohol, 2017)

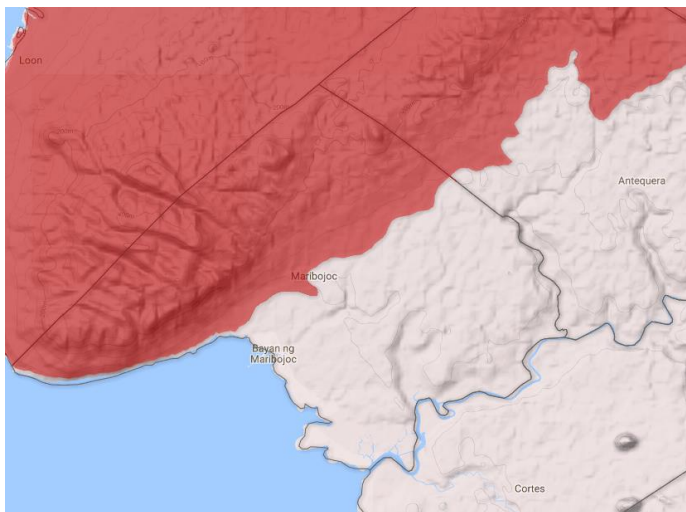


Figure 15. Land affected by Earthquake intensity 7 in Maribojoc (Red) (PPDO-Bohol, 2017)

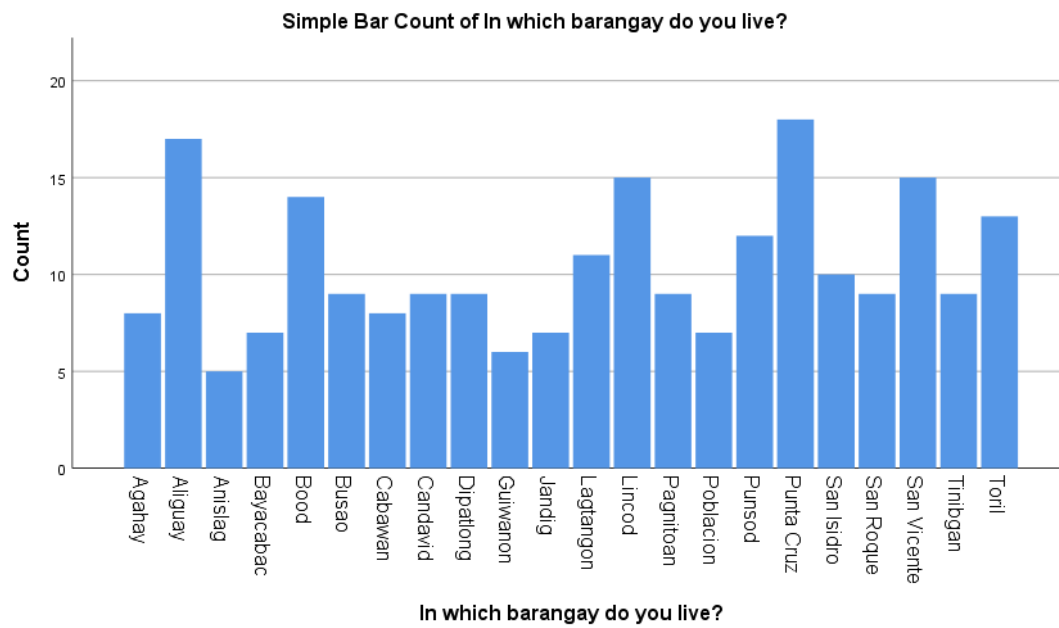


Figure 15. Distribution of the participants per Barangay.

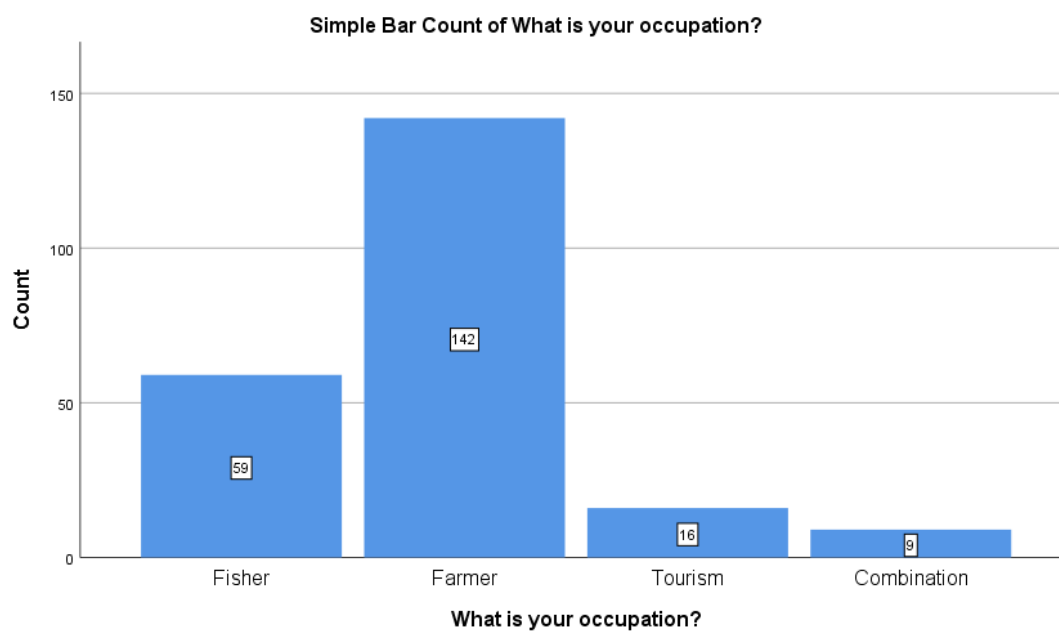


Figure 16. Amount of participants concerning occupation.

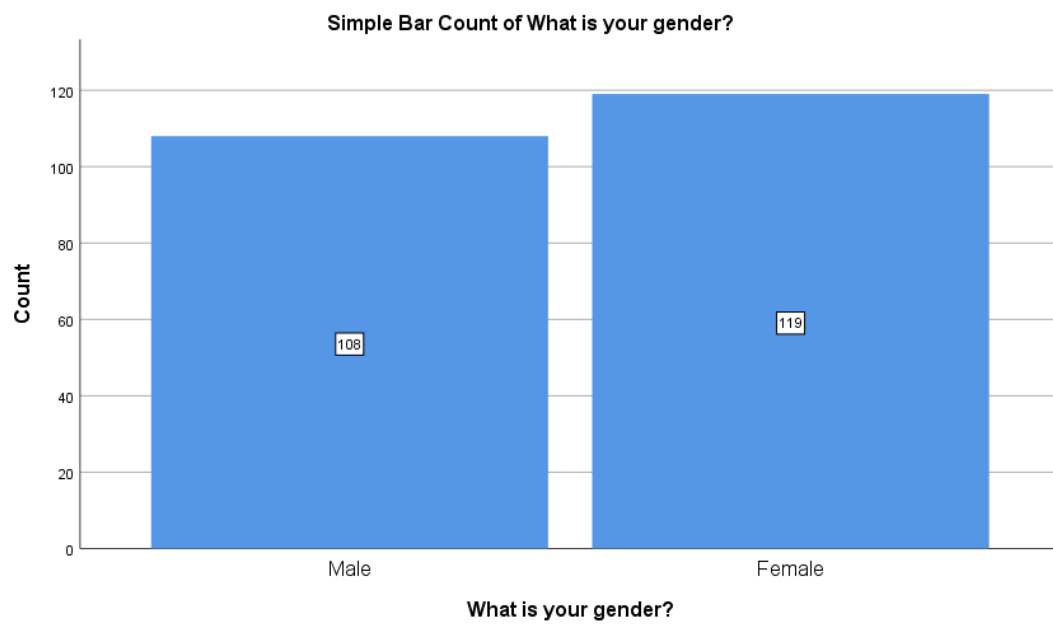


Figure 27. Participant count concerning Gender.

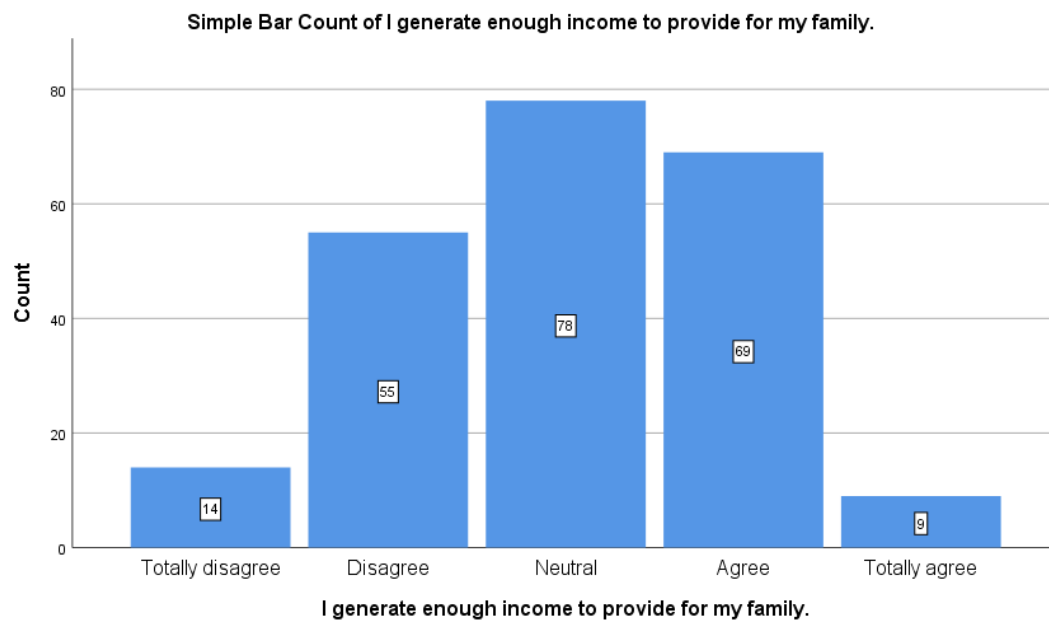
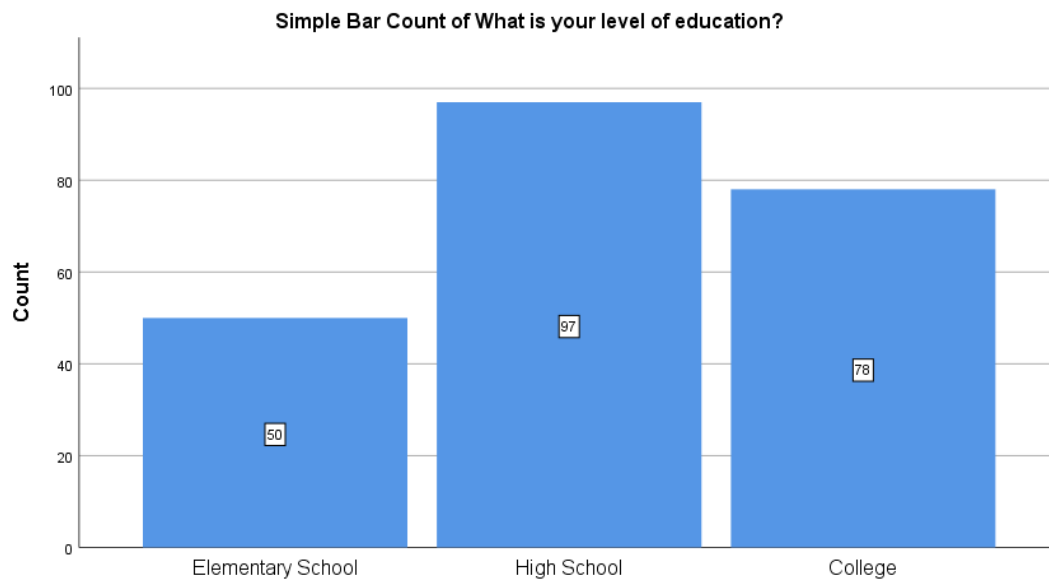


Figure 18. Respondents on the generation of income.



What is your level of education?
Figure 19. Level of Education among the participants.

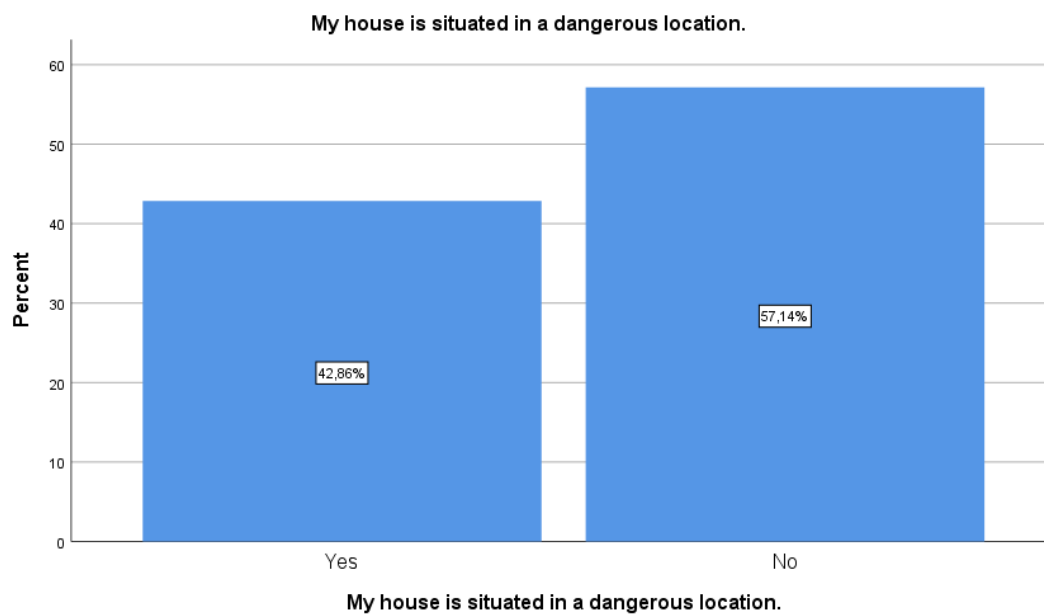


Figure 20. Perception on the dangerous locations.

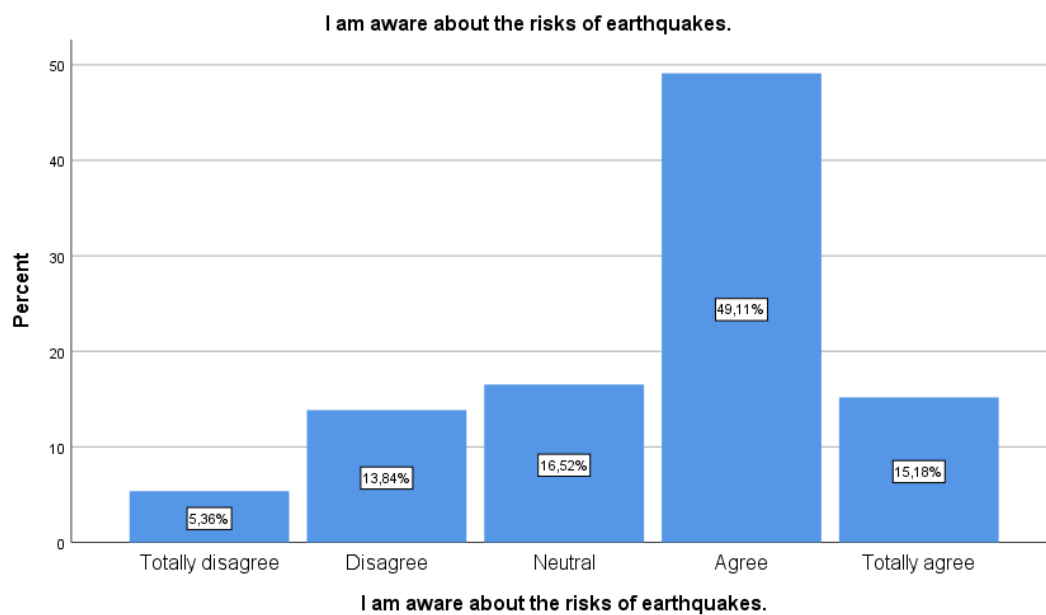


Figure 21. Perception on awareness on the risks of earthquakes.

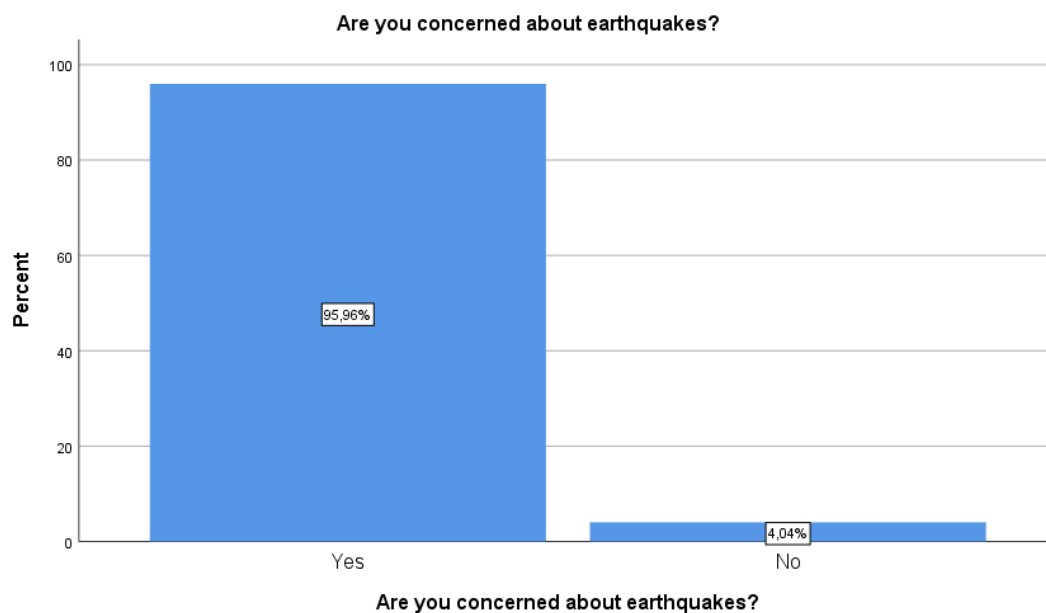


Figure 22. Respondents on being concerned about earthquakes.

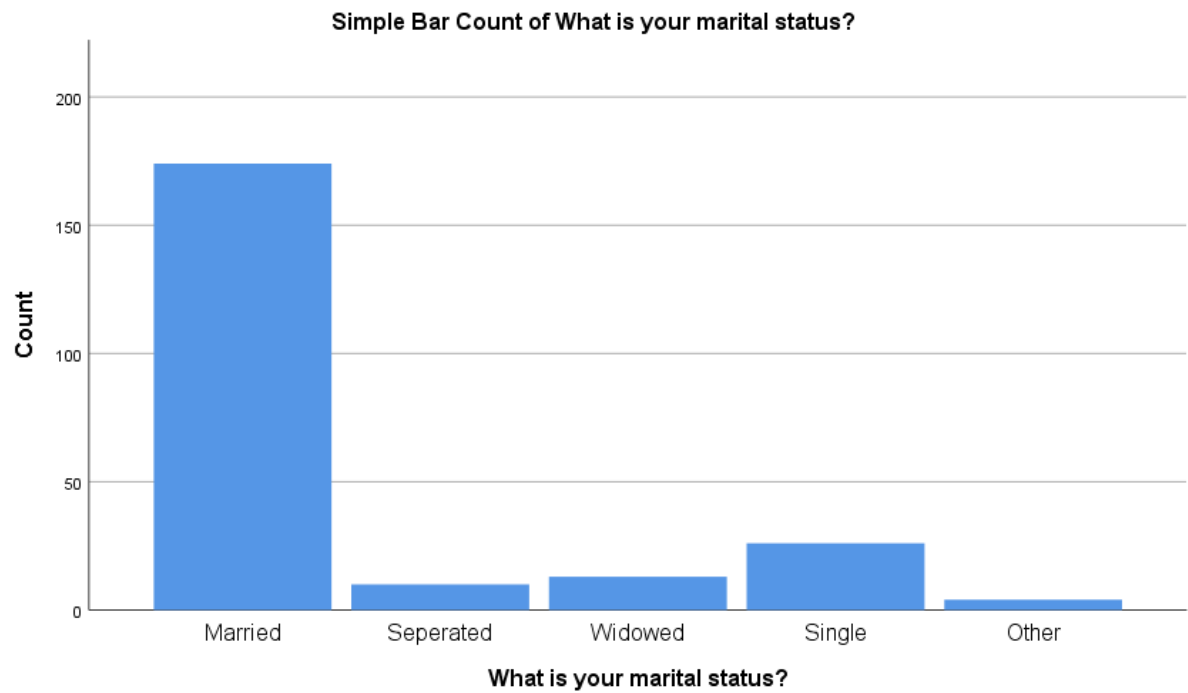


Figure 23. Participant count concerning Marital Status.

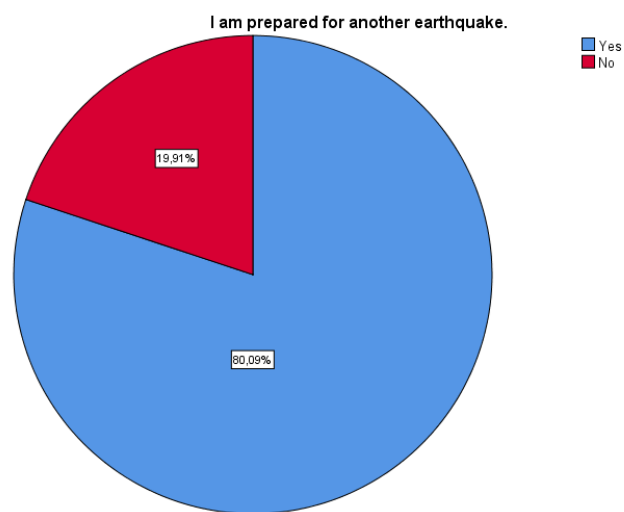


Figure 24. Respondents on preparedness for another earthquake.

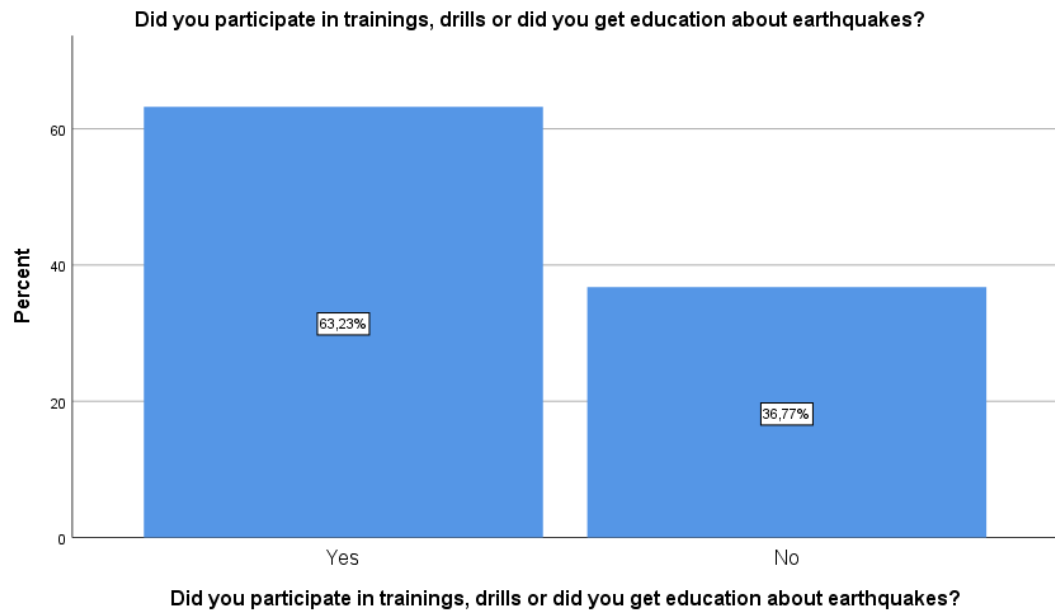


Figure 25. Participant count concerning participation in trainings and drills.

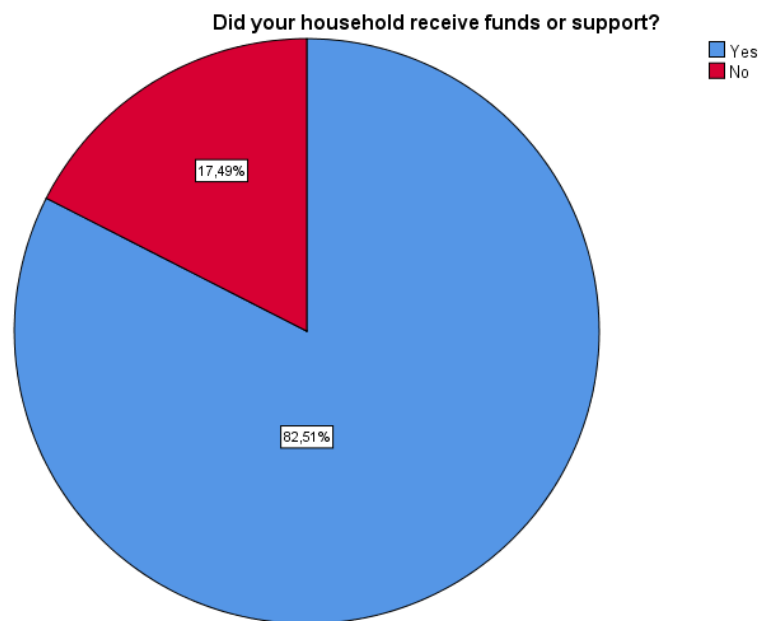


Figure 26. Participant count on received support.

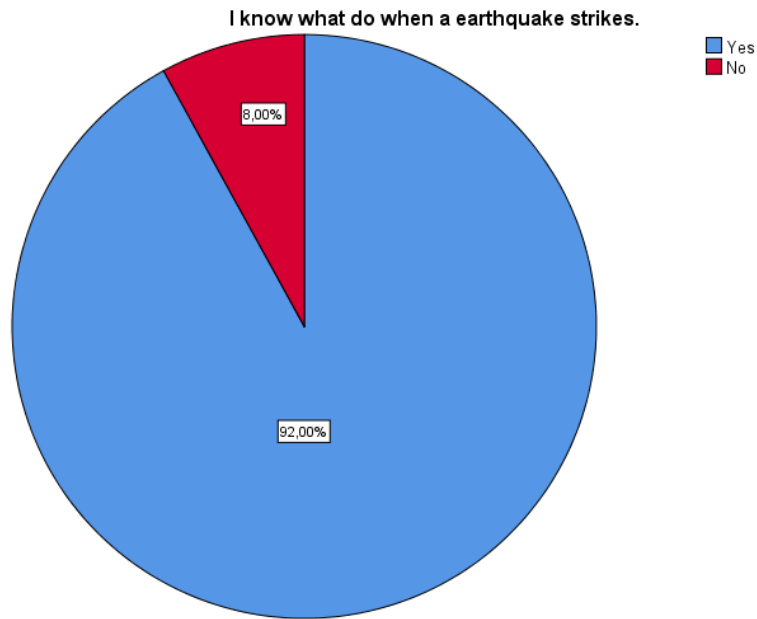


Figure 27. Participant count on the preparedness for earthquakes.

		My house is situated in a dangerous location.	
		Yes	No
		Count	Count
My house is resistant against earthquakes	Totally disagree	13	9
	Disagree	26	38
	Neutral	29	39
	Agree	20	38
	Totally agree	5	3

Table 5. Constituency between household resistance and household situated in dangerous locations.

Statistics

What is your age?		
N	Valid	217
	Missing	10
Mean		49,35
Median		48,00
Mode		51
Std. Deviation		15,333
Minimum		19
Maximum		89

Table 6. Age distribution of the respondents.



Picture 1. The Santa Cruz Church was built in 1886, however the earthquake in 2013 levelled the church to the ground. To inform tourists about this event, the church is now an open museum.



Picture 2. The remains of the floor of the church.



Picture 3. The remaining walls of the church. The construction withstands the walls of breaking down even more.



Picture 4. The old clock-bells are kept for reconstruction of the church.



Picture 5. This place is sacred to honour the people who died during the earthquake.



Picture 6. Although the church had been totally destroyed, this statue of Jesus Christ in front of the church remained intact.



Picture 7. These timber beams were left after the church in Maribojoc was destroyed by the earthquake in 2013 and will be used to rebuild the church.



Picture 8. The church is still very fragile and risks of breaking down.



Picture 9. The remains of the church.



Picture 10. The remains of the church.



Picture 11. The Barangay Captains working on the Discussion Diagram.



Picture 12. Risk and Resource Mapping activity



Picture 13. Identifying landmarks in the municipality of Maribojoc.



Picture 14. Discussion between the Barangay Captains on the placement of the landmarks.



Picture 15. Drawing the coastal uplift on the map.



Picture 16. Explanation of the written down responses.