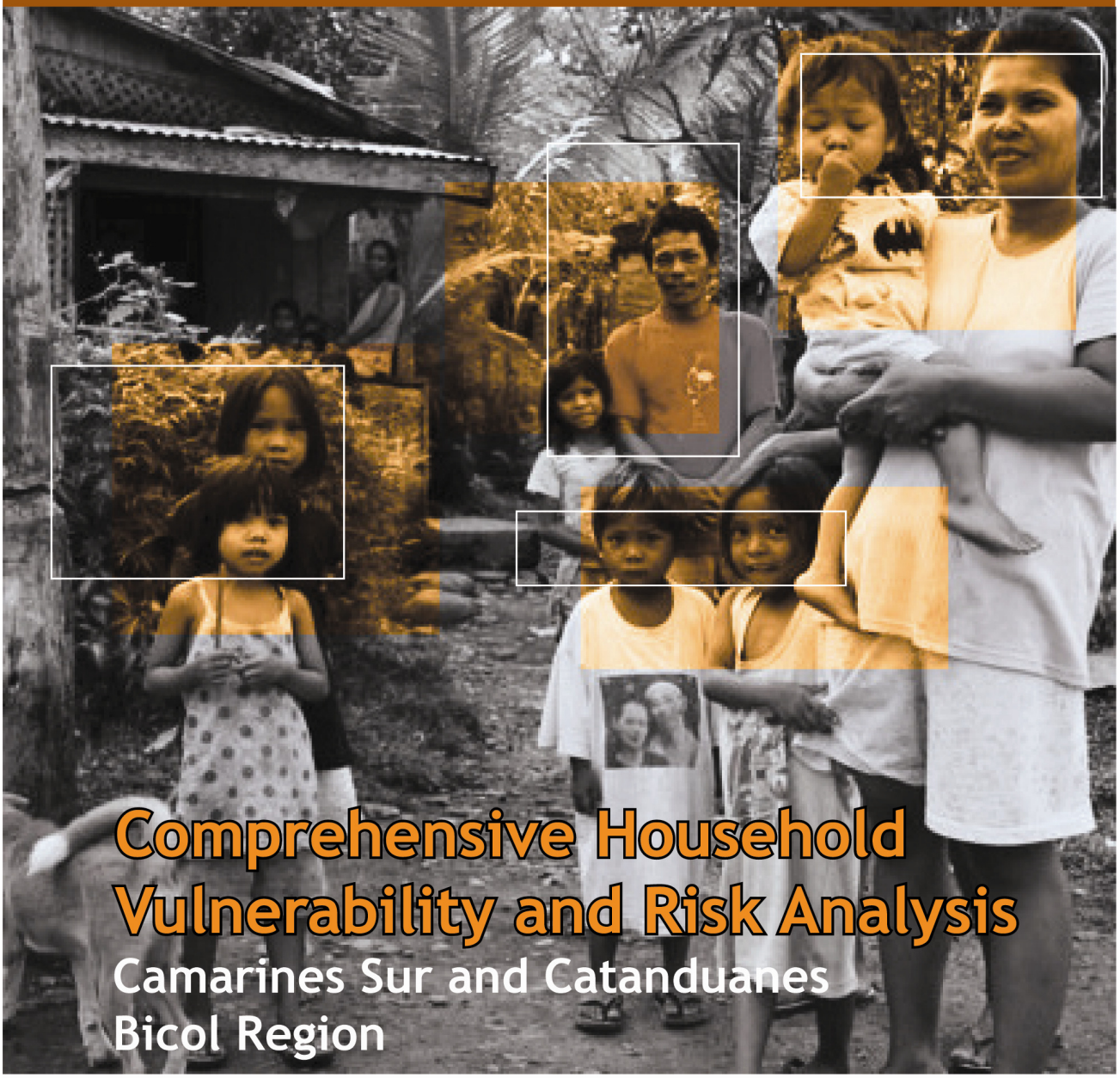
Community-based Disaster Risk Reduction Project
Bicol Region, Philippines



Comprehensive Household Vulnerability and Risk Analysis

Camarines Sur and Catanduanes
Bicol Region

ACF INTERNATIONAL

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Published by ACF International - Philippine Mission 2010

Prepared by: PlaNet Finance

Cover Picture: Jose Ibanez, SUC Estudio

This book is a part of the Community-based Disaster Risk Reduction (DRR) Project implemented by ACF and Save the Children (SC) with the support of Generalitat Valenciana, European Commission Humanitarian Aid Department through its Disaster Preparedness Programme (DIPECHO), Philippines-Australia Community Assistance Program (PACAP), and Agencia Espanola de Cooperation Internacional para el Desarrollo (AECID).

DISCLAIMER: The opinions and analyses expressed in this book were collected through focus group discussions (FGDs), interviews, and consultations with communities. They do not necessarily reflect those of ACF, SC, Generalitat Valenciana, DIPECHO, PACAP and AECID.

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LIST OF ACRONYMS

ACF	Accion Contre La Faim
ADPC	Asian Disaster Preparedness Centre
CBDRM	Community-based Disaster Risk Management
CDP	Center for Disaster Preparedness
CHVRA	Comprehensive Household Vulnerability and Risk Assessment
CPI	Consumer Price Index
DA	Department of Agricultrue
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DND	Department of National Defense
DOT	Department of Tourism
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSWD	Department of Social Welfare and Development
FGD	Focus Group Discussion
GIS	Geographic Information System
HDI	Human Development Index
IRA	Internal Revenue Allotment
KRA	Key Result Area
LGU	Local Government Unit
MGB	Mines and Geosciences Bureau
N/R/P/M/BDCC	National/Regional/Provincial/Municipal/Barangay Disaster Coordinating Council
NEDA	National Economic Development Authority
NGO	Non-government organization
NSCB	National Statistics Coordination Board
NSO	National Statistics Office
OCD	Office of Civil Defense
PAGASA	Philippine Atmospheric, Geophysical, Astronomical Services Administration
PCIC	Philippine Crop Insurance Corporation
PCVA	Participatory Capacity and Vulnerability Assessment
PEF	Peace Equity Foundation
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PPP	Purchasing Power of Peso
ROSCAS	Rotating Savings and Loans Association
SOP	Standard Operating Procedure
UNDP	United Nations Development Programme

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EXECUTIVE SUMMARY

In August and December 2009, PlaNet Finance conducted a comprehensive household vulnerability and risk study in Catanduanes and Camarines Sur provinces in the Bicol region of the Philippines. The aim of the study was to improve the evidence base for disaster risk management (DRM) and initiate effective DRM practice of Disaster Coordinating Councils (DCCs) and community members in addressing and reducing the root causes of the vulnerabilities of the people in those provinces. The study was expected to complement and reinforce the on-going multi-hazard mapping and the Participatory Capacity and Vulnerability Assessment (PCVA) conducted by Action Against Hunger (ACF) in Bicol.

The first part of the study involved barangays that are not recipients of assistance from ACF. The Camarines Sur municipalities of Cabusao, Bula, and Buhi and the Catanduanes municipalities of Baras, San Miguel, and Caramoran were chosen, representing small, medium, and large settlements, respectively.

This was followed by a similar study covering a barangay each in Camarines Sur (Barangay 1, Poblacion in Garchitorena) and Catanduanes (Barangay Hitoma in Caramoran) that are recipients of assistance on disaster risk management from the ACF. In Annex 3 of this report are sample maps integrating the results into the GIS database of ACF. A separate copy in CD-ROM contains the all the key results from this study.

The study utilized both primary and secondary data collection. Secondary data desk research was based from various studies commissioned by government agencies, i.e. PHIVOLCS and NGOs. This information was used to formulate the strategy behind the collection of primary data. Primary data were collected using a combination of approaches, including one-on-one interviews, key informant interviews, the gathering of expert opinion (Delphi method), focus group discussions (FGDs), and survey questionnaires.

Presence of Hazards

The people in all the survey areas are vulnerable to natural disasters. Due their geographic location and the topographic composition of the areas in which they live, almost all respondents in the survey are exposed to typhoons and heavy monsoon rains; strong winds, floods and landslides that accompany or result from the typhoons and monsoons have the greatest impact on homes, farms, fishing activities and small businesses resulting in damages to property and assets and loss in income. In non-ACF areas in Camarines Sur, 99% of the populations were adversely affected by typhoons, 58% by floods and 5% by landslides over the past three years. In non-ACF areas in Catanduanes, 60% were affected by typhoons, 30% by floods and 13% by landslides. For the ACF area in Camarines Sur, 96% have experienced typhoons and storm surges while more than 70% have experienced floods and drought. In the ACF area in Catanduanes, 100% have experienced typhoons, floods and storm

surges. Fortunately, in all of the survey areas, injury or death due to natural disasters has been negligible (an average of less than 0.05) even though most of the respondents (more than 60%) live close to bodies of water like rivers, lakes and the sea.

Based on the FGDs in all survey areas, there are several practices in their areas that the participants believe exacerbate the effects of natural disasters. For instance, some respondents believe that slash-and-burn agriculture in Camarines Sur and dumping of garbage in waterways in Caramoran caused floods. Moreover, in the towns of San Miguel and Baras in Catanduanes, some people feel that the road construction works leading to their areas did not consider mitigation works, thus resulting in landslides. Furthermore, the survey team found no evidence that would indicate that land-use or zoning regulations are implemented in the survey areas. This was validated by the FGD participants who are not aware of any restrictions as to where they can or cannot build their houses, among others.

Demography

Respondents from the survey areas for both Camarines Sur and Catanduanes have large-sized households. On average there are about six members per household with an average of four children, about two of which are below 15 years of age, and one household member over 60 years old. There are no significant differences in household composition for ACF or non-ACF areas. This shows that every household has about three members who may have special needs during and after disasters, especially during evacuation periods. The majority of the respondents are married (more than 77%).Less than 30% of the respondents finished college.

Economy

In terms of occupation, the majority of the people (more than 50%) in the surveyed areas in both provinces are farmers and open sea fishermen. In Catanduanes, farmers-land owners earn on the average Php 5,200 per month while fishermen earn Php 2,365 per month. Their counterparts in Camarines Sur earn about Php 3,800 per month for landowning farmers while fishermen earn an average of Php 2,900 per month. A large portion of the residents (42% in Camarines Sur and 32% in Catanduanes) are also engaged in non-agricutural enterprises which include sari-sari stores and buy-and-sell activities, among others. These enterprises are on a micro level with small capitalization and limited value-adding activities. The incomes of the microentrepreneurs are about Php 4,000 a month. Household expenditures, which are largely for food and children's' education, do not leave much left over for households to generate savings. Less than 15% have savings, which are mostly kept in banks or at home. Crop or asset insurance coverage is not widely practiced either.

Housing and Other Facilities

Housing units in all the survey areas are commonly made of mixed materials. However, a larger proportion of those who are poorer (more than 30%) have dwellings that are made of light materials. This type of housing, being made of wood, bamboo and nipa shingles as roof, is very vulnerable to strong winds. The poorer segments of the respondents who have this type of housing are the fishermen, tenant farmers and wage earners.

Government infrastructure in the survey areas meets some basic needs. Public school buildings were rated by most respondents as good or average by the respondents. The main roads leading to the barangays are paved. However, access roads to the more remote areas within the barangays are still muddy during the rainy season, and barangay health centers are not well-equipped to handle extreme emergency cases as observed during the survey period. Access to potable water in Camarines Sur is mostly from community faucets (34%) and hand pump water from wells (33%) while in Catanduanes, 36% of the respondents have community faucets and 22% source their water from springs. In the ACF areas, 50% of water supply in Garchitorena is from community wells while in Caramoran water supply comes solely from community faucets. In almost all areas, there are no effective drainage systems where household wastes and excess water from rains flow.

Overall Vulnerability

Aside from the presence of natural hazards due to both climactic conditions and topography, several other factors were considered when determining the vulnerability of the areas. These included, first, the amount of income and the sources of income or the livelihood activities of the population, which can indicate the capacity of the people to afford physical mitigation and their capability to recover from disasters. Larger incomes mean that people can build better houses, build savings or purchase insurance that can cushion the impacts of disasters. On the other hand, some sources of income are very vulnerable to disasters such as typhoons and landslides. For instance, open sea fishing is dependent on the size of the waves of the sea, which normally grow bigger during typhoons and monsoon season. Farmers who are dependent of abaca can experience longer recovery period if the abaca plantation is devastated because it takes at least three years before the fibers can be harvested.

Second, the quality of houses can approximate the risks that people face from certain natural disasters such as typhoons and floods. Wooden or bamboo houses with thatched (nipa) roofs can be easily blown by strong winds. Naturally, the type of housing families live in is related to their income levels.

A third key factor in determining vulnerability is the age and sex of household members. Households with more children, more elderly or more women can

experience more difficulties during evacuation and will require greater resources like food and water after a disaster. It should be noted that even the sources of potable water are susceptible to contamination when floods occur. Lastly, the presence of evacuation areas, whether private or public, indicates the level of safety of the people during times of emergency.

Coping Mechanisms

Respondents in the survey have varying ways to cope with disasters. In non-ACF areas, 55% in Catanduanes relied on outside assistance compared 6% in Camarines Sur. Most of the people in Camarines Sur (54%) borrowed money and asked assistance from relatives and friends (37%) to tide them over from a disaster while only 46% and 17%, respectively, in Catanduanes. One notable coping mechanism is the reduction of expenses on food and other household consumption – 23% in Camarines Sur and 13% in Catanduanes. Only a few (less than 7%) stopped the schooling of their children in both provinces.

In the ACF area of Garchitorena, most disaster victims borrowed money (26%), reduced their expenses on food (26%) and relied on government and non-government assistance (14%). A few (10%) asked assistance from friends and relatives and only 6% used their savings. A small number responded to disasters by stopping their children's schooling, migrating and seeking new employment. In Hitoma, seeking assistance from relatives and friends (32%) and reducing food consumption (32%) are the most common responses to calamities. These are followed by looking for new employment (17%) and the use of savings (16%) to cope with the effects of disasters. On the other hand, very few people in Hitoma rely on assistance from the government and other humanitarian organizations.

These findings indicate several issues. People in the survey areas value the education of their children. Only a few of them would stop the schooling of their children due to disasters. As relayed during the FGDs, parents would not, as much as possible, delay the education of their children. Once the schools resume, they send their children back to school. Moreover, asking and receiving assistance from relatives and friends after a disaster show that family ties are still intact among the respondents.

However, the most common coping mechanism, borrowing money, has been burdensome to most, especially for the farmers. As gathered from the FGDs, some abaca farmers received loans from the abaca fiber traders. Their payments are then deducted from the sale of their future produce. This practice has reduced the bargaining power of the abaca growers. The second most common coping mechanism, reducing household expenditure on food, may have adverse consequences especially to children who are in their physical and mental development stages.

Awareness, preparedness and mitigation: evidence of differences between ACF and non-ACF areas

Most of the people in the surveyed areas receive disaster warning information from their radio, television and local government officials. However, there is a clear difference in the source of information in ACF versus non-ACF areas. In non-ACF areas in Camarines Sur, warning information comes from television and radio (59%) and local government officials (21%) while in the ACF area of Camarines Sur, Garchitorena, the main sources of warnings for disasters are their neighbors (24%); television (22%); local government officials (21%); commercial radios (18); and mobile phone text messages (12%). In non-ACF areas in Catanduanes, 60% of warning information comes from radio, 43% from television, 36% from neighbors and a mere 5% from local government officials. In contrast, in the ACF area of Catanduanes, Hitoma, the main source of warning information comes from the local government officials (49%) followed by the radio (47%) and the rest from relatives and neighbors. The FGD discussions validated that local government officials in Hitoma go around the town to announce forthcoming typhoons. This has been one of the results of the ACF assistance provided in the barangay. The communication equipment provided by the project has also help the local council in disaster risk management.

In terms of preparedness and mitigation, the respondents have several practices. In Catanduanes, most of the people of the province have seemingly standard practices as far as preparedness is concerned. They tie rope to secure their houses (61%) when typhoons are coming; stockpile food and other essentials (72%); move to safer places (29%), move assets to safer grounds (28%) and prepare emergency kits (24%). Of those who move to safer places, 86% prefer the houses of their relatives or neighbors. In the ACF area of Hitoma, people stockpile food (42%), prepare emergency kits (26%); move to safer places like the stronger houses of neighbors (16%); and tie ropes on their houses (15%). About 95% of those who evacuate go to their neighbor's or relative's house while the remaining few moves to public buildings like the public school.

In Camarines Sur, people tie ropes to secure their houses and stockpile food (60%); move assets to safer grounds (43%); and move their families to safer places (32%). Among those who move to safer places, 51% prefer the houses of their relatives or friends. In the ACF area of Garchitorena, people practice preparedness and mitigation when disasters are coming. Among the activities are stockpiling of food (42%), moving to safer places like the stronger houses of neighbors (16%); etc. About 36% of those who evacuate go to their neighbor's or relative's house while 33% move to public schools and 25% use other public buildings. Only about 6% use private buildings as evacuation areas. Based on the FGD discussions, the choice of the houses of neighbors as evacuation centers does not necessarily mean that the public school buildings are not structurally safe. The main reasons given, among others, were a) it has been a practice to move to neighbors with safer houses; b)

there are cooking facilities in their neighbors' houses; c) the proximity of their neighbors which enables them to evacuate quicker with their belongings; and d) the mutual help extended by the evacuees.

One notable difference between the ACF and non-ACF areas is the presence of an active barangay disaster coordinating council (BDCC). The BDCCs in the two ACF areas are more aware of DRR compared to the non-ACF areas. In the ACF areas, the BDCCs developed standard operating procedures for all phases of disasters, have produced hazard maps, warning communication systems and are even planning on some structural mitigation for their barangay although they admit that the cost involved are way above what their local government can afford. Those who attended trainings from the ACF projects are unanimous in saying that the trainings they received are useful. The respondents are enthusiastic about the ACF projects and, based on the FGD discussions, they are thinking how ACF can further assist them in improving their livelihoods as part of preparedness and mitigation.

Across survey areas, although the respondents are aware of and prepare for disasters, it has been noted that they are not too much involved in more community-level activities such as improving river embankments. They consider such activity to be the responsibility of the local government units. Nevertheless, it would seem that the disaster preparedness activities of the people in the surveyed barangays in both provinces could be the reason why there are very few casualties from disasters.

The active presence of barangay disaster coordinating councils and the fact that the local communities have already organized themselves for DRR activities and have a high level of awareness of hazards and risks suggests that ACF's intervention is already bearing fruit. For the most part, however, the study revealed that the differences between ACF and non-ACF areas in terms of preparedness and mitigation were slight. This is to be expected since ACF's activities began in 2007, less than two years before this study was conducted, and focus on capacity building exercises which take time to show results since they require a behavioral and attitudinal changes among the local population as well as policy and procedural systems on the part of the local governments. Another round of study, perhaps after two more years, is required to reveal the differences of the ACF and non-ACF communities as far as the pre-, during- and post-disaster phases are concerned.

RECOMMENDATIONS

Based on the results of the survey, PlaNet Finance recommends a multi-pronged approach for reducing the vulnerability of households in the areas:

1. At the household level, first and foremost, household disaster planning and preparedness can be further improved through training and simulation to make DRR activities a part of the people's values and behavior. Among the more important household preparedness activities that can be prioritized is

the strengthening of the houses, especially those that belong to the poorer groups – the nipa huts type - which are most vulnerable to strong winds and floods. A study should be conducted to determine which parts of the house can be reinforced to increase their chances in withstanding strong winds, and then technical assistance on how to structurally strengthen such houses at low costs can be extended to the people.

2. In addition, the local population can be trained on simple, low cost preparedness and mitigation activities like reforestation of river embankments by planting bamboo, proper waste disposal, and protecting water sources.

3. At the meso level, a systemic approach to disaster risk reduction can be initiated by the local government with the involvement of the communities to develop hazard and vulnerability maps and enhance existing inter-cooperation strategies among different stakeholders.

4. Communal disaster risk reduction activities like the institutionalization or mainstreaming of standard operating procedures in all phases of disasters should be strengthened. Evacuation centers can be pre-identified and equipped with necessary facilities, training for emergency medical aid can be conducted and search and rescue can be initiated, among others.

5. Multi-community reforestation, cleaning of drainage systems, fortifying river embankments, and other activities for community disaster mitigation can be undertaken. The loss of forest cover, siltation of rivers, and contamination of water tables affect not just one community but all of those within a catchment area, so rectifying these root causes of vulnerability must involve bringing all the communities together to address these problems.

6. Better communication is needed to increase stakeholdership. Current approaches are not working for all, meaning that plans developed by local officials and support institutions go for naught because of limited understanding and appreciation by the target groups. Additionally, since radios are the main source of information especially in poorer areas, alternative power supply should be provided to the radio stations.

7. One key for reducing vulnerability should be efforts to assist the local population to diversify their sources of income. The use of value chain concept in identifying potential off-farm activities or income generating projects that have demand in the immediate or adjacent communities can be applied to ensure that there is demand and there local resources will be harnessed to produce the products. The people in the survey areas can likewise benefit from product improvement and market sourcing for their

existing microenterprises. Credit from cooperatives or microfinance institutions can be mobilized to support these efforts.

8. Cooperatives or microfinance institutions can also be mobilized to provide other financial services, namely savings and insurance, to help the local population cope with disasters. Financial literacy training can be offered in conjunction with these services to raise awareness about the benefit of such services.

9. At the macro level, DRR assistance to local governments can be integrated in the local development and land-use planning. The national government, through the NEDA, has recently developed a local development planning guidelines integrating DRR which can be utilized by ACF in assisting their chosen barangays. This step will mainstream DRR in the local development planning processes and development activities.

10. ACF can refer to the good practices of various donors as contained in "Community-Based Disaster Risk Management – Good Practices Example" published in Vietnam in 2007 by CARE International in Vietnam for DIPECHO Advocacy Network Initiative. This publication has a wide range of good practices covering various sectors that may be applicable to ACF project areas.

I. OVERVIEW OF THE STUDY

1. Background

Catanduanes and Camarines Sur provinces are considered among the most-disaster prone areas in Bicol region. An estimated 44,000 and 28,000 individuals reside in these disaster-prone areas for Camarines Sur and Catanduanes, respectively[1]. The vulnerability of the provinces to typhoons, landslides, floods, storm surge, tsunami, and volcanic eruption and their impact on life, property, livelihood, and the environment emanates from a combination of factors such as geographical location, socio-economic, and cultural-behavioral conditions, capacity and readiness of the households and agencies.

To contribute to the initiatives aimed at arresting the vicious cycle of disaster and its impact on the socio-economic development of the province, ACF, in collaboration with donors and partners, has implemented the DRR Project with the objective of reducing the vulnerabilities and increasing the capacities of target population to cope with disasters. Among the key result areas (KRAs) of the DRR Project is increasing the knowledge and raising the awareness of DCCs and communities on the hazards, vulnerabilities, and risks present in the intervention areas. An integral part of this KRA is to conduct a comprehensive household vulnerability and risk study analysis of Catanduanes and Camarines Sur provinces that will provide relevant information essential for effective and efficient decision-making of DCCs and communities in preparing and responding to natural disasters. Integrating hazard and risk maps will need further study and validation from the scientific agencies like PAGASA, PHIVOLCS and MGB. The hazards and risks indicated herein are based only on the perceptions and experiences of the people as respondents of the study.

This comprehensive household vulnerability and risk study aims to improve the evidence base for disaster risk management and initiate effective DRM practice of DCCs and community members in addressing root causes and reducing exposure and vulnerabilities of people and their socio-economic condition. The study is expected to complement and reinforce the on-going multi-hazard mapping and the Participatory Capacity and Vulnerability Assessment (PCVA) conducted by the project. Two separate surveys were conducted. The first one covers three municipalities in each province, which are not necessarily under ACF interventions; while the second one covers only one municipality with ACF interventions for each province. The rationale behind these two surveys was to provide comparison in terms of similarities and differences of the residents in those areas in terms of exposure to risk and vulnerabilities, awareness, mitigation and preparedness.

[1] Source: RDCC, 2006

2. Objectives

The objective of this study was to conduct a comprehensive household vulnerability and risk analysis study in the province of Catanduanes and Camarines Sur and publish the result for wider target group involved in DRR and development. The expected target stakeholders are local governments, the scientific warning agencies as well as the development planning and finance agencies and of course the local population itself.

3. Significance

The results of the study are expected to contribute to widening the database of vulnerabilities of households residing in disaster prone areas in Camarines Sur and Catanduanes, where local DCC partners from the regional, provincial, municipal and barangay levels, other agencies in-charge of planning (e.g. NEDA), partner agencies (e.g. PAGASA, PHIVOLCS, MGB), NGOs involved in DRR, among others can refer to and use to enhance their DRR interventions. Moreover, the results can be used in the design of future interventions responsive to the needs of the households in the disaster prone areas for the following broad range of stakeholders:

3.1. Local DCC partners (Regional, Provincial, Municipal and Barangay levels) can be used for planning and implementation of DRR activities, and mainstreaming DRR in local governance

3.2. Partner government agencies (Regional and National levels) including MGB, PAGASA, PHIVOLCS and NDCC as well: can be used for improving the evidence base of disaster management in the provinces, and hopefully be recognized as a meaningful contribution also to the READY Project in identifying hazards, vulnerabilities, and risks

3.3. Other relevant government agencies (Regional and National levels) like NEDA: can be used the study to help formulate long-term development programmes addressing cross-cutting issues and making policy decisions

3.4. Partners and stakeholders involved in DRR related projects/programs can use the findings as basis for expansion, replication, and customizing future DRR projects

4. Limitations

Primarily, this study is only focused on areas in the two provinces that are considered to have high to medium risk exposure from natural hazards,

economic condition and demographic characteristics. The data gathered was analyzed to reflect a provincial perspective on how the high to medium risk towns are managing the impact of disasters or calamities and therefore is not a reflection of the whole province but only a segment of the population (high to medium risk towns).

The choice of the towns is based on available secondary data from the different offices in the national and at the region level, and from the expert opinion of the key stakeholders on disaster risk management in the region. The experts were chosen based on their experience and relative familiarity with the DRM on the ground.

Challenges in logistics (i.e. personnel, transportation, weather, relative peace and order, and facilities) for the survey team prevented PlaNet Finance from covering other potential towns in the survey. The selection and exclusion of the towns was done in consultation with ACF and local authorities.

Since the expected audience and users of this study are development practitioners and stakeholders involved in DRR interventions, the report is crafted in a user-friendly manner to reflect practical information relevant information essential for effective and efficient decision-making of DCCs and communities in preparing and responding to natural disasters rather than purely for academic purposes and exercises. Descriptive statistical analysis is mainly used in data interpretation to simplify discussion of findings and results.

One of the key sources of vulnerability is the quality of housing. This issue was covered in the survey, but only perceptions of the strength of such buildings. The surveyors did not make any opinion as to the true structural strength of such buildings. Evaluating such buildings can be a future activity of the local government and the community as part of DRR.

Finally, it should be noted that the survey focused on macro-level disasters and therefore did not cover particular vulnerabilities such as the disabilities of individuals or the pattern of food sharing within the household. Therefore, the survey results do not provide detailed information about the specific vulnerabilities of individuals in a given household. The survey did reveal that on average four members of the family are children, one is elderly, and one person in each household is differently-abled. All of these factors add not only to the vulnerability of those individuals but to that of the household as a whole. To better understand the vulnerability of individuals within a household, a different survey can be done to cover the needs of such groups and compared to certain standards like the ideal evacuation areas and appropriate food rations, among others, vis-à-vis the existing ones in the areas and the cost that will be involved the meet the needs of such groups.

5. Methodology

- Target area segmentation and selection

A consultative process was conducted with local disaster risk reduction and disaster management stakeholders to determine the indices to be used and the locations to be covered in the survey. The following is the documentation of that process.

ACF together with PlaNet Finance through the cooperation of the Regional Disaster Coordinating Council (RDCC) 5 conducted a workshop on July 17, 2009 with representatives from RDCC, the National Economic Development Authority (NEDA) 5, Mines and Geosciences Bureau (MGB), PAGASA, PHIVOLCS, Provincial Disaster Coordinating Council (PDCC) of Catanduanes to achieve the stated objective. Unfortunately, the representative from Camarines Sur Disaster Coordinating Council was unable to participate.

Based on the local experience and expert opinion, the participants in the workshop identified three key indicators to choose the three municipalities in each province to be surveyed. These indicators are: physical characteristics or attributes (geophysical condition), economic condition of the town as represented by its poverty incidence[2], and the demography of the population (primarily population size based on the 2007 census). These indicators were identified according to the following rationale:

Physical characteristics. The geophysical condition and location (i.e. coastal, upland, low-lying areas) of the target town play a primary role in determining the risks and vulnerabilities of its population. The choice of the geographical locations was done in such as way to look at any differences or similarities as to the extent of vulnerabilities and risks faced by the households in these areas. Coastal areas are prone to storm surges and possible tsunamis aside from the fact that the people dependent on fishing for livelihood are at the mercy of the weather condition. Low-lying areas near rivers and lakes are at risk from floods during rainy and typhoon seasons. Upland areas and those areas beneath the mountains are susceptible to landslides especially if unsustainable forms of agriculture like slash-and-burn are practiced.

Economic conditions. Income and livelihood are important factors in the relative risks and vulnerabilities of the target town and its population owing to the importance of financial endowment in how they will be able

[2] Based on 2007 NSCB figure

to prepare, manage, cope and mitigate the impact of certain risks factors such as natural calamities. Poverty incidence was the chosen variable to represent the economic condition of the town and to find out any link between poverty incidence, risk and vulnerabilities. Mostly, poor people reside in marginal lands and disaster-prone areas and prompt them to rely on insecure and unstable livelihood activities.

Demography. Depending on the size and composition of the population in a given locality, the relative risks can either increase or become more manageable for both families and the community. The population size and composition will determine the approach and resources needed to have an effective disaster risk reduction program. During the stakeholder's consultation, the different municipalities were classified as small, medium and large based on the size of the population. Population size was used as a straightforward indicator instead of population density since the latter is negligible because the area was pre-selected based on medium or high risk and disaster prone geographical location.

A simple map overlay of these different factors were conducted and each agency or organization was asked to identify towns in each province that can be considered high, medium or low risks in each category. The participants define the magnitude of risks based on frequency of occurrence of natural calamities, poverty incidence and population size as defined by the government. Subsequently, PlaNet Finance consulted secondary data to support the different expert opinion from the stakeholders.

All towns with high to medium risks in at least 2 of the 3 indicators were considered to be the top priorities. Two of the ACF towns in the two provinces were considered as part of the survey. These towns were, initially, Garchitorena in Camarines Sur and San Miguel in Catanduanes. However, due to logistical, administrative and coordinative constraints in organizing the survey, Garchitorena was eventually replaced by Cabusao. This was also the case of Pasacao, which was replaced by Bula. It was determined that Bula is the nearest representative that can replace Pasacao in terms of population size since the survey required for a medium-sized town to complement the large town (Buhi) and small town (Cabusao). All the three towns have high poverty incidence and risks to natural hazards. The town of Bula is in the catchment basin for the Bicol and Pawili rivers, which expose it to flooding every year. It also has a mountainous area that experiences landslides and some form of liquefaction.

In addition, available hazard maps provided by MGB and OCD participants were referred to supplement the results of the consultative

meetings with experts. The following hazard maps on earthquake triggered landslide susceptibility, rain-induced shallow landslides, rainfall, land cover, rock fracturing was reviewed for validation of the recommendations of the local stakeholders. The result of the initial discussion on the area selection process based on high, medium and low risks classification is presented in Annex 1.

A poverty map (2007) from the Peace and Equity Foundation (PEF), which is readily available from PEF's website, was also used to identify the target areas for the survey. PEF have gathered a number of pertinent indicators to poverty in many provinces in the country and it includes Camarines Sur. The map identified the population density, household size, poverty incidence, among other indicators and created a development index that will help organizations who want to provide services to a particular province or town.

For the second survey, the choice of municipalities and barangays was determined by ACF from among the areas with on-going ACF interventions. These are the barangays of Barangay 1, Poblacion in Garchitorena, Camarines Sur and Barangay Hitoma in Caramoran, Catanduanes.

- Data gathering techniques

  The study utilized both primary and secondary data collection. Secondary data gained from desk research was used to formulate the strategy behind the collection of primary data. Primary data were collected using a combination of approaches that includes one-on-one interviews, key informant interviews, and focus group discussions (FGDs). The first two approaches gathered quantitative data while the last captured qualitative responses from a sample of the target population as participants.

- Sample and sampling design

  The survey team has designed its sample in order to represent as much as possible the exposure to disaster faced by the populations in both provinces.

  A two-stage cluster sampling has been utilized by the survey team. A workshop handled by the survey team with the different local stakeholders DRM established the criteria for selection. These include covering physical index (occurrence and frequency of natural hazards), economic index (poverty incidence), and demography index (population size). The different towns in Camarines Sur (37) and Catanduanes (11)

were segmented (first stage) based on the different indices with specific focus on high to medium risks town in terms of occurrence and frequency of natural hazards and poverty incidence. Further, the towns were divided into big, medium, and small towns to get a representation of the geographic and demographic size. Accordingly, 3 towns in each province have been selected by the survey team and the choices approved by the stakeholders. A particular attention has been put to get a full representation of the two different provinces in terms of geographical position and exposure to different risks (typhoons, landslides, and floods, proximity to ocean, river, lakes, mountains and volcanos).

In each town, the survey team met with the LGU officers to pick with them the most representative Barangays in their town (second stage). High to medium risks barangay were selected in different location i.e. mountainous, near rivers / lakes / seas, and valleys.

Once the cluster selected as explained above, the survey team used the random systematic sampling to select respondents in each cluster (Barangay). The towns of Cabusao, Bula, and Buhi representing small, medium, and large settlements respectively were chosen in Camarines Sur. On the other hand, Baras, San Miguel, and Caramoran, were selected for Catanduanes having represented the earlier segmentation.

The following figure shows the sampling frame to present an overview of the process:

Figure 2. Sampling Frame

Cluster sampling stages	Town- 1st stage	Town- 2nd stage	Barangay	Respondents
Sampling criteria	Disaster risk	Population size	Disaster risk	Random sampling
	High Medium Low	Large Medium Small	High Medium Low	Randomly chosen based on the list of residents provided by the barangay council

The first survey covered a total of 602 respondents randomly selected from the six towns, as well as more than 60 FGD participants from six FGD sessions conducted. Participants in the FGDs came from one barangay each from the respective municipalities covered in the survey. Selection of participants was based on representative livelihood and occupation, i.e. farming, fishing, micro-enterprise, etc.

For the second survey, 200 respondents were covered, with 100 respondents from each of the two ACF barangays interviewed. Random sampling was based on the list of households provided by members of the barangay council. FGD participants, on the other hand, were selected based on the type of livelihood engagements and gender considerations.

6. Survey Tools/Instrument

A structured questionnaire was used to gather primary data from randomly sampled respondents. The questionnaire focused in determining the source of risks and vulnerabilities of the target population by studying their social, economic, environmental and physical conditions. Their behavior towards risks, mitigation and coping mechanisms against calamities and natural disasters was likewise inquired into.

To triangulate the data gathered from secondary information and primary data, a focus group discussion guide was designed to get qualitative data. Three FGDs were conducted for each province and participants were drawn from the list of households in the selected barangay. A total of six FGDs from 6 barangays sampled were completed with at around 8-10 participants each session.

A copy of the questionnaire used for the two surveys is attached as Annex 4to this report together with the focus group discussion guide questions.

7. Analytical Framework

The model below was used to analyze the results of the survey. It looked into a number of factors in determining the causes of risks and vulnerabilities of the households:

- Socio-economic, cultural and behavioral indicators – age, sex, civil status, number of children and their age distribution, household size; occupation; household income per month; other sources of income; productive assets; savings; insurance; attitudes towards calamities, etc.

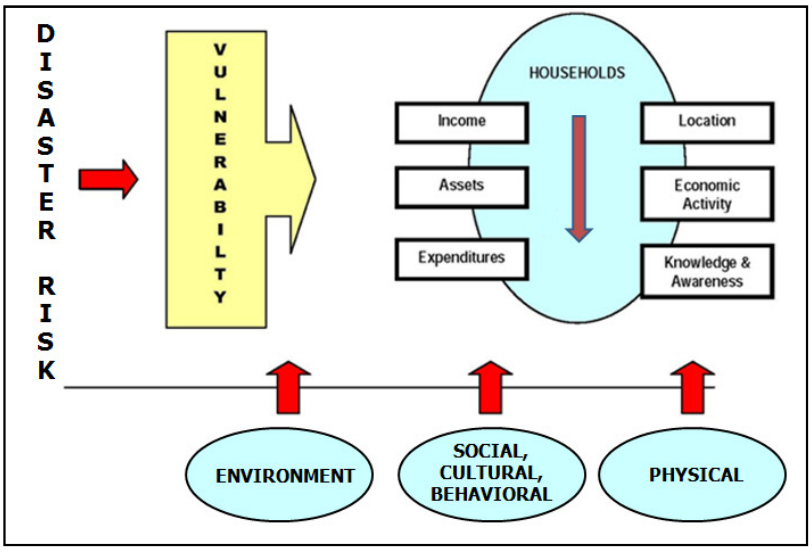
- Environmental indicators – natural hazards like typhoons and storm surges are due to geographical locations which determine the number of typhoons visiting the areas and their frequency and intensity; the topography creates flood-, landslide- and tsunami-prone areas; the probability of the occurrence of earthquakes based on information from national and regional agencies (like PHIVOLCS; PAGASA; Mines and Geosciences Bureau (MGB); OCD-NDCC) and local stakeholders like the LGUs; other NGOs involved in DRR; the community itself, etc.

- Physical vulnerability indicators – the types of housing; school buildings and health centers; the critical lifelines like water supply, electricity, roads, bridges, ports and other transport facilities and telecommunication systems which are vital for post-disaster rehabilitation and reconstruction. A special concern looked at land and resource-use practices in the survey areas.

- Capacity indicators – preparedness and mitigation measures as indicated by:
    - the existence of standard operating procedures during emergencies (like designation of evacuation centers and other contingency measures) and availability of search and rescue capabilities;
    - warning systems available to the people
    - awareness of the people and perceptions of the LGUs on natural disasters and DRR
    - programs and projects implemented by the government and NGOs in the area, including the effect and impact of these programs and projects in terms of damages and the cost involved per program/project
    - community-initiated preparedness and mitigation activities, their effectiveness and costs

8. Assumptions

Figure 2. Analytical Framework



The study team made the following assumptions:

- Despite the presence of DCCs in government, humanitarian organizations and civil society groups in both provinces, residents in hazard prone areas remains highly vulnerable due to income, household size, etc. and exposed to inherent hazards, disasters can cause more school drop outs, thus, the need to for strategic, responsive and innovative interventions to safeguard the human, economic, social and physical capital of the affected population.

- While vulnerable populations and sectors of the society living in these hazard-prone areas have inherent ways, means, and traditional practices to cope and mitigate with the aftermath of disasters, these are not enough

without coordinated and holistic approach from key stakeholders (government, private, civil society, etc.). These practices can be further developed with the support of these stakeholders.

- The effects of global warming and climate change continue to challenge whatever on-going efforts on DRR in these provinces, and the country in general, thus, the need for continuous program innovations to adapt to the changing times.

- While the causes of disaster are natural and beyond the control of the people, appropriate ways and means in preparedness, coping and mitigating strategies need to be adapted and be sustained in the long term, thus, understanding the nature and magnitude of risks and vulnerabilities of the people in the covered areas is crucial elements in DRR and DRM.

9. Background and Description of the Surveyed Provinces

- Province of Catanduanes

The island province of Catanduanes is about 1,495 square kilometers and composed of 11 municipalities and 315 barangays with the capital town of Virac as the only first class municipality. The towns of Caramoran and San Andres are third class towns while the rest are 5th class municipalities in terms of income. According to the National Statistics Office (NSO) Quickstat on Catanduanes as of August 2008, the population of the province is estimated at 215,356. There are about 46,680 households in 2005 (estimated from the 2000 figures), almost one fourth of which are living in the capital town. The total income of the province in 2005 is Php 283.71 with Php 272.58 million coming from the internal revenue allotment (IRA) of the province. Per the data from the provincial capitol, the IRA for 2009 is Php 379,345,016 and the income is PhP 7.2 million. This shows that the province has a small amount of internally-generated income and thus dependent on the IRA from the national government. With this income, Catanduanes is classified as a third class province. Table 1 summarizes demographic statistics of the province. Detailed description of the municipalities of Baras, San Miguel and Caramoran is presented in Annex 2.

Figure 3. Map of Catanduanes

The human development index (HDI) in 2000 ranked Catanduanes as 35th out of the 77 provinces in the country. It ranked higher in the education component (23rd) of the HDI but ranked lower in health (44th) and income (45th).

Table 1. Demographic Characteristics of Catanduanes

Land area (square kilometers)	1,495
Number of municipalities	11
Number of barangays	315
Population	215,356
Male	109,515
Female	105,841
Number of households	46,680
Proportion of population by age group (%)	
0 – 4	13.5
0 – 14	40.30
15 – 64	53.6
18 and over	53.10
65 and over	6.10
Proportion of urban population	17.60
Proportion of persons with disabilities	1.70
Internal revenue allotment in 2009 (Php)	379,345,016
Income of the province in 2009 (Php)	7,200,000

According to the Peace and Equity Foundation (PEF) study in 2007, the province is mostly agricultural with rice (5,540 hectares), abaca (25,546 hectares) and coconut (16,918 hectares) as the main produce. There are about 15,294 abaca farmers and 11,298 coconut farmers. Fishing activities has been on a family level. There are no

commercial fishing activities in Catanduanes compared to the other provinces in the region. The literacy rate (simple literacy) in the whole province is about 94% in 2000.

According to the same NSO data, the annual average family income in Catanduanes as of July 2008 is Php 105,645 with an annual average family expenditure of Php 95,966 for an annual average family savings of Php 9,679. The latest figures of the National Statistical Coordination Board (NSCB) posted in March 2008 stated that the annual per capita threshold in Catanduanes in 2006 is Php 13,654 or roughly Php Php 81,924 for a family of 6 members. Poverty incidence among families is 37% with the magnitude of poor families reaching about 17,000. These figures represent an increase in poverty incidence from the 2003 level of 31.8% or a net increase of 3,400 poor families. In terms of percentage, 46.8% of the population is poor in 2006 compared to 36.8% in 2003. The actual count of poor people reaches 105,075 in 2006 compared to 76,609 persons in 2003. Table 2 summarizes the other socio-economic information.

Table 2. Poverty Incidence and Other Social Indicators in Catanduanes

Annual average family income	Php 105,645
Annual per capita poverty threshold (2006)	Php 13,654
Annual per capital poverty threshold for a family of 6 members	Php 81,924
Poverty incidence among families	37%
Poverty incidence by population	46.8%
Magnitude of poor families	17,000
Head count of poor people	105,075
Literacy rate (simple literacy)	94%
Labor force (2003)	100,00
Unemployment	7.4%
Underemployment	22.7%
Families with access to safe drinking water	94.05%
Families with sanitary toilets	70.08%
Families with access to health facilities	48.65%
Families with housing unit made of strong materials	60.02%
Total fertility rate (Number of children per woman)	4.13
Life expectancy at birth (in years)	
Male	66.22
Female	70.87
Families with children 6-12 years old in elementary grade school	91.76%
Families with children 13-16 in high school	77.06%

Typhoons normally affect the province of Catanduanes annually although in varying strengths. The strong winds of typhoons and their accompanying heavy rains have caused floods and landslides that destroyed houses, crops and other physical properties and assets. For instance, the Department of Agriculture Region 5 (DA 5) reported that more than P80 million worth of potential rice yield by farmers in the

provinces of Camarines Sur, Catanduanes and Sorsogon were lost due to the continuous rains and floods in the past several weeks of January 2009. With its vast coastline, it also experienced storm surges from the sea during typhoons and the possibility of a tsunami as a result of an earthquake.

OCD records show that three typhoons have affected Region 5 (which includes Catanduanes) in varying degrees for the first quarter of 2009. In 2008, typhoon Frank adversely affected the province while another three typhoons similarly caused damages in 2007. It was in 2006 when super typhoon Reming (internationally code-named Durian), one of the six typhoons that affected Region 5, wrought havoc and devastation in Catanduanes. Strong winds and rain caused floods and landslides that destroyed lives and properties. This super typhoon left more than 700 dead and more than 750 persons missing in addition to damages to agriculture (Php 1.6 billion) and infrastructure (Php 3.2 billion) nationwide.

The government is aware of the negative impact of natural disasters and it has been continuously increasing its mitigation efforts. As part of its preparedness activities, the capacities of the warning agencies like the PAGASA and PHIVOLCS have been improved through the provision of modern equipment. DRR programs and projects are also provided to the local community levels for community-based DRR activities like the Project READY which aims to improve the overall disaster risk management at the local level of governance and communities.

These natural disasters have resulted, too, in higher prices in the province. According to the data of NEDA Region 5, for the second quarter of 2008, Catanduanes posted the highest average inflation rate: 12.6 percent. Accelerated inflation rates in all provinces of the region were generally attributed to the elevated cost of rice and other food products, fuel, gasoline, and transportation services. For Catanduanes, however, the housing and repair component also contributed significantly to the increase in the consumer price index (CPI). Higher inflation decreased the purchasing power of the peso (PPP) from P0.66 to P0.62. Until the first quarter of 2009, Catanduanes had a double-digit average inflation level, the highest average in the region, with a CPI of 171.7 during the quarter and consequently the lowest average PPP, equal to P0.58 (based on the year 2000 level). With the highest CPI inflation rate and the lowest PPP, Catanduanes became the province with the highest cost of living among the provinces in the region. It is apparent that the destruction caused by natural disaster can increase the demand for construction materials which can trigger higher inflation in the province.

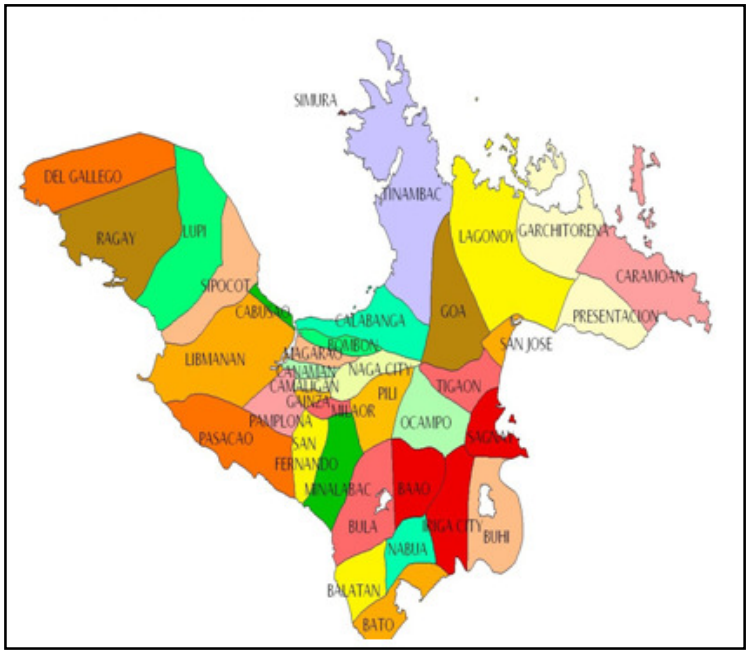
With a labor force of 100,000 in 2003, unemployment reached 7.4% while underemployment stood at 22.7% in the same period. Tourism, which has a huge employment potential, has been lagging in the province compared to the others in the region. Tourist arrivals in Bicol registered a growth rate of 46 per cent in second quarter of 2008 over the 2007 figures, according to the Department of

Tourism (DOT) regional office. A total of 1,306,792 tourists visited Bicol in 2008, an increase of409,292 over the 2007 figures. Of the total number, 1,057,735 were domestic tourists while 249,237 were foreign nationals. Total gross receipts generated by the tourism industry jumped to P781,995,280 from P443,558,400 in 2007 or an increment of 56.72 per cent. Total job generated reached 499,336 or 181,462 over the other year. Unfortunately, Catanduanes ranked last (6th) with 56,613 tourist arrivals for the same period. The province has, therefore, had the lowest share in tourism revenues and jobs generated.

In effect, natural disasters have constrained the development of Catanduanes. Risks from disasters can be a deterrent to further investments that could generate employment while higher inflation have exacerbated the economic conditions of the population especially those who are unemployed.

- Province of Camarines Sur

Figure 3. Map of Camarines Sur



The province of Camarines Sur is geographically located at the center of the Bicol Peninsula, which forms the south-eastern part of the island of Luzon (Fig. 4). It is about 450 kilometers from Manila and is bounded on the north by the provinces of Quezon and Camarines Norte, San Miguel Bay and the Pacific Ocean; on the south by the Province of Albay; Lagonoy Gulf on the East; and Ragay Gulf on the West. The largest among the six (6) provinces of the Bicol Region, it has a total land area of 548,160 hectares or 5,481.6 square kilometers, which is 30.23% of the total regional area. The province is subdivided into four (4) congressional districts composed of two (2) cities (Naga and Iriga City), and thirty-five (35) municipalities including the capital town of Pili. Camarines Sur has a total of 1,063 barangays.

Camarines Sur is generally hilly and mountainous with flat central area known as Bicol Plain and other small coastal plains on the northeastern coast. About 430,679 hectares or 81.8% of the total land area are low-lying with elevation ranging from ground level to 300 meters above sea level. Mangroves and nipa swamps form along both coasts of the Province. Encompassed by the Province is a small peninsula on the eastern side called Caramoan Peninsula with an elevation as high as 904 meters above sea level. The ravines are deep and steep slopes are covered only by cogon. The Ragay Coast is hilly and rolling. Mount Isarog with an elevation of 1,796 meters, and Mount Iriga with 1,196 meters, in the central and southern parts, are inactive volcanoes.

The Province has three lakes: Lakes Bato, Buhi and Baao-Bula. The area is likewise traverse by rivers, streams and creeks that serve as natural drainage particularly in the basin area. The Bicol River, the longest in the Region with length of 95 kilometers, begins at the outlet of Lake Bato and flows across the plain to San Miguel Bay.

The climatic controls over the two air stream systems produce two distinctive variations in the climate, the monsoon and the pacific tradewinds. From October to January, the northeast monsoon prevails, while, the north pacific tradewinds occur from February to September coinciding with the south tradewinds. The climate on the northwest side is type II; on the eastern side, type III; and, on the middle part type IV.

The annual average rainfall over the Province is about 2,773.4 millimeters. Generally, the rainy season occurs from May to January and the months of October, November and December are the wettest. A relatively dry season occurs from February to April.

To date, the rural electrification rate in Camarines Sur is 93%, with 963 barangays energized out of 1031. A total of 241,501 households are served out of 299,491 potential household for a service percentage of 81%.

In terms of the Philippine human development index, Camarines Sur ranked number 26th overall among 77 provinces in a 2000 ranking. The province is in the top 10 in health index but fared lower in education (19th) and in income (56th) indices.

Detailed description of the surveyed Camarines Sur municipalities is presented in Annex2.

II. DISCUSSION OF RESULTS AND FINDINGS

Part 1. Vulnerability and Risk Assessment of Non-ACF Covered Areas:

1. Camarines Sur

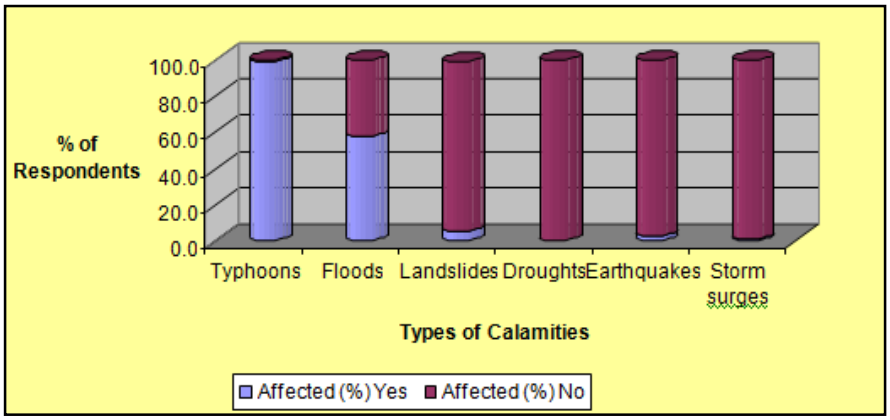
1.1. Household vulnerabilities and Risks

1.1.1 Natural and Environmental Hazards

The surveyed population of 300 respondents is exposed to typhoons and floods (Fig. 5). There are places in Camarines Sur that get flooded even with little rainfall owing to the numerous tributaries and water reservoirs in the province. The presence of several lakes and rivers (Bicol River system) that traverse a great portion of the province and the siltation of this river system contributes to the annual flooding experienced by low-lying areas. Buhi is even flooded without major rainfall and the residents blame this on the flood control, irrigation structure and electrification structure established by the government. They argue that they are being sacrificed to save some low-lying towns from inundation. Even if that is the case, they received little support from the government to alleviate their inconvenience and opportunity loss due to state and province policy on water use.

Drought is rarely a problem for the population because of ample and sometimes more than ample rainfall. Excess precipitation and water run-off is usually the problem faced by many of the residents in the survey areas. However in some areas of Camarines Sur, drought was experienced, though not on a regular basis.

Figure 4. Natural Calamities Experienced by Respondents, Camarines Sur

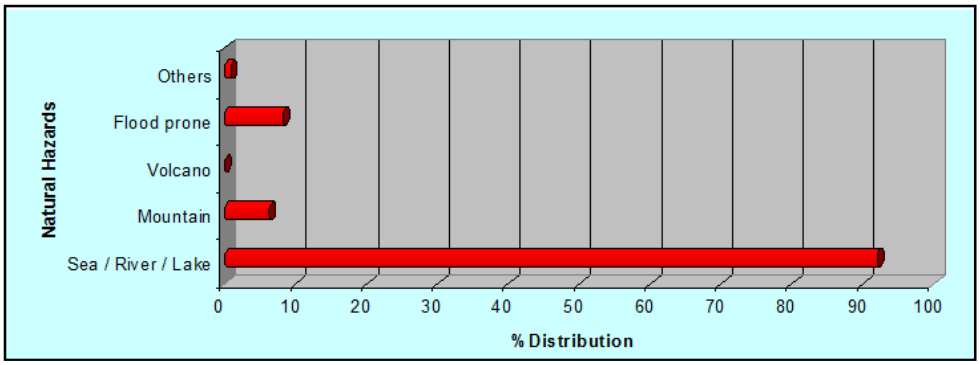


Occurrence of earthquakes is not significant in the province since two of its volcanoes are dormant. Storm surges affect the coastal areas and are usually associated with typhoons. The province is also mountainous in some areas and

occurrence of landslides is experienced by a number of communities. The shifting land use pattern and absence of good vegetation aggravated the land condition that resulted into landslides. One of the areas surveyed even showed evidence not only of landslides but sinking land mass that resulted into considerable damage to properties and livelihood.

Location of respondents' houses. The majority of the surveyed respondents live either near a sea, river or lake which increases their vulnerability, especially during typhoon season (Fig 6). Since Camarines Sur is traversed by a number of major tributaries, several lakes, and has long stretch of coastline on both sides, the risks brought about by water overflow, storm surges and flooding are considerable.

Figure 5. Proximity of Houses to Natural Hazard-prone Areas

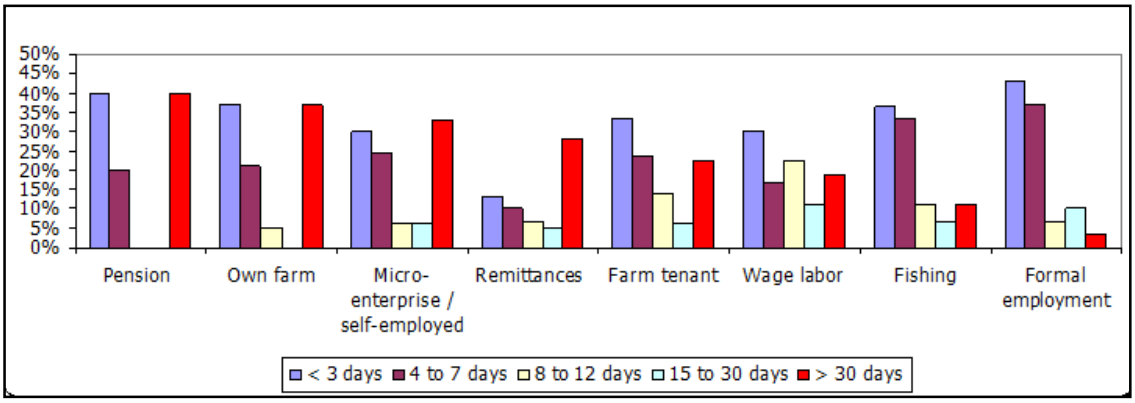


While most of the surveyed population lives far from the mountains, many of the people interviewed mentioned that some of the severe flooding in their area are caused by the overflow of major tributaries due to the flow of water upstream from the mountains. Deforestation due to slash and burn farming and illegal logging increases the impact of heavy rainfall in mountain areas on downstream communities. Some areas have already started reforestation activities to restore the capacity of their watershed to absorb the increased in rainfall not only during rainy season but more importantly when there are typhoons.

1.1.2 Economic Vulnerability

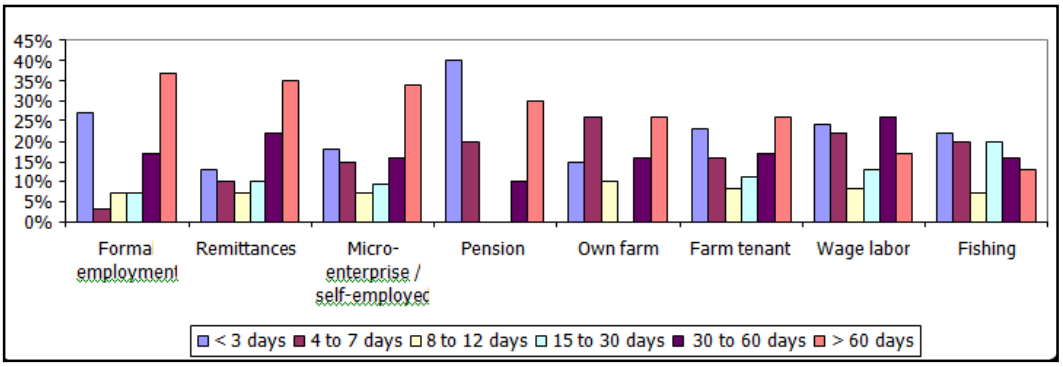
The survey results found out that those involved in farming activities, whether as farmer-owners or tenants, and those self-employed or involved in some micro-enterprise activities are the most affected population (see Figure 7).

Figure 6. Time Needed to Report to Source Livelihood (longest), Camarines Sur



Households relying on pensions and remittances are the other vulnerable groups identified in the survey (Fig. 8). Wage laborers and those involved in fishing have higher "resistance" to disruption in livelihood activities compared to other income sources or occupation. This finding is attributed to the ability of the households to recover after the disaster, as evidenced by the time it took them to go back to their livelihood or resume normal activities (Figure 8).

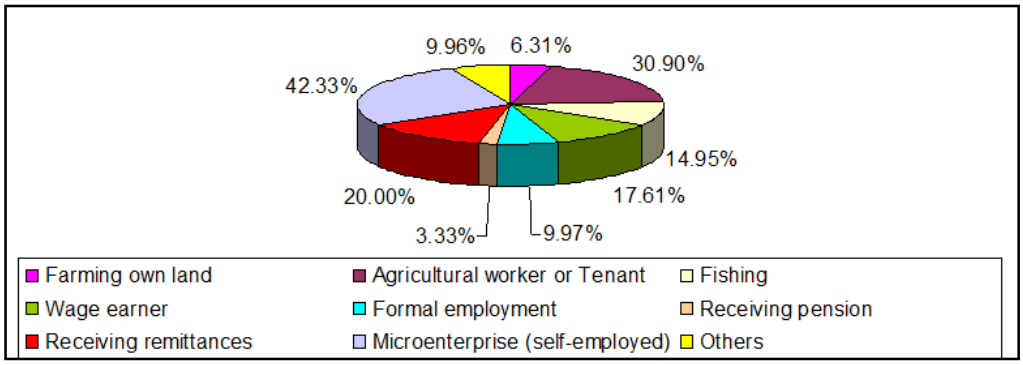
Figure 7. Time needed to return to normal life (longest), Camarines Sur



It should be noted that income sources are not mutually exclusive and there are overlaps since most of the households surveyed are engaged in multiple economic activities. Still, the information provided by the survey can help identify the vulnerable households based on their income sources.

Figure 9 shows the distribution of income sources in the province. It should be noted that people engaged in the dominant economic activities are also the most vulnerable, i.e. self-employment, agricultural workers or tenants, and wage laborers.

Figure 8.Distribution of Respondent's according to Source of Income, Camarines Sur



Average household income per month is P5, 456.21 and average household expense is P4, 560.35. Each household on average has a surplus of P895.86. However, the respondents lamented that they hardly make both ends meet especially those engaged in production activities or are dependent on farming and fishing activities. Wage earners are very dependent on the availability of job in the community or in nearby areas that made it too unreliable.

1.1.3 Socio-cultural-demographic Vulnerability

Large family size characterizes the respondents in Camarines Sur. On average, each household has more than 4 children, more than two of which are below 15 years old, and a household member over 60 years old. Each household has at least 3 members who are vulnerable to disasters because of their age. The young and old members of the household will have more difficulties in evacuating during disasters. On average on member of the household is differently-abled. Table 3 below shows the demographic conditions of the respondents in Camarines Sur.

Table 3. Demographic Characteristics of Respondents, Camarines Sur

Description	Values
Female (%)	73.51%
Civil Status	
a. Single	1.99%
b. Married	77.74%
c. Widowed	1.99%
d. Separated	10.96%
e. Live-in	7.31%
Average Age	45
Finished Elementary School (%)	0.33%
Had some Elementary Schooling (%)	10%
Finished High School (%)	32%
Had Some High School (%)	14.33%
Finished College (%)	29.67%
Reached College Level (%)	8.67%

No Schooling (%)	5%
Average Household size	5.9
Average Number of Children	4.4
Below 15 years old	2.2
Above 60 years old	0.3
Average Number of Children in School	1.64
Average Number of differently-abled	1.07

By occupation (Table 4), families of agricultural workers or tenants, wage laborers, and those engaged in self-employment have larger household size than other income groups, which inherently exposes them to more vulnerability and risks in the aftermath of a calamity.

Table 4. Average household size and composition According to Income Sources in Camarines Sur

Source of income	Household demographics				
	No. of HH Members	No. of Female HH Member	No. of HH Members Below 15 Years Old	No. of HH Members Above 60 Years Old	Number of differently-abled household members
Landed Farmers	5.36	1.68	1.31	0.61	1.05
Tenants/ Agricultural Workers	6.22	1.96	2.35	0.32	1.04
Fishermen	5.79	1.40	2.06	0.85	0.92
Wage laborer	6.62	1.92	2.67	0.29	1.05
Formally Employed	5.25	1.25	1.85	0.47	0.95
Self-employed/ Micro-entrepreneur	6.11	1.77	2.17	0.39	1.07

Level of education. The results of the study showed that the level of education among those affected by calamities and disasters does not seem to be very conclusive in its effect on the ability to resume livelihood activities. Across almost all education backgrounds, households have shown resiliency in coping with disasters or calamities.

Household size and composition. The relationship between household size and composition and the ability of the families to recover from disasters and calamities is inconclusive. There is no apparent relationship between the household size and the number of days households return to work or their normal lives.

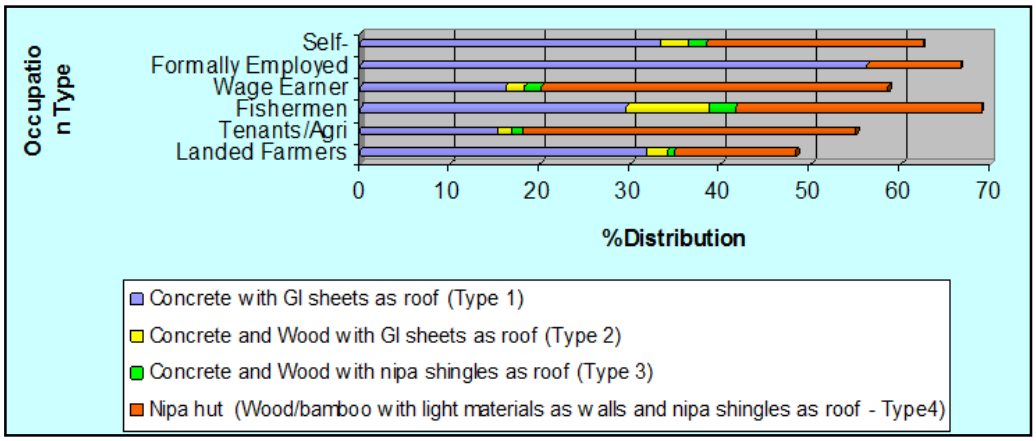
Cultural dimension. Since the surveyed areas are usually frequented by calamities and disasters, the families have accepted this fact. Some of them have expressed a fatalistic attitude toward their occurrence and impact. They

are so used to the situation that when local government officials ask them to evacuate their homes some of them refused.

1.1.4 Physical Vulnerability

More than a third of the households surveyed have very modest type of housing, composed of light materials like bamboo or wood and nipa shingles. Conventionally, this type of housing is defenseless to strong winds brought about by frequent typhoons in the province. Across occupation type, the tenants and wage earners are most likely to have houses constructed with these types of housing materials (Fig 10).

Figure 9. Occupation by Type of Housing Materials, Camarines Sur



The FGD participants confirmed that after a disaster strikes, assistance is provided by the government, NGOs and private organizations for the repair of severely damaged houses after a typhoon or major calamity. This has lowered the cost of rebuilding. It must be noted, however, that living in homes made of light materials is a source of insecurity for the families. In some cases, relocation to safer areas is being done by the local government units to protect their constituents and remove them from dangerous areas.

However, when cross-tabulated with the time it takes for a household to return to their livelihood and normal life, the type of roofs and walls show little correlation (refer to Tables 5-7).

Table 5. Type of roof and time needed before able to go back to livelihood after a disaster (%)

Type of Roof	Number of Days				
	<3	4 to 7	8 to 15	16 to 30	>30
Nipa	38.28	1.53	11.72	6.25	23.4
Iron sheet	29.60	28.00	6.40	5.60	29.60
Mixed	25.58	30.23	18.60	9.30	16.28

The respondents, regardless of the types of the roofs in their houses, have varying time periods in returning to their livelihoods and normalcy.

Table 6. Type of roof and Time needed before able to go back to normal life after a disaster (%)

Type of Roof	Number of Days					
	< 3	4 to 7	8 to 15	16 to 30	30 to 60	> 60
Nipa	25.00	13.28	7.81	14.06	14.84	24.22
Iron sheet	19.20	18.40	6.40	8.80	17.60	28.00
Mixed	4.65	9.30	9.30	6.98	25.58	44.19

The same observation applies to the type of walls of their houses. There is no significant indication that those with concrete-walled houses can return to work faster than those who live in houses with wooden walls (Table 7).

Table 7. Type of wall and time needed to go back to livelihood after a disaster (%)

Type of wall	Number of Days				
	<3	4 to 7	8 to 15	16 to 30	>30
Wood	33.74	20.86	13.50	6.13	24.54
Concrete	35.29	25.88	4.71	5.88	28.24
Mixed	26.53	34.69	10.20	8.16	20.41

Access to potable water. The target population has a variety of sources for potable water (Table 8). About 2/3 of them source their water from either a faucet at home (33.89%) or from their own wells (32.56%). The former is a safer source than the latter especially during times of calamities when the ground water is often contaminated. The number of those still getting water from communal sources is still substantial (23.92%) and this type of water source is also not safe during calamities, especially when there is flooding.

Table 8. Access to potable water supply and sanitation in Camarines Sur (in Percent)

Potable Water Supply						Toilet Types		
Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Flush	Anti-polo	Open
32.56	10.63	13.29	33.89	4.98	4.32	18.82	73.17	8.01

Legend: Type 1 - Individual Well (with hand pump), Type 2 - Community well (shared), Type 3 - Community Faucet, Type 4 - Faucet at home, Type 5 - Spring source, Type 6 - Commercial source (Bottled)

Quality of physical infrastructure. Generally, the assessment of the target population of the physical infrastructure in their community is good (Table 9). Public schools and bridges are usually in good condition. Very small percentage

of those infrastructures is in average or poor conditions. However, almost half of the road network in the surveyed areas is considered by the target population to be rough and muddy. This increases risks and vulnerabilities, especially in a post disaster situation in terms of accessibility of households located in far-flung barangays.

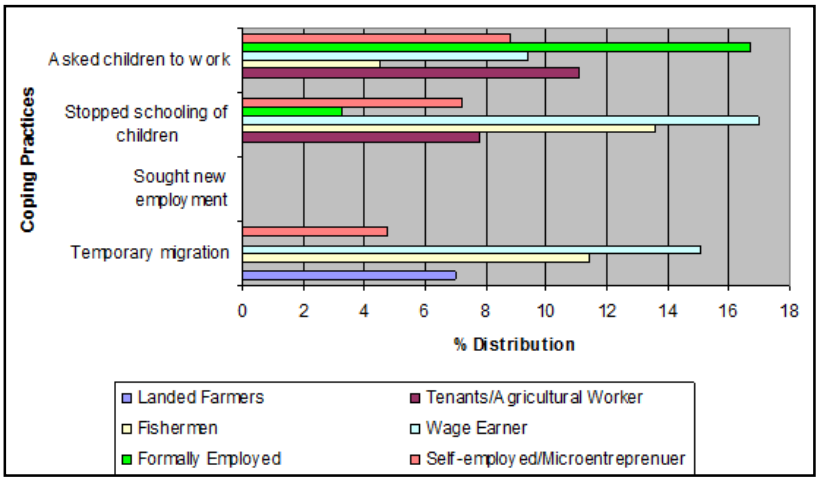
Table 9. Respondents' description of infrastructure in their areas (in Percent)

Infrastructure	In Percent
Public elementary school	
a. Good	75.7
b. Average	12
c. Poor/needs repair	11
Public high school	
a. Good	73.1
b. Average	13.8
c. Poor/needs repair	6.4
Roads	
a. Rough and muddy	47.8
b. Gravel	6.3
c. Asphalt	0.3
d. Concrete	45.5
Bridges	
a. Wood/bamboo	12.7
b. Concrete	67.8
c. Steel	0.4

1.2. Impact

While it is observed that wage laborers and fishermen are less dependent on external assistance, it is worthy to note that their children's education and welfare is affected (Fig 11). Fishing (13.6%) and wage labor (17%) households have the most inclination to ask their children to stop going to school to cope with the disaster and some of them are also sending their children to work for additional support. There are almost 10% of wage labor households asking their children to work and almost 5% for fishing households.

Figure 10.Coping Mechanisms by Source of Income, Camarines Sur



Even if the children are not asked to stop their schooling, a calamity will inevitably prevent them from going to school. On the average, 13 school days is lost every time there is major disaster in the areas surveyed.

Separated from their families, the opportunity for alternative income source is also very limited given the knowledge and skills set of the fishermen and wage laborers. Most of them have very basic educational attainment and a few have graduated from secondary school level (Table 10). Competition from a number of people with almost the same skills set for a few available jobs is going to be fierce.

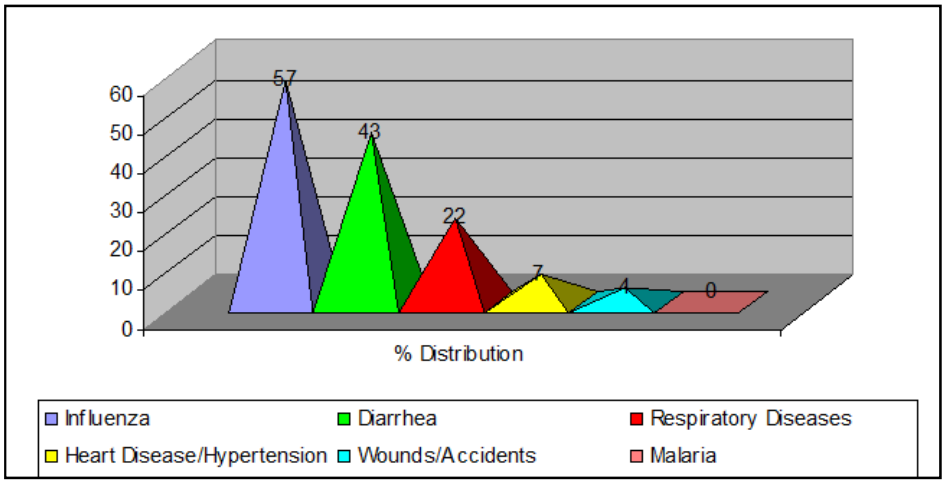
Table 2. Source of Income and educational attainment in Camarines Sur (%)

Educational Attainment	Source of income						
	Landed Farmers	Tenants/ Agricultural Workers	Fisher-men	Wage Earner	Formally Employed	Self-employed/ Micro-entrepreneur	Others
No schooling	5.26	0	0	0	0	0	0
Elementary level	10.53	13.04	15.56	11.32	3.33	7.14	0
Elementary graduate	15.79	35.87	37.78	32.08	20	35.71	23.08
High school level	10.53	15.22	22.22	7.55	3.33	13.49	19.23
High school graduate	52.63	27.17	20.00	35.85	36.67	27.78	38.46
College level	5.26	6.52	4.44	9.43	20	8.73	11.54
College graduate	0	2.17		3.77	16.67	7.14	7.69
Vocational	0	0	0	0	0	0	0
Post graduate	0	0	0	0	0	0	0

Ability to replace damaged assets. Improving the type of houses of the target population is a little difficult for many of them. The study found out that estimated cost of repair is not enough to replace the household assets that have been damaged or impaired by the calamity. The meager income that they generate from their businesses or occupation is not enough to replace their houses or household assets.

Health care and water quality. Improving access to secure potable water is important to safeguard the health of the population and improve their capacity to cope and recover. The study noted that one of the common diseases experienced by the affected population is influenza and diarrhea, usually associated with poor access to good water quality (Fig. 12). Arresting more than 40% of morbidity cases of affected population will go a long way in helping the population and authorities to save on scarce resources which could be devoted to improving infrastructure instead.

Figure 11. Common Diseases Experienced During Calamities, Camarines Sur



Sickness is one of the factors that hinders the ability of the affected families to recover from a calamity since it takes time and financial resources to address. The data in Table 11 shows that fishing, self-employed and agricultural workers or tenants are the mostly affected households. These are the same households earlier identified as most vulnerable to the effect of disasters or calamities. Access to potable water and controlling the spread of influenza will help the mentioned families to cope and recover faster from the effects of a calamity.

Table 3. Common diseases experienced during calamity by source of income

	Landed Farmer	Tenants/ Agricultural Workers	Fisher-men	Wage Labor	Formally Employed	Self-employed/ Micro-entrepreneur
Influenza	63.16	53.76	68.89	49.06	36.67	59.84
Diarrhea	26.32	47.31	53.33	45.28	20	43.31
Respiratory Diseases	0	2.15	4.44	1.89	10	6.30
Heart Disease/ Hypertension	26.32	4.30	4.44	5.66	10	6.30
Wounds/ Accidents	0	4.30	4.44	1.89	0	3.94
Malaria	0	0	0	0	0	0
Others	0	32.26	20	37.74	30	20.74

Even if the province is exposed to a number of typhoons, the respondents have not experienced significant loss in lives or caused injuries. Massive flooding and destruction of properties as a consequence of typhoons resulted into disruption on work, school and other normal daily activities of the communities (Table 12).

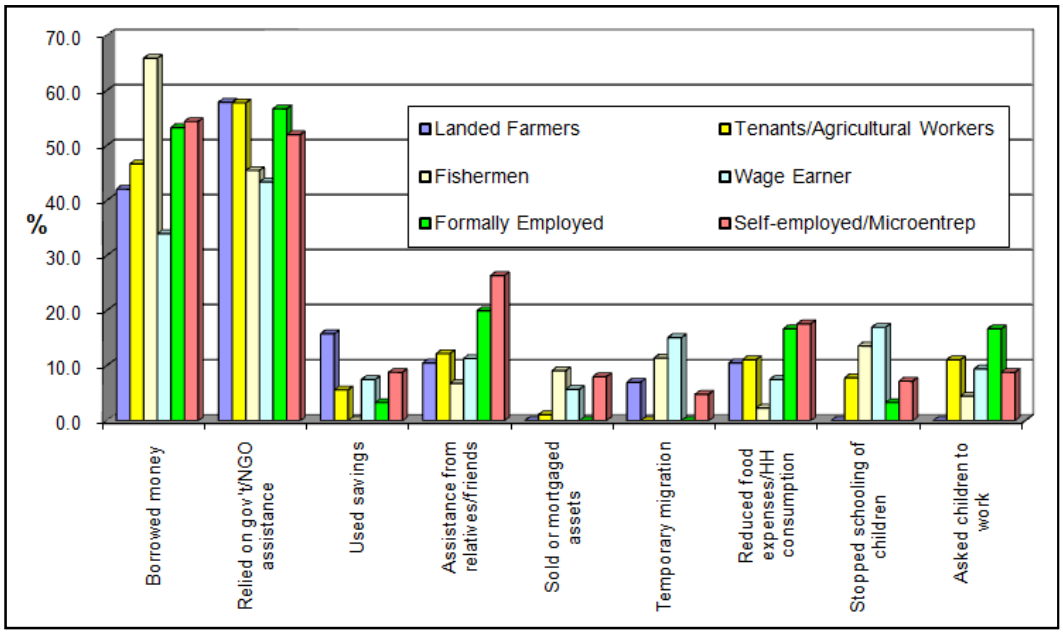
Table 4. Frequency and effects of natural disasters in the past three years in Camarines Sur

Natural Calamities	Affected		Average Number of Occurrence	Average Number of Lives Lost	Average Number of Injured	Average Number of People Missing
	Yes (%)	No (%)				
Typhoons	99	1	3.93	0.00336	0.02013	0
Floods	57.61	42.38	3.61	0	0.00575	0
Landslides	5.29	94.07	5.43	0	0	0
Droughts	0	100	0	0	0	0
Earthquakes	2.31	97.68	1.14	0	0	0
Storm surges	0.66	99.33	2.50	0	0	0

1.3. Coping Mechanisms

The ability to recover from calamities or disasters experienced by the target population may be explained by the type of coping mechanisms, household demographics and access to productive assets.

Figure 12. Coping Mechanisms According to Respondent's Occupation, Camarines Sur



Dependence on external assistance. Fig. 13 shows that those involved in farming and self-employment are more dependent on external support and asking family members' support to cope with the crises or calamities. Farming is most affected since devastation of the land requires longer time to recover and more resources like farm inputs for them to rebound.

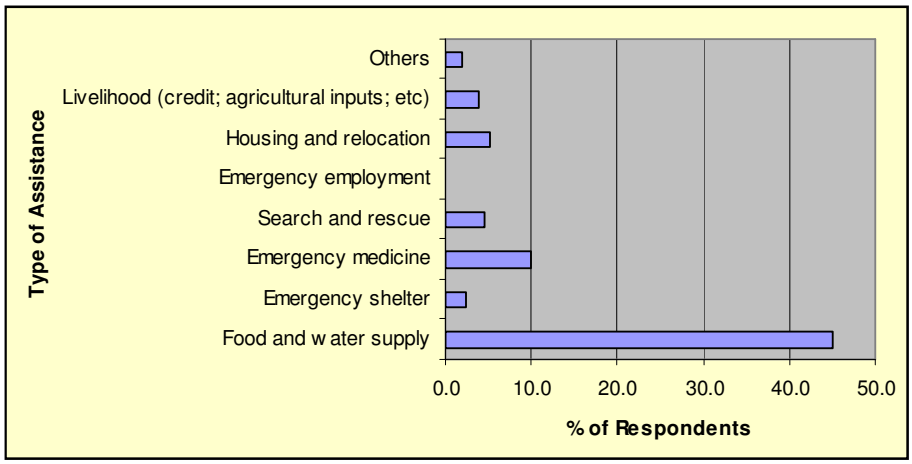
The population in general is looking for government and non-government organizations' support to rebound from calamities and re-start farming activities. However, the survey results showed that support for livelihood and emergency employment is the least received by the households after the disaster (Fig. 14).

To address the inadequate assistance received to revive their income sources, farmers most especially tenants (11.1%) and those self-employed (16.7%) has asked their children to work more than any other groups surveyed. Tenants and self-employed usually do not have the physical and financial asset to use in order for them to compensate for the loss of income resulting from the disruption in farming activities and may be the reason why they resort to sending their children to work. Through the focus group discussions, the community confirmed that some households send their children to work in the

cities or other urban centers as a temporary solution to support their families affected by the calamities.

Households with members receiving pensions or remittances also experienced difficulty recovering from calamities or disasters. It may be attributed to the fact that pensions are received by retired members of the household and age is a factor in vulnerability. The respondents and FGD participants lamented that delays in receiving pension is a frequent occurrence that creates problems. On the other hand, remittances, whether domestic or internationally sourced, are intermittent and, in some cases, unreliable.

Figure 13. Post Disaster Assistance Received, Camarines Sur

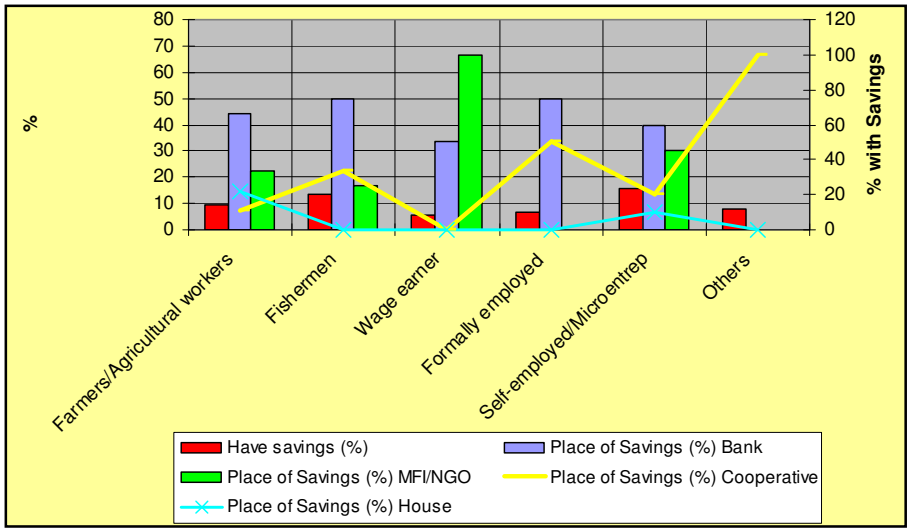


Use of financial assets or services. Fishermen indicated that they are more inclined to borrow compared to other occupation or income source group. It may be due to the fact that none of the fishermen interviewed indicated that they used savings to cope with the calamity but instead sold or mortgaged assets that they have. This practice will have negative impact on the fishing households in the long run since they will not be able to accumulate or retain critical physical asset to support them in the next calamity. Interestingly, none of the households claimed to have insurance to cope with disasters or calamities.

While fishing households mentioned that they do not use savings to cope with disasters, survey data showed that they are actually have the second highest percentage of households who are saving (Fig. 15). This may mean that fishermen are actually saving but are allotting that money for different purpose other than coping with disasters or calamities. By cultural practices, Filipinos usually save to send their children to school and the fishing household may be preparing for the same purpose. Saving for their children's education is important in disaster risk management at the household level considering that they are the group that usually prevents their children from going to school to cope with calamities. Additional savings may result in a reduction in the number

of times that children have to stop schooling to help families earn a living. The accumulation of financial asset like savings for children's education helps build the human asset and capital of the household. It will eventually help them manage risks and reduce their vulnerabilities as suggested by the result of the respondent's level of education against their recovery period from disasters.

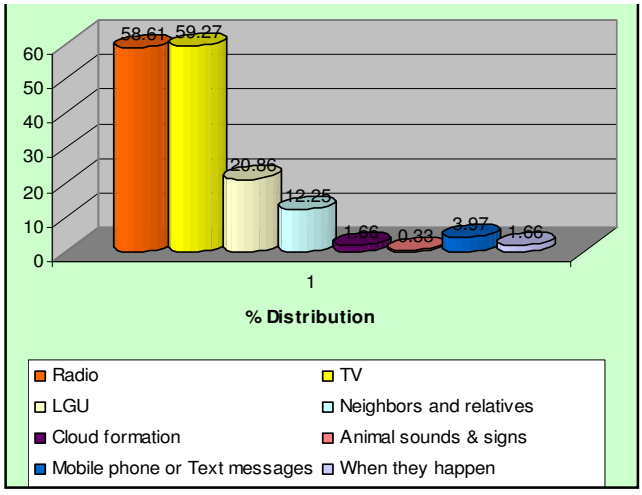
Figure 14. Savings by Occupation Type, Camarines Sur



Importance of social capital. Micro-entrepreneurs or self-employed people take longer to return to their livelihood since they are dependent upon the economic activities of the community. These people are usually engaged in small trading activities, selling of basic goods and commodities i.e. sari-sari stores. When a calamity or disaster strikes in an area, it takes a while before businesses pick up since most of the residents are affected.

1.4. Awareness, Preparedness and Mitigation

Figure 15. Source of Information on Disaster Warnings, Camarines Sur

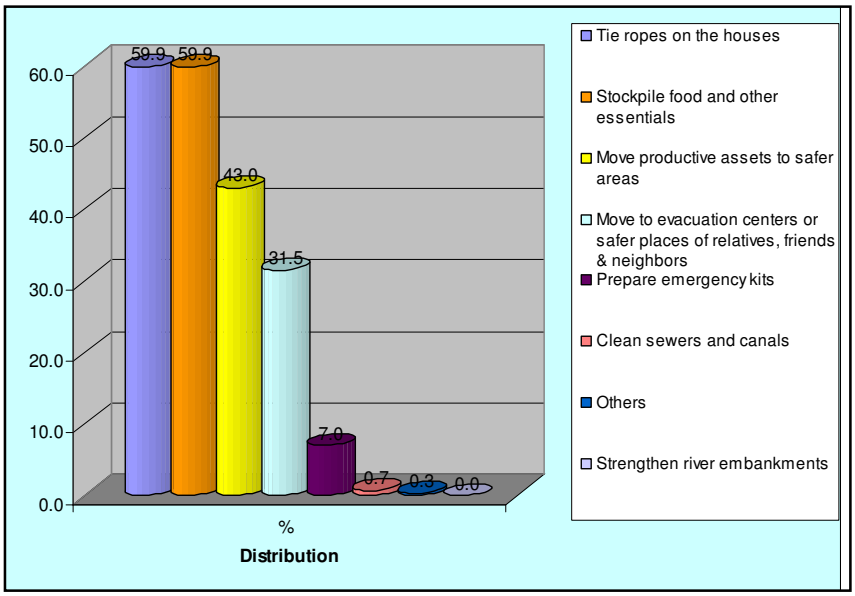


Households in the high to medium risk areas in the province have generally good access to mass media for their information on impending calamities or disasters (Fig. 16). The local government officials, usually at the barangay level, complemented the information by updating and giving warning signals to their constituents. They usually go around the community with loud speakers to remind the residents of safety and precautions needed before a storm arrives. In some areas, non-government organizations donated early warning signals such as flags, bells, and sound system but their use are limited due to costs associated with maintaining the equipment.

In focus group discussions, some areas noted that information from government especially from PAGASA is usually delayed and therefore deemed useless by the community. In response, those with access to the internet have used the facility to get relevant and timely weather forecasts to prepare their people.

At the household level, the families are aware of the preparation that they need to do to cope with the potential calamity or disaster. Fortifying their house, stockpiling of food and other essentials, safekeeping their productive areas, and early evacuation are the mitigating activities that households do to reduce the impact of calamities (Fig. 17). They are however, not involved in more community level activities such as improving river embankments and consider this to be the responsibility of the local government units. In some areas, environmental remediation like reforestation is being done to improve the cover of the mountains. They are getting involved in this because of the felt impact of denuded mountain slopes to their livelihood and families.

Figure 16. Preparedness and Mitigation Activities, Camarines Sur

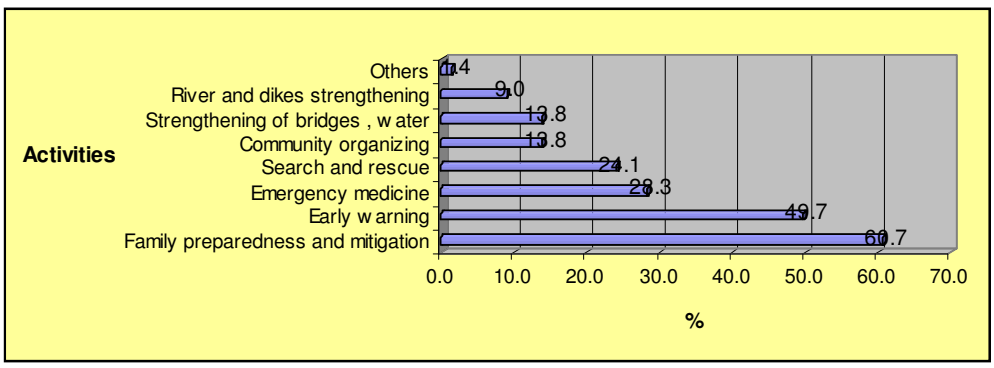


Silted waterways and potential for landslides move the community to action. They further shared that inter-local government cooperation is needed since some of the denuded mountains are quite distant from them but they will eventually be affected since they are within the catchment area of the watershed.

Meso level preparedness and mitigation. Government and non-government agencies have also doing preparedness and mitigation activities to help their constituents or target population. According to the surveyed households, family preparedness, early warning, emergency medicine, search and rescue, human capital and infrastructure enhancements are some of the activities that local officials and NGOs do (Fig. 18). The FGD revealed that transportation is made available to those who want to evacuate before the advent of disaster. However, the surveyed population usually rated the evacuation centers, support services as inadequate to their needs. There are even perceptions that choosing beneficiaries of support after the disaster is very political. Affinity and relationships with known officials is perceived to be the way to receive assistance such as food, healthcare and even livelihood activities. Even the NGOs are not immune to this allegation. Targeting of beneficiaries for support is appeared to be very biased since they do not understand the criteria set by both the government and NGOs.

During focus group discussions, participants were asked if they know the disaster management plan of the barangay. Most often, majority of them does not know of such plans. It is mainly the officials and those transacting with the barangay on a regular basis have knowledge of the existence of certain plan but they also could not elaborate or describe the process. All of them know that the barangay officials give them warning and provide them support for evacuation, and search and rescue operations. The barangay official lamented that their constituents are made aware of the plans but chose to ignore or forget them and only realize its importance during disasters already. There may be a need to revisit the processes and approaches used to communicate information about disaster risk reduction and management.

Figure 17. Prepared/Mitigation Activities Provided by GO/HO, Camarines Sur

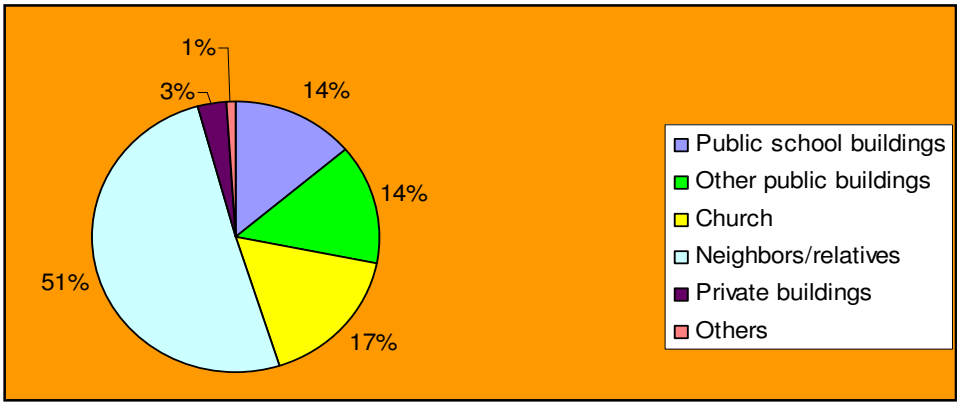


Understanding that their houses are not made of durable materials, the target population mitigates the potential impact of disasters by securing their property. Tying of ropes or moving productive assets to safer areas are being done before the advent of calamities.

While there is no direct relationship between the type of houses of the target population and their ability to recover from disasters, the FGD revealed that they usually reduce the potential damaged to lives and properties by evacuating to friends and neighbor located in higher grounds or those who have at least two story houses. Moreover, 52% of the surveyed respondents preferred to evacuate to houses of neighbors and relatives rather than to public buildings such as school, church, etc. (Fig. 19).

Given that there are very few houses made of sturdier materials, it will put serious pressure at the local government units to provide for more adequate facility for their affected constituents. A casual interview with the barangay officials showed that requests for a bigger, safer, and adequate evacuation centers has been an on-going and big concern. The limited number of families using public infrastructures for evacuation points to the limited capacity of these facilities to adequately support the needs of the affected population. Mobilization of resources from different sources (usually local government or congress representatives) to establish such facility is a top priority for many affected barangays to alleviate the plight of their calamity stricken population. River embankments and other physical infrastructure are constructed to protect the houses of their constituents.

Figure 18. Preferred Evacuation Areas, Camarines Sur



Summary of Findings & Conclusions

This study showed that a number of factors increase the vulnerability and risk of the target population. Foremost of the cause of vulnerability is the source of income of the household. Those dependent on farming, self-employment, wage labor, and fishing are the most vulnerable groups. The income derived from such activity is

marginal and often times unpredictable. Scant financial resources hinder the fast recovery of the households from external shocks and crises like calamities and disasters. They are unable to invest in preventive mechanisms like repair and improvement of houses, healthcare services, sanitation, children's education, and weakens ability to accumulate financial asset through savings. As a consequence, children's welfare and development is affected and sometimes sacrificed in order for the whole family to survive and get through a crisis. Children of vulnerable groups are more prone to stop going to school.

The household composition and size is another contributory factor to a family's vulnerability. Households with large family size and higher number of dependents i.e. children and old age poses a big challenge to their recovery after a disaster. Again, families of farmers, wage laborers, self-employed and fishermen were found to have high dependency ratio and bigger family size.

Level of education of the household head is another factor to their increased susceptibility to crisis and shocks. Majority of the target population have reached the basic education level usually up to high school level. Many of the vulnerable groups are found to be within this educational level hence increases their risks. Temporary migration is resorted to by the vulnerable income groups most particularly wage earners and fisher folks and they are competing in a very tight labor market composed mostly of similar education and skills level. This provides little opportunity for success for most of these households to find alternative income source. Improving the level of skills and knowledge will go a long way to enable vulnerable families to cope with disasters since they will have better work opportunities.

Single-headed households like single parents, widowed, separated and those living-in were determined to be vulnerable. These families need to get additional support for them to cope with calamities or disasters.

Naturally, physical location of the households adds to their risks and vulnerability. Camarines Sur is particularly traversed and exposed to network tributaries and other bodies of water. Risk exposure from flooding is high in many areas and poor families who do not own house or their lot often reside in dangerous areas such as river sides, beach areas or coastlines, and other low-lying marginal areas. This is further compounded by the fact that with their meager income, they will not be able to build strong houses or fortify them to reduce the risk of getting flooded or damaged by floods or strong winds. Relocation is usually a long term solution to families in these areas but it needs significant investment. Usually, they just manage this risk by strengthening their social capital.

Social network is important for the vulnerable groups since they rely on assistance from friends and relatives when evacuation is imminent. Evacuation centers

provided by the government are not adequate including the poor support services i.e. electricity, water and sanitation and food to alleviate the plight of the displaced.

More and more the vulnerable households are realizing the relationships and interconnection of the different factors in their environment that contributes to their risks. Cooperation in reforesting denuded watersheds and request for inter-barangay and town dialogues to address the common hazards like flooding along the Bicol river basin is an example of increasing awareness that their problem is not unique to their community. The problem is shared by many more communities and a form of cooperation or rationalization is needed if they want to mitigate or alleviate the perennial destructive events.

2. Catanduanes

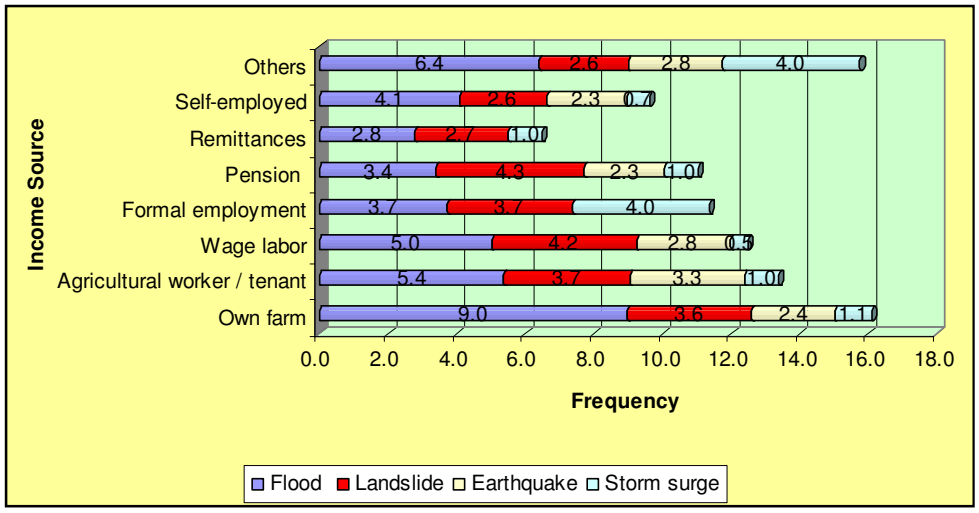
2.1. Household Vulnerabilities and Risks

2.1.1. Natural and Environmental Hazards

Catanduanes is exposed to typhoons due to its location at the eastern seaboard of the country. Strong winds destroy houses and properties while heavy rains, whether associated with typhoons or monsoon, cause floods, storm surges and landslides in some areas in the province especially during the last quarter of the year.

Most of the areas surveyed are located in mountainsides or hillsides and have rivers that make them vulnerable to landslides and floods. There is also a noticeable absence of an efficient drainage system that can mitigate floods. Storm surges have also occurred in the coastal areas that were covered by the survey. In total, 66% of the respondents live by the bodies of water like rivers, lakes and the sea; 33% near mountains and 11% in flood-prone areas. (Other respondents live in areas which are both near the mountains and rivers). The distances to such hazards are less than 100 meters from the houses. Fig. 20 shows the type of natural disasters and frequency experienced by the various occupational groups in Catanduanes during the last three years.

Figure 19. Frequency of Disaster Experienced by Respondents According to Income Source, Catanduanes



At present, no completed hazard and vulnerability maps exist in the areas that can scientifically specify the risks in these areas. This is happening in a province with a poverty incidence of 37% with a population mostly dependent on agriculture, a lower level of education and higher number of children.

2.1.2. Socio-Cultural Demographic Vulnerability

The people of Catanduanes have bigger families with more than 4 children, two of which are below 15 years old and a household member over 60 years old. This household composition reveals that at least 3 members of each household are vulnerable to disasters because of their age. The young and old members of the household will have more physical difficulties in evacuating during typhoons, which is a normal practice in the province (Table 13).

Table 5. Description of the Respondents and Their Households

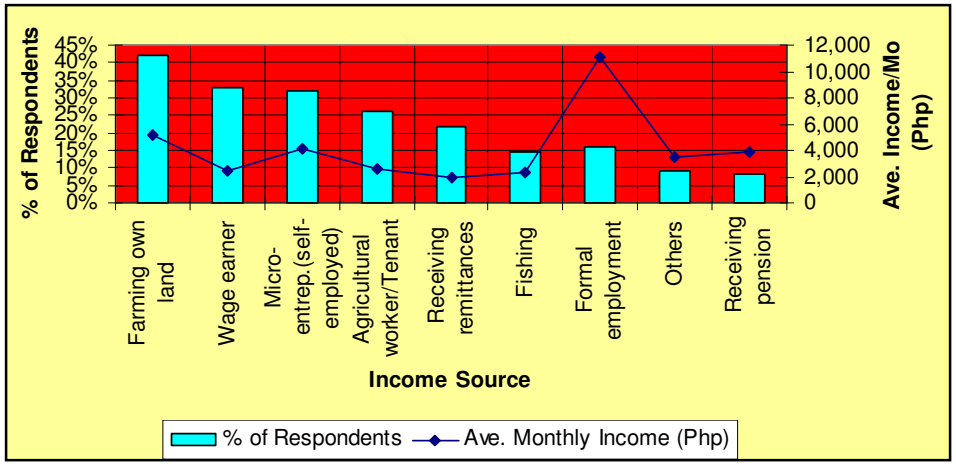
Description	Values
Female (%)	34.11
Civil Status (%)	
f. Single (%)	2.34
g. Married (%)	79.93
h. Widowed (%)	2.68
i. Separated (%)	12.37
j. Live-in (%)	2.66
Average Age (in years)	50
Finished Elementary School (%)	0.34
Had some Elementary Schooling (%)	22.15
Finished High School (%)	17.45
Had Some High School (%)	13.76
Finished College (%)	20.13
Reached College Level (%)	9.40

No Schooling (%)	13.76
Average Household size	**5.1**
Average Number of Children	4.2
Below 15 years old	1.9
Above 60 years old	0.64
Average Number of Children in School	1.5
Average Number of differently-abled	1.05

2.1.3. Economic Vulnerability

Economically, the people in Catanduanes do not have enough financial resources that will enable them to cope with natural disasters. The major source of income in the province is agriculture-based, which are basically farming and fishing. Some of them augment their family income by engaging in microenterprises like sari-sari stores and cottage industries like handicrafts. With abaca and coconut as long-term crops, farmers also grow rice, corn, root crops and vegetables depending on the season. Majority of the households are either owner-cultivator, agricultural worker/tenant or a combination thereof while some (15%) are into fishing. These agriculture-dependent households earn on the average less than Php 5,000 a month (Fig 21). Only a few (16%) are formally employed earning about Php 11,000 which is more than double the farmers and fishermen. It appears that only the formally employed are above the province-wide average annual family income of Php 105,645 (or Php 8,804 per month) as computed by the NSO. Comparing their incomes with the latest poverty threshold of Php 81,924 per annum for a family of six (or Php 6,827 per month), only the formally employed have incomes that are above the poverty threshold.

Figure 21. Average Monthly Income According to Top Income Sources, Catanduanes



Notes: a) Main occupation is the main economic activity where income is derived. b) "Others" may include seasonal off-farm wage work, etc. b) The total will not be 100% since the respondents can have multiple sources of income.

In terms of educational attainment, those who are poorer have lesser number of years of formal education as shown in Table 14.

Table 14. Occupation and educational attainment in Catanduanes (in Percent)

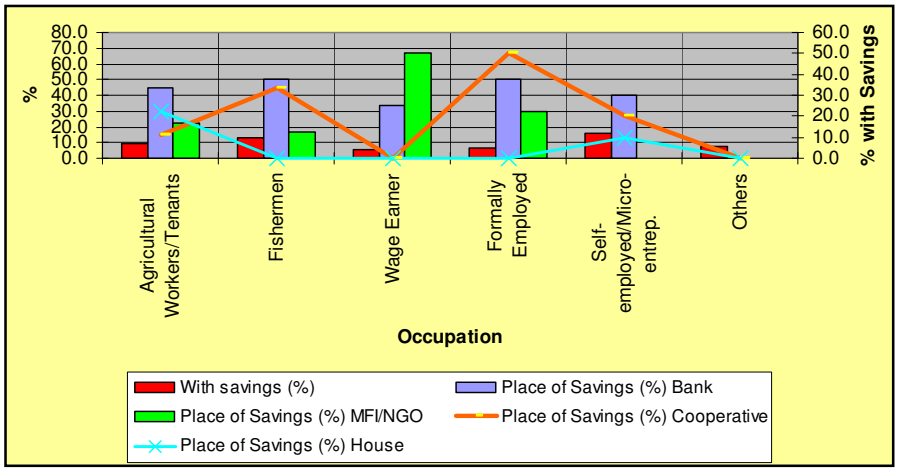
Educational Attainment	Source of Income						
	Landed Farmer	Tenant/ Agricultural Workers	Fisher -men	Wage Earner	Formally Employed	Self-employed/ Micro-entrepreneur	Others
No schooling	0.8	0	0	0	0	0	0
Elementary level	31.2	24.36	15.91	14.29	2.08	18.75	11.54
Elementary graduate	17.8	26.92	25	26.53	4.17	12.5	15.38
High school level	12.8	15.38	15.91	17.35	6.25	15.63	7.69
High school graduate	24.00	17.95	20.45	21.43	8.33	23.96	19.23
College level	5.60	8.70	6.82	10.20	16.67	11.46	26.92
College graduate	6.40	1.28	6.82	4.08	62.50	16.67	3.85
Vocational	1.60	5.13	9.09	6.12	0	1.04	15.38
Post graduate	0	0	0	0	0	0	0

a) Wage earners are carpenters, plumbers, etc. who are paid on a per job basis.
b) Formally employed are those who are working with the government or private sector on a permanent basis with benefits in accordance with the law.

Majority of those formally employed (62.5%) are college graduates. They are the highest earners by occupational category.

There is simply not enough resource for households to engage in physical mitigation activities. A large percentage of the respondents' expenditures (60%) go to food items and 18% for the educational needs of their children with the rest spent on other needs like power, water and communication. It is not surprising, therefore, that savings among the household is not common (Fig 22). Only the microentrepreneurs, as an economic group, have the highest savings in terms of percentages (16%). Ideally, savings are the most accessible source of cash to cushion the adverse impacts of shocks like natural disasters.

Figure 20. Savings by Occupation Type, Catanduanes



Wage earners are carpenters, plumbers, etc. who are paid on a per job basis.

a) Formally employed are those who are working with the government or private sector on a permanent basis with benefits in accordance with the law.

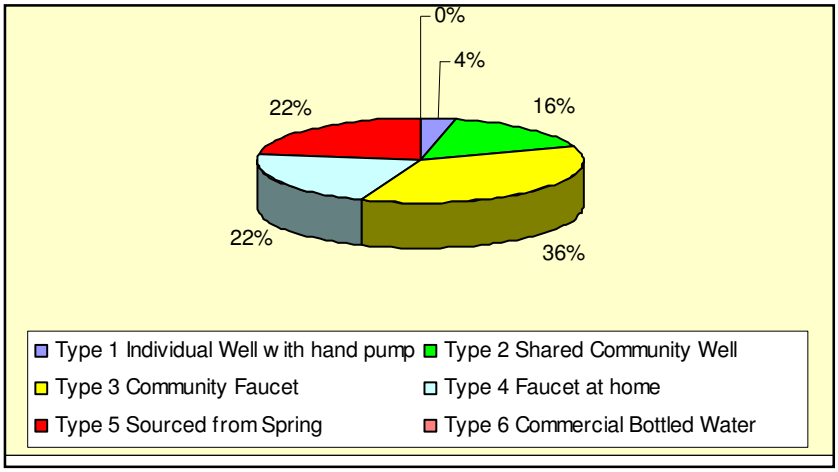
Disasters bring also diseases. The common diseases in the province are influenza and diarrhea as experienced by 60% of those surveyed across various occupations. By occupational groups, the following table shows the common diseases (Table 15).

Table 15. Common Diseases by Source of income in Catanduanes

Common Diseases	Main Occupation						
	Landed Farmers	Tenants/ Agricultural Workers	Fisher-men	Wage Earner	Formally Employed	Self-employed/ Micro-entrepreneur	Others
Influenza	30.16	50	18.18	46..46	31.25	44.79	61.54
Diarrhea	23.02	25.64	15.91	28.28	33.33	23.96	30.77
Respiratory Diseases	6.35	6.41	0	6.06	4.17	7.29	0
Heart Disease/ Hyper-tension	4.76	0	0	0	2.08	5.21	0
Wounds/ Accidents	7.14	7.69	6.82	8.08	6.25	10.42	15.38
Malaria	0	1.28	0	1.01	0	0	0
Others	1.59	20.51	2.27	19.19	10.42	14.58	3.85

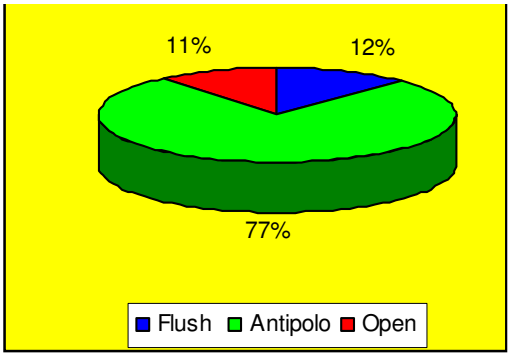
The cause and spread of the said diseases are related to the supply of safe drinking water and access to sanitary toilet facilities. The following table shows the availability of potable water supply and sanitary toilet facilities in the households.

Figure 21. % Distribution on Access to Potable Water Supply, Catanduanes



A large proportion (74%) of the main sources of water are either shared community well, communal faucet or sourced from a spring (Fig. 23). Floods and landslides can easily contaminate or even destroy these sources of potable water which can further exacerbate the occurrence of these diseases. On the other hand, most of the toilets (77%) are antipolo type which is generally dug in the ground connected to a septic tank (Fig 24). This type of toilet is also dependent on water for flushing.

Figure 22. % Distribution of Respondents by Toilet Type, Catanduanes



Any damage in the source of water supply will surely aggravate the health conditions in the community.

One of the possible instruments that can mitigate the impacts of disasters is the insurance coverage of people in disaster-prone provinces like Catanduanes. Unfortunately only a few have insurance coverage for health, life, properties and /or their crops. Most of those who are covered by health insurance are those who are formally employed. The farmers, fishermen and wage earners who are the poorer segment of the community will spend more for their medical needs should they get sick or injured during disasters. On the other hand, during the FGDs, very few people have knowledge on the terms and insurable crops under the Philippines Crop Insurance Corporation (PCIC). Without insurance, the farmers will shoulder all the investment losses of their farms due to strong winds, floods and landslides.

Furthermore, since the landless agricultural workers are dependent on the farmlands, they also incur opportunity losses from potential employment when these farmlands are damaged.

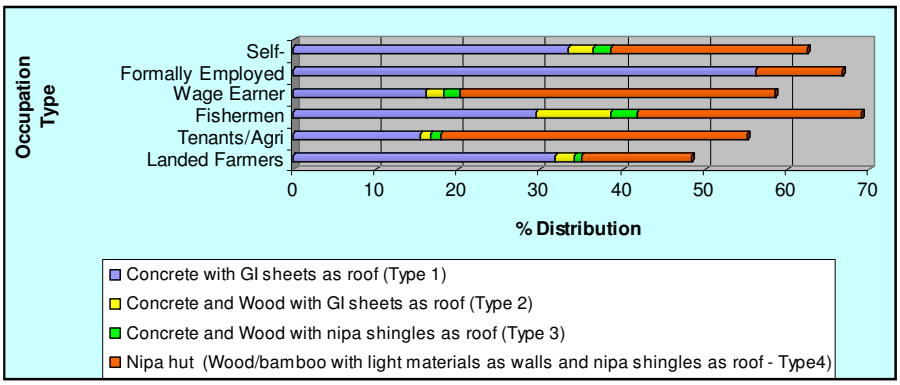
Likewise, the people in the province have few productive and household appliances as assets. Only a few have mechanized farm equipment and vehicles although the focus group discussions revealed that most of them have radio in their household. Possession of assets is important because they can be disposed of to fill the financial gaps in times of shocks or emergencies. Without assets, the people have limited means to cope with disasters. It is also noteworthy that the value of their livestock and poultry which are easily convertible to food or cash (although vulnerable to disasters too) are relatively small indicating that these are backyard production and not on commercial scale. As of July 2008, according to the data of the Bureau of Agricultural Statistics as reported by NSCB, there were only 9,148 carabaos, 2,713 heads of cattle, 306,682 chicken, 14,262 ducks and 1,584 goats in the entire province.

The economic vulnerability is exacerbated by the type of crops that the farmers cultivate and grow. Rice or palay planting season is usually associated with the typhoon season being a crop that needs water supply or irrigation. Since rainy days occur during the typhoon season, all of the rice farmers in the entire province are economically vulnerable. On the other hand, coconut and abaca farmers are more vulnerable from super typhoons since such typhoons can totally damage or wipe out these permanent crops. According to the farmers, it will take about 3 years to replant and cultivate abaca and coconut before harvest can start again. Compared to rice and corn farmers that can replant and harvest in a much shorter time of about 4 months, it will take more time before coconut and abaca farmers they can earn again. These perennial crop growers may need more assistance until they can have their economic recovery.

2.1.4. Physical Vulnerability

With the meager income and higher number of dependents per household, it is not surprising that a larger proportion of the houses of those who earn less are made of wood and bamboos which are not strong enough to withstand the strong winds of a typhoon, flooding and storm surges. Fig 25 shows the types of housing by occupation.

Figure 23. Type of Housing Materials by Occupation, Catanduanes



Across the types of houses, the roof is the main part which affects the ability of the respondents to return to their livelihood and normal life after a disaster. Majority of the respondents (49%) with iron sheet as roofs of their houses take less than 3 days to return to work as shown in Table 16.

Table 6. Type of roof and time needed before able to go back to livelihood after a disaster (%)

Type of Roof	Number of Days				
	<3	4 to 7	8 to 15	16 to 30	>30
Nipa	33.78	36.49	9.46	4.05	14.86
Iron sheet	49.38	35.80	2.47	3.09	9.26
Mixed	29.31	25.86	8.62	6.90	29.31

Consequently, a lesser proportion (22.8%) of those whose houses are roofed with iron sheets takes more than 60 days to have a normal life again after a disaster as presented in Table 17.

Table 7. Type of roof and Time needed before able to go back to normal life after a disaster (%)

Type of Roof	Number of Days					
	< 3	4 to 7	8 to 15	16 to 30	30 to 60	> 60
Nipa	14.86	17.57	1.35	4.05	17.57	43.24
Iron sheet	24.69	23.46	9.88	6.17	12.96	22.84
Mixed	22.41	3.45	3.45	10.34	12.07	48.28

Strengthening of dwellings may not be a priority family expenditure considering that a large percentage of the household expenses are spent on food and educational needs of their children. This means that those who have less will suffer more as far as rebuilding their normal lives is concerned. As gathered from the

FGDs, the first priority after a disaster is ensuring the safety of the family members followed by activities related to the rebuilding of damaged dwellings. Since the poorer members of the community have houses made of light materials, they may be the ones who take more time to go back to their economic activities and eventually to their normal pre-disaster lives. They spend more time for house repairs after a disaster compared to the higher income segment of the community. The FGDs further revealed that fishermen whose boats were not damaged, can return immediately to fishing once the seas have calmed down. However, for those whose boats were destroyed, it can take more than 60 days before they can return to their main source of income. On the other hand, it will take more time for landed farmers to replant with their need for new capitalization. The majority (60%) of those who are formally employed (the highest in the income groupings), those receiving pensions (58%) and remittances (54%) take 3 days or less to return to their occupation compared to a larger proportion of tenants, fishermen and wage earners as shown Table 18.

Table 8. Source of income and time needed before able to go back to livelihood after a disaster

Source of income	Number of Days				
	< 3	4 to 7	8 to 15	16 to 30	> 30
Own farm	49.21	28.57	3.17	0.00	19.05
Farm tenant	29.49	46.15	10.26	5.13	8.97
Wage labor	39.39	39.39	10.10	6.06	5.05
Formal employment	60.42	20.83	4.17	0.00	14.58
Pension	58.33	25.00	0.00	4.17	12.50
Remittances	53.85	29.23	1.54	3.08	10.77
Micro-enterprise/ self-employed	31.58	34.74	10.53	3.16	18.95
Fisherman	39.53	37.21	0.00	4.65	18.60
Others	23.08	53.85	3.85	11.54	7.69

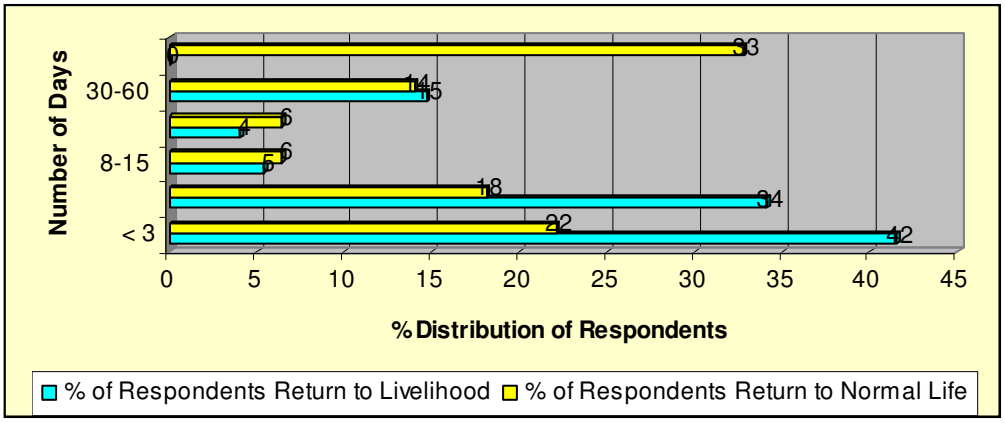
However, it takes longer for the people to return to normalcy. They may have gone back to their sources of livelihood but it takes longer for them to consider their lives normal again. Per occupational group, a large proportion of wage laborers and tenant farmers take more than 60 days before normalcy comes back to their lives while the other groups take more than 30 days. This can be attributed to the fact that these groups are workers who do not have control over the means of production. Table 19 shows the length of time before the respondents, by occupational groups, consider their lives as normal again.

Table 19. Source of income and time needed before able to go back to normal life after a disaster (%)

Source of income	Number of Days					
	< 3	4 to 7	8 to 15	16 to 30	30 to 60	> 60
Own farm	23.1	13.49	10.32	3.97	14.29	34.13
Farm tenant	8.97	29.49	1.28	5.13	10.26	44.87
Wage labor	17.17	17.17	4.04	3.03	9.09	49.49
Formal employment	29.17	8.33	8.33	12.50	12.50	29.17
Pension	33.33	8.33	12.50	12.50	8.33	25.00
Remittances	32.31	26.15	0.00	3.08	1.54	35.38
Micro-enterprise/ self-employed	20.00	17.89	2.11	7.37	15.79	35.79
Fisherman	11.63	34.88	2.33	2.33	16.28	32.56
Others	0.00	18.52	10.53	11.11	13.51	7.29

Overall, across respondents, the majority (76%) in Catanduanes takes a week or less to return to their livelihood while 33% takes more than 60 days before they consider themselves back to their normal lives after a disaster as shown below (Fig. 26).

Figure 24. Duration to Return to Livelihood & Normalcy After Disaster, Catanduanes



With regard to public schools and health centers, majority of the people (more than 70%) consider them as structurally good or average.

As far as the road system is concerned, the concrete circumferential road network in Catanduanes is about to be completed. However, in far-flung rural areas where most of the vulnerable are located, the road networks are still the rough and muddy types while others are paved with gravel. There is still a greater risk in terms of providing emergency assistance to these poor areas – especially inland barangays - which can easily be isolated during floods and landslides.

2.2. Impact

The people consider natural disasters as 'calamidad'- the bearer of suffering of all forms, the initiator of evacuation and the provider of relief goods. Natural disasters are mostly typhoons with strong winds and rain, floods and landslides which usually come with the typhoons. These "calamidad" have caused them the destruction of their houses, crops, livestock and have isolated their areas from their place of work and sources of basic commodities like rice and other food stuffs. In all areas, respondents consider themselves as victims every time there is a disaster, although in varying degrees. For instance, although there are victims who have not lost anything in terms of assets, the isolation of the place did not exempt their household from the adverse effects of food scarcity, high inflation, disruption of social services and mobility problems. Even civil servants who have fixed income will be constrained to report to work if a landslide isolates the residence from the place of work.

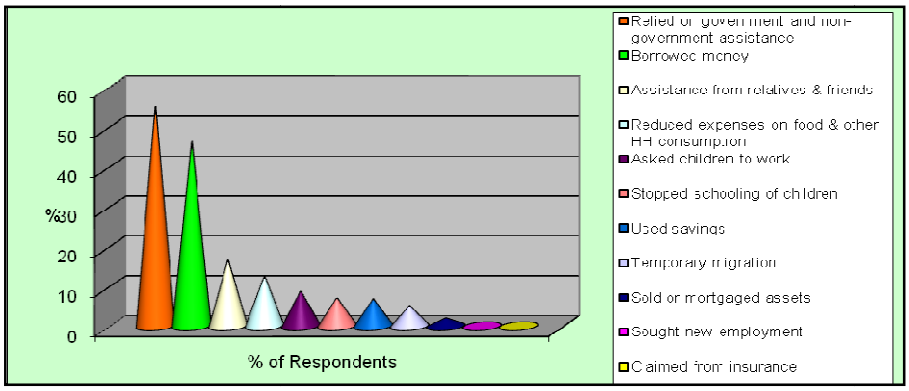
Loss of income or their sources of livelihood was ranked as the main adverse impact of disasters followed by lesser food supply, higher prices and social services disruption. In terms of impacts across main source of income, abaca farmers may have higher incomes (especially during the days of higher prices) than fishermen but the impacts of disasters may have long-term adverse impacts on the abaca farmers. An abaca plantation wiped-out by strong winds or floods will take between 2 to 3 years before they can be stripped of their fibers again. On the other hand, fishermen can go back to fishing 2 or 3 days after the typhoon once the seas calm down (provided of course that they have secured their boats before the typhoon). Moreover, fishermen can engage in transportation by boat once the roads are blocked by landslides.

During the FGDs, the respondents ranked those who are most vulnerable to disasters as: a) children; b) elderly; c) the differently-abled; d) pregnant women; and e) the elderly. Moreover, they have identified the following activities in their areas as aggravating circumstances to the effects of disasters: a) deforestation/illegal logging; b) quarrying; c) siltation of rivers; and d) building of a dam.

2.3. Coping Mechanisms

As far as coping mechanisms are concerned, an overwhelming majority of disaster victims relied on government and non-government assistances (55%) which are mostly food and water supply and on borrowing money (46%). Fig. 27 enumerates the various coping mechanisms of the people.

Figure 27. Coping Mechanisms of Respondents, Catanduanes



Additional borrowings must have increased the indebtedness of the people after a disaster. For instance, as relayed by the FGD participants in San Miguel, abaca farmers procure in advance their basic household needs/commodities from the store of the abaca trader. The payments for these goods are deducted once they sell their abaca fibers to the same trader. In effect, many abaca farmers are living on credit from the trader and once a disaster ruin their crops or that resulted in the production of low quality fibers, their indebtedness to the traders will dramatically increase. Similar arrangements, to a certain degree, exist with rice farmers.

The other notable coping mechanisms are the reduction of expenditures on food, stopping the schooling of their children and asking their children to work. All these measures are obviously aimed at both reducing expenses and to augment income. Almost all participants in the FGDs agreed that after a large-scale disaster, sending children to college is quite impossible. Elementary and high school expenses are bearable. However, reduction of food consumption during a time where health centers are destroyed, may severely impact on the more vulnerable members of the household like pregnant women, lactating mothers, infants and children including the elderly. Stopping the schooling of children and asking them to work may increase the phenomenon of child labor aside from the fact that this situation will delay the education of children and their participation in the formal labor market.

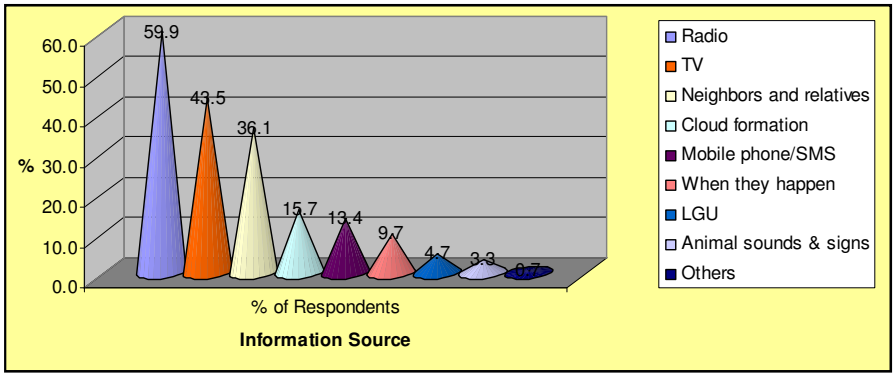
The FGDs, however, revealed that after a disaster, almost all of the people immediately go back to their vegetable farms to supplement their food requirements. (This vegetable farm is locally called "lati" where a mixture of various types of vegetable, legumes, root crops and other short-gestating food crops are planted).

2.4. Awareness, Preparedness and Mitigation

Awareness. On a positive note, the people in Catanduanes are aware of natural disasters and their consequences in their lives. Although some of them criticize the inaccuracies sometimes of warnings provided, majority of them appreciate these

warnings provided by government agencies. The main source of information (60%) of impending typhoons and monsoon rains are radios and/or televisions. Fig. 28below shows the sources of warning information.

Figure 25. Information Source on Disaster Warnings, Catanduanes

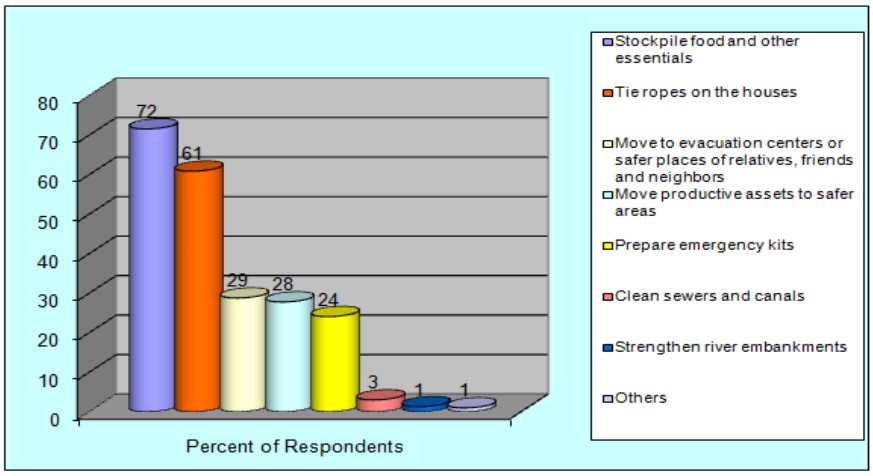


The above findings were confirmed during FGDs. The main source of disaster warnings is the radio. The 2 FM and 2 AM radio stations in Virac and several radio stations in Legaspi City can reach their areas. Television, text messages and word of mouth are also sources of their information. The participants find the warning systems of the government sufficient enough to prepare for disasters although they feel that the forecasts are not accurate all the time.

In terms of scientific information or knowledge of hazards in the areas, there has been information of such kind shared with the people. Aside from past occurrences, they have no sure way of knowing which areas are prone to landslides and floods. For instance, during typhoon Loleng in 1998, people in landslide prone areas in San Miguel moved to a presumed safer place but the landslide occurred there instead killing several people. The people relied on previous events in terms of determining which areas are flood- and landslide-prone.

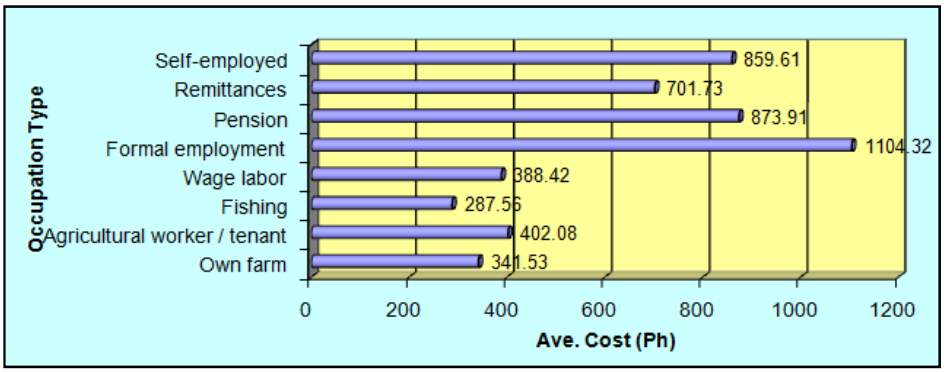
Most of the people of the province have seemingly standard practices as far as preparedness is concerned. They tie rope on their houses (61%) when typhoons are coming; stockpile food and other essentials (72%); move to safer places (29%), move assets to safer grounds (28%) and prepare emergency kits (24%)(Fig. 29). They obviously know what items should be packed and brought with them when they evacuate to safer places. It is also noteworthy that households with stronger houses are willing to accommodate neighbors who use their houses as evacuation areas during disasters. Fig. 29 presents and enumerates the preparedness activities of the people.

Figure 29. Preparedness & Mitigation Activities, Catanduanes



Mitigation, however, entails costs. As expected those who have better incomes can afford more mitigation as expressed by their expenses, as shown in Fig 30.

Figure 30. Average Cost of Mitigation According to Occupation, Catanduanes

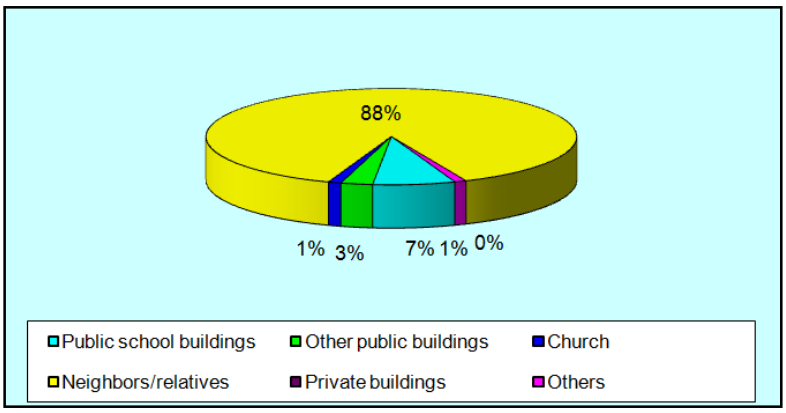


Although public buildings are considered structurally good and average, the number one choice of the people to shelter from disasters are the stronger houses of their neighbors or relatives as shown in Table 24. It appears that this practice has become a tradition with the people. Based on the FGDs, the people find it more convenient to seek shelter in their neighbors' houses which has some cooking facilities, among others. On the other hand, those with stronger dwellings do not refuse any family who would ask shelter in their houses.

Public school buildings were not favored as evacuation centers because they feel that they are more vulnerable in these buildings than their neighbors' houses (Fig. 31). Besides, the houses of their neighbors have cooking facilities, among others, which they can use. During evacuation period, women and children are the first to go. The men stay behind to safeguard their houses and properties. They evacuate

at the height of the typhoon. This is a very common practice in all of the FGD areas.

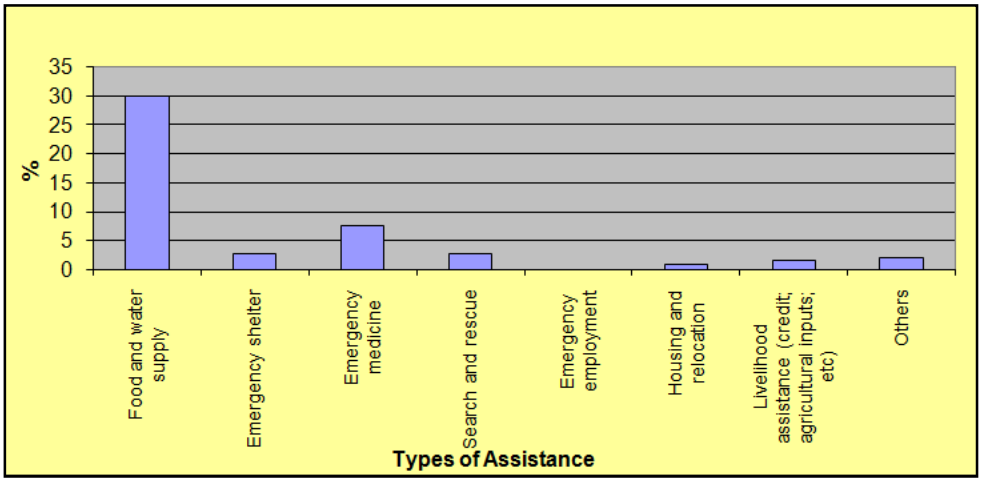
Figure 31. Respondent's Preferred Evacuation Areas, Catanduanes



In terms of preparedness, the practice is confined at the family/household level. This involves basically packing the basic needs – food, clothing, cooking utensils, radios, flashlights, etc - which they bring along with them during evacuation. Those who have valuable properties like boats, livestocks, rice, abaca fiber, etc., secure these assets prior to evacuation. Houses are tied with ropes, boats and livestocks are put into higher safer grounds. After disasters, relief goods come from both the government and other non-government organizations. The length of time before relief assistance arrives depends on the accessibility of their respective areas. If the roads are closed by landslides and the seas are still rough after a typhoon, relief assistance can take days before it reaches the disaster victims.

Government agencies - both local and national - and other humanitarian organizations have provided emergency assistance in the form of relief and rehabilitation assistance (Fig. 32). It was, however, revealed during the FGDs that the timely arrival of the assistance depends on the accessibility of their areas; the attention that media has given to the conditions of disaster victims; and to some extent, the political affiliation of the people to the local official. Fig. 32 shows the various types of assistance extended to the people.

Figure 26. Post-disaster Assistance Provided, Catanduanes



Infrastructure for mitigation purposes - like building dikes, building new bridges, plastering the sides of landslide-prone areas - are too expensive that will require national government funding due to the meager resources of the municipal and provincial governments. Planning for disaster risk reduction, therefore, may need some serious cost-benefit analysis which the local governments may need some expertise on.

Moreover, FGD participants find that government services are inadequate in terms of providing physical infrastructure for mitigation purposes like dikes and others. It is perceived that the provision of relief goods can be further improved to enable the timely delivery to disaster areas. Some of the participants have expressed that distribution of relief assistance from the government are sometimes influenced by the political affiliation of the households or the community itself. More assistance is provided into their communities if a massive devastation gets an extensive media coverage. The participants do not know of any deliberate government efforts to mitigate the impacts of disasters. No plans related to DRR exists and neither the participants have plans of doing any preparedness and mitigation activities on a community level. Nevertheless, they are all aware of the reconstruction efforts of the government to clear the landslide areas, repair damaged roads and bridges, electric power lines and other essential infrastructure.

In all of the FGD areas, there were no trainings related to disaster risk reduction (DRR) and no concrete plans exist to prepare for or mitigate disasters. All of the participants in the FGDs expressed the need for a training in DRR but in their opinion, it will be more effective if such training will be initiated by an 'outsider' to be more effective.

Summary of Findings & Conclusion

The following are important findings on the vulnerabilities and awareness of the people of Catanduanes.

- Poverty exacerbates the vulnerability of the people. Those with lower incomes cannot afford to spend on mitigation and/or improve the quality of their housing to shelter them from disasters. Incomes and types of housing are major determinants of the time it takes for these people to return to their livelihoods and normal lives. Related to this, those who belong to the poorest groups have lower educational levels which will make it difficult for them to compete in the labor market should they decide to seek alternative employment.

- Although all farmers are vulnerable, the type of crops they cultivate carries different levels of risks. Rice farmers can replant within months while coconut and abaca farmers will take about 3 years to replant and harvest again.

- Since the dependency ratio is relatively huge among families, the age factor contributes highly to vulnerabilities as the younger and older members of the family have more physical difficulties in evacuating during typhoons.

- Savings among households are not common and the people possess few assets. Savings and assets are sources of quick cash cushion the impacts of disasters. Consequently, it is not unexpected that an overwhelming majority of disaster victims relied on government and non-government assistances and on borrowing money.

- Very few have insurance coverage whether for life insurance, health, crops or property insurance. The absence of insurance coverage will make the poor bear most of the financial and other adverse impacts of disasters if no external assistance will be provided. The absence of insurance, savings and assets results to increasing indebtedness of the poor after a disaster.

- Coping mechanisms like the reduction of expenditures on food, making children quit schooling and asking them to work during a time when influenza and diarrhea are prevalent and health centers may be destroyed, can severely impact on pregnant women and lactating mothers, infants and children including the elderly.

- The people in Catanduanes are aware of natural disasters and warnings are provided mainly through radios and/or televisions. They also have standard preparedness practices like tying of ropes on their house when typhoons are coming and stockpiling of food and other essentials.

- Although public buildings are considered structurally good or average, the people prefer to seek shelter from disasters in the stronger houses of their neighbors or relatives. On the other hand, those with stronger dwellings do not refuse any family who would seek shelter in their houses during disasters.

It appears that this has been a part of their community mutual assistance during disasters.

- Most assistance come in the in the form of post-disaster emergency relief and rehabilitation from government agencies and other humanitarian organizations. Most of the respondents have no knowledge or have not participated in any concrete preparedness and mitigation programs and projects.

Part 2. Vulnerability and Risk Assessment of ACF Covered Barangays

2.1. Barangay 1, Poblacion, Garchitorena, Camarines Sur

Barangay 1, the survey site, is a disaster-prone barangay in the Poblacion of Garchitorena which is a recipient of assistance from ACF. According to the survey, for the past five years, the people of Barangay 1 experienced typhoons (99%), floods (70%), droughts (75%), earthquakes (40%) and storm surges (96%). No lives were lost with only about 3 injured from typhoons.

2.1.1. Socioeconomic vulnerability

The people of Barangay 1 have, on the average, bigger families with about five children, two of which are below 15 years old and more than one (average of 1.4) member over 60 years old and more than one (average of 1.1) are differently-abled. This household composition reveals that at least 4 members of each household are vulnerable to disasters because of their age and physical well-being. By occupational groups, there are no significant differences in the composition of family members. Fishermen, farmers, wage earners and others have more than five family members. Table 20 describes the respondents in the survey site.

Table 20. Demographic Characteristics Respondents and Their Households

Description	Value
Female (%)	71.00
Civil Status (%)	
• Single (%)	0
• Married (%)	89.00
• Widowed (%)	6.00
• Separated (%)	1.00
• Live-in (%)	4.00
Average Age (in years)	44.89
Finished Elementary School (%)	27.00
Had some Elementary Schooling (%)	20.00
Finished High School (%)	18.00
Had Some High School (%)	20.00
Finished College (%)	4.00

Reached College Level (%)	8.00
No Schooling (%)	1.00
Average Household size	5.46
Average Number of Children	4.88
• Male	2.20
• Female	2.17
Average number of household member below 15 years old	2.07
Average number of household member above 60 years old	1.40
Average number of children in school	2.65
Average number of household member who is/are differently-abled	1.10

The education level of most of the people in Barangay 1 ranges from elementary to high school graduate. The majority of those formally employed has reached high school (26.67%) or has graduated from high school (20%) and they are the highest earners by occupational category. Those who are poorer – the fishermen (57%) and farmers (44%) - have lesser years of formal education.

The sources of income and livelihood for most of the people in Barangay 1 are open sea fishing (45%), microenterprises (18%), agricultural workers (16%), landowner-farmers (6%) while the rest are wage laborers or formally employed. Those formally employed are the highest earners at about Php 4,000 a month while farmers-landowners have an average of Php 3,700 a month and the highest percentage in the occupation groups – the fishermen – have only Php 1,565 a month. On the average, people in Barangay 1 earn less than Php 3,000 a month.

With regard to expenditures, a large percentage of the respondents' expenses (53.86%) go to food items and for the educational needs (18.20%) of their children, with the rest spent on other needs like power, water and communication. In terms of physical assets, there is not much to that belongs to individual families. About 70% of the respondents have farmlands with an accumulated value of Php 2.78 million; 15% with livestock valued at Php 0.6 million; 7% with household appliances valued at Php 0.3 million; and 3.5% with boats at Php 0.13 million. (The said values are the accumulated amounts of each type of asset in the whole of Barangay 1).

As far as saving are concerned, only 19% of the respondents have savings. Among the highest percentage of savers, those receiving remittance (25%), the wage laborers (24%) and those formally employed (20%) top the list. Almost 90% of the savers have their savings at home. On the other hand, the respondents all have health insurance coverage.

For health and sanitation, the water supply in 49.5% of the households in the survey area comes from community wells, 21% have faucets at home, 15% from

individual wells, 9% from community faucet and the rest (5%) from commercial source. On the other hand, most of the households have toilets - 83% with flush and 4% with the antipolo type – a large proportion of the households (13%) are still lacking toilet facilities. In terms of diseases, almost all respondents have household members who had experienced influenza, diarrhea and respiratory diseases.

2.1.2. Physical Vulnerability

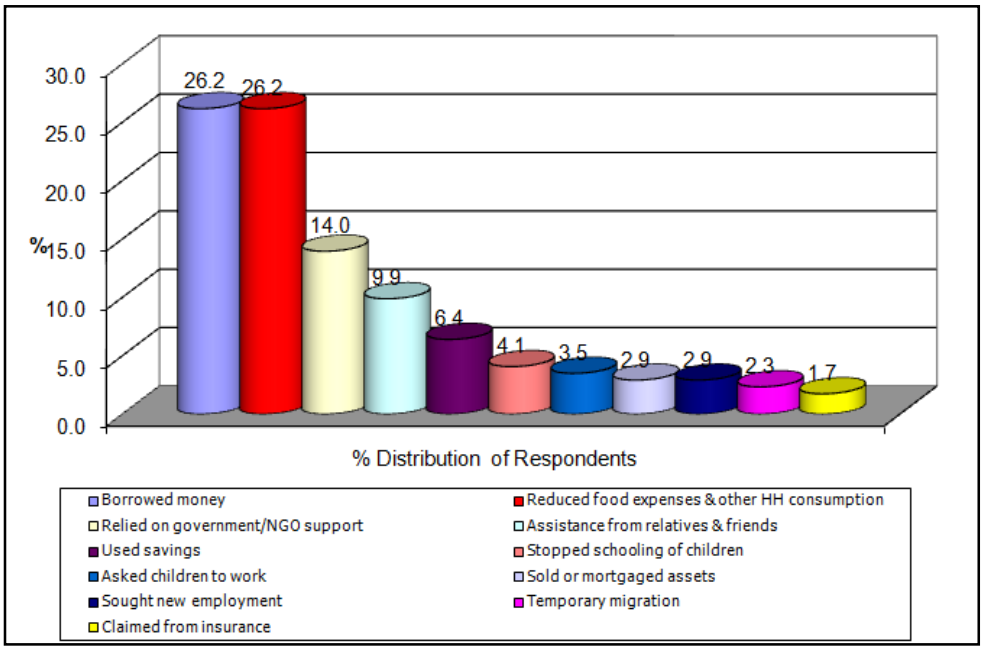
A larger proportion of the houses of those who earn less are made of wood and bamboo, which are not strong enough to withstand the strong winds of typhoons, flooding and storm surges. Most notable are the more than 90% of fishermen, the poorest of the group, whose dwellings are made of nipa with thatched roof and light materials for the walls. In comparison, the majority of the formally employed is relatively well-off and have better houses with iron sheets as roofing and mixed concrete and wood for the walls. Overall, 47% of the respondents assessed their houses to be poor or in need of repairs compared to the 18% who believe that their dwellings are in good condition. Public infrastructure is rated by the majority (more than 80%) of the respondents as either good or average for the elementary and high schools, while 89% of the roads are asphalt and bridges are made of concrete.

In effect, the socioeconomic conditions and topographic location Barangay 1 of Poblacion, Garchitorena increase the vulnerable to disasters of the residents. Open sea fishing is very dependent on the weather. With lower incomes and few resources, their capacities to physically mitigate the impacts of disasters are limited. Their houses are not totally structurally safe to withstand strong winds and they have relatively more children to tend to during disasters.

2.1.3. Coping mechanisms

As far as coping mechanisms are concerned, most disaster victims borrowed money (26%), reduced their expenses on food (26%) and relied on government and non-government assistance (14%). A few (10%) asked assistance from friends and relatives and only 6% used their savings. A small number respond by stopping their children's schooling, migrating and seeking new employment. Fig. 33 shows the coping mechanisms of the respondents.

Figure 33. Coping Mechanisms of Respondents, Bgy.1, Garchitorena, Camarines Sur



2.1.4. Returning to livelihood and normalcy after a disaster

No matter which coping mechanisms are employed, they do not significantly affect the time it takes for the residents to return to their livelihood, which is about a week or less. About half return to work in three days or less. However, the majority of most vulnerable – those who migrated, those who stopped the schooling of their children and those who sought new employment – take four to seven days to return to work. The important factors in returning to work and normalcy are the type of housing materials they have, especially the roofing. A large proportion of those with iron sheets (68%) for roofing can go back to their work within three days after a disaster, compared to only 44% of those with thatched (nipa) roof and 57% of those with mixed materials for their roof. On the other hand, those with house with concrete walls (52%) and mixed materials (61%) can return to work within three days compared to 45% of those with wooden walls. There is no significant relationship between the number of children or household members and the time it takes to return to livelihood activities. Most of the respondents can return to work in a week or less.

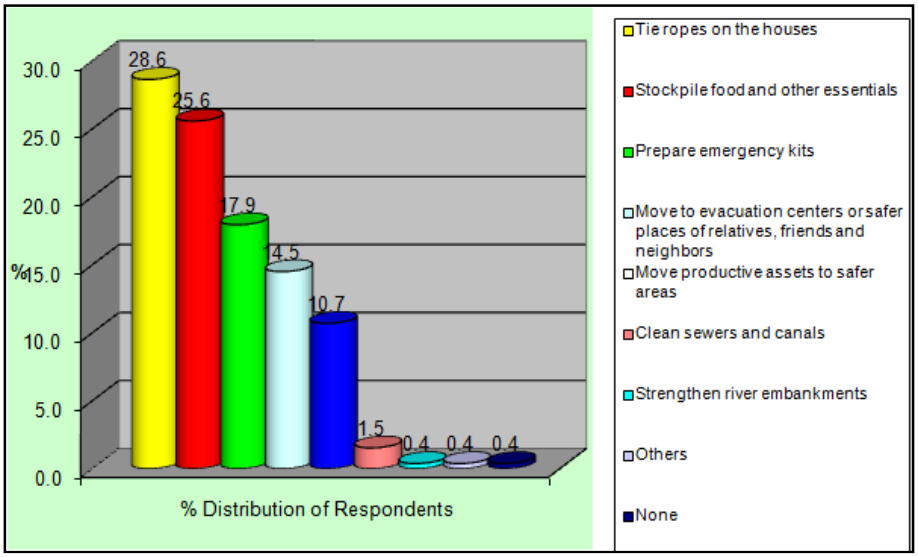
2.1.5. Awareness and preparedness

The respondents in Garchitorena are aware of disasters. The FGD revealed that disasters are synonymous with calamity, hunger, illnesses, poverty and damages. They plan to put up an evacuation center and the establishment of a barangay disaster operation center is on-going. Their main sources of warnings for disasters are their neighbors (24%); television (22%); local government officials (21%);

commercial radios (18); and mobile phone text messages (12%). It is notable here that the barangay disaster coordinating council (BDCC) is active and local barangay officials announce typhoon warnings to the residents and assist in evacuation activities including the preparation of evacuation centers. In fact, a substantial proportion (47%) of those surveyed received trainings on preparedness and mitigation. A large proportion of these trainings (80%) were provided by the ACF; 14% by the municipal government and 6% by the provincial government. About 98% of those who were trained rated the trainings as helpful. Post disaster assistances extended in the area are food and water, emergency medicine, shelter and search and rescue.

People in the area also practice preparedness and mitigation when disasters are coming. Among the activities are stockpiling of food (42%), moving to safer places like the stronger houses of neighbors (16%); etc. About 36% of those who evacuate go to their neighbor's or relative's house while 33% move to public schools and 25% use other public buildings. Only about 6% use private buildings as evacuation areas. The cost of mitigation is not expensive at an average cost of less than Php 250. Fig. 34 below shows the disaster preparedness and mitigation activities of the respondents.

Figure 34. Preparedness & Mitigation Activities, Bgy 1, Garchitorena, Camarines Sur



2.1.7. Challenges for Barangay 1, Poblacion, Garchitorena

The people in the survey area are aware of the natural disasters that they face. Typhoons and storm surges are experienced in the area. Based on the FGD, the participants revealed that a storm surge can happen even if there is no typhoon. Although a large number of the people have undergone disaster preparedness and mitigation trainings, their houses are made of materials that are vulnerable to

strong winds and floods and their low economic income will not afford them to strengthen their dwellings. Improving income levels are the main concern of the people who are mainly engaged in fishing, rice farming and copra production. Based on the FGD, 25% of the land area of the barangay is planted with rice but it could be doubled if there were irrigation facilities. Aside from natural disasters, several problems have been brought out by the FGD participants like a) rice pests that have inflicted huge damage to the farmers; b) sea water intrusion to the rice fields; c) price fluctuations especially of copra; d) lack of farm-to-market roads and post-harvest facilities; and e) illegal fishing. Assisting the people of Barangay 1 in addressing some of these issues will help in sustaining their preparedness and mitigation activities initiated by ACF.

2.2. Hitoma, Caramoran, Catanduanes

2.2.1 Socioeconomic vulnerability

The people of Hitoma have, on the average, more than 3 children, at least one (average of 1.4) of which is below 15 years old (Table 21). At least one member of the household (average of 1.17) is over 60 years old. This household composition reveals that at least 2 members of each household are vulnerable to disasters because of their age. The young and old members of the household will have more physical difficulties evacuating during typhoons, which is a normal practice in the province. By occupational groups, there are no significant differences in the composition of family members.

Table 9. Demographic Characteristics Respondents and Their Households

Description	Value
Female (%)	46.00
Civil Status	
• Single (%)	4.00
• Married (%)	80.00
• Widowed (%)	12.00
• Separated (%)	4.00
• Live-in (%)	0
Average Age (in years)	45.22
Finished Elementary School (%)	11.00
Had some Elementary Schooling (%)	13.00
Finished High School (%)	28.00
Had Some High School (%)	29.00
Finished College (%)	10.00
Reached College Level (%)	9.00
No Schooling (%)	0
Average Household size	6.50
Average Number of Children	3.44
• Male	2.50
• Female	3.06
Average number of household member below 15	1.41

years old	
Average number of household member above 60 years old	1.17
Average number of children in school	1.83
Average number of household member who is/are differently-abled	1.01

In terms of educational attainment, most of the people in Hitoma are in the range of elementary level and high school graduate. It can be noted that those who are poorer – the fishermen and farmers - have less years of formal education. This can be due to outmigration as revealed in the FGD. According to the participants in the FGD, younger, educated people tend to go out of the barangay to look for better job opportunities after their studies.

The sources of income and livelihood for most of the people in Hitoma are open sea fishing (39%), microenterprises, mostly broom-making (21%), agricultural workers (18%), landowner-farmers (7%), while the rest are wage laborers or formally employed. The majority of those formally employed (38.46%) are high school graduates. Based on the FGD, fishing and farming are mostly conducted for domestic consumption. Only a small amount of surpluses are produced for sale within the barangay. Farmers-landowners have an average of Php 5,429 monthly income while fishermen have about Php 3,510 a month. On the average, people in Hitoma earns about Php 3,500 a month. A large percentage of the respondents' expenditures (62.55%) go to food items and 17.16% for the educational needs of their children, with the rest spent on other needs like power, water and communication.

As a result, there are simply not enough resources available for households to engage in physical mitigation activities. It is not surprising, therefore, that savings among the households is not common. Ideally, savings are the most accessible source of cash to cushion the adverse impacts of shocks like natural disasters. With only a meager income, only 28% of the households have savings which are mostly kept at home (83%) and the rest are kept in banks. In terms of insurance, the respondents are covered by health insurance.

As far as health and sanitation are concerned, the water supply in almost all households in Hitoma comes from communal faucets, the source of which is relatively far from the area. The community is at present raising a counterpart fund to finance the protection of the water source and the pipes required for water distribution. According to the residents, the water source is safe from floods but may be at risk from landslides if not properly protected. Although most of the households have toilets - 66% with flush and 18% with the antipolo type – a large proportion of the households (16%) are still lacking toilet facilities. In terms of diseases, almost all respondents have household members who had experienced influenza, diarrhea and respiratory diseases.

2.2.2. Physical Vulnerability

Although majority of the respondents consider their houses as good (58%) and average (33%), these houses are made of mixed concrete, wood and bamboos which may not strong enough to withstand the strong winds of a typhoon, flooding and storm surges. The majority of the houses of the poorer groups (more than 80%) are owned the fishermen and wage earners and are made of wood with thatched (nipa) roofing.

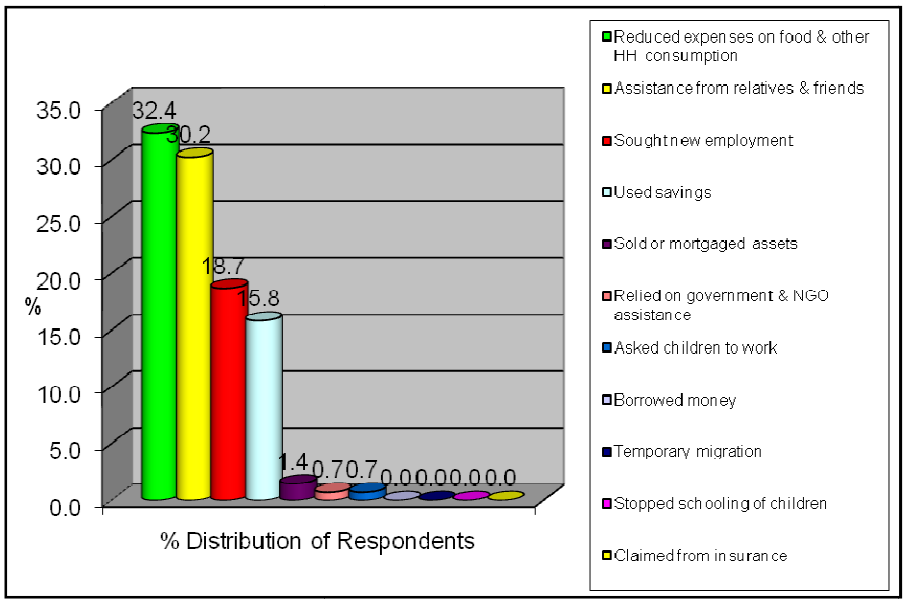
Public infrastructure in Hitoma is not bad. Most people (81%) rated the public elementary school as average as well as the public high school (100%). Bridges leading to the barangay are concrete while most of the roads are either concrete, asphalt or gravel. The area can nevertheless be isolated when landslides occur. Road blockages occur very often during the rainy or typhoon seasons.

In summary, the people of the barangay of Hitoma are vulnerable to disasters due to their socioeconomic conditions and topographic location. First, they are living in a disaster-prone area with bodies of water that can cause floods and storm surges when typhoons and monsoon rains occur every year. Although the barangay is not directly under the path of potential landslides, it gets isolated when landslides close the only safe route to the area hampering emergency assistance during calamities. Second, the people have lower incomes and few resources, and thus fewer options, to physically mitigate the impacts of disasters. The main sources of income – open sea fishing and broom-making - are vulnerable to typhoons and heavy rains. Their houses are not totally structurally safe to withstand strong winds and their incomes cannot afford them to save nor pay for insurance premiums which can cushion the adverse effects of typhoons and floods. Third, families in the area have relatively large members who are more vulnerable during pre-, during, and after disasters like evacuation, lack of food and water, among others. Lastly, the local government does not have enough funds to construct physical mitigation for Hitoma. The barangay will need the national government assistance if it were to construct flood and landslide control measures.

2.2.3. Coping mechanisms

As far as coping mechanisms are concerned, assistance from relatives and friends (32%) and reduction in food consumption (32%) are the most common responses to calamities. These are followed by looking for new employment (17%) and the use of savings (16%) to cope with the effects of disasters. On the other hand, very few people in Hitoma rely on assistance from the government and other humanitarian organizations. As validated from the FGD, the residents welcome outside assistance after typhoons or floods but they normally rely on themselves and their immediate families to cope. Fig. 35 presents the various coping mechanisms of the people.

Figure 35. Coping Mechanisms of Respondents in Bgy. Hitoma, Catanduanes



2.2.4. Returning to livelihood and normalcy after a disaster

The types of coping mechanism do not significantly affect the time it takes for the residents to return to their livelihood and normalcy. Most of the residents are back to their livelihood three days after the disaster. The most noticeable factors for the residents to return to work and normalcy are the type of housing materials they have, especially the roofing material. Those with iron sheets for roofing can go back to their work within three days after a disaster, compared to only 81% of those with thatched (nipa) roof and 85% of those with mixed materials for their roof. On the other hand, those with house with concrete walls can adjust within the same time frame compared to 86% of those with wooden walls and 89% of those with mixed materials (usually concrete and wood). The FGD revealed that house reconstruction is among the top priority activities after a disaster. More often, housing repairs do not normally bring back the destroyed houses into their pre-disaster levels due to lack of financial resources of the households. The average cost housing repair is about Php 28,000.

Other factors that affect the return to work of the people in Hitoma after a disaster are the household size and number of children. More households with six or more members take much time to return to work after a disaster. Across occupation, the majority (more than 95%) return to their livelihoods in three days or less after a disaster, except for those who are receiving remittances where only 83% recover under the same period. This can be due to the delays in the transfer of remittances after a disaster. It should be noted that majority in Hitoma are fishermen and microentrepreneurs and they can return to their livelihoods once the weather clears compared to farmers who need larger amounts of farm inputs before they can

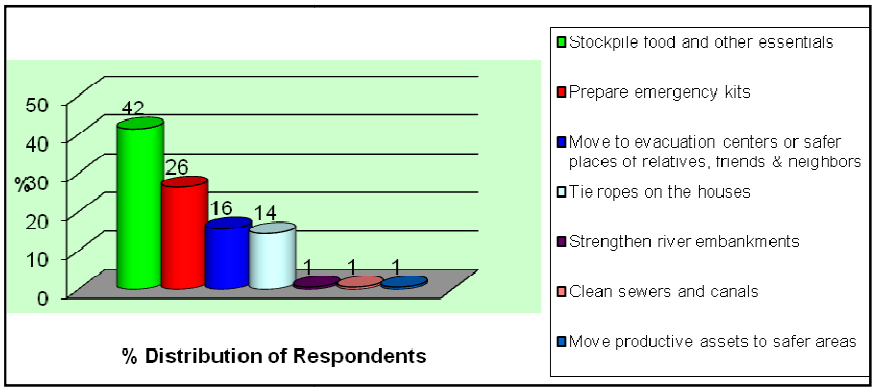
return to work. There is no significant difference in the time to return to work and normalcy with regard to sex, educational attainment, among others.

2.2.5. Awareness and Preparedness

The respondents in Hitoma have awareness regarding disasters, which they attribute to, aside from their experience, the ACF DRR Project. Their main sources of information on forthcoming disasters are the local government officials (49%) and commercial radios (47%). According to the FGD participants, barangay official go around the area to announce typhoon warnings. They have an active barangay disaster coordinating council with radio communication equipment and the barangay has a hazard map outlining the risks of the area as well as the safer areas which can be used as evacuation route. They claim that these efforts were initiated by the ACF project. In fact, a substantial proportion (24%) of those surveyed received trainings on hazard and risk identification, warning and evacuation. All of those who had trainings agree that they were useful and valuable.

People in the area also practice preparedness and mitigation when disasters are coming. Among the activities are stockpiling of food (42 %%), moving to safer places like the stronger houses of neighbors (16%); etc. About 95% of those who evacuate go to their neighbor's or relative's house while the remaining few moves to public buildings like the public school. The cost of mitigation is not expensive at an average cost of Php 200. Fig. 36 shows the preparedness and mitigation activities of the respondents.

Figure 36. Preparedness & Mitigation Activities, Bgy. Hitoma, Catanduanes



Fewer respondents in Hitoma stockpile food compared to the other survey areas in Catanduanes. Based on the analysis of the income and as expressed by the FGD participants, lesser people in Hitoma stockpile food as preparedness and mitigation activity because there is not much food or money to buy food items (Fig 36). Their income is basically enough for their day-to-day subsistence. Nevertheless, the FGD revealed that when they evacuate during typhoons, they bring with them whatever

food items they have and their cooking utensils, indicating that they are aware and prepared to the best that they can.

Challenges for Hitoma

The residents of Hitoma are aware of the hazards and risks they face and they are thankful to ACF for implementing a project on disaster risk reduction in the area since 2007. In fact, they have prepared maps, an active barangay disaster coordinating council, some communication equipment and other plans related to disaster risk reduction. They even identified a needed flood control dike although they admit that it will be too expensive to be prioritized by the local government. Moreover, they are planning to establish a public evacuation center that can accommodate about 100 persons.

However, the need for improving their economic status still remains. During the FGD, participants raised their concern on how they can improve their income from their present levels. The fishing industry is small scale and at best fishermen sell what little surplus they have only within the barangay. Hitoma fishermen have small boats (called sibid-sibid) with a capacity of only one to two fishermen and are unable to sail far out to sea. The other main source of income is broom-making that involves sugbo or lasa (the raw material) production and semi-processing them into the base raw material for the final product that is broom. (Some producers are engaged in lasa production up to making the final product). This cottage industry has suffered from fluctuating prices especially during the lasa harvest season where supply is abundant. Since the producers have no existing organization that can stabilize the prices in one way or the other, they compete for buyers which results in lower prices for their products. To improve their economic status, the FGD participants are suggesting that some form of assistance be extended to fishermen and broom makers where credit for capitalization, technical know-how for improved processing/production and market linkages can be established. This idea will help sustain the initiatives of ACF on disaster risk reduction. Improving livelihood that will result in sustained incomes for the people of Hitoma will likewise sustain the disaster preparedness and mitigation activities initiated by ACF in the area.

2.3. Summary of Findings & Conclusions

People in the surveyed ACF covered barangays in Camarines Sur and Catanduanes are vulnerable to disasters due to their socioeconomic conditions and topographic location. They are living in a disaster-prone area with bodies of water that can cause floods and storm surges when typhoons and monsoon rains occur every year. This is compounded with their subsistence level of livelihood, with low incomes and few resources, thus having fewer options, to physically mitigate the impacts of disasters. The main sources of income – open sea fishing and farming are vulnerable to typhoons and heavy rains.

Moreover, the physical condition of their houses is not totally structurally safe to withstand strong winds. Their low incomes affect their capacity to save and afford to pay for insurance premiums which can cushion the adverse effects of typhoons and floods.

Families in the area have relatively large members who are more vulnerable during pre-, during, and after disasters like evacuation, lack of food and water, among others. Elderly and children face more difficulties during evacuation. Local governments in both barangays do not have enough funds to construct physical mitigation for Hitoma, thus the need for national government assistance if it were to construct flood and landslide control measures.

Significant coping mechanisms are more on reduction of food expenses and household consumptions, reliance to government and NGO support, and assistance from relatives and friends. Borrowing money is more evident in Barangay 1, Garchitorena than in Hitoma which can be attributed to the limited financial institutions present in the latter.

Major factor that affects the time to return to work and normalcy after a disaster includes the type of housing materials and house structure, wherein those with houses made of thatch roof takes longer than with those with semi-concrete/concrete. Livelihood-wise, those engage in fishing takes lesser time to return to work than those engaged in farming. There is no significant difference as regard to sex and educational attainment in returning to normalcy.

The provision of ACF interventions through various DRR related capacity building activities, compounded with the active presence of BDCC in both barangays contributed to the heightened awareness, preparedness, response and mitigation of the respondents during the event of disasters. Common activities showing preparedness include stockpiling of food and other essentials, tying ropes on the house and making ready sets of emergency kits.

While residents have been trained on disaster preparedness and mitigation, the challenge remains that they are still residing in houses where structure and types of housing materials used remains vulnerable to strong winds and floods. Affordability of strong housing structure and material is a problem due to their low levels of income. Thus, despite the education on awareness and preparedness, there remains the fact that people need more interventions to address these needs in order to sustain the DRR efforts of ACF and local governments.

Part 3. Comparative Analysis of ACF and non-ACF Covered Areas

The respondents in the survey areas are all vulnerable to natural disasters due to their geographical location and the topographic composition of the place they live. This is expected because of the selection criteria used. Typhoons and heavy monsoon rains have been affecting the survey areas resulting in floods, landslides

and sometimes storm surges for the coastal barangays. In terms of household size and composition, there are no significant differences between the ACF and non-ACF areas. The respondents too have relatively bigger household size and composition. However, in all of the survey areas, death and injuries due to natural disasters have been very minimal although most of the respondents live not far from natural hazards.

In terms of economic conditions, the majority of the respondents in the area surveyed in both provinces are dependent on agriculture, that is farming and open sea fishing with some microenterprises which include sari-sari stores, buy-and-sell activities and broom-making. In non-coastal areas, most of the farmers are abaca planters who depend on the fibers for income while some are small-scale rice growers while in coastal barangays, a large proportion are fishermen. Across occupations, the fishermen have generally lower incomes along with wage earners and tenants. However, farmers dependent on perennial crops such as abaca are faced with serious economic dislocation if and when abaca plantations are totally wiped out. It takes about 3 years to grow abaca before their fibers are ready for harvesting. Household expenditures are mostly on food and education of children, family savings and insurance coverage are not common. As far as educational attainment is concerned, there are no significant differences in levels of education among the respondents across all the survey areas.

Having almost the same level of incomes, the housing units in all the survey areas are commonly made of mixed materials. However, a larger proportion of those who are poorer have dwellings that are made of light materials, which are wood, bamboo and nipa shingles as roof. Such type of housing is very vulnerable to strong winds. Government infrastructure, like public schools and main roads, in all the survey areas was rated mostly as average or good by the respondents although no effective drainage system exists for household waste and excess water from rainfall. However, barangay health centers are not well-equipped to handle extreme emergency cases as observed during the survey period. Access to potable water in all the areas is mostly from community faucets and hand pump water from wells with springs and wells as the other minor sources of water.

With very similar conditions, the sources of vulnerabilities of the respondents in both ACF and non-ACF areas are basically the same. The types of house of most respondents are always at risk because of the presence of natural hazards especially typhoons. The composition of the households - with children, women and elderly – will pose difficulties during evacuation and will require greater resources like food and water after a disaster. Their sources of potable water are susceptible to contamination when floods occur and may cause illnesses. Lower incomes limit the capacity to spend for mitigation or generate savings and secure insurance that can cushion the impacts of disasters. On the other hand, the sources of income are very vulnerable to disasters like typhoons, landslides and other weather disturbances.

In terms of coping mechanism, the respondents have varying ways to cope with disasters. In non-ACF areas, 55% in Catanduanes relied on outside assistance compared to only 6% in Camarines Sur. Most of the people in Camarines Sur borrowed money (54%) and asked assistance from relatives and friends (37%) to tide them over from a disaster while only 46% and 17%, respectively, in Catanduanes. Reducing of expenses on food and other household consumption are more common in Camarines Sur (23%) than in Catanduanes (13%). Only a few (less than 7%) stopped the schooling of their children in both provinces.

In the ACF area of Garchitorena, most disaster victims borrowed money (26%), reduced their expenses on food (26%) and relied on government and non-government assistance (14%). A few (10%) asked assistance from friends and relatives and only 6% used their savings. A small number responded by stopping their children's schooling, migrating and seeking new employment. In Hitoma, seeking assistance from relatives and friends (32%) and reducing food consumption (32%) are the most common responses to calamities. These are followed by looking for new employment (17%) and the use of savings (16%) to cope with the effects of disasters. On the other hand, very few people in Hitoma rely on assistance from the government and other humanitarian organizations.

People in the survey areas value the education of their children. Only a few of them would stop the schooling of their children due to disasters. As relayed during the FGDs, parents would not, as much as possible, delay the education of their children. Once the schools resume, they send their children back to school. Moreover, asking and receiving assistance from relatives and friends after a disaster show that family ties are still intact among the respondents. However, borrowing money has been burdensome especially to farmers. As gathered from the FGDs, some abaca farmers advance their household needs from the stores owned by abaca fiber traders. Their payments will be deducted from the sale of their future produce. This practice has reduced the bargaining power of the abaca growers. On the other hand, reducing household expenditure on food may have adverse consequences especially to children who are in their physical and mental development stages.

Most of the people in all survey areas are aware of disasters. They normally get their disaster warning information from their radios, television and local government officials. In non-ACF areas in Camarines Sur, warning information comes from television and radio (59%) and local government officials (21%) while in the ACF area of Garchitorena, the main sources of warnings for disasters are their neighbors (24%); television (22%); local government officials (21%); commercial radios (18); and mobile phone text messages (12%). In essence, a large proportion of respondents rely on local government disaster warning in both ACF and non-ACF areas in Camarines Sur.

On the other hand, in non-ACF areas in Catanduanes, 60% of warning information comes from radio, 43% from television, 36% from neighbors and a mere 5% from local government officials. However, in the ACF area of Hitoma, the main source of warning information comes from the local government officials (49%) followed by the radio (47%) and the rest from relatives and neighbors. According to the FGD participants, local government officials in Hitoma go around the town to announce forthcoming typhoons. This has been one of the results of the ACF assistance provided in the barangay. The communication equipment provided by the project has also help the local council in disaster risk management.

In terms of preparedness and mitigation, the respondents have several practices. In Catanduanes, most of the people of the province have seemingly standard practices as far as preparedness is concerned. They tie rope on their houses (61%) when typhoons are coming; stockpile food and other essentials (72%); move to safer places (29%), move assets to safer grounds (28%) and prepare emergency kits (24%). Of those who move to safer places, 86% prefer the houses of their relatives or neighbors. In the ACF area of Hitoma, people stockpile food (42%), prepare emergency kits (26%); move to safer places like the stronger houses of neighbors (16%); and tie ropes on their houses (15%). About 95% of those who evacuate go to their neighbor's or relative's house while the remaining few moves to public buildings like the public school. In all areas in Catanduanes, the majority of those who move during disasters go to the safer houses of their neighbors or relatives. The FGD revealed that this practice has been in existence for a long time that it has become the tradition.

In Camarines Sur, people tie ropes and stockpile food (60%); move assets to safer grounds (43%); and move their families to safer places (32%). Among those who move to safer places, 51% prefer the houses of their relatives or friends. In the ACF area of Garchitorena, people practice preparedness and mitigation when disasters are coming. Among the activities are stockpiling of food (42%), moving to safer places like the stronger houses of neighbors (16%); etc. About 36% of those who evacuate go to their neighbor's or relative's house while 33% move to public schools and 25% use other public buildings. Only about 6% use private buildings as evacuation areas. Compared to the respondents in Catanduanes, a lesser proportion of respondents in all of the survey areas of Camarines Sur move to safer house of their neighbors and relatives.

One notable difference between the ACF and non-ACF areas is the presence of an active barangay disaster coordinating council (BDCC). The BDCCs in the two ACF areas are more aware of DRR issues compared to the non-ACF areas. In the ACF areas, the BDCCs developed standard operating procedures for all phases of disasters, have produced hazard maps, warning communication systems and are even planning on some structural mitigation for their barangay although they admit that the cost involved are way above what their local government can afford. Those who attended trainings from the ACF projects are unanimous in saying that the

trainings they received are useful. The respondents are enthusiastic about the ACF projects and, based on the FGD discussions, they are thinking how ACF can further assist them in improving their livelihoods as part of preparedness and mitigation.

Across survey areas, although the respondents are aware of and prepare for disasters, it has been noted that they are not too much involved in more community level activities such as improving river embankments. They consider such activity to be the responsibility of the local government units. Nevertheless, it would seem that the disaster preparedness activities of the people in the surveyed barangays in both provinces could be the reason why there are very few casualties from disasters.

Based on the FGDs in all survey areas, there are several practices in their areas which the participants believe exacerbate the effects of natural disasters. For instance, some respondents believe that slash-and-burn agriculture in Camarines Sur and dumping of garbage in waterways in Caramoran caused floods. Moreover, in the towns of San Miguel and Baras in Catanduanes feel that the road construction works to their areas did not consider mitigation works resulting in landslides. Furthermore, the survey team found no evidence that would indicate that land-use or zoning regulations are implemented in the survey areas. This was validated by the FGD participants who are not aware of any restrictions as to where they can or cannot build their houses, among others.

III. RECOMMENDATIONS

Uplifting the standard of living of the poor people in both provinces whose incomes are so dependent on subsistence agriculture and fishing that is so vulnerable to disasters is indeed a great challenge. Physical mitigation may be beyond the available financial resources of the local governments but there are other DRR-related activities that can help the people prepare for and mitigate the impacts of disasters. It is recommended that a multi-pronged approach for reducing the vulnerabilities and risks of households in the areas be carried out across household, meso and macro levels.

Household Level

Improvement in household disaster planning and preparedness. Through community consultation, training, demonstration and simulation activities, DRR activities can and should be made a part of the people's consciousness, values and behaviors, training on preparedness on a family level can be further strengthened by building on the present level of awareness of the people. Even if the people are too poor to shoulder the cost of physical mitigation, they can be trained on simple cost-effective preparedness and mitigation activities like reforestation on river embankments, proper waste disposal, protecting water sources, improving house construction and strengthening their existing houses against strong winds. As farmers, the people will not have difficulties in reforestation for DRR purposes.

Bamboo, which abounds in the area, can be planted in river banks at practically no cost to the people. On the other hand, even without a proper drainage and sewerage system, proper waste disposal will complement the efforts on strengthening river embankments. To strengthen the existing house structure, a study should be conducted to determine which parts of the house can be reinforced to increase their chances in withstanding strong winds. The Department of Social Welfare and Development (DSWD) has embarked years ago on this study and they have come out with some simple structural design that is affordable to the poor. The same is true for the very important sources of potable water in the areas. An unprotected water source will definitely hamper the return to normalcy of disaster victims. Encasing the sources with concrete can mitigate the damages and/or will make rehabilitation easier and faster.

Providing counseling services to the families on child welfare and development. To address issues of children missing schools, dropping out of schools, and working children, counseling should be done and should include managing separation of family members due to temporary migration and other psycho-social intervention in a post disaster situation.

It is also recommended that efforts be made to increase the development and engagement of the community members on communal risk reduction activities like reforestation, cleaning of drainage, fortifying river embankments, sharing techniques and approaches in reducing risks in the "bayanihan[3] context, among others. This will strengthen the foundation for accumulating social asset and at the same time increase households / community involvement in activities that affects their fellow members of the community.

Diversification of income sources to reduce the dependence and associated vulnerability is a key recommendation. Off-farm economic activities or income generating projects that have serious demand from the immediate or adjacent communities should be promoted. The use of value chain concept in identifying potential off-farm activities can be applied to ensure that there is demand and there local resources will be harnessed to produce the products.

Meso Level[4]

A systemic approach to disaster risk reduction should be initiated and developed by the local government involving community participation to develop hazard and vulnerability maps and enhance existing inter-cooperation strategies among different stakeholders such as local government units, government agencies, NGOs. Hazard maps and other scientific information can be created and integrated in DRR-

[3] "Bayanihan" is a traditional Filipino value and practice involving community members to join hands in the spirit of cooperation to do communal activities.

[4] This includes Local government Units / Agencies i.e. Barangay, Municipal, and Provincial including NGOs, People's Organizations or other support institutions operating at least at the municipal level.

related trainings and disseminated to the people living near the vulnerable areas. Furthermore, hazard maps will be an important input to any revision of the land-use plans of the local governments concerned.

It is also recommended that there be a review and assessment of the current systems, processes and approaches in disaster risk management. Issues about denudation of forest cover, siltation of rivers, and contamination of water tables affect not just one community but all of those within a catchment area like a watershed. Dialogue and action programs must be developed to mitigate any adverse impact for example of the destruction of a watershed area. Several gaps in the current have been identified in this report including appropriate targeting of households to receive support pre and post disaster situation. The result of this survey has provided an impetus for a more focused disaster risk reduction planning and management. Mapping community using the different indicators found to be contributing to household risks and vulnerability will aid the development of appropriate support and intervention to the right households. Efficiency and effectiveness can be achieved when efforts are focused on key indicators to address household vulnerabilities.

Standard operating procedures (SOP) within the communities must be established. SOPs can include the designation or opening of designated evacuation centers during disasters, medical emergencies, search and rescue, etc. Designated evacuation centers like school buildings and health centers can be upgraded to tend to the needs of evacuees especially women and children like additional toilets, cooking facilities, etc. Emergency medicine can be included in the trainings of barangay health workers while search and rescue can be integrated in the trainings of the barangay "tanods". This will ensure the presence of immediate medical relief to those injured as a consequence of any disaster. Local governments can initiate this with the assistance of the Office of Civil Defense, the Philippine National Red Cross and other NGOs involved in DRR. Existing reliable organizations like cooperatives and farmers' association can be tapped to propagate DRR concepts.

Better communication is needed by the authorities and support institutions in disseminating disaster risk reduction and management. The current approaches is not working for all and whatever good plans developed by the local officials and support institutions will go for naught because of limited understanding and appreciation by the target groups, thus, the need to revisit the approaches and strategies being used by local officials in disaster management to increase stakeholdership. Appropriate and well communicated targeting mechanism is one of the areas to be improved in disaster management together with expanding household level risk mitigation and coping mechanisms. Information, education and communication processes have to be reviewed to assess its effectiveness in meeting the needs of the people.

Since radios are the main source of information especially in poorer areas, alternative power supply should be provided to the radio stations. Uninterrupted information on warnings will keep the people updated and alert.

Develop an education and skills building program aimed at strengthening the capacity of the vulnerable families to seek other income or employment opportunities to cope with a crisis. The skills training to be offered should be market-based and not supply-driven to ensure that the capacity developed will be useful to the target community. Off-farm income sources should be identified, promoted and supported by the concerned agencies especially local government units and agencies.

Authorities and support organizations have to consider the critical needs of the households in pre and post disaster situation. Many households are not conscious about securing good source of potable water to reduce the incidence of water-borne diseases such as diarrhea, thus, most of the households resort to curative measures than preventive actions and often depend on local authorities to provide support to them. Disaster preparedness and planning processes have to be improved.

It is also important to increase access to financial services by linking vulnerable households with reputable and reliable service providers in the locality as this is being given little attention and support by authorities and support institutions. Financial services like loans and savings are some of the main coping mechanisms employed by the vulnerable groups. However, they have little access to formal or semi-formal financial institutions i.e. banks, cooperatives and microfinance institutions that prevents them from safely depositing their money or borrowing from responsible institutions. Building up their financial asset through savings and getting productive loans will households improve their economic base and ability to cover emergency expenditures in the event of a calamity. Savings can likewise contribute to building human capital by ensuring that money is allotted for the children' education. Rotating savings and loans associations (ROSCAS) can also be encouraged for areas that are remote or inaccessible to financial institutions. They have proven to be interim mechanism to pool community's financial resources but prudence should be observed and support to increase transparency and accountability should be given to the ROSCAS. Moreover, strengthening cooperatives can increase individual savings which can be further explored to finance insurance schemes (like health and/or crop and livestock insurance) that can mitigate the impacts of disasters. Insurance schemes can spread or transfer risks and reduce the peoples' vulnerabilities to higher prices and further indebtedness, among others, as a result of disasters. This should be further studied with various options including the cost and benefits of subsidizing insurance premiums.

Support for the development of alternative sources of livelihood must be provided in order to wean the community from its high dependence on agriculture and low-margin economic activities. The people can likewise benefit from product improvement and market sourcing for their existing microenterprises.

Macro Level

A long term-strategy on DRR should be developed by the LGUs to comprehensively address all phases of disasters. DRR assistance to local governments can be integrated in the local development and land-use planning. The national government through the NEDA has recently developed a local development planning guidelines integrating DRR which can be utilized by ACF in assisting their chosen barangays. This step will mainstream DRR in the local development planning processes and development activities.

One important component of this plan should be the development of alternative sources of livelihood and wean away the community from depending purely agriculture. The people must have some other sources of alternative income that is not prone to the destruction of natural disasters. For the existing microenterprises, product improvement and market sourcing will help improve the income levels of the microentrepreneurs. The hazards from natural disasters will remain and developing alternative sources of income will be part of managing the risks involved. Participatory review and planning processes need to be encouraged and undertaken especially among the local officials and their constituents to increase buy-in and application of the plan.

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ANNEXES

Annex 1. Classification of Municipalities based on Risks Levels – High, Medium and Low

1. Province of Catanduanes

Name of Town	PDCC	MGB	NEDA	PHIVOLCS	DILG
Virac	H	L	H	H	H
Bato	M	M	M	H	M
San Miguel	**H**	**H**	**H**	**H**	**H**
Baras	**M**	**M**	**M**	**H**	**M**
Gigmoto	M	H	H	H	M
Bagamanoc	H	M	H	H	H
Viga	L	H	L	H	L
Calolbon	M	M	M	H	M
Caramoran	**H**	**H**	**H**	**H**	**H**
Panganiban	L	H	M	H	H
Pandan	L	M	H	H	H

Legend: H – High risk, M – Medium risk, L – Low risk

2. Province of Camarines Sur

Name of Town	DILG	MGB	NEDA	PHIVOLCS
Del Gallego	L	L	L	H
Ragay	L	L	L	H
Lupi	L	M	L	H
Sipocot	L	L	L	H
Cabusao	**H**	**H**	**M**	**H**
Libmanan	H	H	M	H
Calabanga	H	H	H	H
Canaman	H	H	H	H
Magarao	H	H	H	H
Camaligan	H	H	H	H
Gainza	H	H	H	H
Naga	H	H	H	H
Milaor	H	H	H	H
San Fernando	H	H	H	H
Minalabac	H	H	M	H
Pasacao	M	H	L	H
Pili	L	L	L	H
Bula	**H**	**H**	**M**	**H**
Baao	H	H	M	H
Iriga	L	M	L	H
Nabua	H	H	H	H
Bato	H	H	H	H

Balatan	L	L	M	H
Buhi	**L**	**H**	**M**	**H**
Ocampo	L	L	L	H
Sangay	H	H	H	H
Tigaon	L	L	L	H
Goa	L	M	M	H
San Jose	L	L	L	H
Lagonoy	H	H	H	H
Tinambak	H	M	M	H
Garchitorena	H	M	M	H
Caramoan	H	M	M	H
Siroma	M	M	L	H
Presentacion	H	L	M	H
Bombon	H	M	M	H
Pamplona	M	M	M	H

Legend: H – High risk, M – Medium risk, L – Low risk

Annex 2. Description of Surveyed Areas by Municipalities

Province of Catanduanes

1. Municipality of Baras

According to the data gathered from the municipal hall, Baras has a population of 11, 787 as of 2007 with men comprising about 52%. There are about 2,200households in the municipality with negative population growth rate at -0.35. This is probably caused by out migration as observed in the high incidence of family members working outside of the municipality among the survey participants. About half of the population is in the age ranges of 14 years and below and 60 years and above.

The land area of Baras is 109.5 square kilometer and comprised of 29 barangays. The alienable and disposable land area is about 211 hectares with the rest of 4,549 hectares as forest and timberland. The IRA is about Php 19.5 M in 2005 with about a million pesos as internal resource generated making it a 5th class municipality. For this year 2009, the IRA of Baras is Php 31.2 million.

Most of the employment is in agriculture with some part-time fishermen. About 400 hectares are planted with rice; 1,109 hectares with coconut and 3,430 hectares with abaca and banana with 150 hectares. Abaca farmers total 1,714 for a total production of 476,522 kilograms in 2005. In terms of livestock, more than half are goats reaching about 6,600 heads.

There are 8 barangay health stations, 1 rural health unit and a public hospital. There are 120 barangay health workers stationed throughout the municipality. About 121 households (6%) have no access to potable water supply while 857 households (39%) have no sanitary toilets. There are 16 government public elementary schools with 2,279 enrollees and 2 government high schools with 1,058 enrollees in 2005. Completion rate at the elementary level is 63% while high school has 78% completion rate. Infant mortality rate is 10 per 1,000 live births. About 77% of the households have access to electricity. Cohort survival rate in the elementary level is only 63% while 82% in the secondary level. According to the Peace and Equity Foundation (PEF) study of 2007, Baras has a poverty incidence of 48%.

2. Municipality of San Miguel

The data from the municipal hall of San Miguel revealed that its land areas is 130 square kilometers and a population of 12,966 (in 2007 NSO figures) with 2,718 households spread throughout its 24 barangays. About 8,217 hectares (47%) are agricultural lands which ranks second to forest land area. Abaca is mostly grown (6,487 hectares), coconut (588 hectares), rice (365 hectares) and

the rest with root crops legumes and banana. San Miguel ranks first among the municipalities in the production of abaca fibers. While abaca and coconut are permanent crops, rice can only be cultivated 7 months in a year. Rice growing is generally once a year and dependent on the rains for irrigation. There are about 2,804 abaca farmers compared to 707 coconut farmers. The town has no forest products to speak of but data from the municipal hall has expressed apprehension that illegal cutting of trees has been rampant causing forest cover erosion and a general decline in upland productivity among others. As an inland municipality, San Miguel's fisheries are confined to fresh water activities. Because of its terrain, 16 of its barangays are considered by the municipal government as flood-prone.

The town is a 5th class municipality with an income of Php 22.68 million in 2005, Php 21.11 million of which is the IRA from the national government. Its internally-generated revenues, therefore, is just over a million pesos a year. For this year 2009, the IRA is Php 33.9 million. According to the records generated from the municipal planning office, access to potable water reaches 96% of the population but only 74% has sanitary toilets. Moreover, only 75% of the households have access to electricity. Infant mortality rate is 10 per 1,000 live births. Cohort survival rate in the elementary level is only 72% while 60% in the secondary level. According to the PEF study, San Miguel's poverty incidence is 46%.

3. Municipality of Caramoran

Caramoran is located in the northern part of the province with a total land area of 252 square kilometer which is about 17% of the total provincial land area. It has 27 barangays with a population of 25,618 with 4,293 households as of 2007. According to data gathered from the municipal hall, the source of income or livelihood of the people is dependent on agriculture. A large part of its land (2,857 hectares) is planted with abaca followed by coconut (2,230 hectares), 570 hectares with lasa (a reed type of plant used for making brooms), 202 hectares with rice or corn and the rest (about 300 hectares) with root crops, fruits and vegetables. It has been established that there are mineral deposits of gold, platinum and coal in an area of about 12,179 hectares in three of its barangays. There are 2 waterfalls and 7 rivers in the municipality which have caused floods during typhoons and heavy rains.

There are 9 barangay health stations, a rural health station and a 7- bedroom municipal hospital. Based on the information from the municipal planning office, although 89% of the people have access to potable water, only 57% have sanitary toilets. Infant mortality rate is 20 per 1,000 live births in 2005. In the same period, only 59% of the people have access to electricity. Cohort survival rate in the elementary level is only 65% while 75% in the secondary level.

The total income of the town in 2005 is Php 30.76 million, Php 30.12 million of which came from the national government through the IRA. Again, the internally-generated revenue of the town seems to be limited. For 2009, the IRA of the town is Php 52.6 million.Poverty incidence, according to the PEF study, is 57%.

Province of Camarines Sur

The Municipality of Buhi

Buhi is an agricultural and tourism town located 500 kilometers south of Manila and east of Mayon Volcano. It has a total area of 22, 855 hectares including the 1,800 hectares of productive Lake Buhi - the habitat of the smallest edible fish in the world locally known as "Sinarapan" (Mistychthys Luzonensis Smith)[5].

It is a second class municipality whose local economy depends much on fishing, farming rice, corn, banana and coconut and Abaca (Manila hemp) production. Its poverty incidence is high where 51.62% of its 14,01313,236 households or 70,75667,702 inhabitants are considered poor. The town ranked very low in the quality of house materials among its residents where 57.49% of the houses' walls are made of light materials.

The residents of this relatively big town and its 38 barangays have access to health care, education, and road network that links it with major urban centers like Iriga City. The town has a low incidence of households without access to potable water (14.94%).

Buhi has access to modern and conventional communication facilities like landlines, internet, mobile phones, cable television, and courier services among others.

The Municipality of Cabusao

The town of Cabusao is a 5th class municipality and is basically an agricultural town where most of its constituents are engaged in farming and fishing. Rice is the major agricultural crop grown in the municipality. Other crops planted in the municipality are coconut, root crops, vegetables and fruit bearing tree. The production pattern is generally two cropping a year in areas served by irrigation.

There are various livestock raisers in the municipality located in all barangays. Commercial raisers or cattle have their pastures and grazing grounds maintained. Poultry production is a very profitable business. There are numerous commercial raisers engaged in egg production.

[5] http://buhi.camarinessur.gov.ph

The municipality has vast fishing grounds situated at the San Miguel Bay. Bangus fry is abundantly harvested during summer and thus constitutes to the revenues of the municipality. Presently, there are a large number of motorized and non-motorized fishing bancas used commonly by the fishermen on their fishing activities. The fishing method/gear used commonly by the fishermen includes hook and line, beach seines, gill nets, scissors nets, multiple hands lines and cabiao.

Cabusao is one of the poorest towns in Camarines Sur 61.23% of its 17,5996,201 population live below the poverty line. Its 2,999 households fared quite poorly in access to potable water (52.94%) and ownership of house and lot (39.08%). It is a small town covering only 9 barangays.1.

Barangay 1, Poblacion Garchitorena, Camarines Sur

The municipality of Garchitorena lies at the northeastern part of Camarines Sur and is comprised of twenty-three (23) barangays of which four (4) are in the Poblacion and three (3) others are mountain barangays. The remaining sixteen (16) are coastal barangays. It has a total land area of 273.92 square km. with a population density of 91.30/sq.km and a potential labor force of 12,043. Garchitorena has a high malnutrition rate and only 65% of the population having sanitary toilets. It has a total population of 24,825 composed of 4,565 households and 4,892 families with 12,924 male populations and 11,901 female populations (NSO Survey as of September 2007). Its geographical location exposes its population natural hazards such as storm surge, flood and landslide. Without a pronounced dry season, the last quarter into the early months of the first quarter have tropical disturbances with monsoon winds bringing in heavy rains. Its land area is predominantly utilized on agriculture. Coconut production is the main source of local earnings and it yields at 8,000 hectares while 436 hectares and 104 hectares are planted with palay and abaca respectively. Aside from agriculture, its extensive fishing ground and abundant marine resources provide its constituents with additional source of income and revenue to the municipality. Garchitorena is very dependent on its Internal Revenue Allotment coming from the National Government amounting to about Php 42 million.

Barangay Hitoma, Caramoran, Catanduanes

Hitoma, the survey area, is a disaster-prone barangay in Caramoran and has been a recipient of assistance from ACF on disaster risk reduction since 2007. It has about 146 households and a population of about 876 people. The barangay has practically no ricelands, abaca plantation, and fruit trees. Vegetables are grown in backyards for home consumption. Except for a few

coconut trees, the agricultural lands are situated mostly in the nearby barangay.

Surrounded by bodies of water - on the northern side by Sabang Lake, Hitoma river on the South and the sea on the west - Hitoma is prone to floods during typhoons and rainy season. Storm surges have also been experienced in the past. For the last five years, the people of the area have experienced on the average 5 typhoons, more than five floods and a storm surge each year in varying degrees of intensity. Although they have not been devastated by landslides, they get isolated when landslides close their main roads during typhoon and rainy seasons. A large proportion of the people (43.3%) are living in flood-prone areas while 14.3% have houses near mountains where possible landslides can occur. The remaining 42.4% live not far from the lake or river or by the seaside which can also be prone to disasters.

Annex 3. Structured Questionnaire for Vulnerability Analysis Survey

INSTRUCTION TO ENUMERATOR:
The **RESPONDENT** will be a household head of family or his/her spouse who lives in a disaster-prone barangays identified by ACF.
Introduce the survey and its objective which is to elicit and generate data and information from the respondents on the presence of hazards and their perception on the vulnerabilities that may are faced with. The information from this survey may be used by ACF for activities related to disaster preparedness and mitigation and by the national and local governments in formulating policies and in designing programs and projects on disaster risk reduction. Please establish rapport and be polite during the interview. Check the box corresponding to the answer to each question and write appropriate answers to the blanks.

RESPONDENT CODE NUMBER: _____
DATE OF INTERVIEW: _____ TIME STARTED: _____
NAME OF INTERVIEWER: _____TIME ENDED: ____
FIELD EDITED BY/ DATE : _____ ENCODED / CHECKED BY: _____

I. RESPONDENT'S PERSONAL INFORMATION

1. Name of Respondent: _____
2. Address:_____
3. Number of years living in current residence: □ 1 - □1 □ 2 - 1 to 3 □ 3 - > 3
4. Age (as of last birthday): _____
5. Sex: □ 1 Male □ 2 Female
6. Civil status:□ 1 Single□ 2 Married□ 3Separated□ 4 Widowed □ 5 Live-in / Partner
7. Highest educational attainment:
   - □ 1 no schooling
   - □ 2 some elementary
   - □ 3 elementary graduate
   - □ 4 some high school
   - □ 5 high school graduate
   - □6 some college
   - □ 7 college graduate
   - □ 8 vocational
   - □ 9 post graduate
8. Number of family members living with you: _____
9. Number of Children (all): _____
10. How many of your children are in the following age range (all children living with the family)?

13a. Age range (years)	Sex (How many?)	
	13b. Male	13c. Female
□1: 0 – 5		
□2: 6 – 15		
□3: >/= 16		

11. How many of your school age (6 years to 16 years old) children are enrolled in school? _____

12. How many in your household, including you, are 60 years and above? _____

13. How many of your family members are differently-abled? □ 1 none□ 2 one□ 3 two □ 4> two

14. Is your house near: □ 1 sea / river/ lake □ 2 mountain(with previous case of land slide or possible land slide)
□ 3 volcano□ 4 flood prone area □ 5 others _____

15. What is the approximate distance (in meters) between your house and the objects in previous question? _____

16. Lot/land owner ship: □ 1 owned □ 2 rented □ 3 informally used without owner's permission □ 4 Used with owner's permission

17. House ownership: □ 1 owned □ 2 rented □ 3 free (nakikitira)

18. House Structure:
18a. Roof: □ 1 nipa (thatch)□ 2 iron sheet □ 3 mixed
18b. Walls: □ 1 wood □ 2 concrete □ 3 mixed
18c. Floor: □ 1 earthen (lupa)□ 2 wood □ 3 concrete□ 4 mixed
18d. Overall condition □ 1 good □ 2 average □ 3 poor / needs repair

19. Is your house damaged during any of previous disasters? □ 1 Yes□ 2 No

20. Do you have electricity in your house?□ 1 Yes□ 2 No

21. What is your MAIN communication means during disasters?
□ 1 cell phones□2 VHF radio □ 3 Landline (telephones)□ Others (specify) _____

II. HOUSEHOLD ECONOMIC INFORMATION

22. What are the top 3 income sources of your household? (Monthly income is estimated to be the total income in a year divided by 12 months)

Sources (please check)	18a. Estimated Monthly Income (Php)	18b. Classification (**Select Code**: 1 Regular; 2 Casual/seasonal)
□ 1 Farming □a Own Land □b Tenant/Agricultural Worker		
□ 2 Fishing		
□ 3 Wage labor		
□ 4 Formal employment □a Government □b Private		
□ 5 Pension		
□ 6 Remittances (Domestic / Int'l)		

□ 7 Micro-enterprise/Self Employed □ 1 Sari-sari store □ 2 Transport □ 3 Buy & sell □ 4 Handicrafts □ 5 Food processing □ 6 Carpentry/mechanic □ 7 Others		
□ 8 Others_____		
	Total:	

23. Estimated Household Monthly Expenses (Monthly expenses can be estimated by annual expenses divided by 12 months)

Type of Expenses	19a. Estimated Amount (Php)
□ 1 Food	
□ 2 Education	
□ 3 Utilities a. Water b. Electricity c. Telephone/Mobile Phone d. Others	
□ 4 Transportation	
□ 5 Rent	
□ 6 Leisure	
□ 7 Miscellaneous	
□ 8 Others	
Total:	

24. What other assets do you own? (can be multiple answers). Estimated value of assets can be aggregated.

Assets (Please CHECK)	Estimated value (Php)
Farmland a. How many hectares? _____ b. Crops grown in a year? □Rice □Corn □Abaca □Legumes □Vegetables □Others_____	
Mechanized farm equipment a. □Tractor b. □Thresher c. □Weeder d. □Others_____	
Livestock and Poultry a. □Carabao b. □Cow c. □Goat	

d. □Chicken e. □Ducks f. □Others	
Vehicles a. □Truck for hire b. □Bus for hire c. □Jeepney for hire d. □Tricycle for hire e. □Car for personal use f. □Motorcycle for personal use g. □Bicycle h. □Others_____	
Appliances a. □Radio b. □ Washing machine c. □TV/DVD Player d. □Refrigerator e. □Electric Stove f. □Others	
Boat a. □Own use for fishing b. □For rent c. □Others	
Jewelry	
Others (specify)	

25. Do you have savings? □ 1 Yes □ 2 No **GO TO Q 28**

26. Where do you keep your savings? □1 Bank □2 MFI (NGO; Association) □3 Cooperative □4 House

27. Why do you save?
□ 1 education □ 2 buy assets □3 To cope with emergencies (during or after natural disasters)
□4 for business □5To cope with emergencies not caused by other than natural disasters)
□6 others_____

28. Are you, or any members of your household, covered by any form of insurance?
□ 1 Yes □ 2 No **GO TO Q 30**

29. If yes, what insurance coverage? □ 1 Health □ 2 Crop Insurance □ 3 Accident □ 4 Others

III. ACCESS TO SOCIAL SERVICES

30. What is the physical condition of the nearest public elementary school?
□1 Good □2 Average □3 Poor / Needs repair

31. Physical structure of the nearest public high school:
□1 Good □2 Average □3 Poor / Needs repair

32. In a year, how many times or days the school was closed due to disasters in your area?
    a. Number of times (frequency)
    b. Average days (each time)

33. Is the school damaged due to disasters (typhoon/flood or landslides)? □ 1 Yes □ 2 No

34. What is the nearest health facility in your barangay?
□1 Barangay health center □2 Municipal hospital □3 Tertiary hospital □4 Others _____

35. How far from your house is the nearest public health facility? □1 <500m □2 - 0.6 km to 1 km □3 ->1 km

36. Is the health facility accessible and operation during disasters?□ 1 Yes □2 No

37. Physical structure of the nearest public health facility:
□ 1 good □ 2 average □ 3 poor / needs repair

38. What is the mode of transportation to the schools?
□ 1 By foot □ 2 By bicycle, motorcycle or tricycle □ 3 By jeep or bus
□ 4 By animal-driven cart□5 By motorboat

39. What is the mode of transportation to the health facilities?
□ 1 By foot □ 2 By bicycle, motorcycle or tricycle □ 3 By jeep or bus
□ 4 By animal-driven cart□5 By motorboat

40. What is your toilet? □ 1 with flush (sanitary latrines)□ 2 antipolo type □ 3 Open defecation

41. What is the general road condition?
□1 Rough dirt & muddy road when raining □2 Gravel □3 Asphalt □4 Concrete

42. If there are bridges, what is the bridge condition? □1 Wood/bamboo □2 Concrete □3 Steel

43. What is the source of potable water supply?
□ 1 Individual Well (with hand pump)□2 Community well (shared) □3Community Faucet □4 Faucet at home □5 Spring source□6 Commercial source (Bottled)

44. How far from your house is the nearest source of potable water? □1 < 0.5 km □ 2 0.6 km to 1 km □3 > 1km

45. Is the water facility accessible and available during natural disasters?□ 1 Yes □ 2 No

46. Common illnesses of household members experienced during the disasters?

Illnesses	Yes	No	Treatment received (1 – hospital, 2 -	Estimated Cost of Treatment

			Home)	(Php)
□1 Influenza (Flu)				
□2 Diarrhea				
□3 Respiratory Diseases				
□4 Heart Disease/ Hypertension				
□5 Wounds/Accidents				
□6 Malaria				
□7 Others (Specify)				

IV. IMPACTS, PREPAREDNESS, MITIGATION AND RESPONSE

47. Were you, or any of your family members, affected or have been victims of any of the following disasters or calamities in the past 5 years?

Events	Yes	No	No. of times they happened	Lives Lost	Number of Injured	Number of people missing
□1 Typhoon						
□2 Flood						
□3 Landslide/mudslide						
□4 Drought						
□5 Earthquake						
□6 Storm surges						
□7 Others						

48. Who were most affected by disasters in your family?

□1 children □2 elderly □3 differently-abled people □4 pregnant □5 others _____

49. In the last 5 years, how much was the cost of damages on your assets from the disasters you experienced?

Assets	Estimated cost of damage (Php)	Cost of repair / replacement	Source of funds (1 Personal, 2 Borrowed, 3 Free)
Farmland			
Mechanized farm equipment			
Livestock and Poultry			
Vehicles			
Appliances			
Boat			
Jewelry			
House			
Others (specify)			

50. What are any visible environmental activities that contributed to increase the risk of disasters in your area?

□ 1 Quarrying □ 2 deforestation / logging (in the area of residence or up-stream, or mangrove)

□ 3 Damn building (in the area of residence or up-stream) □ 4 Siltation of rivers □ 5 Others _____-

51. Is there an evacuation center identified and allocated by the LGU? □1 Yes □2 No **GO TO Q 56**

52. Is this evacuation center in a safe area? □1 Yes □2 No

53. In the past 5 years, have you and your family evacuated when there are typhoons or other natural disasters coming? □1 Yes □2 No **GO TO Q 60**

54. What is your evacuation area?

1□ Public school buildings	2□Public buildings (gymnasiums, municipal halls, etc.)	3□ Church
4□ Neighbors/relatives	5□ Private buildings	6□ Others

55. How far is your nearest evacuation area? □1 - < 1 km □2 - 1 km to 2 km □3 - > 2 km

56. Who provided these evacuation centers?
□1 LGU□2 Church □4NGOs□5 Others _____

57. What are the facilities available in your evacuation area? (can be multiple responses)

□1 toilet □2 kitchen □3 potable water □4 sleeping quarters □5 medicines □6 others _____

58. How do you assess the condition of the facilities and services in your evacuation center?

□1 Good□2 Fair□3 Needs improvement / Poor

59. What are the inadequate services in your evacuation center? (Can be multiple responses)

□1 toilet □2 food □3 potable water □4 sleeping quarters □5 medicines □6 others _____

60. Did you receive any training on disaster / risk management? □1 yes □2 no **GO TO Q 65**

61. What information did you receive during the training? (Can be multiple responses)

□1 on warning / alert signal □2 evacuation route and sites
□3 identification of hazard and risks in your community, etc.□4 others (specify) _____

62. Were the information you received helpful? □1 Yes □2 No

63. Who provided the training? □1 barangay □2 municipal government □3 NGO □4 volunteer group

64. What coping mechanisms did you adopt to mitigate the effects of disasters you experienced?

Coping Mechanisms (Please check: can be multiple answers)		
□1 Borrowed money from relatives, friends, banks, money lenders, etc to take mitigation actions (like strengthen the housing structure against typhoon)	□5 Sold or mortgage assets	□9 Stopped schooling of children
□2 Relied on assistance from the government & other humanitarian organizations	□6 Migrated temporarily to other areas	□10 Asked children to work
□3 Used savings	□7 Sought new employment	□11 Claimed from insurance
□4 Assisted financially by relatives/money transfers/remittances	□8 Reduced expenses on food and other household consumption	□12 Others

65. How long does it take to go back to your work or livelihood after a disaster?

1□< 3 days	2□ 4 days to 7 days	3□ 8 days to 15 days
4□ 15 days to 30 days	5□ more than 30 days	

66. How long does it take to go back to your normal life after a disaster?

1□< 3 days	2□ 4 days to 7 days	3□ 8 days to 15 days
4□ 15 days to 30 days	5□30 to 60 days	6□ more than 60 days

67. How do you know if natural disasters (typhoons, floods, earthquake drought, and landslides) will occur?

□1 Radio	□3 LGU announcement	□5 Cloud formation	□7 Cell phone/Text	□9 Others (Specify)
□2 TV	□4 Neighbors and relatives	□6 Animal sounds and signs	□8 When they are happening	

68. Are warnings given on time to prepare your evacuation and safe guard your belongings? □1 Yes □2 No

69. What is your assessment of the warning given by authorities? □1 Good □2 Fair □3Poor / needs improvement

70. How long did it take for local authorities to provide emergency or relief services after the disaster?

□1 - < 3 hours □2 - < 6 hours □3 - < 12 hours □4 - < 24 hours □5 - > 1 day

71. What does your family do to prepare for and mitigate natural disasters? (Can be multiple responses)

Mitigation Activity	Cost Incurred
□1 Tie ropes on the house	
□2 Stockpile food and other essentials	
□3 Prepare emergency kit	
□4 Strengthen river embankments	
□5 Clean sewers and canals	
□6 Move to evacuation centers or safer places of relatives and friends/neighbors	
□7 Move productive assets to safer places	
□8 Others	

72. Did the government and other humanitarian organizations do anything to prepare for or mitigate the effects of natural disasters in your areas? □1 Yes □2 No **END OF INTERVIEW**

73. If yes, what was done? (Please check the appropriate box, can be multiple responses)

Program/Project
□1 Family preparedness and mitigation
□2 River, dikes embankment strengthening
□3 Emergency medicine
□4 Search and rescue
□5 Community organizing for preparedness and mitigation
□6 Early warning
□7 Strengthening of bridges, water supply, electricity, etc.
□8 Others (please specify)

74. What were the post-disaster assistance extended by the government and other humanitarian organizations? (Please check)

Assistance Extended	Government	Humanitarian Organizations / NGOs
□1 Food and water supply		
□2 Emergency shelter		
□3 Emergency medicine		

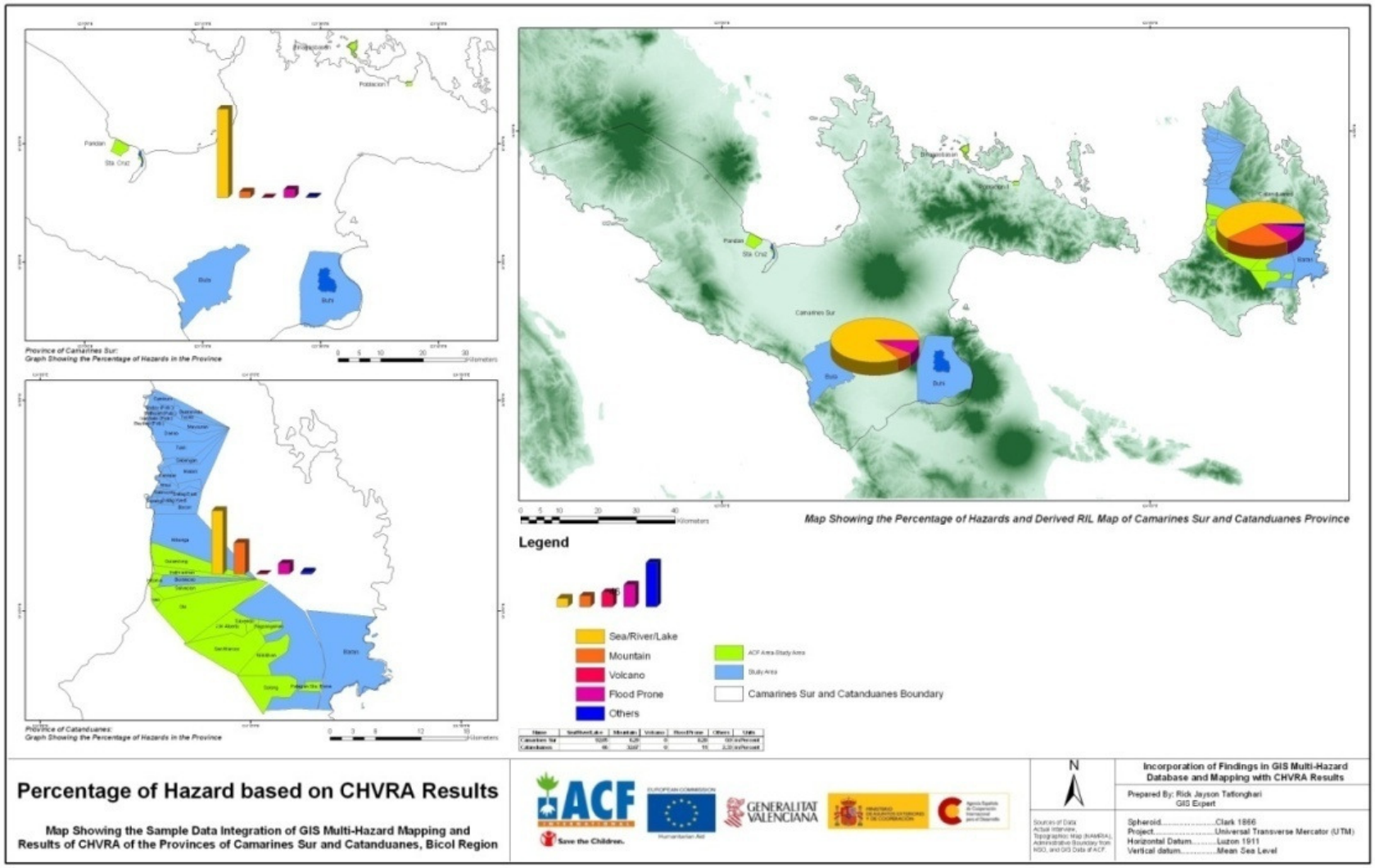
□4 Search and rescue		
□5 Emergency employment		
□6 Housing and relocation		
□7 Livelihood assistance (agricultural inputs; credit; etc.)		
□8 Others (please specify)		

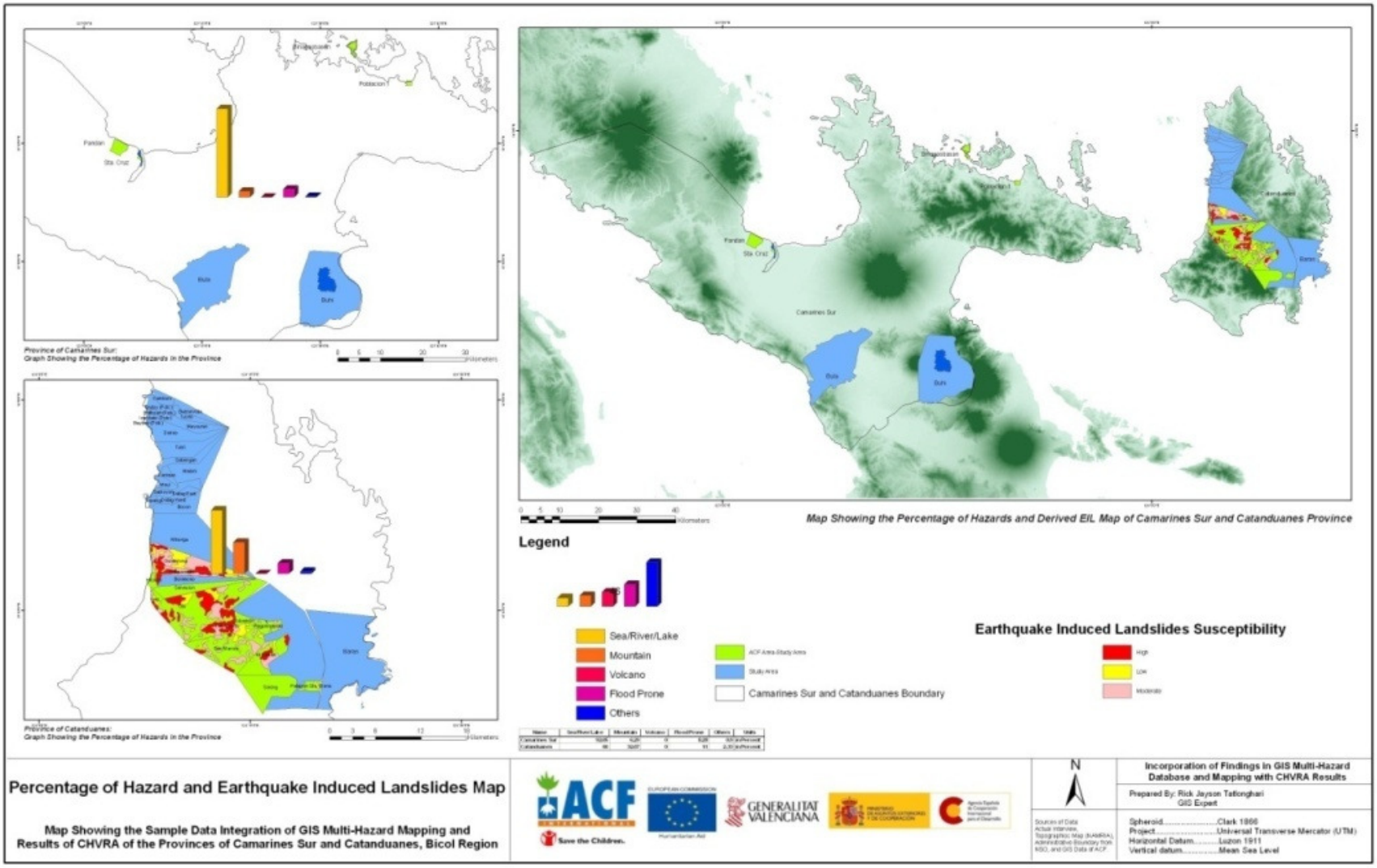
75. Were the services / assistance you received after the disaster adequate or enough for the basic needs?

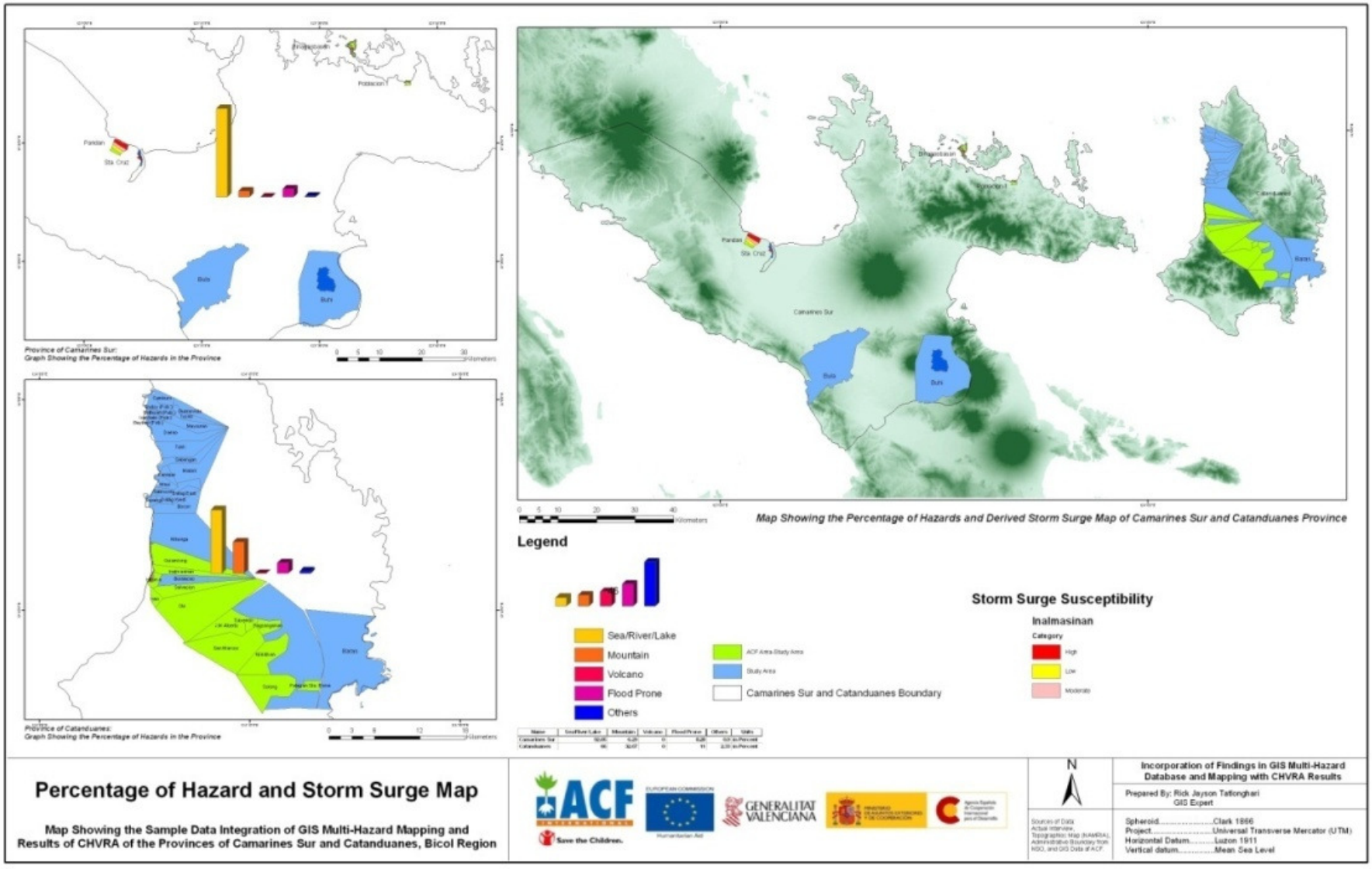
□1 Yes □2 No **END OF INTERVIEW**

This ends the interview. Please ask the respondent if he/she has any questions/comments.
Thank the respondent.

Annex 4. Sample GIS Maps




Province of Camarines Sur:
Graph Showing the Percentage of Hazards in the Province
Province of Catanduanes:
Graph Showing the Percentage of Hazards in the Province
Map Showing the Percentage of Hazards and Derived EIL Map of Camarines Sur and Catanduanes Province
Legend
Sea/River/Lake
Mountain
Volcano
Flood Prone
Others
ACF Area Study Area
Study Area
Camarines Sur and Catanduanes Boundary
Earthquake Induced Landslides Susceptibility
Percentage of Hazard and Earthquake Induced Landslides Map
Map Showing the Sample Data Integration of GIS Multi-Hazard Mapping and Results of CHVRA of the Provinces of Camarines Sur and Catanduanes, Bicol Region
Incorporation of Findings in GIS Multi-Hazard Database and Mapping with CHVRA Results
Prepared By: Rick Jayson Tatlonghari
GIS Expert
Spheroid.....Clark 1866
Project.....Universal Transverse Mercator (UTM)
Horizontal Datum.....Luzon 1911
Vertical datum.....Mean Sea Level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Legend
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Mountain
Volcano
Flood Prone
Others
ACF Area Study Area
Study Area
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Storm Surge Susceptibility
Inalmasinan
Category
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Low
Moderate
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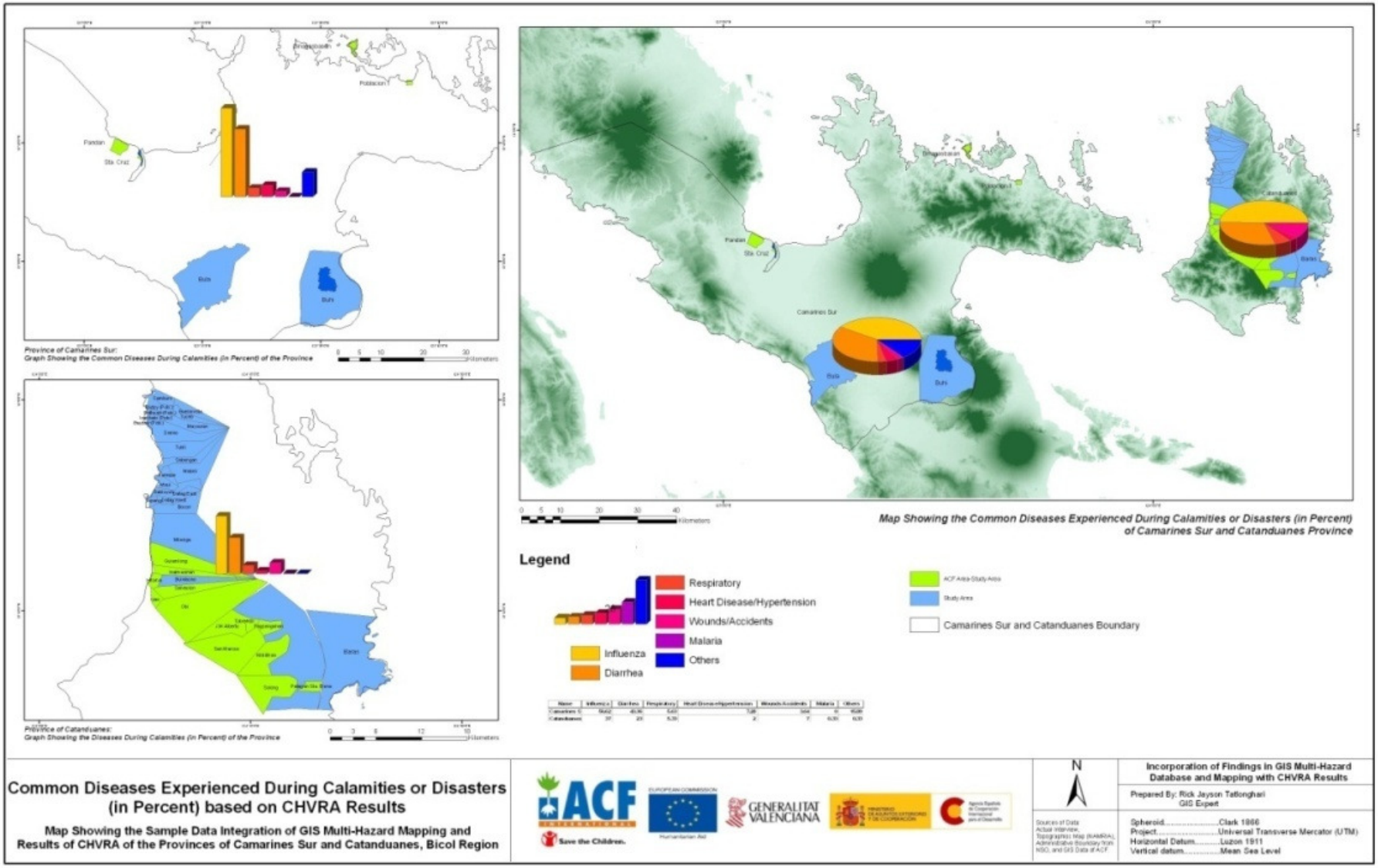
Province of Camarines Sur:
Graph Showing the Common Diseases During Calamities (in Percent) of the Province
Province of Catanduanes:
Graph Showing the Diseases During Calamities (in Percent) of the Province
Map Showing the Common Diseases Experienced During Calamities or Disasters (in Percent) of Camarines Sur and Catanduanes Province
Legend
Respiratory
Heart Disease/Hypertension
Wounds/Accidents
Malaria
Others
Influenza
Diarrhea
ACF Area-Study Area
Study Area
Camarines Sur and Catanduanes Boundary
Common Diseases Experienced During Calamities or Disasters (in Percent) based on CHVRA Results
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Save the Children.
Humanitarian Aid
GENERALITAT VALENCIANA
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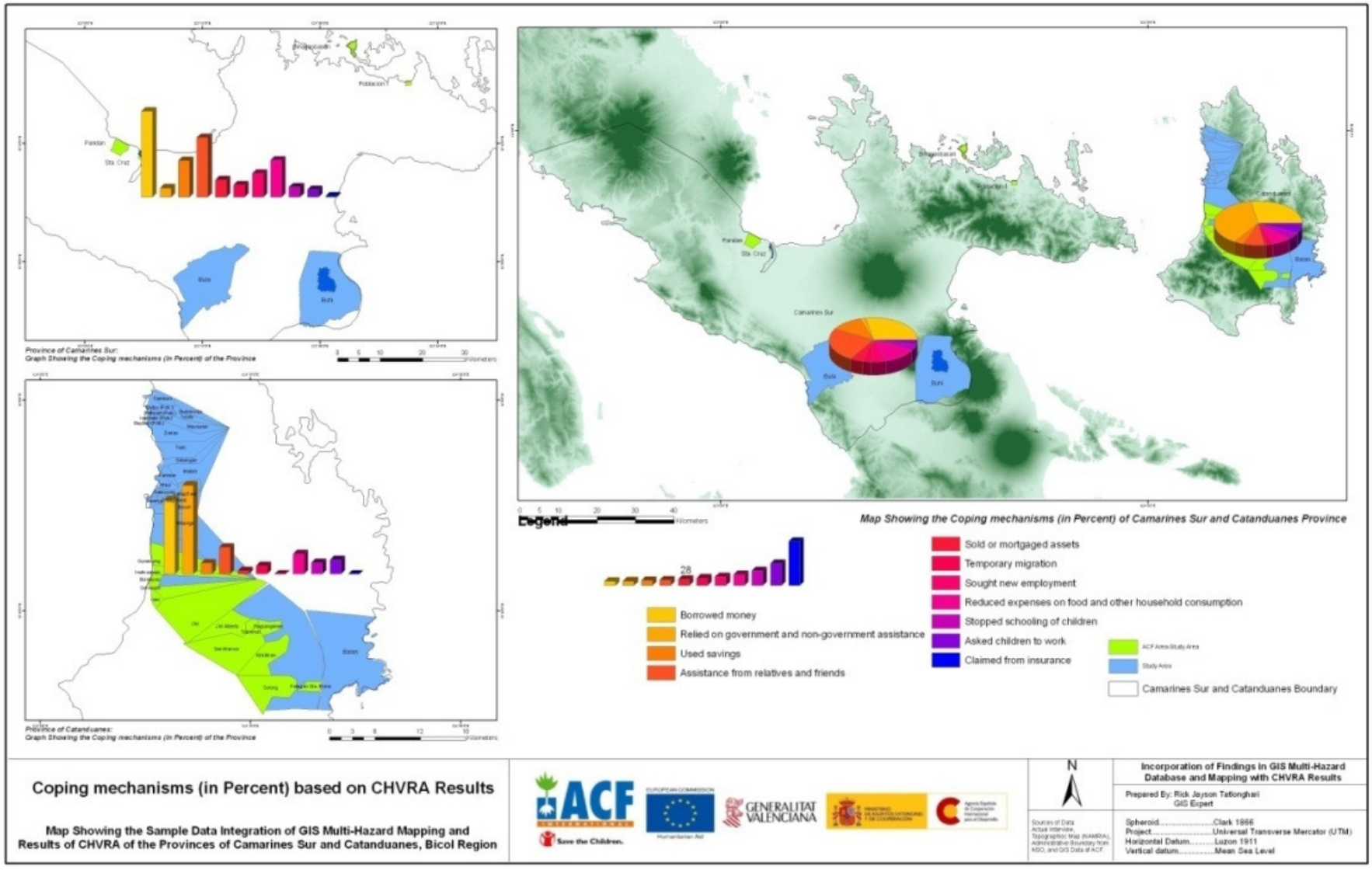
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Province of Catanduanes:
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Map Showing the Coping mechanisms (in Percent) of Camarines Sur and Catanduanes Province
Legend
28
Borrowed money
Relied on government and non-government assistance
Used savings
Assistance from relatives and friends
Sold or mortgaged assets
Temporary migration
Sought new employment
Reduced expenses on food and other household consumption
Stopped schooling of children
Asked children to work
Claimed from insurance
ACF Area Study Area
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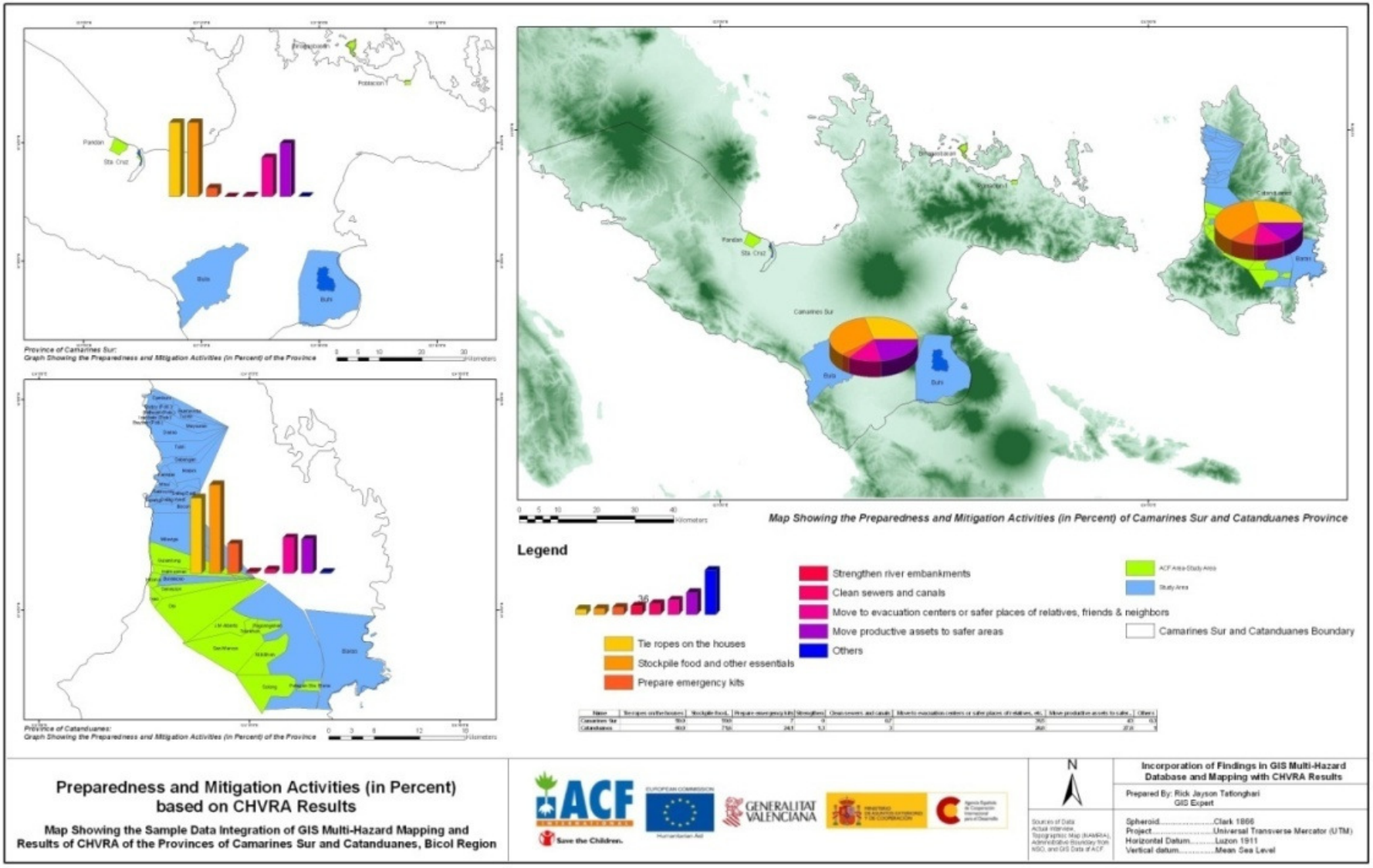
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Prepare emergency kits
Strengthen river embankments
Clean sewers and canals
Move to evacuation centers or safer places of relatives, friends & neighbors
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