Coping Mechanisms Towards Resource Degradation, Natural Disasters and Economic Crises in the Upland Municipalities of Ilocos Sur

ANDRES T. MALINNAG, JR. Ed.D.
JAIME G. RARAS, MAEd

Abstract

Fourteen municipalities comprise the upland area of Ilocos Sur and these are located in the eastern strip of the second district of the province. Most of the residents are members of the indigenous cultural communities. Out of 19,307 households, 392 were taken as sample. Among 560 municipal employees of the 14 municipalities, 233 were likewise taken as sample.

This study was based on the premise that the people of the upland municipalities employ unique, if not, impressive coping mechanisms towards three socio-economic problems, namely resource degradation, natural disasters and economic crises. The researchers also looked into the capabilities of the government functionaries along administrative services, personnel, finance, and physical facilities. These are consistent with the major concerns of the social reform agenda of the Macapagal-Arroyo Administration which are geared towards the improvement of life of the indigent in the countryside.

The researchers used frequency counts and percentages for the research descriptive parts. The multiple linear regression and correlation coefficient were used to determine the relationship between the respondents and their coping mechanisms towards resource degradation, natural disasters, and economic crises. These statistical tools were also used to determine the relationship between the level of capability of the government functionaries and the coping mechanisms employed by the people of the upland municipalities of Ilocos Sur towards the aforementioned socio-economic problems.

The findings of this study showed that families in the upland municipalities have an average of four children. Majority of the heads of families failed to seek higher education. Farming is still the primary occupation and most of the respondents are home and lot owners.

The household respondents had preventive measures to cope with resource degradation but often initiated adequate coping mechanisms towards natural disasters and economic crises. Likewise, the government functionaries found ways to cope with problems on natural disasters.

The level of administrative capability of the government functionaries was adequate; personnel capability level was very adequate; and finance was uncertain or unstable.

Along the capability of LGUs to combat resource degradation, majority of the 14 upland municipalities do not own fire trucks. All of them except San Emilio has one patrol car/jeep. Functional trucks for road clearing are also available, but loaders for the towns of Burgos and Galimuyod are unavailable. Likewise, bulldozers and/or graders are unavailable in the towns of San Emilio, Sugpon, Cervantes, and Alilem.

To combat natural disasters, every municipality has the following equipment or facilities: ambulance, evacuation sites, and emergency clinics. To further improve their services, the towns of Banayoyo, Lidlidda, San Emilio, Salcedo and Galimuyod use the schools, barangay health centers, or vocational sites as alternative venues during emergency.

To combat economic crises, all the 14 upland municipalities have centers for NFE and Cooperatives. More so, several respondents claim that their towns have NFE programs.

Among the socio-economic characteristics, only real property ownership of the household respondents had a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.

The government functionaries' capabilities in terms of administrative, and personnel, finance, and physical facilities had significant relationship with their coping mechanisms.

There was a significant difference between the household respondents' and government functionaries' coping mechanisms towards resource degradation, natural disasters, and economic crises.

Introduction

Fourteen municipalities comprise the upland area in the province of Ilocos Sur. All of these are located in the eastern strip of the second district of the province. Most of the residents are members of the cultural communities.

The people in these upland areas experience difficulties in agriculture because of drought and sometimes floods resulting to death. Difficulties in fighting epidemics and maintaining good health, scarcity of food or lack of food security resulting to high mortality rate are evident.

Aside from the difficulties mentioned above, the researchers decided to look deeper into the coping mechanisms of the people of the upland municipalities towards resource degradation *(kaingin* and the use of chemicals), natural disasters (floods, typhoons, droughts, and earthquakes), and economic crises (food shortage and unemployment).

The researchers were also interested to look into the capabilities of the government functionaries along administrative services, personnel, and finance, and to determine whether the services they render are enough. These are consistent with the major concerns of the social reform agenda of the present administration which is the improvement of life of the urban poor and the indigent in the countryside, as revealed in the State of the Nation Address (SONA) of the Honorable President Gloria Macapagal-Arroyo.

Hopefully, this study would contribute to rural development in several ways. *First,* the result of the study could be utilized in planning by the present municipal and provincial government administrators. *Second,* it may serve as a basis for the design of projects by concerned government and private entities in order to improve the standard of living in the upland municipalities of the province of Ilocos Sur. *Lastly,* it could also be used by state universities like the University of Northern Philippines in planning for the extension programs and services. All of these are meant for the people of the upland municipalities so that they can feel that they are part of the mainstream society and are not neglected by the government.

Statement of the Problem

In general, this study sought to answer this problem:

How do the people of the upland municipalities cope with the problems brought about by resource degradation, natural disasters, and economic crises?

It aimed to answer the following specific problems:

1. What are the socio-economic characteristics of the household-respondents in terms of number of children, educational attainment, occupation, and real property ownership?
2. What is the level of coping mechanisms of household-respondents and government functionaries towards resource degradation, natural disasters and economic crises?
3. What is the level of capability of the government functionaries in tenns of administrative services, personnel, and finance?
4. What are the existing government functionaries' equipment and physical facilities to combat resource degradation, natural disasters, and economic crises?
5. Is there a significant relationship between the socio-economic profile of the household-respondents and their coping mechanisms towards resource degradation, natural disasters, and economic crises taken singly and as a whole?
6. Is there a significant relationship between the capabilities of the respondent-government functionaries and their coping mechanisms towards resource degradation, natural disasters, and economic crises taken singly and as a whole?
7. Is there a significant difference between the household-respondents' and government functionaries' coping mechanisms towards resource degradation, natural disasters and economic crises?

Conceptual Framework

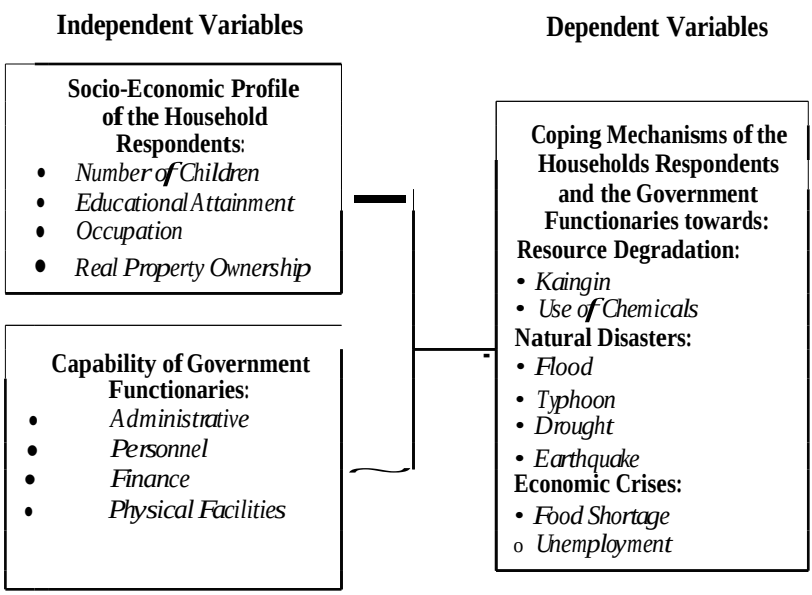

Figure 1 presents the conceptual framework of the study. The independent variables are the socio-economic profile of the household respondents and the capability of government functionaries. The dependent variables are the coping mechanisms of the household respondents and government functionaries towards resource degradation, natural disasters and economic crises.

Review of Related Literature

The Philippines is basically an agricultural country. Most of its people draw subsistence from farming. The government, as cited by Diokno (1998) through the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) based in Los Banos, Laguna pointed out that in the Philippines during the period of 1990-1995, about 51,000 hectares of forest lands went up in smoke in just one year. "This figure represents almost 50 percent of the annual average deforestation rate of the country over the five-year period."

In most cases, PCARRD noted, forest fires were caused by acts of carelessness such as cigarette butt thrown into flammable grasses, uncontrolled kaingin (slash-and-bum) farming and hunting. Worse is that forest fires are started by plain arsonists who usually make a bonfire in the forests.

Mackinnon (2000) explicitly stated that although forest fires burn mostly the scrub and the secondary forest, each fire cuts deeper into the evergreen forest, especially on peaty soils or when logging leaves too much flammable litter. The Philippines has an impressive record of diverse and endemic biological resources. In fact, it ranks number 8 in the world's list of I7 mega-diversity countries and is considered a real biodiversity megastar (Mittermeier, 1998.)

To protect and preserve the country's biological diversity, the National Integrated Protected Areas System (NIPAS) Act was passed in June 1992.

In the editorial of Canopy International (1999), it was noted that environmentalism nowadays has become not only a social issue but a mainstream political force – one with ample clout to push through legislated mandates. According to Eusebio (1977), forest fires and kaingin (slash-and-bum) are making a killing in the Philippine woodlands. Countless flora and fauna have disappeared or are headed for extinction owing to legal or illegal logging, mining operations, slash and bum or swidden farming, forest fires and pests and diseases of trees.

Sy (1998) undertook a research entitled: Rehabilitation of Natural Logged-Over Forests: The Philippine Scenario. In this study, he found out that the causes of failures lie along the reforestation/rehabilitation program of the government. The factors he enumerated include: poor quality of planting stocks, species-site incompatibility, improper handling and transport, lack of proper and sustained

maintenance and protection of project areas, pests and diseases, droughts and typhoons, and fires.

As a concluding statement, he had this to say:

> *Despite the ban on the commercial exploitation of the remaining old-growth forests and the residual forests above 18% in slope and above 1,000 m in elevation, the natural forests inevitably play crucial roles not only in the Philippine economy but also in the ecological realm. Cognizant of these multifarious benefits derived from the forests, the Philippine government and the private sector continue to exert efforts to counter further degradation and restore these natural resources in their productive states despite meager financial resources, natural calamities and other adverse factors. Through an intensified information and education campaign on the values of trees and forests and through the involvement of the local populace in the community-based forests management, a more speedy and effective rehabilitation of the natural forests is anticipated.*

As a result, he suggested strategies in support of the rehabilitation program of the government namely Integrated Social Forestry Program, Forest Land Management Program, Community Forestry Program, National Reforestation Project, Low Income Upland Communities Project and Coastal Environment Program.

Along Natural Disasters

The benefits of *regular* flooding were appreciated in ancient Egypt, where the floodwaters of the Nile River brought fertile silt and much-needed water to the fields each year. The earliest records of stream levels are from these annual Nile floods.

Flash floods are caused by extremely intense rainfall (23 cm/10 in or more an hour). They may be short-lived, continuing for a few hours or less at a given location. They tend to be somewhat more common in mountainous areas, where steep slopes cause water to travel at high speeds. They may also occur as the result of intense rainfall that rapidly swells streams, and they may cause dam failures by increasing the pressure of impounded water. Flooding is also caused by the constriction of streams by engineering projects such as landfills; removal of vegetation, which accelerates the rate of runoff; and paving and construction, which reduce the land's capacity to absorb rainfall.

Structural changes in rivers and in the lands surrounding them may not be the only causes of flooding during periods of heavy rains. Scientists suggest that the shifting rain patterns responsible for much of the unusually heavy precipitation

during the late 1990s may be the result of EI Niiio events. Weather changes associated with the greenhouse effect may also be contributing to the increased rainfall levels

Two different and at times competing approaches are used in attempting to prevent or reduce damage caused by river flooding. The structural approach relies on dams and reservoirs, levees or dikes, modification of stream channels, flood-diversion systems, and treatment of watersheds. Flood-control dams impound water at times of flood to mitigate downstream hazard; then, after the threat subsides, water is slowly released. Artificial levees raise the height of stream banks, thus reducing the likelihood of flooding. Straightening of channels to allow floodwaters to flow faster and therefore shallower is yet another method. In some places, floodwaters are diverted into previously prepared holding basins to reduce the flood crest downstream. Another technique diminishes the amount of water entering streams by reforesting watersheds and by detaining runoff high in the headwaters of a river (Saul A.,1992).

Critics of the structural approach note that the cost of flood-control structures often exceeds the value of the property being protected. In addition, such restraining structures as artificial levees tend simply to move the hazard upstream or downstream, and levee failure can be extremely serious. Channel straightening is often temporary.

Advocates of the nonstructural approach prefer using zoning, subdivision regulations, and public acquisition to prevent new building in floodplains. They encourage using these lands for compatible purposes, such as for agriculture and parks. For areas of existing development, early-warning systems and flood insurance are prescribed.

Critics of the nonstructural approach agree that avoidance of flood-prone areas is desirable. They point out, however, that many major cities were sited adjacent to bodies of water for purposes of transportation, power generation, and water supply and that it is economically unfeasible to abandon these metropolitan areas. Recent trends in flood control have been toward the use of both approaches, as nonstructural methods have gained greater recognition

Aside from floods, another natural occurrence that adversely affects man is the earthquake. An earthquake occurs when stress builds up in one spot on the Earth's crust to a level sufficient to overcome the frictional forces resisting the sliding of a preexisting fault, or to break rock and create a new fault.

The most effective means of minimizing the destruction caused by earthquakes is through seismic hazard reduction. This approach recognizes the inevitability of earthquakes and tries to reduce their effect in populated regions. The key elements of a hazard reduction program are a hazard map, a force equation, and a building code. The hazard map divides a state or country into several seismic

zones, with different hazard ratings based on the likelihood of strong ground motion. Many different geological and seismological factors are used to construct such a map, including the historical pattern of earthquakes, proximity to major faults, and the presence of geological structures known to be associated with earthquakes.

Along Economic Crisis

Macarayan (1999) in her article entitled Food Security Through Global Cooperation remarked that planning elements dominate developing countries' food policy. Most governments intervene in agricultural market in order to achieve food policy objectives. Valdez and Siamcualla (1986) as cited by Macarayan (1999) revealed that food consumption in a region will be more stable than in individual countries if trade between countries is allowed.

Lamberte et al (1999) proposed a credit program properly managed by cooperatives to be used as an effective instrument for uplifting the living standards of the poor. The government, they noted, must transfer all directed credit programs to regular government banks and rationalize them. It must see to it that government banks remain focused on their primary mandates. Aside from that for credit programs covered under certain agreements with donor agencies, the government must renegotiate these agreements so that they can be transferred to the government owned-funds.

The national unemployment rate went down from 13.9 percent last year to 13.3 percent this year according to a report from the Department of Labor and Employment (DOLE). Labor Secretary Patricia Sto. Tomas was quoted as saying that the 0.6% decline in unemployment can be attributed to the increased number of workers in the informal sector. Sto. Tomas bared DOLE programs to protect non-regular employees like contractual and casuals that include an information drive on their rights and financial benefits. DOLE also noted a rise in employment in the agricultural sector by 10%, industrial sector by 5.4%, and services by 5%. (http//www.inq7.net/brk/2001 /jun/30/text/brkpo] 9-1-p.htm).

It could be theorized at this point that the difficulties or problems encountered by the people have solutions as cited by the various books and special reports. The same is true to the people of the upland municipalities of Ilocos Sur, provided that the people as well as the government functionaries are united and sincere in addressing the crises for a better living.

Assumptions

The researchers took into consideration the following assumptions:

1. The two groups of respondents in this study were classified to be the best sources of information about the coping mechanisms employed by the municipalities along the indicated variables.
2. The fourteen upland municipalities experience problems along resource degradation, natural disasters, and economic crises.
3. The questionnaire used/distributed was valid and reliable.
4. The respondents answered the questions honestly under normal conditions.

Null Hypothesis

There is no significant relationship between the socio-economic profile of the household-respondents and the coping mechanisms of the household-respondents and the government functionaries.

Operational Definition of Terms

For purposes of clarification and understanding, the following terms are hereby operationally defined on the basis of their usage in this study.

Coping mechanisms. It refers to the various ways and means utilized by the households and the government functionaries to adjust in new situations.

Upland Municipalities. It refers to the 14 towns of Ilocos Sur which are categorized as cultural communities.

Socio-Economic Profile. It refers to the conditions or characteristics of the respondents in terms of number of children, educational attainment, occupation and real property ownership.

Capability of Government Functionaries. It refers to the capability of local and national government officials who render service to the people in tenns of administrative, personnel, finance and physical facilities.

Resource Degradation. It refers to man-made destruction of natural resources such as cutting of trees resulting to destruction of watershed and pollution of the rivers.

Kaingin. It refers to the massive felling and burning of trees in the forest wherein cleared tracts of lands are used in the planting of root crops and other legumes.

Methodology

Research Design and Instrument The researchers used the descriptive method A structured interview schedule for household-respondents and a questionnaire for the respondent government functionaries based on the results of the preliminary interviews were administered. **A** documentary analysis was also used in gathering pertinent data.

The pre-testing of the interview schedule for the household heads was conducted among the residents of Bugnay, Candon City whose cultural characteristics are akin to the 14 upland municipalities of Ilocos Sur. The validation of the content of the questionnaire was tested among the city employees of Candon City. Random sampling was used in selecting the respondents for both groups.

Population and Sample. From 19,307 households of the 14 upland municipalities of Ilocos Sur, 382 was taken as sample households. Out of 560 municipal employees, 233 were taken as sample.

Table 1. Distribution of population and sample household-respondents and **municipal employees among the 14 upland municipalities of Ilocos Sur.**

TOWNS	No. of Brgys.	No. of House-Holds	Sample House-Holds	No. of Emplo-Yees	Sample Employees
Del Pilar	7	730	15	44	18
Sigay	7	393	8	36	15
Salcedo	21	2104	43	40	17
Galimuyod	24	1802	36	34	14
Suyo	8	2151	44	58	24
Cervantes	13	2655	54	50	21
Quirino	9	1354	27	39	16
Sugpon	6	632	13	43	18
Alilem	9	1111	22	31	13
Banayoyo	14	1317	27	36	15
Lidlidda	11	828	17	31	13
San Emilio	8	1233	25	36	15
Burgos	26	2174	44	46	19
Napgbukel	12	823	17	36	15
Total	**175**	**19307**	**392**	**560**	**233**

The size of samples for both groups was derived through the stratified random sampling, illustrated by the following formula:

$$n = \frac{N}{1 + Ne2}$$

where:

n = number of sample
N = number of population
e = lcvcl of significance at 5%

Data Gathering Techniques and Procedure. The researchers followed the standard operating procedure in securing the permission and the authorization of the local executives concerned in the official conduct of this study.

The rcscarchers personally floatcd and rctricvcd thc questionnaires with the assistance of some education students of thc university, The questionnaire for household heads was translated into lluko for easier comprehension. A portion of the questionnaire was allotted for comments and remarks.

Statistical Treatment of Data. The researchers used frequency counts and percentages for the rescarch dcscriptivc parts. The multiple linear regression and correlation coefficient were used to determine the relationship between the respondents and their coping mechanisms towards resource degradation, natural disasters, and economic crises. These statistical tools were also used to determine the relationship between the level of capability of the government functionaries and their coping mechanisms towards the aforementioned socio-economic problems.

The capabilities of the government functionaries in terms of administrative. personnel, finance and physical facilities were correlated with the coping mechanisms of the household respondents.

To determine the level of coping mechanisms of the household respondents and the government functionaries, the following scale was employed:

Scale	Interval	Level
5	4.21–5.00	Very High
4	3.41- 4.20	High
3	2.61- 3.40	Average
2	1.81- 2.60	Low
1	1.00 - 1.80	Very Low

For the level of capabilities of government functionaries along administration and personnel the scale below was followed:

Interval	Level
4.21 – 5.00	Extremely Adequatc (EA)
3.41 – 4.20	Very Adequate (VA)
2.61 - 3.40	Adequate (AD)
1.81 - 2.60	Inadequate (IN)
1.00 - 1.80	Very Inadequate (VI)

For the level of capabilities of government functionaries along finance the scale below was followed:

Interval	**Level**
4.21 – 5.00	Strongly Agrec (SA)
3.41 - 4.20	Agree (AG)
2.61 - 3.40	Uncertain (UN)
1.81 - 2.60	Disagree **(DI)**
1.0O – 1.80	Strongly Disagree **(SD)**

Discussion of the Results

Socio-economic characteristics

Table 2 shows the socio-economic characteristics of the household respondents, namely: number of children, educational attainment, occupation, and ownership of real property.

Occupation. Majority (70.15%) of the respondents were engaged in famting; only a few were public school teachers (6.63%): laborers (5.35%); local/national employees (4.85%): carpenters (2.55%); drivers (1.79%): caregivers (1.02%); auto-mechanic (0.77%); fishermen (0.51%); and electrician (0.26%). This implies parallelism to their educational attainment. Since many of them did not fiaish higher education; it was likely that they were engaged in non-professional jobs.

Ownership of real property. The household-respondents gave multiple responses as to their ownership of real property. More than half (51.79%) of them owned a house and lot. A lesser number owned unirrigated land (33.42%); irrigated land (21.68%); and house only (17.86%). A few (12.24%) had no property. This implies underdevelopment in the countryside which calls for major agricultural study to irrigate more portions of agricultural lands to boost production.

Table 2. Frequency and percentage distribution of the household respondents in terms of number of children, educational attainment, occupation **and real** property ownership.

CHARACTERISTICS	F n=392	%
Number of children		
7 and above	49	12.50
6	37	9.44
5	55	14.03
4	74	18.88
3	2	15.52
2	4	13.77
1	2	8.16
0	18	4.59
No Answer	11	2.81
Mean (r) = 3.84		
Educational attainment		
No Schooling	8	2.04
Primary	37	9.44
Elementary Graduate .	60	15.31
Did not Finish High School	62	15.82
High School Graduate	114	29.08
Two Years in College	41	10.46
Finished a College Degree	37	9.44
MA Units	16	4.08
Master's Degree	2	0.51
No answer	15	3.82
Occupation		
Fanner	275	70.15
Public school teacher	26	6.63
Laborer	21	**5.35**
Local/national employee	19	**4.85**
Carnenter	10	2.55
Driver	7	1.79
Care giver	4	1.02
Auto-mechanic	3	0.77
Fisherman	2	0.51
Electrician	1	0.26
No answer	24	6.12
Real property ownership		
House and Lot	203	51.79
Un-irrigated Land	131	33.42
Irrigated Land	85	21.68
House	70	17.86
No Property	48	12.24

Legend:
F = Frequency

Level of Coping Mechanisms Towards Resource Degradation, Natural Disasters and Economic Crises

Table 3 presents the household-respondents and government functionaries' level of coping mechanisms towards resource degradation, natural disasters, and economic crises.

Table 3. The level of coping mechanisms of the household-respondents and government functionaries towards resource degradation, natural disasters and economic crises.

LEVEL OF COPING MECHANISMS	Mean	Level
HOUSEHOLD-RESPONDENTS ...		
I. **Resource Degradation**		
Kain. gin		
We plant trees in the mountains where : properties are located	3.28	Average
Wo are the residents who take care of the forest against illegal logging and kaingin.	3.62	Hiah
We make billboards pertinent to the proper disposal of cigarette butts.	2.94	Average
Chemicals		
We put into a pit the containers of chemicals used.	3.49	Average
We tell the children the bad effects of chemicals if thrown into bodies of water.	3.96	High
II. **Natural Disasters**		
Floods		
We implement first aid by the use of stones and rocks in the eroded places.	3.46	Hiah
We make canals for waters to flow towards the rivers.	3.47	High
We plant grasses and vines in denuded parts of the forest	3.17	Average
Typhoon		
We strengthen posts of our houses and use improvised bamboo clamps for the roofings.	3.84	High
We get ready with flashlights, kerosene, can goods etc.	4.12	Often
We listen to the radio for information serving as waring to us.	4.31	Very High
We prepare our family for evacuntion shorld there be any untoward incident	3.74	*High*
Drought		
We clean and repair canals for waterin 1e plants during summer time.	3.88	High
We spread dried hay in the far to kee; .oisture for the plants.	3. Jl	Average
We also use cellophane and spread it around the plants to keep moisture	2.63	Average
We dig deep wells and install some water pipes to water the plants.	3.48	High
Earthquakes		
We are instructed to go to the "dap-ayan" or barangay halls if ever there is a strong earthquake.	2.98	Average
If ever we feel the earthquake we always go out of the house.	3.16	Average
We do not panic and we pray to God.	4.09	High

Table 3 continued

LEVEL OF COPING MECHANISMS	Mean	Level
III. Economic Crises		
Food Shortage		
We plant vegetables in our yards	4.11	High
We domesticate chickens, goats and pigs for food	4.32	Very High
We store root crops, beans, rice, salt, etc.	4.32	Very High
We need to **be** contented with what wc have like root crops (kamo. kamangeg, *tugi*, buga, etc.)	3.95	Hiah
Unemployment		
We concentrate on farming and planting vegetables	4.15	Hiah
We engage in small-scale selling of bananas, fire wood, vegetables, etc.	3.36	**Average**
We give voluntary help in times of need (bayaniban).	3.98	Hiah
GOVERNMENT FUNCTIONARIES		
I. Resource Degradation		
Kaingin		
1. Sets yearly "Fiesta ti Kabambantayan" or similar programs to plant trees.	3.75	Hieh
2. Enacts and implements priority legislative measures to safeguard the environment	3.72	High
3. Organizes and deputizes environment-friendly citizens to monitor forest activities.	3.46	Hieh
4. Coordinates with NGOs like Bantay Kalikasan, Green Peace, etc. to protect the environment.	3.44	High
As a Whole	**3.59**	**Hieh**
Use of Chemicals		
1. Sets penalty to offenders like those caught poisoning bodies of water.	3.72	High
2. Repulates the sale of chemicals to farmers.	3.45	Hieh
3. Undertakes infonnation dissemination about the negative effects of the use of chemicals.	3.53	High
II. Natural Disasters		
1. Organizes Grassroots Coordinating Council to help the flocxi victims.	3.71	High
2. Allocates enough contingency funds for calamities.	4.06	Hieh
3. Undertakes massive effort reforesting watersheds	3.62	High
4. Maintains and repairs flood control dams.	3.69	High
5. Introduces levees/dikes.	3.55	High
6. Modifies stream channel as flood diversion system.	3.28	Average
As a whole	3.71	High
Typhoon		
1. Activates emergency personnel to help typhoon victims.	3.95	High
2. Allocates enough contingency funds for natural calamities.	4.01	High
3. Prepares and conducts relief operations during typhoon times.	4.06	High
4. Undertakes regular information dissemination.	3.68	High
5. Undertakes weather modification techniques.	3.08	Average
As a Whole	3.76	High

Table 3 continued

LEVEL OF COPING MECHANISMS	Mean	Level
Drought		
I. Prioritizes construction of irrigation system, canals, diversion dams and reservoir etc.	3.83	High
2. Undertakes a modernized method of fanning like satellite farms.	3.21	Average
3. Undertakes regular information dissemination	3.37	Average
4. Develops and uses water lifting machines.	3.22	Average
As a Whole	3.41	High
Earthquakes		
1. Conducts assessment to identify fault lines in the municipality.	2.74	Average
2. Designates employees to evaluate damages caused by earthauakes.	3.33	Average
3. Initiates assistance operation to earthquake victims	3.20	Average
4. Undertakes regular information dissemination.	2.80	Average
5. Formulates and implement hazard maps.	2.76	Average
6. Enforces bulding code.	3.00	Average
As a Whole	2.97	Average
III. Economic Crises		
Food Shortage		
1. Operates rolling stores at low prices	2.72	Average
2. Encourages the people to do backyard gardening and poultry raisin.	3.97	Hieh
3. Empowers people to engage in a functional cooperative.	3.80	High
4. Reminds the people to tighten their belts.	3.50	High
5. Undertakes agricultural education to the residents.	3.83	High
6. Subsidizes state agricultural experiment stations	3.18	Average
7. Encourages contour *farming* and crop rotation	3.46	High
8. Encourages furrow irrigation.	3.28	Average
9. Implements price control law.	3.09	Average
As a Whole		
Unemployment		
1. Initiates non-formal education, skills training to augment their income.	3.64	High
2. Invites capitalists and other investors to put up their business in the localitv.	2.87	Average
3. Taps overseas Filipino workers to come home and do legal business in the municipality.	2.70	Average
4. Endorses cooperative village enterprise.	3.18	Average
5. Provides community loans.	3.47	High
6. Introduces cooperative farming.	3.27	Average
7. Implements the minimum wage law.	3.22	Average
Asa Whole		

Along Resource Degradation, The level of coping mechanisms of the household respondents along resource degradation particularly in the prevention of kaingin. The respondents are not consistent or serious in preventing the people who are cutting/burning trees for legume plantation and the like.

The respondent government functionaries particularly along the prevention of Kaingin gave a mean of 3.59 or "High". It means that they are consistent and serious in their drive to prevent Kaingin. In fact they even set yearly "Fiesta ti Kabambamtayan" or similar programs to plant trees, enact legislative measures to safeguard the environment; organize and deputize environment-friendly citizens to monitor forest activities and coordinate with other NGOs like Bantay Kalikasan, Greenpeace and others.

For the use of chemicals a mean of 3.73 or "H•; :," was obtained. It means that the people were aware of the dangers of disposin, the chemical containers without care; likewise, they also remind their family members and kids of the dangers posed by the chemicals thrown into the bodies of water. The respondent government functionaries gave a mean of 3.57 or "High". It means that the Local Government Units (LGUs) set penalties to offenders caught poisoning bodies of water; undertake information dissemination about the negative effects of improper disposal of chemicals and their containers.

As a whole, the coping mechanisms of the household respondents and the government functionaries are at "High" level with a mean of 3.51 and 3.58 respectively. This implies more serious coping mechanisms to be done along kaingin and the proper use and disposal of chemicals in order to prevent degradation of our natural resources.

Along natural disasters. The respondents' level of coping mechanisms towards flood, typhoon, drought, and earthquake are also presented in Table 3.

For floods, a mean of 3.37 or "Average" was obtained. Its means that the people occasionally implement first aid to eroded areas ie. planting of grasses in denuded areas to prevent soil erosion that may cause ı sh floods and clearing of canals.

The respondent government functionaries partiarly in the prevention of floods, revealed a mean of 3.71 or "High". It means that the LGUs organize grassroots coordinating councils to help flood victims; allocate contingency funds for calamities; undertake regular information dissemination; undertake massive effort in reforesting watersheds; maintain and repair flood control dams, introduce dikes and modify stream channels as flood diversion system.

For typhoons, a mean of 4.0 for the household respondents and 3.76 for the LGUs, both at "High" level were obtained. It means that the household

respondents are often prepared with the following: batteries for flashlights and radios, kerosene, and canned goods. On the other hand, the LGUs activate emergency personnel to help typhoon victims; allocate and release contingency funds; prepare and conduct relief operations during and after the typhoon; and undertake continuous weather information dissemination.

For drought, a mean of 3.21 or "Average" was obtained for the household respondents and 3.41 or "High" for the government functionaries or LGUs. This means that the level of coping mechanisms and practices of the household respondents is "High" particularly on the maintenance of canals to water their plants during summer time; spreading of hay to maintain moisture in the fields; use of plastic covering to maintain moisture ? the soil; and use of hose pump by gas/diesel engine generators.

This is backed up by the study Jf Fernandez (1998) who said that ordinary Filipinos can rectify a grievous wrong done on the nation by rapacious and greedy men. Moreover a special feature in the Philippine Star (2001) gave credence to the efforts of the government to alleviate the plight of the poor through inauguration of the Casecan project in Luzon to bring more water to un-irrigated fields.

For earthquake, a mean of 3.41 or "High" was obtained for the household respondents and a mean of 2.97 or "Average" for the government functionaries or LGUs. This means that the household respondents often do the following as part of their coping mechanisms and practices: go out from their home; evacuate the people to barangay hall or "dap-ayan" where it is safer to stay; be calm and pray. On the other hand the government functionaries or the LGUs occasionally conduct assessments to identify local fault lines in the municipality; undertake regular infonnation dissemination; formulate and implement hazard maps; and enforce building codes.

As a whole, a mean of 3.50 or "High" was obtained for the household respondents and 3.46 or "Very High" for the government functionaries or *LGUs.* It implies that there are more serious coping mechanisms being done by the government functionaries or LGUs specifically during drought and earthquakes.

Along economic crises. For food shortage, a mean of 4.18 was obtained for the household-respondents and a mean of 3.43 for the government functionaries or LGUs, both at "High" level. It means that the household respondents often undertake indigenous and diversionary tactics like planting vegetables in their backyards; raising some livestock and poultry; and having a stock of beans, rice, salt and others. They eat root crops, bananas, and other available crops in the locality.

For unemployment, a mean of 3.83 at "High" level was obtained for the household respondents. It means that they depend on farming, engage in small trading industry to sell their products like banana, vegetables and others to combat

unemployment. For the government functionaries or LGU respondents, a mean of 3.19 at "Average" level was revealed. It means that the LGUs occasionally initiate non-formal education or skills training program to augment the people's income; invite capitalists and other investors to put up their business in the locality; tap OFWs to invest in their own municipality; provide community loans; endorse cooperative village enterprise; introduce cooperative farming; and implement the minimum wage law.

As a whole the coping mechanisms of household respondents yielded a mean of 4.01 which falls under the level "Often" and a mean of 3.31 or "Average" for the government functionaries or LGUs specifically along economic crises.

For the grand mean, the household respondents yielded a mean of 3.67 at "High" level while a mean of 3.45 was obtained for the overnment functionaries also at "High" level.

Level of Capability of the Government Functionaries

The level of capability of the government functionaries was measured in terms of their capability in administration, personnel, finance and physical facilities.

Table 4 shows their level of capability in administration, personnel, and finance.

Table 4. Level of capability of the government functionaries in administration, personnel and finance.

DIVISION	LEVEL OF CAPABILITY	
	Mean	Level
Administration	3.18	AD
Personnel	3.49	VA
Finance	3.14	UN

Legend: VA - Very Adequate UN - Uncertain
AD – Adequate

Administration. The LGUs' capability in adrzistration had a mean of 3.18 at "Adequate" level. It means that the LGUs adequately provided administrative services. In fact the LGUs provided training or seminar-workshops pertinent to coping mechanisms towards the following: (a) preservation of natural resources such as prevention of the dangers of kaingin and bad effects of chemicals in fishing; (b) natural disasters particularly in the emergency measures in cases of typhoons, floods and earthquakes; and (c) minimizing if not eradicating economic crises such as the conduct of non- formal education for purposes of augmenting family income.

Personnel. The LGUs' gamered a mean of 3.49 at "Very Adequate" level. It means that the LGUs had very adequate and capable personnel. In fact, to strengthen the capability of their personnel. the LGUs conducted training or seminar at least once a year on how to man the affairs of the LGUs in times of natural disasters, and economic crises. Likewise, the LGUs allowed the employees to enjoy a certain degree of freedom in accomplishing their tasks.

Finance. The table shows a mean of 3.14 at "Uncertain" level. It means that the LGUs were uncertain in their coordination efforts with national and international funding agencies to re se enough funds or allocate bigger budget to agencies that have direct linkages to +i grassroots level.

Physical Facilities. The govemment functionaries were also asked about the number of available facilities to combat resource degradation, natural disasters, and economic crises.

Table 5 presents the existing equipment and physical facilities of the government functionaries to combat **resource degradation.**

Availability of fire trucks, As shown in Table 5, the towns of Lidlidda and Cervantes have one fire truck each. The towns of Nagbukel, Burgos, Banayoyo, San Emilio, Galimuyod, Salcedo, Sigay, Del Pilar, Suyo, Quirino, Alilem and Sugpon have no fire trucks. This implies that it is quite difficult for the LGUs to address the emergency in times of fire in the community and in the forest areas. However, neighboring towns which have fire trucks help out in cases of fire,

Table 5. Inventory of the government physical facilities to combat resource **degradation per municipality.**

EQUIPMENT	M1	M2	M3	W	S	M6	M7	MB	M9	MAO	M11	M12	M13	M
Fire Truck	0	0	0	1	0	0	0	0	0	0	1	0	0	0
atrol Car/Jeep	1	1	0	3	5	1	1	1	1	1	1	0	2	0
Truck for road clearing	1	1	2	3		1	1	1	1	1	3	0	1	1
oader	1	0	1	0		0	0	1	1	1	1	1	1	1

Legend:
M1 - Nagbukel
M2 - Bugos
M3 - Banay0yo
M4 - Lididda
M5 -San Emilio
M6 -Galimuyod
M7 -Salcedo
M8 -Sigay
M9 -Del Pilar
MAO - Suyo
M11 - Cervantes
M12 - Quirino
M13 - Alilem
M14 - Sugpon

Availability of functional patrol car/jeen. The towns of Nagbukel, Burgos, Lidlidda, Galimuyod, Salcedo, Sigay, Del Pilar, Suyo, and Cervantes have one patrol car/jeep each. The town of Alilem has 2 patrol cars and the towns of Banayoyo, San Emilio, Quirino, and Sugpon have no patrol car/jeep.

Availability of trucks for road clearing. Most of the upland municipalities have trucks for road clearing. The towns of Lidlidda and Cervantes have three

trucks each. Banayoyo has 2 trucks; one each for Nags :l, Burgos, San Emilio, Galimuyod, Salcedo, Sigay, Del Pilar, Suyo, Alilem and 5ugpon. This means that they are ready to set aside road obstructions for raster, easier, and comfortable transportation particularly during rainy seasons when soil erosion is rampant.

Availability of loaders. There is a total of 9 loaders in the upland municipalities. Only the towns of Burgos, Lidlidda, San Emilio, Galimuyod and Salcedo have no loader.

Table 6 presents the physical facilities of each municipality to combat natural disasters.

Table 6. Inventory of the government physical facilities to combat **natural disasters per municipality.**

EQUIPMENT	M1	M2	M3	M	M5	M	M7	MB	MD9	MA0	M11	M12	M13	M4
Ambulance	1	2	2	2	2	2	1	1	1	2	1	2	3	2
Evacuation Sites	1	1	1	1	1	1	1	1	2	1	4	1	2	1
Emergency Clinics	1	4	1	1	1	1	3	2	',	1	2	1	1	1

Legend: M1 - Nagbukel; M2 - Burgos; M3 - BanayOyo; M4 - Lididda; M5 -San Emilio; M6 -Galimuyod; M7 -Salcedo; M8 -Sigay; M9 - 'Plat; MIO; M11 intes; Mt2 _C ino; M13 - Aliem; M14- Sugon

Availability of ambulance. The town of Alilem has three (3) emergency vehicles or ambulance; two (2) each for the towns of Burgos, Banayoyo, Lidlidda, San Emilio, Galimuyod, Suyo, Quirino and Sugpon. The rest of the 14 upland municipalities have one (1) each. This implies that all the 14 municipalities have existing ambulance or jeep available for rescue operations. These vehicles were donations from the Philippine Charity Sweepstakes Office (PCSO).

Availability of evacuation sites. All 14 municipalities have evacuation sites; four (4) in Cervantes, two (2) each in del Pilar and Alilem; and one (1) in the rest of the upland towns. This means that the LGUs have designated areas to be used as evacuation sites when needed. It further implies that the LGUs prioritize the safety and welfare of the constituents during calamities.

Aygi]ability and/or number of emergency clinics. There are four (4) emergency clinics in Burgos; three (3) in Salcedo; two (2) each in Sigay and Cervantes; and the rest of the upland towns have one (1' each. This shows that all the 14 LGUs give high importance to the health and weh, e of the people.

Availability of other facilities, The towns o1 mayoyo, Lidlidda, San Emilio, Salcedo and Galimuyod claim they use any of .:: following facilities as alternative venues: schools, barangay and health center or ,ocational site.

Table 7 shows the physical facilities of each municipality to combat economic crises.

Table 7. Inventory of the physical facilities to combat economic crises per municipality.

PHYSICAL FACILITY	M1 n=16	M2 n=15	M3 n=15	M4 n=13	M5 n=14	M6 n=14	M7 n=17	M8 n=16	M9 n=18	M10 n=24	M11 n=21	M12 n=18	M13 n=18	M14 n=18
WFE Centers	1	1	2	2	1	1	1	0	1	1	0	1	3	1
Cooperatives	0	1	1	2	1	2	3	1	2	1	4	2	3	1

Legend:

M1 - Nagbukel M5 San Emilio M9 -Del Pilar M13 - Alilem
M2 - Burgos M6 -Galimuyod M10 -Suyo M14 - Sugpon
M3 - Banayoyo M7 -Salcedo M11 - Cervantes
M4 - Lidlidda M8 -Sigay M12 -Quirino

Availability of Centers for NFE. Most of the 14 LGUs have NFE centers; three (3) in Alilem, two (2) each in Banayoyo and Lidlidda, and one (1) each in Nagbukel, Burgos, San Emilio, Galimuyod, Salcedo, del Pilar, Suyo, Quirino and Sugpon. Only the towns of Sigay and Cervantes have no NFE center. This implies that the upland municipalities have sites for Non-Formal Education programs for the development of the constituents in order to augment the family income.

This is supported by the findings of Olanio (2002) who found out that all clientele respondents of the upland municipalities attended the literacy cum livelihood program where they could read and write simple sentences, figures, and numbers.

Number of Cooperatives. The town of Cervantes has four (4) existing cooperatives. There are three (3) in the towns of Salcedo and Alilem; two (2) in Lidlidda, Galimuyod, del Pilar, and Quirino and one each in the towns of Burgos, Banayoyo, San Emilio, Sigay, Suyo, and Sugpon. Only the town of Nagbukel has no existing functional cooperative. This implies that the LGUs encourage the support of self-help among their constituents

This has reference to study of Lamberte (1999) who claimed that credit programs properly managed by cooperatives are effective instruments for uplifting the living standards of the poor.

The Relationship Between the Socio-economic Profile and Coping Mechanisms

Number of Children. As shown in Table 8, the number of children of the household respondents when correlated with their coping mechanisms particularly

on resource degradation resulted to an rxy value of -.051 which is lower than the critical value of .084 at .05 level of significance: the same variable when correlated with natural disasters resulted to .015 which is lower than the critical value of .084 at .05 level of significance; the same variable when correlated with economic crises resulted to .013 which is lower than the critical value of .084 at .05 level of significance. As a whole, number of children when corr;;lated with the household respondents' coping mechanisms revealed an rxy of -.011 which is lower than the critical value of .084 at .0S level of significance. This means that the number of children of the household respondents did not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore the null hypothesis is accepted.

Table 8. Correlation coefficient of the household respondents' socio-economic profile and their coping mechanisms along resource degradation, natural disasters, and economic crises.

SOCIO ECONOMIC PROFILE	COPING MECHANISMS							
	Resource Degradation		Natural Disaster		Econ. Crisis		As a whole	
	rxy	Decision	rxy	Decision	rxy	Decision	rxy	Decision
No. of Children	-.051	NS	.015	NS	.013	NS	-.011	NS
Educational Attainment	.052	NS	.028	NS	.014	NS	.048	NS
Occupation	-.020	NS	-.037	NS	-.038	NS	-.029	NS
Real Property Ownership	.187	S	.092	S	.106	S	.153	S

n= 392, Critical Value at.05 level of significance = .084

Educational attainment. The educational attainment of the household respondents when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy value of .052 which is lower than the critical value of .084 at .0S level of significance; the same variable when correlated with natural disasters resulted to .028 which is lower than the critical value of .084 at .05 level of significance; the same variable when correlated with economic crises resulted to .014 which is lower than the critical value of .084 at .05 level of significance. As a whole, educational attainment when correlated with the household respondents' coping mechanisms revealed an nxy of .048 which is lower than the critical value of .084 at .05 level of significance. This means that the educational attainment of the household respondents did not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore, the null hypothesis is accepted.

Occupation. The occupation of the household respondents when correlated with their coping mechanisms particularly on resource degradation resulted to an ny value of -.020 which is lower than the critical value of .084 at .05 level of significance; the same variable when correlated with natural disasters resulted to -.037 which is lower than the critical value of .084 at .05 level of significance; the

same variable when correlated with economic crises resulted to –038 which is lower than the critical value of .084 at .05 level of significance. As a whole, the occupation of the respondents when correlated with their coping mechanisms revealed an ry of -.029 which is lower than the critical value of .084 at .05 level of significance. This means that the occupation of the household respondents did not have a significant relationship with the coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore, the null hypothesis is accepted.

Real Property Ownership. Real property ownership of the household respondents when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy value of .187 which is higher than the critical value of .084 at .05 level of significance; the same variable when correlated with natural disasters resulted to .092 which is higher than the critical value of .084 at .05 level of significance; the same variable wher. correlated with economic crises resulted to .106 which is higher than the critical value of .084 at .05 level of significance. As a whole, real property ownership when correlated with their coping mechanism revealed an rxy of .153 which is higher than the critical value of .084 at .05 level of significance. Therefore, the null hypothesis is rejected. This means that the real property ownership of the household respondents had a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.

Relationship Between Capabilities of Government Functionaries and Coping Mechanisms

Table 9. Correlation coefficient of the capabilities of government functionaries and their coping mechanisms towards resource degradation, natural disasters and economic crises.

DMSION	COPING MECHANISMS							
	Resource Dearadation		Natural Disaster		Econ. Crisis		As a whole	
	rxy	Decision	rxy	Decision	rxy	Decision	rxy	Decision
Administrative	.558	S	.439	S	.517	S	.576	S
Personnel	.490	S	.575	S	.463	S	.581	S
Finance	.501	S	.565	S	**.489**	S	.593	S
Physical Facilities	.088	S	.165	S	.087	S	.133	S

n = 233, Critical value at = .109

Administration. The administrative capability of LGUs when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy value of .558 which is higher than the critical value of .109 at .05 level of significance; the same variable when correlated with natural disasters resulted to .439 which is higher than the critical value of .109 at .05 level of significance; the

same variable when correlated with economic crises resulted to .517 which is higher than the critical value of .109 at .05 level of significance. As a whole, the administrative capability when correlated with their coping mechanisms revealed an rxy of .576 which is higher than the critical value of .084 at .05 level of significance. This means that the administrative capability of government functionaries had a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore, the null hypothesis is rejected.

Personnel. The personnel capability of government functionaries when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy value of .490 which is higher than the critical value of .109 at .05 level of significance; the same variable when correlated with natural disasters resulted to .575 which is higher than the critical value of .109 at .05 level of significance; the same variable when correlated with economic crises resulted to .463 which is higher than the critical value of .109 at .05 level of significance. As a whole, the personnel capability when correlated with their coping mechanisms revealed an rxy of .581 higher than the critical value of .084 at .05 level of significance. This means that the personnel capability of government functionaries had a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore, the null hypothesis is rejected.

Financial aspect. The financial aspect of government functionaries when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy value of .501 which is higher than the critical value of .109 at .05 level of significance; the same variable when correlated with natural disasters resulted to .565 which is higher than the critical value of .109 at .05 level of significance; the same variable when correlated with economic crises resulted to .489 which is higher than the critical value of .109 at .05 level of significance. As a whole the financial aspect of government functionaries when correlated with their coping mechanisms revealed an rxy of .593 which is higher than the critical value of .109 at .05 level of significance. This means that the financial aspect of government functionaries had a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. Therefore, the null hypothesis is rejected.

Physical facilities. The physical facilities of government functionaries when correlated with their coping mechanisms particularly on resource degradation resulted to an rxy of .088 which is lower than the critical value of .109 at .05 level of significance but when the same variable was correlated with natural disasters it resulted to .165 which is higher than the critical value of .109 at .05 level of significance. The same variable when correlated with economic crises resulted to .087 which is lower than the critical value of .109 at .05 level of significance. This shows that the physical facilities of government functionaries have no correlation with their coping mechanisms towards resource degradation and economic crises.

As a whole, however, the physical facilities of the government functionaries when correlated with their coping mechanisms revealed an rxy of .133 which is higher than the critical value of .109 at .05 lcvel of significance. This means that the physical facilities of government functionaries as a whole had a significant relationship with thcir coping mechanisms, specifically on natural disasters. Therefore, the null hypothesis is rejected.

Table 10 presents the significant difference between the household respondents' and the government functionaries' coping mechanisms towards resource degradation, natural disasters and economic crises.

Table 10. The significant difference between the household respondents and government functionaries' coping mechanisms **toward resource degradation, natural disasters, and economic crises and as a whole.**

VARIABLE	Computed t- value	DECISION
Resource Degradation	-1.651	S
Natural Disasters	1.193	NS
Economic Crises	11.996	S
AS A WHOLE	4.451	S

tabular value = 1.645 at .05 level of significance with df = 623

Resource degradation. As shown in the table, the coping mechanisms of the household respondents and the government functionaries along resource degradation had a computed t-value of –1.651 which is higher than the tabular-value of 1.645 at .05 level of significance; thus the null hypothesis is rejected. 1his means that there is a significant difference between the coping mechanisms of the household respondents and the government functionaries along resource degradation.

Natural disasters. The coping mechanisms of the household respondents and the government functionaries along natural disasters had a computed t-value of 1.193 which is lower than the tabular-value of 1.645 at .05 level of significance; thus the null hypothesis is accepted. *This* means that there is no significant difference between the coping mechanisms of the household respondents and the government functionaries along natural disasters.

Economic crises. The coping mechanisms of the household respondents and the government functionaries along economic crises had a computed t-value of 11.996 which is higher than the tabular-value of 1.645 at .05 level of significance, thus, the null hypothesis is rejected. This means that there is a significant difference between the coping mechanisms of the household respondents and the government functionaries along economic crises.

As a whole, the coping mechanisms of the household respondents and the government functionaries along resource degradation, natural disasters, and economic crises had a computed t-value of 4.451 which is higher than the tabular value of 1.645 at .05 level of significance; thus the null hyothcsis is rejected. This means that there is a significant difference between the coping mechanisms of the household respondents and the government functionaries along resource degradation, natural disasters and economic crises.

Summary of Findings

Socio-Economic Characteristics

1. The average number of children among the household respondents is 3.84 or four.
2. Majority of the household respondents (281 or 72%) have not availed of tertiary/higher education, 114 or 29.08% are high school graduates and the rest did not finish high school and elementary.
3. Farming is the primary occupation and source of living with a frequency of 275 or 70.15 percent.
4. There were 203 or 37.80 percent who own a house and lot; followed by owners of un-irrigated agricultural lands and irrigated lands. It is also noted that there were 48 respondents or 8.94 percent who do not have real properties.

The Level of Coping Mechanisms of the Household Respondents and Government Functionaries

1. Towards Resource Degradation. A mean of 3.51 and 3.50 were given by the household respondents and the government functionaries respectively, both at "High" level.
2. Towards Natural Disasters. Tue household respondents gave a mean of 3.50 at "High" level and the government functionaries gave a mean of 3.46 also at "High" level.
3. Towards Economic Crises. The household respondents rated a mean of 4.01 at "High" level and the government functionaries gave a mean of 3.46 also at "High" level.

Level of Capabilities of Government Functionaries

I. Along Administration. A mean of 3,18 was given at "Adequate" level by the respondent government functionaries.
2. Along Personnel. The respondent government functionaries gave a mean of 3.49 at "Very Adequate" level.
3. Along Finance. A mean of 3.14 was given by the respondent government functionaries at an "Uncertain" level.

Inventory of Government Facilities to Combat Resource Degradation

1. The respondents of Nagbukel, Galimuyod, Salcedo, Del Pilar, Suyo, Sigay, Quirino and Alilem revealed that there is no existing or available fire truck. Onlv Lidlidda and Cervantes have fire trucks.
2. All upland municipalities havc a functional patrol car/jeep except San Emilio.
3. All the 14 upland municipalities have trucks available for road clearing except Quirino.
4. The municipalities of Nagbukel, Banayoyo, Sigay, Del Pilar, Suyo, Cervantes, Quirino, Alilem and Sugpon have one loader each.
5. The municipalities of Lidlidda, San Emilio, Cervantes, Alilem and Sugpon have one bulldozer/grader.

Inventory of Government Physical Facilities to Combat Natural Disasters

I. All the 14 upland municipalities of Ilocos Sur have an existing or available ambulance or jeep for rescue operation.
2. Every municipality has a designated evacuation site for the people during disasters.
3. AII the municipalities have emergency clinics for health and first aid purposes during disasters.
4. Along the Availability of Other facilities i.e., schools, Barangay Hall and Health Centers. The towns of Banayoyo, Lillidda, San Emilio, Salcedo and Galimuyod claimed they have either of the following facilities: schools, barangay and health centers or vocational sites as alternatives for emergencies. The rest of the municipalities did not identify any.

Inventory of the Government Physical Facilities to Combat Economic Crises

I. Except for Sigay and Cervantes, all the upland municipalities have their own centers or sites for non-formal education programs sponsored by the LGU for the development of the constituents in order to augment their family income.
2. Number of Cooperatives. The respondents of the municipality of Nagbukel claimed that there is no functional cooperative in their locality while the others have existing functional cooperatives.

The Correlation Coefficient of Household Respondents' Socio-Economic Profile and their Coping Mechanisms along Resource Degradation, Natural Disasters and Economic Crises

I. The number of children of the household respondents when correlated with their coping mechanisms revealed an rxy of -.011 which is lower than the critical value of .084 at .05 level of significance. This means that the number of children of the household respondents does not have a significant

relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.

2. The educational attainment of the household respondents when correlated with their coping mechanisms revealed an nxy of .048 which is lower than the critical value of .084 at .05 level of significance. This means that the educational attainment of the household respondents does not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.
3. The occupation of the household respondents when correlated with their coping mechanisms revealed an nxy of –029 which is lower than the critical value of .084 at .05 level of significance. This means that the occupation of the household respondents does not have a significant relationship with the coping mechanisms towards resource degradation, natural disasters and economic crises.
4. The real property ownership of the household respondents when correlated with their coping mechanisms revealed an nxy of .153 which is higher than the critical value of .084 at .05 level of significance. This means that the real property ownership of the household respondents bas a significant relationship with coping mechanisms towards resource degradation, natural disasters and economic crises.

The Correlation Coefficient of the Government Functionaries and their Coping Mechanisms Towards Resource Degradation,

Natural Disasters and Economic Crises

1. The administration capability of government functionaries when correlated with their coping mechanisms revealed an rxy of .576 which is higher than the critical value of .084 at .05 level of significance. This means that the administrative capability of government functionaries bas a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.
2. The personnel capability of government functionaries when correlated with their coping mechanisms revealed an rxy of .58~ which is higher than the critical value of .084 at .05 level of significance. This means that the personnel capability of government functionaries bas a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.
3. The financial aspect of government functionaries when correlated with their coping mechanism revealed an rxy of .593 which is higher than the critical value of .109 at .05 level of significance. This means that the financial aspect of government functionaries has a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises.
4. The physical facilities of government functionaries in combating economic crises when correlated with their coping mechanisms revealed an rxy of .133 which is higher than the critical value of .109 at .05 level of significance. This means that the physical facilities of government

functionaries have a significant relationship with their coping mechanisms, specifically on natural disasters.

The Significant Difference of the Coping Mechanisms of the Government Functionaries and Household Respondents Toward Resource Degradation, Natural Disaster and Economic Crisis

1. The coping mechanisms of the household respondents and the government functionaries have a computed t-value of 4.451 which is higher than the tabular value of 1.645 at .05 level of significance. This means that there is a significant difference between the coping mechanisms of the household respondents and the government functionaries along resource degradation, natural disasters and economic crises.

Conclusions

Based on the findings, the following conclusions were drawn:

Along Socio-Economic **Profile**

1. Four children is the average number of siblings in the families in the upland municipalities.
2. Majority of the respondents failed to seek higher education.
3. Farming is still the primary occupation of the people in the upland municipalities.
4. Majority of them are house and lot owners.

The Level of Coping Mechanisms of the Household Respondents and Government Functionaries Along Resource Degradation, Natural Disasters and Economic Crises

The household respondents occasionally do preventive measures along resource degradation but often initiate coping mechanisms along natural disasters and economic crises.

The Level of Capabilities of Government Functionaries

The administrative capability of government functionaries is at "Adequate" level, "Very Adequate" in terms of personnel; and "Uncertain" in terms of finance.

Inventory of Government Facilities to Combat Resource Degradation

Most of the upland municipalities do not have firetrucks, bulldozers and graders. Patrol cars/jeeps, trucks and loaders are available to combat resource degradation.

Inventory of Government Physical Facilities to Combat Natural Disasters

To address the needs of the people in tenns of natural disasters, the 14 upland municipalities have available ambulances, evacuation *sites* and emergency clinics.

Inventory of the Government Physical Facilities to Combat Economic Crises

Most of the upland municipalities put up NFE centers and cooperatives to combat economic crises.

The Correlation of Household Respondents' Socio-Economic Profile **and their Coping Mechanisms along Resource Degradation, Natural Disasters and Economic Crises**

1. The number of children of the household respondents does not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. The family size of the respondents does not increase their level of coping mechanisms towards resource degradation, natural disasters and economic crises.
2. The educational attainment of the household respondents does not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. The educational attainment of the respondents does not induce them to improve their coping mechanisms towards resource degradation, natural disasters and economic cnses.
3. The occupation of the household respondents does not have a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. The type of occupation that the respondents have does not present **a** better coping mechanism towards resource degradation, natural disasters and economic crises.
4. The real property ownership of the household respondents has a significant relationship with their coping mechanisms towards resource degradation, natural disasters and economic crises. The more properties a person has, the higher level would be his coping mechanisms towards resource degradation, natural disasters and economic crises.

The Correlation of the Government Functionaries and their Coping Mechanisms Towards Resource Degradation, Natural Disasters and Economic Crises

I. The administrative capability of government functionaries has a significant relationship with their coping mechanisms. The LGUs reflect the coping mechanisms they employ to combat resource degradation, natural disasters and economic crises.
2. The personnel capability of government functionaries has a significant relationship with their coping mechanisms. The trainings, adequacy of manpower resources, dedication of the people and the like greatly enhance their coping mechanisms towards resource degradation, natural disasters and economic crises.

3. The financial aspect of government functionaries has a significant relationship with their coping mechanisms towards resource degradation. The bigger the funding allocation of the LGUs, the more feasible and realistic are their coping mechanisms towards resource degradation, natural disasters and economic crises.
4. The availability of physical facilities of government functionaries has a significant relationship with their coping mechanisms, specifically on natural disasters. The more physical facilities that LGUs own, the faster and more effective are their coping mechanisms towards resource degradation, natural disasters and economic crises.

Significant Difference of the Coping Mechanisms of the Government Functionaries and Household Respondents **Toward Resource Degradation, Natural Disaster and** Economic **Crisis**

The levels of coping mechanisms of the household respondents and the government functionaries along resource degradation, natural disasters, and economic crises are significantly different. The coping mechanisms employed by the household respondents are different compared to the coping mechanisms instituted by the government functionaries which could be attributed to varying interests, concerns and importance.

Recommendations

Based on the findings and conclusions, the following recommendations are offered:

I. Considering the limited education of the household respondents, the government functionaries especially the LGUs should coordinate with the University of Northern Philippines to conduct short tenn trainings based on the constituents' line of interest and needs. This could also augment their income. If ever short trainings are given to them, a portion of it shall include environment awareness and proper waste management and disposal. Importance of recycling wastes is also encouraged.
2. Training of personnel of LGUs should include one year exposure or immersion (sites of occurrences of problems relative to resource degradation, natural disasters and economic crises) in order to experience manning the affairs of the LGU they intend to serve.
3. Modem technological advancements should be made available to the upland people to improve production and at the same time catch up with the advancement of technology.
4. A comprehensive study on the mountainous terrain of the eastern part of Ilocos Sur by the LGUs concerned should be undertaken to consider the possibility of the construction of dams and other water reservoir to irrigate more lands.

5. The LGUs in coordination with the Department of Environment and Natural Resources should install billboards in all forest sanctuaries to warn the people regarding the proper disposal of cigarette butts, which may cause forest fires. College students enrolled in ROTC should be tapped to serve in the government's campaign to intensify the tree planting activity by regularly going to the reforestation area for the purpose of caring and watering them.
6. The upland municipalities should group themselves as one and propose an operational plan to the Department of Interior and Local Government particularly in the Bureau of Fire Protection to establish fire fighting centers.
7. The upland municipalities should try to raise fonds to purchase patrol car/jeep and other facilities for use in time of emergency.
8. Local officials should sponsor a Lakbay Aral to Baguio City or some other municipalities whose preventive measures towards the occurrence of flash floods are greatly admired, and they should profit from it by employing the same pattern to denuded sites.
9. Farmers should be advised by farm technicians of the Department of Agriculture about the relative use of hay and other farm produce to maintain the moisture of the soil. Burning of hay and other rubbish (uprooted weeds) should be controlled by dispersion.
10. Through the initiative of the Municipal Planning and Development Coordinator, the LGUs must set a workable plan in identifying earthquake prone areas by inviting volcanologists and geologists from **PAGASA** to help them formulate hazard maps based on their findings at the same time educate the people on what to do whenever there are quakes or tremors.
11. The provincial government of Ilocos Sur should comply with the Executive Order of the President to operate rolling stores regularly among the destitute members of the society particularly the residents of the 14 upland municipalities where products like rice, canned goods are to be sold at a very low price. In coordination with the LGUs concerned, dates of operation should be scheduled and disseminated to the people. Likewise, Bantay Bilihin, a DTI scheme should be re-activated to monitor the implementation of the price control law.
12. The LGUs, during their town fiestas should conceptualize an Oplan Balikbayan to honor the OFWs and Balikbayans so that they come back to help their town and start to operate a business to contain the problems of underemployment and unemployment.

References

A. Books

FERNANDEZ, RODOLFO A 1998. Writing on Environment Crisis and Conflicts.

Hansen et al Outside Magazine, (www.infoseek.com)

B. Articles

ZAFALION FRED. 1991. A History of the Outer National Chemical Industry.

BROWER M., 1987. The Toxic Cloud: A Crow. Country Report on the Poisoning of America's Air.

DIAMANTE, DOLORES ADRIANNE et al. 1999. Transplantation: To Restore and Conserved Scagrass Beds. pp. 6-7.

DIOK.NO, GLORIA, ed. Canopy International. 1998. The Philippines: An Environmental Wasteland by the Next Century? Vol. 24p. 1.

EUSEBIO, **M. A.** 1977. Heart Rot in Trees and Decay Following Logging Wounds. Biotrop Publication No. 2. pp. 175-187.

LABISTE, MA. DIOSA. Philippine Daily Inquirer. Typhoon Sets Tone for RP's l" Conference in Rainwater Harvest November 8, 2001. p. 12.

LAMBERTE, MARIO B. 1999. Philippine Daily Inquirer. Credit Programs for the Poor: One Way to Get Out of the Poverty Trap. December 5, p. 10.

MACARAYAN, NERISSA ALMIRANEZ. 1999. The Modem Teacher. Food Security Through Global Cooperation.

MAGSAJO, DONG. The Philippine Star. Casecnan Multi-Purpose Irrigation and Power Project. Water and Poer for the Future. October 12, 2001 P. S– 13.

MITTERMEIER. R 1998. Conservation International Megadiversity Book. Pasig City.

PENAFIEL, SAMUEL R 1999. Canopy International. Improving the River Environment. Vol. 25. p. 12.

SAUL,A. 1992. Floods and Flood Management. .

SY, MANOLITO U. 1998. Canopy Interational. Rehabilitation of Natural Logged-Over Forest: The Philippine Scenario. Vol. 24 pp. 3-9.

VALDEZ, ALBERTO and SIAMCUALLA, AMMAR. 1989. Food Security in Developing Countries. Boulder, Colorado.

C. Unpublished Material

OLANIO, NARDITA F. 2002. Non formal Education Program: An Assessment for Better Quality of Life. Unpublished Master's Thesis: St. Mary's College, Sta. Maria, Ilocos Sur.

D. Others

(http://www.inq7.et/brk/2001/jun/30/text/brkpol_9-1-p.btm).

www.infoseek.com