



DISASTER RISK REDUCTION AND MANAGEMENT OF CITIES IN ILOCOS REGION

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Abstract: The researcher concluded that moderately compliant was obtained on the level of compliance on Disaster Risk Reduction and Management on disaster prevention and mitigation which highlights on early warning system in the community; and On the level of compliance on Disaster Risk Reduction and Management on disaster preparedness moderately compliant was attained. Drills and exercises for the responders was found to be neglected that requires concern. The topmost problem encountered by DRRMO personnel which affects their level of compliance on disaster risk reduction and management on disaster prevention and mitigation was outdated hazards and risk mappings in the community.

The following recommendations are offered: The Local Government Unit may consider to provide additional budget for the CDRRMO in their city for the purchase of rescue equipment and accessories that can be useful when calamity occurs in the community; and The Local Government Unit may come up with a scheme to encourage the barangays to provide their own early warning systems for the residents to know when there is warning of possible calamity to avoid property damages and casualties in the locality.

I. INTRODUCTION

The number of natural disasters is rising worldwide, which is increasingly evident every year. When a natural hazard occurs in a vulnerable community, it transforms from a potential harmful event into a disaster that has catastrophic social and economic consequences. Disasters can be seen as one of the biggest obstacles to sustainable development and poverty eradication as they can drive people into poverty and can reverse the development gains built up over decades. In same manner with devastation of lives, livelihoods and economic loss, displacement is one of the major outcomes of disasters. In the aftermath of a disaster, very often, part of the affected communities are forced to leave their homes and livelihoods to search for better living conditions in other community (Zorat, 2017).

Calamity may be classified into natural or man-made disaster that affects the people and properties that collapses the economy and inflation arises. Globally, different nations suffer from different calamities based on their geographical location. Thus, the war in between two (2) countries like Russia and Ukraine brought thousands of deaths and damage to public and private properties.

Asian countries population have the highest risk of being displaced, the Philippines in particular has a long history of disaster-related displacement crisis. Every year Philippines is hit by extreme hazards the most frequent are typhoons, earthquakes, volcanic eruptions, and floods that develop into disasters causing devastation and displacement when they occur in the presence of a vulnerable and exposed population. The high frequency of these events makes the Philippines one of the most disaster prone countries in the world which ranks second in the World Risk Index (Ginnetti, 2017).

The Philippines ranked fourth in the category of countries at relatively high mortality risk from multiple hazards, with 72.6% of the population in the danger hot spots at a high mortality risk if a natural disaster transpires. The World Bank had designated disaster risks for the Philippines contain in the categories of volcanoes, earthquakes, landslides, storm surges, cyclones, and typhoons. The Philippines also ranks highly on the list of countries at relatively high economic risk from multiple hazards, with approximately 78.7%, or a large majority, of the Philippines' Gross Domestic Product as located in at-risk areas. Thus, to describe this statistic it is as potential economic losses that affects the livelihood of people (Dilley et al, 2019).

Philippines has begun to address the issues of Disaster Risk Reduction Management and Climate Change Adaptation by creating a comprehensive, national legislative platform that allows for and demands the allocation of funding, resources, time, and organization to local, regional, as well as national Disaster Risk Reduction Management planning. These laws have been internationally lauded as one the best frameworks for addressing Climate Change and Disaster Risk Reduction Management, for their thoroughness. When United Nations Special Representative of the Secretary-General for Disaster Risk Reduction, Margareta Wahlström, visited the Philippines in 2012, she called the Philippines' legal framework for Disaster Risk Reduction Management the best in the world (Ubac, 2016).

A law was passed in 2010 that pertains to disaster risk reduction management in the Philippines. Republic Act Number 10121, known as the Philippine Disaster Risk Reduction and Management Act (PDRRMA) of 2010. As mandated under Republic Act Number 10121, the Provincial Disaster Risk Reduction and Management Office (PDRRMO) has the overall responsibility of approving the PDRRMP and ensuring that it is consistent with the Provincial Disaster Risk Reduction and Management Fund (PDRRMF). It also has the main responsibility of coordination, integration, supervision and monitoring the development and enforcement by agencies and organizations of the various laws, plans, programs, guidelines, codes, or technical standards required by this act; managing and mobilizing resources for disaster risk reduction and management (DRRM), including the National DRRM Fund; monitoring and providing the necessary guidelines and procedures on the Local DRRM Fund (LDRRMF) releases as well as the utilization, accounting, and auditing .

Under the law, the Provincial Disaster Risk Reduction and Management Office has the main responsibility of ensuring the implementation and monitoring of the Provincial Disaster Risk Reduction and Management Plan (PDRRMP). Specifically, it is tasked to conduct periodic assessment and performance monitoring of member-agencies of the Provincial Disaster Risk Reduction and Management Council (PDRRMC) and the Municipal Disaster Risk Reduction and Management Councils (MDRRMCs). Further, it is also responsible for ascertaining that the physical framework, social, economic and environmental plans of communities, cities, municipalities and provinces are consistent with the PDRRMP.

II. STATEMENT OF OBJECTIVES

This research described the Disaster Risk Reduction and Management (DRRM) of cities in Ilocos Region for calendar year 2023. In specific, the study would answer the following questions:

1. How is the Disaster Risk Reduction and Management Program in Ilocos Region be described along with:
 - 1.1 Human Resources;
 - 1.2 Financial Resources;
 - 1.3 Material Resources; and
 - 1.4 Information Resources?
2. How is the level of compliance on DRRM of cities in Ilocos Region along:
 - 2.1 Disaster Prevention and Mitigation;
 - 2.2 Disaster Preparedness;
 - 2.3 Disaster Response; and
 - 2.4 Disaster Recovery and Rehabilitation?
3. What are the problems encountered by the respondents which affect their level of compliance on DRRM of cities in Ilocos Region?
4. What measures can be proposed to enhance the compliance on DRRM of cities in Ilocos Region?
5. What are the implications of the study to Public Administration?

III. RESEARCH METHODOLOGY

This chapter illustrates the research methodologies applied, it comprised of, research design, locale, respondents, sampling design, data collection methods, research tools or instruments, and statistical treatments entailed for data gathering.

3.1 RESEARCH DEISGN

The researcher applied the quantitative descriptive research design. The survey research would provide a quantitative or numeric description of trends, attitudes, or opinions' of a population by studying a sample of that population. The study was an evaluation that intended to determine the Disaster Risk Reduction and Management aligned to Republic Act Number 10121 of 2010.

Quantitative descriptive research is a non-experimental type of research whereby the variables are measured using numerical terms although the variables under interrogation are not manipulated by the researcher (Mbuva, 2021). This research design uses survey research methodology which was applicable to this study in which the primary instrument used was the survey questionnaire.

LOCALE OF THE STUDY

The researcher conducted the study of cities in Ilocos Region. Ilocos Region is located in the Northern Luzon part of Philippines which has seas being surrounded by water which make it prone to flooding and natural hazards like earthquake. The participating four (4) cities in two (2) provinces in Ilocos Region are: Ilocos Sur Province with two (2) component cities, Candon, and Vigan, and Ilocos Norte Province which has two (2) component cities namely, Batac, and Laoag

Respondents of the Study

In this research, a total of two hundred (200) respondents took part. The breakdown was 22 CDRRMO personnel and volunteers in Candon, 19 in CDRRMO Vigan City, 120 in CDRRMO Batac City, and 39 in Laoag City CDRRMO. The CDRRMO personnel comprised of regular and job order personnel, while volunteers came from barangay officers in four (4) cities involved in the study. The respondents of this study comprised of individuals with knowledge in disaster risk reduction and management in the city. The respondents were thoroughly involved in disaster risk reduction and management operations as the principal and qualified personalities in providing pertinent and vital information required in this current research.

Job Profile	Candon	Vigan	Batac	Laoag	Total
Number of people in stratum			61,432	53,935	339,330 111,125 565,822
Strata sample size	22	19	120	39	200

IV. RESULTS AND DISCUSSION

1. Description of Disaster Risk Reduction and Management Program in Ilocos Region

1.1 Human Resources

Human resources are the people involved in Disaster Risk Reduction and Management with varied functions before and after a calamity happened in a community.

Table 1 presents the Disaster Risk Reduction and Management Program in Ilocos Region on human resources.

The Disaster Risk Reduction and Management Program in Ilocos Region on human resources on land awareness with the manager and members had varied number of people. In CDRRMO1 there are 15 individuals, 11 in CDRRMO2, 5 in CDRRMO3, and 8 in CDRRMO4. Land awareness team are responsible to provide information to the residents in the barangays on the incoming calamity and advise them to evacuate from their house to go to evacuation center in the community for safety. It implies the number of individuals in the land awareness team differs from one city to the other based on the population in the area. The number of team members vary from one city to other because of the number of volunteers providing assistance to the CDRRMO personnel. Most volunteers are the barangay officers from different barangays in the city, as mentioned by the respondents.

The methodology section outlines the plan and method that how the study is conducted. This includes Universe of the study, sample of the study, Data and Sources of Data, study's variables and analytical framework. The details are as follows:

Table 1

Disaster Risk Reduction and Management Program in Ilocos Region on Human Resources

CDRRMO Personnel	Actual Number of Persons			
	CDRRMO1	CDRRMO2	CDRRMO3	CDRRMO4
Land awareness manager and members	15	11	5	8
Land first responder rescuer manager and members	15	11	5	8
Land rescue technician manager and members	15	11	5	8
Land rescue power boat operator manager and members	15	3	3	3
Land Incident management manager and members	15	11	5	9
Water awareness manager and members	15	11	5	7
Water first responder rescuer manager and members	15	11	4	7
Water rescue technician manager and members	15	11	4	7
Water rescue power boat operator manager and members	2	3	4	2
Water Incident management manager and members	15	11	4	7
DRRMO regular personnel	3	5	2	2
DRRMO on job order personnel		10	3	
Volunteers	116	207	68	85

Land first responder rescuer manager and members in CDRRMO1 comprised of 15 individuals, 11 in CDRRMO2, 5 in CDRRMO3, and 8 in CDRRMO4, the same number of team in land rescue technician team. Land first responder rescuers are responsible to attend to the casualties in land like providing immediate care to their wounds, moving them to safe place, carrying casualties to safe place, and bringing casualties to the hospital if so required. The land first responder rescuers are provided training in first aid and carrying casualties while, the volunteers would be given instructions in lifting the victims of calamity since there was limited time to teach volunteers in providing immediate care to casualties during calamity, as observed by the respondents.

2. Level of Compliance on DRRM of Cities in Ilocos Region

2.1 Disaster Prevention and Mitigation

Disaster prevention in this study refers to the outright avoidance of adverse impacts of hazards and related disasters. It expresses the concept and intention to completely avoid any potential adverse impacts through action taken in advance such as construction of dams or embankments that eliminate flood risks, land use regulations that do not permit any settlement in high-risk zones and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake (NDRRMP, 2014). Disaster mitigation, operationally is the lessening or limitation of the adverse impacts of hazards and related disasters. Mitigation measures encompass engineering techniques and hazard resilient construction, as well as improved environmental policies and public awareness (NDRRMP, 2014).

Table 5 shows the level of compliance on Disaster Risk Reduction and Management on disaster prevention and mitigation.

On the level of compliance on Disaster Risk Reduction and Management on disaster prevention and mitigation the highest mean of 3.72 described as compliant was attained on the indicator disseminates flood forecasting in the community. According to the respondents, the usual practice is in flood forecasting the barangay officers are informed to relay it to the residents to make prepare and leave their household if it is near a sea or stream or lake to avoid possible destruction of property and loss of lives.

3. Problems Encountered by the Respondents Which Affects Their Level of Compliance on DRRM of Cities in Ilocos Region

3.1 Disaster Prevention and Mitigation

Table 10 presents the problems encountered by CDRRMO personnel which affects their level of compliance on disaster risk reduction and management on disaster prevention and mitigation.

Table 10

Problems Encountered by CDRRMO Personnel which Affects Their Level of Compliance on Disaster Risk Reduction and Management on Disaster Prevention and Mitigation

Indicators	<i>f</i>	%	Rank
Outdated hazards and risk mappings in the community	134	67.00%	1
Insufficient structural interventions in the community	119	59.50%	2
Inadequate non-structural interventions in the community	107	53.50%	3
Some residents disregard disseminated flood forecasting in the community	95	47.50%	4
Limited early warning systems in the community	88	44.00%	5
Lack of flood monitoring in the community	77	38.50%	6

The topmost problem encountered by CDRRMO personnel which affects their level of compliance on disaster risk reduction and management on disaster prevention and mitigation was outdated hazards and risk mappings in the community with 134 or 67.00% responses. It indicates that hazards and risk mapping were neglected by not making progress on the new disaster due to climate change adaption which was revealed as the major concern which is vital in disaster prevention.

3.2 Disaster Preparedness

The problems encountered by CDRRMO personnel which affects their level of compliance on disaster risk reduction and management on disaster preparedness is presented in Table 11.

Table 11

Problems Encountered by CDRRMO Personnel which Affects Their Level of Compliance on Disaster Risk Reduction and Management on Disaster Preparedness

Indicators	<i>f</i>	%	Rank
Insufficient drills and exercises for the responders	158	79.00%	1
Inadequate responders training	149	74.50%	2
Outdated contingency planning	96	48.00%	3
Limited time on pre-disaster assessment	74	37.00%	4
Limited coordination on prepositioning and stock piling	63	31.50%	5

The topmost problem encountered by CDRRMO personnel which affects their level of compliance on disaster risk reduction and management on disaster preparedness was on the insufficiency of drills and exercises for the responders provide with 158 or 79% responses obtained.

IMPLICATIONS OF THE STUDY TO PUBLIC ADMINISTRATION

The result of the study would serve as a baseline for the government sectors to build linkages with other government agencies and private sectors to face climate change in positive ways like lessen emission of gas in the atmosphere to protect the ozone layer.

The CDRRMO personnel were found to be limited even if there is job order of personnel hired. The scope of calamity varies depending on the level of the strength of the wind and water that must be monitored to warn the people residing in flood prone areas to transfer to high land or high area where it is safe.

In the community, there are stakeholders that are willing to be a part of the disaster risk reduction management program as volunteers but thorough and rigid training must be provided to them. Coordination with other private sectors with skills in rescue operation can be tapped to train the responders. Saving the lives of the respondents is important because they want to serve in the community without any compensation.

It is better to start the children to be aware on safety tips during typhoons, earthquake, and fire on what they should do to give them seminar and skills in survival technique for presence of mind during occurrence of calamity.

CDRRMO chief may likewise coordinate with schools to provide seminars to elementary children on survival skills in calamity situation which is done by the Bureau of Fire on yearly basis the conduct of Fire Drill in schools and other government and private establishments.

Being proactive and participative in disaster risk reduction management among the population in the community is the best policy to consider with. The safety of every individual is also their concern and not just depend on what the government can do to the people. Safety is everybody's concern to keep community safe from calamity through collaboration, cooperation of the people and the government.

Strengthening public awareness on risk prevention during various calamities like flood, earthquake, landslide, soil erosion, and fire will make the people ready and have presence of mind what to do when calamity will occur in the community. Preparation and awareness on disaster before it may happen will save more lives and property can be put into safety also prior to the occurrence of a calamity.

Based on the result of the study financial resources is vital in the success of disaster risk reduction and management. Frequent trainings of the responders as volunteers would enhance their knowledge and skills in land and water rescue operations to be able to save more lives in the community.

Strengthened coordination and collaboration with public and private sectors would provide additional support through donations of in kind items and financial assistance to the families and individuals affected by calamity. The aid provided by different organizations would bring bayanihan in the community as a gesture of helping people in need the locality means a lot to the people in need as positive reinforcement that they are not left out but being cared of by others.

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