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Disaster Preparedness and Local Governance in the Philippines

Sonny N. Domingo and Arvie Joy A. Manejar



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Disaster Preparedness and Local Governance in the Philippines

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Abstract

The high level of casualties, population displacements and economic costs from recent disaster events still point to necessary augmentations in disaster preparedness. Policy has to be revisited, institutional arrangements have to be reviewed and resource mobilization issues have to be addressed. RA10121, albeit strong on its own, has to be enhanced and supported by functional department policy to be aptly cascaded. Policy and planning alignments also have to be enhanced both from the national to subnational levels and horizontally within local government institutions and national government agencies.

Keywords: Disaster preparedness, local governance, disaster risk reduction and management

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Disaster preparedness and local governance in the Philippines

Sonny N. Domingo and Arvie Joy A. Manejar¹

1. Introduction / Background of the Study

1.1. Rationale

The Philippines is prone to natural disasters as it lies along both the typhoon belt and the Pacific ring of fire. Just within the current decade, thousands of lives had been lost, millions of people had been displaced and hundreds of billions worth of damages had been incurred due to disaster events.

The year 2011 saw 18 floods and landslides, 12 typhoons including the devastating typhoon Sendong, two volcanic eruptions and one earthquake – causing 1,439 casualties and a total of 11.7 million affected victims (Guha-Sapir et al. 2011). 2012 hosted typhoon Bopha which devastated provinces in Mindanao killing more than a thousand people and damaging billions worth of properties, livelihood and infrastructure. In 2013, super typhoon Haiyan's (local name: Yolanda, category 5) wind speed of more than 300 kph caused four-meter storm surges across nine regions and 44 provinces, resulting to a death toll of 8,000 people, 1.2 million destroyed houses, and PHP 200 billion of damaged properties (GFDRR, 2015; Campanero and Egargo 2017). More recent typhoons like Vinta and Urduja which came before the end of 2017 also left the Philippines with more than three hundred dead and missing and billions worth of damages. A similar disaster situation was witnessed before the end of 2018 where 126 people died and 4 billion worth of agricultural crops and infrastructure were damaged due to the floods and landslides brought about by tropical depression Usman.

The above highlight the need to augment disaster preparedness, particularly in more vulnerable developing countries like the Philippines where compounding elements magnify disaster impacts. Environmental degradation, urbanization, marginalization, high population density, weak bureaucratic institutions, and lack of preparation for disasters combine with other man-induced and natural risks. The combined risks from these factors are experienced more by the poorer communities within the developing states (Kusumasari et al. 2010). One way to mitigate the magnitude of effects of disasters is preparing for them. There have been international agreements and frameworks for perusal of these developing countries, and these are rationally integrated in the countries' national policies. However, the critical question is whether these national policies are being grounded among local communities and which mechanisms are used to implement such.

1.2. Objectives

Recognizing the need to evaluate disaster preparedness and local governance, the study generally assessed disaster risk preparedness among selected local government units and look into issues pertaining to local governance and disaster risk management.

Specifically, the study sought to conduct the following:

- a. evaluation of the national and local government policy on disaster risk preparedness;

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- b. examination of the state of preparedness activities and governance concerns in select localities, and;
- c. provision of recommendations for possible policy augmentations and implementation arrangements.

2. Methodology

2.1. Background

In a disaster-prone country like the Philippines, much is expected from the local governments which are considered to be the core of a community. A local government unit (LGU) remains integral across phases – before, during, and after disasters – as mandated by the Local Government Code of 1991. Solway (2004) outlined the basic roles of the local government in facilitating the community during a disaster. The LGU must be able to (1) assess the vulnerabilities of the area and its constituents, (2) instill basic knowledge of natural disasters and the possible impacts, (3) conduct an information and education campaign (IEC) on disaster mitigation, (4) coordinate with officials in charge of planning, construction, health, and welfare, (5) conduct first-aid trainings, (6) partner with educational institutions to broaden awareness and support existing knowledge, and (7) build evacuation centers and determine safe locations for those affected.

However, there have been instances where LGUs were sidelined in the process due to the overlapping duties and responsibilities among involved institutions, and unclear command responsibility, observed most particularly during super Typhoon Haiyan. There were also concerns pertaining the utilization of the Local Calamity Fund which will be tackled later on in the discussion. Thus, there was a need to revisit the DRRM policies, particularly the implementation processes, and determine whether the policies have an impact and reach on local communities. In line with this, the study conducted a process evaluation which focused on the evaluation of policy implementation within LGUs and looked into various indicators of preparedness and resiliency as an outcome of the policy.

2.2. Approach of the study

The research design of this study fell under one of the qualitative and non-experimental approaches. While ethnographic approach can be utilized, it was taken into consideration that the framework for disaster preparedness extended beyond a group of people under one culture; it should be a framework that can be used across the country with varying cultural differences. Thus, the study took on a narrative approach which banked on the stories told by the participants in order to comprehend the phenomenon. It differed from the ethnographic approach in the sense that it did not group together individuals coming from the same culture but rather a group of people affected or contributed to the phenomena. The design invoked a collaboration between the researcher and the participant, and it further involved a) exploration of a single or a small group of participants, b) collection of stories as a data, c) retelling the narratives, and d) validating the stories with the participant (Edmonds and Kennedy 2013).

Since one of the objectives of the study was an assessment of the disaster preparedness among local governments, the most fitting design would be the critical design. It criticized the norms of an existing system while using a scientific framework to probe further into the relationships among cultural features, economic systems, information, and social and political actions. The main purpose of the design was to identify the hidden agenda, power plays, and assumptions within the cultural system, and derive descriptions, analysis, and recommendations to inhibit

or counter the constraints (Thomas 1993; Madison 2005). The presence of power relations was integral to the design integrated with institutional framework, arrangement, and mechanism that connoted a chain of command and accountability as an important gear for the engine to work effectively and efficiently.

Figure 1. Critical design under the narrative approach (Edmonds and Kennedy 2013)

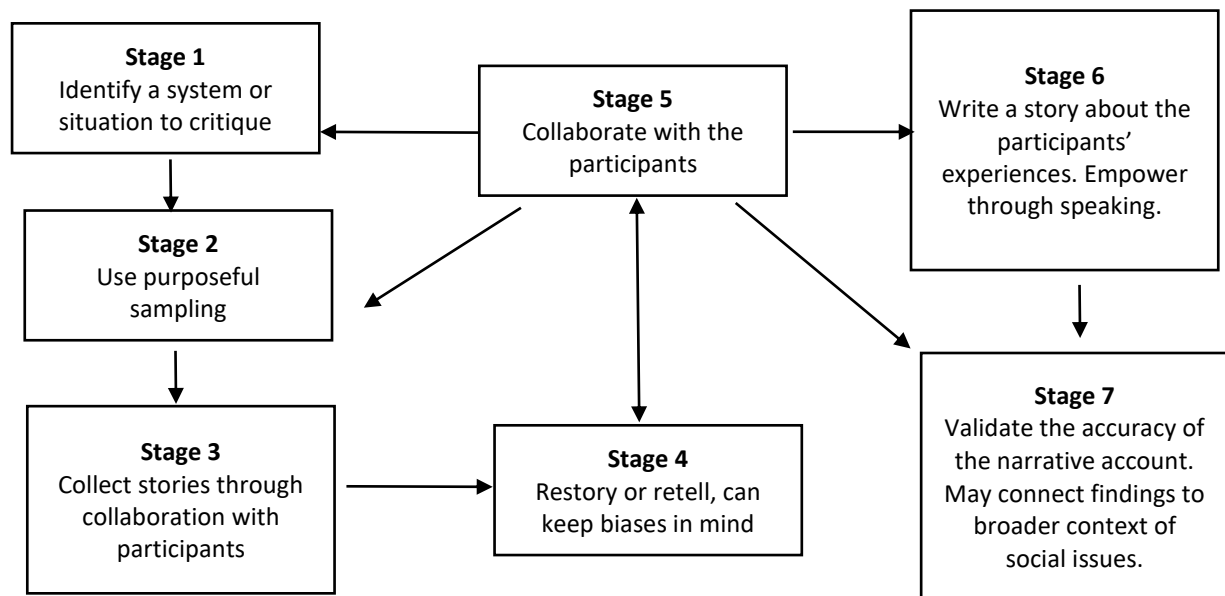
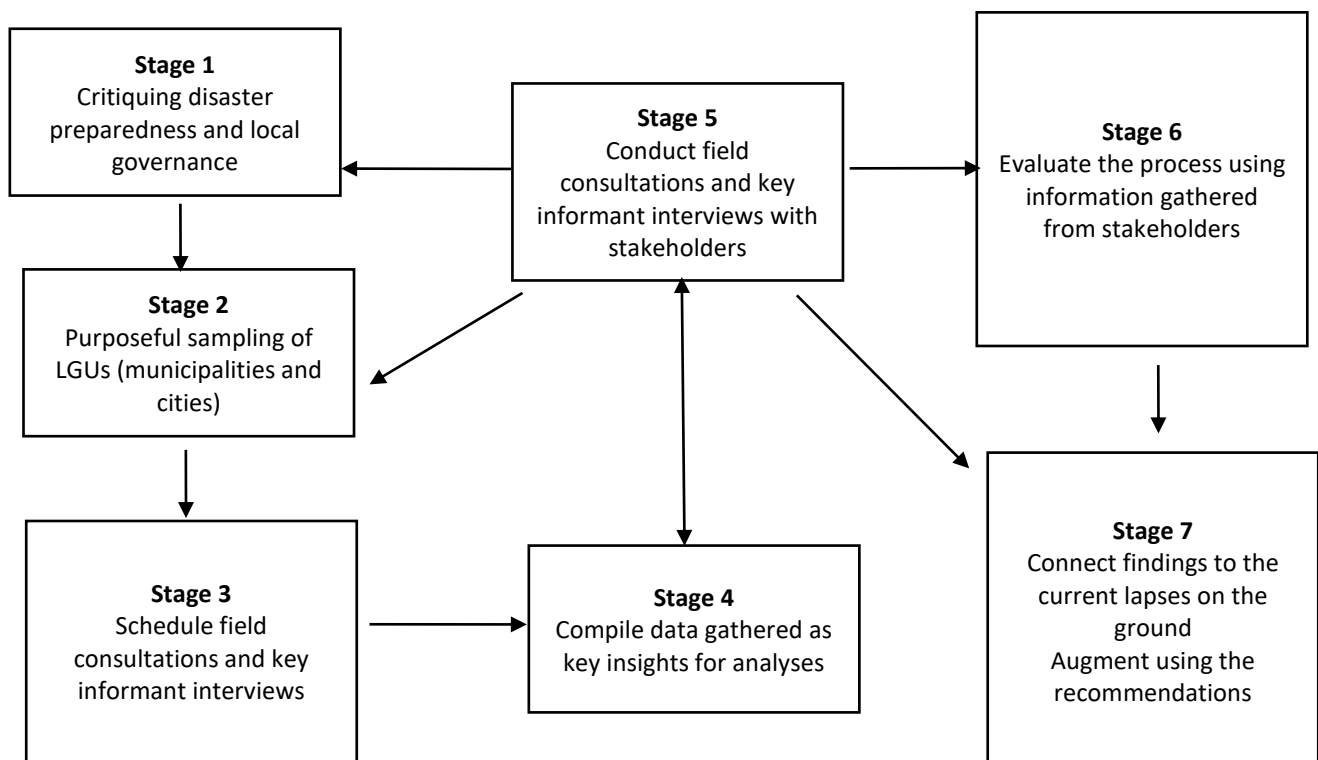


Figure 2. Critical design adapted to the study



2.3. Research design and conceptual framework

In line with the need to examine the impact and reach the policies and the implementation processes, process evaluation was used for the study. It looked into policy activities and evaluated whether they have produced the intended outcomes. This evaluation method can be conducted periodically across phases of the program or by reviewing the activities and output components. The process asked the following general questions:

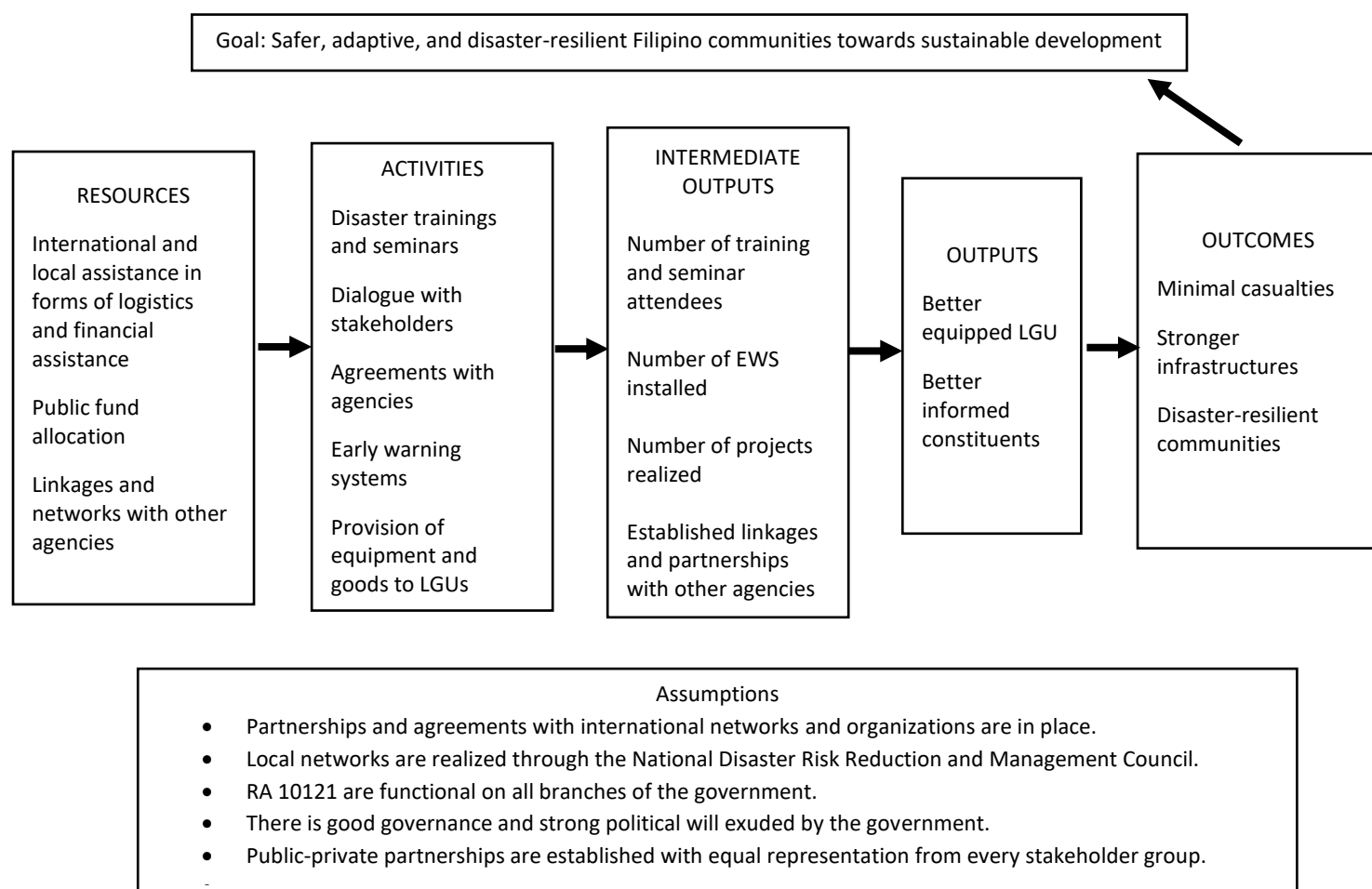
1. Who are the target beneficiaries of the policy?
2. What has the program insofar as it has been implemented?
3. When did the activities under the said program start?
4. Where were the activities conducted?
5. What are the hindrances encountered by the executing body during the implementation process?

Since interventions involved complex social and behavioral factors, it was crucial to look into the existing policies, and scrutinize the extent and impact of the implementation process across sites and stakeholders which included the intended, null, perverse, and side effects (Vedung 1997). Additionally, policymakers and implementing bodies have better insights on which factors contributed to either success or failure of the policy, and these would aid in the replication of the program to the other sites should it be considered. The process evaluation also provided links between interventions and other components of the program which outcome evaluation cannot provide as it treated the intermediate processes as black boxes.

Evaluation was started by planning followed by data collection, processing and analysis, and finally, through implementation and feedback which again sets off in a new learning cycle. Logic models have been identified as foundation of planning and core of evaluation (Logic Model Workbook nd). In the conception phase of a policy, it was recommended that stakeholders be given opportunities to participate in order to come up with perspectives that were otherwise lost to the decision makers and to clarify expectations for the policy. Logic model identified these said stakeholders and incorporated them in the evaluation process. Additionally, the model framed short, intermediate, and long-term outcomes.

The components of the logic model were linked together by if-then relationships. If resources were accessible and available for the policy, then activities under the mandate of the said policy can be carried out and implemented; if these activities were correctly implemented, then certain outputs and outcomes can be achieved.

Figure 3. Logic model (Logic Model Workbook nd)



The framework below linked the core functions of the process evaluation. This evaluation method included key components such as context, reach, dose, fidelity, implementation, and recruitment to fully arrive at an objective observation. Interventions may vary from one context to another along with causal assumptions which correspond to a different set of consequences when implemented in a separate setting or among different subgroups.

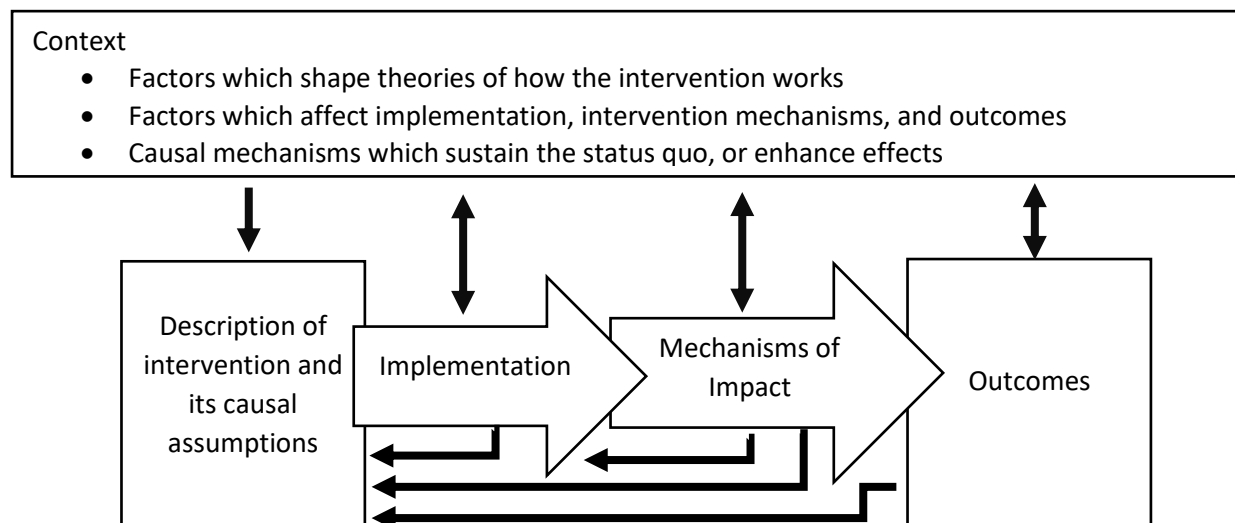
Table 1. Key components of process evaluation (Linnan & Steckler 2002)

Component	Definition
Context	External factors belonging to the social, political, and economic environment that may influence intervention
Reach	Proportion of audience/stakeholders in an intervention Often measured by attendance
Dose	Quantity of intervention or component Function of efforts of the intervention provider
Fidelity	Extent to which the intervention was delivered as planned Function of intervention providers
Implementation	Composite score that indicates the extent of intervention and reception of intended audience or stakeholders

Recruitment	Procedures used to approach and attract participants Occur at individual and organizational/community levels
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The causal assumptions used in the framework will follow what is set in the logic model of a certain policy. Feedback loops were in between components of the framework as outcomes emerge, signifying the need to revisit intervention descriptions and assumptions from time to time (Moore et al. 2015).

Figure 4. Process evaluation framework



2.4. Evaluation Methodology

Data Collection. As presented above, the study followed a process evaluation framework based on the logic model and with a narrative approach and critical design, and this merged into a case study design intended to narrow the general field into several examples.

The table below presented the general evaluation questions that covered the study alongside the respective components corresponding to the framework and the set of indicators which the information was based upon.

Table 2. Guide questions and key components in process evaluation framework

Evaluation Questions	Link to activities or target population in logic model	Indicators	Component
Who are the target beneficiaries?	Population of city/municipality	Demographic information per LGU	Reach, Dose, Recruitment
What were the lessons learned and skills developed by those affected by the policies?	Seminars, trainings, other activities found in LGU's LDRRMP and reflected in AIP	Activities reflected in LDRRMF utilization report, may be classified per pillar	Dose, Fidelity, Implementation
What were the impacts or effects of the DRRM	Required plans and documents from all government levels	Utilization reports, may be classified per pillar	Dose, Fidelity, Implementation

policies within the LGU?	(provincial, regional, municipal, barangay) Local DRRM Fund and utilization, and other sources (eg ODA, NDRRMF, PSF)	Historical data of linkages and networks with other agencies/NGOs	
What were the problems encountered by the implementing body in the local setting?	Incidences of disallowances from COA PPAs, implementation in the LGU Previous typhoon experiences	LGU personnel and local community feedbacks Oversight and implementing bodies' insights Utilization reports, utilization rate and prioritization	Dose, Fidelity Implementation

The study initially gathered materials and insights from the lead acting agencies such as the Department of Interior and Local Government (DILG), and Office of Civil Defense (OCD) through a Key Informant Interview (KII) of key officials. The KII enabled the identification of LGUs most fitting for the case studies. Thereafter, site visits were scheduled in the said LGUs where the local officials served as key informants and participants for the focus group discussions (FGD). The sampling for this study was purposive and convenient; national government agencies (NGAs) were chosen based on the pillar they represented – OCD as the oversight agency and DILG as the vice-chairperson for the preparedness pillar while LGUs were chosen based on the categories given by DILG that can best represent Philippines – Pasig and Marikina City as prime examples of having the best mechanisms for disaster preparedness, and Abuyog and Mayorga being the LGUs that have gone through strong typhoons. The next table presented the methodology used for each evaluation question and the identified respondents.

Table 3. Data collection method and tools used

Evaluation Questions	Data sources	Data collection method	Data collection tools	Documents needed
What are the underlying assumptions for the disaster preparedness in the country?	OCD, DILG, DBM, COA, NEDA	Document review Interview FGD	National laws and policies Questions developed by authors FGD	RA 10121 Other disaster-related laws Transcribed FGD
Who are the target beneficiaries?	LGU	Document review Interview FGD	LGU Files Questions developed by authors	Demographic profile of LGU
What were the lessons learned and skills developed by those affected by the policies?	LGU, C/MDRMO, C/MPDO, LGU Accountant, Budget Officer	Document review	Questions developed by authors	Enhanced CLUP, CDP, CDRA, LCCAP, CP, AIP, LDIP
What were the impacts or effects of the DRRM policies within the LGU?	LGU, C/MDRMO, C/MPDO, CSOs, NGOs OCD, DILG, DBM, COA	Document review Fiscal analyses Interview FGD	Questions developed by authors	Local planning documents, local DRRM Fund Utilization annual report 2013-2017, ELA, 20% Development Fund utilization report 2013-2017, all financial submissions to DILG, COA, and DBM regarding DRR
What were the problems encountered by the implementing body in the local setting?	LGU, C/MDRMO, C/MPDO, CSOs, NGOs, LGU Accountant, Barangay OCD, DILG, DBM, COA, NEDA	Interview FGD Document review Fiscal analyses	Questions developed by authors	Utilization reports, utilization rate and prioritization Minutes of meetings within LDRRMC

Data Analysis. Following the research design, the components of the process evaluation examine comprehensively the existing system of disaster preparedness down to the local levels. The results of the study that will be discussed later included the “bottlenecks” within local governance in ensuring disaster preparedness within the communities. It was also expected that

the collective insights from the stakeholders should be able to derive “descriptions, analysis, and recommendations to inhibit or counter the constraints” to better their situation against any impending disaster (Thomas 1993 and Madison 2005).

Context. This referred to the extent to which the external factors (or the underlying assumptions in the logic model) belonging to socio-political and economic environment affect the interventions from various sources down to the local governments.

Reach. The measure of how many stakeholders are included in the intervention. This component sought to determine which level have the national policies and external assistance been translated into (barangay, family or individual?)

Dose. The concentration of which intervention has been injected into a local government. Comparisons were inevitably made between cities and municipalities, and urban and rural areas. Factors were identified as to why there were disparities in terms of inputs and outputs between the two landscapes. This component also allowed an examination of which financial resource has been supporting most of the interventions, and which pillar this resource went.

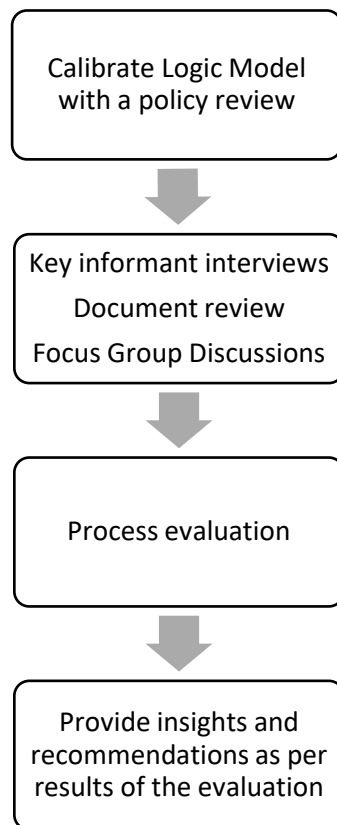
Fidelity. This component may also be identified as harmonization since it will check whether the coverage and outcomes from the data gathering coincided with the guidelines of the international frameworks, national policies, and local plans.

Implementation. Extent of intervention and reception of the stakeholders. This component was mainly culled from the narratives of key officials, counterchecked with the ideal stakeholders presented in the guidelines and manuals. While this seemed to be a perception-based criterion, it was able to facilitate recommendations from the ‘audience’ itself to further improve and augment the policies and interventions in place.

Recruitment. To determine procedures used to include the stakeholders in the implementation process. This enabled the identification whether the implementation and grounding of initiatives followed the bottom-top or community-based approaches.

The flowchart indicated below summarizes the methodology of the study.

Figure 5. Flowchart of conceptual framework



3. Related Literature

3.1. Timeline of policies

Being a country consistently battered with disasters, the Philippine government issued laws and orders to counteract the effects and mitigate the impacts. The first landmark was during 1941 when former President Manuel L. Quezon issued Executive Order (EO) No. 335 which created the National Emergency Commission and eventually, the Provincial Emergency Committee that supervises both Municipal and City Emergency Committees. RA 1190 was enacted in 1954, establishing National Civil Defense Administration (NCDA) and national and local civil defense councils. Under the term of Ferdinand Marcos in the 1970s, Office of Civil Defense (OCD) and National Disaster Coordinating Council (NDCC) were created under Presidential Decree No. 1566. Embedded in RA 7160 or the Local Government Code (LGC) of 1991 was the giving of access to local government units (LGUs) with areas declared in a state of calamity to five percent of estimated revenue from regular sources in the event of calamities. RA 8185 amended section 324d of the LGC and categorized the fund into relief, rehabilitation, and reconstruction and other services in order to improve the fund utilization. It can be observed that most laws and orders concerning disaster risk reduction and management (DRRM) coincide with agreements in climate change, strengthening the correlation and causality of climate change and disasters. In 1992, Philippine committed with the United Nations Conference on Environment and Development (UNCED) for Agenda 21. It was comprised of set of strategies and action plans that would marshal in a sustainable future with five goal elements: poverty reduction, social equity, empowerment and good governance, peace and solidarity, and ecological integrity (EMB, nd). Another is RA 8749 passed in 1999. The Philippine Clean Air Act committed to monitor and follow the standards for greenhouse

gas emissions (GHGs). This was followed in 2004 by EO 320, s.2004 wherein implemented projects are encouraged to prevent or absorb emitted GHGs. In 2009 and 2010, twin laws were passed in the country with common objectives; The Climate Change Act and the Philippine Disaster Risk Reduction and Management (PDRRM) Act aimed to lessen the vulnerabilities and the damage impacted by disasters. The momentous passing of RA 10121 increased the number of members under the council from 19 to 44 members, and now included financial institutions, private sector, and civil society organizations (CSOs). The council is still chaired by the Secretary of National Defense, but has designated the four vice-chairperson positions a specific phase for DRRM: the Secretary of Department of Science and Technology (DOST) in charge of disaster prevention and mitigation; Secretary of the Department of Interior and Local Government (DILG) for preparedness; Secretary of Department of Social Welfare and Development (DSWD) for response; and the Director General of National Economic and Development Authority (NEDA) for disaster rehabilitation and recovery. The national council is replicated down to the regional and barangay level.

In a nutshell, the Philippines underwent phases of DRRM, from disaster preparedness and response in the 1970s, disaster management in the 1980s, risk management in the 1990s, and risk reduction in the years 2005 and beyond (COA, nd).

3.2. Role of LGUs

When a disaster strikes, four phases of emergency management are applied: preparedness, mitigation, response, and recovery. Preparedness is the level of readiness based on undergone planning, training, and exercises to respond to an emergency. Mitigation refers to a consistent action to decrease and limit risk to people and infrastructure. The third phase, response, consist of actions addressing human basic needs e.g. relief goods and evacuation centers. The last phase focuses on the rehabilitation of economy and livelihood. These four phases do not necessarily occur one before another; in face of disasters, they occur more often than not in overlapping timeframes (Col 2007).

The local government plays an integral role before, during, and after disasters because they do not only have a direct jurisdiction over their constituents, but they are also expected to know the community's needs as well. The LGU in the Philippines is at the forefront of disaster risk reduction and management as mandated by the Local Government Code of 1991. The LGU must have the autonomy to act decisively and issue proactive decisions suited for their constituents' situation supported with the higher levels of government. Literatures across highlight the importance of decentralization of responsibilities i.e. doing away with top-down approach, stakeholder participation in all phases of DRRM, and transparency of valuable information exchanges (Col, 2007).

Solway (2004) outlined the basic roles of the local government in facilitating the community during a disaster. The LGU must be able to (1) assess the vulnerabilities of the area and its constituents, (2) instill basic knowledge of natural disasters and the possible impacts, (3) conduct an information and education campaign (IEC) on disaster mitigation, (4) coordinate with officials in charge of planning, construction, health, and welfare, (5) conduct first-aid trainings, (6) partner with educational institutions to broaden awareness and support existing knowledge, and (7) build evacuation centers and determine safe locations for those affected.

Local institutions are integral in influencing community responses against disasters and climate hazards. They help determine the effect of the impacts, develop capacity of households to

respond and adapt practices, and mediate different external interventions. In a review of 118 cases across 46 countries, climate adaptation was revealed to involve more informal institutions wherein there exist five categories of local responses: mobility in response to risks and scarcities; storage of surpluses including sturdy infrastructure for keeping seeds and harvested crops; diversification of employment opportunities, assets, and consumption strategies; communal pooling of resources across families; and market exchange. Most of these came from the rural communities dominated by indigenous people which have been exposed to various disasters and later on developed adaptive responses against environmental risks (Agrawal et al. 2008). Analysis of various social groups is integral to recommending adaptation strategies. There could be underlying reasons for their increased risk and vulnerability which could influence the interventions given to them.

As identified in the National DRRM Council's (NDRRMC) framework, every LGU should be able to establish a Local Disaster Risk Reduction and Management Plan (LDRRMP) aligned with NDRRMP with themes on disaster preparedness, response, prevention and mitigation, and rehabilitation and recovery. NDRRMCs and LDRRMCs should also be closely coordinated, and RA 10121 delineated the jurisdiction of responsibilities. NDRRMC will be the lead agency if two or more regions are affected, regional DRRMC if two provinces or more, provincial DRRMC if two or more cities and/or municipalities, city/municipal if two or more barangays, and barangay development council if only one barangay is affected. LDRRMCs are also in charge of integrating disaster risk reduction and climate change adaptation into development programs to counter poverty and facilitate sustainable development, and they have the authority to declare forced or preemptive evacuation of local residents if needed. Representatives from the private sector and civil society groups are also part of LDRRMCs as mandated through Memorandum Circular No. 03, s. 2012. The four CSOs that will be selected will have a representative each from (1) an academe or research institution that is not part of a state university, (2) a faith-based organization, (3) non-government or people's organizations, and (4) foundations or community-based organization; all four must be within the jurisdiction of the local government unit (LGU) they are applying for. The private sector representative shall be chosen from chambers of commerce if applicable. It is vital for the vying organizations to have a competent track record of DRRM activities, sound institutional structures, and valid registration with the Securities and Exchange Commission (SEC) for national, and Cooperative Development Authority (CDA) or Department of Labor and Employment (DoLE) for local. The performance of the member organizations shall be tracked and monitored based on their annual deliverables and feedback from other organizations. They have a term of two years and will only be allowed two consecutive terms. However, they can apply for another term period after a year. The membership may be revoked when the organization fails to fulfill its responsibilities to the council, spreads false information, and sponsor activities that are no longer in line with the goals of NDRRMC.

However, the LGU was sidelined three years after RA 10121 was passed in the wake of super typhoon Yolanda. In the event of a disaster, either the Defense Secretary or the President would preside over NDRRMC meetings however, in the case of Typhoon Yolanda, it was the Executive Secretary who presided. From there onwards, the command responsibility was blurry, and no one knew who was calling the shots. Too many actors were in play that when interviewed, the acting officials then gave different answers. This was particularly evident on the ground, in Tacloban City, where former DILG Secretary Mar Roxas took over the reins and allegedly "emasculated" Mayor Alfred Romualdez. Even the Defense Chief was relegated a support position when supposedly he should be able to make decisions. Fund problems were also not lost in the wide magnitude of the disaster. Municipal mayors shared the disappointment

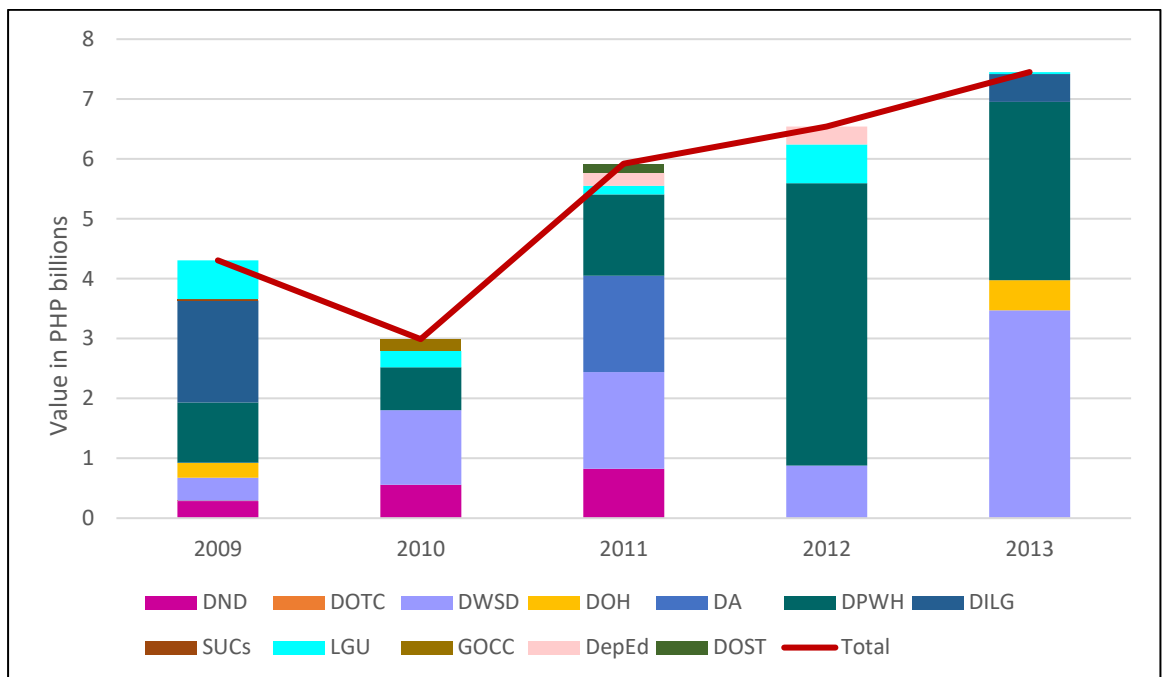
when even after a year, they have not received a single centavo from the national government. Moreover, the comprehensive rehabilitation and recovery plan (CRRP) was only approved the year after. Relief assistance mostly came from non-governmental organizations and humanitarian groups. Causes for delays were pinpointed to bureaucratic processes across intervening government agencies. In terms of housing programs, the limited number of engineers or skilled technical personnel slowed down the programs in at least 14 towns of Leyte which were classified as fourth and fifth income classes (Rufo 2013).

The Yolanda case coincided with the usual constraints on LGU disaster response which pertained to ineffective planning and implementation, overlapping responsibilities with various institutions, ambiguous methods of communication and dissemination, weak inter-organizational coordination, and ignorance of established disaster plans (Kusumasari et al. 2010).

In terms of funding, DRRM's financial resources mainly come from the Department of Budget and Management (DBM)'s formulated national budget. There is a partition reserved for the Calamity Fund (CF) which is a specialized pool of fund intended for relief aid, rehabilitation, repair, and reconstruction activities. The release of these funds are included in the special provisions of the General Appropriations Act. It states that the fund remain untouched until all donations and grants received by the agencies of the government are exhausted. If disbursed, the fund will be released directly to the implementing agencies as per approval of the President of the Philippines. After which, the NDRRMC will pass a report on the utilization of funds and grants received by the agencies to the DBM, House Committee on Appropriations, and Senate Committee on Finance. Across years, the Calamity Fund has increased by 275 percent which gives evidence that the government is now prioritizing finances for man-made and natural calamities. Looking closer at figure 1, the largest shares were mostly given to DILG in 2009, and DSWD and DPWH for the following years. The fund for the frontliner– the LGUs – experienced a decrease from 2009 (14.98%) to 2011 (2.44%), an increased again at 9.94 percent in 2012, and a drastic fall at 0.43% in 2013. A local disaster risk reduction and management fund (LDRRMF) is established particularly for the LGUs. It is comprised of at least five percent of estimated revenue from regular sources and 30 percent of it is classified as Quick Response Fund. The fund can be transferred to other LDRRMCs under a state of calamity, but if unused, it will be placed in a Special Trusts Fund for LDRRMC events for the next five years. If this special fund remains unutilized, the money shall go back to the LGUs general fund (Bueza 2014).

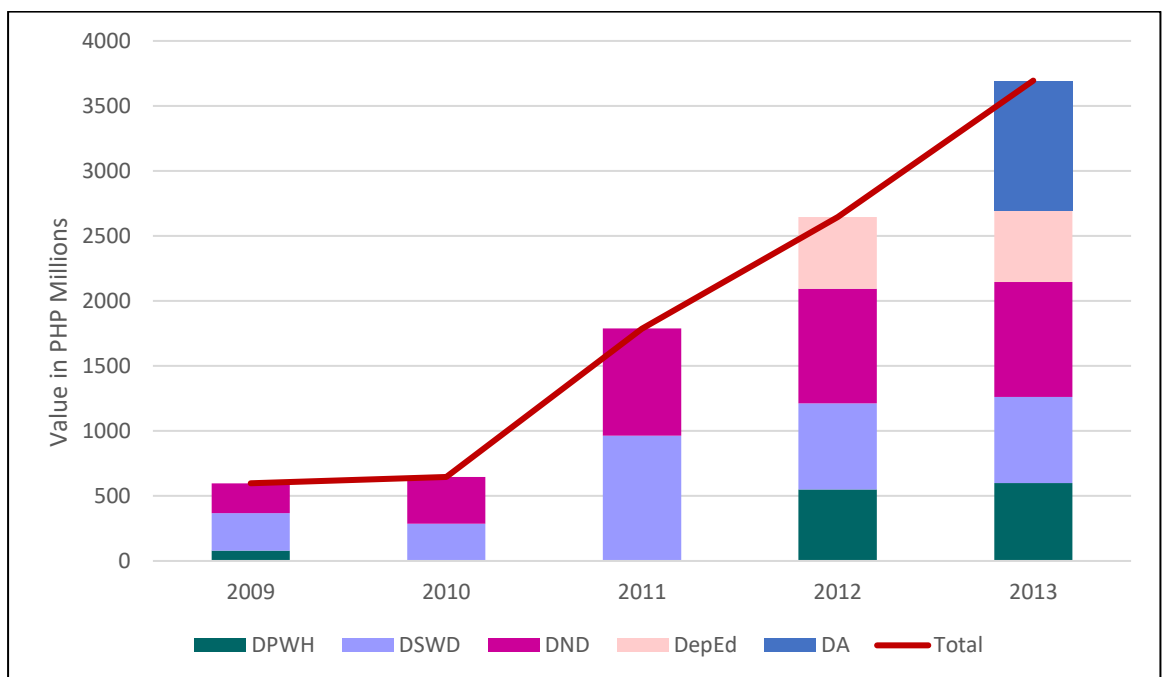
However, it has been observed that third to sixth-class municipalities experienced inequitable fund distribution hence the LGUs were forced to take care of themselves and rehabilitate on their own. In a case study in Guiuan, the significant variables which affected the community's grounding of disaster preparedness were proximity to a hospital, access to health insurance, availability of electricity and information sources particularly in the island communities of the area, and weak emergency evacuation centers (Campanero and Egargo 2017).

Figure 6. Trend and composition of Calamity Response Fund



The 30 percent share of QRF is allocated for relief and recovery programs aimed to normalize disaster-struck areas as quickly as possible. Compared to the calamity fund, the QRF is consistently increasing with greatest shares going to the DND and DSWD as seen in table 2.

Figure 7. Trend and shares of various government agencies in the QRF from 2009-2013 (COA, nd)



Contrary to this, 50% of the Local Calamity Fund are unutilized annually based on a 2004 World Bank – NDCC study. LGUs would prefer to cut back on spending as it may not be allowed by DBM or COA. Additionally, LGUs have not complied with the requirement of a Disaster Management Plan; there are those who passed but did not include local practices just to have access to the disaster funds. It is integral even more to revisit DRRM policies to come up with better utilization strategies that could adapt to the needs and unique situations of the LGUs. Thus, it is important to track and monitor the utilization of the DRRM funds since spending can also provide insights as to how the government deals with DRRM. In FY 2013, COA observed that the disbursement of funds were more on the area of response. This type of spending leaves the people less prepared and more vulnerable to disasters, and more costly disaster-relief and recovery spending will occur, following the trends of disbursement.

3.3. DRRM in NDRRMP and climate change acts, prospects and moving forward

All eyes were on the Philippines during late 2016 and early 2017 as President Rodrigo Duterte refused to ratify the Paris Agreement which was already signed by almost 200 nations. The 20-years-in-the-making agreement asked the signatories to reduce greenhouse gas emissions, limit warming to two degrees Celsius, keep temperatures at 1.5C above pre-industrial levels, and invest in environment and ecosystems (Goldenberg et al. 2015). Duterte's refusal came from the fact that Philippines is forced to cut down on emissions when it is still on its way to industrialization while other nations, especially the rich ones, have already reached their peak, thereby implying that the deal favors the richer nations more and hinders the further development of the poorer ones (King 2016). However, 10 months after, Duterte relented, committing Metro Manila to lower its emissions by 70 percent by 2030 (dela Cruz 2017). On March 14, the Senate unanimously voted yes to Senate Resolution No. 261 adopted as Senate Resolution 320, ratifying the Paris Agreement on Climate Change. The ratification gives the country access to the Green Climate Fund amounting to USD 100 million which is pooled together annually by the world's biggest carbon contributors (Quismundo 2017). The direction of DRRM and climate change policies in the Philippines are gearing towards the goal of NDRRM Plan (NDRRMP) which is to create "safer, adaptive and disaster resilient Filipino communities towards sustainable development" (NDRRMP 2011).

While policies in the country are moving towards the right direction, challenges remain at all governing levels. Smooth coordination and effective communication within and outside of national and local councils are yet to be realized despite the vertical coordination between regional, national, and local levels provided for by the RA 10121 (COA, nd).

4. Results

4.1. Governance aspect of disaster preparedness

4.1.1. Department of Interior and Local Government

Based on RA 10121, the Department of Interior and Local Government (DILG) has been given the mandate to be the vice-chairperson for the disaster preparedness thematic pillar. This was to take advantage of the position and authority the department has over all LGUs across the country. It has become a regulatory agency in terms of local governance, thus the task to ground disaster preparedness tenets has been handed over to the DILG.

Over the years, the DILG has come to a consistent observation in which competence for disaster preparedness cannot be grounded in the barangay level due to an apparent lack of education. Concepts such as climate change and DRRM have difficulty getting across to the community leaders, much more to the residents themselves. What usually happens is the understanding stops at the response level. The preparation for any disaster is a concept which remains foreign to most LGUs. Thus, the department has shifted its focus to the family level; programs such as Family Development Sessions by DSWD were capitalized upon in order to include the tenets and concepts of disaster preparedness and to encourage harmonization among institutions at a localized level.

In light of this, the department implemented *Operation Llisto* in 2015. It is a disaster preparedness manual containing a checklist of early preparations. There are existing variations for LCEs, the barangays, and the families. The actions were classified to be proactive, preparatory, and necessary measures. While the checklist only starts hours before the impact, it outlines the need to have institutional arrangements in place or what they refer to as long-term preparedness. The inability to lay down institutional arrangements may also lead to the failure of short-term preparedness. The table below summarizes the four general actions for LCE level contained in the said manual.

Table 4. Four general actions of Operation Llisto for LCEs

Create structures and systems	Institutionalize policies and plans	Build competencies	Equip with hardware and supplies
Creation of organizations (LDRRMCs, LDRRMO, Command System)	Create position for LDRRMO and 3 staff	Training of information and awareness personnel	Acquiring security, search and rescue, medical, and clearing resources
Preparation of plans: LDRRMPs, LCCAPs	Creation of BDRRMCs	Training of security, lifeline, and SRR personnel	Acquiring humanitarian resources
Infrastructure audit	Provision of insurances	Training of humanitarian personnel	Acquiring information and awareness resources
Social Vulnerability Assessment	Preparation of communication templates	Training of DRRM and Admin personnel	
Update CLUP	Establish linkages and support	Training for post-disaster response	
Issue Local DRR Communication Protocol			

4.1.2. Local Governance and Disaster Preparedness

Mainstreaming disaster preparedness initiatives within local governments entail comprehensive planning and institutional restructuring. Major planning documents have to be

infused with the tenets of preparedness and the more encompassing thematic principles of disaster risk reduction and management. Such ideally entail recrafting the comprehensive land use plan (CLUP), the comprehensive development plan (CDP), the executive-legislative agenda (ELA), with due consideration to the local disaster risk reduction management plan (LDRRMP), the local climate change action plan (LCCAP), and the climate and disaster risk assessment (CDRA) document. The CDRA has been identified as the primary tool in mainstreaming CC and DRR initiatives into the major planning documents, turning the CDP into CDP Plus and the CLUP into the Enhanced CLUP.

Planning, decision-making and local investment alignments have to reflect the short-term, medium-term and long-term facets of disaster preparedness. The CLUP, CDP and ELA comprise three of the major planning documents among LGUs. The CLUPs span a minimum of nine years, the CDPs six years, and the ELA coincides with the local officials' three-year term. In aggregate, these plans comprise the roadmap for subnational governance and community-level development. As such, their content and alignment with thematic disaster-related documents are critical.

However, it has been observed that most LGUs have misalignment in the local plans – goals settings and visions were absent, in the cases where these are present, they were not similar across plans, and the ELA is not reflective of the bigger planning documents.

Comprehensive Land Use Plan (CLUP). CLUP has been referred to by the LGUs as the “father of all plans” in the development process of the community. The Housing and Land Use Regulatory Board (HLURB) presented a manual entitled the CLUP Guidebook (2013), which delineated the guidelines for the planning and formulation of the CLUP. The process involves a multitude of stages, all of which are interrelated and with corresponding implementing agency/office for each.

The MPDC along with the TWGs, NGOs, CSOs, barangays, and those from the private sector, review planning and policy guidelines. Also taken into careful consideration are inputs from local and national sectoral plans as well as information from summary reports of key sectoral thematic areas. This phase is followed by the identification of stakeholders and vulnerable communities. Baseline assessment would, then, be conducted all the while ensuring the alignment of the plan with the Provincial Development and Physical Framework Plan (PDPFPP). This phase is characterized by the enhancement of the crafted vision statement, which is *safe, risk-resilient, adaptive capacities*. Following this is the conducting of a situational analysis with regards to the local government unit's (LGU) resources and its environment. Activities regarding this matter are led by the MPDC, TWGs, NGOs, CSOs, barangays, Municipal Disaster Risk Reduction and Management Office (MDRRMO), and those from the private sector. The same agencies are responsible for the subsequent phase which is the inclusion of baseline scientific information such as projected climate change and disaster-related vulnerabilities as well as a reporting on threat and potential impact. From there, development thrusts are defined and a land use plan can already be prepared. The MPDC alongside the Zoning Officer drafts the zoning ordinance (ZO), which is to be included in the plan itself. The LCE joins the aforementioned agencies in drafting the CLUP and the ZO. The documents are then presented to the Sangguniang Panlalawigan for review. Approval of the CLUP and the ZO are anchored on the following agencies/offices: MPDC; Local

Zoning/Enforcement Office; Local Zoning Board of Appeals; and, other relevant offices and barangays. The same agencies are also responsible for offering feedback to the presented outputs for the CLUP and the ZO.

Comprehensive Development Plan (CDP). If the CLUP is considered as the “father of all plans”, the CDP is regarded as the “mother of all plans”. The Department of the Interior and Local Government (DILG) authored the Memorandum Circular (MC) 2015-77, which dictated the guidelines for mainstreaming climate change adaptation (CCA) and disaster risk reduction (DRR) in local development planning. The MC has presented a detailed process flow on the formulation of the local plans. Development of the CDP undergoes a number of stages, each interconnected with the next. Corresponding stakeholders as well as leading agencies were also specified for each step of the process.

In preparation of the CDP, the Local Chief Executive (LCE) alongside the Municipal Planning and Development Coordinator (MPDC) sets a vision with which the plan would anchor upon. Vision elements, descriptors, and success indicators are defined by the aforementioned stakeholders. Augmenting to the earlier steps is the inclusion of basic information requirements such as the area’s ecological profile with findings from a natural resource assessment (NRA), and an environmental and natural resources accounting. Information from a vulnerability assessment with the utilization of base and land maps, as well as hazard and risk maps. Integration of such information would be made possible through the efforts and assistance of Civil Society Organizations (CSOs), as well as sectoral and functional committees. Following this is the development of a vision-reality gap analysis and the usage of local development indicators table for new information. Results from the problem-solution matrix; decision zones; Community-Based Monitoring System (CBMS); Local Governance Performance Management System; and, the Regional Physical Framework Plans, further augment to the baseline information composing the plan. These responsibilities are hinged on the LCE, the MPDC, the Municipal Local Government Operations Officer (MLGOO), and some CSOs. The same set of stakeholders are responsible for the succeeding phase, which is the identification of project, programs, and activities (PPAs) of the plan, all the while considering its alignment with legislations. Focus is then shifted towards the formulation of sectoral development plans, comprehensive shelter plans, hazard mapping, and the Disaster Risk Reduction and Management Plan (DRRMP). Technical assistance and involvement of the following agencies/offices are noted in this final portion of the planning process: LCE, CSOs, National Government Agencies (NGAs), Technical Working Groups (TWGs), and the private sector.

Climate Disaster Risk Assessment (CDRA). According to the DILG Memorandum Circular No. 2010-112 dated 12 October 2010 reminding LGUs to update and legitimize their Comprehensive Land Use Plan (CLUP) and Comprehensive Development Plan (CDP), mainstreaming of sectoral/thematic area and topical plans such as Disaster Risk Reduction Management and Climate Change Adaptation will be taken into consideration. One of the requirements of recent planning considerations and ensuring that climate change and disaster risks are integrated in the local plans is the conduct and integration of Climate and Disaster Risk Assessment (CDRA) in the preparation of risk-sensitive CLUPs and CDPs.

The CDRA aids in determining the level of risks and vulnerabilities of identified areas to come up with priority projects, programs, and activities that can be implemented. It also takes into account the climate-related hazards and potential impacts of climate change. Formulation of this plan involves the following five fundamental stages of processes: a) Organizing climate change and hazard information; b) Scoping of potential spatial/areal, sectoral impacts by identification of key areas or sectors that may be affected by climate change and natural hazards; c) Developing exposure database through collection of baseline maps and attribution of data on exposure, vulnerability/sensitivity and adaptive capacity; d) Conducting climate change vulnerability assessment by vulnerable areas identification and analysis of exposure, sensitivity, and adaptive capacity to various climate stimuli; e) Conducting disaster risk assessment by risk areas identification and analysis of hazards, exposure, and vulnerability. Thereafter, findings can be summarized through identification of priority decision areas/sectors based on the following: combined level of risks and vulnerabilities, risk management options, and climate change and mitigation options. The lead agencies responsible for this phase of processes are the MPDC and the MDRRMO. In order to mainstream CC and DRR initiatives, the following offices/agencies are responsible to what is called the Enhanced Comprehensive Land Use Plan: MPDC, MDRRMO, Local Zoning/Enforcement Office, Local Zoning Review Committee, relevant offices and barangays.

Local Climate Change Action Plan. In order to fully mainstream CC and DRR initiatives, the LGU is required to create a local document mirroring the National Climate Change Action Plan (NCCAP). The Department of the Interior and Local Government drafted Memorandum Circular (MC) No. 2014-135, which contains the guidelines on the formulation of the LCCAP. The process is composed of a number of stages with overseeing bodies/agencies for each phase.

The LCCAP is derived from the CDP and its formulation is anchored on the principles stated by the National Climate Change Action Plan (NCCAP). Starting the process is the call for the creation of an LCCAP Core Team by the LCE. The said team will be the principal overseeing body of the whole plan – its formulation and eventual implementation. The core team will be comprised of representatives from various sectors, namely: Planning and Development, Health, Engineering, Agriculture, Social Welfare and Development, Budget, Treasurer, DRRM, LGOO, and others. The team would then be subjected to a series of trainings and workshops regarding climate change and its effects. Also, the team would identify the scope of the CCA planning as well as corresponding stakeholders to the plan. Following this, the team would enlist the technical assistance of a number of governmental agencies in order to gather necessary information for hazard identification, vulnerability assessment, risk analysis, and validation. From the data gathered, the core team would then convene on the prioritization of CC risks to address as well as corresponding strategies and PPAs. It is also in this phase that it is ensured that the plan is aligned with other local development plans such as the CDP and CLUP. Outputs are then consolidated and included in the drafting of the LCCAP. Monitoring and evaluation schemes are, then, designed for the plan. The Sanggunian reviews the documents for the LCCAP. If approved, the LCCAP is adopted through a resolution.

Municipal Disaster Risk Reduction and Management Plan (MDRRMP). The National Disaster Risk Reduction and Management Plan provided general guidelines for the formulation of Local Disaster Risk Reduction and Management Plan. The whole process is spearheaded by the Municipal DRRM Office (MDRRMO). It involves risk assessment and contingency planning in the area which would require inputs and information on local disaster risks on natural hazards, vulnerabilities, and climate change risks. Inclusion of the Barangay Disaster Risk Reduction Management Plan through the BDRRMC is also encouraged. The MDRRMO guides and facilitates trainings for the barangay councils in formulation of their respective plans. The alignment of MDRRMP with the national, regional, and provincial framework, particularly with the NDRRMP has to be ensured throughout the process.

The proposed MDRRMP and budget formulated by the MDRRMO shall be submitted to the Sangguniang Bayan through the Municipal Disaster Risk Reduction Council (MDRRMC) and the Local Development Council (LDC). Included in the MDRRMP are updated hazard and risk maps, climate projections and past disaster assessments in the municipality usually sourced from CDRA, and a DRRM investment programming plan detailing applicable programs projects and activities (PPAs). If the document gets approved, the MDRRMO shall conduct continuous monitoring.

Prioritization of PPAs for inclusion to the municipal annual investment plan (AIP) is conducted during MDRRMC meetings. The PPAs are classified according to four thematic areas with funding sources from the National DRRM Fund, local DRRM Fund, assistance to disadvantaged communities, and international aid. Fund utilization and accomplishment reports are submitted monthly to the internal offices of the LGU and the Department of Budget and Management (DBM); quarterly to DILG; monthly for Office of Civil Defense, and annually to Commission on Audit.

The MDRRMO sets an annual schedule for monitoring while a three-year schedule for evaluating. Monitoring aspect deals with the information that provides directions in setting the annual priorities and budgets. On the other hand, evaluating aspect focuses on efficiency, effectiveness, and impacts. MDRRMP monitoring and evaluation consists of the steps to assess the extent of implementation of climate change adaptation and mitigation PPAs as well as the overall impact of the plan.

Contingency Plan (CP). The CP is anchored on MDRRMP as it aims to identify and create plans and protocols specific to each hazard or risk. Recommendations in the CP include assistance in adaptive capacity evaluation and consequence estimation, alerting/ warning systems, damage assessment and coordination of agencies.

As most LGUs fail to prepare CPs for each major disaster hazard, contingency planning is often just embedded it in the MDRRMP or CLUP through situational and hazard analyses. In absence of CP, *Oplan Listo* document of the DILG serves as the basic checklist for preparedness in municipal, barangay, and household levels. This, however, is implemented separately from the MDRRMP. This particular initiative of DILG is not necessarily mainstreamed in the core development plans of the LGUs.

Status of reviewed plans, national level

The vertical and horizontal alignment of disaster preparedness policy and plans are traceable through appropriate documentary evidences. Even the Philippine Development Plan (PDP), the medium term development plan of the Duterte administration, targets the mainstreaming of DRRM in major subnational planning documents in its ecological integrity chapter. This is important as the baseline 2016 accomplishment levels are relatively low.

Among the 81 provinces, 33 highly urbanized cities, and 1489 municipalities, only few had a complete set of updated planning and development documents. The approved CLUPs tallied to 552 in 2016, barely a third of the total number of cities and municipalities complied. In addition, the CLUPs were still not the enhanced plans containing inputs from CDRA. In other words, climate change and disaster risk reduction management initiatives have not yet been mainstreamed in land use planning of most municipalities and cities. The figure for CDP was much lower since only 37 LGUs had valid documents. This contrasted with the local disaster risk reduction management plans (LDRRMPs) and local climate change action plans (LCCAP) as there were 1,522 and 1,114 plans submitted for each accordingly.

While many LGUs managed to create plans for disasters and climate change, these were not reflected in the CDP and CLUP, the two main planning documents reflective of the LGUs' development thrusts and direction. This situation implies misalignments in local development planning, particularly in setting priorities and projects that may be approved by the LGU from the immediate to the longer term.

Early warning systems were also required to be established in each LGU. Operating systems have been observed to increase to 1,180. Alongside the EWS, DRRM operation centers have also risen. Compliance with the setting up of dedicated local DRRM offices with permanent personnel also need to be complied with Permanent employees summed up to 775 people, but temporary employees remained bigger at around 1,038 people.

Table 5. Summary of plans submitted and DRRM operation centers as of 2016 (NEDA 2018)

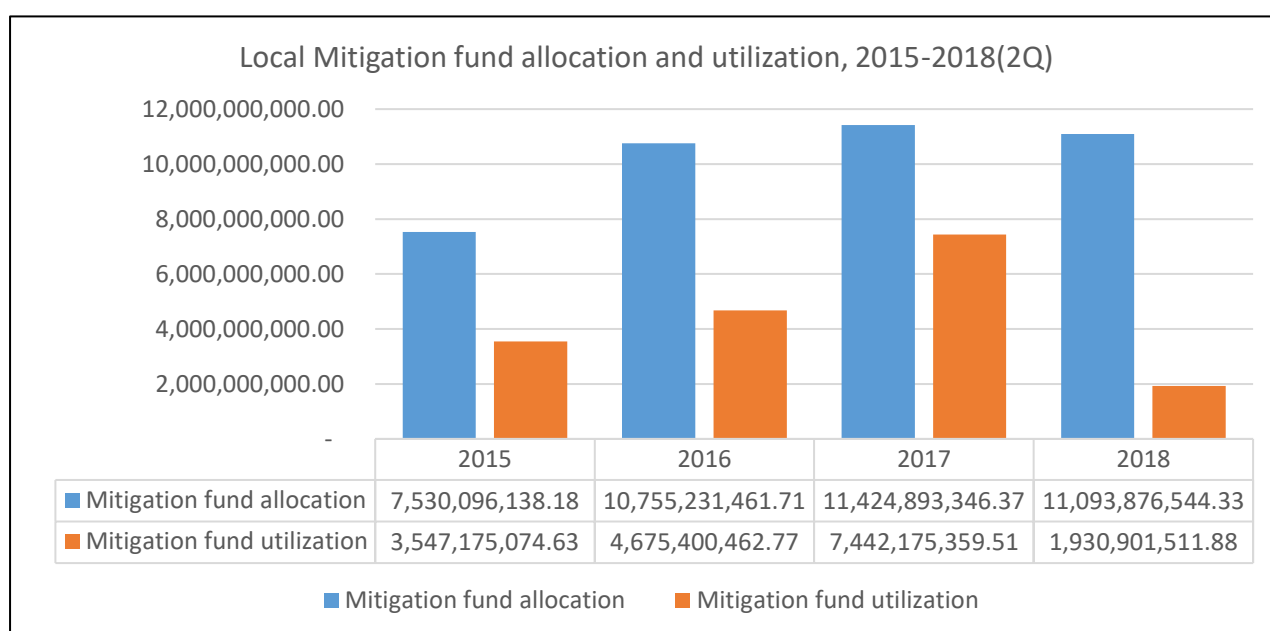
Local Planning Document	Figure
Comprehensive Land Use Plans (CLUP)	552
Comprehensive Development Plans (CDP)	37
Local Disaster Risk Reduction and Management Plans (LDRRMP)	1,522
Local Climate Change Action Plans (LCCAPs)	1,114
Early warning systems (EWS)	1,180
DRRM Operation Centers	
Permanent	775
Temporary	1,038

4.2 Fiscal Analysis

The LGU may source out its funds for disaster risk reduction through the five percent allocation of internal revenue allocation and estimated revenue sources called the local disaster risk reduction management fund. Other sources included the (1) NDRRMF downloaded to the LGUs, (2) 20 percent local development fund, (3) funds from within LGU, (4) funds from other LGU and local sources, and (5) funds from international development organizations. The LDRRMF fund is subdivided into two parts – 70 percent of which comprise the mitigation fund while the 30 percent is for the quick response funds. The latter can only be tapped when a state of calamity is declared within the locality. In the reporting however, some LGUs were able to provide a breakdown between its two components while the others treated it as a lump sum.

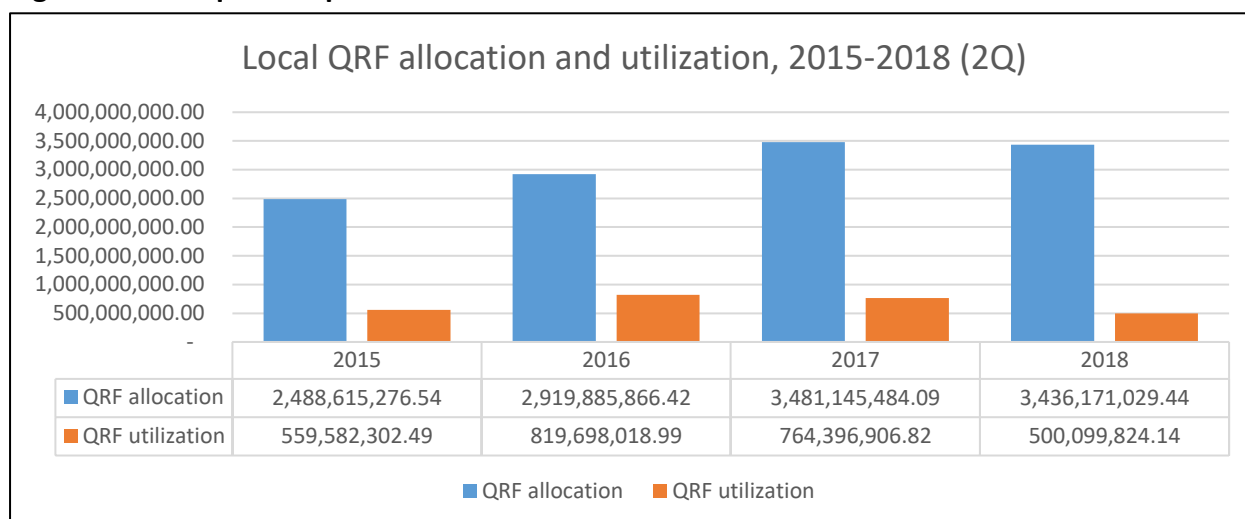
As what can be observed in the succeeding figures, it has been a consistent trend for the LGU's utilization of the LDRRMF to fall short of the allocation for the 70 percent. A legitimate question that needs to be answered is whether this enough indication of sufficient DRRM funding at the sub-national level. If not, then potential institutional and policy bottlenecks and hindrances to fully utilizing DRRM resources have to be explored.

Figure 8. Local mitigation fund from 2015-2018



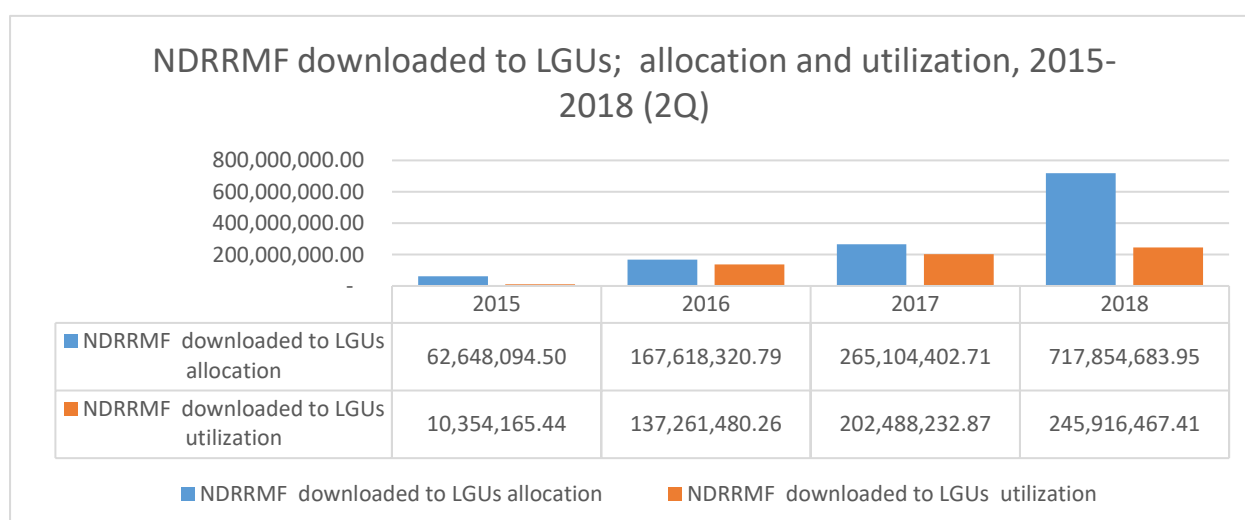
The 30 percent QRF component of the LDRRMF also exhibited the same observation however, this may be attributed to the absence of incidence of disaster or natural hazard in the area. The unexpended funds for both components were supposed to be remitted into a special trust fund where these can be reprogrammed for other PPAs. After five years, these funds shall be accrued into the general fund of the municipality where these are more flexible to use.

Figure 9. Local quick response funds from 2015-2018



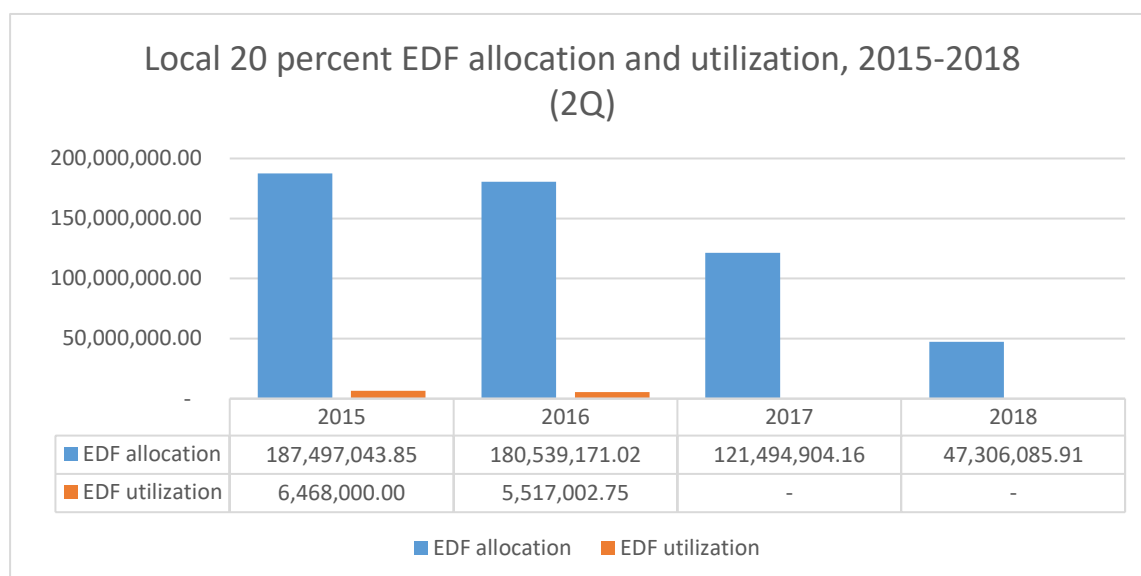
Another fund source for the LGUs to tap into is the NDRRMF. For the years 2016 and 2017, the NDRRMF's allocation almost matched its utilization. In 2018, the NDRRMF share shoot up from PHP 300 Million to PHP 700 Million, but the utilization was only up to PHP 250 Million.

Figure 10. NDRRMF downloaded to allocation and utilization from 2015-2018 (FDPP)



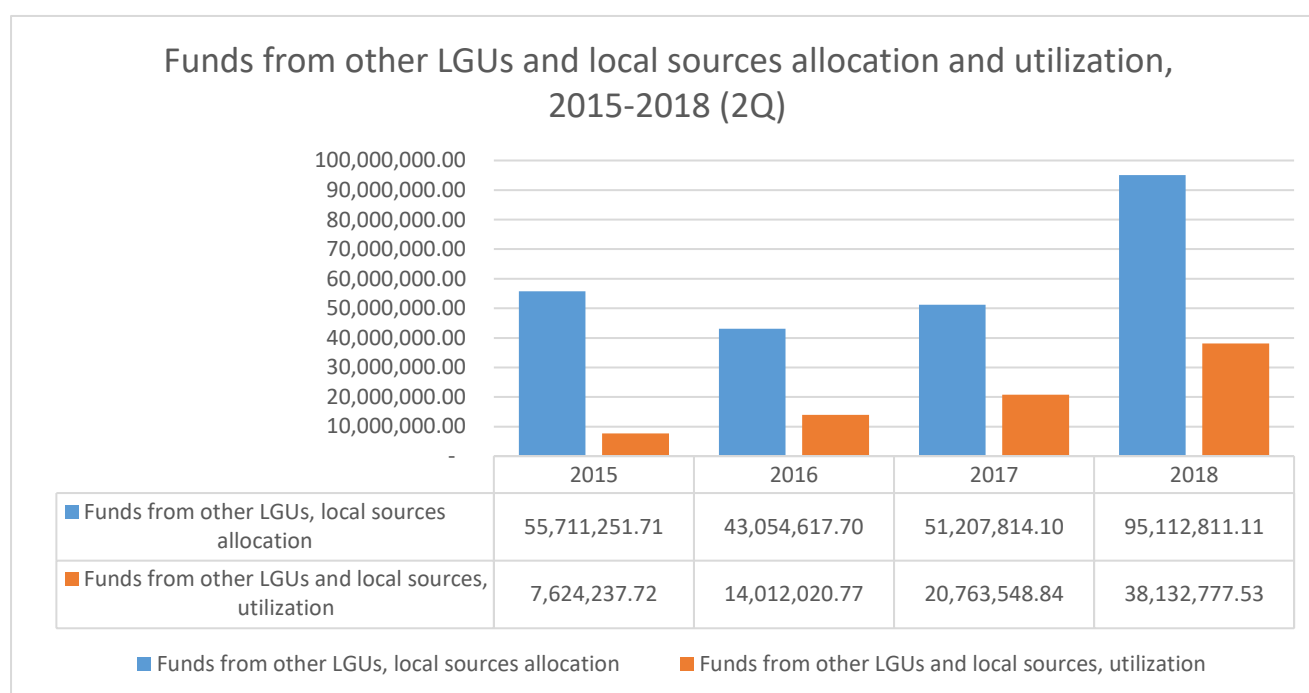
Another fund source is the 20 percent local economic development fund which is more flexible in use for varying purposes. Disaster-related expenditures may be difficult to be culled out from the lumped sum of expenditures however, a similar spending pattern was also observed for this fund. The allocation for the 20 percent EDF was as high as PHP 180 Million, but the spending only went up to PHP six million. The share decreased from 2015-2018 together with the utilization.

Figure 11. Local 20 percent EDF allocation and utilization (FDPP)



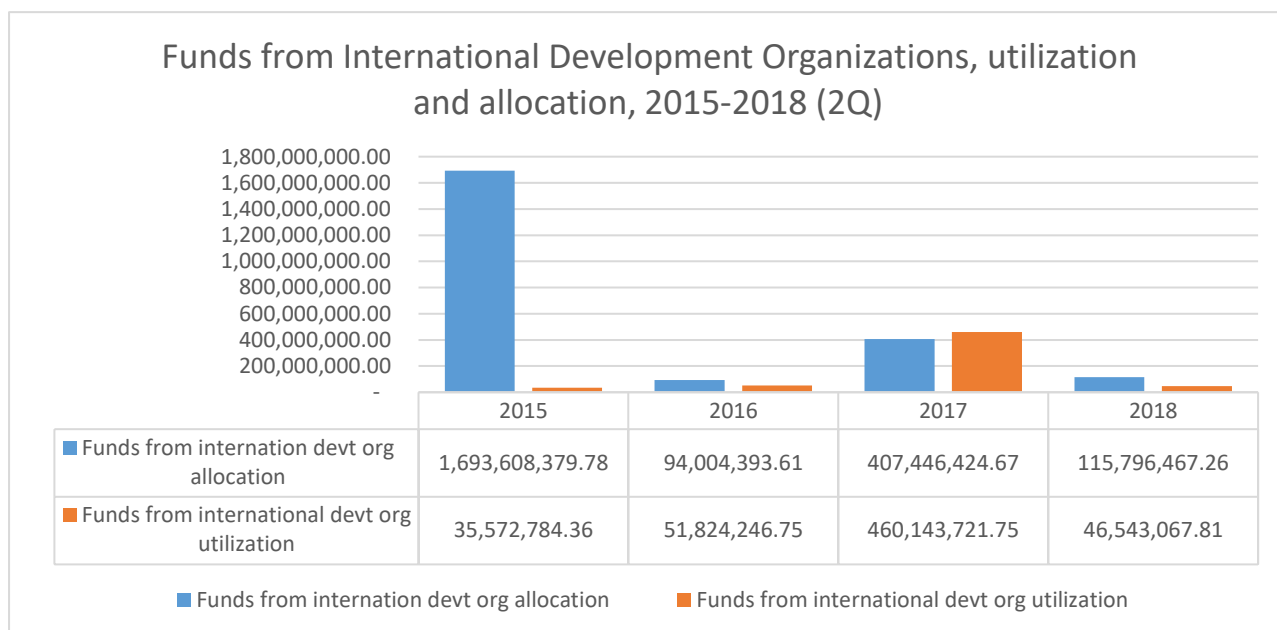
The next source identified was the funds from other LGUs and local sources. Although smaller than other fund sources, the utilization was consistently lesser compared to its allocation.

Figure 12. Allocation and utilization of funds from other LGUs and local sources from 2015-2018 (FDPP)



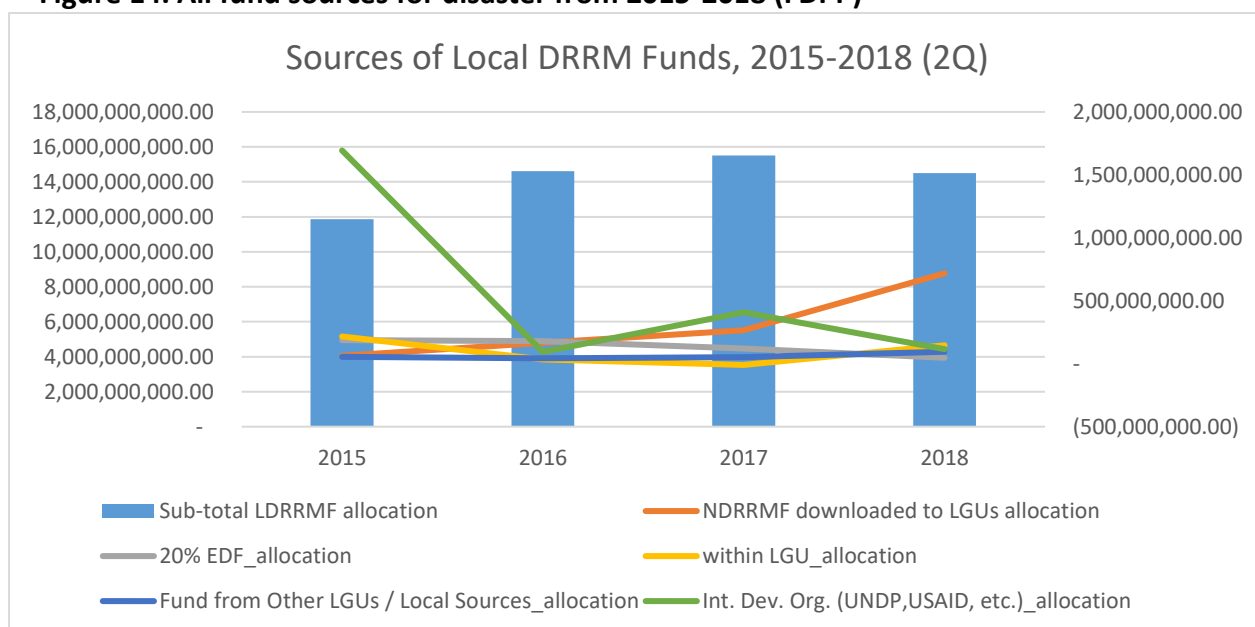
The last fund source identified was from the international development organizations. There was a large allocation in 2015 probably due to the influx of external assistance for Yolanda, but there was minimal utilization of it. The allocation decreased drastically for 2016, but there was not much disparity between the utilization. The latter even surpassed the allocated funds in 2017.

Figure 13. Allocation and utilization of funds from international development organizations (FDPP)



The biggest portion of the disaster fund sources were taken mostly from the LDRRMF. The external fund sources from international development organizations were the highest at the onset of 2015, but drastically decreased until 2018 and was taken over by the NDRRMF as the LGUs' secondary fund source.

Figure 14. All fund sources for disaster from 2015-2018 (FDPP)



4.3 Case Studies

Detailed inputs for the study were obtained through case studies of two highly urbanized cities and two municipal counterparts of different development states. The cities of Marikina and Pasig in Metro Manila and the municipalities of Abuyog and Mayorga in Leyte were looked at. The following section presents highlights of the inputs gathered from their respective local governments

4.3.1 CASE SITE 1: Marikina City

Expenditure

Marikina, as a highly urbanized city, has almost 10 times higher allocation of local DRRM funds compared to the municipal case studies in Leyte. Despite this, there was still disparity between the allocation and utilization of funds. The 30 percent share for the QRF of the study was barely tapped from 2015-2018.

The city's fund sources were identified as the LDRRMF, general fund, and trust fund. They did not see the need to tap into the 20 percent local development fund (LDF) since the city can barely utilize the appropriation for LDRRMF. External assistance for the city came in kind and not in cash. Some of these donations were rain gauges and early warning systems.

Figure 15. Allocation and utilization of the mitigation fund in Marikina City from 2015-2018

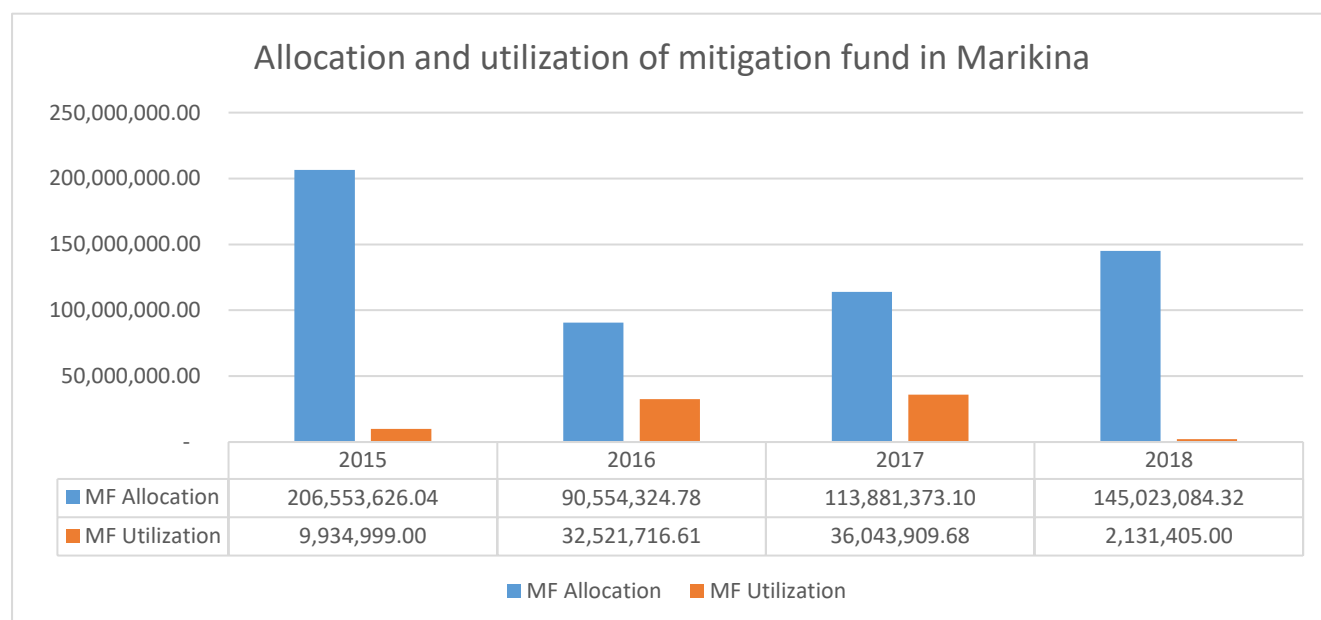


Figure 16. Allocation and utilization of the quick response fund in Marikina City from 2015-2018

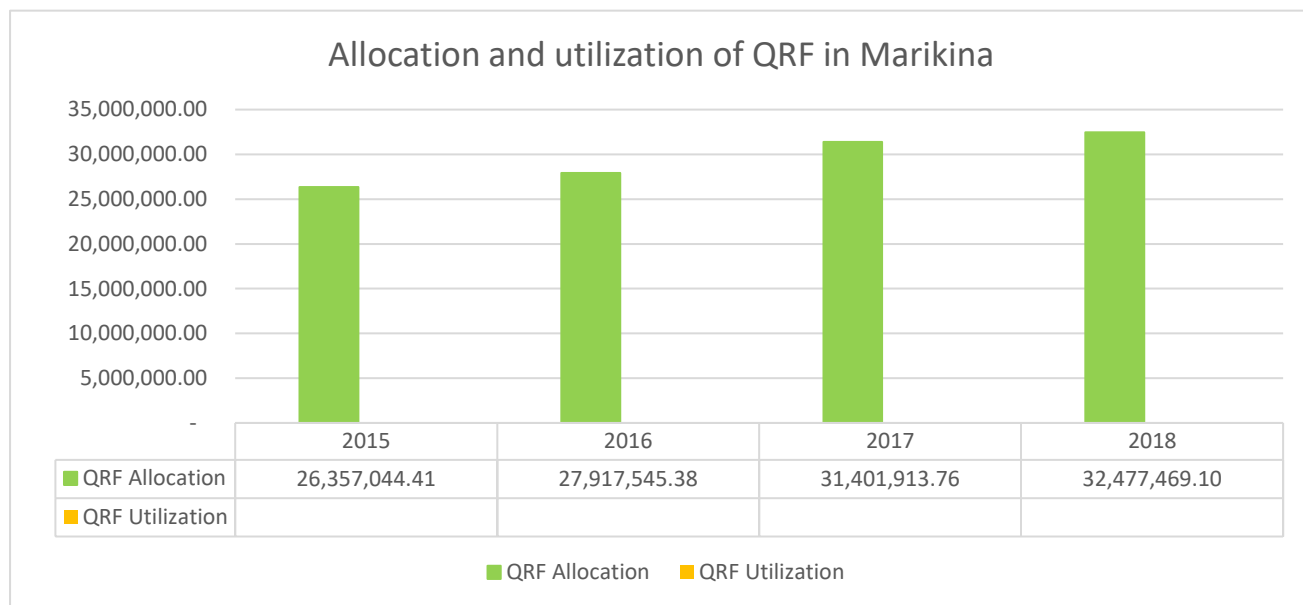
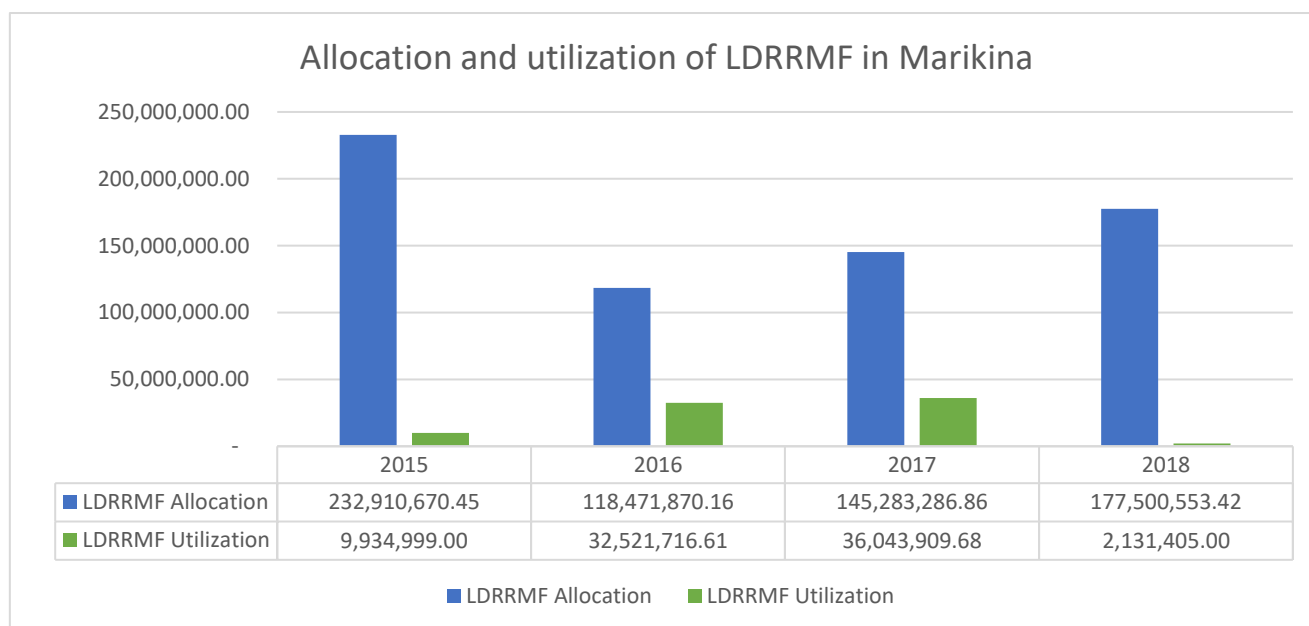


Figure 17. Allocation and utilization of LDRRMF in Marikina City from 2015-2018



Planning

Typhoon Ondoy, perceived as the worst typhoon experience by the community, served as an eye-opener. This prompted the establishment of improved early warning systems and rain gauges in Rizal in recognition that Marikina was a catch basin. Additionally, slope protection was constructed as part of structural mitigation. This was similar to a seawall and will serve as flood gates of Marikina River. Pumping stations were also given pumping stations. Informal settlers were minimized within the city. It can be observed that Pasig's disaster initiatives shifted from response to preparedness pillar.

A separate office called Marikina Settlement Office was in charge of monitoring and identifying flood-prone areas within the city. A recent survey revealed the decrease in flood-prone areas. A specialized control center similar to Pasig was also present in Marikina and was called as Rescue 161 with complete ambulance service. The maintenance of vehicles and equipment was not disallowed by COA unlike in other areas as long as the fund source was from the LDRRMF. Volunteers for the CDRRMO fell under the Volunteer Management Office and were covered with insurance. DRR personnel have hazard pay too through a local ordinance. Trainings and capacity-building activities were continuously given and received by the office in coordination with other agencies.

Should the technology fail and the control center no longer operate, contingency plans were in place with institutional collaboration with Bureau of Fire Protection (BFP), Philippine National Police (PNP), and community leaders. Evacuation centers have spaces for children, elderly, and pets with adequate supply of vanity kits, rice, and relief goods.

BDRRMPs were created with consultation from the CDRRMO. This and the budget reports with the approved set of AIPs and LDIPs were submitted to the DILG. The barangays have the capacity to budget for their respective AIPs so they do not see the need to request additional funds from the CDRRMO.

Key Challenges/Issues

Despite the many number of personnel and volunteers for the CDRRMO, there were only two regular and permanent personnel. There was also a fast turnover of employees due to opportunities with higher compensation rates.

Recommendations

A dialogue with DILG was still in process for the memorandum. In terms of personnel matters, retention mechanisms must be applied such as higher pay.

4.3.2 CASE SITE 2: Pasig City, NCR

Expenditure

Pasig City is considered as a first income class city; thus, it was expected that its LDRRMF amounted to almost half a billion. The mitigation fund of the city was largely utilized in 2015 and 2017, but minimal for 2016 and 2018. Its QRF share was barely tapped like Marikina.

The DRRM office acknowledged that while it has a large budget dedicated to disaster initiatives, it was the most vulnerable and poorest communities which have lower budgets for DRR efforts. Internally, the personnel in the office faced the problem of personnel salary gap wherein the compensation they received did not equally reflect the workload they took in that particular position. Additionally, the projects, programs, and activities they proposed, in some instances, were flagged by COA. It appeared that the guidelines were not practical enough and tended to dwell on procurement concerns. The budget set aside for a project did not apparently include expenses for MOOE. The office interpreted the usage of trust fund as a fund source for projects related to DRR and expenses under quick response immediate after a disaster.

Figure 18. Allocation and utilization of mitigation fund in Pasig City from 2015-2018

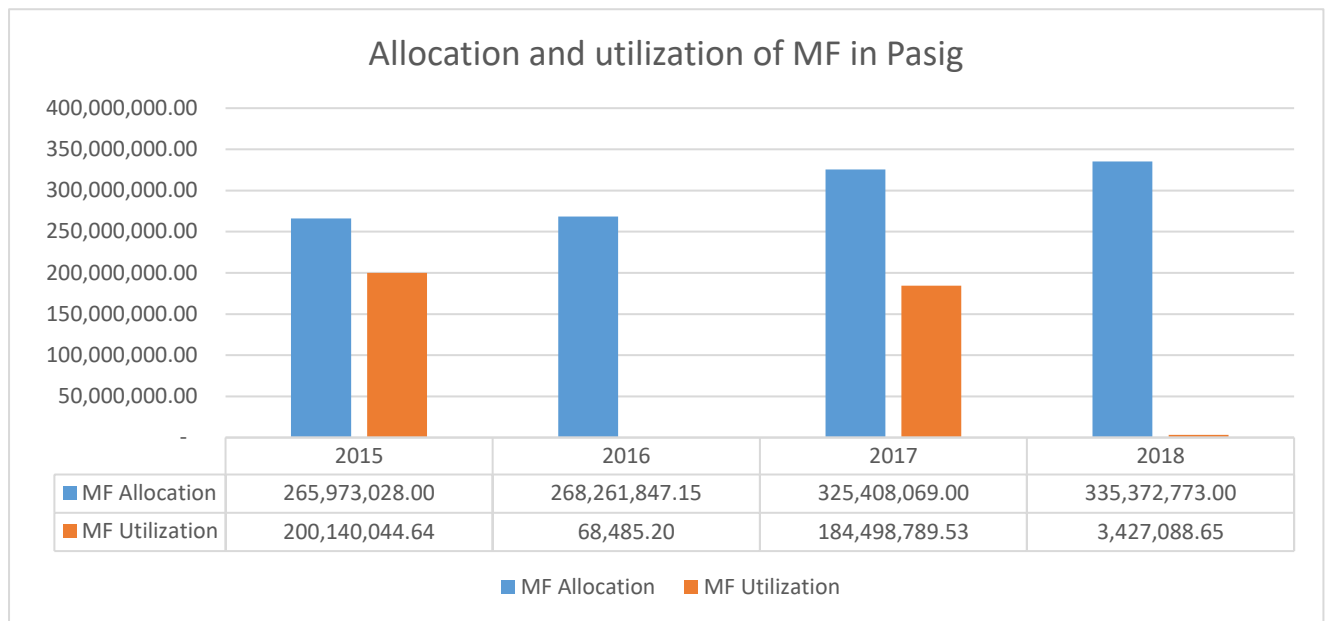


Figure 19. Allocation and utilization of quick response fund in Pasig City from 2015-2018

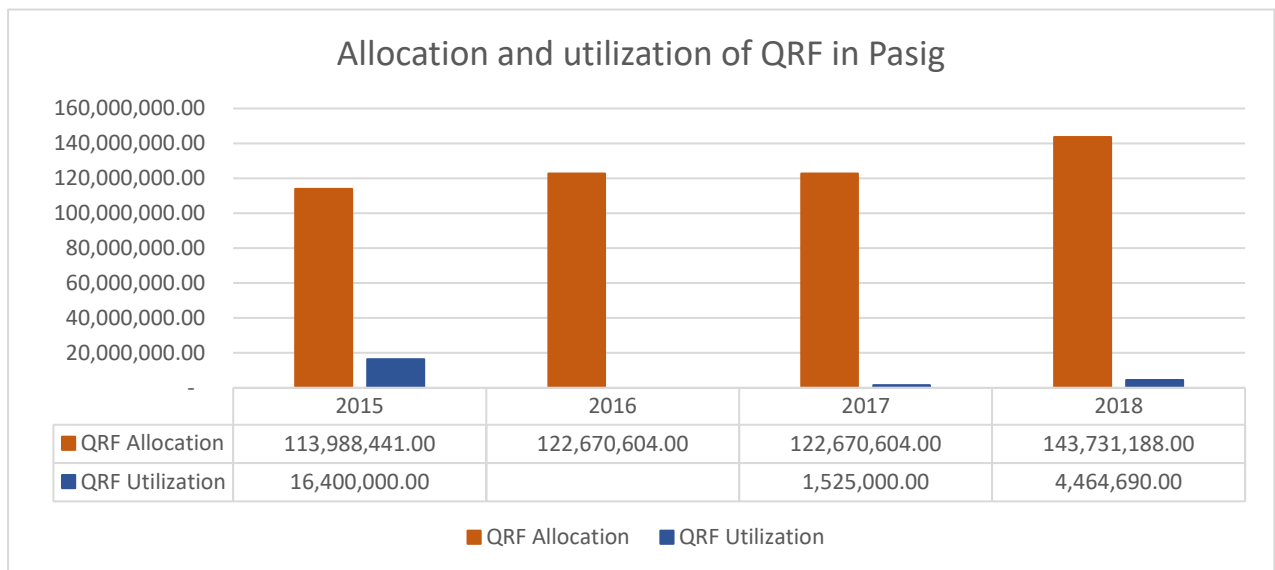
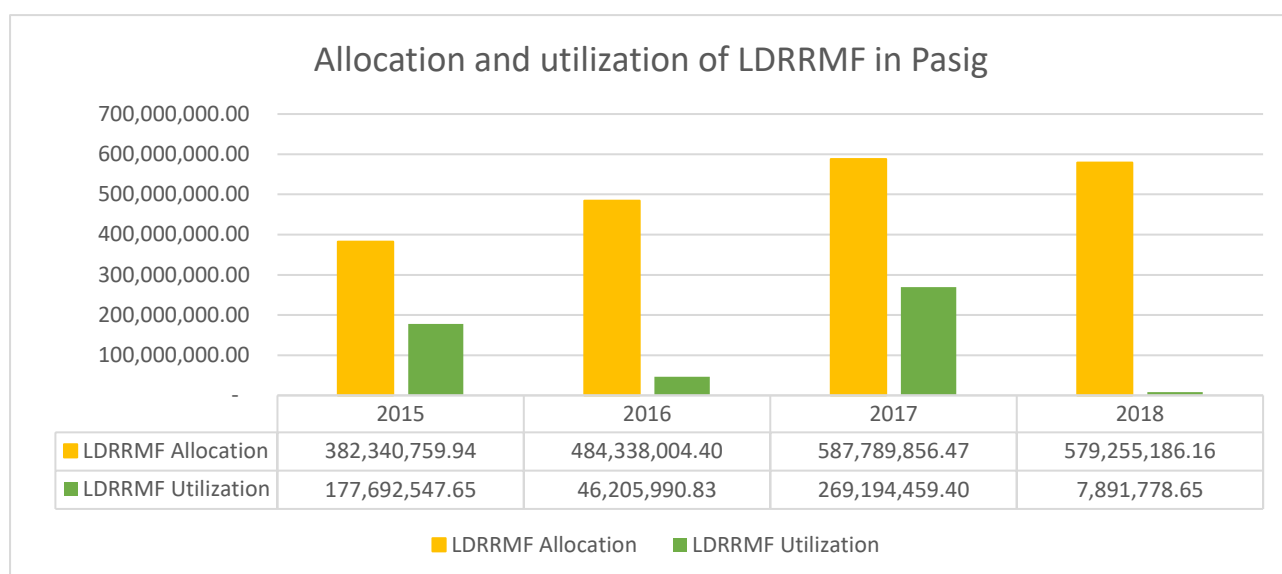


Figure 20. Allocation and utilization of LDRRMF in Pasig City from 2015-2018



Planning

Pasig City's DRRM office has also intervened in mitigating activities in line with climate change efforts such as waste management, shoreline protection, monitoring of water and soil pollution. Unlike other DRRM offices which have completely taken on the mandates of climate change, Pasig City delineated the functions between the disaster office and the city environment and natural resource office. The former office was viewed as the one in charge of practical concerns. The office has a total of 300 casual personnel grouped into four teams and in rotation for 24 hours and seven days a week. There was also an extensive monitoring system where crimes and rainfall can be projected annually. Hazard pay for these employees were secured through a local ordinance.

The city's DRRMO was able to interface with the barangay and included the issues highlighted by the barangay. The office also provided technical aid in the conception of Barangay DRRM Plans and mainstreamed these with the City's DRRM Plan. The bottom-up approach resulted to an accurate inventory of which parts of the barangays have higher exposure to certain hazards, and a list of vulnerable households. Every street and every block has potential scenarios, thus response was easily targeted regardless of which hazard. In terms of PPAs, the bigger ones which the barangay cannot fund were carried over by the city for funding.

It referred to the Oplan Listo as too basic since typhoons were considered to be dynamic. It would be misleading and inaccurate if typhoons and responses were boxed in and standardized. In light of this, Pasig's local government can make its own call despite receiving warnings from both DOST PAGASA, and DILG.

Key Challenges/Issues

The office referred to the blurry incident command system as a root cause of inefficiency in the implementation. In addition to that was the lack of coordination among local units and external organizations.

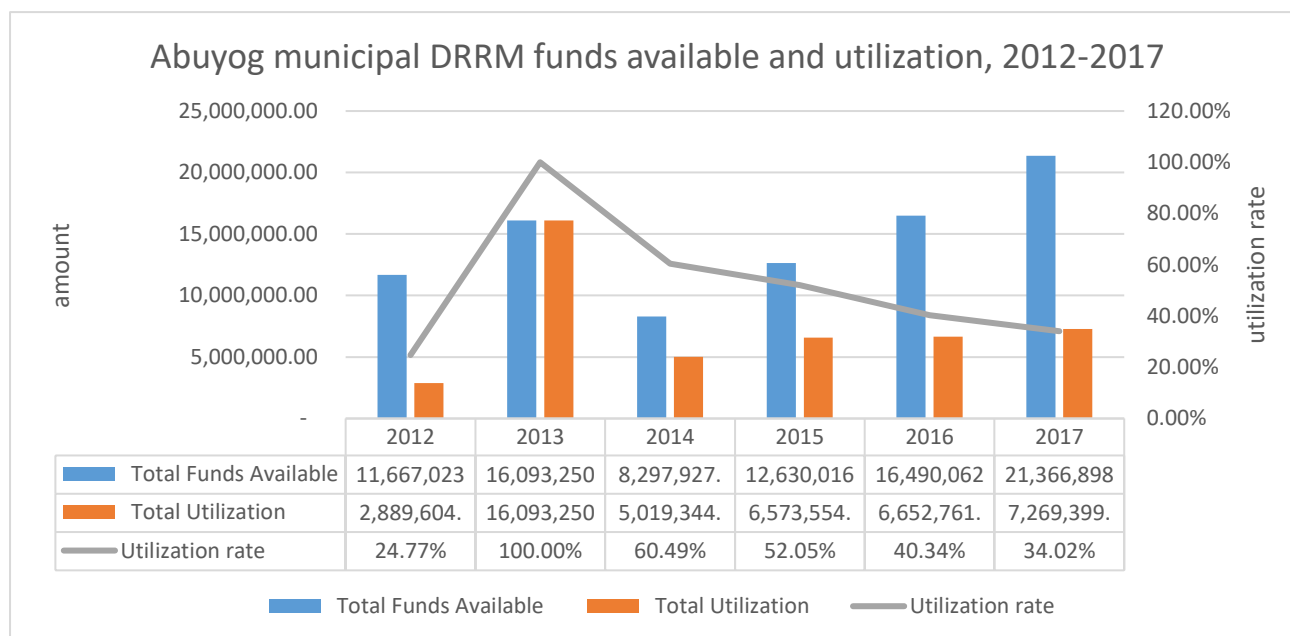
4.3.3 CASE SITE 3: Abuyog, Leyte

Expenditure

Abuyog was a first-class municipality in Leyte. It was very capacitated and advanced compared to its municipal counterparts in the region. The LGU has complete documentation of its local development plans and disaster preparedness modules however, it seemed that the capacities of the community were not reflected in its fiscal spending. Save for 2013, the LGU's utilization was lower compared to its allocation. The utilization rate of the community followed a downward trend.

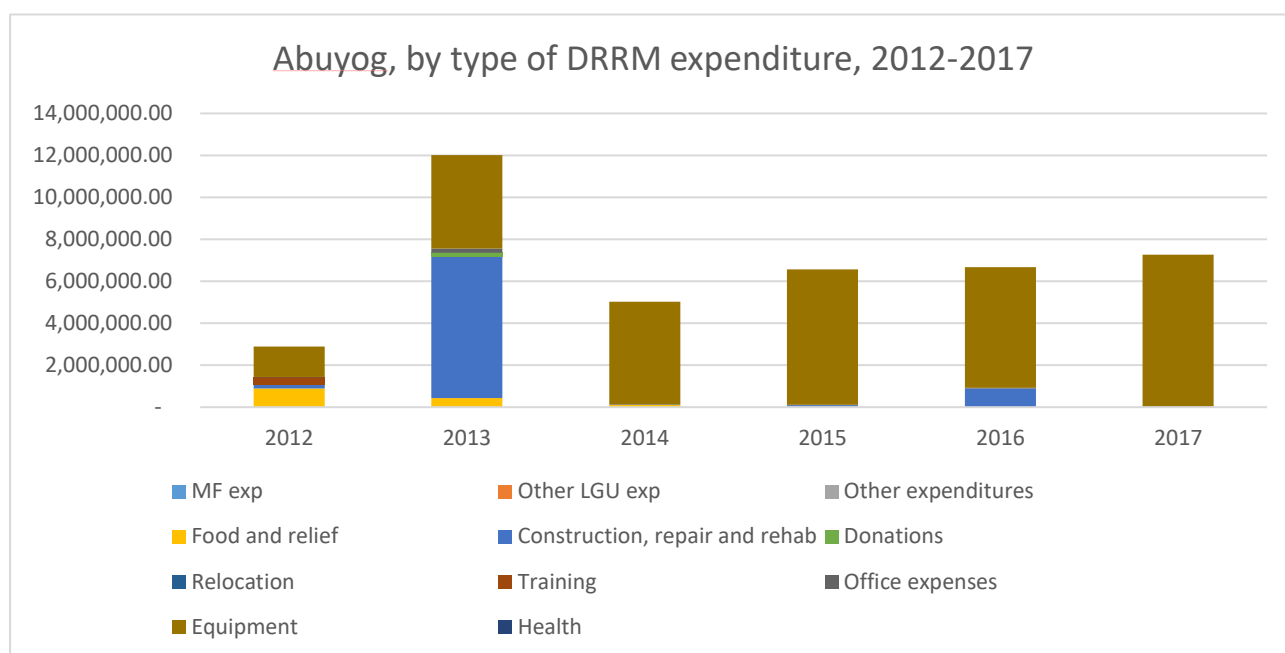
Concerns have been voiced out by the LGU with regards to the utilization of funds. External funds were very helpful in augmenting the needs of the community, and Abuyog took advantage of this. There was greater dependence in external fund sources for their bigger projects. With regards to the unexpended funds that have been put inside a special trust fund, the LGU was wary of utilizing them as they wanted it to be a reserve for eventual disasters and rainy days. The misinterpretation of its usage also contributed to them not optimizing the financial allocation to the community.

Figure 21. Utilization of available DRRM funds in Abuyog from 2012-2017



Abuyog spent 68 percent of its funds on equipment, followed by construction, and repair and rehabilitation which comprised 17 percent. The latter was the highest in 2013, most probably due to the Typhoon Yolanda. It can be presumed that while the utilization was not optimized, the LGU was spending most of it in capital expenditures such as flashlight, speed boats, radios, and megaphone among others which may be categorized under the disaster preparedness pillar.

Figure 22. Utilization of funds per expenditure type in Abuyog from 2012-2017



Planning

The LGU exhibited high level of awareness about the its mandate before, during, and after disasters. The MDRRMO was able to create a manual of operations to be followed by the LGU and the schools akin to a disaster response plan. The MDRRMO attributed the high awareness of the community to the Yolanda experience. It facilitated the need for a Damage Assessment and Needs Analysis to become a basis of interventions needed for the LGU.

Abuyog depended on the ClickSense by UNDP in order to have a total renumeration of the constituents in the area. It also enabled the LGU to deliver the intervention by household such as seminars on Family Disaster Plans and drill exercises that were carried out in coordination with the Family Development Sessions by Department of Social Welfare and Development. Aside from these, the LGU also encouraged the creation of a Barangay Disaster Response Plan (BDRP) for each hazard – a devolved version of a contingency plan, and a Comprehensive Barangay Disaster Risk Reduction and Management Plan (CBDRRMP). OCD did not require the inclusion of contingency plans and family disaster plans in the CDRRMP since it believed that these plans were not within the jurisdiction of the barangays. Evacuation systems, in the case of disaster, were already in place in the community. For the shelter, the LGU has an inventory of in and out evacuees. For the meals, it was reiterated in the seminars that the first meal should come from the family while the next three meals should come from the barangay. However, it was acknowledged by the key informants that equal distribution of benefits and relief among evacuees may be difficult.

Facilities present in the LGU was a multi-use, multi-purpose evacuation center in place. To further instill the disaster preparedness in the community's mindset, the LGU planned to establish a school for disaster and climate change adaptation for perusal of all barangays in the Philippines.

Comprehensive Land Use Plan (CLUP)

The Municipality of Abuyog had its enhanced CLUP approved on April 18, 2017, covering the years 2017 to 2036. The improvements added results generated from the Climate Disaster Risk Assessment (CDRA), sustainable land management, and plans for agricultural sector. Along with climate change adaptation initiatives, DRR was mainstreamed in the plan through land use categories (settlement, production, protection, and infrastructure development). This was also apparent as the planning document, dubbed as the “father of all plans”, has a separate section for the CC-DRR plan of the LGU. Technical assistance in the formulation of the plan were provided by World Bank, GIZ, PHIVOLCS, and PAGASA among others. As for the fund utilization related to the CLUP, only 200,000 to 300,000 pesos were utilized from the five million peso-budget. The high awareness of the LGU and the community was due to the onslaught brought by Typhoon Yolanda.

Despite the high level of awareness and capability, there seemed to be a shift in quality in coastal planning that may be brought about by the limited policies tackling water resource and coastal planning. Monitoring and evaluation of zoning regulations were suggested.

Comprehensive Development Plan (CDP)

Since CLUP was the “father of all plans”, the CDP was dubbed as the “mother of all plans”. Whereas the CLUP was readily enhanced by a proactive MPDC and former MDRRMO, the CDP, on the other hand, was not aligned with the plans and priorities stated in the CLUP. The previous CDP document expired in 2016 and must be updated by the LGU. Three sectors comprised most of the PPAs included in the CDP: social, economic and environmental. The last sector was the only one containing CC and DRR initiatives.

Municipal Disaster Risk Reduction and Management Plan (MDRRMP)

The planning process for the MDRRMP started with a proposal from the MDRRMO which was then brought to MDRRMC for presentation and to the Sanggunian Bayan for approval. The PPAs under the MDRRMP were segregated according to the four thematic areas they most fit in. Priorities were given to organization and trainings of workshops for the barangays, and communication systems. Each barangay possessed a radio that kept them in contact with the police force. Funding sources for these PPAs included national DRRM fund, IRA allocation, official development assistance (ODA) and other external aid. Past DRR efforts used to be classified as reactive, but they have shifted to a proactive stance. The institutionalization of CC and DRR initiatives also enabled the change from short term planning to long term.

Activities like the family disaster preparedness seminars and drills mimicked *Oplan Listo* of DILG and seemed to inculcate DRR awareness among families more effectively. Initiatives taken by the former MDRRMO and the current MPDC allowed them to become a national awardee and a recipient of the multi-hazard simulation drills.

DRRM-related PPAs were funded through the 20 percent development fund and MDRRMF. The distribution of percentage in the five percent IRA allocation remained similar with the other municipalities – 70 percent for the pillars and 30 percent for the quick response funds. The LGU proved to be consistent with their decision to not tap the latter percentage for future calamities despite the funds reverting to the general fund. Utilization reports were usually given monthly and quarterly to DILG and monthly for OCD. DBM apparently did not require a fund utilization report from the LGU as they were more concerned with the aggregated amount of spending. For this LGU’s case, the COA was open to the flexibility of the utilization of the DRR funds.

Contingency Plan

The inventory indicated the existence of a contingency plan, but no document was presented during the time of the data collection process.

Climate Disaster Risk Assessment (CDRA)

Findings from the CDRA were utilized for the formulation of the enhanced CLUP (2017-2036). The process adopted by the CDRA followed six steps: (1) garnering and organizing climate and hazard information, (2) determining potential impacts of climate change and related hazards, (3) setting up an exposure database for information, (4) conducting a Climate Change Vulnerability Assessment (CCVA), (5) conducting a Disaster Risk Assessment (DRA), and (5) summarizing the collected findings. A detailed organizational framework was included in the CDRA, the framework of which guided the development of the assessment process.

As observed in the development of local plans, there was also a high level of familiarity with the processes coupled with capacities to act on them. Back in 2017, the LGU waited for the DILG guidelines in mainstreaming CCA/M and DRR initiatives into CDP.

Modules of Family Disaster Preparedness

With the help of GIZ, Abuyog was able to craft a systematic family preparedness program from the seminar to the drill exercises, comprising of eight modules. This basically formed the skeleton of the disaster preparedness pillar in the municipality.

The first module was a leveling of expectations and orientation of the training. It introduced the different hazards present in the area and the corresponding effects to the family and the environment. The hazards enumerated in the module were earthquake, tsunami, volcanoes, landslide, epidemic, desertification, pest infestation, deforestation, environmental pollution, drought, floods, and tropical cyclone/typhoons.

The second module in the program was an orientation on disaster management and why it was important for family survival and security. This phase also integrated existing spiritual values, beliefs, and practices. The third module was the assessment of status. It will examine components such as planning, institutional, structural information system, resource, warning system, response mechanism, public education, and training and rehearsals. The following module was an identification of escape routes, and an evaluation of met and unmet indicators. In addition to this, there was also an assessment of vulnerabilities and capacities of the households. The fifth module was the mobilization of resources in order to address the identified vulnerabilities and capacities. First-aid training was taught in module six while module seven focused on the knowledge and demonstration of households about disaster preparedness. The last module was mainly about synthesis and evaluation of the whole training.

Key Challenges/Issues

Policy-related issues such as the failure to present complete reports in fieldworks were just some of the many impediments in the development of local plans. Abuyog being classified as less affected also made it more difficult to push for greater shares in DRR-related PPAs like relocation site which made the LGU resort to requesting for national fund. For external aid, no

audit mechanism existed for the municipality as it was only the proponents of the projects who can audit. Additionally, these foreign-assisted projects were usually accepted by lower-class municipalities to augment financial needs however, there was a lack of a standard mechanism and proper channels to subject the incoming foreign aid. Inconsistent advice from accountants were also experienced during the process.

There were also gaps among personnel in harnessing technology to enable faster collection and generation of data and inputs like advanced GIS training, risk analysis, community mapping, utilization of CBMS data, and generating LiDAR data to inform local planning.

Recommendations

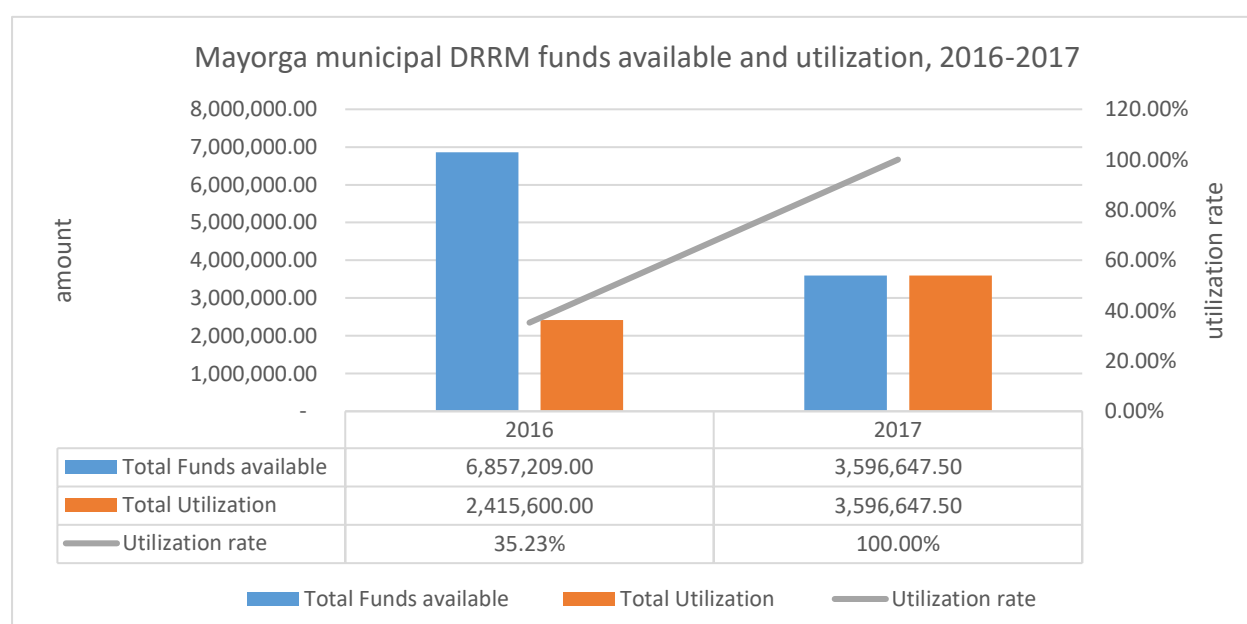
The MPDC listed various recommendations to further improve the integration of DRR initiatives in the local plans included establishing a 100-meter distance from the shoreline and relocating households behind this boundary, and a roadway directly leading to Abuyog to be funded by national resources. It was recommended to the COA that purchase of second-hand equipment be banned or lessened to curb possibilities of corruption, and that disbursements be presented in the plan. As for the community management, it was contrary from normal responses that MPDC was against community-based. According to him, waiting on the LGU delayed both the inception and implementation process. Lastly, for the larger scale, there was a positive reception to the proposed Department of Disaster Resiliency to further streamline processes.

4.3.4 CASE SITE 4: Mayorga, Leyte

Expenditure

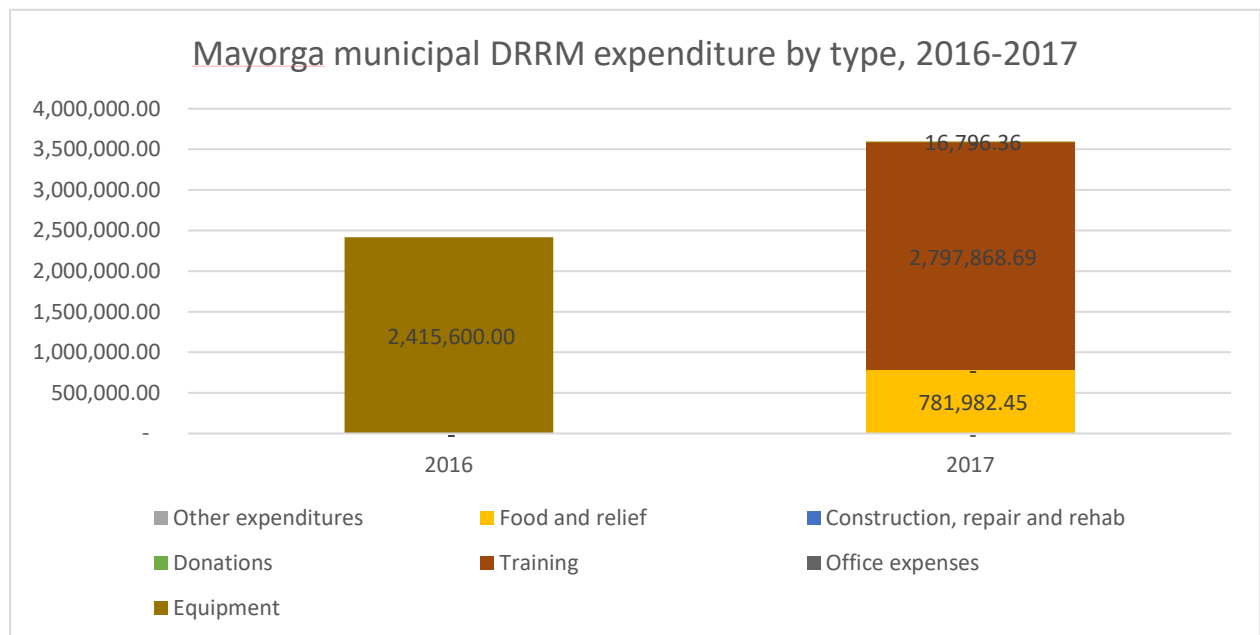
Mayorga was less capacitated compared to Abuyog and was categorized as a lower income class municipality. The LGU lacked in documentation as the only available years they have for fiscal spending was 2016 and 2017. In the previous year, the LGU was able to utilize 100 percent of its funds which decreased compared to last year's available funds.

Figure 23. Utilization of available funds in Abuyog from 2016-2017



Mayorga spent 40.46 percent of its 2016 LDRRMF for equipment while 46.54 of its 2017 fund was spent on trainings, and a smaller portion on food and relief. In the interview, the LCE of Mayorga wanted to capacitate the community's Rural Health Unit (RHU) as a reliever for the absence of an Emergency Response Team (ERT). Trainings were for the capacity building of the LGU's personnel, particularly the MDRRMO. Some of the future plans of the municipality was the establishment of a disaster academy cum learning center.

Figure 24. Utilization of funds per expenditure type in Abuyog from 2012-2017



Planning

Mayorga was a fifth-class municipality in Leyte. Compared to Abuyog, it has a much lower fund resource and lower capabilities. Due to recent interventions by international development organizations, the LGU was able to harness capabilities and work on its lapses. One development was the usage of ClickSense to determine health details for each household. The RHU of the municipality played a big part in this as it was designated to mobilize in times of health and nutrition emergencies. There was also an increased consideration to the types of farmers present in the municipality who were vulnerable to disasters. There was a recommendation for an immediate clearing after disasters, so crops would not be wiped out by attracted pests like beetles. One way to mitigate the agricultural losses would be to modify and diversify crops and at the same time, branch out to higher-value commodities.

Present programs of the LGU included food hubs, inventory of assets, and integration of DRR systems in the schools' curriculum. Like Abuyog, Mayorga's approach to intervention has become family-based. It recently coordinated with KALAHI-CIDS on community-based projects.

Comprehensive Land Use Plan (CLUP)

The municipality had no approved CLUP yet, but it was able to provide a draft during the data collection. It covered the years 2018 to 2027 but was still undergoing enhancements as

mandated by the guidelines from Housing and Land Use Regulatory Board. The results of the CDRA were treated as the standard for developing the plan. There was active participation from barangays in the preparation, and together with the personnel, they exhibited familiarity with the processes but with limited capability.

The objectives of the plan were reflected in the strategies of the LGU which included climate-smart and disaster risk resilient government buildings and integration of drainage studies and road map to steer the direction of development.

Comprehensive Development Plan (CDP)

The CDP of the Mayorga was completed in 2016 and will be used until 2022, but it was also similarly amended in order to mainstream CC and DRR initiatives through CDRA with the support of UNDP and DILG. Aside from the two agencies, coordination and assistance for the completion of the plan were also provided by the LCE, MPDO, MLGOO, SB, education sector, CSOs, and barangay captains. An influx of both local and international external assistance was observed in the community. Some of these were Save the Children, Relief International, Red Cross International, World Vision, Plan International, Caritas International, Christian-Aid Alyansa Tigil Mina, Operation Compassion, Center for Renewable Energy and Sustainable Technologies (CREST), United Architects of the Philippines Metro Tacloban Chapter, and the System of Rice Intensification Pilipinas among others. Pre-Yolanda CDP, on the other hand, was solely facilitated and funded by the GIZ.

The municipality's CDP was able to include the barangay development plans, and its completion implied that the personnel working on it have high level of familiarity and capability for this planning process.

Municipal Disaster Risk Reduction and Management Plan (MDRRMP)

The MDRRMP was developed in 2016 and spanned the range 2017 to 2019. Planning process for this document was initiated by the Save the Children NGO through a four-day MDRRM Planning. While there was no support or facilitation from UNDP during the development of the document, technical assistance was still offered by the same agencies and representatives involved in the formulation of CDP. The four-day workshop was attended by municipal and barangay officials as well as representatives from local, national, and international CSOs, and sectoral representatives. The plan was apparently based on the approved CDP of the municipality.

Four tools were utilized in the planning process namely, hazard assessment maps, hazard history timeline, seasonality calendar, and risk maps. The results were then outlined within the four thematic areas of the NDRRMP. The municipality was able to identify point persons for each thematic area like the institutional arrangement in the national level. The MPDO was identified for the first, the MLGOO for the second, Office of Municipal Social Welfare and Development for the third, and the Office of the Legislative Department for the fourth.

In terms of PPAs, these were categorized per thematic area and arranged per priority order to form the financial DRRM plan for 2016-2018. It was learned that one of the major fund sources for disaster-related PPAs was Assistance to Disadvantaged Municipalities. One of the priority PPAs was the construction of a DRR-CCA learning center cum evacuation center which would offer trainings on first aid, basic life support, and fire and water safety. The LGU planned to

apply for funding from the People's Survival Fund as the costs will be too high to be shouldered by regular sources.

One concern in the expenditure aspect of the LGU was the sharing of DRR funds with the climate change-related PPAs. They have access to the five percent MDRRMF, and 20 percent economic development fund. The mitigation part of the MDRRMF, estimated to be around PHP 2.1 million, was flexible in use for both CCA/M and DRRM. Full disclosure reports on fund utilization were submitted quarterly and annually to the Commission on Audit (COA) while monthly, quarterly, and annual reports were sent to the DILG. There were no instances of disallowances or underutilization recorded for the LGU. As for the monitoring and evaluation of the MDRRMF, the MDRRMC was tasked to conduct them and ensure that DRRM were integrated in local plans.

Contingency Plan

The contingency plan managed to cover nine hazards, two of which were facilitated by the OCD in the formulation. These were storm surge and an unidentified hazard.

Climate Disaster and Risk Assessment (CDRA)

The climate and disaster risk assessment started in 2016 with assistance from CCC, HLURB, and DILG. The assessment was led by the MDRRMC in coordination with local and international NGOs, the academe, and the private sector. There were assigned focal persons at the barangay level who served as coordinators during the conduct of assessment. Found in the document were analyses of exposure and risk levels of five elements (population, urban areas, natural resources, lifeline utilities, and critical point facilities) to the identified natural hazards the municipality is susceptible to such as earthquake, flooding, liquefaction, typhoon, drought, tsunami, and storm surge.

The assessment of the LGU started with the presentation of the geography of the area and an enumeration of the region into barangays with the corresponding population. The LGU followed the framework prescribed by the Housing and Land Use Regulatory Board in 2015 which mainly comprised of the five main steps as also depicted in the process flow of CDRA: (1) Collection and organization of climate change and hazard information, (2) scoping of potential impacts of hazards and climate change, (3) development of exposure database, (4) conduct climate change vulnerability assessment and disaster risk assessment, and (5) identification of decision areas and corresponding policy intervention.

For the first step, the LGU of Mayorga gathered its climate information and projections from PAGASA. The hazard information was obtained from various agencies to comprise the hazard susceptibility matrix. Projections for the municipality estimate higher temperatures and frequent flooding however, the number of dry days was also expected to decrease. Despite the decreased incidence of drought, the municipality will experience extreme daily rainfall occurrence measuring more than 200 mm by 2020 and 2050. The previous step was followed with identification of possible impacts to the development sectors and key areas of the municipality. The LGU created impact matrices for its resources like forest, agriculture, urban, and coastal. For its forestry sector, the municipality plans to conduct mangrove reforestation, an integrated coastal resource management plan, strict implementation regarding cutting ordinances, and information and education campaigns. Its mitigation plans for agriculture included construction of more drainage and irrigation systems, planting of flood-resistant

crops, and trees with high water holding capacity near catchment areas, usage of greenhouses, and crop and livestock diversification among others. Another area identified by the LGU was the urban sector which they planned to mitigate through a municipality-wide drainage system and utilization of green technology. The last was the coastal resource. Some of the LGU's preventive measures included relocation of informal settlers to make way for mangrove rehabilitation and coastal buffer zones, coral gardening, implementation of coastal resource management plan, and banning of mangrove cutting.

The exposure database must contain the baseline information on all elements, and the LGU exhibited reliance on CBMS and PSA to serve as data sources for CCVA and DRA. For the DRA, risk areas were identified through hazard, exposure, and vulnerability analyses. The municipality also conducted a hazard inventory matrix which identified seven natural hazards namely, earthquake, flooding, liquefaction, typhoon, drought, tsunami, and storm surge. The area's susceptibility for each hazard was examined and determined, determining the population for each area exposed to such hazard. The areas' respective adaptive capacities and severity of consequences were also estimated. These risks were hoped to be reduced and eliminated through proper policy interventions.

The trainings on formulating local plans helped the personnel overseeing the planning processes have familiarity with the basic concepts, but there was still an absence in mechanism of knowledge transfer, and limited capability to translate risk knowledge into policies and programs that can respond to the municipality's immediate needs.

Key Challenges/Issues

The municipality acknowledged the inability of the community to be resilient despite the learnings from devastation brought by Typhoon Yolanda. The difficulties were reflected in the local government plans. Constraints were seen in the fiscal aspect, particularly in programming and budget planning. For instance, there was an absence of provision stating the maximum expenditure allowed for DRR. Limited funding pushed the LGU to sacrifice certain PPAs as it needed to respond to the emerging and immediate needs of the community. There was also an absence of tagging for climate change expenditures since it was not required from the LGU. Moreover, there was a recognition of lack of technical assistance and personnel in conceptualizing and implementing local plans such as in the case of developing per thematic area concerns wherein agricultural expertise was sourced from NGOs instead of government organizations.

As observed in the planning processes of the various local plans, there was an influx of external assistance, but the municipality has weak prerogative to refuse or allow NGO presence and lacked the mechanisms to properly manage these. Additionally, the updating of the plans was hindered due to limited funding for data collection and maintenance, capacity building activities, and equipment and tools. Practices within the municipality also contributed in the delay of the planning documents. Some of these were poor data collection and maintenance lapses, lack of commitment for database development, GIS, and planning, no incentives to retain trained staff, and absence of data sharing protocols. Absence of a directory for important people/organization was also seen as a constraint in the implementation of CCA/M and DRRM-related PPAs.

Recommendations

The incidences of wrongly tagged PPAs under programmed fund sources might be addressed through a clear delineation and separation of fund sources for climate change and disaster risk reduction PPAs.

As for the planning process, the technical working group needed to be institutionalized and established to improve data collection and increase participation of all departments and sectors. The personnel involved should also continue to enhance technical skills, enhance capacities for CDRA, GIS, database management and visualization, and learn how to translate risk knowledge into policies impacting various sectors. It was also recommended that a comprehensive national inventory of DRR assets be developed. In terms of PPAs, future suggestions were placed such as improvements in water supply and toilet systems of schools, construction of typhoon-resilient barangay halls, capacitation of the municipal health office, conduct of surveys among elderly population, and trainings to improve disaster preparedness among local communities. Lastly, it was proven integral to establish monitoring and evaluation mechanisms to track progress of the planning.

5 Key Insights and Recommendations

The Philippines continues to incur massive casualties, population displacements, and economic damages from disaster events despite a progressive DRRM policy landscape that has seen consistent improvement since the passing of RA10121 in 2010.

Cascading policy from the national down to the local government levels remain a challenge. It can be claimed that disaster risk awareness among stakeholders is at an all-time high, but evidentiary support do not point to appropriate mainstreaming of DRRM within LGUs. Major planning documents like CLUPs and CDPs, if present at all, do not reflect the required climate and disaster risk assessment enhancements. A majority of the one-third of all municipalities and cities with CLUPs do not have the enhanced version. CDP compliance on the other hand remain dismal at less than 3 percent of all LGUs in 2016. Thematic planning, however, is good with LDRRMP and LCCAP submissions at 100 percent and 73 percent, respectively. Such is indicative of the short-term focus of local government planning and DRRM investment planning. Disaster preparedness, including its pre-requisite processes and institutional machinations, have to be addressed through stable inclusion in longer-term planning and investment programming documents.

Structural augmentations of local government institutions need to be fast-tracked as 2016 levels show only a few permanent DRRM officers being appointed in local DRRM offices. Although espoused in policy, the appointment of dedicated personnel has been wanting with 2016 levels showing only 775 permanent appointees as compared to 1038 temporary ones. Even if all of the appointed DRRM personnel are regular employees, the number still fall short of the recommended staff level per LGU.

Also consistent among the case LGUs, as well as the national level data, is the seeming underutilization of local disaster risk reduction and management funds. The mandated 5% LDRRMF fund is consistently underutilized among local governments, even in the progressive highly urbanized cities of metro manila. Given anecdotal evidences of DRRM fund insufficiency, such low levels of fund utilization point to policy and institutional hindrances that need to be addressed.

The high level of casualties, population displacements and economic costs from recent disaster events still point necessary augmentations in disaster preparedness. Policy has to be revisited, institutional arrangements have to be reviewed and resource mobilization issues have to be addressed. RA10121, albeit strong on its own, has to be enhanced and supported by functional department policy to be aptly cascaded. Policy and planning alignments also have to be enhanced both from the national to subnational levels and horizontally within local government institutions and national government agencies.

Disaster preparedness has to be manifested before, during and post disaster events. The test really is how to optimally capitalize on available resources and governance tools both at the national and local government levels to have the least casualties, displacements, damages in times of disaster events.

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