



International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Anticipatory Action, Disaster Preparedness, and Social Resilience in Disaster Response Among Local Government Units

Jennelyn C. Clarito

Project Officer, Drr-Cca – Islamic Relief - Philippines

ABSTRACT

This study investigated the impact of anticipatory action and disaster preparedness on social resilience within local government units (LGUs) in Region XII and BARM. Using a mixed-methods approach, the research found that LGUs demonstrated strong awareness of anticipatory action, high disaster preparedness, and significant social resilience. Quantitative analysis revealed a significant influence of anticipatory action awareness and disaster preparedness on social resilience. Qualitative data identified challenges in disaster response and highlighted effective coping strategies like community-based preparedness and collaboration. Based on these findings, the study proposed an information and education campaign to enhance community preparedness and awareness of anticipatory action.

INTRODUCTION

Disaster preparedness, involving proactive measures and community resilience, is essential for mitigating the impacts of natural disasters, particularly in vulnerable regions like the Philippines, which faces increasing flood risks. Despite awareness of these threats, actual preparedness remains low, with a significant gap between acknowledging risk and taking action. The concept of anticipatory action, crucial for timely intervention, is underutilized, and research on its effect on disaster preparedness and social resilience in LGUs is limited, highlighting the need for this study to inform effective disaster response strategies, especially for flood management.

RESEARCH QUESTIONS

Study 1 – Disaster Awareness and Preparedness Towards Social Resilience

1. What is the level of awareness on disaster response through anticipatory action in terms of risk information, forecasting, and early warning systems; planning, operations, and delivery; and pre-arranged finance among Local Government Units?
2. What is the level of disaster preparedness in terms of systems and structures, policies, and plans, building competencies, and equipment and supplies among Local Government Units?
3. What is the level of social resilience in disaster management in terms of social cohesion, network and support; community knowledge, skills and awareness; community goals, efficacy, communication, and access among Local Government Units?
4. Is there a significant relationship between disaster response through anticipatory action and social resilience?
5. What factor in disaster response through anticipatory action significantly predicts social resilience?
6. Is there a significant relationship between disaster preparedness and social resilience in disaster management?
7. What factor in disaster preparedness predicts social resilience in disaster management?
8. What correlation pathway analysis can be drawn?

Study 2 – Challenges and Strategies on Disaster Response and Preparedness in Building Resilience

1. What are the challenges the LGUs encountered related to disaster response, preparedness, and in building social resilience?
2. What are the coping strategies in response to the challenges?

Study 3 – Policy Development Literature

1. What disaster preparedness plan can be proposed based on the predicted variables?

2. What information and education campaign can be developed based on the results of the study?

Research Design

This study utilized a concurrent mixed-methods design, emphasizing quantitative descriptive correlation to analyze relationships between anticipatory action, disaster preparedness, and social resilience, while simultaneously employing qualitative-descriptive research to explore LGUs' challenges and coping strategies, providing supplementary insights to comprehensively address the research questions.

Locale of the Study

This study focused on flood-prone Municipalities/Cities in BARMM and Region XII, including areas in Maguindanao Del Norte, Maguindanao del Sur, Cotabato Province, and Sultan Kudarat. These regions frequently experience flooding due to their low-lying geography and exposure to heavy rainfall, as evidenced by advisories from DOST-PAGASA and reports of significant flooding incidents in 2023. Given the persistent threat of floods, the research highlights the critical need for effective disaster preparedness, anticipatory action, and community resilience in these vulnerable areas.

Research Instrument

This study employed a mixed-methods approach, utilizing both quantitative and qualitative data collection instruments. A researcher-developed survey questionnaire, based on established frameworks and literature, measured anticipatory action awareness, disaster preparedness, and social resilience using a 5-point Likert scale. The questionnaire included sections on risk information, planning, preparedness systems, social cohesion, and access to services. To ensure reliability, the questionnaire underwent validation and pilot testing, with Cronbach's Alpha used to assess internal consistency. Qualitative data was gathered through interviews with Disaster Risk Reduction and Management (DRRM) council members, using an interview guide with open-ended questions and probes to explore challenges, coping strategies, and perspectives on disaster response.

Research Participants

The respondents of the study were the Disaster Risk Reduction and Management Council of the Local Government Units under study. They came from DSWD, DRRM office, Office of the Mayor, Office of the Municipal Agriculture, and the LGU Engineering Office. Those who were from LGUs but were not from the above-mentioned offices were excluded from the study. The participants were allowed to withdraw from the study anytime without recurring any consequences.

Data Analysis

The quantitative data was analyzed using descriptive statistics (mean) to describe the levels of anticipatory action, disaster preparedness, and social resilience. Spearman's Rho correlation was used to determine the relationships between these variables, and regression analysis was employed to assess the significant influence of anticipatory action and disaster preparedness on social resilience. For the qualitative data, thematic analysis was conducted, involving transcript review, identification of significant statements, meaning formulation, categorization into themes, and a descriptive summary of findings. The qualitative results informed the development of the quantitative survey questionnaire.

RESULTS AND DISCUSSIONS

Awareness on Disaster Responses Through Anticipatory Action

The awareness of the respondents on disaster response through anticipatory action was measured through the indicators: Risk information, forecasting, and early warning systems, Planning, operations, and delivery, and pre-arranged finance.

Risk information, forecasting, and early warning systems

Local government units demonstrate strong disaster response awareness, particularly regarding anticipatory action (mean score of 4.05). They possess significant knowledge of risk information, forecasting, and early warning systems, including weather patterns, vulnerability assessments, and decision-making protocols. This understanding highlights the critical role of accurate forecasting and risk information in effective disaster anticipation, leading to improved community resilience and preparedness.

Planning, operations, and delivery

Local government units (LGUs) show good awareness of disaster response planning, operations, and delivery through anticipatory action (weighted mean 4.04), indicating a solid understanding. However, there's a need for improvement in formalizing procedures and ensuring stakeholder alignment. LGUs are aware of key elements like integrating anticipatory actions into contingency plans and establishing SOPs, but require further refinement. This aligns with research emphasizing the importance of continuous improvement in anticipatory action planning to effectively mitigate disaster impacts.

Pre-arranged finance

Local government units (LGUs) show a good awareness of the importance of pre-arranged disaster finance for anticipatory actions, with a weighted mean of 4.04. They understand the need for adequate funding, ready response funds, and proper budget allocation. However, they also recognize knowledge

gaps in this area, indicating room for improvement. This aligns with research emphasizing the necessity of securing funds in advance to enable timely disaster response. Therefore, strengthening financial preparedness and exploring diverse funding sources are crucial for enhancing the effectiveness of anticipatory actions.

Disaster Preparedness

Disaster preparedness is indicated by systems and structures, policies, and plans, building competencies, and equipment and supplies among Local Government Units.

Systems and structures

LGUs demonstrate strong disaster preparedness in systems and structures (mean 4.23), effectively establishing LDRRMCs and evacuation centers. However, they need to improve networks with local businesses and livestock centers. Strengthening these areas, along with continued community engagement, will enhance overall disaster resilience and response.

Policies, and plans

LGUs demonstrate strong disaster preparedness in policies and plans (mean 4.17), with well-established early warning, evacuation, and relief systems. However, improvements are needed in search and rescue policies and stakeholder coordination. Strengthening these areas, particularly through clear agreements, is crucial for effective disaster response and enhanced community resilience.

Building competencies

LGUs demonstrate strong disaster preparedness in policies and plans (mean 4.17), with well-established early warning, evacuation, and relief systems. However, improvements are needed in search and rescue policies and stakeholder coordination. Strengthening these areas, particularly through clear agreements, is crucial for effective disaster response and enhanced community resilience.

Equipment and supplies

The community demonstrates good disaster preparedness in terms of equipment and supplies (mean 4.07), with essential tools and supplies largely available. However, there's a need for further attention and resources in areas like public bulletins and lifeline supplies. Strengthening these areas, alongside continued stakeholder collaboration for efficient resource mobilization, will enhance overall disaster readiness and response capabilities.

Social Resilience on Disaster Management

The level of social resilience in disaster management was measured in terms of social cohesion, network and support; community knowledge, skills and awareness; community goals, efficacy, communication, and access among Local Government Units.

Social cohesion, network and support

The community exhibits a high level of social resilience (weighted mean 3.95), characterized by strong social cohesion, support networks, and trust. This robust social fabric, demonstrated through place attachment and community bonds, is crucial for effective disaster management and recovery. Research confirms that these factors significantly enhance a community's ability to cope with and recover from crises, highlighting the importance of fostering social connections and trust for resilience.

Community knowledge, skills and awareness

The community exhibits a high level of social resilience (weighted mean 3.95), characterized by strong social cohesion, support networks, and trust. This robust social fabric, demonstrated through place attachment and community bonds, is crucial for effective disaster management and recovery. Research confirms that these factors significantly enhance a community's ability to cope with and recover from crises, highlighting the importance of fostering social connections and trust for resilience.

Community goals, efficacy, communication, and access

The community demonstrates high social resilience in terms of community goals, efficacy, communication, and access (weighted mean 4.12). This indicates effective disaster response capabilities, driven by strong communication, a shared vision, and access to essential resources. The community's sense of collective purpose, efficient information exchange, and access to vital services contribute to enhanced collaboration and preparedness. This aligns with research highlighting the importance of community confidence, collaborative problem-solving, and decision-making in strengthening social resilience and facilitating effective disaster recovery.

Significant relationship between disaster response through anticipatory action and social resilience

A strong and significant relationship exists between disaster response through anticipatory action and social resilience. All dimensions of anticipatory action—risk information, forecasting, planning, operations, and pre-arranged finance—show significant correlations with social resilience components like social cohesion, community knowledge, and goals. This indicates that improved risk information, effective planning, and accessible pre-arranged finance directly enhance community preparedness and resilience. Integrating anticipatory actions into community resilience strategies is crucial for building stronger, more resilient communities.

Factors in disaster response through anticipatory action significantly predict social resilience

This study emphasizes the critical role of pre-arranged finance, a key component of anticipatory action, in predicting and influencing social resilience. Pre-arranged finance significantly impacts various aspects of resilience, including social cohesion, community knowledge, goals, and overall resilience, consistently emerging as the strongest predictor. The study reveals that financial preparedness enables timely disaster responses, reduces impacts, and facilitates quicker recovery by ensuring resources are readily available and effectively mobilized. Essentially, prioritizing pre-arranged finance is crucial for strengthening social resilience and optimizing disaster management.

Significant relationship between disaster preparedness and social resilience in disaster management

This study establishes a strong, positive correlation between disaster preparedness and social resilience. Key preparedness elements, including equipment, policies, and training, significantly enhance social cohesion, community knowledge, and communication. Adequate resources and well-structured policies are particularly crucial for building strong community networks and preparedness. While systems and structures play a supporting role, the overall findings emphasize that effective disaster preparedness involves both physical resources and fostering strong community connections through proactive planning and collaboration.

Factors in disaster preparedness predict social resilience in disaster management

This study's regression analysis demonstrates that disaster preparedness significantly predicts social resilience, with policies and plans, and equipment and supplies, emerging as key predictors. Well-structured policies and adequate resources are crucial for fostering social cohesion, enhancing community knowledge and skills, and improving community goals, efficacy, communication, and access. Overall, effective disaster management policies and well-equipped communities are vital for strengthening social resilience and preparedness.

Correlation pathway analysis

This study's regression analysis demonstrates that disaster preparedness significantly predicts social resilience, with policies and plans, and equipment and supplies, emerging as key predictors. Well-structured policies and adequate resources are crucial for fostering social cohesion, enhancing community knowledge and skills, and improving community goals, efficacy, communication, and access. Overall, effective disaster management policies and well-equipped communities are vital for strengthening social resilience and preparedness.

Study 2 – Challenges and Strategies on Disaster Response and Preparedness in Building Resilience

Phase 2 of this study explored disaster response and preparedness challenges faced by LGUs, revealing issues such as inaccurate data, limited resources, poor participation, inadequate infrastructure, and communication barriers. To address these, LGUs employed strategies like community-based preparedness, collaborative efforts, recovery support, and adaptation to local needs, aiming to build social resilience despite these obstacles.

Challenges in Disaster Response

The challenges of LGUs in disaster response is described. The themes: limited participation and awareness, livelihood and preparedness issues; and Inadequate infrastructure and accessibility concerns.

Inaccurate data and identification Issues. This is one of the challenges that the LGUs shared. They have difficulty in identifying affected households due to discrepancies in the data provided by local government units (LGUs) and barangays.

Ang ma encounter naming na mga problema Talaga in preparation sa flooding is yung first sa LGU is yung Masterlist of affected family kasi hindi Talaga natin malaman kung ilan Talaga ang affected families kasi minsan hindi din natin ma ano si Barangay minsan kasi sobra yung Masterlist na binibigay nila sa amin We as an MSWDO and NDREN is magpupunta Talaga yung mga staff from the two office para evalidate yung mga number of families na data na ibinibigay sa amin ng mga Barangays kasi minsan kasi hindi kasi magka pareha yung mga data namin e jive lahat para in preparation for the disaster coming. ((The problems we encounter during flood preparation are first with the LGU's master list of affected families because we can't always determine the exact number of affected families. Sometimes, the data given to us by the barangays doesn't match our own data, and we have to send staff from MSWDO and MDRRM to validate the information. This creates issues in preparation for the upcoming disaster.) IDI-1

Another participant also mentioned that it is hard to manually verify the data, which was time-consuming and led to delays in disaster response. There is really a problem in the identification of the affected households.

It is really very time consuming if you have to manually verify the data of those who are affected with the calamity. Instead of focusing your attention to helping them and or responding to them... IDI-8

This situation points to a lack of coordination and awareness among local authorities, resulting in ineffective disaster response preparation and delays in providing assistance.

Another narrative about such challenge is presented by another participant who encountered similar challenges when conducting damage analysis.

Usually po maam yung sa amin dito is yung mga farmers namin dito is parang target namin is handa Narin po sila kasi nagaconduct kami ng barangay level na yung sa RDNA (Rapid Damage Analysis) meron na po silang mga idea at ipinagpatuloy po namin ang aming yung sa food and agriculture program noon at karamihan sa staff naming is na train na po about disaster. (Our challenges in disaster response mainly involve our farmers. We conduct Rapid Damage Analysis (RDNA) at the barangay level so that they are aware and prepared. However, issues still arise when some data from farmers is

inconsistent or incomplete. Although most of our staff is trained in disaster response, the challenge lies in the accurate gathering of data at the local level.) IDI-2

Limited resources and funding is also another disaster response issue among LGUs. There are insufficient resources, and they have difficulty to meet the needs of all affected families immediately.

Ang problems na ma encounter namin... kasi ang fund lang kasi ng LGU is maliit lang so ang affected areas or number of families naming is Malaki parang 100% every barangay ang affected so yung ano naming is hindi lahat sabay sabay mabibigyan, kasi kailangan pa namin humingi sa other partner agencies ng mga services like example yung mga kits, relief goods yung mga ganon kasi yung mabibigay agad agad namin mabibigay is the Community Kitchen, pakainin sila sa Barangay na during that kind of disaster, pero yung sabay sabay silang nabibigyan ng mga bigas noodles yung mga ganun hindi pa Talaga kaya sa LGU na sabay bigyan." (The problems we encounter are the limited budget of the LGU, which isn't enough to provide for all affected areas at once. Each barangay is affected, but we cannot provide relief to everyone at the same time. We need to request additional support from partner agencies for things like relief kits and food, as the LGU's funds are too small to cover the needs of all affected families simultaneously.) IDI-9

Limited goods for distribution is also observed by another participant:

In terms of disaster response, we focus primarily on prepositioning goods, but the resources available to us are very limited. We can't always rely on the LGU to act quickly due to the lack of sufficient resources, which delays our ability to respond effectively. IDI-4

In addition, the LGUs also face the problem of unresponsiveness and passivity in the community. When communities are either unwilling or unable to participate actively in disaster preparedness and response programs, it severely hampers the ability of authorities to effectively manage disaster risks and provide timely assistance.

A response from one of the LGU official clearly show that community passivity and the unresponsiveness of barangay officials to disaster management programs. The lack of resources for the community often shifts focus away from preparedness, leading to apathy and non-participation in disaster response activities.

Ang problema nga among na encounter is that Passive ra ang mga tao like come what may kung unsa man ang mahitabo ang uban nga barangay officials unresponsive pud sa program sa gobyerno for almost 7 or 8 years me gahatag ug orientation nay uban nga area nga wala jud pakialam pero tungod pud sa kawad on kay syempre mangita pud sila ug pagkaon para sa ilang pamilya unlike sa mga urban areas nga naa sila alternatives. (The problem we encounter is that people are passive—they are indifferent to disaster preparedness and response, as they often think, "Whatever happens, happens." Some barangay officials are also unresponsive to government programs. Despite orientation efforts over the past 7 or 8 years, some areas still show no interest. This is due to the lack of resources, as people are focused on finding food for their families, unlike those in urban areas who may have alternative resources.) IDI-6

Another participant also described a lack of engagement with emergency programs and poor communication, both of which are key aspects of community unresponsiveness. Even when resources like hotlines are provided, there is no active participation or response from the community.

Walang nagyayaring NDRRMC meeting so yan kasali ako pero hindi ko alam baka meron sila. Ang alam ko meron dapat meeting ang council before or during para malaman kung ano ang dapat pero yun ata yung hindi napa practice ni LGU and lumabas din po yan doon sa during pilot ng World Vision. (There are no meetings of the NDRRMC, so I am included but not informed about any discussions. I know there should be a meeting before or during the disaster to know what needs to be done, but I think this is not practiced properly by the LGU. This also came out during the World Vision pilot.) IDI-4

Challenges in Disaster Preparedness

The challenges in disaster preparedness often stem from multiple factors, including limited participation and awareness, inadequate infrastructure and accessibility concerns, and livelihood and preparedness issues. These challenges can significantly hinder effective disaster preparedness, making communities more vulnerable and less resilient when disaster strikes.

Limited participation and low awareness are significant obstacles in disaster preparedness, especially in rural or marginalized areas. When communities are unaware of the risks or the importance of being prepared, they often do not participate in disaster preparedness programs, which affects the overall resilience of the community.

Response ni barangay to be program and activities na kina conduct ni LGU. Hindi natin like if the beneficiary is from 4ps members hindi hundred percent yung mga attendance. (The response of the barangay to the programs and activities conducted by the LGU is often lacking. For example, if the beneficiaries are 4Ps members, their attendance rates are not 100%.) IDI-7

This response also highlights passivity of the people in the community:

Hindi kasi lahat ng tao ay nakakaalam ng importance ng disaster preparedness. Hindi nila nakikita yung bigat ng kahalagahan ng paghahanda kaya mababa yung engagement nila sa mga programa. (Not everyone knows the importance of disaster preparedness. They don't see how crucial it is to prepare, so their engagement in the programs is low.) IDI-P3

Moreover, inadequate infrastructure and accessibility issues can significantly impede disaster preparedness, especially when communities are in remote or flood-prone areas. This can include issues such as poor drainage systems, lack of evacuation centers, and limited transportation options.

Significant flooding challenges due to outdated infrastructure. The drainage system is very old and wasn't designed to handle the city's growing population. The limited resources available for upgrading infrastructure have made it difficult to manage the increasing urban flood risks. (Cotabato City faces major challenges with outdated infrastructure, particularly drainage systems, which were not designed to cope with the rapid urban growth. The limited resources for improving these systems slow down efforts to mitigate flooding.) IDI-5

Livelihood and preparedness issues are also encountered by LGUs. When communities rely heavily on agriculture or other vulnerable livelihoods, disaster preparedness can be particularly challenging. Many people in disaster-prone areas may resist preparedness measures, fearing that such actions could disrupt their income-generating activities. Additionally, the lack of financial resources and livelihood support can prevent people from investing in disaster preparedness measures.

Kung minsan kasi maam merun naman Talaga tayong hindi inaasahan na pangyayari so ang ginagawa namin is iniinform namin sila base sa weather forecast, and problema kasi hindi naman pweding sabihin ang farmer na hindi siya magtanim kasi yun yung major na pinag kukuhanan nila ng hanapbuhay so the best thing is siguro to mitigate the impact is para maging prepare nlng sila through the implementation and dissemination kasi yun nag inuulit ko hindi nating pweding sabihin na hindi sila magtanim kasi magtatanim Talaga yan sila kung mayrong tubig at saka pera na gagamitin sa pagtatanim, the main problem lang Talaga is Climate change kasi hind imo naman Talaga ma project ang weather. (The challenge is that farmers depend on their crops for livelihood, and we cannot stop them from planting, even when there is a forecast for flooding. We can only try to mitigate the impact by informing them and preparing them. The real problem is climate change, which makes it hard to predict the weather, and this uncertainty impacts their ability to prepare.) IDI-3

It can be gleaned from the results that challenges in disaster preparedness—limited participation, inadequate infrastructure, and livelihood concerns—are interconnected. Limited participation is due to a lack of awareness and resources. Inadequate infrastructure hampers effective response, while livelihood concerns make it difficult for communities to prioritize preparedness over immediate survival needs.

Challenges in Building Social Resilience

The challenges in building social resilience are complex and involve issues related to communication barriers, problems with community involvement and engagement, and geographical and environmental factors. These challenges significantly hinder the ability of communities to effectively prepare for, respond to, and recover from disasters.

Isa sa mga malaking hamon na kinakaharap namin ay ang kahinaan sa komunikasyon. Halimbawa, kapag may kalamidad, mahirap iparating ang mga babala sa mga malalayong barangay dahil sa kakulangan ng signal at internet connection. Hindi lahat ng tao ay nakakatanggap ng tamang impormasyon, kaya't nagkakaroon ng kalituhan at pagkaantala sa mga aksyon. Ang mga hotline na ginagamit namin ay madalas hindi sumasagot, kaya't mahirap magbigay ng tulong agad. (One of the biggest challenges we face is the weak communication systems. For example, during disasters, it is difficult to convey warnings to remote barangays due to the lack of signal and internet connection. Not everyone receives the correct information, which causes confusion and delays in action. The hotlines we use often don't answer, making it hard to provide immediate assistance.) IDI-8

Maybe one of the problems I see here is communication, because there are areas that have no signal, they are too far, and their means of transportation are not that accessible. Also, not all of the residents of ===== use Facebook, not everyone has a cellphone or internet, so that's the problem. Sometimes, we make announcements through social media. IDI-4

For the LGU officials, Community involvement and engagement are crucial in building resilience. Without active participation, disaster preparedness initiatives may not be effective. Geographical and environmental factors significantly impact disaster preparedness and resilience, especially in remote, or difficult-to-access areas.

Ang komunidad namin ay nasa isang flood-prone area, kaya't palagi kaming nahihirapan sa mga pag-apekto ng kalamidad. Kapag tumaas ang tubig, madalas ang mga kalsada ay hindi madaanan kaya't nahihirapan kaming mag-evacuate. Bukod dito, ang mga remote areas ay may limitadong access sa mga relief goods at emergency services, kaya't mas nahihirapan ang komunidad na makuha ang tulong na kailangan nila. (Our community is in a flood-prone area, so we are always struggling with the impacts of disasters. When the water rises, the roads often become impassable, making it difficult for us to evacuate. Moreover, remote areas have limited access to relief goods and emergency services, which makes it even harder for the community to receive the help they need.) IDI-10

Ang challenges kasi naming noon is ang communication hindi diritso ma rely sa kanila ang information. (The information could not easily reach them.) IDI-P2

In some communities, there may be a lack of trust in local authorities or government organizations. This leads to hesitance in participating in government-organized initiatives, such as disaster preparedness programs, because people may feel that these programs do not benefit them or are not well-executed.

Walang dadalo if my meeting and you will hear them say na "kaya kaya masolve ang problema? Maayo pa magpuyo. (No one will attend if there's a meeting, and you will hear them say, 'Can the problem really be solved? It's better to just stay home.) IDI-9

The challenges in building social resilience—such as communication barriers, low community involvement, and geographical/environmental limitations—significantly hinder effective disaster preparedness and response. These challenges highlight the importance of improving communication infrastructure, ensuring greater community engagement, and addressing the unique needs of remote areas.

Strategic Solutions to the Problems

To cope with the above-mentioned challenges, the LGUs shared some strategies. Coping mechanisms are essential strategies that communities use to deal with the challenges they face during and after a disaster. These mechanisms involve community-based preparedness, collaborative efforts, immediate relief and recovery support, and adaptation to local needs. The responses from informants provide insights into how these mechanisms are applied and their effectiveness in promoting resilience and disaster response.

One of the LGUs' strategies is ensuring community-based preparedness. Community-based preparedness emphasizes the role of local communities in preparing for and responding to disasters. Involvement at the grassroots level ensures that disaster response is tailored to the unique needs of the community.

Ang problema naming is meron kaming mga volunteer people na in case of disaster ay nandyan sila so, ginaprepare naming ang communities nandyan si Disaster para sa Orientation, How to prepare in times of Disaster, parang ganun siya, so kailangan meron silang kits, and kanang murag mga bangka in case nga taas najud ang tubig naa najud siya prepare najud ang communities ug ang barangay. (The problem we have is that we have volunteer people who are there in case of a disaster, so we prepare the communities by giving orientation on how to prepare for disasters. They need kits and boats in case the water level rises. The community and the barangay must be prepared) IDI-1

They also shared about collaboration. Collaboration between different sectors—government, NGOs, and community organizations—is essential for effective disaster response. Working together ensures that resources and expertise are shared, which strengthens the overall disaster response and recovery.

May mga MOA tayo from other groups like mga CSOs, mga private sector, gipalig-on namo ang amoang partnership thru sa isa ka MOA nga himoon namo, indicated didto sa among MOA's specially during may mga emergencies nga dapat muagi jud sila diri sa emergency center. (We have MOAs with other groups like CSOs, private sectors. We strengthened our partnership through MOAs, especially during emergencies, where they need to pass through the emergency center.) IDI-4

For the participants, immediate relief is a vital coping mechanism, especially in the aftermath of a disaster. Timely support can significantly reduce the suffering of affected individuals and help them recover more quickly.

Ensure that communities are ready and have access to necessary resources as soon as disaster strikes. IDI-10

Other LGUs bank on monitoring as form of immediate relief.

May weekly monitoring po kami at may naka-assign na staff para magmonitor kung ano nila pagdating ng baha kung ready or prepared na sila so far ok naman sila ma'am hindi na gaya noon na bigla lang magdatingan tapos maraming ma-damage. (We have weekly monitoring, and staff is assigned to monitor if they are ready or prepared when the flood comes. So far, they are okay. It's not like before when floods suddenly arrived and caused a lot of damage.) IDI-2

In addition, adapting to the local needs is one of the strategies of LGUs. Adapting disaster preparedness and response efforts to local needs ensures that the coping mechanisms are relevant, practical, and effective.

So may paghahanda na Talaga ang communities, lalo na yung mga livestock nila hindi na nila ginalagay sa lowland kasi maanod man Talaga yung mga ano nila. (...so the communities are truly prepared, especially with their livestock. They no longer place them in lowlands because they know they will get swept away during floods.) IDI-3

The coping mechanisms employed by communities in disaster preparedness and response—such as community-based preparedness, collaborative efforts, immediate relief, and adaptation to local needs—are integral to building social resilience. By ensuring that local needs are prioritized, leveraging partnerships, and providing immediate relief, communities can recover more effectively and strengthen their resilience to future disasters. These strategies not only mitigate the impact of disasters but also empower communities to become active participants in their recovery and preparedness.

Study 3 – Policy Development: Disaster Preparedness Plan and Information and Education Campaign

Disaster Preparedness Plan

This study found that while LGUs demonstrate overall disaster preparedness, particularly in systems and structures, they need to address specific gaps like livestock centers, search and rescue policies, and livelihood support, as well as challenges related to limited participation and infrastructure. To enhance resilience and response effectiveness, a proposed disaster preparedness plan outlines targeted actions to improve systems, policies, competencies, and equipment, while also addressing livelihood conflicts, ensuring comprehensive preparedness for future disasters.

Information and education campaign on anticipatory action in disaster response and preparedness

Information and Education Campaign (IEC) Brochure

An Information and Education Campaign (IEC) focused on anticipatory action plays a crucial role in disaster preparedness. Anticipatory action refers to proactive measures taken before a disaster occurs, which aim to reduce its potential impact. By providing the public with knowledge and tools ahead of time, communities are better equipped to handle emergencies, reducing risks and enhancing resilience.

Objectives of the IEC on Anticipatory Action:

Raise Awareness. The campaign's primary objective is to raise awareness about the risks and potential impacts of disasters. It informs the public about early warning signs and the importance of taking preventive measures in advance.

Promote Preparedness. A key focus is on encouraging individuals and communities to prepare for potential disasters before they occur. This includes having emergency kits, evacuation plans, and emergency contacts ready.

Disseminate Early Warning Information. Anticipatory action requires communities to act on early warnings. Through IEC, communities learn how to interpret warnings and respond in a timely and appropriate manner, minimizing harm.

Encourage Community Participation. An IEC campaign actively encourages the participation of community members in disaster preparedness efforts. When people are actively involved, they are more likely to take personal responsibility and support collective efforts to safeguard lives and properties.

Empower Vulnerable Populations. Special focus is placed on vulnerable groups such as children, the elderly, and people with disabilities. Ensuring these populations have the necessary resources and knowledge to act during emergencies is critical.

References

- Adey, P., & Anderson, B. (2011). Event and anticipation: UK civil contingencies and the space—Times of decision. *Environment and Planning A*, 43(12), 2878-2899.
- Aldrich, D. P., & Meyer, M. A. (2014). Social capital and community resilience. *American Behavioral Scientist*, 59(2), 254–269
- Alshehri, S. A., Rezgui, Y., & Li, H. (2015). Delphi-based consensus study into a framework of community resilience to disaster. *Natural Hazards*, 75, 2221-2245.
- Appleby-Arnold, S., Brockdorff, N., & Callus, C. (2021). Developing a “culture of disaster preparedness”: The citizens’ view. *International journal of disaster risk reduction*, 56, 102133.
- Association of Southeast Asian Nations (ASEAN) (2022). ASEAN Framework
- Bailey, R. (2012). *Famine early warning and early action: The cost of delay*. Royal Institute of International Affairs.
- Ballesteros, R. S., & Yamanaka, M. D. (2015). Climate change and flood disasters in the Philippines: Applying the framework for analyzing structural and non-structural adaptation measures. *Weather and Climate Extremes*, 9, 56-68.
- Bankoff, G. (2012). Storm over San Isidro: “Civic community” and disaster risk reduction in the nineteenth century Philippines. *Journal of Historical Sociology*, 25(3), 331-351.
- Birchall, S. J., MacDonald, S., & Slater, T. (2021). Anticipatory planning: finding balance in climate change adaptation governance. *Urban Climate*, 37, 100859.
- Birchall, S. J., MacDonald, S., & Slater, T. (2021). Anticipatory planning: finding balance in climate change adaptation governance. *Urban Climate*, 37, 100859.
- Birkmann, J. (2007). Risk and vulnerability indicators at different scales: Applicability, usefulness and policy implications. *Environmental hazards*, 7(1), 20-31.
- Boelee, L., Lumbroso, D. M., Samuels, P. G., & Cloke, H. L. (2019). Estimation of uncertainty in flood forecasts—A comparison of methods. *Journal of Flood Risk Management*, 12, e12516.
- Bollettino, V., Alcayna-Stevens, T., Sharma, M., Dy, P., Pham, P., & Vinck, P. (2020). Public perception of climate change and disaster preparedness: Evidence from the Philippines. *Climate Risk Management*, 30, 100250.
- Canton, L. G. (2019). *Emergency management: Concepts and strategies for effective programs*. John Wiley & Sons.
- Carmona, A. and Ella, V. (2017). Social Vulnerability Assessment of Barangays Located in Flood-Prone Areas of the Major Watersheds in the Island of Negros, Philippines. *Journal in Urban and Regional Planning*, 19-33.
- Chaves-Gonzalez, J., Milano, L., Omtzigt, D. J., Pfister, D., Poirier, J., Pople, A., ... & Zommers, Z. (2022). Anticipatory action: Lessons for the future. *Frontiers in Climate*, 4, 932336.
- Cohen, O., Goldberg, A., Lahad, M., & Aharonson-Daniel, L. (2017). Building resilience: The relationship between information provided by municipal authorities during emergency situations and community resilience. *Technological Forecasting and Social Change*, 121, 119– 125.
- Cred, U. N. D. R. R. (2020). Human Cost of Disasters. An Overview of the last 20 years: 2000–2019. *CRED, UNDRR, Geneva*.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Creswell, J. W., Clark, V. L. P., Gutmann, M. L., & Hanson, W. E. (2003). *ADVANCED MIXED. Handbook of mixed methods in social & behavioral research*, 209.

- Cullmann, J., Dilley, M., Egerton, P., Fowler, J., Grasso, V. F., & Honoré, C. (2020). State of climate services, risk information and early warning systems. In *EGU General Assembly Conference Abstracts*.
- Cutter, S. L., Ahearn, J. A., Amadei, B., Crawford, P., Eide, E. A., Galloway, G. E., ... & Zoback, M. L. (2013). Disaster resilience: A national imperative. *Environment: Science and Policy for Sustainable Development*, 55(2), 25-29.
- Dariagan, J. D., Atando, R. B., & Asis, J. L. B. (2021). Disaster preparedness of local governments in Panay Island, Philippines. *Natural hazards*, 105(2), 1923-1944.
- Dekens, J. (2007). Local Knowledge for Disaster Preparedness: A Literature Review. International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal
- Emergency Response Preparedness (ERP) (2015). Risk Analysis And Monitoring Minimum Preparedness Actions Advanced Preparedness Actions And Contingency Planning
- Engle, N. L., de Bremond, A., Malone, E. L., & Moss, R. H. (2014). Towards a resilience indicator framework for making climate-change adaptation decisions. *Mitigation and Adaptation Strategies for Global Change*, 19(8), 1295–1312.
- FEMA, (2016) . Mitigation Framework Leadership Group (MitFLG) Draft Concept Paper Draft Interagency Concept for Community Resilience Indicators and National-Level Measures. <https://www.fema.gov/media-library-data/1466085676217-a14e229a461adfa574a5d03041a6297c/FEMA-CRI-Draft-Concept-Paper-508Jun2016.pdf>
- Fema, A. (2011). Whole community approach to emergency management: Principles, themes, and pathways for action. *Federal Emergency Management Agency, US Department of Homeland Security, Washington DC*.
- Food and Agriculture Organization of the United States and the World Food Program (2023). Demystifying Anticipatory Action. Food Security Cluster Coordinators Meeting - January 26, 2023
- Fuchs, S., Birkmann, J., & Glade, T. (2012). Vulnerability assessment in natural hazard and risk analysis: current approaches and future challenges. *Natural Hazards*, 64, 1969-1975.
- Gettliffe, E. M. I. L. I. E. (2021). UN OCHA anticipatory action. Lessons from the 2020 Somalia pilot. *Centre for Disaster Protection, London*. Retrieved from <https://reliefweb.int/report/somalia/un-ocha-anticipatory-action-lessons-2020-somalia-pilot>.
- Haque, S. (2008). Global rise of neoliberal state and its impact on citizenship: Experiences in developing nations. *Asian Journal of Social Science*, 36(1), 11-34.
- Ikedo, M., & Palakhamarn, T. (2020). Economic Damage from Natural Hazards and Local Disaster Management Plans in Japan and Thailand.
- Jang, L. J., Wang, J. J., Paton, D., & Tsai, N. Y. (2016). Cross-cultural comparisons between the earthquake preparedness models of Taiwan and New Zealand. *Disasters*, 40(2), 327-345.
- Joerin, J., Shaw, R., Takeuchi, Y., & Krishnamurthy, R. (2014). The adoption of a climate disaster resilience index in Chennai, India. *Disasters*, 38(3), 540-561.
- Khalili, S., Harre, M., & Morley, P. (2015). A temporal framework of social resilience indicators of communities to flood, case studies: Wagga wagga and Kempsey, NSW, Australia. *International Journal of Disaster Risk Reduction*, 13, 248–254.
- Kusumastuti, R. D., Husodo, Z. A., Suardi, L., & Danarsari, D. N. (2014). Developing a resilience index towards natural disasters in Indonesia. *International journal of disaster risk reduction*, 10, 327-340.
- Kwok, A. H., Doyle, E. E., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211.
- LeClerc, J., & Joslyn, S. (2015). The cry wolf effect and weather-related decision making. *Risk analysis*, 35(3), 385-395.
- Leonard H. & Guercia, J. (2011). Integration of Training Civilian and Military Disaster Responders. (Unpublished Master dissertation). Naval Postgraduate School.
- Mayunga, J. S. (2007). Understanding and applying the concept of community disaster resilience: a capital-based approach. *Summer academy for social vulnerability and resilience building*, 1(1), 1-16.
- McEntire, D. A., & Myers, A. (2004). Preparing communities for disasters: Issues and processes for government readiness. *Disaster Prevention and Management: An International Journal*, 13(2), 140-152.
- Merone L, Tait P (2018) Preventing disaster in the pacific islands: the battle against climate disruption. *Aust New Zealand J Public Health* 42:419–420. <https://doi.org/10.1111/1753-6405.12823>

- Merz, B., Kuhlicke, C., Kunz, M., Pittore, M., Babeyko, A., Bresch, D. N., ... & Wurpts, A. (2020). Impact forecasting to support emergency management of natural hazards. *Reviews of Geophysics*, 58(4), e2020RG000704.
- Mucke, P., Jeschonnek, L., Garschagen, M., Schaubert, A., Seibert, T., Welle, T., ... & Matuschke, I. (2014). *WorldRiskReport 2014: The city as a risk area* (Vol. 2014). Bündnis Entwicklung Hilft.
- Olken, F., & Rotem, D. (1986). Simple random sampling from relational databases.
- on Anticipatory Action in Disaster Management. Community Relations Division (CRD) of the ASEAN Secretariat, Jakarta.
- Orencio, P. M., & Fujii, M. (2013). A localized disaster-resilience index to assess coastal communities based on an analytic hierarchy process (AHP). *International Journal of Disaster Risk Reduction*, 3, 62-75.
- Palmer, T. N. (2000). Predicting uncertainty in forecasts of weather and climate. *Reports on progress in Physics*, 63(2), 71.
- Parsons, S., Atkinson, P. M., Simperl, E., & Weal, M. (2015). Thematically analysing social network content during disasters through the lens of the disaster management lifecycle. In *Proceedings of the 24th International Conference On World Wide Web*.
- Patel, S. S., Rogers, M. B., Amlôt, R., & Rubin, G. J. (2017). What do we mean by 'community resilience'? A systematic literature review of how it is defined in the literature. *PLoS currents*, 9.
- Paton, D. (2013). Disaster resilient communities: developing and testing an all-hazards theory. *IDRiM Journal*, 3(1), 1-17.
- Pichon, F. (2019). *Anticipatory humanitarian action: What role for the CERF*. Working Paper 551). London: Overseas Development Institute. Retrieved from <https://www.odi.org/sites/odi.org.uk/files/resource-documents/12643.pdf>.
- Russo, F., & Rindone, C. (2014). Urban exposure: Training activities and risk reduction. *WIT Transactions on Ecology and the Environment*, 191, 991-1001.
- Saja, A. A., Goonetilleke, A., Teo, M., & Ziyath, A. M. (2019). A critical review of social resilience assessment frameworks in disaster management. *International journal of disaster risk reduction*, 35, 101096.
- Schumann, G. J., Brakenridge, G. R., Kettner, A. J., Kashif, R., & Niebuhr, E. (2018). Assisting flood disaster response with earth observation data and products: A critical assessment. *Remote Sensing*, 10(8), 1230.
- See, J. C. G., & Porio, E. E. (2015). Assessing social vulnerability to flooding in Metro Manila using Principal Component Analysis. *Philippine Sociological Review*, 53-80.
- Shmueli, D. F., Ozawa, C. P., & Kaufman, S. (2021). Collaborative planning principles for disaster preparedness. *International Journal of Disaster Risk Reduction*, 52, 101981.
- Simpson, M., James, R., Hall, J. W., Borgomeo, E., Ives, M. C., Almeida, S., ... & Wagener, T. (2016). Decision analysis for management of natural hazards. *Annual Review of Environment and Resources*, 41, 489-516.
- Thalheimer, L., Simperingham, E., & Jjemba, E. W. (2022). The role of anticipatory humanitarian action to reduce disaster displacement. *Environmental Research Letters*, 17(1), 014043.
- Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection.
- UNDRR. (2019). Global assessment report on disaster risk reduction. *United Nations Office for Disaster Risk Reduction (UNDRR)*.
- United Nations Office for Disaster Risk Reduction (UNDRR), (2022). Our World at Risk. [online] Undrr.org.
- Wilkinson, E., Pforr, T., & Weingärtner, L. (2020). Integrating 'anticipatory action' in disaster risk management. *Overseas Development Institute, London*.
- Wilkinson, E., Pforr, T., & Weingärtner, L. (2020). Integrating 'anticipatory action' in disaster risk management. *Overseas Development Institute, London*.
- Wirtz, P. W., & Rohrbeck, C. A. (2017). Social influence and cognitive-motivational effects on terrorism preparedness: A hurdle model. *Health Education Journal*, 76(4), 385-397.
- Yadav DK, Barve A (2019) Prioritization of cyclone preparedness activities in humanitarian supply chains using fuzzy analytical network process. *Nat Hazards* 97:683–726. <https://doi.org/10.1007/s11069-019-03668-3>
- Zakour, M. J., & Gillespie, D. F. (2013). *Community disaster vulnerability*. Theory, Research, and Practice.