ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

DISASTER MITIGATION RESPONSE OF SELECTED MUNICIPALITIES AND CITY IN THE 5TH DISTRICT OF THE PROVINCE OF PANGASINAN

Mary Grace Contaoi Sagun
Philippine College of Criminology, Manila, Philippines

Article DOI: https://doi.org/10.36713/epra24852
DOI No: 10.36713/epra24852

ABSTRACT

The increasing intensity and frequency of disasters in the Philippines continue to threaten the safety, stability, and resilience of local communities, particularly those in highly exposed and hazard-prone provinces like Pangasinan. Disasters – both natural and human-induced – continue to disrupt human security, economic stability, and community resilience across the Philippines. Given its location along the Pacific Ring of Fire and Typhoon Belt, the country faces recurrent hazards such as floods, typhoons, earthquakes, and landslides. This study assessed the disaster mitigation response of selected municipalities and a city in the 5th District of Pangasinan, with the aim of evaluating the level of preparedness and effectiveness of local disaster risk reduction and management (DRRM) systems, identifying significant differences among stakeholders, and developing a validated intervention program to strengthen community resilience. Using a mixed-methods research design, quantitative data were gathered through structured questionnaires administered to 239 respondents, composed of MDRRMO personnel, civic organization representatives, and community members, while qualitative data were collected through key informant interviews. The quantitative results, analyzed through weighted mean and Kruskal–Wallis tests, revealed that LGUs were highly prepared in terms of planning and training but only moderately prepared in resource allocation. The overall effectiveness of disaster mitigation response was rated effective, though funding and coordination gaps persisted. Qualitative findings supported these results, identifying challenges such as limited financial resources, inadequate equipment, weak inter-agency coordination, and inconsistent community participation. The study concluded that the 5th District of Pangasinan demonstrates commendable progress in DRRM implementation, yet disparities among LGUs highlight the need for equitable funding, stronger coordination mechanisms, and continuous capacity-building.

KEYWORDS: *Disaster Mitigation, Preparedness, Effectiveness, DRRM, Local Governance, Pangasinan*

INTRODUCTION

Disaster Mitigation Response among municipalities and cities is a critical function of local governance, particularly in areas that are repeatedly exposed to natural hazards. As disasters continue to increase in frequency, magnitude, and unpredictability, Local Government Units (LGUs) must improve their preparedness, planning, and mitigation systems to reduce vulnerabilities and prevent massive socio-economic impact. Disaster mitigation, unlike disaster response, focuses on long-term risk reduction—strengthening structures, enhancing early warning systems, improving land-use management, and capacitating communities before hazards strike.

Globally, disasters have resulted in widespread disruption, significant economic losses, and severe humanitarian crises, especially in developing nations where institutional capacities are limited and climate change continues to intensify hazards (UNDRR, 2022). In the Philippines—which ranks among the most disaster-prone countries in the world due to its location in the Pacific Ring of Fire and typhoon belt—disaster mitigation has been legally institutionalized through Republic Act No. 10121 and the National Disaster Risk Reduction and Management Plan (NDRRMP). These frameworks aim to strengthen proactive disaster governance and equip LGUs with the tools, guidelines, and mechanisms necessary for resilience building.

However, despite these national systems, many municipalities still face gaps in implementation, weak technical capacities, insufficient funding, limited inter-agency coordination, and low community engagement. While various studies have explored disaster response at the national level or within large urban centers, there remains limited empirical evidence on how local policies, resources, and mitigation strategies are translated and operationalized in rural, semi-urban, and provincial settings.

The 5th District of Pangasinan—composed of municipalities and one component city frequently affected by flooding, typhoons, and seismic disturbances—is one setting where these gaps are evident. Yet, there is still insufficient research examining the level of preparedness, the effectiveness of current mitigation strategies,

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

and the challenges LGUs encounter in implementing DRRM measures in this district.

Therefore, this study investigates the Disaster Mitigation Response of selected municipalities and a city in the 5th District of Pangasinan. It specifically examines preparedness levels, measures effectiveness, identifies challenges, and develops an intervention program based on empirical findings. The results aim to contribute to strengthening local disaster mitigation systems and support evidence-based policymaking for safer, climate-resilient, and more disaster-ready communities.

LITERATURE REVIEW

Disaster mitigation research emphasizes the critical need for strengthening localized systems of preparedness, response, and resilience. International studies indicate that long-term mitigation planning is more effective than reactive, response-focused strategies. Buchanan (2020) emphasized that proactive disaster governance reduces vulnerabilities before hazards occur. In relation to this, it is also stressed that empowering local authorities improves implementation because local actors understand community-specific risks better than centralized national institutions. It is also found that digital platforms and real-time information significantly enhance decision-making during emergencies. Complementing this argument, it is reported that community-generated data supports more accurate hazard detection and resource allocation. It is further argued that psychological recovery interventions must be considered as part of long-term resilience, as emotional rehabilitation influences the speed of recovery. A study also highlighted that investments in mitigation strategies yield greater economic return compared to expenditures focused only on post-disaster repair and recovery.

In the Philippine context, the literature shows that similar concerns persist at the local government level. Garcia (2020) reported that although RA 10121 strengthened the national DRRM structure, operationalization remains inconsistent across LGUs. Esteban (2020) found that limited technical skills and inadequate DRRM manpower weaken municipal preparedness. Mendoza (2021) identified insufficient DRRM funding as a major barrier to effective mitigation, especially in small municipalities. A study also emphasized the value of integrating indigenous knowledge to enhance context-specific adaptive strategies. Dalangin and Bandoja (2021) demonstrated that community-led initiatives in DRRM increase ownership and responsiveness during emergencies. It is noted that the lack of continuous community-based education reduces readiness and delays adaptive responses. Soriano (2021) concluded that high-risk agricultural communities remain vulnerable due to poor access to updated and reliable disaster information. It is also reported that early warning systems are present in many municipalities, yet remain underutilized. Additionally, it is observed that barangay DRRM councils experience coordination challenges that hinder full implementation of mitigation activities.

Overall, the literature consistently shows that disaster mitigation becomes more effective when it is grounded in localized governance, community engagement, capacity building, and sufficient resources. However, very limited empirical evidence exists that specifically evaluates the disaster mitigation response of municipalities in Pangasinan—particularly within the 5th District. Most existing studies focused on national DRRM frameworks, DRRM education initiatives, or isolated municipal case assessments, resulting in insufficient understanding of how multiple municipalities within one district perform collectively in terms of mitigation. This gap limits policy refinement and prevents the development of localized intervention strategies suited to district-level realities.

This study addresses that gap by assessing the disaster mitigation response of selected municipalities and one city in the 5th District of Pangasinan to determine preparedness levels, measure mitigation effectiveness, identify specific implementation challenges, and propose targeted interventions.

Theoretical Framework

Disaster mitigation requires a multidimensional understanding of risk, preparedness, response, and recovery. This study adopts a comprehensive framework to analyze institutional actions as well as socio-political, behavioral, and systemic dynamics that shape disaster responses. Integrating multiple theories allows the study to examine who is at risk, how communities adapt, the importance of participation, the interaction of systems, and factors influencing preparedness behaviors. Systems Theory serves as the major theoretical foundation, emphasizing that disaster mitigation and response are systemic processes. Municipalities and the city function as interdependent subsystems within the provincial disaster management network. Coordination, communication, and resource-sharing among agencies, organizations, and communities determine the effectiveness of mitigation efforts. This perspective aligns with the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) and the Sendai Framework (2015–2030), which advocate a holistic and multi-sectoral approach to disaster governance. Social Vulnerability Theory and Resilience Theory complement this systemic view by addressing population-specific risks and adaptive capacity. Social Vulnerability Theory highlights how socio-economic inequalities, marginalization, and limited access to resources increase certain groups' exposure to hazards, ensuring that disaster responses are equitable and inclusive. Resilience Theory emphasizes the capacity of communities and institutions to not only recover but also adapt and improve after disasters, focusing on long-term preparedness, adaptive governance, and community cohesion. Together, these theories guide the study in evaluating the robustness, inclusiveness, and effectiveness of disaster mitigation responses in the 5th District of Pangasinan.

Significance of the Study

This study is valuable to various stakeholders involved in disaster mitigation and response in the 5th District of Pangasinan. It aims

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

to identify gaps and weaknesses in current disaster management practices and provide recommendations for interventions that improve preparedness, resilience, and overall disaster response. Local Government Units (LGUs) will benefit from insights that can help enhance disaster risk reduction strategies, optimize resource allocation, and strengthen community engagement, enabling them to respond more effectively to future disasters. Disaster response agencies, such as the Office of Civil Defense (OCD) and the National Disaster Risk Reduction and Management Council (NDRRMC), can adapt national and regional programs to local needs and improve coordination and response capabilities. Local communities will gain from more effective disaster preparedness programs, awareness campaigns, and early warning systems, which can reduce casualties, injuries, and property damage. Community-based and non-governmental organizations can use the findings to strengthen their mitigation and relief efforts and promote collaboration with LGUs and residents. Finally, policy makers and national government agencies can use the study's recommendations to improve legislation, funding, and support for local disaster management programs, potentially applying successful strategies to other regions in the Philippines.

Objectives of the Study

This study aims to assess the disaster mitigation response of selected municipalities and city in the 5th District of Pangasinan. Specifically, it seeks to answer the following questions:

- To examine the level of preparedness of selected municipalities and city on disaster mitigation response in terms of Planning, Training, and Resources.
- To determine if there is a significant difference in the level of preparedness among the selected municipalities and city based on the above variables.
- To evaluate the level of effectiveness of selected municipalities and city on disaster mitigation response in terms of Disaster response drills, Emergency response equipment, Training and readiness, Communication, Emergency shelters and evacuation plans, Inter-agency coordination, Public awareness and education, and Budget and funding.
- To determine if there is a significant difference in the perceptions of the three groups of respondents regarding the level of effectiveness among the above variables.
- To identify the challenges encountered by the informants on disaster mitigation response.
- To propose programs or interventions based on the findings of the study.

METHODOLOGY

This presents the methods and procedures done throughout the study including the research design, participants, data collection, analysis, and ethical considerations.

Research Design

This study used a Mixed-Method Research Design, combining both quantitative and qualitative approaches to gain a comprehensive understanding of disaster mitigation responses. According to Creswell and Plano Clark (2018), mixed-method research collects, analyzes, and integrates quantitative and qualitative data, allowing measurable results to be enriched with context and explanation. The quantitative method involved distributing a survey questionnaire to selected municipalities and Urdaneta City, including Binalonan, Laoac, Pozorrubio, Sison, and Villasis. The survey measured the level of preparedness in planning, training, and resources, as well as the effectiveness of disaster mitigation responses in areas such as drills, emergency equipment, training and readiness, communication, evacuation plans, inter-agency coordination, public awareness, and budget allocation. The qualitative method explored the experiences and perspectives of MDRRMO heads to understand the challenges they face in disaster mitigation. This approach allowed the researcher to capture participants' narratives and gain deeper insights into how they perceive and handle disaster response in their communities.

Research Method

In order to supplement the qualitative insights and offer quantifiable proof of the efficacy of the current catastrophe mitigation strategies, quantitative data will be employed. Information will be gathered by Surveys/Questionnaires. The researcher used exploratory sequential method design in which the researcher first collects and analyzes quantitative data, followed by the collection and analysis of qualitative data to explain or elaborate on the quantitative results. A sample of local government representatives, disaster management personnel, and community members will all receive structured surveys. Their knowledge, attitudes, and behaviors about disaster preparedness, the efficiency of early warning systems, and the accessibility of resources for mitigation efforts will all be evaluated through the questionnaires.

Population of the Study

This study was conducted in selected municipalities and one city within the 5th District of Pangasinan—Sison, Pozorrubio, Binalonan, Laoac, Villasis, and Urdaneta City—focusing on areas actively engaged in disaster response. The respondents included members of the Municipal and City Disaster Risk Reduction and Management Offices (M/CDRRMO), community members, and representatives of civic organizations. A total of 49 MDRRMO/CDRRMO personnel, 180 community members, and 10 civic representatives participated in the study.

Purposive sampling was used to select participants who are directly involved in disaster preparedness, mitigation, and response. Inclusion required participants to be active members of their MDRRMO/CDRRMO with at least one year of experience in disaster risk reduction. Administrative staff not directly involved in planning or response were excluded to ensure the data reflected practical, hands-on knowledge. The participants represented a mix of disaster response officers, risk reduction coordinators, emergency responders, and planning staff. This approach ensured that the study captured insights from those most

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

knowledgeable about local disaster mitigation, preparedness, and response initiatives. As supported by recent local studies, purposive sampling is appropriate for selecting participants with specific expertise, enhancing the reliability of findings for evidence-based interventions.

Data Gathering Tools

The primary tool used in this study is a researcher-made survey questionnaire with a Likert scale. The questionnaire collects data on the level of preparedness of selected municipalities in disaster mitigation in terms of planning, training, and resources. It also measures the effectiveness of disaster mitigation responses, covering disaster response drills, emergency equipment, training and readiness, communication, evacuation plans, inter-agency coordination, public awareness, and budget allocation. Additionally, it identifies the challenges encountered in disaster mitigation related to training, resources, inter-agency coordination, and community engagement.

To ensure validity, a validation letter was sent to experts requesting their review of the questionnaire. Feedback from these validators was incorporated to improve the tool, following the principles of Heale and Twycross that emphasize accurate and precise measurement. The questionnaire was then pilot-tested in San Manuel, Pangasinan, and its reliability was assessed using Cronbach's alpha.

Data Gathering Procedures

The data for this study were collected using a systematic and organized process to ensure accuracy, validity, and reliability. First, the researcher validated the survey questionnaire and conducted a pilot test in San Manuel, Pangasinan, to check its reliability, resulting in high Cronbach's alpha scores for both preparedness and effectiveness measures. After validation, formal letters were sent to the selected municipalities and Urdaneta City in the 5th District of Pangasinan to request permission and cooperation for the study.

Once approval was granted, informed consent forms were distributed to participants to ensure ethical standards. These participants included members of the Municipal and City Disaster Risk Reduction and Management Offices (MDRRMOs), community members, and representatives from civic organizations. The researcher then distributed the questionnaires, giving respondents adequate time to answer and clarifying questions when needed. Data collection was conducted in Sison, Pozorrubio, Binalonan, Laoac, Villasis, and Urdaneta City. Completed questionnaires were collected systematically, and the responses were analyzed to identify patterns, trends, and insights into disaster preparedness, mitigation strategies, and effectiveness of local responses. Throughout the process, proper communication with local authorities and participants was maintained to ensure smooth coordination and accurate data collection, consistent with ethical and research standards in disaster management studies.

Treatment of Data

The data collected in this study were analyzed using descriptive statistics. The level of preparedness of the selected municipalities and city in terms of planning, training, and resources, as well as the level of effectiveness of disaster mitigation responses, were measured using Weighted Mean. Preparedness ratings were interpreted as 4 – Highly Prepared, 3 – Prepared, 2 – Slightly Prepared, and 1 – Not Prepared. Effectiveness ratings, adapted from Thongsri, were interpreted as 4 – Very Effective, 3 – Effective, 2 – Slightly Effective, and 1 – Not Effective.

For the challenges encountered by informants, thematic analysis was employed. Interview data were first transcribed, and the researcher identified similarities and differences in participants' responses. The steps included familiarization with the data through repeated reading, generating initial codes to label key features, searching for themes by grouping related codes, reviewing themes to ensure they accurately reflect the data, defining and naming themes to capture their core meaning, and producing a coherent narrative supported by data extracts. This approach allowed the study to systematically interpret both quantitative and qualitative findings, providing a comprehensive understanding of disaster preparedness, effectiveness, and challenges in the selected municipalities and city.

Ethical Considerations

Informed consent from the data subjects is necessary to guarantee the confidentiality of the information collected, given that some of the respondents are members of the vulnerable category. Similarly, the Research Ethics Committee thoroughly examined this work before granting a certification prior to data collection. This is consistent with the university's regular operating procedure. Similarly, in compliance with the Data Privacy Act of 2012, also known as R.A. 10173, the researcher must confirm and uphold the confidentiality of the information collected from the participants, especially those who were given unique identifiers to preserve their anonymity, and no personally identifiable information (PII) was directly connected to their answers.

RESULTS AND DISCUSSION

This presents the results of the study based on the stated research objectives. The discussion combines and explains the quantitative findings from the statistical analyses together with the qualitative insights gathered from the interview.

Level of Preparedness on Disaster Mitigation Response as Assessed by the Civic Organizations, Community Members, and MDRRMO

Table 1 shows that the municipalities demonstrate strong disaster mitigation preparedness in terms of Planning and Training, with overall ratings classified as "Highly Prepared." Both community members and civic organizations perceive that planning systems are well-established and that training programs are accessible. This finding supports Buchanan (2020) who emphasized that proactive planning structures significantly reduce vulnerabilities

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

even before hazards occur. It is also consistent with Dutta (2021) who stressed that strong training initiatives and capacity-building at the local level enhance actual response effectiveness. However, the MDRRMO provided more cautious assessments particularly in Training, indicating that internal implementation challenges and capacity gaps still exist.

In terms of Resources, the municipalities were only rated "Prepared," reflecting that resources are sufficient but not abundant. Civic organizations provided the highest rating, likely due to exposure to NGO-supported initiatives, while MDRRMO and community members rated resources more conservatively. This aligns with the findings of Fuchs (2020) who asserted that although LGUs may have solid planning frameworks and trained personnel, there remains a shortage in equipment, logistics, and material support needed to fully sustain disaster mitigation operations. Overall, the municipalities show commendable preparedness performance in Planning and Training, but resource constraints may limit response speed and operational coverage during actual emergencies.

***Table 1. Summary Table on the* Level of Preparedness on Disaster Mitigation Response**

Dimension	CO	CM	MDRRMO	Overall Interpretation
Planning	3 (P)	4 (HP)	4 (HP)	Highly Prepared
Training	4 (HP)	4 (HP)	3 (P)	Highly Prepared
Resources	4 (HP)	3 (P)	3 (P)	Prepared

Difference on the Level of Preparedness on Disaster Mitigation Response in Selected Municipalities as Assessed by the Civic Organizations, Community Members, and MDRRMO

Table 2 shows the differences in disaster preparedness levels among selected municipalities based on the assessment of Civic Organizations, Community Members, and MDRRMO. The indicators analyzed were Planning, Training, and Resources.

Results show no significant difference in Planning ($p = 0.151$), indicating uniform perception across stakeholders. This suggests that municipalities have comparable DRRM planning systems, likely influenced by standardized national requirements under RA 10121 and national planning guidelines. Previous studies also noted that planning tends to be uniform across LGUs due to compliance demands and institutional support in planning development as mentioned by Villanueva (2016).

For Training, the p-value of 0.069 is slightly above significance, indicating potential variation in training delivery and quality across municipalities. Literature supports that while national training modules are available, implementation differs due to funding, leadership priorities, and staff capacity as noted by Gaillard and Mercer (2013).

Moreover, there is a significant difference in Resources ($p = 0.005$), highlighting unequal access to equipment, logistics, and operational support among municipalities. This aligns with World Bank (2021) report showing disparities driven by budget differences and dependency on IRA. Resource-rich LGUs can procure more equipment and sustain operational systems, while financially limited municipalities experience constraints. This confirms that resource inequality remains a major barrier to equal disaster readiness.

Table 2. Significant Difference on the Level of Preparedness on Disaster Mitigation Response

Indicators	X^2	df	p value
Planning	3.78	2	0.151
Training	5.35	2	0.069
Resources	10.55	2	0.005

Level of Effectiveness on Disaster Mitigation Response as Assessed by the Civic Organizations, Community Members, and MDRRMO

Table 3 shows the level of the overall effectiveness on disaster mitigation response across the domains. The overall assessment shows that most domains are rated as Effective, including Disaster Response Drills, Training and Readiness, Communication, Inter-Agency Coordination, and Public Awareness and Education. On the other hand, Emergency Response Equipment and Emergency Shelters & Evacuation Plan are rated as Very Effective, indicating strong readiness in these areas. This suggests that while municipalities are generally prepared for disasters, they show particular strength in providing equipment and evacuation facilities.

Generally, the municipalities' disaster mitigation responses are generally Effective, with Emergency Response Equipment and Emergency Shelters & Evacuation Plans rated Very Effective. Disaster Response Drills, Training and Readiness, Communication, Inter-Agency Coordination, Public Awareness and Education, and Budget and Funding are rated Effective. While CO and CM often perceive performance as Very Effective in visible areas like equipment availability, shelters, and outreach, MDRRMO ratings are consistently Effective, reflecting operational constraints such as equipment limitations, logistical

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

challenges, and budget implementation issues. Strengthening post-drill evaluation, scenario-specific training, equipment modernization, inclusive public engagement, and transparent budget management can enhance overall disaster preparedness, consistent with recent findings on structured evaluation and continuous improvement in local disaster management (Villanueva, 2016).

Table 3. Summary Table on the Level of Effectiveness on Disaster Mitigation Response

Domain	CO	CM	MDRRMO	Overall
Disaster Response Drill	4 (VE)	3 (E)	3 (E)	Effective
Emergency Response Equipment	4 (VE)	4 (VE)	3 (E)	Very Effective
Training and Readiness	3 (E)	3 (E)	3 (E)	Effective
Communication	4 (VE)	3 (E)	3 (E)	Effective
Emergency Shelters & Evacuation Plan	4 (VE)	4 (VE)	3 (E)	Very Effective
Inter-Agency Coordination	3 (E)	3 (E)	3 (E)	Effective
Public Awareness & Education	3 (E)	3 (E)	3 (E)	Effective

Difference on the Level of Effectiveness on Disaster Mitigation Response in Selected Municipalities as Assessed by the Civic Organizations, Community Members, and MDRRMO

Table 4 shows differences in how stakeholders perceive disaster mitigation effectiveness across municipalities. Four areas—Disaster Response Drills, Emergency Response Equipment, Emergency Shelters and Evacuation Plans, and Budget and Funding—showed significant differences, while Training and Readiness, Inter-Agency Coordination, Communication, and Public Awareness and Education did not.

Differences in drills likely reflect variations in realism, frequency, and stakeholder involvement, with more comprehensive drills receiving higher ratings, as Twigg (2015) emphasizes that the effectiveness of drills improves when they simulate real-life disaster conditions and involve multi-sectoral participation. Discrepancies in equipment highlight uneven resource distribution and maintenance across municipalities, affecting response capacity. Variations in shelters and evacuation plans point to inequalities in infrastructure, accessibility, and inclusivity. Budget differences indicate disparities in allocation, disbursement, and transparency, which can influence perceived effectiveness.

In contrast, areas like training, coordination, communication, and public awareness show consistent ratings across municipalities, likely due to standardized national frameworks and compliance with government-led programs. However, uniform ratings may reflect compliance rather than high performance, as operational effectiveness can still be limited in practice.

While some aspects of disaster risk reduction are implemented consistently, gaps in equipment, drills, shelters, and budget reveal structural inequities. Addressing these requires targeted capacity-building, decentralized resource allocation, and participatory governance to ensure effective and equitable disaster response.

Table 4. Significant Difference on the Level of Effectiveness on Disaster Mitigation Response

Indicators	X^2	df	p value
Disaster Response Drill	6.8061	2	0.033
Emergency Response Equipment	12.1625	2	0.002
Training and Readiness	0.0365	2	0.982
Communication	5.0149	2	0.081
Emergency Shelters and Evaluation Plan	18.3973	2	<.001
Inter-Agency Coordination	1.3433	2	0.511
Public Awareness and Education	0.1729	2	0.917
Budget and Funding	6.1126	2	0.047

Challenges Encountered on Disaster Mitigation Response

Several challenges affect the effectiveness of disaster mitigation response across municipalities. A recurring concern is the gaps of community engagement and acceptance of modern disaster strategies. Despite available plans and resources, many communities prefer traditional practices, which limits the effectiveness of new interventions. Informants highlighted that resistance to innovation creates barriers between local governments and the public, leaving disaster plans largely top-down and less effective. Research emphasizes that sustainable mitigation requires approaches grounded in local knowledge and participatory processes, as public trust and social capital are

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

essential for fostering adaptive behaviors in disaster-prone areas (Twigg, 2015). Municipalities must bridge this gap through dialogue, education, and inclusive strategies that foster trust and cooperation.

Resource and operational constraints also pose significant barriers. Limited equipment, bureaucratic delays, and staffing shortages reduce the capacity for timely response. While funding may exist, slow procurement and inefficient allocation hinder effective implementation. Reliance on non-permanent personnel and restricted office hours further constrain service availability, especially during nights and weekends. Such resource and operational constraints reflect broader issues in disaster governance, where fragmented organizational structures and bureaucratic inefficiencies impede responsiveness during crises (Kapucu, Arslan, & Collins, 2010). Even when financial resources are technically available, delays and staffing gaps compromise disaster readiness.

Another challenge is the institutional misalignment and capacity deficits between local government planning and the operational needs of municipal disaster offices. Plans may be developed proactively but are often not implemented due to conflicts with budgeting cycles or competing local priorities. Informants noted that critical mitigation programs are delayed if they are not included in the Annual Investment Plan, leading to underutilized resources and postponed risk reduction measures. This policy-implementation gap limits the impact of disaster risk reduction initiatives, highlighting the importance of coherent, integrated, and participatory planning processes (Tierney, 2012; Sendai Framework, 2015–2030). Improved coordination between disaster offices and local finance units is essential to ensure timely and effective implementation.

Inclusively, disaster mitigation effectiveness is hindered by cultural resistance, operational constraints, and institutional misalignment. Addressing these challenges through participatory planning, resource optimization, and strengthened governance mechanisms is crucial for enhancing municipal preparedness and ensuring equitable and effective disaster response.

Proposed Comprehensive Capacity Enhancement Program

The study revealed several operational, structural, and institutional challenges in the current disaster risk reduction and management (DRRM) system. To address these issues, a comprehensive capacity enhancement program for the Municipal Disaster Risk Reduction and Management Office (MDRRMO) is proposed. The program focuses on strengthening preparedness, response, and resilience through targeted interventions across equipment, infrastructure, funding, human resources, community engagement, and institutional coordination.

Key initiatives include upgrading emergency response equipment through inventory, procurement, and maintenance (₱2,000,000) and improving emergency shelters with retrofitting, stockpiling, and inclusivity measures (₱5,000,000). Fund management will be enhanced with quick-release protocols, staff training, and a digital tracking system (₱500,000) to ensure timely and transparent resource use.

Community participation will be increased through barangay-level orientations, drills, participatory planning, and integration of indigenous practices with scientific strategies in IEC materials (₱1,000,000). Human resource capacity will be strengthened by creating permanent plantilla positions, hiring and training additional responders, and implementing continuous professional development (₱3,000,000). To ensure 24/7 readiness, a three-shift system, hazard pay, night differentials, and emergency hotlines will be implemented (₱1,500,000).

Lastly, governance and planning gaps will be addressed by aligning DRRM plans with the municipal Annual Investment Plan via joint planning committees, pre-AIP workshops, and inclusion in the Local Development Council (₱300,000), while barangay-level monitoring and liaison support (₱500,000) will improve compliance and timely implementation. Collectively, these measures aim to create a more resilient, responsive, and effective local DRRM system.

CONCLUSION AND RECOMMENDATIONS

This presents the conclusions and recommendations based on the findings of study.

Conclusion

Based on the summary of findings, the study concludes that while the selected municipalities exhibit high preparedness in planning and training, their overall resource preparedness remains only moderate, revealing a critical imbalance between planning capacity and operational capability. The consistently high ratings from CM and the MDRRMO affirm the presence of comprehensive and updated plans, stakeholder collaboration, and skilled personnel, yet the more cautious ratings from civic organizations (CO) highlight perceived gaps in participatory inclusion, operational clarity, and plan execution at the grassroots level.

Furthermore, the findings confirm significant disparities in resource availability and effectiveness, particularly in disaster response drills, emergency response equipment, emergency shelters and evacuation plans, and budget and funding, which suggest uneven implementation and resource distribution across municipalities. While training and readiness, communication, inter-agency coordination, and public awareness and education are implemented consistently, their uniformly “Effective”ratings indicate routine compliance rather than transformative practice, and may not yet translate into fully resilient systems.

Finally, the qualitative themes reinforce these gaps by revealing community resistance to modern DRRM approaches, resource and operational constraints, and institutional misalignment between DRRM plans and municipal budget priorities. These systemic and socio-cultural barriers hinder the translation of preparedness into effective action. Therefore, the proposed

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 11| November 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

program—which emphasizes equipment modernization, shelter upgrades, fund management reforms, strengthened workforce capacity, participatory community engagement, and DRRM–budget alignment—is crucial to address these deficiencies, bridge perceptual and operational gaps among stakeholders, and build a more inclusive, well-resourced, and resilient disaster mitigation system in the selected municipalities.

Recommendations

To strengthen local DRRM systems, several measures are recommended. Municipalities should establish Inter-Municipal DRRM Resource Clusters to pool equipment and stockpiles across neighboring LGUs, supported by a centralized digital inventory to enable faster and more efficient deployment. Civic organizations should be involved in planning through a Co-Author Scheme, allowing them to draft and co-sign sections of DRRM plans, thereby increasing transparency, trust, and community ownership. Workforce professionalization is also essential; a Career Progression Framework linking promotions and permanency to performance and training milestones, along with funded certifications, will improve skills and retention. Barangays can enhance community training by setting up DRRM Learning Labs for interactive, role-based simulations that combine indigenous knowledge and youth-led risk mapping. Financial preparedness should be strengthened through annual Financial Response Drills, which practice rapid fund release, procurement, and reporting to improve transparency and efficiency. To overcome resistance to modern disaster strategies, Acceptance Accelerator Teams comprising cultural leaders, faith-based workers, youth, and traditional healers can engage communities through dialogue, myth-busting, and participatory forums. Finally, multi-sector After Action Reviews after drills and real events, along with public "DRRM Scorecards" and community feedback, will enhance accountability, coordination, and alignment of stakeholder perceptions.

ACKNOWLEDGEMENT

This work has been made possible through the blessings of life, wisdom, and strength from the Almighty Father, who guided the researcher throughout the completion of her study. Special thanks are extended to Attorney Dodelon Sabijon, whose guidance, professional advice, and careful review greatly improved the quality of this research. Gratitude is also given to all the panel members for their valuable suggestions, encouragement, and support, which contributed to the enhancement of this study.

REFERENCES

1. *United Nations Office for Disaster Risk Reduction (UNDRR). (2020). Local Governments and Disaster Risk Reduction: A Key Role for Resilience. Retrieved from https://www.undrr.org.*
2. *Buchanan, M., & Monastersky, R. (2016). Resource Management and Disaster Mitigation in Local Governments. Journal of Disaster Risk Management, 24(3), 122-137.*
3. *Garcia, R. S. (2020). Evaluation of the Philippine Disaster Risk Reduction and Management Act of 2010: Local government unit perspective.*
4. *Esteban, R. N., & Alvarado, M. P. (2020). Disaster risk reduction in Pangasinan: Local government and community synergy.Lawangen A, Roberts J, Interactions between disaster risk reduction and intangible culture among indigenous communities in Benguet, Philippines, International Journal of Disaster Risk Reduction 94 (2023) 103801 doi:10.1016/j.ijdrr.*
5. *Mendoza, L. P. (2021). Implementing the National Disaster Risk Reduction and Management Act: A local government perspective.*
6. *Dalangin, C. S., & Bandoja, A. L. (2021). Community-based disaster risk reduction and management: A case study of Pangasinan.*
7. *Soriano, A. J. (2021). Community-based approaches to disaster risk reduction in Pangasinan: A case study.*