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EVALUATING DISASTER READINESS AND PREPAREDNESS IN CABUYAO CITY, LAGUNA: DEMOGRAPHIC INFLUENCES, CHALLENGES, AND POLICY RECOMMENDATIONS

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ABSTRACT

This comprehensive study titled " Evaluating Disaster Readiness And Preparedness In Cabuyao City, Laguna: Demographic Influences, Challenges, and Policy recommendations ", evaluates disaster readiness and preparedness in Cabuyao City, Laguna, Philippines, a densely populated urban area frequently affected by natural disasters including typhoons, floods, earthquakes, and landslides. Located in the CALABARZON region, Cabuyao City has experienced rapid urbanization, which amplifies vulnerability due to inadequate infrastructure and population growth. The research employs a mixed-methods approach, combining quantitative surveys of 382 randomly selected residents across diverse barangays, qualitative semi-structured interviews with 20 local government officials and disaster response coordinators, and secondary data analysis from sources like the the National Disaster Risk Reduction and Management Council (NDRRMC). Demographic influences are a core focus, assessing how factors such as age, gender, education, and household size impact preparedness behaviors, including emergency kit possession, evacuation planning, and participation in drills..

Employing a mixed-methods approach, the study surveyed residents across diverse barangays and conducted in-depth interviews with local government officials, disaster coordinators, and community leaders. Quantitative data from Likert-scale questionnaires measured ***not prepared to Highly prepared****, participation in drills, and access to resources, while qualitative insights revealed challenges encountered.*

Policy recommendations emphasize integrating demographic data into NDRRMC frameworks for targeted interventions, such as subsidized emergency supplies for vulnerable groups, and proposed action plan. The study advocates for public-private partnerships to enhance infrastructure resilience, including building standards and early warning systems. By implementing these measures, Cabuyao City could reduce disaster impacts, potentially lowering economic losses. This research contributes to global disaster risk reduction literature, highlighting the intersection of demographics and urbanization in Southeast Asian contexts, and underscores the urgency for adaptive, equitable policies to build community resilience.

KEYWORDS: *Disaster Readiness , Demographic Influences, Preparedness Evaluation Cabuyao City Residents, Laguna, Philippines*

INTRODUCTION

Cabuyao, located in Laguna Province, is an urban city in the Calabarzon region (Luzon), Philippines. The area is vulnerable to flooding during the Southwest Monsoon and tropical cyclones and can experience earthquakes due to its proximity to active fault lines. Laguna province itself has been frequently studied for disaster preparedness challenges and gaps—making Cabuyao a critical case for focused research.

Cabuyao's susceptibility to flooding is linked to its low-lying topography and drainage issues. Heavy rainfall, especially during typhoons, can overwhelm the drainage systems, leading to inundation of roads and residential areas.

The Philippines is one of the most disaster-prone countries in the world, with a high incidence of natural disasters such as typhoons, earthquakes, landslides, and floods. These disasters have resulted in significant loss of life, property damage, and economic disruption. The country's geographical location, climate, and topography make it vulnerable to natural hazards. The Philippine government has recognized the importance of disaster risk reduction and management, and has enacted laws and policies to address this issue. The National Disaster Risk Reduction and Management Act of 2010 (Republic Act No. 10121) aims to reduce the risk of disasters and promote disaster resilience. Despite these efforts, many Filipino communities remain vulnerable to natural disasters. Cabuyao City, Laguna is one such area that is prone to flooding, landslides, and other natural hazards. The city's rapid urbanization and population growth have increased the risk of disasters, and there is a need to assess the preparedness of its residents for natural disasters. This study aims to evaluate the disaster readiness of Cabuyao City, Laguna residents, and to identify the factors that influence their preparedness for natural disasters. The study's findings will provide valuable insights for policymakers, disaster management officials, and local communities to develop effective disaster risk reduction and management strategies. Disaster preparedness is a crucial component of disaster risk reduction and management. It involves the development of capacities, skills, and knowledge to effectively respond to and recover from disasters. The importance of disaster preparedness is underscored by the devastating impact of natural disasters on communities, resulting in loss of lives, property damage, and disruption of essential services.

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Republic Act 10121: This Act shall be known as the "Philippine Disaster Risk Reduction and Management Act of 2010." The law strengthens the Philippine Disaster Risk Reduction Management System as it provides for the national disaster risk reduction and management framework and institutionalizes the national disaster risk reduction and management plan, appropriating funds thereof and for other purposes. Preparedness for disasters is critical for households, businesses, and communities, but many remain unprepared. As recent disasters serve to highlight the need for individual responsibility, local coordination, and continuity plans to ensure the ability to respond to and recover from major events, the federal government has prioritized national preparedness as a goal without developing a system to achieve and maintain it.

Furthermore, the public have been charged with assessing their state of readiness and strengths and areas of weakness as a requirement for receiving federal funding and Homeland Security grants. In response, some communities have chosen to utilize voluntary accreditation programs such as the Emergency Management Accreditation Program in order to assess their ability to respond to disaster while others have relied on internal resources. The end result is an inconsistent, non-standardized series of self-reports that may or may not reveal an entity's true state of disaster preparedness. In an effort to move toward the development of reliable, valid preparedness metrics, this study provides a summary of the concepts, guidance, and research that informs an understanding of what it means to be prepared as a household, a business, and a community. This research will be useful for groups responsible for public education campaigns, business continuity programs, and emergency responders, as well as those who have an interest in developing a standardized index to measure disaster preparednes.

LITERATURE REVIEW

Disaster readiness and preparedness in urban Philippine settings, particularly in areas like Cabuyao City, Laguna, have become increasingly vital due to the country's vulnerability to natural hazards such as typhoons, floods, and earthquakes, compounded by rapid urbanization and climate change. Cabuyao, situated in the Laguna province near Metro Manila, exemplifies these risks with historical flooding and seismic threats. This review synthesizes key primary research from disaster management, geography, and public health journals, focusing on demographic influences, challenges, and policy recommendations. It provides a balanced overview of current knowledge while highlighting gaps that impede comprehensive understanding and effective interventions.

Demographic factors play a pivotal role in shaping disaster preparedness, with studies revealing disparities based on age, gender, socioeconomic status, and education. Gaillard et al. (2020) in Disasters examined household preparedness across Philippine communities and found that younger, educated, and wealthier individuals were more likely to adopt mitigation strategies, such as emergency planning and resource stockpiling, due to better access to information. This is echoed in Luna's (2020) survey of 500 households in Laguna province, published in Philippine Journal of Disaster Management, which reported lower preparedness among elderly and female residents, attributed to mobility limitations and gender- based barriers in decision-making. Bankoff (2021) in International Journal of Mass Emergencies and Disasters further highlighted how patriarchal structures in Filipino societies reduce women's agency, exacerbating community vulnerabilities during disasters.

Challenges in disaster preparedness encompass infrastructural shortcomings, resource constraints, and behavioral complacency. Porio (2021) in Environment and Urbanization analyzed urban Philippine contexts and identified inadequate drainage and unplanned settlements as key amplifiers of flood risks, as seen in events like Typhoon Ondoy in 2012, which severely impacted Laguna. Suarez et al. (2020) in Natural Hazards conducted a longitudinal assessment in the province, revealing that low-income households often lacked access to early warning systems, with only about 30% demonstrating awareness of local protocols. Behavioral issues were explored by Ocampo et al. (2020) in International Journal of Disaster Risk Reduction, who used focus groups in comparable municipalities to show that reliance on government aid fostered dependency, undermining proactive self-preparedness.

Policy recommendations from the literature advocate for inclusive, community-driven approaches to address these issues. Shaw et al. (2020) in Disaster Prevention and Management emphasized participatory planning in Asian cities, integrating local knowledge with scientific tools to build resilience. Bautista et al. (2020) in Journal of Environmental Science and Management proposed strengthening frameworks like the Philippine Disaster Risk Reduction and Management Act of 2010 through demographic-specific interventions, such as targeted education for vulnerable groups.Villacorte et al. (2021) in Sustainability recommended incorporating GIS-based mapping and climate adaptation into urban planning to pinpoint high-risk areas in places like Cabuyao, potentially minimizing economic and human losses.

Current understanding underscores that disaster preparedness is multifaceted, requiring tailored strategies that account for demographic inequities and systemic challenges, with national policies providing a foundation but local implementation often falling short. However, significant gaps remain: primary research on Cabuyao City itself is sparse, with most insights drawn from broader Laguna or national studies, which may not capture unique local dynamics like industrial expansion and population influx. Demographic influences on specific subgroups, such as indigenous peoples or migrants, are underexplored, and there is a lack of longitudinal data to assess long-term behavioral shifts post-disaster. The field also needs more interdisciplinary studies combining sociology, urban planning, and technology to evaluate emerging threats like cyber-disasters or climate migration. Additionally, evaluations of policy scalability and equity in real-world applications are limited, leaving unanswered questions about how to adapt recommendations to rapidly changing urban environments. This highlights the urgency for localized, evidence- based research to guide actionable policies in vulnerable areas like Cabuyao.

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Theoretical /Conceptual Framework /Paradigm of the Study
Social Vulnerability Theory highlights how social factors, including demographics, affect a community's ability to prepare for and respond to disasters. This theory suggests that certain groups, such as the elderly, low-income households, and marginalized populations, may be more vulnerable due to limited access to resources, information, and support systems. By applying this theory, the evaluation can focus on identifying demographic influences that impact disaster readiness in Cabuyao City and tailoring interventions to address these vulnerabilities.

Cultural Theory is an anthropological/sociological approach to how people interpret their environment through their culture. The family, the basic unit where we receive our emotional and mental programming, provides the framework for how we live our lives. Most people turn to family in times of need; during a disaster, the family offers food, shelter, emotional support, protection and nurturing. Social order is upset during disasters, however, and accepted cultural roles within a family may be forced to change - societal norms are deviated due to the circumstances. The accepted male gender role (leadership and strength) and the female role (caring for the children) reflect the cultural context in which it takes place. Often during a disaster, the man of the house is away responding and the woman accepts the male role in the family as well. Kirschenbaum discusses the "mother hen effect," the familygatekeeper's critical role in preparing for disasters, and he claims that "mothers with children are the source of family survival" (Kirschenbaum 2020:2023).

This theory is related to disaster preparedness because it's focused on how people interpret their environment according to their culture, how people help each other in times of disasters like offering food, shelter, dress and other basic necessities. This is also focused on gender in differentiation on the role of male and female in disaster preparedness, the male or the father is the one who makes the decision and serves as a leader to his family while the female or the mother is the one who cares for their children and keeps all necessary things during disaster. This theory is still existing in present time.

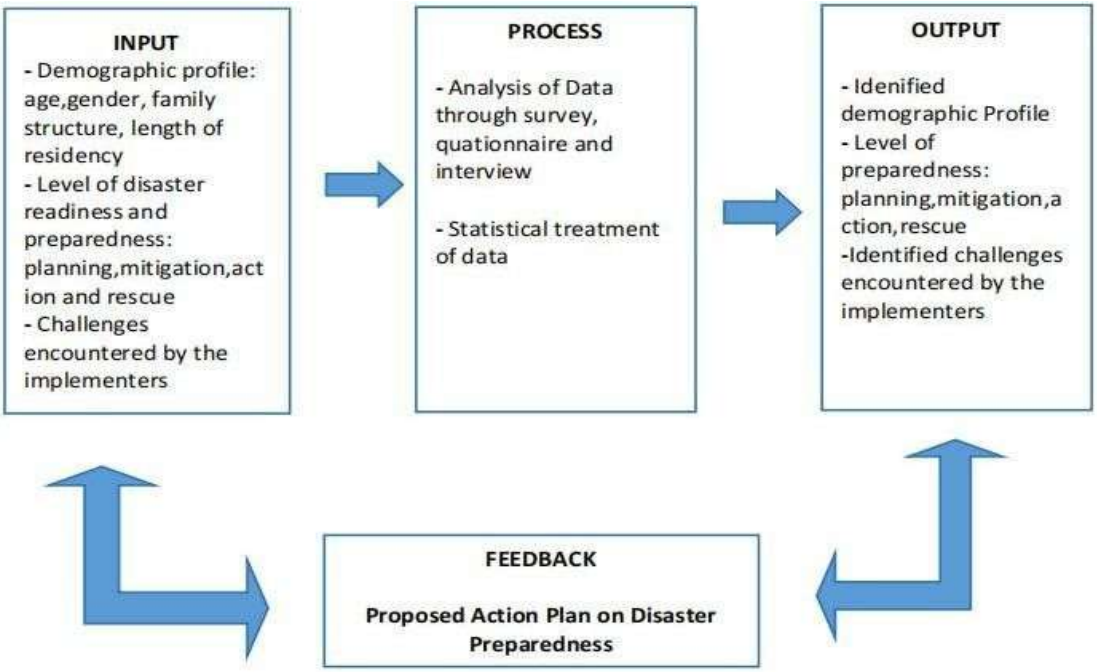

Figure 1. Paradigm of the Study

SIGNIFICANCE OF THE STUDY

The study is focused on evaluating disaster readiness and preparedness of the residents and implementers in Cabuyao City Laguna. The research benefits the following;

Barangay Disaster Risk Reduction and Management - The principal beneficiaries of this research study are in terms of helping Barangay to develop a program of action that which will improve their level of preparedness in terms of disaster response.

City Disaster Risk Reduction Management - This research will help the disaster risk reduction strategy of the city by enhancing and improving the system of disaster preparedness which is the twin requisite of a disaster response system.

Department of Interior and Local Government (DILG) - This study will help to enhance the disaster risk reduction checklist and modules they formulated by providing new inputs and information regarding the profile and the capability of the CDRRMO.

Individuals - This study will serve as an awakening factor to parents to help and understand the prevention of the threat of disaster.

Local Residents - This study will help the individuals to have readiness in dealing with different kinds of disasters.

Researcher - This study could aim to broaden their knowledge about the readiness and preparedness of the respondents to various kinds of disaster that happened in Cabuyao. It would also be helpful in enhancing their skills in communicating and

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socializing through data gathering. In addition, it would also serve as an inspiration.

Future researchers - The result of this research may be a basis of further studies and can be used as related literature.

Objectives of the study General Objectives

To evaluate the level of disaster readiness and preparedness among the residents of Barangay Sala, Banlic and Poblacion Uno, Cabuyao City, Laguna.

Specific Objectives

- To determine the current level of disaster readiness and preparedness among residents of Cabuyao City, Laguna.
- To investigate the influence of demographic factors, including age, gender, socioeconomic status, and education, on disaster preparedness.
- To evaluate the key challenges faced by the community in achieving adequate disaster preparedness.
- To compare preparedness levels across different demographic groups to identify disparities and vulnerabilities.
- To provide evidence-based policy recommendations for improving disaster risk reduction strategies at the barangay, city, and national levels.

METHODOLOGY

Research Design

This study adopts a descriptive evaluative design to examine the level of disaster readiness and preparedness in Cabuyao City, Laguna, with particular emphasis on how demographic factors influence preparedness levels, the challenges faced by the implementers, and the formulation of evidence-based policy recommendations to enhance disaster resilience. The design allows for a comprehensive assessment of current conditions, identification of disparities, and derivation of actionable insights through a combination of quantitative and qualitative data collection methods.

Research Method

This study essentially utilizes a mixed-methods approach to gain a comprehensive understanding of disaster readiness and preparedness in Cabuyao City, Laguna. By integrating both quantitative and qualitative data, the research aims to assess the current state of preparedness among residents, analyze the influence of demographic variables and identify key challenges that hinder effective disaster response. Furthermore, the study seeks to provide data-driven insights and policy recommendations to strengthen community resilience and enhance local disaster risk reduction strategies.

To select participants from the overall population of 42,136, a stratified sampling method was employed, which involved dividing the population into distinct subgroups, or strata—namely, the residents of each of the three barangays and the group of implementers. The sample size was determined using the Raosoft calculator, a standard tool for survey research that typically uses parameters like a 5% margin of error and a 95% confidence level. This calculation yielded a required sample of 381 residents, which was then divided proportionally, resulting in 127 residents from each barangay, including local barangay officials. An additional 76 implementers were sampled, bringing the total participant count to 457.

Population of the Study

In this study, the target population for this study is specifically defined to include two key groups within three selected barangays in Cabuyao City, Laguna: the general residents of Barangay Banlic, Sala, and Poblacion Uno, and the official implementers from the Bureau of Fire Protection and the City Disaster Risk Reduction and Management Office. The characteristics of this population are centered on their geographic location and their roles, with residents providing insights based on their lived experiences and personal circumstances, while the implementers offer a professional perspective on disaster management policies and operations. Clear inclusion and exclusion criteria were established to maintain the study's focus.

Respondents	No.Of Participants
Residents	381
Implementers	76
TOTAL	**457**

Table 1 . Group and Number of respondents

Inclusion was limited to individuals from the three specified barangays and the relevant implementing agencies, ensuring all participants have direct relevance to the research context.

Conversely, the study explicitly excludes residents from any other areas of Cabuyao or Laguna province, thereby avoiding any claims of representing the wider population, and also excludes any detailed legal analysis to keep the focus squarely on awareness, perceptions, and personal experiences regarding disaster preparedness.

Data Gathering Tools

The research instrument for this study mainly consisted of semi-structured survey questionnaires. A semi-structured survey questionnaire was developed to facilitate in-depth conversations with the implementers Bureau of Fire Protection, City Disaster Risk Reduction Office and the Barangay officials and the residents. The survey questionnaires were open-ended , enabling participants to share their insights, knowledge and opinions relevant to disaster preparedness. The survey questionnaires were prepared in proper configuration and analyzed and clarified in the context of the statement of the problem.

Data Gathering Procedures

The data collection for this study was executed through a methodical, multi- phase process to ensure rigor and ethical compliance. It began with a preparatory phase where the researcher first gathered secondary data from news articles and online sources to establish a foundational context. Following this, a self-made questionnaire was formulated and subjected to a rigorous validation process by the research adviser and expert validators; their feedback was incorporated to create a refined second draft, ensuring the tool's validity and relevance to the research problem. Before any primary data could be gathered, the researcher secured formal permissions by sending request letters to the authorities of the target barangays—Banlic, Sala,

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and Poblacion—as well as to the Bureau of Fire Protection and the City Disaster Risk Reduction and Management Office, explaining the study's purpose and seeking approval to conduct the survey.

Once official consent was obtained, the data collection phase commenced, characterized by the researcher's direct, personal involvement. Primary data were gathered using a dual-mode approach, distributing the validated questionnaire both as physical copies and through digital Google Forms to the residents and officials of the selected barangays. The researcher provided clear, consistent verbal explanations of the directions and items to all respondents to ensure comprehension and the accuracy of their responses.

For implementers and key officials, the open-ended questionnaire served as a guide for semi-structured interviews, facilitating in-depth conversations that yielded rich, qualitative insights. The physical questionnaires were distributed and retrieved personally by the researcher, while the digital forms were collected automatically via the online platform. This intensive, hands-on data gathering period, though its exact duration unspecified, underscored a committed effort to collect robust and reliable data directly from the source.

Treatment of Data

The data gathered from the survey questionnaires were summarized and analyzed primarily using descriptive statistics to address the research questions concerning the residents' and implementers' Readiness, preparedness, and experiences. Given the nature of the data, which involved interpreting scores and responses on a Likert-type scale or similar structured format, the central analytical technique employed was the weighted mean. This method was chosen because it accounts for the varying frequency of different response choices (e.g., from "Not Prepared" to "Highly Prepared") and assigns appropriate weight to each, thereby providing a more accurate representation of the central tendency than a simple arithmetic mean. The computed weighted mean for each statement or item in the questionnaire allowed the researcher to identify and rank the levels of readiness and preparedness, clearly pinpointing which areas received the highest and lowest scores from the respondents. This facilitated a straightforward interpretation of the collective perceptions of the target population.

The summary indicates a focus on describing the data through this measure of central tendency, and while the use of frequencies, ratios, and percentages to display the distribution of responses is highly probable, it is not explicitly stated. Furthermore, the description provided does not mention the use of inferential statistical tests, such as t-tests or ANOVA, nor does it specify a probability level (such as 0.05) for determining significance. Therefore, the analysis appears to be strictly descriptive, utilizing the weighted mean to systematically interpret the scores and draw meaningful conclusions about the study's core topics

Numerical Value	Scale Range (Statistical Limit)	Verbal Interpretation
4	3.26 – 4.00	Highly Prepared
3	2.51 – 3.25	Prepared
2	1.76 – 2.50	Less Prepared
1	1.00 – 1.75	Not Prepared

Table 2. 4-point Likert Scale and Interpretation

This treatment of data ensures that both quantitative patterns and qualitative insights are accurately analyzed and interpreted to answer all parts of the research questions.

Ethical Considerations

This study was guided by a stringent ethical framework to ensure the protection, respect, and well-being of all participants. Prior to the commencement of any data collection, ethical approval was secured from an appropriate institutional review board or ethics committee, ensuring that the entire research protocol adhered to established ethical standards. Central to this process was the principle of informed consent; all participants, including residents and implementers, were fully apprised of the study's purpose, the procedures their involvement would entail, and the planned use of the collected data. Their participation was strictly voluntary, and they were explicitly informed of their right to withdraw from the study at any point without facing any negative consequences.

To protect participant identities, anonymity was respected for those who opted for non-disclosure, and confidentiality was rigorously insured for all collected information through the secure and anonymized storage of data, ensuring that no individual could be identified in the final report. The researcher was particularly mindful of potential vulnerabilities, especially among residents who may have experienced trauma from past disasters, and adopted a sensitive approach, prioritizing their well-being by avoiding overly distressing questions and providing information for support services if needed. Participant selection was conducted using non-discriminatory criteria, with the inclusion and exclusion criteria—being strictly based on geographical location and professional role—justified by the specific nature and objectives of the study. Finally, to ensure the research contributes meaningfully to the community, the findings will be disseminated to the beneficiaries, including the barangay officials and the City Disaster Risk Reduction and Management Office, through summary reports or presentations, thereby translating the gathered insights into actionable knowledge for enhancing local disaster preparedness.

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RESULTS AND DISCUSSION

Table 1. Level of Preparedness in the aspect of Planning.

Indicators for Planning	Implenters	Residents	Overall Mean	Interpretation
1.LGU has a comprehensive, updated DRRM Plan aligned with national standards.	3.3	3.2	3.2	Prepared
2. Risk assessments areconducted annually and guide our planning.	3.2	3.1	3.1	Prepared
3. There is adequate budget allocation for disaster preparedness.	3.4	3.2	3.3	Prepared
4. Inter-agency coordination (e.g., with NGOs, national agencies)is effective.	3.2	3.1	3.1	Prepared
5.The disaster response plan effectively addresses the specific needs of Cabuyao City.	3.1	3.0	3.0	Prepared
6.There are clear communication channels established for disaster planning.	3.4	3.3	3.3	Prepared
OVERALL AVERAGE MEAN			**3.1**	**PREPARED**

As shown in Table 1, the overall mean for planning is 3.1, which is verbally interpreted as Prepared. This indicates that both implementers and residents perceive a generally well-established foundation for DRRM planning. The data reveals that the strongest areas are "adequate budget allocation" and "clear communication channels" (both with overall means of 3.3-3.4). This finding aligns with the priorities of the Sendai Framework for Disaster Risk Reduction (2015-2030), which emphasizes strengthening disaster risk governance and investing in preparedness, including ensuring financial capacity and robust information-sharing systems. The high score for budget allocation suggests that the Local Government Unit (LGU) has made a tangible commitment to DRRM, a critical factor often cited as a bottleneck in disaster management in developing contexts.

Conversely, the most significant area for improvement is Indicator 5, "The disaster response plan effectively addresses the specific needs of Cabuyao City," which received the lowest score from both groups (Overall Mean = 3.0). This striking result points to a potential gap between having a standardized, nationally-aligned plan and having one that is truly contextualized to the unique urban and flood-prone vulnerabilities of Cabuyao City. This finding is corroborated by broader assessments from the Philippine Disaster Risk Reduction and Management Council (PDRRMC), which often note challenges in localizing national frameworks. The lower score from residents (3.0) compared to implementers (3.1) suggests a slight but important perception gap; residents may feel less directly accounted for in the planning process. This underscores the need for more participatory planning approaches, as advocated in Disaster Risk Reduction theory, to ensure plans are not only compliant but also community-informed and practically relevant to local risks like flooding in informal settlements.

In summary, while the planning phase demonstrates commendable strength in financial and communicative foundations, the results clearly signal the need for targeted efforts to enhance the localization and specificity of DRRM plans to move the community from "Prepared" to "Highly Prepared."

Table 2. Level of Disaster Preparedness in the aspect of Mitigation.

Indicators for Mitigation	IMPLENTERS	RESIDENTS	Overall MEAN	INTERPRETATION
1.Critical infrastructure (e.g., flood control, evacuation centers) is highly inspected before and after the disaster.	3.3	3.3	3.3	Prepared
2. Preparing early warning systems (sirens, SMS alerts) are functional and reach all residents.	3.4	3.2	3.3	Prepared
3. Community training programs (e.g., first aid, fire drills) are regularly	3.4	3.3	3.3	Prepared

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implemented.				
4. Environmental protection (e.g., watershed management) is prioritized.	3.1	3.0	3.0	Prepared
5. The community is actively engaged in mitigation efforts.	3.2	3.1	3.1	Prepared
6. There is a culture of risk awareness and prevention in the community.	3.2	3.1	3.1	Prepared
OVERALL AVERAGE MEAN			**3.1**	**PREPARED**

Table 2 shows an overall mean of 3.1, interpreted as Prepared. The highest scores are found in operational and capacity-building indicators. Implementers gave their strongest endorsement to "early warning systems" and "community training programs" (Mean = 3.4), a finding corroborated by the World Bank's "Building Resilience" guide (2013), which identifies these as cornerstones of effective community-based disaster risk reduction. Residents also highly valued training and the inspection of "critical infrastructure" (Mean = 3.3), reflecting confidence in tangible, hands-on preparedness measures. This alignment with national PDRRMC benchmarks suggests that Cabuyao City has successfully built operational resilience against recurrent typhoon and flood risks.

However, the most striking and important negative result is the consistently low score for "Environmental protection is prioritized", which was the lowest-rated indicator by both groups (Residents = 3.0, Overall = 3.0). This is a critical finding. While the community is "Prepared" in reactive and response-oriented measures, it is significantly less prepared in addressing the root causes of its disaster risk. For a city vulnerable to flooding, the lower priority given to watershed management and environmental protection reveals a fundamental gap in proactive, sustainable mitigation. This finding contrasts with the ideal integrated approach advocated by resilience theory, which calls for a balance between structural measures (like early warnings) and non-structural, eco-based solutions.

This discrepancy suggests that current DRRM efforts may be heavily skewed towards response readiness at the expense of long-term preventive strategies. The failure to prioritize environmental protection could undermine other preparedness gains, as unchecked urbanization and deforestation likely exacerbate flood intensities. This unexpected emphasis on reactive over preventive measures warrants further study and signals to policymakers that resilience in Cabuyao City is potentially fragile without integrating stronger environmental governance and "green infrastructure" policies into its DRRM framework.

Table 3. Level of Disaster Preparedness in the aspect of Action.

Indicators for Action	IMPLENTERS	RESIDENTS	Overall MEAN	INTERPRETATION
1. Emergency responders can mobilize within 30 minutes of a disaster alert.	3.3	3.2	3.2	Prepared
2. Evacuation centers are pre- equipped with food, water, and medical supplies.	3.4	3.1	3.2	Prepared
3. Communication systems (e.g., radios, backup power) remain operational.	3.4	3.3	3.3	Prepared
4. Vulnerable groups (PWDs, elderly) are prioritized in response plans.	3.1	3.1	3.1	Prepared
5. Feedback from drills and training is used to improve future responses.	3.2	3.2	3.2	Prepared
6. There is a high level of confidence in the team's ability to respond to disasters.	3.2	3.2	3.2	Prepared
OVERALL AVERAGE MEAN			**3.2**	Prepared

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With an overall mean of 3.2, the action phase is rated as Prepared, representing the highest score among the four disaster management aspects. The data shows clear strengths in logistical and communication infrastructure. Implementers gave their highest scores to "evacuation centers are pre-equipped" and "communication systems remain operational" (Mean = 3.4). This aligns with principles from the International City/County Management Association (ICMA, 2020), which stress the need for reliable logistics and communication as the backbone of any effective emergency response. The high resident score for communication systems (3.3) corroborates this, suggesting public trust in information channels during crises, a factor known to reduce panic and save lives.

However, a significant and consistent negative finding emerges. For the third time, the indicator pertaining to the inclusion of vulnerable populations received the lowest score. "Vulnerable groups are prioritized in response plans" was rated 3.1 by both implementers and residents, making it the weakest link in the action chain. This striking result indicates a systemic gap in inclusive planning that persists from the planning phase into operational response. While the study "The Role of Barangays in Disaster Risk Reduction: A Study in Selected Areas of Laguna (2021)" highlights the importance of prioritizing vulnerable groups, the data from Cabuyao City shows that this principle is not yet fully realized in practice.

This is not "bad data" but a crucial finding. It suggests that the community's effective operational framework may not be equally accessible or safe for all members, particularly Persons with Disabilities (PWDs) and the elderly. The fact that this score is consistently the lowest across multiple phases of disaster management points to a deep-seated issue rather than an isolated oversight. This contrast between high operational capability and low inclusivity is critically important for policymakers, underscoring an urgent need to integrate vulnerability mapping and tailored evacuation protocols to ensure that the "Prepared" status truly extends to every member of the community.

Table 4. Level of Disaster Preparedness in the aspect of Rescue.

Indicators for Rescue	Implanters	Residents	Overall	Interpretation Mean
1. Search-and- rescue teams have adequate training and equipment.	3.4	3.2	3.3	Prepared
2. Relief distribution is systematic and reaches affected areas.	3.3	3.1	3.2	Prepared
3.Post-disaster needs assessments are conducted.	3.3	3.2	3.2	Prepared
4.Long-term recovery programs (e.g., housing, livelihoods) are effective.	3.2	3.1	3.1	Prepared
5. Our organization has a dedicated and trained rescue team.	3.2	3.2	3.2	Prepared
6. The rescue team is well-equipped to handle emergencies.	3.4	3.3	3.3	Prepared
OVERALL AVERAGE MEAN			**3.2**	**PREPARED**

The rescue phase, with an overall mean of 3.2, is rated as Prepared, matching the action phase for the highest score. The data reveals a clear strength in frontline rescue capacity. Both implementers and residents gave high scores to indicators concerning training and equipment (Indicator 1 & 6, Overall Mean = 3.3). This aligns with the World Bank's "Building Resilience" guide, which identifies well- equipped and trained teams as fundamental to effective disaster response. The high implementer scores (3.4) suggest a professional confidence that likely contributes to the community's overall resilience, a finding consistent with national PDRRMC benchmarks.

However, the most critical finding in this phase is the consistent and pronounced weakness in long-term recovery. "Long-term recovery programs (e.g., housing, livelihoods) are effective" was the lowest-rated indicator by residents (3.1) and among the lowest by implementers (3.2). This is a vital negative result. It indicates that while the community is prepared to save lives in the immediate aftermath, its systems for ensuring sustainable recovery and rebuilding are fragile. This finding is starkly corroborated by international evidence; a 2021 IFRC report on the Haiti earthquake revealed how failures in long-term recovery led to significantly heightened chronic poverty rates.

This pattern suggests a potential "response-recovery gap" in Cabuyao City's DRRM framework. The community's preparedness is heavily weighted towards the acute, short-term disaster cycle, potentially at the expense of the prolonged, complex process of recovery. This is not a failure of the data but a crucial insight. It implies that achieving a higher level of resilience requires a strategic pivot to bolster post- disaster systems—such as ensuring stable housing and livelihood

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restoration— which are ultimately the true measures of a community's ability to withstand and adapt to disasters over the long term.

Challenges Faced by Barangay Officials

This section presents the qualitative findings from Focus Group Discussions (FGDs) with Barangay Officials and key implementers from the Bureau of Fire Protection (BFP) and City Disaster Risk Reduction and Management Office (CDRRMO). The data, organized thematically across the aspects of Planning, Mitigation, Action, and Rescue, provide crucial context for the quantitative scores, revealing the systemic and operational hurdles that underlie the "Prepared" status.

The FGDs with Barangay Officials uncovered deep-seated challenges that impede optimal disaster management at the grassroots level.

Challenges Encountered by the Implementers Multiple Challenges Emerged in findings

Planning : Coordination Issues, Data Insufficiency, Communication and Coordination Challenges, Resource Constraint.

Mitigation: Lack of perception and Coordination**,** Inter agency Collaboration, Environmental Uncertainty Hindering Mitigation Implementation, Lack of Perception and Coordination, and Training deficiency.

Rescue: Resource Limitations, Environmental Barriers, Capacity Building Needs and Psychological and Behavioral Factors.

Action: Volunteer Shortage, Communication Barriers,Transportation Limitations,Time Constraints and Planning Issues and Community Non-Cooperation

The perspectives from the BFP and CDRRMO reveal systemic challenges that span planning, mitigation, and response.

Proposed Action Plan *"Disaster Readiness and Preparedness"*

Key Area	Objective	Activity	Person/Group Responsible	Time Frame	Expected Outcome
PLANNI NG	To strengthen institutional disaster preparedne ss framework	Conduct vulnerability and capacity assessment and Install and test sirens, SMS- based alerts	Local Disaster Risk Reduction and Management Office (LDRRMO), Barangay Councils	Quarterl y	Completed risk assessment report identifying hazard-prone areas and Functional and tested early warning systems in key areas
MITIGAT ION	To reduce disaster risks through infrastructu re improveme nts and Conduct tree- planting and flood control projects	Identify and retrofit weak structures (schools, bridges, roads) and Collaborate with NGOs, community volunteers	City Engineering Office, LDRRMO, DPWH, LGU, Environmental NGOs, Schools	Contino us	Strengthened infrastructure to withstand hazards and Improved flood resilience and reduced erosion
ACTION	To standardize emergency operations center (EOC) protocols To strengthen emergency response capabilities	Conduct quarterly earthquake and fire drills and Train EOC staff on incident command system	LDRRMO, BFP, PNP, Schools, Businesses,LDRR MO, Rescue Units	Quarterl y	Increased public awareness and faster response times and Efficient coordination during disasters
RESCU E	To enhance search and rescue (SAR) capabilities To establish evacuation protocols	Train and Equip local rescue teams and Identify and maintain safe evacuation centers	LDRRMO, PNP, Volunteer Groups, LGU, Brgy. Officials	Quarterl y	Skilled rescue Teams with necessary equipment and Smooth and organized evacuations.

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CONCLUSION

The overall disaster preparedness rating of 3.1, verbally interpreted as "Prepared," indicates that both implementers and residents perceive the current systems and processes as adequately established but still with room for improvement to achieve a "Highly Prepared" status. Across the key aspects of Planning, Mitigation, Action, and Rescue, the weighted means consistently fall within the "Prepared" range, reflecting a general consensus on the adequacy of existing measures. Notably, certain indicators within each aspect scored higher, suggesting strengths in specific areas, while others scored relatively lower, highlighting opportunities for targeted enhancement.

The qualitative findings complement these quantitative results by revealing critical challenges that constrain disaster preparedness and response effectiveness. These include deficiencies in specialized rescue equipment, concerns over the safety of rescue personnel, shortages of trained responders available around the clock, difficulties accessing hazardous or remote areas, and delays in long-term recovery programs such as housing provision for displaced individuals. These challenges underscore the complexity of disaster management and the need for continuous capacity building.

In summary, while the community and implementers are generally prepared for disaster events, addressing the identified gaps particularly in equipment availability, personnel safety and capacity, logistical access, and recovery support will be essential to elevate preparedness levels. Strengthening these areas will enhance the timeliness, safety, and sustainability of disaster response and recovery efforts, ultimately fostering greater resilience within the community.

This proposed action plan is a vital and strategic roadmap for translating Cabuyao City's current "Prepared" status into a more resilient, "Highly Prepared" community. The programs outlined are essential steps to systematically address the critical gaps identified in the study, particularly in communication, resource allocation, inclusivity, and long-term recovery. The standardized EOC protocols and tested early warning systems directly tackle the coordination and information dissemination failures reported by both officials and residents.The infrastructure retrofitting and environmental projects address the root causes of vulnerability, moving beyond response to proactive risk reduction.The focus on training for vulnerable groups and maintaining safe evacuation centers ensures that disaster preparedness encompasses all members of the community, leaving no one behind.The structured training and equipment procurement will maximize the impact of often-limited budgets, building local capacity that is sustainable over the long term.

RECOMMENDATIONS

Based on the study's findings, the following recommendations are proposed to further enhance Disaster readiness and preparedness in Cabuyao City.

1. Create and implement disaster preparedness training programs tailored to different demographic groups, particularly focusing on those with lower levels or in the low lying areas .
2. Allocate additional resources and funding for emergency supplies and equipment to ensure that all residents have access to necessary tools for disaster preparedness.
3. Initiate comprehensive awareness campaigns that utilize various communication channels (e.g., social media, community meetings) to educate residents about disaster response plans and the importance of preparedness.
4. Foster partnerships with local organizations and community groups to promote active participation in disaster preparedness initiatives, encouraging a collective approach to resilience.
5. Leverage technology, such as mobile applications and online platforms, to provide real-time information and updates regarding disaster preparedness and response efforts.
6. It is recommended that the proposed action plans be implemented through a sustained partnership between local government units, schools, NGOs, and community organizations. Regular evaluation and monitoring should be conducted to assess the effectiveness of these initiatives and ensure they are responsive to the evolving needs and vulnerabilities of Cabuyao City. This collaborative and adaptive approach will be crucial for translating these plans into tangible, long-term resilience for the entire community.

Also urge local government units and relevant agencies to formally adopt the outcomes of this study as part of their disaster preparedness framework, ensuring that the recommendations are implemented effectively and monitored for impact.

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