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DEVELOPMENT OF DISASTER MANAGEMENT FRAMEWORK BASED ON EXPERIENCES IN FAR-FLUNG COMMUNITIES IN IFUGAO

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ABSTRACT

This phenomenological study explores the lived experiences of residents and local leaders in remote Ifugao communities, Philippines, concerning natural disasters, aiming to develop a responsive, community-based disaster management framework. Utilizing systems thinking, social vulnerability to environmental hazards, community-based disaster management, people's vulnerability and disasters, and social capital theories, the research delves into their experiences across disaster phases, the short- and long-term impacts, and the challenges within existing management systems. Findings reveal that despite geographical isolation and limited formal support, these communities exhibit profound self-reliance, actively engaging in early warning, preparedness, response, and initial recovery through indigenous knowledge and mutual assistance. Disasters inflict severe multi-faceted impacts, including extensive livelihood disruption, agricultural loss leading to food insecurity, and significant psychological distress, often necessitating temporary migration. Yet, communities demonstrate extraordinary positive adaptation, heightened vigilance, strong social cohesion, and continuous learning to mitigate future risks. However, the current disaster management system faces substantial operational weaknesses, characterized by inconsistent government aid, leadership gaps, resource deficiencies, and inequitable, delayed, or biased aid distribution exacerbated by logistical barriers. These systemic failures disproportionately burden marginalized communities, forcing reliance on their limited internal capacities. The study concludes by advocating for an integrated, responsive, and locally sensitive disaster management practice. Recommendations emphasize officially incorporating traditional knowledge and mutual aid structures, providing holistic and long-term recovery support (including mental health and livelihood diversification), strengthening governance, accountability, and aid distribution, and investing in resilient infrastructure to bridge isolation. This approach seeks to genuinely build upon community resilience while addressing critical systemic vulnerabilities, moving towards a proactive, cooperative, and effective disaster management paradigm.

KEYWORDS: *Ifugao Communities, Disaster Management, Community-Based, Resilience, Vulnerability*

INTRODUCTION

Disasters such as typhoons, earthquakes, landslides, and flash floods pose serious threats to public safety and community stability. These events not only cause physical destruction but also expose systemic weaknesses in disaster management, particularly in marginalized and rural communities. Beyond their immediate impacts, disasters often trigger secondary problems, including economic loss, resource scarcity, and social disorder. Studies have shown that post-disaster conditions can heighten the risk of opportunistic crimes such as theft and looting, as weakened law enforcement and social instability create opportunities for deviance (Augusto, 2021; Gonzales et al., 2024; Walton et al., 2021).

Integrating criminology and disaster management offers a holistic framework for addressing these challenges. Criminology emphasizes public order, safety, and crime prevention (Freilich & Newman, 2018; Sousa & Kelling, 2014), while disaster management focuses on preparedness, response, and recovery (Crosweller & Tschakert, 2020). Combined, these fields can strengthen resilience and reduce vulnerabilities in disaster-prone communities by maintaining both physical safety and social cohesion (Blaustein et al., 2023; Wickes et al., 2022).

Globally, climate-related disasters have intensified, disproportionately affecting low- and middle-income countries (WHO, 2023; UNDRR, 2022). International frameworks such as the **Sustainable Development Goals (SDGs 11 and 13)** and the **Sendai Framework for Disaster Risk Reduction** emphasize inclusive, community-based resilience and the integration of local knowledge into disaster strategies (UNDRR, 2019; Ramani & Hettiarachchi, 2022). However, disaster responses remain largely urban-centric, leaving rural and marginalized areas underrepresented in planning and resource allocation (Sufri et al., 2023).

In the Philippines—one of the world's most disaster-prone nations—frequent typhoons, earthquakes, and landslides continue to challenge community resilience (Ibrahim, 2023; World Risk Report, 2021). Regions such as Bicol, Eastern Visayas, and Mindanao repeatedly endure catastrophic events like Super Typhoon Haiyan and Typhoon Sendong, which caused extensive fatalities and displacement (Pormon, 2023; Rasquinho et al., 2011). Despite advances in national disaster management, significant disparities persist in rural areas, where logistical constraints and limited infrastructure hinder effective

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response and recovery (Fernandez, 2021; ABS-CBN News, 2021).

In **Ifugao Province, d**isasters such as typhoons, flash floods, and landslides continually endanger far-flung communities (GMA News, 2009; Quitasol & Visaya Jr., 2022). Its mountainous terrain, soil erosion, and isolation further amplify disaster risks (PIA, 2011; Arceo, 2024). Yet, these communities remain underrepresented in national frameworks, which tend to prioritize urban centers.

This study, therefore, seeks to bridge this gap by documenting the lived experiences of far-flung communities in Ifugao to develop a **criminology-informed, community-centered disaster management framework.** By integrating local realities with criminological insights, the research aims to inform inclusive policies that strengthen resilience, promote social order, and ensure equitable disaster preparedness in all communities.

Theoretical Framework of the Study

This study leans on Systems Thinking Theory (Bertanffy, 1968; Senge, 2006), which sees remote Ifugao communities as tightly connected systems. Here, social, cultural, and environmental factors all play a part in shaping how people handle disasters. This approach gives a more complete way to look at what these communities go through and how they respond.

Backing this up are a few more theories. Social Vulnerability Theory (Cutter et al., 2003) puts the spotlight on resilience and how communities adapt. Community-Based Disaster Management (CBDM) (Yore et al., 2007) pushes for real involvement from locals. People's Vulnerability and Disasters (Wisner et al., 2004) digs into inequality and the specific risks each community faces. Social Capital Theory (Bourdieu, 2000, as cited in Tsounis & Xanthopoulou, 2024) points to the power of trust and social networks when it comes to bouncing back after a disaster.

The study also takes cues from Pragmatism (Sorrel, 2013) and Post-structuralism (Fox, 2014). That means it looks for practical, experience-based solutions and really listens to what the community has to say. All these theories come together to shape a management framework that puts the community at the center and helps build resilience in Ifugao's most remote areas.

Conceptual framework

The conceptual framework of this study focuses on developing a community-based disaster management framework for the far-flung communities in Ifugao. The first step in this process involves gaining an understanding of the lived experiences of community members when dealing with natural disasters. This step is paired with familiarizing the researcher with the relevant legal frameworks, such as the National Disaster Risk Reduction and Management Act of 2010 and the Local Government Code of 1991. These legal guidelines underscore the importance of involving local communities in disaster management processes and provide a legal foundation for the study.

The next step involves designing a community-based disaster management framework that is reflective of the unique experiences of these communities. The framework will then undergo expert review to ensure it aligns with national disaster management principles while remaining practical and relevant to the needs of the communities. The interconnected arrows represent the logical progression from exploring the community's experiences and legal frameworks to creating and validating a tailored disaster management framework.

The goal, represented in the bottom box, is to develop a comprehensive, context-specific disaster management framework that incorporates local knowledge and expert feedback to improve disaster resilience in these far-flung communities.

Objectives of the study

The study generally aims to explore the experiences of remote Ifugao communities in coping with natural disasters to develop a responsive disaster management framework that strengthens resilience and enhances preparedness, response, and recovery. Specifically, aims:

- To examine the experiences of the informants about natural disasters in terms of the phases of disaster management;
- To determine the short-term and long-term effects of natural disasters on the lives of informants;
- To identify the challenges experienced by the informants in the existing framework on community-based disaster management;
- To elicit the informants' recommendations to enhance the management operations of natural disasters; and
- To propose an enhancement program.

METHODOLOGY

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

Research Design

This study utilized a phenomenological research design, a qualitative approach that explores and describes the lived experiences of individuals regarding a specific phenomenon. As emphasized by Moustakas (1994), phenomenology seeks to understand shared experiences rather than generalize findings. In this study, the phenomenon examined was the experience of residents in far-flung Ifugao communities in coping with natural disasters. This design enabled the identification of patterns and the development of a framework to address community needs, enhance resilience, and improve disaster management practices.

Research Method

This study employed qualitative methods, specifically in-depth interviews and focus group discussions, to gather the lived experiences, perceptions, and insights of informants regarding natural disasters. These methods allowed for an in-depth exploration of complex phenomena from the participants' perspectives. As Creswell (2022) notes, qualitative research seeks to understand the meanings individuals attach to human

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experiences through emergent, flexible procedures. Data were collected in the informants' natural settings to capture authentic experiences and identify shared themes and patterns. Guided by Patton (2002), this process enabled the development of a community-based disaster management framework grounded in the realities of Ifugao's far-flung communities.

Population of the Study

The study selected local citizens and community leaders aged 18 and above with first-hand experience in managing or responding to natural disasters in remote Ifugao communities. Informants included volunteer responders, disaster victims, barangay officials, and kagawads. Individuals without direct disaster experience were excluded. Age criteria ensured participants could provide informed consent.

A purposeful sampling technique identified informants with relevant knowledge, supplemented by snowball sampling to reach additional participants. The final number of informants was determined by data saturation, when no new themes emerged (Braun & Clarke, 2019; Moser & Korstjens, 2018; Sebele-Mpofu, 2020). While Wutich et al. (2024) suggest 20–40 interviews per site for cross-site meta-themes, this study relied on context-dependent saturation considering the unique experiences of each community.

Data Gathering Tool/s

This study used two research instruments. First, a self-constructed interview guide collected in-depth data on informants' disaster experiences. The guide was developed using sample protocols (Chowdhury, 2017; Simpson et al., 2021), methodological guidance for semi-structured interviews (Laforest et al., 2012), and ethical considerations in disaster research (Abeysinghe & Leppold, 2023; Mezinska et al., 2016), ensuring sensitivity, inclusivity, and confidentiality.

Second, an evaluation tool based on the National Disaster Risk Reduction and Management Framework (2011) and Plan 2020–2030 was used by experts to assess the contextualized framework derived from the study. Both instruments were validated by a panel of four experts in criminal justice, disaster management, local governance, community studies, qualitative research, and language, using criteria for relevance, clarity, and alignment with study objectives (Paredes et al., 2021).

Data Gathering Procedure

Participants from Banaue, Mayoyao, and Tinoc were recruited based on direct disaster experience, identified through community leaders and snowball sampling. Semi-structured interviews, guided by protocols from prior disaster research (Chowdhury, 2017; Simpson et al., 2021) and qualitative best practices (Laforest et al., 2012), were conducted with participant consent and audio-recorded for accuracy. Transcripts captured narratives, emotions, strategies, and nonverbal cues. Ethical considerations included informed consent, confidentiality, voluntary participation, and the right to withdraw. Data were validated through peer member checks, allowing participants to review and clarify their responses. Upon data saturation, findings informed the development of a community-based disaster management framework, which was then reviewed by experts for clarity, relevance, and alignment with disaster management principles. The data collection timeline considered participant availability and accessibility, ensuring the framework remained contextually relevant and actionable.

Treatment of the Data

The treatment of data was guided by the study's research questions and the qualitative methods chosen for this study. For the first four research questions, the thematic analysis method (Braun & Clarke, 2022) was used to examine the data. For the fifth question, a disaster management framework was developed based on the findings and validated through expert feedback. The following specifies treatment and analysis of data:

Thematic Analysis for Research Questions 1-4. For the first four research questions, thematic analysis was used to identify and analyze patterns in the data. The steps for this process include:

1. The data from interviews and focus group discussions were reviewed thoroughly. The researcher read and reread transcripts to fully understand the content.
2. The researcher assigned codes to pieces of data that were relevant to the research questions. These codes captured ideas and themes related to the informants' experiences, the effects of disasters on their lives, and their aspirations for improving disaster management.
3. After coding, the data were grouped into themes to answer the four research questions.
4. The researcher checked if the identified themes make sense and if the data within each theme were consistent. Any overlapping or unclear themes were combined or removed.
5. Finally, each theme was clearly defined. These definitions helped explain the data in relation to the research questions and made the findings easier to interpret.

Framework Development for Research Question 5. For the fifth research question, data were analyzed to develop a **community-based disaster management framework**. The process involved:

1. **Compiling findings** from the first four questions to understand community experiences in disaster management.
2. **Developing a framework** focused on local solutions that addressed community needs and practical disaster preparedness and response strategies.
3. **Expert review** by specialists in disaster management, community studies, and local governance to ensure practicality and alignment with community needs.
4. **Analyzing expert feedback** using basic statistics (mean, frequency, standard deviation) to assess agreement on the framework's relevance and effectiveness.
5. **Member checking** with selected informants to verify the accuracy of interpretations and ensure trustworthiness of the findings.

Ethical Considerations

An informed consent form explained the study's purpose, procedures, and risks, ensuring voluntary participation and the

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right to withdraw at any time. Illiterate participants were read the form aloud, and verbal consent was obtained. Participants who withdrew had their data excluded to maintain confidentiality. A semi-structured interview guide was used, with questions designed to be respectful, clear, and sensitive to participants' emotions. Only adults (18+) participated, with special care for vulnerable groups such as women, senior citizens, and persons with disabilities, ensuring accessibility, respect, and necessary accommodations throughout the process.

RESULTS AND DISCUSSION

Experiences of the Informants About Natural Disasters in Terms of the Phases of Disaster Management

The responses provided by the selected participants during the interview are categorized according to the themes.

The discussion on the emergent theme of "Community Experiences and Adaptive Strategies Across the Disaster Management Cycle," which can be effectively reorganized into the three core phases of disaster management: pre-disaster, during-disaster, and post-disaster. This structure highlights the cyclical nature of disaster management and how the experiences of remote Ifugao communities fit into each stage.

Pre-Disaster Phase: Early Warning and Preparedness - This phase encompasses the actions and experiences of the community before a natural disaster strikes, focusing on warning systems and proactive preparations.

Theme 1. Early Warning and Information Dissemination - During this phase, informants' experiences show a mix of dependence on and challenges with various communication channels. Codes such as "Media and Technology for Information" (radio, TV news, cellphones) and "Modern Communication Channels" reflect a desire for modern tools, as seen in Participant 2's action*: "Monitors the radio, watches TV news, and checks their cellphone."* However, challenges like power outages create a reliance on backup tools and informal networks. As Participant 3 notes, they *"watch the news and listen to the radio but find it hard to know what's happening if there is an early power outage."* This highlights the persistent issue of ensuring fluid information flow.

Others, like Participants 21, 22, and 23, rely on a combination of technology and natural indicators, stating, "Most *use TV or social media, and also ICOM for communication in sitios without electricity; they also notice strong winds and rain, as typhoons are common during specific months."* Syed et al. (2021) suggested that this use of multiple channels is a pragmatic response to unreliable infrastructure in remote areas.

Similarly, Ahmad and Yunos (2020) emphasized that integrating both traditional and modern communication strategies strengthens community resilience, especially where formal systems fail. This dual dependence illustrates the community's adaptive strategies for bridging information gaps during disasters.

Theme 2. Pre-Disaster Preparedness Actions - Informants exhibit a multifaceted readiness strategy from individual homes to the entire community. *"Physical and Agricultural Preparedness"* involves tangible actions to protect livelihoods and property, such as Participant 1's practice of *"removing water barriers in rice fields to avert overflow, tying down the roof of the house, and securing belongings."* "Household Preparedness" focuses on stocking essential supplies, with Participant 3 noting *they "stock food and water, prepare flashlights, and clear weak sections of the house walls and surroundings to avert accidents; also secure the roof."* Participant 4's *response about preparing canned goods, cleaning the roof, and securing animals also showcases this proactive approach to all household assets.* This collective strategy is seen as a shared adaptation mechanism in one of the world's most disaster-prone countries (Gumasing & Sobrevilla, 2023).

Recent studies affirm that households in rural and hazard-prone areas prioritize both food security and protection of agricultural resources as part of disaster readiness (Gaillard et al., 2019). Likewise, Balgos et al. (2020) highlight that community-based preparedness anchored on household-level initiatives enhances resilience and ensures continuity of livelihoods during calamities.

During-Disaster Phase: Impacts and Response

This phase covers the direct experience of the disaster as it unfolds, including its immediate impacts and the actions taken to survive it.

Theme 3. Disaster Impacts and Consequences - The discussion paints a vivid picture of the consequences suffered by these communities. "Environmental and Agricultural Destruction" and "Structural Damage" are direct and widespread, as described by Participant 1: *"Typhoon Yoyong caused massive landslides, many big trees fell, and only a small harvest was gathered."* Participant 7 adds that they *"had numerous landslides, which destroyed homes. Almost nobody was able to crop during El Niño, in which there was a state."* The psychological toll is also significant, as being psychologically affected as a farmer when rice paddies are washed away is demoralizing. Mendoza et al. (2020) affirm that climate-related disasters not only destroy agricultural livelihoods but also heighten stress and trauma among farmers who rely on subsistence farming.

The direct physical damage is further highlighted by Participants 21, 22, and 23, who state, "Our *house was destroyed, most of the wooden buildings fell, and some houses were covered by landslides."* Such impacts align with findings that extreme weather events increasingly threaten both rural settlements and agricultural production, exacerbating poverty and vulnerability (Eadie & Su, 2020). The declaration of a "state of calamity" officially acknowledges that the disruption is beyond the community's capacity and requires external intervention (Distor, 2025).

Theme 4. Response Actions - Informants' responses show a mix of self-survival and communal monitoring. "Initial Sheltering and Situational Awareness" corresponds to immediate actions like Participant 2's, who *"Stayed inside the house and observed the surroundings."* "Vigilance for

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Information Seeking" is also key, as exemplified by Participant 4, who *"Monitored the radio for information and always stayed alert for whatever might happen."* The statement of Participants 21, 22, and 23 that they *"Secured belongings, the roof of the house, and stayed on standby and alert at home"* highlights the ingrained need for "Home Security for Disaster Readiness." This aligns with recent findings that households in hazard-prone areas often adopt immediate protective behaviors such as securing property and monitoring news sources as part of their survival strategies (Ogie et al.,2018; Nakayachi et al.,201).

The consistent theme of "Calm and Continuous Vigilance" reflects a deeply ingrained adaptive strategy to recurrent threats (Flaubert et al., 2021), echoing studies that emphasize the importance of maintaining awareness and proactive readiness in reducing vulnerability during disasters (Nabarette et al., 2022).

Post-Disaster Phase: Recovery
This phase focuses on the actions taken after the disaster has passed to rebuild, restore, and cope with the aftermath.

Theme 5. Disaster Recovery Actions - Galderisi et al. (2022) argued that the recovery phase highlights the immense effort required to rebuild. "Self-Initiated Recovery and Repair" is a prevalent theme, with informants actively salvaging materials and repairing properties using their limited resources, as demonstrated by Participant 1, who *"recovered through self-effort, saved what could still be used, and repaired damaged belongings and properties."* Despite limited external aid, communities exhibit incredible mental resilience. Participant 3 notes they *"received a temporary food supply from the barangay and strengthened their mind to recover, as typhoons cannot be avoided,"* showing their ability to overcome trauma and resume livelihoods. The focus on self-reliance and the cyclical nature of recovery blending into preparedness is a core finding, proving the "five phases of emergency management" (Ann Arundel County, Maryland, 2025).

The discussion concludes by connecting these findings to the Community-Based Disaster Management (CBDM) theory, which emphasizes the role of local knowledge and empowerment in disaster risk reduction (Mohinuddin, 2020). The informants' reliance on self-initiated preparedness, response, and recovery highlights that these communities actively manage disaster risks using their own resources, underscoring the need for a framework that considers their unique needs and capabilities. The narratives collectively represent the "Community Experiences and Adaptive Strategies Across the Disaster Management Cycle," praising their unrelenting energy and pragmatic measures in the face of incessant natural adversity.

Short-term and Long-term Effects of Natural Disasters on the Lives of the Informants
The responses given by the selected participants during the interview process are categorized along the themes as shown in Table 4.

As implied by the responses of the informants on the impact of natural disasters on their lives, several short- and long-term effects were determined and presented in Table 4.

Theme 1. Disrupted Livelihood and Income Loss - The most immediate and pervasive impact of natural calamities on the informants is the severe disruption of their socio-economic stability. The agricultural backbone of these communities is repeatedly shattered, leading to total agricultural livelihood loss. This is acutely felt by farmers whose crops and rice fields are destroyed. Participant 2 shared that they "felt disappointed due to the small harvest, which is their source of food," and others report that typhoons and El Niño leave "nearly nothing left to harvest." Similar findings are highlighted by the Food and Agriculture Organization (2021), which reported that extreme weather events consistently erode rural food security by reducing yields and destroying farmlands.

The economic fallout extends beyond the farm, with one informant being "compelled to work elsewhere to offer sustenance to their household." The long-term difficulty of resuming agricultural work is a constant struggle, captured in remarks like "no rice to harvest, hard to begin again" and "hard, no more land to plant on." Research by Bene et al. (2019) likewise emphasizes that climate-induced livelihood shocks deepen poverty, forcing households to seek unstable or alternative forms of income.

The impossibility of finding other employment increases their economic exposure, with Participant 5 expressing a sense of *"hopelessness" but still "looking for other sources of livelihood aside from farming."* These experiences highlight a link between environmental devastation and socio-economic hardship, which can lead to contamination of water sources and other health and economic threats (Ingrao et al., 2024).

Theme 2. Stress, Anxiety, and Trauma - Beyond the physical and economic damage, a significant psychological and emotional toll is evident in the informants' accounts. They report intense stress and anxiety directly tied to their financial vulnerability and the constant threat of disaster. Farmers are described as being "psychologically affected and disheartened" when their fields are destroyed. Participant 4 felt *"traumatized because their rice field and garden were buried and destroyed due to a landslide."* This aligns with findings from the Southern African Development Community (SADC) region, where mental health distress—including anxiety, depression, trauma, and ecological grief—is frequently observed in farming communities following floods, droughts, and other environmental shocks.

The pervasive "ongoing safety concerns and stress" are particularly sharp for those "always worried about landslides" or about their family's security, as Participant 1 was *"very concerned for the safety of their child and kept worrying about not being able to construct a better house because of a lack of money."* This constant pressure and emotional distress can lead to "health decline and trauma effect," with Participant 4 noting he *"got ill and felt unwell because the farm (livelihood source) was lost."* A recent case study in Wayanad, Kerala, found that

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more than a third of landslide survivors reported sleep disturbances and psychological trauma more than a year after the event.

These experiences reflect the high mental health price paid by individuals and communities during disasters, especially those who belong to the vulnerable sector (Kirkbride et al., 2024; SADC regional review 2025; Wayanad landslide survivors 2025).

Theme 3. Resilience and Adaptation - Despite these severe challenges, the narratives also reveal a powerful and ingrained capacity for resilience and positive adaptation. The informants have developed a pragmatic and robust mindset. Participant 3 noted that such experiences are *"nothing new because we are used to this kind of situation. It's needed to have a robust mindset."* The shared adversity has fostered stronger community bonds, and the "bayanihan system (community cooperation) became even stronger." In terms of practical adaptation, they have learned to "time the planting so that it won't coincide with the typhoon season" and have become more self-reliant, "not relying on aid." This shift towards self-reliance and "increased vigilance" creates a "developed vigilance and rapid recovery routine," with people learning to "always stay alert and try to recover quickly after each calamity" (Rodriguez, 2024). This ability to recover, look ahead to future disasters, adapt systems, and augment coping mechanisms is a key component of their resilience (Ndlela & Worth, 2020).

Ultimately, this common experience translates to "personal strength and enhanced social relationships," as individuals grow "braver and stronger, and with a good relationship with others," which aligns with the theory of social vulnerability to environmental hazards and a resilient human resistance (Rochira et al., 2022).

Challenges Experienced by the Informants in the Existing Framework on Community-based Disaster Management

The challenges that emerged from the assessment of the selected participants on community-based disaster management.

The informants' experiences reveal significant challenges within the existing community-based disaster management framework, pointing to a need for systemic reform. The issues identified lead to three critical themes: troubled warning and communication systems, a lack of proactive and coordinated government action, and a failure to provide community-centric assistance.

Theme 1. Troubled Warning and Communication Systems - The primary challenge lies in the inadequacy of early warning and communication systems. The informants' feedback consistently points to systemic deficiencies, indicating that vital information often fails to reach them in a timely and reliable manner. As Participant 15 states, *"There should be an early warning system and immediate action,"* underscoring the urgency required. Similarly, Participant 16 suggests that *"there should be good communication and coordination with the community."*

The frequent calls for better communication reveal that the current channels are fragmented and often unreliable, particularly in hard-to-reach areas. This is consistent with findings by Alam and Ray-Bennett (2019), who highlight that weak early warning dissemination in rural communities often results in delays, confusion, and limited protective action. Likewise, Paul et al. (2020) emphasize that in disaster-prone developing regions, communication breakdowns and lack of coordination remain persistent barriers to effective preparedness, leaving vulnerable groups dependent on informal networks for critical information.

This aligns with broader criticism of disaster management in developing environments, where systems are often unable to reach the "last mile" due to logistical and systemic challenges (Hai et al., 2023). The informants' reliance on informal networks and alternative sources of information, therefore, is not a choice but a necessity born of an unreliable official system.

Theme 2. Proactive and Coordinated Government Action - A recurring critique from the informants is the government's reactive and uncoordinated approach to disaster management. Participants' suggestions for improvement focus on a more proactive and integrated system. Participant 14 proposes that *"there should be an appropriate and effective disaster management system, with all leaders and the community always coordinating."* This highlights a desire for a unified framework that includes all stakeholders. Such sentiments echo the call of policy experts who argue that the Philippines must move away from a relief-centered model toward anticipatory and proactive measures, such as forecast-based financing and preparedness initiatives, which have been shown to reduce risks and protect livelihoods before disasters strike (Inquirer, 2021).

Furthermore, the informants suggest that leaders or volunteer teams *should "actively monitor and predict weather-related calamities to initiate preparedness measures, also flexibly coordinating in all offices to avoid hassle along the way."* This statement from Participants 18, 19, and 21 indicates a clear understanding that a truly effective framework requires ongoing vigilance and seamless collaboration across different agencies and governance levels, rather than a slow, bureaucratic response. A policy study by the Philippine Institute for Development Studies (2020) likewise recommended transforming the current disaster management setup into a unified and empowered agency capable of leading, coordinating, and monitoring efforts across national and local levels, while ensuring participation from civil society and community stakeholders.

The call from Participant 12 that *"the government should be proactive"* succinctly captures the community's demand for a fundamental shift in leadership philosophy. In addition, the informants are searching for a paradigm that is not only reactive but proactive, incorporating lessons learned, encouraging accountability, and ensuring all stakeholders, from local barangays to national agencies, work together as one to create real resilience (Sumaylo, 2023).

Theme 3. Community-Centric Assistance - The informants' experiences expose a significant disconnect between official

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aid and community needs. They frequently describe a "Lack of Government Support and Self-Provisioning Burden," where individuals are forced to fend for themselves to secure necessities. This frustration is encapsulated by Participant 1's observation *that "The government's assistance and relief goods aren't always enough for every family, and some don't get any at all."* This sentiment points to a failure in the design and execution of aid delivery, which mirrors findings that disaster relief in the Philippines often struggles with delays, uneven distribution, and inadequacies that fail to match community-specific needs (Mojica & Pantoja, 2020).

The informants' suggestions for reform, such as Participant 1's call for assistance to be *"given in cash to help with their needs,"* highlight a desire for a more flexible and responsive system that empowers communities to address their specific needs. Highlight a desire for a more flexible and responsive system that empowers communities to address their specific needs. Indeed, emerging approaches like cash-based assistance have been recognized as more adaptive, dignified, and responsive to diverse household requirements, especially in disaster contexts (Cabot Venton et al. 2021).

The overarching sentiment is that while the community itself possesses resilience, as seen through practices like the bayanihan system, this strength is often a forced coping mechanism resulting from the inability of the formal disaster management framework to provide timely, equitable, and effective assistance.

Recommendations of the Informants to Enhance the Management Operations on Natural Disasters

The informants' recommendations for enhancing disaster management operations reflect a comprehensive and deeply informed vision for a more effective system. These suggestions, born from firsthand experience, are manifested into three core themes: the need for effective warning and communication systems, a push for proactive and coordinated government action, and a desire for holistic and equitable aid.

Theme 1. Need for an Effective Warning System - The informants' feedback consistently points to a critical need for a reliable and efficient warning system. They emphasize that such a system is the first line of defense against calamities, enabling communities to take quick, protective actions. Participant 17's recommendation that "all should cooperate, and there should be an early warning system" highlights the dual need for both robust technology and a collective social response. Similarly, Participants 22 and 23 emphasize that "the government should always be prepared and have a proper warning system."

This demand for government proactivity in warning systems is not just about technology but about ensuring that information is timely, available, and accurate for every household, regardless of infrastructural limitations. Studies in the Philippine context affirm this concern, noting that gaps in localized early warning systems often hinder timely evacuation and preparedness, especially in rural areas where communication channels are weak (Santos & Niyogi).

Likewise, the United Nations Office for Disaster Risk Reduction (UNDRR) stresses that people-centered early warning systems must integrate technology, governance, and community participation to effectively reach the "last mile" of vulnerable populations (UNDRR, 2022). Such anticipatory principles are key to modern disaster risk reduction (Shmueli et al., 2020) and are essential for reaching the "last mile" of vulnerable communities (Hai et al., 2023).

Theme 2. Government-led Initiatives for Disaster Preparedness - While the communities demonstrate a high degree of self-sufficiency in preparedness, the scale of repeated disasters often exceeds their capacity. The informants' recommendations call for government-led initiatives to institutionalize and amplify these existing efforts. Participant 14 proposes that "there should be an appropriate and effective disaster management system, with all leaders and the community always coordinating," advocating for a unified approach. Participants 18, 19, and 21 further specify this, suggesting that leaders and volunteer teams should "actively monitor and predict weather-related calamities to initiate preparedness measures, also flexibly coordinating in all offices to avoid hassle along the way." This call for proactive, inter-agency collaboration is a direct response to a fragmented system. Recent analyses of disaster governance in the Philippines similarly underscore that fragmentation among agencies and insufficient coordination often weaken preparedness and response capacity, thereby requiring stronger institutional mechanisms that bridge national and local levels (Bakoff & Pelling, 2020).

Furthermore, the community wants to see physical enhancements that support preparedness, with Participant 1 recommending that "there should be an evacuation center, a health center, a rescue team, and proper equipment in the barangay for response efforts." These suggestions aim to transform preparedness from a solely individual responsibility into a collective one, amplifying existing adaptive strategies. In fact, studies stress that investing in local infrastructure such as evacuation centers, health posts, and community-based response units significantly improves resilience, particularly in geographically isolated communities (Asian Development Bank, 2021).

Theme 3. Holistic and Equitable Aid - Informants' experiences with post-disaster relief reveal that aid is often insufficient, inequitable, and lacking a long-term vision. They recommend a move toward a more holistic form of assistance that extends beyond immediate survival to include long-term recovery. Participant 1 notes, *"There should be a proper plan, and the assistance should be given in cash to help with their needs. The government's assistance and relief goods aren't always enough for every family, and some don't get any at all."* This plea for financial aid and sufficient provisions reflects an understanding that aid should be flexible and empower communities to rebuild their lives and livelihoods.

Recent studies emphasize that cash-based assistance not only improves efficiency but also enhances the dignity and agency of disaster-affected households (Aker, 2021; Doocy & Tappis, 2019). Also, Kumar & Narayan (2020) emphasize that the equitable distribution also underscores a desire to address issues of bias and corruption, which continue to undermine disaster response effectiveness in many developing contexts.

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The recommendation from Participant 10 *for "close coordination and continuous communication between the government and the community"* highlights the need for a system where affected people are not just passive recipients but active participants in the aid process. This aligns with recent findings that participatory and community-driven approaches lead to more effective and sustainable recovery outcomes (Gaillard & Gomez, 2021; Wisner, 2020).

This holistic view of aid, which focuses on livelihood restoration and overall recuperation (Deraniyagala, 2016), is a direct reflection of the community's desire to move beyond mere survival to true resilience. In addition, Deraniyagala (2016) further noted that the severe disaster impacts and consequences that the informants experienced, including wholesale destruction of agriculture, destruction of buildings, and loss of livelihoods, highlight the need for adequate post-disaster relief.

Enhancement Program

This study developed an intervention to enhance the disaster management program in far-flung communities in Ifugao.

I. Rationale

The enhancement program was created to address the challenges faced by far-flung communities in Ifugao, where disaster preparedness is limited by distance, lack of resources, and weak communication systems. Although these communities show resilience through traditional practices and teamwork, their efforts are often not enough to handle large-scale disasters such as typhoons, landslides, and earthquakes, which continue to threaten their safety, livelihood, and well-being.

The program seeks to improve disaster management by connecting local practices with formal disaster frameworks. It focuses on building capacity, setting up localized early warning systems, mobilizing resources, and promoting inclusive governance so that remote areas are not left behind. By combining indigenous knowledge with modern approaches, the program ensures community ownership and sustainability.

Through better preparedness, coordination, and resilience at the community level, the program offers a more practical and inclusive way of managing disasters. It equips remote communities to prevent, respond to, and recover from calamities, thereby protecting lives and strengthening long-term resilience in Ifugao.

II. OBJECTIVES

1. To enhance proactive measures that reduce disaster risks within the isolated areas.
2. To enhance disaster preparedness procedures that will safeguard all stakeholders.
3. To ensure rapid and effective disaster response protocols that prioritize the safety of members of the communities.
4. To develop sustainable recovery strategies that restore and improve safety to communities.

III. METHODOLOGY

Program Components	Key Result Areas	Performance Indicator	Task/What is to be done	Person/s Responsibilities
Strengthen Information Dissemination & Early Warning Systems	1. Efficient communication flow 2. Accessibility of Warnings 3. System Reliability 4. Community Awareness 5. Technology Utilization	● At least 95% percent of disaster warnings disseminated within the standard response time. ● At least 90% percent of households reached by early warnings ● High level of Community Awareness ● Complete number of communication platforms	● **Strengthened Warning Communication:** - Implementing a robust, reliable communication system that ensures warnings reach all community members, including those in hard-to-reach areas. This involves leveraging diverse channels (e.g., siren systems, community leaders with megaphones, local radio, and targeted SMS alerts where possible) and establishing clear protocols for information dissemination during emergencies. This initiative addresses the need for "Effective Warning Systems and Resource Provision" and "Coordinated Communication."	● Barangay, Municipal & Provincial Disaster Risk Reduction & Management Council (DRRMC) ● Local Media & Telecommunication Providers

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			● **Technology and Media Integration for Accessibility:** - Investing in or facilitating access to basic, resilient media and technology for information dissemination. This could include providing battery-operated radios, establishing community charging stations, and training residents on their use. The focus is on ensuring continued access to information even when primary infrastructure fails, directly responding to the challenges of "Communication Channels and Access Challenges" and the desire for "Modern Communication Channels" and "Backup Communication Tools." ● **Community-Centric Communication Networks:** - Formalizing and empowering existing "Diverse Communication Channels thru Community Networks" to act as key nodes for information relay. This involves training community volunteers and leaders in effective risk communication, ensuring that warnings are not just received but understood and acted upon by all demographics within the community, including the elderly and those with disabilities. This initiative fosters "Community-Centric Communication."	
Enhance Pre-Disaster Preparedness & Capacity Building	● Community Preparedness ● Capacity Building ● Resource Mobilization	● 90% of households with emergency kits and plans ● 85% of community members are trained in disaster response and first aid	● **Comprehensive Household and Livelihood Preparedness**: - Promoting and supporting household-level preparedness through educational campaigns and provision of basic resources for "Essential Supplies Preparedness." This includes encouraging the assembly of "Personal & Family Emergency Kit"	● Barangay Disaster Risk Reduction and Management Council (BDRRM) ● Bureau of Fire Protection ● Barangay Health Workers (BHWs)

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		● 95% availability of pre-positioned supplies and emergency equipment	components and integrating "Household & Livestock Preparedness" into local planning. The goal is to strengthen individual and family capacity to withstand initial disaster impacts, directly addressing the existing "Physical & Agricultural Preparedness" efforts and aiming for "Comprehensive Household Preparedness." ● **Agricultural Mitigation and Resilience Building:** - Implementing sustainable practices for "Agricultural Disaster Mitigation" and supporting "Proactive Agricultural Preparedness" at the community level. This can involve training on climate-resilient farming techniques, terracing, and flood/landslide prevention measures specific to local typography. This responds to the vulnerability expressed in "Environmental & Agricultural Destruction" and the current "Improved rice fields/vegetable plots" efforts. ● **Community Mutual Aid Systems Development:** - Formalizing and supporting "Collective Mutual Aid Preparedness" and "Promoting Community-led Recovery." This involves organizing and training community response teams (e.g., "Barangay with complete rescue equipment & team"), facilitating communal stockpiling of emergency provisions, and establishing clear roles for "Community mutual aid for post-disaster cleanup." This leverages existing social capital to enhance collective readiness and recovery efforts.	● Local Chief Executive ● Department of Social Welfare and Development (DSWD) ● Agricultural Office / Municipal Agriculture Officer (MAO) ● DENR & LGU ENRO (Environment & Natural Resources Office) ● National Irrigation Administration (NIA

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Responsive and Equitable Disaster Response	● Community satisfaction with safe, accessible, and fully equipped evacuation and health centers; and transparent, accountable, and fair delivery of aid to all affected by calamities.	● 85% of the community evacuation centers are established and fully operational ● 90 % of beneficiary satisfaction rating on fairness and timeliness of aid distribution.	● **Establishment of Safe Evacuation & Health Centers:** - Developing and equipping dedicated "Safe Spaces and Community-Governance Relations" which serve as "Evacuation center & good community-official relationship" with necessary "Emergency Provisions Preparation" (food, water, blankets, alternative lights) and "Medical kits" and basic "Health services." This addresses the need for immediate sheltering and care, as well as the observed "Sought shelter/looked for a place to stay" and "Initial Sheltering & Situational Awareness." ● **Efficient and Equitable Aid Delivery Mechanisms:** - Establishing transparent and accountable systems for "Reliable Aid Delivery" that address the current "Inequitable & Insufficient Aid" distribution. This includes clear protocols for needs assessment, distribution points, and appeals processes, ensuring "Fair, apolitical aid distribution" reaches "all affected/at-risk areas" promptly and without bias, directly tackling "Bias and Prioritization in Aid Distribution" and "Corruption/Misappropriation of Aid."	● Local Chief Executive (Mayor/Punong Barangay ● Municipal/Barangay Disaster Risk Reduction and Management Council (M/BDRRMC) ● PNP ● Department of Health/Municipal Health Office ● Local Engineering/DPWH
Strengthening Governance, Coordination, and Accountability	● Enhanced Inter-Agency and Multi-Stakeholder Coordination ● Continued Capacity Building and Institutional Learning	● 90 % of joint planning, training, and simulation exercises with LGUs, NGOs, and National agencies. ● 95% Barangay Officials, Barangay Police, with community	● **Mandatory Multi-Level Leader Engagement:** - Implementing programs for "Leadership Engagement and Awareness" and ensuring "Mandatory multi-level leader engagement" during all phases of disaster management. This includes training leaders on their roles and responsibilities, promoting	● Local Executive (Governor/Mayor/Punong ● Barangay) Municipal/Provincial DRRMC ● Line Agencies (DSWD, DOH, DA, DepEd, DPWH, PNP, AFP)

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	● Transparency and Accountability Mechanisms	volunteers have undergone training. ● 100% aid or resource allocation reports published and disseminated to the public	proactive presence, and fostering a "Systemic Government Proactivity." This initiative directly tackles "Leadership Gaps" and "Absent Leadership." ● **Inter-Stakeholder Communication and Coordination Platforms:** - Establishing robust platforms for "Inter-stakeholder Communication and Coordination" to ensure "Proper coordination, information & communication among all stakeholders." This can involve regular drills, joint planning sessions, and communication protocols between government agencies (local and national), community leaders, and NGOs. This initiative directly addresses "Coordination Hindered by Leader Bias" and aims for "Holistic Stakeholder Alignment." ● **Community Feedback and Accountability Mechanisms:** - Developing mechanisms for "Community Engagement and Compliance" that allow residents to provide feedback on aid distribution and response effectiveness. This fosters "Accountable Governance" and addresses calls for "oversight for fair distribution," building trust and ensuring the framework is truly responsive to community needs. This will help overcome "Community Non-Cooperation as a Barrier" and reduce "Aid Expectation" by fostering active participation.	● Community Leaders and Volunteers
Long-Term Resilience and Adaptive Learning	● Promoted sustainable livelihoods and recovery	● 85% of livelihood programs implemented ● 95% of the community is	● **Support for Livelihood Restoration and Diversification:** - Providing "Recovery Aid and Housing Support" and "Livelihood Restoration Support" that focuses not	● MSWD ● Department of Agriculture (MAO)

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	● Strengthened community resilience	implementing locally risk reduction measures.	just on immediate repair but on building long-term "Livelihood & Economic Resilience." This includes financial assistance, provision of resilient crops, and training on alternative livelihoods to reduce "Livelihood Disruption & Relocation" and "Total Agricultural Livelihood Loss." ● **Psychological First Aid and Community Well-being Programs:** - Implementing programs to address the "Psychological, Emotional, & Health Impacts of Disasters," including "Mental Health Issues & Disaster Trauma." This can involve community-based psychological first aid, counseling services, and support groups to foster "Mental Fortitude & Resilience" and address "Recurring Stress & Anxiety" experienced by informants. ● **Institutionalizing Adaptive Learning:** - Creating formal processes for "Continuous Resilience & Preparedness" and "Positive Adaptations, Resilience, & Learning." This involves regular post-disaster assessments to identify successful adaptive strategies, document "Learned Safety Practices & Adherence to Warnings," and integrate these lessons into updated disaster management plans. This promotes "Systemic Government Proactivity" and enables the framework to evolve based on lived experiences.	● Department Trade & Industry (DTI) ● Local Government Units(LGUs) ● Municipal & Barangay Health Office ● Philippine Red Cross & Accredited NGOs

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CONCLUSIONS AND RECOMMENDATIONS

This presents the conclusion and recommendations drawn from the study.

Conclusion

Based on the results of this study, the following conclusions were drawn:

· For SOP 1, with its emphasis on the experiences in the context of disaster management phases, the results continually reveal that these communities, even with their geographical remoteness and limited formal support access, play an active role in early warning, preparedness, response, and initial recovery activities mainly through their own effort, mutual assistance, and indigenous knowledge. This reveals an essential self-reliance that is the cornerstone of their resilience.

· With respect to SOP 2, examining the short-term and long-term impacts of natural disasters, the research concludes that these communities experience heavy and multi-faceted impacts that transcend short-term physical damage. The short-term impact is characterized by extensive livelihood disruption, crop loss contributing to food insecurity, and direct psychological distress, frequently requiring temporary migration. In the long term, they harden into chronic financial insecurity, ongoing stress, and a concrete mental burden. Yet of key significance for SOP 2 is the extraordinary ability for positive adjustment, resilience, and ongoing learning within these populations. They become highly vigilant, with high social cohesion and modification of their practices (such as farming schedules) to reduce subsequent risk, showing an ongoing spirit of staying the course in the face of repeated adversity.

· Lastly, for SOP 3, regarding sample difficulties in the current community-based disaster management system, the research concludes that there are sample-based operational and systemic weaknesses that hinder proper disaster response and relief. One of the main conclusions is the inconsistency and inadequacy of sample external assistance, especially from the government. Evidence of this comes in the form of widespread leadership shortages, a dire shortage of resources and equipment, and serious problems with aid delivery, including inequality, inadequacy, delay, and the occurrence of bias or diversion. Logistical impediments, mainly compromised roads, present a major and chronic constraint to the access of aid. The research concludes that these obstacles compel marginalized communities to disproportionately bear the costs of self-recovery and self-provisioning, in evidence of a disconnect between top-down disaster management practices and experiences on the ground in these same marginalized groups. Altogether, the conclusions argue in favor of an imperative for more integrated, responsive, and locally-sensitive disaster management practice that truly builds upon community resilience while also overcoming key systemic vulnerabilities.

Recommendations

Based on the findings of the study, the following recommendations were drawn:

1. To respond to the inherent self-reliance and coping mechanisms evidenced in populations, it is paramount to officially acknowledge and incorporate traditional knowledge as well as existing mutual aid structures into formal disaster plans and equip them with adequate resources and training to make them more effective and sustainable instead of substituting them with outside solutions.
2. Due to the extreme and multifaceted effects of natural disasters and the proven resilience potential of the affected communities, disaster relief and rehabilitation operations are advised to take a holistic and long-term approach. This involves not just the immediate provision of necessities and monetary assistance but also ongoing support for the recovery of livelihood as well as diversification, with a focus on climate-resilient agriculture. In addition, strengthened mental health and well-being programs need to be incorporated into post-disaster interventions to deal with the psychological loads and trauma sustained by affected communities to ensure that community resilience is developed through material and psychosocial assistance.
3. For the purpose of addressing the dramatic operational and systemic shortcomings evident within the current scheme, the research suggests a strengthening of governance, accountability, and the effectiveness of aid distribution. This is through compulsory multi-tier leader participation with defined roles and duties, periodic capacity-building programs for the local government, and inclusive channels for aid allocation to remove disparity, delays, and prejudice. Investment in resilient infrastructure, including roads and communication systems, is crucial to bridge geographical isolation and provide timely access for both the delivery of aid and early warning dissemination. Last but not least, formal feedback loops and accountability structures will empower communities, create trust, and provide assurance that the disaster management framework will be continuously upgraded based on their everyday experiences and changing needs.

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