Disaster Communication and Institutional Coordination in Urban Flood Management: A Case Study of Medan City

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Abstract	Flooding in Medan City has had extensive social, economic, and psychological impacts on local communities, affecting tens of thousands of residents through damage to property, infrastructure loss, and prolonged trauma. These recurrent floods are largely attributable to Medan's geographical characteristics, particularly the presence of numerous active rivers that increase hydrometeorological vulnerability. Consequently, residents are required to coexist with disaster risks, placing the Regional Disaster Management Agency (BPBD) at the forefront of flood response and mitigation efforts. This study aims to examine BPBD Medan City's flood management strategies, its communication and coordination practices during disaster response, and the key obstacles encountered in the disaster management process. Using a disaster communication perspective grounded in Haddow's framework, this research focuses on five dimensions: audience focus, leadership commitment, situational awareness, the role of media, and disaster communication planning. Data were collected through semi-structured interviews with nine key informants selected via purposive sampling, all of whom held strategic roles and had direct experience in flood disaster management. The data were analysed using the Miles and Huberman interactive model, involving data reduction, thematic categorisation, interpretation, and verification. The findings reveal that BPBD Medan City continues to implement flood mitigation within a regional autonomy paradigm, resulting in the absence of a comprehensive and strategic approach to hydrometeorological flood management. Disaster coordination remains highly centralised, with strong sectoral egos persisting across institutions and creating significant coordination gaps. BPBD also faces structural constraints, inter-agency communication barriers, and complex community dynamics, including unresolved trauma among flood victims. This study concludes that effective disaster management in Medan City requires improvements in three key areas: systematic disaster communication planning, strengthened inter-institutional coordination, and enhanced citizen participation in disaster mitigation efforts.
Keywords	Disaster communication, strategy, BPBD, hydrometeorological floods

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1. INTRODUCTION

Disasters are increasing in number and scope worldwide (Kousky, 2012; Laframboise & Loko, 2012), including in Indonesia, which is geographically and demographically vulnerable to natural and

non-natural disasters (Tamitiadini, Dian, et al., 2019). Disasters can be caused by natural or human factors (Susanto, 2017). Non-natural disasters originate from human behavior (Kodoatie and Sugiyanto, 2002) while natural disasters are a series of events caused by nature (Isnaeni, 2019), which result in loss of life, suffering, loss of property, damage to facilities and infrastructure, disruption to the environment, ecosystems, lives and livelihoods of the community, and even psychological impacts (Lubis, 2010).

Psychologically, disasters have a significant impact on people's mental health. Neria, Nandi, and Galea (2008) reported that 30% to 40% of victims directly exposed to disasters experience post-traumatic stress disorder (PTSD) after the disaster. These findings indicate that disasters pose a significant threat to community mental health. However, communication can mitigate these negative impacts (Mehl & Pennebaker, 2003; Pennebaker & Harber, 1993). Effective communication can be a therapeutic tool for mental health. Conversely, when people do not have or do not believe they have someone to communicate with after a disaster, individuals tend to experience higher levels of post-traumatic stress and depression symptoms (Houston, Spialek, et al., 2015). During disasters, communities often communicate because they are impacted by environmental crises and human relationships (Donna, 2016). The process of conveying messages or information regarding disaster mitigation, preparedness, response, and recovery (Adi, 2023) directly or through the media, and generating responses or feedback (Lestari, 2018), the goal of which is to ensure successful disaster management (Kusuma et al., 2024), is called disaster communication.

Currently, in the context of disaster management, several paradigm shifts have occurred. From an emergency response paradigm to a preparedness paradigm. From a centralized paradigm to a regional autonomy paradigm, where regions are at the forefront of managing disasters in their regions. From a government-centric paradigm to a participatory paradigm, meaning disaster management is no longer focused on a single point, namely the government, but rather on a participatory one, with disaster management being a collaborative effort at the local, national, and international levels. From a paradigm of generosity to a paradigm of fundamental rights, disaster management initially relies on generosity and then evolves into disaster management as a basic human right (Usiono, 2018). Disaster management by the BPBD of Medan City still adheres to the regional autonomy paradigm, where the region takes the lead in handling disasters within its area. In contrast, in developed countries, both centralistic and autonomous paradigms have been replaced by a participatory paradigm. Researchers have increasingly emphasized the need to empower local institutions and limit bureaucracy to ensure effective disaster risk reduction responses at the grassroots level (Farber, 2018; Tselios & Tompkins, 2017; Wilkinson, 2012). Many studies emphasize the importance of ensuring that disaster risk reduction actors form effective networks for sustainable implementation across all levels of government (Das & Luthfi, 2017; Scott & Tarazona, 2011). Due to the apparent cost differential between prevention initiatives and response and relief (Shreve & Kelman, 2014), developing countries have placed a lower priority on this (Wilhite, 2002), leaving a wide skills and capacity gap for disaster risk reduction operations at subsequent levels of government (Messer, 2003).

While Flood Early Warning Systems (FEWS) provide information and warnings to the public, aiming to inform them of imminent danger and guide evacuation (Lumbroso, 2018), several organizations involved in the managerial and technical aspects of disaster preparedness collaborate to provide flood information to civil society (Mandl & Frye, 2012). Flood Early Warning Systems require accurate and timely forecasting, robust and sustainable communication networks, reliability, and collaborative action to achieve these goals (Cools, Innocenti & O'Brien 2016). However, even with these systems in place, floods continue to occur, both in frequency and impact, and with failed evacuations,

losses are often attributed to poor communication and coordination. Therefore, the centralized paradigm is increasingly being abandoned. In developed countries like the United States, responding to the ongoing threat of disasters is done by supporting a Whole Community philosophy that focuses on involving local stakeholders in their community's disaster management (FEMA, 2013). This falls into the category of a participatory paradigm. The US federal disaster management perspective has shifted from a "government-centric model" of disaster planning and response to a "Whole of Community" approach (Federal Emergency Management Agency (FEMA, 2013), in which local governments, community organizations, and individual citizens are recognized as stakeholders in disaster preparedness, response, and recovery in their communities (Napolitano, 2011). A key assumption of the Whole of Community approach is that local stakeholders should be aware of and involved in disaster management efforts within their communities, and have access to and the ability to exchange disaster information (Chandra et al., 2013). This assumption highlights the significance of communication within the Whole-of-Community disaster management framework.

This requires a disaster communication management approach that views communication as either a dialogic process among community leaders and organizations or as a vertical process in which citizens send or receive information directly to or from agencies and organizations (FEMA, 2011; Houston, 2012; Reynolds & Seeger, 2005). Sometimes, communicating with disaster-affected communities is challenging due to their behavior in situations where people continue to occupy and settle in hazardous areas (Warner & Engel, 2014). On the other hand, in some cases, the community is not even identified as a key community sector that can be utilized when building resilient communities (Gurwitch, Pfefferbaum, Montgomery, Klomp, & Reissman, 2007). This requires a special approach in communicating with communities experiencing such dynamic situations. David (2015) stated that disaster risk reduction, from national to local governments, has proven effective because these institutions are crucial for the division of roles and responsibilities, the identification and support of vulnerable groups, the establishment of effective communication networks, and emergency decision-making. Because local communities and institutions are the first to respond to disasters, it is not surprising that the international community recognizes and supports preparedness and response efforts at this level (Cowan, O'Brien, & Rakotomalala-Rakotondrandria, 2014; IFRC, 2014).

Communities play a critical role in disaster response and long-term support for victims, especially as disasters become more frequent and intense. The US government has incorporated NGOs into its national strategy, promoting collaboration among local, state, federal, and business agencies to enhance national health security. NGOs have proven indispensable in recovery efforts, as seen in the aftermath of Hurricane Katrina and the tornadoes in Joplin, MO, and the Chicago suburbs. NGOs can also contribute to disaster planning by fostering resilience in advance. This overview and taxonomy of NGO services aims to clarify their role in the disaster lifecycle and encourage broader discussion on pre-disaster planning. (Atukunda Lucky, 2025). This study aims to answer the following questions: How does BPBD communicate and coordinate during disaster management? What are the obstacles faced in the disaster management process? Using Haddow's Disaster Communication concept, researchers began by collecting data through (1) Audience Focus, namely, understanding what the communicants, in this case, disaster victims, need. What information can be received from the community and volunteers to meet these needs?What communication mechanisms are established to ensure that the information obtained is accurate and precise ?(2) Commitment of leaders who play a role in emergency response management, communication and coordination between institutions carried out to accelerate disaster management actions. (3) Situational Awareness, how BPBD collects,

analyzes, and disseminates information related to disaster management. 4. Inclusion of Communications in Planning and Operations, incorporating communication elements into BPBD program planning and activities, and finally 5. Media partnerships, including television, newspapers, radio, and other forms of media, play a crucial role in accurately conveying information to the public. Cooperation with the media involves understanding the media's needs and having a team trained to work with them to obtain and disseminate information to the public.

2. METHODS

This study uses a qualitative approach. A qualitative approach is a method used to address research problems related to data in the form of narratives derived from interviews, observations, and document exploration (Wahidmurni, 2017). This method allows researchers to gain a detailed understanding of the BPBD's strategies in disaster management and to understand the community's response in the city of Medan, which has historically been vulnerable to flooding, through disaster communication. The primary unit of analysis in this study is the strategy employed by the Medan City BPBD in addressing hydrometeorological floods from the perspective of disaster communication and communication barriers. The study was conducted from January 2025 to November 2025 in Medan City. The researcher chose Medan City due to the significant impact of floods in the city, where in 2024, 35,224 residents were affected, and in 2025, more than 46,000 people were impacted by the floods. These figures indicate a substantial potential loss due to flooding, making it necessary to understand the communication strategies employed by BPBD in handling flood disasters in Medan City. Interviews were conducted using an open-ended guide, allowing informants to freely express their experiences, perspectives, and knowledge (Agwenda and Yesicha, 2024). All interview sessions were audio-recorded (with permission), transcribed verbatim, and analyzed thematically to identify recurring patterns, insights, and differences. There are 9 key informants, selected as primary data sources through purposive sampling, each of whom has experience in dealing with floods and plays a strategic role in disaster preparedness efforts. They are also involved in coordination and communication during disasters and continue to work closely with the affected community.

Informants representing BPBD are Yunita, Head of BPBD Medan City. Tarigan, Head of Prevention and Preparedness. Panjaitan, Head of Rehabilitation and Reconstruction, Ritonga, Head of Emergency and Logistics. They have direct experience in flood disaster management simulations in Medan City. The next informants are Yani, Secretary of Kelurahan Sei Mati, where the village continues to experience flooding every year; then there are Riska and Syarifah from the Community element. Fadli from the FAJI organization/community element, and Rizanul as a Community leader and social observer. These diverse perspectives form a comprehensive narrative of how the Regional Disaster Management Agency's (BPBD) communication strategy has been implemented in hydrometeorological flood management in Medan. This unit of analysis allows for a contextual exploration of disaster communication as a strategic communication process in disaster management.

The data analysis process in this study employs the Miles & Huberman analysis model, which involves a cycle of data reduction, data presentation, and concluding, all of which reinforce the conclusion-making process (Sutopo, 2006). In the first stage, 1) data reduction, a selection is made from all the data obtained from interviews with 9 informants, then attention is focused on simplifying, abstracting, and transforming the raw data that appears, after which it is systematically grouped to be identified according to the themes to be presented. At this stage, an understanding of the data and the preparation of themes are conducted, where four main themes are identified: structural barriers,

institutional coordination gaps, community behavioral dynamics, and communication bottlenecks. Stage 2) Data presentation. At the data presentation stage (display data), this is done using a narrative text format, where the data is reviewed based on the 4 themes that have been arranged and then interpreted according to the research problem, namely how BPBD communicates and coordinates during disaster management and what obstacles are encountered in disaster management using Haddow's concept. Stage 3) Concluding and verification. This section presents the perspective of the results from the strategies of BPBD Kota Medan, summarized from the main themes that have been presented.

3. FINDINGS AND DISCUSSION

Hermanto et al. (2022) stated that the disaster communication strategy implemented must involve all elements in recovery and repair efforts after a disaster. Arifin (2015) stated that one of the steps in developing a communication strategy is by selecting the right communication method. Effective disaster communication is considered the most crucial factor in ensuring the success of disaster management (Kusuma, 2024). The combination of communication planning and communication management (Effendi, 2003) by including all communication elements starting from the communicator, message, channel (media), recipient to influence (effect) designed to achieve communication goals; changing human behavior on a larger scale through the transfer of new ideas (Cangara, 2013) is an important step in creating effective communication planning and flow (Yunus, 2023). Wayalpace, Peterson, and Burnet state that the goal of a communication strategy is to achieve goals through a planned communication process (Ruslan, 2000) involving wise decision-making for long-term calculations. (Rofianto, 2007) Every stage of disaster management, from mitigation and preparedness to emergency response and post-disaster recovery, requires a disaster communication strategy (Syahara et al., 2021; Moorthy et al., 2018).

1. Structural Barriers

When the emergency status was issued by the Mayor of Medan shortly after the disaster, the Regional Disaster Management Agency (BPBD), the agency responsible for the emergency response command system, became the sole agency legally responsible for disaster management. The Medan BPBD pioneered various emergency response measures during the 2024 floods. A total of 7,699 homes were inundated and 35,224 residents were affected by the floods in 2024, spread across 10 districts in Medan. The concept of intergovernmental relations was created to describe the relationship between different levels of government (between government officials and agencies) to achieve a common agenda (Ayee, 1997; Wright, 1974). This concept reflects the general growth of relationships among national and sub-national government entities, as well as among many officials who hold key positions in policy-making (Bolleyer, 2009).

In response to the flow of cooperation and coordination between institutions during emergency response situations, the Medan City Regional Disaster Management Agency (BPBD) conducts an initial assessment to record damage and identify rehabilitation needs. This is done during the emergency response. After the emergency response status is lifted, they coordinate with regional government agencies (OPD) to assess physical repairs. To assess the extent of damage, losses, functional disruptions, access disruptions, and increased disaster risk, a post-disaster needs assessment (Jitupasna) is conducted. Once the Jitupasna document is complete, the next step is to prepare the R3PB (Post-Disaster Rehabilitation and Reconstruction Plan). Accompanied by the Provincial BPBD, the Provincial BPBD drafted a letter to the Governor requesting that the Governor provide recommendations to the City

BPBD. This recommendation served as the basis for the City BPBD to submit a grant proposal to the National Disaster Management Agency (BNPB). After the BNPB received the grant proposal, it, along with the North Sumatra BPBD, conducted a site survey and a document review. Preparing the R3PB document alone took months before post-disaster rehabilitation and reconstruction were finally approved. Rigid and bureaucratic policies can certainly slow down the decision-making process.

Likewise, disaster mitigation is hampered by the classic "no budget" issue. It seems there's no other option but to rely on the Medan City Regional Disaster Management Agency's (BPBD) budget and hope for assistance from the BPBD, which has a very lengthy bureaucracy. Yunita, Head of BPBD Medan City stated;

> "To fulfill national priority programs, BPBB has also experienced budget cuts. Many of our programs have not been implemented, such as operational control activities and the provision of disaster preparedness infrastructure, capacity building activities for the Rapid Response Team for disasters, and disaster preparedness drills" (Yunita, 2025).

Tarigan (2025), Head of Prevention and Preparedness, stated that the BPBD's strategy to strengthen communities in disaster management is through the Disaster Resilient Village program, which was initiated by the Mayor in 2023.

> "Based on the Circular Letter of the Mayor of Medan Number; 300.2.1/1985/2023 Concerning the Establishment of Disaster Resilient Community Groups (Keltana) in 21 sub-districts, 151 villages in Medan City, the plan is that Keltana will be trained starting from disaster resilience document planning, early warning systems, evacuation routes, determining where the assembly point is, creating SOPs, creating disaster scenarios to disaster simulations." (Tarigan, 2025)

Yunita (2025) explained that the Regional Disaster Management Agency (BPBD) is obligated to foster Keltana (National Disaster Management Agency). The Keltana program was planned to be included in the 2024 BPBD budget, but due to budgetary constraints, it has not yet been implemented.

The synergy between the Government, BPBD, NGOs, the private sector, and other communities will create a disaster communication system that is more responsive, inclusive, and sustainable (Fahrianoor & Nizar, 2023; Nugraha et al., 2024). Budget issues can be resolved through leadership commitment and collaborative efforts.

> "The problem is that sectoral egos are still very narrow, especially regarding funding. It's as if disaster management funding is solely under the purview of the City's Regional Disaster Management Agency (BPBD). Yet, every agency should have a contingency fund in case of a disaster." (Rizanul, 2025)

Disaster communication strategies should be integrated, integrative, simultaneous, synergistic, and coherent, and should be reflected in the establishment of goals, targets, long-term programs, activity priorities, and resource allocation (Ruslan, 2000). Disaster management should not only be the responsibility of the Medan City Regional Disaster Management Agency (BPBD), but also of all stakeholders. It should not only be a concern for the Medan City BPBD, but also for the Provincial and National BPBDs. It should not only be a priority for the City of Medan, but also for the Province and the Nation.

The utilization of limited resources, especially funding, can be achieved by establishing cooperation with other parties, as demonstrated by research conducted in the disaster-resilient village of Gedog (Panese, 2023; Hangge & Murdhani, 2024). Similar research conducted by Jazmarita (2021) highlighted the inadequacy of human resources and funding sources in forest and land fire disaster

mitigation programs in Rimbo Panjang Village.

Holmes and Sykes (2020) highlight that participatory budgeting not only increases policy responsiveness but also fosters a sense of ownership and cohesion within communities. For example, cities that implement this approach often report increased public satisfaction with government decisions and greater equity in resource distribution. Benton (2020) describes intergovernmental relations as functional in several ways. This includes (a) interactions between different levels of government, (b) understanding the roles and responsibilities of each level of government, and (c) developing effective relationships to enhance their capacity to meet expectations.

Intergovernmental relations are unique, interdependent, and interconnected within government units. Currently, coordination, cooperation, and coexistence are considered prerequisites for the independent exercise of state power, resources, and functional activities by two or more levels of government (Pandey, 2022). This can lead to unfulfilled plans due to structural policy issues. A lack of financial resources is a major obstacle to the work programs of the Medan City Regional Disaster Management Agency (BPBD), and it appears to be a solely BPBD issue, not a national issue. This contradicts Indonesia's commitment to the international community.

Soetono (2024) stated that to address challenges and obstacles, Indonesia has initiated the development of policies on disaster financing and has made significant progress by implementing risk finance and insurance plans. Indonesia has strengthened its response to disasters and ensured that resources for relief and recovery are readily available (The World Bank, 2021). The request emphasized the importance of addressing disaster risk financing to secure assistance from various international agencies, including the World Bank (Ministry of Finance, 2011).

Indonesia must prioritize its disaster risk reduction and disaster risk management efforts, as it will face years of resource competition (ReliefWeb, 2021). It can make it challenging to provide policies for catastrophe mitigation with enough funding. Indonesia has implemented policies and strategies to address these challenges and enhance institutional capacity in international and regional cooperation, as well as national disaster management planning (Stiftung, 2022).

The state budget, regional revenue, expenditure budget, and public sources are among the shared funding sources for disaster management to which the central government is accountable. According to Article 5 of Government Regulation No. 22 of 2008, the national government and local governments appropriately allot funds for disaster response in the APBN and APBD, State Budget, and Regional Revenue and Expenditure Budget during the pre-disaster, emergency response, and post-disaster phases). In addition, the regulatory states that the Government only provides a. a catastrophe contingency fund; b. ready-to-use money; and c. grant-based social assistance funding under the disaster management budget derived from the State Budget.

Funds designated for disaster management are those that are utilized for pre-, during, and post-disaster management. Disaster contingency funds are set aside to handle calamities and mitigate the potential impact of a specific disaster. Ready funds are cash that the Government has on hand and reserves for use during a catastrophe or disaster until the emergency response time limit expires. The Government grants social assistance funding to local governments to help with post-disaster management. Providing necessities during an emergency response is known as disaster relief or emergency assistance. (Soetono, 2024)

2. Institutional coordination gaps

The interview results explain that the first emergency step taken by the Medan Regional Disaster Management Agency (BPBD) was to coordinate the emergency response. Yunita (2025), Head of the Medan City BPBD, stated that the BPBD has three functions: command, coordination, and implementation. As a command function, from the disaster emergency response to the post-disaster phase, the BPBD is responsible for coordinating with relevant regional government agencies (OPDs) and other stakeholders. Yunita explained the communication and coordination that BPBD had carried out.;

> "After the Mayor issued a disaster response status, we communicated with several regional government agencies (OPDs) and others. There's a concept called the Pentahelix. We implemented that, a collaboration between the government, academics, businesses, communities, and the media." (Yunita, 2025)

Baharudin Ritonga, Head of the Emergency and Logistics Division of the Medan City BPBD, also stated;

> "When the Mayor issued the emergency response status, we immediately set up a command post consisting of a refugee post, a logistics aid recipient post, a service post, etc." (Ritonga, 2025)

The Regional Disaster Management Agency (BPBD) coordinates with the Operations Control Center (Pusdalops) to monitor the situation and collect data on affected locations, the number of victims, and the extent of losses. Accurate information on disasters is crucial to confirm questions about what, when, where, how, how much, causes, effects, and efforts undertaken, as well as urgent needs (Kurniati, 2020). Rizanul, a social observer, said:

> " In principle, the Regional Disaster Management Agency (BPBD), as the leading sector in disaster management, ensures that other sectors are ready to assist administratively and technically when a disaster occurs. We have never synchronized technical and administrative actions, resulting in delays in disaster response. As the lead agency, the BPBD must have a standard operating procedure (SOP) for its task force, and other institutions should be able to act immediately based on the SOP. Therefore, without the mayor's order, this must proceed under BPBD's command." (Rizanul, 2025)

Herbert Panjaitan, Head of the Rehabilitation and Reconstruction Division of the Medan City BPBD, explained what his division does when a disaster occurs;

> "During the R3PB (Post-Disaster Rehabilitation and Reconstruction Plan) stage, the RR sector works cross-sectorally (for damaged houses we coordinate with Perkim, for damaged roads, networks and bridges we coordinate with the PU Department, for refugees we coordinate with the social services" (Panjaitan, 2025).

BPBD stated that, in addition to coordinating with related agencies, they also coordinate with other stakeholders by forming a Disaster Risk Reduction Forum (FPRB) and fostering relationships with volunteers, NGOs, and the Disaster Management Task Force. In contrast to the conditions on the ground, many residents complained about the lack of emergency aid, limited resources, and the slow response of relevant agencies, which indicated the Medan City Government's weak presence during residents' most difficult situations. Rizanul (2025) emphasized;

> "This incident is no longer just a natural disaster, but a systemic failure in infrastructure management and the city government's response. The city leadership's decisions were extremely slow. The Regional Disaster Management Agency (BPBD) should have the power to coordinate resources from regional government agencies (OPD) in Medan."

BPBD assessed that it had coordinated effectively and quickly. However, when a disaster struck, the public felt that the BPBD lacked standard operating procedures (SOPs) and a rapid work system for handling emergencies.

" As the lead sector, BPBD must be able to coordinate, from inter-institutional to national levels. We can see how neighboring countries (Malaysia) immediately assisted shortly after we declared an emergency response, indicating they have a task force with a well-developed system. This is something that hasn't been seen yet in BPBD Medan. Even disaster anticipation and mitigation plans may not exist." (Rizanul, 2025)"

Rizanul questioned the BPBD's commitment to disaster anticipation and mitigation. Interviews with the BPBD revealed that by 2025, the agency had a public awareness program aimed at educating students at five elementary schools (Siti Hajar Tuntungan Elementary School, Hang Tuah I Elementary School, Medan Belawan, Marelan Elementary School, Maimun Elementary School, and Helvetia Junior High School 40). However, the message conveyed during socialization, communication, and education (KIE) did not align with the age capacity of the community receiving the message, specifically elementary school children.

Table 1. Campaign "Ready to Survive"

No.	Activity	Objective
1.	Disaster evacuation simulation at schools, offices, and communities.	Improving community preparedness in handling disasters.
2.	Distribution of educational materials such as posters, videos, and infographics through social media and mass media	Providing education about emergency steps during disasters such as earthquakes, floods, or fires

BPBD Medan (2024)

The table above outlines the activities conducted by BPBD in socialization at schools, along with the goals to be achieved during this process. However, in reality, what is conveyed does not match the planning that was carried out. Syarifah and Riska, teachers at SDN 060905, who attended the socialization, shared their experiences.

"There were 75 children and 25 teachers who participated in the outreach program conducted by the Regional Disaster Management Agency (BPBD) at our school. The outreach program began at 9 a.m. and ended at 12 p.m. There was a brief discussion about disasters, followed by practical training on using rescue equipment, including an inflatable rescue boat and a life jacket." (Syarifah, 2025)

"I don't think the outreach is effective for children. After all, elementary school children won't be able to use a rescue boat during a flood. We're confused: is this outreach for elementary school children or for elementary school teachers?" (Riska, 2025)

The message gap occurred when the Medan City Regional Disaster Management Agency (BPBD) delivered material to the wrong audience. The message delivered by the BPBD was inaccurate. The message on how to use an inflatable rescue boat was more appropriate for high school students, not elementary school students. This indicates a lack of coordination between the BPBD and the Education

Department, which oversees UPT Schools, especially elementary schools. There is a discrepancy between the message designed and the message conveyed by the sources. This results in the message conveyed not matching the communicator's ability to receive it.

According to Fadli, Chairman of the Indonesian Rafting Federation (FAJI), some requirements must be met for rescue boat users. Using a rescue boat with unskilled personnel will be ineffective. A boat cannot operate properly if the driver is unskilled. To ensure that drivers develop the necessary skills, training on how to operate a boat is essential. Fadli emphasized:

> "We want to help the government. We've asked the mayor to provide a place where we can gather and train young people in safety drill skills. But so far, no official has provided anything." (Fadli, 2025)

FAJI, an organization that frequently assists the Regional Disaster Management Agency (BPBD) during floods, expressed disappointment with the government's response to community needs. He noted that there was a lack of coordination between the mayor and city government agencies (OPD). Despite the mayor's stated support for Faji's program, it failed to materialize on the ground.

> "We see that coordination between agencies is still very weak. There is fear among the departments to act independently without the Mayor's orders. Here, the Mayor's role must be able to synchronize the special tasks assigned to the BPBD with other supporting sectors, so that concerns that could have legal consequences do not occur. However, if the Mayor does not grant special authority to the BPBD and synergize with other OPDs, don't expect Medan's BPBD to be able to quickly take preventive action" (Rizanul, 2025)

The issues within the BPBD are not only related to structural barriers but also to institutional gaps. The coordination gap between institutions is evident from the slow post-disaster response and prevention efforts that are carried out independently. There is no synergy between agencies that share the same goals and understanding. To prevent more severe damage and greater losses. Rizanul commented:

> "If it is true that the BPBD is the agency that commands regional apparatus organizations in disaster management, then issues like streets still being piled with garbage after a flood could be resolved quickly. The BPBD would just need to coordinate with the Parks and Sanitation Department. There's no need to go through the Regional Secretary to get the Mayor's permission, right?"(Rizanul, 2025)

Rizanul also criticized the lengthy bureaucratic process required for post-disaster response. This occurred at the bureaucratic level. Coordination gaps were also evident at the lowest levels. Coordination gaps are also evident at the lowest level of government. Yani, Secretary of Kelurahan of Sei Mati, one of the villages severely impacted by the floods, said:

> "We continue to carry out socialization about floods, but only a few participants representing the community attend. I actually want the Neighborhood Head (Kepling) to work better, because the Kepling should be close to the community so that the people are more concerned." (Yani, 2025).

This is truly astonishing, as even at the neighborhood head level, who is elected by the residents, they are unable to mobilize them for educational and outreach purposes. It's no surprise, then, that even though the Regional Disaster Management Agency (BPBD) has developed disaster prevention messages, they often fail to reach the community due to inadequate communication.

The gap in communication and coordination has led to public distrust. Every individual or

group must have a clear understanding of their roles and responsibilities. This can reduce confusion, prevent overlapping tasks, and ensure each party is held accountable for their contributions. This gap can be bridged if BPBD collaborates between the Regional Apparatus Organizations (OPD) and stakeholders. If each party has the same understanding and mindset, disaster management can be carried out quickly. However, what happens is a bureaucracy that is complex and time-consuming, requiring patience while waiting for decisions and policies from regional leaders.

Governments may lack the capacity, resources, or political will to implement participatory mechanisms effectively. Even when participatory platforms are established, they may be more symbolic than substantive, serving to validate predetermined decisions rather than foster genuine dialogue. To address these challenges, governments and stakeholders must adopt strategies that bridge the gap between policy formulation and citizen engagement. One important approach is the democratization of information. Ensuring that citizens have access to clear, concise, and relevant information on policy issues empowers them to make informed contributions (Bovaird & Loeffler, 2016).

Prameisa's (2018) research revealed that community inactivity, apathy, and inadequate capacity prevented the Disaster Resilient Village program for flood management in Sirnoboyo Village, Pacitan, from achieving its optimal potential. Therefore, community involvement in the evaluation process is crucial to ensure that the developed communication system is effective and targeted in meeting community needs (Aziz, 2023).

The sub-district has a crucial role in translating policies and directives from higher levels as well as collecting and disseminating information in the community, considering its strategic position as a liaison between the city government and the community, it is very important to maximize disaster communication at the sub-district level, (Prasetyo et al., 2024; Perdana et al., 2022; Aziz, 2024). Relationships between institutions vary worldwide. In some countries, they are collaborative, well-coordinated, and inclusive, while in others, they are competitive, hierarchical, and dependent (Kincaid & Cole, 2016; Rosenthal, 1980).

Inter-institutional gaps can reveal a lack of productive collaboration between stakeholders, undermining the potential for cooperation and, ultimately, sustainable resource management (Sokile et al. 2003). This can also be referred to as an institutional void. An institutional void refers to the institutional conflict that arises when there are no accepted rules and norms to guide the interaction between formal and informal institutions in political processes, and when policy measures have not yet been agreed upon (Hajer 2003). This conflict typically occurs in the gap between classical modern institutions (i.e., well-structured hierarchical institutions with codified rules of action for decision-making) and the modern institutional space (characterized by the involvement of new actors in decision-making processes that initiate collective action based on informal institutions). An example of this kind of void can be seen when communities act outside formal institutions to effect change (Hajer 2009).

Everingham (2009) suggests that such voids can arise from the absence or weak intermediary institutions between policymakers and informal institutional actors at the field level. In such cases, formal constitutional choice rules (e.g., government resource management bodies) are unable to adequately respond to or address the collective choice rules of informal institutions. More generally, institutional voids describe a specific type of situation in which there is an inadequate bridge between formal constitutional rules and informal collective choice rules. While a useful concept, institutional voids describe collective choice actions but do not address rules. Structural voids exist in a network when two sets of actors (operating in formal and informal institutions) are not connected, but a third

party exists with ties to both (Burt 2000, 2004).

3. Community Behavioral Dynamics

Community involvement in the disaster management process is crucial to ensure that the communication systems developed are effective and tailored to meet the community's needs. During a disaster, people often panic and become emotionally overwhelmed. Residents' anger is fueled by rising floodwaters, with many people trapped in their homes and still awaiting evacuation. The lack of human resources at BPBD and equipment causes the evacuation to proceed slowly. Then, the community behaves according to the knowledge it has. Fadli recounted the events during the flood:

"During the evacuation, there was a crowd. However, since we are independent and not affiliated with the government, the community was somewhat hesitant around us. Some residents even wanted to evacuate on their own, despite not having access to a boat. We provided it, and in the end, they apologized and patiently waited. Maybe if we were BPBD Medan or the police, we might have been targeted by the residents." (Fadli, 2025)

Reactive responses also occur after evacuation.

"People arrive at the post in a state of fear, panic, fatigue, and hunger. The first thing they need is ready-to-eat food and mineral/drinking water. However, when they are registered, they refuse, because they think that if they are registered, what will they gain? People only want to be registered when they get something. There should be a trauma healing post, but we don't have one. We can only meet their basic needs." (Ritonga, 2025).

Those who refuse to be registered have probably experienced floods and evacuations many times. According to them, registration will give nothing except food and drink. There is a sense of distrust and shattered hope after the disaster.

"Our society is indeed diverse. In the field, many people are angry because the evacuation was delayed, but some refuse to be evacuated. The reason is that they don't want to leave their homes and belongings." (Yani, 2025)

The interview above illustrates the importance of understanding the psychological aspects of victims. These findings indicate that disasters pose a significant threat to community mental health. Therefore, during emergencies and overcrowding, the Regional Disaster Management Agency (BPBD) strives to engage with the community through interpersonal communication. Yunita (2025), stated:

"We usually approach the victims one by one, assisting. We greet the children and women to calm and strengthen them." (Yunita, 2025)

Disaster management, particularly disaster psychosocial support, requires continuous scrutiny to prevent it from becoming a social disaster (Rodríguez et al., 2018). This means that the post-disaster rehabilitation phase cannot be left unattended. Post-traumatic psychological effects must be healed in disaster victims, following their experiences in the flood.

Chaplin (2006) stated that psychosocial is a psychological aspect that explains social relations, encompassing various aspects of psychology. Meanwhile, Baron and Byrne (2005) suggest that psychosocial knowledge seeks to understand the causes of individual behavior and thinking within the context of social settings. Continuous psychosocial support has a reciprocal impact on individuals' social and psychological well-being, as well as their social environment.

As defined by Smet (1994), there are four components of psychosocial support: first, emotional support, which manifests as caring, empathetic, and concerned expressions for other people; second, appreciative support, which manifests as positive displays of regard for other people; third,

Instrumental help, which takes the form of tangible material aid; fourth, Informational support, which involves giving people counsel, recommendations, or comments.

Psychologically, disasters cause significant mental health impacts. For example, Neria, Nandi, and Galea (2008) reported that 30% to 40% of victims directly exposed to a disaster experience post-traumatic stress disorder (PTSD) after the disaster. These findings indicate that disasters pose a significant threat to public mental health.

Differences in behavior within communities during disasters are a common occurrence. Personal decision-making and actions in response to disasters create unique dynamics that must be understood during disaster management. Personal norms are a person's feelings or activities in complying with a moral obligation to carry out or refrain from certain actions that result in helping (De Groot & Steg, 2009, 2010; Jackson, 2005; Schwartz, 1977).

Mutual aid behavior is an altruistic behavior based on trust and cooperation. Altruistic behavior, driven by societal norms, is a key component of this mutual cooperative behavior. Strong social norms can reduce the likelihood that disasters will have detrimental psychological impacts for a long time. According to Kumala (2021), individuals who care for one another will be able to navigate their tough times together more easily than those living in an individualistic setting. Therefore, a message must be continuously instilled in the community that becomes a life concept for those who choose to live in disaster-prone areas.

The concept of living in harmony with risk, for example, is a message conveyed to the community to raise awareness of what is permissible and what is not in the event of a disaster. What to choose in a critical situation: whether to leave home or choose to stay, what important items to bring, and whom to save. These are difficult choices during a disaster. Which, if chosen, will not become a regret for the disaster-affected community.

4. Communication bottlenecks.

A communication strategy is a combination of communication planning and management (Effendi, 2003). Communication planning can begin by including all communication elements, from the communicator, message, channel (or media), recipient, to the intended influence (or effect) designed to achieve communication goals. This step is important in creating effective communication planning and flow (Yunus, 2023). It aims to change human behavior on a larger scale by transferring new ideas (Cangara, 2013). Referring to effective communication from Haddow's concept (2008), the communication barriers faced by BPBD Medan can be seen from;

(1). Audience Focus, which is understanding what the community (the communicants) needs. What information can be gathered from the community and volunteers to address those needs (messages)? How is the communication mechanism established to ensure that the information obtained is accurate and appropriate (channels). Effective disaster communication is considered the most crucial factor in ensuring the success of disaster management (Kusuma, 2024).

> "The community often receives information quickly through online news, radio, WhatsApp groups, or social media. Rarely do we access official government information channels (Rizanul, 2025).

This means that the community trusts news available in the media more than the messages delivered by the BPBD through its communication channels. Arifin (2015) states that one step in developing a communication strategy is by choosing the right communication method. To determine the right method, planning must be carried out first.

"The community we are assisting is in a state of fear, exhaustion, and confusion. Sometimes they react negatively when we ask various questions; they do not want to be registered. It is also difficult to give them advice. They only want their family members to be evacuated immediately. But some people do not want to be evacuated. Therefore, we must persuade and reassure them. This is what is difficult for us to deal with , in 2025. In terms of communication, this is referred to as personal communication barriers. He community shows unstable attitudes and emotions. Reactions based on prejudice can be interpreted as a lack of trust in the communication process. n addition to personal factors, environmental factors also influence personal factors. Inconvenience, disturbances, and improper timing in communication make communication inefficient and ineffective. Ermanto et al. (2022) state that disaster communication strategies must involve all relevant elements, including the Medan City BPBD, the City Government, OPDs, and all stakeholders. They can act as communicators who convey messages in disaster situations. A good message considers the audience and the response expected from the communicants (the goal). From the research, it can be seen that the messages delivered were not targeted appropriately, and the intended goal of changing public attitude did not occur.

(2) The commitment of leaders who play a role in emergency response. Smooth communication and coordination between institutions can accelerate disaster response actions.

"The Medan BPBD should communicate more often with other BPBDs, for example, the BPBD in Berastagi. There should be information from the Berastagi BPBD to inform us about the water conditions there, so that we in Medan can immediately prepare. This is information that we did not receive" (Fadli, 2025).

Research has shown that disaster response is often hindered by lengthy, bureaucratic processes, which slow down post-disaster policies and prevent disaster prevention from being effectively reinforced with disaster mitigation. Structural obstacles and coordination gaps indicate that the commitment of leaders remains relatively weak.

(3) Situational Awareness, how the BPBD collects, analyzes, and disseminates information related to disaster management. If this is not done, it will become a situational factor in communication barriers.

"This is because the BPBD does not have a distinctive disaster mitigation approach derived from community experience. Here is no clear BPBD plan, and neither are there supporting agencies. o, when a flood occurs, everyone is at a loss." (Rizanul, 2025)

Communication congestion is often caused by a lack of awareness of the situation. he lack of communication between BPBDs results in weak preparedness. ituational awareness only occurs when early warnings are issued by the Meteorology, Climatology, and Geophysics Agency (BMKG). Early warnings are actions that inform the public as quickly and as frequently as possible by providing warning signals that a disaster is imminent (Warsono, 2019). n fact, situational awareness is the entirety of knowledge that can be accessed and integrated when needed. His knowledge is crucial for disaster response, as it comprises cumulative information that, when analyzed, forms the basis for informed decision-making. ituational awareness is achieved through the facilitation of effective communication. This refers to the availability of relevant and timely information, as well as the recipient's ability to interpret and use it in making informed decisions.

(4) Media partnership, Recognizing the phenomenon that information is not being sought from official government media, BPBD established a close collaboration with the media.

"We collaborate with media under the auspices of the Communication and Information Agency.

he role of the media here is to disseminate news. If a disaster occurs, the media reports it in real time. Please, no bad news. It's not that we're against criticism. hat we want is balanced news coverage; this is also for the benefit of the public." (Yunita, 2025).

Media such as television, newspapers, radio, and others play a crucial role in conveying information accurately to the public. Cooperation with the media involves understanding the media's needs and having a team trained to work with them to obtain information and disseminate it to the public. Additionally, the media play a crucial role in providing up-to-date information about disaster situations. The media have the power to influence society. Sing the perspective of the hypodermic needle theory, people who receive information through the media seem to be influenced by the messages conveyed by the media. Borah, 2016)

The media must have a sense of crisis so that the news they deliver does not create new disasters as a result of the information spread. Because once a crisis occurs, the situation becomes turbulent, with various potential unintended effects (Devlin, 2021). As a media outlet reporting disasters, it must implement crisis communication in addition to journalism. To manage a crisis, the collection, processing, and dissemination of information (Coombs, 2010) is more efficiently handled by the media. However, what we often see is that the media, which should be providing education, ends up getting caught up in the thrill of information for the sake of ratings (Sulastri, 2023).

Updating news is indeed important, but equally important is how the information conveyed through the media affects the psychological recovery of disaster victims (Nugroho, 2018) rather than causing a new crisis. The constant stream of news in the media, with its numerous sources of information, will create public distrust toward the incoming information. 5) Inclusion of Communications in Planning and Operation During a disaster, effective communication carried out with the community is communication that does not cause psychological impact (Wirawati, 2015). According to Deddy Mulyana, interpersonal communication, which occurs face-to-face and is conducted persuasively, enables each participant to directly capture the reactions of others, both verbally and nonverbally (Sarmiati, 2019). Empirical evidence from Franck et al. (2015). t shows that the decline in trust and reciprocity within the community has contributed to the disintegration of social capital, which undermines the well-being of both individuals and the collective. Therefore, it is not surprising that in some cases, when disasters occur, crime also emerges—such as looting, theft, and other forms of criminal activity. This is what the Medan City BPBD fears when disasters strike.

"If religious leaders and community figures do not assist the BPBD to strengthen the community, perhaps everyone would lose their calm (become emotional), meaning that communities affected by disasters would no longer be able to cope with the loss of property. Due to hunger, they might think of looting. That is why it is necessary for us, together with religious leaders and community figures, to approach and speak with the victims to nurture their spirituality during disasters. We must ensure that the disaster does not lead the community astray. Due to hunger, they might resort to stealing and other similar actions. What is the psychological effect of disasters that we fear?" (Yunita, 2025)

Risk communication theory, as proposed by Lundgren and McMakin (2018), emphasizes that successful communication must fulfill several elements, including the credibility of the information source, timeliness, and the ability to influence public behavior (Lundgren & McMakin, 2018). Choosing credible communicators who can be trusted and listened to by the affected community during difficult situations is essential for BPBD to minimize the risk of a disaster crisis.

Ineffective disaster communication can leave a person feeling isolated. Studies by Ejiri et al.

(2019) and Syed et al. (2017) highlight weakened community networks, reduced face-to-face interactions, and fragmented neighborhood cohesion as the primary causes of social disconnection. His pattern is especially visible in densely populated areas, where anonymity and transient populations limit opportunities to build sustainable social bonds.

A communication process carried out dialogically allows for interaction to occur. Interpersonal communication is the most effective way to change attitudes, beliefs, and opinions in persuasive activities, leading to transformation. This can be applied at a practical level, facilitating the process of change for individuals and society as a whole. Communication will be effective if it is based on the level of concern between the communicator and the communicant. Psychologically, interpersonal communication and group communication can be viewed from cognitive, affective, and conative aspects. He cognitive aspect involves messages received that the brain can interpret and then perceive based on previous flood experiences, which subsequently form information. The affective aspect includes motivation and needs. Motivation is the drive that comes from within oneself to do something. In the event of self-evacuation, one prepares everything needed, looks for a safe shelter, communicates with family and close friends, etc.

Meanwhile, the conative aspect relates to a person's tendency to act based on cognitive and affective aspects. Research on disaster communication strategies in the South Buton Regency community reveals that disaster information and education provided by local community leaders are considered more credible and easier for the community in the foothills of Mount Burangrang to understand. Communication barriers are minimized because the community easily comprehends the messages conveyed (Suherman, 2018). Based on the results of this research, it is evident that local community leaders, as communicators who use the local language and understand the community's cultural values in disaster areas, are more effective because they facilitate the community's comprehension of the message content.

Conclusion The findings and discussions reveal that the BPBD of Medan City has not yet implemented strategic efforts in disaster management. Disaster management is still carried out using a regional approach rather than a participatory one. Coordination is conducted in a centralized manner, where sectoral egos are still very evident in every stage of disaster management. Communication gaps and bureaucratic stages between agencies further slow down disaster response.

There are four key issues faced by the BPBD in this context: structural barriers, institutional coordination gaps, community behavior dynamics, and communication obstacles during disasters. This study confirms that the Medan City BPBD has not effectively coordinated with institutions at the same level and other stakeholders. Here are many resources that the Medan City BPBD could utilize; however, they are not properly coordinated, resulting in hindered disaster management efforts. Post-disaster trauma handling has also not been addressed at all. Although there are efforts to make the media a collaborator capable of providing reassuring information, a persuasive approach is still needed through the presence of religious and community leaders to accompany and disseminate strengthening messages. BPBD, which possesses extensive knowledge and expertise in disaster management, must strive to build situational awareness by providing up-to-date and reliable information to ensure that all disaster response agencies share a common understanding of needs, risks, and available resources. PBD must also incorporate communication elements into every program planning and operation in the field, before, during, and after a flood occurs. PBD should also highlight challenges that provide insights for enhancing inter-agency collaboration, thereby improving the overall effectiveness and efficiency of disaster response coordination efforts. This can lead to a more coordinated and timely disaster response,

ultimately resulting in better service provision for disaster survivors. Ultimately, there are three key areas that the Medan City BPBD must improve to implement more strategic disaster management: planning disaster communication, strengthening coordination between agencies, and fostering citizen participation.

4. CONCLUSION

This study demonstrates that flood disaster management in Medan City remains predominantly procedural rather than strategic. While operational responses are routinely implemented, the absence of an integrated disaster communication framework limits the effectiveness of institutional coordination and collective action. The findings indicate that disaster governance continues to rely on a top-down regional logic, which constrains collaboration across agencies and restricts meaningful community involvement. As a result, available institutional, social, and informational resources have not been mobilised optimally. The analysis further suggests that the core challenges facing the Medan City BPBD extend beyond technical capacity and are rooted in governance and communication practices. Fragmented coordination mechanisms, overlapping bureaucratic processes, and insufficient alignment of institutional roles have weakened response efficiency. In addition, limited attention to social dimensions—particularly post-disaster psychological recovery— has reduced the sustainability of disaster response outcomes. Although media engagement has been initiated, communication strategies have not yet fully integrated trusted local actors, such as religious and community leaders, who play a crucial role in shaping public trust and resilience. To move towards more effective disaster governance, this study underscores the need for a strategic shift in three interrelated areas. First, disaster communication must be systematically embedded into all phases of disaster management, from preparedness to recovery. Second, inter-agency coordination should be strengthened through clearer role integration and shared situational awareness. Third, citizen participation should be actively fostered as a core component of disaster resilience rather than treated as a supplementary element. Addressing these priorities would enable the Medan City BPBD to transition towards a more adaptive, inclusive, and responsive model of urban flood disaster management.

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5. METHODS

This study used a qualitative, descriptive-analytical approach to gain a deeper understanding of the implementation of the Disaster Resilient Village policy to enhance disaster preparedness based on local wisdom in West Bandung Regency. This approach was chosen because it comprehensively describes social phenomena, including how communities interpret the threat of the Lembang Fault and how the policy is implemented at the village level (Kusumastuti & Khoiron, 2019). The research was conducted in villages located in earthquake-prone areas around the Lembang Fault, such as Cikahuripan and Kayu Ambon villages in Lembang District, considering these areas have high levels of vulnerability and are also implementation locations for the Disaster Resilient Village program. Data sources were obtained from informants including village government officials, Disaster Resilient Village volunteers, BPBD officers, and community members familiar with local wisdom practices related to disasters.

Data collection was conducted through in-depth interviews to elicit information on policy implementation, community understanding of disaster mitigation, and the integration of local values into the program. Field observations were also conducted to assess infrastructure readiness, volunteer activities, and community behavior in responding to potential disasters. Documentation studies were also used as a complement by reviewing important documents such as risk maps, activity reports, village profiles, and guidelines for implementing Disaster Resilient Villages. The collected data were analyzed using the Miles and Huberman model, which includes data reduction, data presentation, and

drawing conclusions (Sugiyono, 2013). To maintain data validity, this study applied triangulation of sources, techniques, and time to ensure the findings were more valid and accountable. Furthermore, the entire research process upheld research ethics by maintaining the confidentiality of informants' identities, clearly explaining the research objectives, and obtaining informed consent before conducting interviews.

6.   FINDINGS AND DISCUSSION

6.1 Implementation of the Disaster Resilient Village Policy in West Bandung Regency

Policy implementation is a crucial stage in the overall process of formulating and implementing government policy. It is at this stage that the various decisions made are translated into concrete actions to achieve policy objectives. The success of implementation is not only determined by the quality of planning but also depends heavily on the role of policy implementers, both working individually and in groups (Wahab, 2021). Implementers are the key actors ensuring that policies are implemented in accordance with established standards, mechanisms, and objectives. Their ability, commitment, and understanding of the policy's substance are important indicators of implementation effectiveness. Furthermore, inter-agency coordination, resource support, and social environmental conditions also influence how the policy is implemented in the field (Iswandi et al., 2021).

The implementation of the Disaster Resilient Village policy in West Bandung Regency has shown quite effective results, particularly in terms of establishing disaster preparedness institutions and increasing community knowledge about disaster mitigation. Steps such as the formation of village volunteer teams, outreach on disaster threats, and conducting evacuation simulations demonstrate the local government's commitment to strengthening village capacity. However, implementation still faces several challenges. The most prominent obstacle is weak communication and coordination between relevant institutions, both at the village and district levels. Furthermore, limited human resources, budget, and a lack of disaster management tools prevent the Disaster Resilient Village program from running optimally. The existing bureaucratic structure and disposition also require refinement to serve as clearer guidance, particularly in addressing potential disasters related to the Lembang Fault activity.

Meanwhile, the Regional Government and the West Bandung Regency Regional Disaster Management Agency continue to address these shortcomings through various strategic measures. These efforts include accelerating disaster risk mapping, strengthening village human resource capacity through advanced training, and increasing collaboration with non-governmental organizations competent in disaster mitigation. However, the success of the Disaster Resilient Village program depends not only on the government but is also crucially determined by the level of community awareness and active participation. Without community support—whether through outreach activities, evacuation drills, or environmental monitoring—the Disaster Resilient Village program will struggle to achieve its primary goal of creating resilient, responsive, and disaster-prepared communities. Regarding the disaster mitigation implementation pattern in West Bandung Regency, all efforts have been made to the maximum in accordance with Law Number 24 of 2007 concerning disaster mitigation, although obstacles remain. The following is a discussion of the implementation of the Disaster Resilient Village Policy in Bandung Regency, including:

a. Communication

Communication is one of the biggest challenges in implementing the Disaster Resilient Village policy in West Bandung Regency. The communication flow within the pentahelix approach (government, community, academics, business, and media) is not yet optimal and consistent,

resulting in frequent delays in information transmission to the public. Many residents in West Bandung Regency still hold the paradigm that disaster management is the exclusive domain of the government, resulting in low active participation in the formation and management of Disaster Risk Reduction forums at the village level. This misperception indicates that the dissemination of information regarding local community participation in disaster preparedness has not been effectively communicated.

Barriers to communication strategies are also closely related to technical operational issues, namely the incomplete mapping of disaster-prone areas across all villages in West Bandung Regency. Limited human resources assigned to the mapping team have resulted in many high-risk areas not being identified in detail. As a result, it is difficult for the West Java Regional Disaster Management Agency or village governments to develop specific communication messages tailored to local hazard characteristics (e.g., landslides in hilly areas vs. flooding in lowlands). This lack of accurate data weakens the substance of disaster mitigation communication, which should be the foundation of the Disaster Resilient Village program.

Finally, communication effectiveness is also eroded by the lack of a solid organizational structure in some villages in West Java. When a village does not have a formally organized disaster resilient village team or volunteers recognized within the village structure, the program is often run by only a handful of village implementers on an ad-hoc basis. This situation creates inconsistencies in information delivery and coordination, preventing important messages regarding early warnings or evacuation routes from being delivered quickly and evenly. Optimizing communication, therefore, depends heavily on strengthening institutions and ensuring the availability of qualified human resources at the village level.

b. Resources

Limited human resources are one of the most significant challenges in implementing the Disaster Resilient Village policy in West Bandung Regency. The Disaster Resilient Village program relies heavily on the initiative and performance of field personnel, including village officials, local volunteers, and members of the Disaster Risk Reduction forum. However, the number of available personnel is often disproportionate to the size and complexity of the disaster threats faced. Beyond quantity, the quality and competency of human resources is also a concern. Many field implementers have not received comprehensive and ongoing disaster mitigation training, so their understanding of disaster management—from pre-disaster, during, and post-disaster—remains limited. This directly impacts the quality of contingency planning and emergency response at the village level.

Inadequate incentives also exacerbate this resource constraint. Disaster Resilient Village volunteers and program implementers often work based on humanitarian needs without adequate financial compensation or social security. This lack of clear incentives can undermine the motivation and long-term commitment of personnel, leading to high volunteer turnover. When trained volunteers resign, the Disaster Resilient Village program in that village must start the recruitment and training process from scratch, which is time-consuming and expensive and hinders program sustainability.

Structurally, this lack of resources creates vulnerabilities in the disaster preparedness system in West Bandung Regency. The Disaster Resilient Village program, which should serve as the vanguard in community-based disaster management, is not performing optimally. A larger budget allocation and policies that support the strengthening of local human resources, including the provision of certified training and equitable incentives, are needed. Without strong resource support,

the vision of creating independent and disaster-resilient villages in West Bandung Regency will be difficult to achieve.

c. Disposition

The issue of disposition, or the placement of institutional responsibilities, presents a structural obstacle to the implementation of Disaster Resilient Villages in West Bandung Regency. In several villages, disaster mitigation programs operate without a binding formal bureaucratic structure, such as a Village Disaster Management Task Force or Disaster Preparedness Group, integrated into village governance. This lack of a clear disposition often results in the Disaster Resilient Village program relying solely on the personal initiative of the Village Head or the local Village Consultative Body, rather than being part of institutionalized village policy. As a result, the program's sustainability is vulnerable to changes in leadership or shifts in priorities at the village level.

This situation is exacerbated by the fact that the majority of field implementers are freelance volunteers and are not directly coordinated under the formal village government structure. While volunteerism in West Bandung Regency is quite high given the frequency of hydrometeorological disasters, their informal status often presents obstacles in the chain of command, resource mobilization, and reporting accountability. These volunteers may be highly dedicated, but without a clear mandate from the village government, they struggle to access village funds, training facilities, or even obtain the necessary legal recognition when coordinating with the Regional Disaster Management Agency of the Regency. This lack of formal coordination significantly reduces the effectiveness of disaster response at the community level.

d. Bureaucratic Structure

The problematic bureaucratic structure at the village level is a fundamental obstacle to ensuring the effectiveness and sustainability of the Disaster Resilient Village program in West Bandung Regency. In some villages, the implementation of this policy is hampered by the absence of a dedicated unit or section explicitly assigned to manage disaster risk. As a result, disaster management responsibilities tend to become additional tasks for village officials already burdened with other primary workloads, or are not institutionalized at all. The absence of a clear structure of responsibility within the village governance organization leaves the Disaster Resilient Village program without a legal basis and a definite budget allocation, resulting in sporadic and unplanned disaster preparedness initiatives.

The absence of a binding bureaucratic structure directly impacts the status and coordination of implementers in the field. Many personnel involved in disaster mitigation activities are simply freelance volunteers who have not been formally and directly coordinated by the village. While they play a vital role as frontline workers, this informal status presents significant challenges related to operational management. Volunteers often struggle to access village resources, such as operational funds or equipment, due to the lack of a legal framework or official assignment letter. This not only hinders efficient response during disasters but also complicates the ongoing mentoring and capacity building process for volunteers by the West Bandung Regency Regional Disaster Management Agency. The absence of a binding bureaucratic structure directly impacts the status and coordination of implementers in the field. Many personnel involved in disaster mitigation activities are simply freelance volunteers who have not been formally and directly coordinated by the village. While they play a vital role as frontline workers, this informal status presents significant challenges related to operational management. Volunteers often struggle to access village resources, such as operational funds or equipment, due to the lack of a legal framework or official assignment letter. This not only

hinders efficient response during disasters but also complicates the ongoing mentoring and capacity building process for volunteers by the West Bandung Regency Regional Disaster Management Agency.

6.2 Disaster Preparedness Based on Local Wisdom in West Bandung Regency

Local wisdom plays a crucial role in disaster mitigation efforts. This concept refers to the distinctive characteristics of a community reflected in various aspects of their lives. Local wisdom encompasses values, norms, ethics, beliefs, traditions, and rules that are recognized and passed down through generations within a community (Pajarianto et al., 2022). More than simply knowledge about relationships between individuals, local wisdom also reflects a community's understanding of the interconnectedness between humans and nature, including how to maintain balance and create harmonious and sustainable relationships with the surrounding environment (Hidayati et al., 2020). Disaster preparedness for earthquakes and landslides caused by the Lembang Fault in West Bandung Regency integrates modern knowledge with Sundanese local wisdom passed down through generations. These traditional practices focus on a harmonious relationship between humans and nature to reduce disaster risk. These practices can be described as follows:

a. Recognizing Natural Signs

Traditional knowledge often includes a heightened sensitivity to environmental changes perceived as harbingers of disaster. For example, in some communities, unusual animal behavior (such as birds or reptiles migrating to higher ground before flooding), extreme changes in weather patterns, or specific natural phenomena in a location are believed to signal impending danger. This local wisdom serves as a community-based early warning system that has existed for generations. Although the scientific mechanisms behind some of these "signs" are sometimes difficult to explain, these natural markers remain relevant and can be combined with modern knowledge to validate and strengthen collective community awareness in disaster-prone areas.

b. Sustainable Development Practices

In terms of infrastructure, local wisdom provides a blueprint for more earthquake-adaptive housing development, particularly in areas crossed by the Lembang Fault. Traditional Sundanese houses often use locally available lightweight materials such as wood, bamboo, and palm fibre. The construction techniques applied, such as the *umpak* system (stone foundations that do not rigidly bind the house pillars) and flexible dowel connections, allow the building structure to sway during shocks without experiencing fatal structural damage, unlike rigid reinforced concrete buildings which are prone to cracking and collapse.

c. Appropriate Land Use

Local wisdom practices consistently promote a harmonious relationship between people and the land they inhabit, reflected in the careful selection of settlement locations to avoid areas considered "forbidden" or naturally dangerous. Traditional communities often intuitively recognize and adhere to high-risk zones—such as flood-prone riverbanks, unstable steep slopes, or geological fault areas. This experiential spatial knowledge results in a natural land use system where vital activities like farming or building shelters take place in safe zones, while risky areas are left as open space or forest. This preventative approach, which prioritizes safety by not challenging nature, is now a fundamental principle in modern disaster mitigation spatial planning, where local governments identify Landslide Hazard Red Zones or Disaster-Prone Areas.

d. Knowledge Transmission Through Oral Tradition

The practice of knowledge transmission through oral tradition is a key pillar of disaster preparedness in West Bandung Regency, particularly in addressing the threat of Lembang Fault earthquakes and landslides. Essential knowledge about natural signs, such as unusual animal behaviour or changes in spring conditions before an earthquake, as well as the history of past disasters, is effectively preserved and disseminated through folklore, pantun, or the wise advice of local elders. This method of knowledge transmission has proven highly effective because it is delivered within the familiar and easily understood context of Sundanese culture, thus not only increasing the local community's disaster mitigation awareness but also strengthening collective memory and communal bonds in a shared effort to reduce disaster risk from generation to generation.

6.3 Evaluation of the Disaster Resilient Village Policy Based on Local Wisdom in West Bandung Regency

The West Bandung Regency Government implemented the Disaster Resilient Village program in response to the geographic vulnerability of its region, particularly the threat posed by the active Lembang Fault. This approximately 29-kilometer-long active fault traverses several densely populated districts and has the potential to trigger significant earthquakes with magnitudes up to 6.8, making it a local disaster mitigation priority. Case studies of Disaster Resilient Village implementation, such as in Kayu Ambon Village, Lembang District, demonstrate the program's crucial role in increasing the awareness and capacity of residents living in the fault's red zone. Through the Disaster Resilient Village program, communities are trained to understand evacuation routes, prepare emergency kits, and conduct regular earthquake simulations. This effort aims to transform geological knowledge about the Lembang Fault into practical actions on the ground, although the challenge is ensuring the program's sustainability and the active participation of all community elements evenly along the fault line.

An evaluation of the effectiveness of the Disaster Resilient Village policy in the context of the Lembang Fault threat revealed the following:

a. Suboptimal Communication

An evaluation of the effectiveness of the Disaster Resilient Village policy in West Bandung Regency revealed that suboptimal communication is one of the main obstacles in mitigating the Lembang Fault threat. Ineffective information transmission between the Regional Disaster Management Agency (BPBD), village governments, and communities has led to gaps in understanding the risks at the grassroots level. This problem is not simply a lack of information, but also a lack of adaptive and structured delivery methods. As a result, understanding of specific mitigation measures for earthquakes caused by the Lembang Fault varies from village to village, hampering the development of a comprehensive disaster awareness culture.

Observations in villages along the Lembang Fault indicate that formal communication systems are often one-way and do not effectively reach all levels of society. Official village meetings tend to involve only representatives, and local early warning systems are often poorly maintained or lack public awareness. Interviews with village officials highlighted the difficulty in translating technical disaster language from the BPBD into simple, easily understandable language for residents. Meanwhile, residents themselves admit to receiving information more often from informal sources such as neighbors or social media, whose accuracy is sometimes questionable. Therefore, urgent improvements are needed to the Disaster Resilient Village program's communication mechanisms. Communication strategies must be more participatory, involve two-way interaction, and utilize

informal channels that have proven effective within the local community. By ensuring that information about the Lembang Fault is conveyed clearly, consistently, and sustainably, it is hoped that the resilience of the community in West Bandung Regency in facing potential earthquake disasters can be significantly increased.

b. Socialization and Education

An evaluation of the effectiveness of the Disaster Resilient Village policy in West Bandung Regency shows that optimizing socialization and education is key to addressing the specific threat of the Lembang Fault, which has the potential to trigger destructive earthquakes. Current approaches tend to be generic and do not specifically target communities living along the fault line. A more focused approach is needed through formal and informal education, as well as existing community forums in villages. This aims to transform geological knowledge about the Lembang Fault into a practical understanding of self-rescue measures, evacuation routes, and family preparedness, with the hope of significantly improving community response when a disaster occurs.

Engaging the younger generation is also a crucial strategy in optimizing this socialization and education. Young people can act as effective information disseminators within families and peer communities, while ensuring the sustainability of future disaster mitigation programs. The integration of Lembang Fault mitigation materials into the local curriculum in schools in West Bandung Regency is supported by West Java Governor Regulation No. Law No. 1 of 2020 concerning Increasing the Cultural Capacity of Disaster-Resilient Communities can serve as a strong legal and structural foundation. Thus, educational efforts are not merely incidental but become an integral part of community life, fostering a deeply rooted culture of disaster awareness in facing the threat of the Lembang Fault.

c. Funding Dependence

An evaluation of the effectiveness of the Disaster Resilient Village policy in West Bandung Regency in the context of the Lembang Fault threat indicates significant funding vulnerabilities. Several disaster mitigation programs, including outreach, training, and infrastructure procurement, remain heavily dependent on Village Fund allocations or external funding assistance. This financial dependency poses a risk to program sustainability; when the primary funding source ceases or is diverted to other village development priorities, the Disaster Resilient Village initiative could potentially stall. This is crucial given that the Lembang Fault threat is permanent and requires consistent, long-term mitigation efforts, not just seasonal projects.

To ensure the resilience of the Disaster Resilient Village program, a more innovative and independent financing model is needed, reducing absolute dependence on ADD. Alternative solutions include optimizing local resources, such as establishing Village-Owned Enterprises that allocate a portion of their profits to mitigation activities, or transparently managed local community-based fundraising. Furthermore, local governments, through the Regional Disaster Management Agency and related agencies, need to facilitate village access to sustainable funding schemes, such as grants from private institutions or partnerships with the private sector through corporate social responsibility programs. Diversifying funding sources is essential to ensure the Disaster Resilient Village program remains effective in building community resilience in the face of the Lembang Fault threat.

Furthermore, to increase the effectiveness of the local wisdom-based Disaster Resilient Village policy in West Bandung Regency, several steps are as follows:

a. Strengthening the Organizational Structure

To increase the effectiveness of the Disaster Resilient Village policy in West Bandung Regency, the first fundamental step is strengthening the organizational structure at the grassroots level. Evaluations have shown that currently, some villages still rely solely on casual volunteers, resulting in sporadic and unsustainable program operations. Ensuring that each village has a clear, competent Disaster Resilient Village management structure that is integrated with the village government and the local the Regional Disaster Management Agency is crucial. This structure must have a strong mandate, supported by a Village Head Decree, and staffed by personnel who have received adequate disaster mitigation training. This institutional strengthening serves as the operational backbone, ensuring systematic coordination, resource allocation, and long-term program sustainability, particularly in addressing the latent threat of the Lembang Fault.

Integration of this organizational structure with the village government and local the Regional Disaster Management Agency is also essential to ensure program synchronization from the local to the district level. This will minimize bureaucratic obstacles and communication issues previously identified as major weaknesses. An integrated structure allows for effective information flow, both from the Regional Disaster Management Agency to villages regarding early warnings and feedback from villages regarding specific needs on the ground. Furthermore, strengthening this organizational structure also opens up opportunities for more accountable and efficient funding management, reducing dependence on uncertain external funding by optimizing the planned allocation of village funds for sustainable disaster mitigation programs.

b.   Formal Integration of Local Wisdom

The next crucial step in improving the effectiveness of Disaster Resilient Village in West Bandung Regency is the formal integration of Sundanese local wisdom into disaster mitigation policies. Although local wisdom, such as the value of mutual cooperation or spatial understanding of nature, has existed for generations, its application within Disaster Resilient Village 's formal policy framework is still suboptimal and requires in-depth study. Identifying and documenting local knowledge—for example, natural markers of potential disasters or lifestyle practices aligned with the geographic conditions of the Lembang Fault—and then incorporating it into the disaster mitigation education curriculum or Village Disaster Management Plan will create an approach that is more relevant and easily accepted by local communities.

This integration process is also strongly supported by relevant legal frameworks, such as West Java Governor Regulation No. 1 of 2020 concerning Increasing the Cultural Capacity of Disaster-Resilient Communities in West Java Province. This regulation provides a legal framework for village governments and the Regional Disaster Management Agency to systematically incorporate cultural elements and local wisdom into every aspect of disaster management. Thus, the Disaster Resilient Village policy relies not only on formal standard operating procedures from the central government but is also enriched with an approach rooted in local values, ensuring that efforts to build community resilience in the face of the Lembang Fault threat are holistic, participatory, and sustainable.

c.   Human Resource Capacity Building

Human resource capacity building is a crucial pillar for ensuring the success of the Disaster Resilient Village program in West Bandung Regency. Evaluations have shown that the competency of village officials and field volunteers still needs to be improved to effectively manage the risks of the Lembang Fault. Structured and ongoing training is essential, not only to provide technical disaster knowledge but also to build managerial skills in crisis coordination and communication.

This training should be tailored to local hazards, encompassing both structural and non-structural mitigation aspects, and supported by modules that are easily applicable at the village level.

In addition to internal training, involving academics from renowned institutions such as Padjadjaran University or the Bandung Institute of Technology can provide significant added value through expert mentoring. Academics and researchers from these institutions often possess up-to-date research data on Lembang Fault activity and experience in disaster response in West Java. Their role can include providing accurate scientific data for the development of Village Disaster Management Plans, technical assistance in risk mapping, and regular evaluation of the effectiveness of the Disaster Resilient Village program. This partnership between local governments, villages, and academics creates synergy that ensures a mitigation approach based on scientific evidence and best practices, thus optimally enhancing community resilience to earthquake threats.

4. CONCLUSION

The implementation of the Disaster Resilient Village policy in West Bandung Regency has shown progress through the establishment of disaster preparedness institutions, volunteer training, and community capacity building. However, its effectiveness remains hampered by communication issues, limited resources, weak institutional disposition, and suboptimal bureaucratic structures at the village level. Disintegrated communication channels, limited risk mapping data, a lack of trained human resources, dependence on specific funding sources, and the lack of formal recognition of volunteers pose significant challenges to the program's sustainability. Efforts by the Regional Government and the West Bandung Regency Disaster Management Agency have led to improvements, such as increased collaboration, accelerated risk mapping, and strengthened staff capacity. However, the full success of Disaster Resilient Village remains highly dependent on the support of a strong institutional structure, adequate resource allocation, and active community participation as the core of community-based disaster mitigation. Disaster preparedness in West Bandung Regency relies not only on modern knowledge but also on strengthening community resilience through local Sundanese wisdom passed down through generations. This local wisdom is reflected in sensitivity to natural signs, adaptive development practices that address earthquake risks, land selection and management in harmony with natural conditions, and the transmission of knowledge through oral traditions that maintain the community's collective memory of various disaster threats. The integration of local traditions and modern disaster science makes community preparedness more comprehensive, culturally rooted, and effective in reducing disaster risk in areas exposed to the Lembang Fault threat.

The effectiveness of the Disaster Resilient Village policy in West Bandung Regency in addressing the Lembang Fault threat is greatly influenced by the quality of communication, outreach, funding, and institutional capacity at the village level. Evaluations show that although Disaster Resilient Village has become an important instrument for improving community preparedness, its implementation still faces obstacles such as suboptimal communication, outreach that is not specific to the fault threat, and a high dependence on limited funding sources. Therefore, increasing Disaster Resilient Village 's effectiveness requires strategic steps, including strengthening village organizational structures, formal integration of local wisdom into mitigation policies, and increasing human resource capacity through ongoing training and partnerships with academics. By making these improvements, Disaster Resilient Village can become a more holistic, adaptive, and sustainable approach in building the resilience of the West Bandung Regency community against the risk of earthquakes caused by the Lembang Fault.

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