Research Article

Policy Capacity Based on Disaster Mitigation in West Sulawesi

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Abstract.

This study aims to analyze the policy capacity from the institutional, regulatory, technical, and participatory aspects implemented by the government based on disaster mitigation in West Sulawesi. It uses a qualitative descriptive approach to explain regional policy capacity exploration in disaster mitigation case studies. The study was conducted at Regional Disaster Management Agency (BPBD) and Regional Device Organization (OPD) related to disaster mitigation. Data were collected through observation, questionnaires, in-depth interviews with informants, and literature studies. They were then analyzed using the Miles and Huberman approach, which consists of data reduction, data presentation, verification, and conclusion. The results found that the capacity of mitigation-based policies still faces challenges in four main aspects: institutional, regulatory, technical, and participatory. Institutionally, formal structures such as BPBD and related OPDs, coordination, human resources, and inter-agency roles still need to be strengthened. Regulations have not been implemented in a contextual, practical, and integrated manner with regional development planning. Technically, there are still weaknesses in the limitations of facilities, infrastructure, and the use of technology in supporting operations for mitigation activities. Community participation is also not optimal in terms of awareness, active involvement, and ongoing education. Policy recommendations can be submitted, including recommendztions to strengthen local institutions by increasing institutional capacity through periodic human resources training, strengthen cross-sector coordination systems, and establish work units that are adaptive and responsive to the dynamics of disaster risk.

Keywords: policy capacity, disaster mitigation, institutional, regulatory, technical, participatory

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1. Introduction

West Sulawesi is one of the provinces in Indonesia that is highly vulnerable to natural disasters such as earthquakes, landslides, and floods. Its geographical position in an active seismic zone and its topographical characteristics—hilly regions and coastal areas—make this province prone to disaster threats. For instance, a 6.2 magnitude earthquake that struck Mamuju and Majene Regencies caused significant infrastructure damage, loss of lives, and substantial socio-economic impact. Moreover, the Indonesian Disaster Risk Index (IRBI) from 2019 to 2023 consistently ranked West Sulawesi as one of the highest-risk provinces nationwide, with scores of 166.49 in 2019 and 2020 (the

second and first highest, respectively), 164.85 in 2021, 165.23 in 2022, and 160.08 in 2023.

This disaster risk index is derived from a risk assessment that considers potential hazards, vulnerability, and capacity levels. It indicates that disasters in this region can have severe consequences across many areas of life. Therefore, disaster mitigation is critical in reducing social, economic, and environmental impacts while supporting sustainable development.

Regional policy capacity is a key element in disaster mitigation efforts in West Sulawesi. Such policies must involve comprehensive planning, institutional strengthening, enhanced human resource capacity, and adequate budgetary support. Unfortunately, budget limitations, lack of accurate disaster risk data, and low public participation often hinder effective policy implementation.

Law Number 24 of 2007 on Disaster Management mandates local governments to prepare a Regional Disaster Management Plan (RPBD). However, in West Sulawesi, the implementation of this policy still encounters various obstacles. One significant issue is the institutional capacity of the Regional Disaster Management Agency (BPBD), which often lacks the resources and expertise to optimally fulfill its coordination and mitigation roles.

Additionally, public engagement in disaster mitigation policy remains limited, even though community empowerment is a highly effective strategy to reduce disaster risks through preparedness training, strengthening local traditions that support mitigation, and community-based infrastructure development. On the other hand, the potential for technological and innovative solutions, such as geospatial data and early warning systems, offers opportunities for integration into regional mitigation policies. Cross-sector collaboration—including with academia, NGOs, and the private sector—must also be optimized to enhance mitigation effectiveness.

Policy capacity is shaped by regulatory frameworks such as regional regulations, spatial planning documents, and disaster strategies within planning documents like the RPJMD, RAD, or RPB. Alignment between regional and national policies, such as the National Disaster Management Plan (RPBN) and Law Number 24 of 2007, is also crucial.

Disaster mitigation is a strategic priority, particularly in regions vulnerable to natural hazards such as West Sulawesi. The experience of facing major earthquakes and the ongoing threat of other potential disasters underscores the urgent need for a robust

and integrated disaster mitigation policy capacity. This capacity does not rely solely on infrastructure readiness but involves various interrelated multidimensional aspects.

One critical dimension of disaster mitigation is the institutional aspect, which includes the capability of governmental and non-governmental institutions to plan, coordinate, and implement mitigation efforts effectively. Strong institutions with clear structures and streamlined coordination mechanisms are better equipped to respond to disaster threats swiftly and systematically. However, optimal institutional capacity would be ineffective without the support of adequate regulations. Clear and firm regulatory frameworks are essential to guide mitigation implementation in accordance with recognized standards and protocols and to ensure consistent law enforcement against violations that may increase disaster risks.

In addition, the technical dimension serves as a fundamental pillar in disaster mitigation. The ability to predict hazards, conduct risk analyses, and build disaster-resilient infrastructure is crucial in minimizing damage. Disaster-prone areas such as West Sulawesi require technological enhancement and the upskilling of mitigation actors to handle emergencies with greater readiness and planning.

The effectiveness of disaster mitigation cannot be achieved without direct community involvement. The participatory dimension highlights the importance of engaging local communities in every stage of the mitigation process—from planning and implementation to evaluation. The active involvement of local residents not only strengthens preparedness but also accelerates post-disaster recovery processes. This demonstrates that disaster mitigation is a shared responsibility that demands the contribution and synergy of all stakeholders.

In essence, regional policy capacity for disaster mitigation refers to a government's ability to formulate, implement, and evaluate policies, programs, and actions aimed at reducing disaster risks and impacts. As mentioned, this capacity involves developing a Disaster Management Plan (RPBD) tailored to the region's risk characteristics. It should include risk identification, disaster-based spatial planning, and integrating mitigation efforts into regional development.

Overall, regional policy capacity reflects a government's readiness to face disaster risks, protect communities, and minimize physical, social, and economic losses. Learning, adaptation, and evaluation must continuously strengthen this dynamic capacity. Given the ongoing challenges and opportunities, strengthening policy capacity in West Sulawesi is crucial for reducing future disaster impacts. Ongoing policy evaluation,

sufficient budget allocation, and improved stakeholder synergy are vital for building regional disaster resilience.

In the context of public policy, "capacity" refers to the ability of institutions or governments to formulate, implement, and evaluate policies responsively and adaptively. Policy, in turn, is a series of decisions and actions taken by public authorities to achieve specific objectives—in this case, reducing disaster risk. Therefore, policy capacity can be interpreted as the level of readiness and competence of a governance system in managing resources, creating regulations, and implementing mitigation programs that prioritize public safety and resilience.

Measuring the capacity of disaster-mitigation policy across each dimension in West Sulawesi requires a comprehensive and structured approach. Within the institutional dimension, capacity is assessed by the strength of inter-agency coordination, clarity of organizational structures, and communication effectiveness in responding to disaster situations. Evaluation also encompasses the involvement of regional government, disaster management authorities, and nongovernmental organizations in mitigation planning and implementation. Enhancing capacity can be achieved by strengthening cross-sector coordination, clarifying emergency-response mechanisms, and improving human-resource capabilities through regular training and simulation exercises.

In the regulatory dimension, capacity measurement focuses on a legal framework that supports disaster mitigation, compliance with safety standards, and enforcement of regulations in the field. Effective regulation is evaluated not only by the presence or absence of rules but also by the extent to which those regulations are applied consistently and understood by the public. Capacity enhancement here may involve revising relevant legislation, conducting more intensive public outreach, and reinforcing oversight of mitigation-policy implementation.

The availability of disaster-resilient infrastructure measures the technical dimension, the use of technology in early-warning systems, and the ability to identify and manage risks accurately. Technical assessment also considers resource readiness—equipment and expert personnel—to address disaster threats. Improving technical capacity can be accomplished through modernizing monitoring technologies, reinforcing public infrastructure, and advancing field-staff technical skills via specialized education and training.

In the participatory dimension, capacity is gauged by the level of community engagement in the planning, executing, and evaluating mitigation policies. Effectiveness indicators include active public participation in outreach activities, preparedness training,

and evacuation drills. An inclusive approach is needed to bolster participatory capacity, alongside increased public awareness and strengthened partnerships between government entities and local communities to build shared preparedness.

Measurement and capacity enhancement across these four dimensions are interdependent and require integrated coordination. Success in disaster mitigation in West Sulawesi rests not only on regulatory strength or technical preparedness but also on institutional solidity and active community participation. By reinforcing each dimension in a balanced manner, the region's disaster mitigation policy capacity can be significantly and sustainably improved.

Strengthening disaster mitigation policy capacity in West Sulawesi is particularly urgent, given the repeated experience of disasters without significant improvement in local preparedness and response. Robust policy capacity must include access to accurate disaster data, risk-based planning, inter-agency coordination, community participation, and sustainable funding for mitigation efforts. Without these elements, disaster mitigation policies risk remaining as administrative documents with limited on-the-ground impact.

Improving policy capacity in West Sulawesi means building a responsive governance system capable of designing evidence-based policies and involving local actors in every decision-making stage. This approach ensures better preparedness for future disasters and helps minimize their adverse effects. Building disaster-oriented policy capacity is a technical necessity and a strategic urgency to safeguard regional development and community protection.

Reviewing the disaster-mitigation policy capacity literature in other Indonesian provinces and developing countries can provide a pertinent benchmark for clarifying this study's research gap and pinpointing its novel contribution. In several Indonesian provinces, such as Aceh, Central Java, and West Nusa Tenggara, earlier studies have shown that disaster-mitigation policy capacity often centers on strengthening institutional structures and regulatory frameworks in the aftermath of significant events. For example, Aceh's response to the 2004 tsunami led to establishing the Rehabilitation and Reconstruction Agency (BRR), which institutionally bolstered the government's ability to manage large-scale disasters. In Central Java, enacting a regional regulation (Perda) on disaster management demonstrates how legal instruments can be directed to support local preparedness. Likewise, in West Nusa Tenggara, technical capacity was reinforced by constructing-resilient infrastructure following the Lombok earthquakes.

By comparison, implementing policy capacity across the four dimensions—institutional, regulatory, technical, and participatory—remains underdocumented in West Sulawesi. Existing literature tends to emphasize emergency response and post-disaster recovery, while in-depth analyses of institutional readiness and community engagement in mitigation efforts are scarce. This underscores a significant research gap, particularly regarding how these four dimensions can be systematically integrated into a coherent mitigation framework in West Sulawesi. Furthermore, aligning local regulatory capacity with the national policy framework poses a distinct challenge.

This comparative perspective highlights the novelty of this study's focus on measuring and enhancing policy capacity across the four dimensions, specifically within West Sulawesi. The present research aims to map existing policy capacities and identify structural weaknesses and avenues for development in the region's unique context. In doing so, it contributes new insights to disaster-mitigation policy studies.

2. Methods

2.1. Concept of Capacity

Capacity can be defined as the ability to carry out tasks or produce expected outcomes. According to Moenir, ability relates to one's role or task that creates goods or services. It also refers to a person's condition or characteristic that enables them to carry out tasks based on established rules or organizational structures [1]. Haryanto emphasizes that the advancement of an organization is primarily determined by the competence of its human resources [2].

Morgan explains that capacity includes skills, knowledge, attitudes, values, relationships, behaviors, motivation, resources, and conditions that enable individuals, organizations, networks, and broader systems to perform their functions and achieve set development goals [3]. Capacity can be divided into human, social, and political capability and may reside within individuals, groups, organizations, or entire societies [4].

According to Keban, capacity building is a core approach to development, enabling individuals to define their priorities and organize themselves for change [5]. Milen describes capacity building as a continuous improvement process within individuals, institutions, or systems, supported internally and externally, such as by donors [6]. Milen also defines capacity as the ability of individuals, organizations, or systems to perform

effectively, efficiently, and sustainably. UNDP and CIDA describe capacity development as the process through which individuals, groups, organizations, and institutions improve their ability to perform core functions, solve problems, set objectives, and meet development needs sustainably [6].

Grindle views capacity building as the ability to perform tasks appropriately, effectively, and efficiently, especially within public sector organizations [7]. Brown adds that it enhances individuals' or systems' ability to reach their desired goals [8].

In local governance, capacity is critical for implementing regional autonomy. Capacity is not limited to human resources but includes systems and managerial structures. Dwiyanto categorizes regional capacity into technocratic and political capacities [9]. Almond states that governance capabilities consist of regulatory, extractive, and distributive capacities, where democratic societies tend to be more responsive than totalitarian systems [10].

In regional governance, these capacities include:

1. Regulatory capacity – the ability to govern its region and population through regional regulations.
2. Extractive capacity – the ability to gather and optimize regional resources;
3. Distributive capacity – the ability to distribute regional resources equitably.

These are further linked to sound governance principles:

1. Accountability – the degree of responsibility for public policies and services;
2. Professionalism – emphasizing expertise and compliance with ethical and legal standards;
3. Equity – ensuring fairness and equal opportunity for all citizens.

Political capacity includes:

1. Responsiveness – the ability to listen and respond to community needs;
2. Networking and collaboration – building partnerships with external stakeholders.

Public participation is a key element of political capacity. Effective participation occurs when citizens are aware and actively involved in policy-making. However, public participation remains low due to a lack of awareness and structural-cultural factors.

Transparency is also vital, ensuring open access to policy-related information with three main elements: consistent data, comprehensive and up-to-date information, and ease of access [10].

Capacity, therefore, involves decision-making ability, inter-institutional coordination, and analysis to support public service delivery. It includes:

1. Policy capacity – decision-making and coordination ability;
2. Implementation capacity – the ability to execute and enforce policies;
3. Operational capacity – the ability to deliver effective and efficient public services.

2.2. Concept of Policy

In the Indonesian dictionary, policy is a set of concepts or principles that form the basis for planning and implementing work to achieve specific goals. Etymologically, the word "policy" derives from Greek, Sanskrit, and Latin: "polis" in Greek meaning "city-state," "pur" in Sanskrit meaning "city," and "politia" in Latin meaning "state" [11].

According to Carl Friedrich, policy refers to a proposed course of action suggested by an individual, group, or government within a specific environment, which presents opportunities and constraints in achieving particular objectives [12]. A policy inherently includes elements such as goals, objectives, or intentions.

Jones defines policy as consistent and recurring behavior related to efforts within and through government to address public problems. This view suggests that policy is inherently dynamic [13].

Abidin categorizes policy into three levels:

1. General policy – guidelines covering broad issues across institutions or regions.
2. Implementation policy – operationalization of general guidelines, often in the form of government regulations.
3. Technical policy – more specific operational actions under implementation policies [14].

These definitions summarize policy as a strategic, goal-oriented process or action intended to address specific issues. According to Anderson, policy has several key implications [15]:

1. It is goal-directed, not arbitrary.
2. It reflects patterns of behavior by public officials, not isolated decisions.
3. It is about what the government does, not just what it plans to do.
4. It may be positive (explicit governmental action) or harmful (deliberate inaction).
5. It carries legitimate authority and demands public compliance, distinguishing it from other rules.

Generally, policy refers to written decisions that bind members of an organization and influence behavior with the intent to establish new societal values. Unlike laws, policies are not legally binding in the same way but rather serve as flexible guidelines that allow for contextual interpretation.

2.3. Concept of Policy Capacity

Policy capacity refers to the government's ability to formulate, implement, and evaluate policies effectively and efficiently. It reflects the ongoing effort to enhance governance performance to address issues and deliver expected outcomes [16].

Morgan defines policy capacity as the combination of skills, knowledge, attitudes, relationships, motivation, resources, and conditions that allow individuals, organizations, and systems to perform their functions and achieve development goals over time [3].

Effective disaster mitigation policy requires adequate capacity across four interrelated dimensions:

1. Institutional – the presence of clear mandates, effective coordination, and competent human resources;
2. Regulatory – the legal frameworks and policies underpinning mitigation;
3. Technical – access to data, tools, infrastructure, and skilled personnel;
4. Participatory – the degree to which communities are involved in planning and implementation [6], [17].

According to UNDP, institutional capacity means organizations' ability to manage resources, establish structures, and adapt to challenges [6]. In disaster mitigation, strong institutions such as BPBD must be capable of long-term strategic planning and cross-sectoral collaboration [18].

Law No. 24/2007 provides the national foundation on the regulatory side, but regional implementation often lacks integration into development documents like RPJMD and spatial plans [19].

Technical capacity refers to mastery of mitigation methods and technologies such as hazard maps and early warning systems. Regions like West Sulawesi still struggle with this due to resource disparities [20].

Participatory capacity depends on public involvement in policy processes. The Pressure and Release (PAR) model states that vulnerabilities stem from exclusive development. Involving local wisdom and community groups enhances the relevance and sustainability of mitigation strategies [21].

In sum, policy capacity is a complex, multidimensional component. Strong institutions, actionable regulations, technical resources, and inclusive participation are all necessary for effective disaster mitigation, especially in high-risk regions like West Sulawesi.

2.4. Method

This study was conducted from December 2024 to January 2025 at the Regional Disaster Management Agency (BPBD) and relevant local government institutions (OPD) in West Sulawesi Province. The research employed a qualitative descriptive method with an exploratory case study approach to examine disaster mitigation policy capacity through direct field inquiry. Data collection involved multiple techniques, including observation, semi-structured interviews with core informants (government agencies), key informants (experts), and supporting informants (local community members), as well as questionnaires and literature studies. The study uses purposive sampling and reaches out to the relevant individuals.

The materials used included observation sheets and structured questionnaires, while the tools consisted of stationery for manual recording, a digital camera for documentation, and a tape recorder to record interviews. Both primary data (field observations, interviews, and documentation) and secondary data (books, journals, laws, and related documents) were utilized.

In qualitative research, interview guidelines and their results do not require validity and reliability testing like quantitative research, which uses structured instruments (such as questionnaires). However, the concepts of validity and reliability are still relevant. Data validity is assessed based on the level of credibility, which can be achieved

through obtaining trustworthy sources of information (data triangulation), confirming interview results with informants (member checking), and the researcher's involvement in data collection (prolonged engagement). Meanwhile, data reliability is based on data consistency throughout the research process (dependability), such as when the researcher uses structured interview guidelines, records the interviews, and is actively involved in data analysis activities.

The analysis was conducted using the Miles and Huberman model [22], consisting of four stages: (1) data collection, to gather valid and relevant information; (2) data reduction, to focus and simplify the collected data; (3) data display, to present the information in a structured format; and (4) conclusion drawing and verification, to interpret patterns and formulate findings. Data reduction is simplifying the data obtained from interviews, observations, and documentation, presenting it in narrative form, identifying patterns, and making comparisons.

The location was chosen due to the BPBDs and related agencies' strategic role in developing and implementing disaster mitigation policy. The analysis focused on four key dimensions—institutional, regulatory, technical, and participatory capacity—critical for understanding and improving regional disaster mitigation efforts in West Sulawesi.

3. Results and Discussion

3.1. Institutional Capacity

Institutional capacity serves as a critical foundation for formulating and implementing disaster mitigation policies at the regional level. In the context of West Sulawesi Province, the Regional Disaster Management Agency (BPBD), as the technical institution responsible for disaster management, has become a central instrument in reducing disaster risks. However, this institutional structure continues to face structural and functional challenges that hinder its policy capacity.

Structurally, BPBD West Sulawesi faces limitations regarding competent and trained human resources, particularly managerial and technical disaster management skills. These constraints impact the effectiveness and timeliness of risk-based policy planning. Additionally, the organizational structure has yet to support cross-sectoral coordination fully. Collaboration between BPBD and technical agencies such as the Public Works Agency, Social Services, Health Office, and vertical institutions like the military (TNI),

police (Polri), and BMKG remains sporadic and reactive, particularly during disaster events.

Functionally, neither BPBD nor related institutions has yet optimized their role in implementing continuous mitigation activities. Most interventions focus on emergency response and post-disaster recovery, rather than prevention and risk reduction. This suggests that institutional capacity for integrating mitigation into regional development planning remains weak, even though mitigation should be an integral and anticipatory part of the development cycle.

An interview with the Head of the Prevention and Preparedness Division at BPBD revealed:

"*We carry out our duties according to our responsibilities, especially in formulating prevention and preparedness plans for disaster risk reduction. We generally integrate mitigation into regional development planning documents, ensure infrastructure development considers disaster risks, and promote cross-sector collaboration with other OPDs, NGOs, and the private sector. Through this preventive approach, BPBD serves as the front line in creating resilient and disaster-ready regions*."*(Interview, February 16, 2025)*

BPBD plays a central role in disaster mitigation at the regional level. As the lead agency, it is responsible for planning, coordinating, and implementing risk reduction programs, including risk assessment, early warning systems, public education, and capacity-building for staff and volunteers.

Further insights came from the Head of Social Protection and Insurance at the Social Services Department, who stated:

"*We support mitigation efforts by strengthening the social protection of vulnerable groups. This includes maintaining integrated beneficiary data, preparing disaster logistics, and developing responsive social protection systems. We also train and guide Disaster Response Youth (Tagana), who lead public education, evacuation, and psychosocial support*."*(Interview, February 18, 2025)*

This approach ensures that the Social Services Department contributes to both emergency and preventive mitigation by building community preparedness and inclusive social protection systems for at-risk groups such as older people, children, and people with disabilities.

The Head of the Public Health Division at the Health Office also emphasized the importance of readiness:

"*Our focus is ensuring healthcare facilities remain operational during emergencies, including preparing disaster-resilient health centers and training emergency medical response teams. These actions contribute to reducing health risks and strengthening community resilience*."*(Interview, February 20, 2025)*

The Health Office supports mitigation by enhancing healthcare systems' ability to respond to disaster conditions. Their work includes risk mapping, training medical staff, and ensuring logistical support for public health needs during disasters.

The researcher interviewed the Head of the Emergency Division of the West Sulawesi Regional Disaster Management Agency (BPBD) to inquire about the coordination between BPBD, related government agencies (OPD), and local governments in planning and implementing disaster mitigation programs in West Sulawesi.

"Inter-agency coordination is ongoing, but response time and program synchronization still need to be improved. Sometimes, when BPBD plans disaster simulations, the technical agencies are not fully prepared, so more integrated planning is necessary." (Interview, February 16, 2025).

The head of the Disaster Management Section of the West Sulawesi Social Affairs Office was also interviewed regarding structural or administrative obstacles to implementing disaster mitigation in the region.

"The main obstacle we face is overlapping bureaucratic structures. Some authorities at the district and provincial levels are not yet fully integrated, so when a disaster occurs, communication is often delayed." (Interview, February 18, 2025).

An interview with a resident of Tapalang Village, West Sulawesi, regarding the role of BPBD and the local government in anticipating disasters in disaster-prone areas.

"I know there's a BPBD that handles disasters, but honestly, information about their programs rarely reaches the community. We are only informed when there is a simulation, which doesn't happen yearly." (Interview, February 20, 2025).

Despite the progress, institutional collaboration across city/regency governments remains inconsistent. Some regions with high earthquake potential, such as Majene and Mamuju, still lack comprehensive and operational contingency plans. This gap highlights the absence of standardized institutional practices for inter-regional disaster mitigation policy. Moreover, the limited involvement of non-governmental actors—such as universities, civil society organizations, and the private sector—reflects a deficiency in collaborative institutional capacity.

Ideally, disaster mitigation institutions must be participatory and engage multiple stakeholders in inclusive risk governance. While BPBD has shown development, including its role in cross-sectoral forums and formulating disaster management plans (RPBD), challenges remain in integrating mitigation into broader development strategies and securing consistent resources and political support.

3.2. Regulatory Capacity

The regulatory aspect of disaster mitigation policy capacity in West Sulawesi still faces several critical challenges, particularly in harmonizing national legal frameworks with effective implementation at the local level. While Indonesia has established a solid national legal foundation, such as Law No. 24 of 2007 on Disaster Management, local operational regulations remain limited in scope and contextual relevance.

Although efforts have been made to strengthen regional regulations, many regencies and cities in West Sulawesi still lack specific regional regulations (Perda) on disaster management or contingency plans embedded within their regional development planning documents. Existing policies often remain sectoral and have not yet mainstreamed mitigation as a core development priority. Moreover, synchronization between documents such as the Regional Medium-Term Development Plan (RPJMD), Spatial Planning (RTRW), and strategic plans of local agencies (OPD) is still suboptimal. As a result, mitigation is not yet fully embedded in the broader development agenda.

This lack of integration weakens local policy capacity and creates disjointed risk reduction efforts. To be effective, mitigation must be recognized as a disaster management activity and a critical component of sustainable regional development.

An interview with the Head of the Prevention and Preparedness Division of BPBD reinforced this point:

"*From a regulatory perspective, disaster mitigation policy capacity is heavily determined by the legal framework's existence, implementation, and effectiveness underpinning every step and strategy. BPBD strategically ensures mitigation policies are executed within a clear and enforceable regulatory structure."(Interview, February 16, 2025)*

BPBD West Sulawesi operates under national laws and various BNPB regulations. However, its role is not limited to interpreting national policy; it also includes initiating region-specific rules that reflect local conditions. These include contingency plans, the

Regional Disaster Management Plan (RPBD), and integrating disaster concerns into development planning (e.g., RPJMD and RKPD).

Despite progress in developing policy documents, implementation still faces hurdles. A significant challenge is the lack of regulatory coherence, where sectoral policies and disaster mitigation strategies function in isolation. This limits BPBD's ability to push for systematic, risk-based planning.

In addition, the enforcement of existing regulations is inconsistent. Many regional policies are not backed by clear technical guidelines or operational standard operating procedures (SOPs), which complicates their implementation by local agencies. This gap between policy and practice reflects a capacity shortfall in lawmaking, regulation enforcement, and integration into administrative routines.

Political dynamics and limited budget authority further inhibit BPBD's ability to advocate for robust, context-specific regulations. As a non-structural agency under the Governor, BPBD often faces challenges in aligning its initiatives with other OPDs or securing long-term institutional commitments.

Nevertheless, BPBD promotes regulatory improvement through cross-sector coordination and public awareness. For example, the agency has supported formulating the Governor's Regulations on early warning systems and community-based disaster preparedness protocols—efforts to localize national frameworks into regionally relevant guidelines.

An additional perspective from the Head of Social Protection and Insurance at the Social Affairs Office illustrates the cross-sectoral challenge:

"*Our regulatory involvement focuses on social protection during disaster conditions, grounded in laws like Law No. 11 of 2009 on Social Welfare and Ministerial Regulation No. 28 of 2017 on Disaster Response in Social Protection. However, much of our programming still lacks solid local legal grounding.*"*(Interview, February 18, 2025)*

This illustrates how cross-sector actors like the Social Affairs Office contribute to disaster mitigation from a legal and operational perspective, yet often do so without dedicated, localized legal instruments. This can weaken program continuity, particularly when leadership or budget priorities shift.

An interview with a member of the West Sulawesi Regional People's Representative Council (DPRD) Commission on Social Affairs and Welfare regarding how effective current regulations are in promoting community preparedness for disasters:

"The existing regulations are quite good, especially in forming disaster preparedness teams at the village level. However, implementation is still uneven. There are still some villages that do not have specific training." (Interview, February 16, 2025).

An interview with the Head of the Legal and Public Policy Section of West Sulawesi BPBD, regarding legally binding regulations and their practical implementation in the field:

"In terms of regulations, there is a strong legal framework, but enforcement is still weak. Public dissemination is also suboptimal, so many people do not understand their rights and obligations in disaster mitigation." (Interview, February 18, 2025).

An interview with a resident of Malunda Subdistrict, West Sulawesi, regarding the public's understanding of government regulations on disaster preparedness:

"It seems that not many people know about those rules. Most rely on information from the village head or during socialization events. If no such activities exist, the community doesn't understand what to do when a disaster happens." (Interview, February 20, 2025).

In practice, implementation gaps also occur between provincial and district levels and across agencies. For example, the distribution of social assistance or the management of post-disaster logistics is often hampered by unsynchronized technical regulations and unclear mandates.

In summary, although formal legal instruments exist, regulatory capacity remains constrained by a lack of harmonization, weak implementation mechanisms, and insufficient legal contextualization at the regional level. Effective disaster mitigation policy requires not only the availability of laws but also their operability, clarity, enforceability, and alignment with community needs.

3.3. Technical Capacity

Technical capacity is a critical component of disaster mitigation policy. It involves mastering the knowledge, skills, tools, technologies, and infrastructure needed to support preparedness, prevention, and risk reduction. In the case of West Sulawesi, technical capacity remains one of the weakest aspects of the overall policy framework.

Field observations show that many districts in West Sulawesi lack essential disaster risk information such as hazard maps, evacuation route plans, early warning systems, and baseline vulnerability data. This absence of foundational data significantly hampers

the development of effective and responsive mitigation strategies. Additionally, using geospatial technology and decision support systems (DSS) is minimal and sometimes nonexistent.

Infrastructure for supporting disaster mitigation—such as resilient public buildings, safe evacuation centers, and logistical warehouses—is often underdeveloped or unequally distributed among high-risk areas. This technical gap limits not only response capacity during disasters but also proactive mitigation efforts that could reduce long-term risk exposure.

An interview with the Head of the Prevention and Preparedness Division at BPBD West Sulawesi confirmed:

"*Technical capacity plays a crucial role in disaster mitigation. We face challenges in acquiring and managing geospatial data, hazard zoning, and establishing early warning systems. Moreover, our technical human resources still need intensive training in risk modeling, data analysis, and emergency simulation*."*(Interview, February 16, 2025)*

This statement highlights the urgent need for technical competence in hardware and infrastructure, as well as human resources capable of translating data into actionable mitigation policies.

As noted in a previous interview, the Health Office of West Sulawesi has taken some steps toward strengthening technical capacity by preparing disaster-resilient health centers and emergency medical response teams. However, coordination between sectors is still fragmented. For example, although BMKG provides early warnings, many communities lack the tools, procedures, or awareness to act on them.

Technical equipment such as sirens, weather monitoring tools, rescue kits, and information dissemination systems is often unavailable or outdated. In some cases, community-based early warning systems exist but are not integrated with official protocols, resulting in delays and confusion during disaster events.

Moreover, disaster simulations and drills are not conducted regularly, especially in schools, hospitals, and government offices. This reduces public readiness and increases vulnerability in the event of a disaster. Capacity-building programs for technical personnel at BPBD and other OPDs also remain sporadic due to budget constraints and a lack of long-term planning.

The Social Affairs Office echoed this concern, stating:

"*We are still lacking in disaster logistics readiness and warehouse facilities. Our capacity is largely reactive rather than preventive, hindering our ability to operate efficiently in emergencies*."*(Interview, February 18, 2025)*

In addition, many public buildings—including schools and health centers—have not been retrofitted to withstand earthquakes or floods, even though such hazards are recurrent in the region. Technical audits and risk-based construction standards are not routinely applied in infrastructure projects.

Interview with a Technical Staff Member of the West Sulawesi BPBD, regarding whether early warning system (EWS) equipment and technology in West Sulawesi are adequate for disaster anticipation:

"Early warning devices have been installed in several disaster-prone areas, but not all are functioning properly. Some of the equipment is still damaged, and the repair process takes a long time." (Interview, February 16, 2025).

Interview with the Head of Information Technology at West Sulawesi BPBD, regarding the readiness of technical personnel to operate and respond to information from the early warning system:

"Technical personnel have been trained, but the frequency of training is still lacking. Some operators do not fully understand how to update the system when extreme weather changes occur." (Interview, February 18, 2025).

Interview with a resident of Kalukku Village, West Sulawesi, regarding whether they have ever seen or heard an early warning system (EWS) near their residence during a disaster:

"I've seen a device like a siren near the village office, but it rarely seems to be tested. During the last earthquake, I didn't hear it go off. Maybe it was broken or simply not working." (Interview, February 20, 2025).

Overall, the technical capacity for disaster mitigation in West Sulawesi remains limited by insufficient infrastructure, outdated equipment, poor data systems, and a lack of trained personnel. Improving technical capacity requires strategic investments in infrastructure, consistent use of modern technology, inter-agency data sharing, and continuous professional development for field actors.

3.4. Participatory Capacity

Participatory capacity refers to the extent to which communities and other stakeholders are involved in planning, implementing, monitoring, and evaluating disaster mitigation policies. In West Sulawesi, participatory mechanisms remain limited, sporadic, and often symbolic, despite their crucial role in building disaster resilience.

Field observations show that public participation in disaster mitigation planning is generally low, particularly at the grassroots level. Most community members are still unfamiliar with basic disaster risk reduction (DRR) concepts, hazard mapping, and evacuation procedures. Socialization and community engagement programs are irregular, and when conducted, often use technical language that is difficult for the general public to understand.

An interview with a community leader in Simboro District, Mamuju, revealed:

"*We rarely receive clear information about what to do when disasters occur. Most of the time, people only learn after it happens. There are no routine training sessions, and sometimes we feel excluded from the government's planning processes.*"*(Interview, February 22, 2025)*

This testimony highlights the disconnect between formal institutions and community-level actors, which weakens public trust and limits the effectiveness of policy implementation. Participatory capacity must involve not only consultation but active involvement of citizens, especially in risk-prone areas.

The Head of the Prevention and Preparedness Division at BPBD acknowledged:

"*We still need to improve our outreach to the community. Participation is not yet optimal. While we have included several community groups in training and drills, we need more structured and continuous programs that empower people to take initiative in risk reduction.*"*(Interview, February 16, 2025)*

The involvement of community-based organizations (CBOs), local wisdom networks, and youth groups remains underutilized. For example, the Disaster-Ready Villages (Destana) initiative has not been scaled up widely in West Sulawesi, even though it could enhance local preparedness and foster bottom-up planning.

Interview with the Head of the Disaster Preparedness Community Communication Forum, regarding the extent to which the community is involved in the planning and implementation of disaster mitigation programs in the area:

"Community involvement already exists, especially in disaster-prone villages. However, participation is mostly in the form of socialization, not yet at the policy planning stage." (Interview, February 16, 2025).

Interview with a disaster response volunteer in West Sulawesi, regarding the level of knowledge the public has to act quickly during a disaster:

"There are still people who don't understand the evacuation procedures or how to respond during emergencies. Socialization efforts need to be more intensive, especially in remote areas." (Interview, February 18, 2025).

Interview with a resident of Simboro Subdistrict, regarding whether they have ever been involved in disaster preparedness training or outreach in their neighborhood:

"There was once an evacuation drill, but that was a long time ago—about two years ago. Since then, there hasn't been anything. We hope there will be regular training so we know what to do." (Interview, February 20, 2025).

Furthermore, the education sector has not fully integrated disaster awareness into school curricula. While some schools have conducted evacuation simulations, these are not systematic or part of a larger participatory mitigation program. Religious leaders, women's groups, and persons with disabilities are often excluded from planning sessions, although they represent key vulnerable groups that could contribute unique insights and needs assessments.

Another challenge is the lack of feedback mechanisms that allow citizens to report risks or voice concerns. Community participation tends to be more active during emergency response or aid distribution phases rather than during mitigation or preparedness phases, suggesting that participation is reactive rather than proactive.

Financial barriers also restrict participatory capacity. Many community programs rely on short-term project funding without sustainable follow-up. This results in low motivation and minimal institutional memory within the community.

Overall, participatory capacity in West Sulawesi is hindered by limited public awareness, weak communication between the government and the community, inadequate inclusion of marginalized groups, and unsustainable engagement models. Strengthening this dimension requires a shift from top-down dissemination to bottom-up empowerment, enabling communities to become active agents in building local resilience.

4. Conclusion

This study shows that the disaster mitigation policy capacity in West Sulawesi remains limited across four critical dimensions: institutional, regulatory, technical, and participatory. Institutionally, the presence of the BPBD and relevant OPDs has not been accompanied by strong inter-agency coordination or optimal human resource capabilities. Functionally, the roles of these institutions are still focused on emergency response rather than long-term risk reduction.

From the regulatory perspective, although national legal frameworks such as Law No. 24 of 2007 are in place, their localization and integration into regional planning documents remain weak. Many regional regulations do not reflect West Sulawesi's specific needs and vulnerabilities, and their enforcement is hampered by inconsistent implementation and limited political support.

Technically, the region faces serious challenges in infrastructure, data availability, and the application of disaster-related technologies. The absence of risk maps, early warning systems, and trained personnel significantly reduces the effectiveness of mitigation programs. Public facilities have also not been adequately prepared to withstand disaster impacts.

Participatory capacity is still reactive and limited. Public involvement in planning and policy formulation is minimal, often occurring only during emergency response. Community awareness and education are lacking, and marginalized groups are underrepresented in the decision-making process.

To strengthen the disaster mitigation policy capacity in West Sulawesi, a tiered priority of actions must be established between short-term and long-term goals, with a transparent allocation of responsible parties. In the short term, the focus is on institutional strengthening through optimizing coordination by the Regional Disaster Management Agency (BPBD) as the frontline in disaster management, supported by related government agencies (OPD) in providing risk data and basic infrastructure. In addition, revision of regulations that more firmly support disaster mitigation should be promoted by the Regional House of Representatives (DPRD) through adaptive and risk-based legislation. Technical capacity enhancement is carried out through regular disaster management training and emergency response simulations involving technical OPDs and BPBD.

In the long term, capacity strengthening focuses on developing disaster-resistant infrastructure and integrating mitigation measures into spatial planning by related OPDs.

BPBD, together with the community, needs to increase participation through ongoing education and community awareness programs. On the regulatory side, DPRD is expected to update local regulations regularly to accommodate changing risks and advances in mitigation technologies. The synergy between institutions, regulations, technical capacity, and participation is expected to enhance disaster resilience in West Sulawesi sustainably.

Acknowledging the study's limitations will place the findings in the appropriate context. The limited research period affects the data's relevance in describing disaster mitigation policy capacity dynamics. These findings can serve as a foundation for broader research in other provinces by comparing institutional variations, regulations, technical readiness, and community participation variations. Recognizing the study's limitations clarifies the scope of the findings and opens opportunities for further research that expands the temporal and spatial scope of analysis.

Taken together, these findings indicate that the overall capacity for disaster mitigation policy in West Sulawesi is still far from optimal, requiring significant structural, institutional, and cultural improvements.

To address the challenges identified, this study proposes the following recommendations:

1. Institutional Strengthening: Improve the organizational capacity of BPBD and relevant OPDs through regular training programs, strategic human resource development, and stronger coordination mechanisms.

2. Regulatory Reform: Accelerate the formulation of regional disaster management regulations that are contextual, enforceable, and aligned with national frameworks. These should be integrated into regional development plans like the RPJMD and RTRW.

3. Technical Development: Invest in infrastructure, data systems, and technologies that support proactive mitigation efforts. This includes developing early warning systems, hazard maps, and simulation training.

4. Community Engagement: Strengthen participatory mechanisms by involving communities in all phases of the disaster cycle, especially risk assessment, planning, and education. Ensure the involvement of vulnerable groups to promote inclusive participation.

5. Cross-Sector Collaboration: Encourage collaboration with NGOs, academic institutions, and the private sector to build a more holistic and resilient disaster management system.

In the future, follow-up researchers could conduct quantitative evaluations of the effectiveness of the Early Warning System (EWS) and longitudinal studies post-implementation of new regulations, which would enrich this research, especially in measuring the concrete impacts of disaster mitigation policy capacity in West Sulawesi. Evaluations like the EWS assessment can accurately show how quickly and effectively the early warning system operates in reducing the risk of casualties and infrastructure damage. Meanwhile, longitudinal studies following regulation implementation can observe changes in institutional capacity, regulatory effectiveness, and increased community participation over the years.

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