

Disaster Mitigation Management Strategy in Improving Community Knowledge, Attitudes and Behavior by the Regional Disaster Management Agency in Nunukan Regency

Saskia Sara Dewi, Nur Insan and Hasniaty

Master of Management Program, Postgraduate Faculty, Fajar University Makassar

email: saskiasaradewi@gmail.com

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Abstract

This study was conducted at the Regional Disaster Management Agency (BPBD) of Nunukan Regency with the aim of identifying the disaster mitigation management strategies employed to enhance community knowledge, attitudes, and behaviors. The study also explores the factors that hinder and support the implementation of these strategies. The research adopts the strategic management framework proposed by Wheelen and Hunger (2008) and employs a qualitative descriptive approach. Informants were selected using purposive sampling, and data were collected through interviews, observation, and documentation. Data analysis followed the interactive model by Miles, Huberman, and Saldana (2014). The findings reveal that BPBD Nunukan implements four primary strategies: (1) leveraging strengths and opportunities, (2) capitalizing on opportunities while minimizing weaknesses, (3) using strengths to counter threats, and (4) minimizing weaknesses and avoiding threats. Mitigation activities include public outreach, training programs, technical guidance, the establishment of the Disaster Risk Reduction Forum (FRPB), Disaster-Resilient Villages (Destana), Student Disaster Awareness Programs (Sispena), and the installation of disaster risk signposts. Supporting factors include the existence of local disaster management policies, relevant activity programs, effective inter-departmental coordination, collaboration with local institutions and communities, the use of media such as social platforms and official websites, and partnerships with national radio (RRI). Conversely, inhibiting factors include limited budgets, inadequate infrastructure, insufficient human resources in both quality and quantity, the absence of standardized operating procedures (SOPs) for disaster mitigation, and geographical challenges specific to the Nunukan Regency.

1. Introduction

Indonesia, as an archipelagic nation, is among the countries most frequently affected by disasters. This vulnerability is primarily due to its geographical location at the convergence of three major tectonic plates: the Eurasian Plate, the Indo-Australian Plate, and the Pacific Plate. These conditions make Indonesia highly susceptible to various natural hazards, including volcanic eruptions, tsunamis, floods, and landslides.

Disasters are defined as events or a series of events that threaten and disrupt human life and livelihoods, caused by natural, non-natural, and human factors, resulting in human casualties, environmental damage, property loss, and psychological impact (Law No. 24 of 2007).

Disasters are classified into three types: natural, non-natural, and social. Natural

disasters involve disturbances arising from the environment that negatively impact the community's livelihood, social structure, and fulfillment of basic needs (Haryanto, 2003).

Disaster mitigation refers to a series of efforts aimed at reducing disaster risks through physical development, increased public awareness, and improved capacity to respond to potential hazards. Mitigation activities include spatial planning, infrastructure and settlement development, and the provision of education, public awareness campaigns, and training, using both conventional and modern approaches.

Globally, disaster management has received increased attention due to its unpredictable and life-threatening nature. The frequency and severity of disasters—both natural and non-natural—have risen significantly.

According to the **World Risk Report (2022)**, Indonesia ranks third globally among countries most vulnerable to disasters. This ranking is based on the high frequency and impact of disaster events in the country.

Data from the **National Disaster Management Agency (BNPB)** up to September 2024 records **1,200 natural disasters** in Indonesia. Floods are the most frequent, with 750 events, followed by forest and land fires (210), extreme weather (198), landslides (88), droughts (32), earthquakes (11), tidal waves and abrasion (8), and volcanic eruptions (3).

To address this, the government—through BNPB—has implemented various disaster management efforts before, during, and after disaster events. Disaster mitigation, particularly in the **pre-disaster phase**, plays a crucial role in reducing risks. For disaster-prone areas, access to mitigation information is essential to ensure that communities understand the causes of disasters and the necessary steps to take when a disaster occurs.

Disaster mitigation strategy management refers to a systematic and planned approach to minimizing the impact of disasters through preventive, preparedness, and effective response measures. This includes risk identification, planning, and action implementation at all stages of disaster occurrence.

Strategic management focuses on setting organizational goals, developing and implementing policies, and allocating resources

to achieve these goals. Effective and well-targeted strategies are essential in ensuring that organizations can carry out their missions and achieve their visions.

Strategic management is also necessary for government institutions across sectors. As Berry and Wescheller (in Bryson, 2008) note, strategic management provides a rational, leadership-oriented view in policy development.

According to David (2011), strategic management is "the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives." Similarly, Wheelen and Hunger (2003) define it as a set of managerial decisions and long-term actions including environmental scanning, strategy formulation, implementation, and evaluation.

Nawawi (2005) adds that strategic management involves large-scale, future-oriented planning (vision), high-level decision-making (mission), and optimization of operational plans to achieve strategic goals.

Nunukan Regency, based on its geographical, geological, hydrological, and demographic characteristics, is prone to both natural and non-natural disasters. According to the **Central Statistics Agency (BPS) of North Kalimantan Province**, Nunukan has experienced the highest number of natural disasters among the five regencies in the province, particularly forest and land fires.

Table 1.1. Natural Disaster Incidents in North Kalimantan Province (2024)
Disaster Profile of Nunukan Regency

Regency /City	Amount Natural Disaster Landslide	Amount Natural Disaster Flood	Amount Natural Disasters Forest and Land Fires	Amount Natural Disasters Weather Extreme
Malinau	-	6	-	-
Bulungan	1	-	13	-
Tidung Land	-	-	-	-
Nunukan	1	9	19	2
Tarakan	-	4	8	-
North Kalimantan	2	19	40	2

Source : BPS North Kalimantan Province

Nunukan's **Disaster Risk Index (IRB)**, as per BNPB's 2024 Indonesian Disaster Data

and Information (DIBI), falls into the **medium to high-risk category**. This index provides

valuable input for local governments in policy-making, planning, and disaster management.

Table 1.2. Disaster Risk Index of Nunukan Regency (2015–2023)

Tahun	2015	2016	2017	2018	2019	2020	2021	2022	2023	Kelas Risiko 2023
Nilai IRB Kabupaten Nunukan	173,2	173,2	173,2	169,3	169,3	169,3	170,5	170,5	154,6	Tinggi

Sumber: DIBI-BNPB, 2024

To implement effective disaster management, Law No. 24 of 2007 mandates that each region must have a measurable disaster response plan and a dedicated institution. In response, Nunukan Regency established its **Regional Disaster Management Agency (BPBD)** through **Regional Regulation No. 3 of 2014** and **Regent Regulation No. 36 of 2021**.

Disaster Occurrence and Impact in Nunukan

Based on BPBD data, Nunukan experiences frequent hydrometeorological disasters such as strong winds, floods, forest fires, and landslides. Flooding occurs annually and results in substantial material loss and casualties. Although the area is considered seismically stable, tectonic faults in nearby areas could still pose a future threat.

Table 1.3. Natural Disaster Incidents in Nunukan Regency

Jenis Bencana		Tahun Kejadian Bencana									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
01	Abrasi	-	-	-	-	-	1	2	-	-	1
02	Cuaca Ekstrem	1	1	-	3	1	6	3	6	5	3
03	Banjir	2	3	5	7	2	3	7	6	22	7
04	Banjir Bandang	-	-	-	-	-	-	-	-	1	-
05	Banjir dan Tanah Longsor	-	-	-	-	-	-	1	1	1	1
06	Gempabumi	1	-	-	-	-	-	1	-	-	-
07	Kebakaran Hutan dan Lahan	-	25	1	47	2	52	7	8	30	20
08	Tanah Longsor	-	2	-	1	2	1	2	6	2	4
09	Kekeringan	-	-	-	-	-	-	-	-	2	1
Jumlah		4	31	6	58	7	63	23	27	63	37

Sumber: Data Bencana BPBD Kabupaten Nunukan, 2024

Areas exposed to disaster threats should be considered in spatial planning and development strategies.

Table 1.4. Disaster Hazard Exposure Area in Nunukan Regency

Jenis Bahaya		Luas Bahaya (Ha)				Kelas
		Rendah	Sedang	Tinggi	Total	
01	Banjir	212.277,87	127.434,42	131.033,34	470.745,63	Tinggi
02	Banjir Bandang	25.785,81	10.719,27	9.558,99	46.064,07	Tinggi
03	Tanah Longsor	147.651,93	282.520,71	434.336,94	864.509,58	Tinggi
04	Cuaca Ekstrim	152,46	210.659,31	323.209,98	534.021,75	Tinggi
05	Gelombang Ekstrim dan Abrasi	-	7.102,71	1.353,24	8.455,95	Tinggi
06	Gempabumi	1.354.787,94	2.566,06	-	1.357.354,00	Rendah
07	Tsunami	4.509,72	901,80	-	5.411,52	Sedang
08	Kekeringan	-	1.308.942,77	48.411,23	1.357.354,00	Tinggi
09	Kebakaran Hutan dan Lahan	106.690,95	476.639,19	234.381,42	817.711,56	Tinggi

Source : BPBD Regency Data Nunukan , 2024

High loss potential is observed across all disaster types in Nunukan. These include

physical damage, economic losses, and environmental degradation.

Table 1.5. Potential Losses from Disasters in Nunukan Regency

Jenis Bahaya		Potensi Kerugian (Juta Rupiah)			Kelas	Kerusakan Lingkungan (Ha)	
		Kerugian Fisik	Kerugian Ekonomi	Total Kerugian		Luas	Kelas
01	Banjir	856.242,54	452.241,51	1.308.484,05	Tinggi	258.435,54	Tinggi
02	Banjir Bandang	78.437,91	93.709,13	172.147,04	Tinggi	20.278,26	Tinggi
03	Tanah Longsor	274.421,99	4.128.573,99	4.402.995,98	Tinggi	716.808,33	Tinggi
04	Cuaca Ekstrim	1.923.166,18	1.179.422,79	3.102.588,97	Tinggi	-	-
05	Gelombang Ekstrim dan Abrasi	130.263,57	8.911,67	139.175,24	Tinggi	8.319,60	Tinggi
06	Gempabumi	787,50	5.922,34	6.709,84	Tinggi	-	-
07	Tsunami	2.105,66	2.467,97	4.573,63	Tinggi	888,84	Tinggi
08	Kekeringan	-	4.011.071,04	4.011.071,04	Tinggi	1.354.631,31	Tinggi
09	Kebakaran Hutan dan Lahan	-	2.267.903,74	2.267.903,74	Tinggi	711.008,01	Tinggi

Source: BPBD Regency Data Nunukan , 2024

Disaster Mitigation Strategy in Nunukan

Disaster response has largely focused on **emergency response**, but there is growing recognition of the need to prioritize **disaster mitigation** through strategic management. BPBD Nunukan employs both **passive** and **active mitigation** approaches. **Passive mitigation activities** include:

- Legislation and regulation drafting
- Disaster vulnerability mapping
- Development of standard operating procedures
- Educational media (brochures, posters)
- Disaster risk assessments
- Integration of disaster education into school curricula
- Community disaster task force formation

Active mitigation activities include:

- Installing disaster signage
- Enforcing spatial planning and building regulations
- Disaster training for officials and communities
- Relocation of vulnerable populations
- Public counseling and awareness programs
- Structural mitigation (e.g., dams, levees)

In addition, BPBD carries out:

- Disaster simulations
- Media campaigns (mass and social media)
- Public persuasion efforts

However, it remains unclear whether these efforts have effectively improved **community knowledge, attitudes, and behavior** regarding disaster preparedness.

Research Focus

This study aims to examine how disaster mitigation strategies implemented by BPBD Nunukan contribute to enhancing **community awareness, preparedness, and resilience**. The research applies **Wheelen and Hunger's (2003)** strategic management framework, which emphasizes long-term managerial decisions and actions through environmental scanning, strategy development, implementation, and evaluation.

Given the disaster exposure and impact in Nunukan, this study is titled: **"Disaster Mitigation Management Strategy in Improving Community Knowledge, Attitudes, and Behavior by the Regional Disaster Management Agency in Nunukan Regency."**

2. Literature Review

2.1. Strategic Management Draft

Management originates from the term "to manage," which means to organize, take care of, or administer. Substantively, management refers to a set of activities with managerial characteristics. In terms of terminology, there is still no universally accepted definition, as experts interpret management in various ways.

According to Robbins and Coulter, management is a process of coordinating work activities so they are completed efficiently and effectively with and through other people. George R. Terry defines management as activities undertaken to achieve goals, carried out by individuals who contribute their best efforts through predetermined actions. He emphasizes the need to understand what should be done, how to do it, and how to evaluate the effectiveness of the efforts. Terry also identifies four fundamental functions of management, commonly abbreviated as POAC: Planning, Organizing, Actuating, and Controlling. Planning refers to the process of selecting and linking facts and making assumptions about the future to visualize and formulate activities needed to achieve desired outcomes. Organizing involves determining, grouping, and arranging activities required to achieve goals, placing people accordingly, and providing physical resources and delegated authority. Actuating refers to motivating all members of the organization to strive sincerely and harmoniously to achieve objectives in accordance with the established plan. Controlling is the process of setting standards, evaluating actual performance, and making necessary adjustments to ensure alignment with organizational goals.

The concept of strategy, widely known in military contexts, refers to the method by which commanders organize operations to win battles. In a managerial context, Akdon defines strategy as tips, methods, and primary tactics systematically designed to execute management functions with organizational goals in mind. David Hunger and Thomas L. Wheelen define strategy as a set of managerial decisions and actions that determine long-term organizational performance. Strategy thus encompasses how an organization achieves its vision and maintains competitiveness. In essence, strategy is a carefully planned method to achieve specific objectives.

Strategic management, a combination of management and strategy, refers to a continuous process of planning, implementing,

and evaluating decisions to achieve long-term organizational goals. Wolt, as cited by Akdon, describes management as a process that encompasses planning, organizing, leading, and controlling resources — including human, material, financial, and informational — within an organizational environment. Fred R. David defines strategic management as cross-functional decisions that enable organizations to achieve objectives. Sondang P. Siagian defines it as a series of fundamental decisions and actions taken by top management and implemented across the organization to achieve goals. According to Wheelen and Hunger (2003), strategic management consists of managerial decisions and actions that determine long-term company performance. Lawrence R. Jauch and William F. Glueck (1998) see it as a set of actions leading to effective strategy formulation, while Bambang Haryadi (2003) emphasizes it as a systematic process to formulate, implement, and evaluate strategies to realize an organization's vision and mission. Mulyadi (2001) highlights internal strategies that deliver the best value to customers. Porter (1996) defines strategy as the creation of a unique and valuable position through a set of activities.

The objectives of strategic management include directing organizational resources to align with goals, accommodating the interests of stakeholders (such as employees, shareholders, and society), anticipating change, and improving efficiency and effectiveness. The benefits of strategic management include better decision-making, increased organizational adaptability, heightened motivation through employee involvement, and improved sensitivity to external threats. It also helps prevent internal and external problems, increases profitability, and enhances operational efficiency.

Strategic management involves several key stages: (1) Strategic Intent — which includes defining vision, mission, business scope, business model, and objectives; (2) Strategy Formulation — including SWOT

analysis and setting long-term goals; (3) Strategy Implementation — involving organizational design, resource allocation, and policy development; and (4) Strategy Evaluation — continuous assessment of internal and external factors. Hunger and Wheelen (2003) outline four core elements in strategic management: environmental scanning, strategy formulation, strategy implementation, and evaluation and control. These components are interrelated and form a continuous cycle that supports organizational sustainability. Essential components include vision, mission, objectives, strategies, policies, and the organizational environment.

2.2. Disaster Mitigation Draft

According to Law No. 24 of 2007, mitigation refers to a series of efforts aimed at reducing disaster risks through physical development, public awareness, and capacity building. Mitigation encompasses continuous actions that aim to minimize or eliminate long-term risks to human lives and property. These actions focus on avoiding the placement of people and property in high-risk areas and controlling hazards through specialized infrastructure and technological applications. Disasters, as defined by the same law, are events or series of events that disrupt lives and livelihoods due to natural, non-natural, or human-made causes, resulting in casualties, environmental damage, material losses, and psychological impact.

Disasters are categorized into three types: (1) Natural disasters, such as earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes, and landslides; (2) Non-natural disasters, including technological failures and disease outbreaks; and (3) Social disasters, which include conflicts and terrorism. Disaster mitigation refers to proactive measures taken before a disaster occurs, including preparedness and long-term risk reduction. Government Regulation No. 21 of 2008 states that disaster mitigation should include physical development, community awareness, and

increased resilience. It must also be supported by both soft power (such as education and outreach) and hard power (such as infrastructure development).

Disaster mitigation can be classified into structural and non-structural efforts. Structural mitigation (Zakky, 2018) includes engineering techniques and infrastructure development to minimize vulnerabilities, such as flood channels, early warning systems, and earthquake-resistant buildings. Non-structural mitigation involves regulatory policies, public education, and community preparedness. The BPBD of Nunukan Regency has implemented various mitigation efforts, including the installation of warning signs, enforcement of spatial regulations, disaster preparedness training, relocation from high-risk areas, public education campaigns, and the development of evacuation routes and shelters. These efforts are complemented by the use of both mass media and social media for public awareness.

According to the National Disaster Management Agency (BNPB, 2012), mitigation activities are divided into passive and active types. Passive mitigation includes the drafting of legislation, risk mapping, guideline development, poster and brochure distribution, disaster studies, risk assessments, educational integration, formation of task forces, strengthening community forums, and mainstreaming disaster risk reduction in development. Active mitigation includes signage installation, supervision of land use and building permits, disaster training for communities, relocation initiatives, counseling, temporary shelter planning, and construction of protective structures.

2.3. Knowledge, Attitude, and Behavior Draft

Knowledge, as defined in the Indonesian Dictionary, encompasses everything known and serves as a guide for action. It can be acquired through personal experience, particularly when individuals face the same event repeatedly, such as disasters. Donsu (2016) describes knowledge as a behavioral response driven by sensory

curiosity. Notoatmodjo (2019) emphasizes that knowledge results from sensory experiences, especially sight and hearing, and is shaped by attention, perception, and memory. Knowledge may originate from tradition, religion, experience, logic, or intuition. Factors influencing knowledge include internal factors (education, work environment, age) and external factors (environment, socio-cultural systems).

Attitude, according to Notoatmodjo (2014), is an individual's internal response to a stimulus that cannot yet be directly observed. Attitude consists of several levels, such as receiving, responding, valuing, and being responsible. These levels reflect how individuals internalize and act upon their beliefs.

Behavior refers to observable or non-observable actions that occur as responses to specific stimuli. According to Skinner (in Notoatmodjo, 2014), behavior is a reaction to external stimuli and includes all forms of human activity, whether consciously realized or not. Behavior is shaped by various factors and interactions, and in a biological sense, it represents human activity driven by internal and external influences.

2.4. Conceptual Framework

The Nunukan Regency Disaster Management Agency (BPBD) has implemented various mitigation strategies, including signage placement, regulatory supervision, public training, relocation programs, community counseling, temporary shelter planning, and the construction of disaster-resistant infrastructure. These efforts are supported by mass and social media campaigns and persuasive public engagement to enhance community preparedness. Referring to the strategic management model by Hunger and Wheelen (2003), this study adopts a four-stage process: environmental scanning, strategy formulation, implementation, and evaluation. This model serves as the foundation for analyzing the effectiveness of disaster

mitigation strategies in enhancing community knowledge, attitudes, and behavior.

2.5. Operational Definitions

To provide clarity, the operational definitions used in this study are as follows: (1) Strategic management refers to the process of planning, implementing, and evaluating decisions to achieve long-term organizational goals. (2) Disaster refers to events that disrupt community life and livelihoods due to natural, non-natural, or human-made causes. (3) Mitigation refers to efforts aimed at reducing disaster risks through physical development, awareness, and capacity-building. (4) Disaster mitigation is the set of actions taken before a disaster occurs to reduce its potential impact. (5) Disaster management encompasses all efforts to reduce risks and manage disasters, including prevention, mitigation, preparedness, emergency response, and recovery. (6) Knowledge is the result of processed and internalized information. (7) Attitude reflects the mental and neural states derived from experience that influence individual responses. (8) Behavior is the observable response of an individual to a stimulus, shaped by frequency, duration, and intention, whether realized or not.

3. Research Methods

3.1. Research Approach and Type

This research aims to explore the disaster mitigation management strategies implemented by the Regional Disaster Management Agency (BPBD) of Nunukan Regency in enhancing public knowledge, attitudes, and behavior. Therefore, a **qualitative descriptive approach** was employed. This approach allows researchers to engage directly with the research subject, gathering information based on the perceptions of both the researchers and informants, which may evolve through the interactions that occur during interviews.

This study is a type of **qualitative research**, which, according to Lexy J. Moleong,

is designed to understand phenomena experienced by research subjects—such as behavior, perceptions, motivations, and actions—holistically and descriptively in the form of words and language within a natural context, utilizing various scientific methods. Accordingly, the researcher describes the disaster mitigation strategies carried out by BPBD Nunukan to enhance public knowledge, attitudes, and behavior.

3.2. Researcher's Role Management

The researcher plays an internal, subjective role as the primary instrument of data collection. The researcher will conduct **in-depth interviews** to explore how the disaster mitigation management strategies are implemented by the BPBD of Nunukan Regency to improve public knowledge, attitudes, and behavior. This includes preparing interview materials and questions related to the study focus. The research instruments used in this study include interview guides, observation notes, and documentation.

3.3 Research Location

The research was conducted at the **Regional Disaster Management Agency (BPBD)** of Nunukan Regency, North Kalimantan Province. This location was purposefully selected because it directly aligns with the research focus on disaster mitigation strategies carried out by BPBD Nunukan in enhancing public awareness and preparedness. Furthermore, BPBD serves as the official local government institution specifically responsible for disaster-related matters in the region.

3.4 Data Sources

Data sources are crucial components in research and influence the choice of data collection methods. As stated by Purwoko (2008), data sources refer to the origins from which data or information are obtained. According to Loufland (in Moleong, 2000), "The primary data sources in qualitative research are words and actions, while additional sources include documents and other materials."

Informants were selected using **purposive sampling**, where individuals are chosen based on their relevance to the study topic or direct involvement in disaster mitigation activities. The informants in this study include:

1. The Head of BPBD Nunukan Regency, the Secretary of BPBD, the Head of Information and Systems, the Head of Prevention, Preparedness, Rehabilitation and Reconstruction, and the Head of Rescue and Evacuation Division.
2. Documents such as written records, archives, official regulations (e.g., Regent's Decrees), the organizational structure of BPBD, strategic plans, disaster mitigation SOPs, reports, and relevant data.

The data collected consisted of two types:

1. **Primary data**, gathered directly through field observations and in-depth interviews with key informants. The process of observing, listening, and questioning was carried out in a conscious, structured, and purposeful manner to obtain relevant information.
2. **Secondary data**, used to complement the primary data, included documents, records, reports, official websites, online articles, and other literature related to the research topic at BPBD Nunukan.

To ensure data validity and prevent bias, **triangulation techniques** were applied, combining data from various sources to strengthen the findings (Sugiyono, 2018).

3.5 Data Collection Techniques

The procedures for data collection in this study included the following methods:

1. **In-depth Interviews**: This technique involves structured conversations aimed at exploring participants' thoughts, feelings, and experiences, reconstructing past events, and anticipating potential future occurrences.
2. **Observation**: Information was gathered through direct observation of activities and behavior during the research process.

3. **Documentation**: This method involved collecting both primary and secondary data by reviewing documents such as laws, regulations, archives, reports, and expert opinions relevant to the research.

3.6 Data Analysis Techniques

This study employed **qualitative descriptive analysis** to systematically describe, interpret, and explain the data collected. The analysis followed the **Interactive Model of Analysis by Miles, Huberman, and Saldaña (2014)**, which involves three concurrent activities:

1. **Data Condensation**: The process of selecting, simplifying, abstracting, and transforming raw data from field notes, interview transcripts, documents, and other empirical materials.
2. **Data Display**: Organizing and presenting data to facilitate understanding, drawing conclusions, and identifying further actions or analysis.
3. **Conclusion Drawing and Verification**: From the beginning of data collection, researchers look for meaning, identify patterns, relationships, and configurations. Conclusions may emerge progressively or after all data is collected, depending on the coding process, data organization, researcher expertise, and research scope.

This analytical model allows researchers to interpret complex data in a coherent, systematic manner to generate meaningful conclusions.

3.7 Validity of Findings

To ensure the validity of findings, **triangulation** was employed, involving cross-verification of data obtained from different sources. This process may reveal three outcomes: (1) data sources align and reinforce each other; (2) data differ but are not contradictory; or (3) data sources conflict. In all scenarios, diverse perspectives were

acknowledged and accommodated to ensure comprehensive analysis.

3.8 Research Stages and Timeline

The research is planned to take place over a **four-month period**, from **February to**

May 2025, covering the stages of preparation, data collection, analysis, and report writing. The timeline considers the availability of informants and the operational schedule of BPBD, ensuring minimal disruption to institutional activities.

Table 3.1. Research Stages and Timeline

No	Description	Feb	Mar	Apr	May	Jun	Jul
1	Research Title Consultation and Proposal	✓					
2	Proposal Writing	✓					
3	Proposal Seminar			✓			
4	Data Collection and Analysis			✓	✓		
5	Research Report Writing					✓	
6	Research Findings Seminar						✓
7	Final Defense (Closed Examination)						

4. Results and Discussion

Strategic management is a series of management processes implemented within an organization to achieve its vision and mission, maintain alignment with its environment, and formulate and implement strategies alongside strategic control to ensure the organization's goals are attained. Strategic management focuses on determining organizational objectives, formulating and developing policies and plans to achieve those objectives, and allocating resources to implement the policies effectively.

To examine the strategic management of disaster mitigation conducted by the Regional Disaster Management Agency (BPBD) of Nunukan Regency in enhancing public knowledge, attitudes, and behavior, this study adopts the framework proposed by Wheelen and Hunger (2008), which includes four indicators of strategic management: **environmental scanning, strategy formulation, strategy implementation, and evaluation and control.**

4.1. Environmental Scanning

Environmental scanning involves observing and recording conditions or changes in the surrounding environment, including

natural aspects and human activities. The aim is to understand natural phenomena, assess human impact on the environment, and monitor ecosystem sustainability. This can be done through direct observation, measurement, or the use of technology such as sensors and satellite imagery.

In strategic management, environmental scanning is the initial and critical step taken before strategy formulation, involving both the internal and external environments of the organization. This helps in identifying and analyzing external opportunities and threats, as well as internal strengths and weaknesses, which can influence the achievement of organizational objectives.

External environmental factors influencing BPBD Nunukan's disaster management strategies include:

1. Policies and regulations supporting disaster management
2. Support from local government leaders
3. Collaboration with other agencies and institutions
4. Community support

Internal environmental factors include:

1. Human resources
2. Disaster mitigation programs

3. Budget allocations from the regional government (APBD)
4. Facilities and infrastructure
5. Information dissemination via social media and websites

Law No. 24 of 2007 on Disaster Management serves as the foundation for establishing regional disaster management bodies like BPBD. In Nunukan, this is formalized through Regional Regulation No. 24 of 2011 and later updated by Regulation No. 10 of 2021 and Regent Regulation No. 36 of 2021 concerning the organizational structure, duties, and functions of BPBD Nunukan.

According to an interview on July 7, 2025, BPBD Nunukan is mandated to assist the Regent in formulating technical policies and plans and managing disaster-related responsibilities as part of essential public services. BPBD's basic services focus on public peace, order, and protection, in alignment with the vision and mission of the regional leadership. The agency prioritizes programs and activities aligned with these services in its planning and budgeting documents.

4.2 Human Resources

Human resources (HR) are essential in disaster management. The number and competencies of personnel at BPBD Nunukan are considered inadequate for effective disaster response. According to an interview with the Head of BPBD on July 7, 2025, staffing shortages make the agency highly reliant on support from other government agencies and community volunteers during emergencies.

Table: Number of BPBD Employees by Employment Status (2025)

No.	Employment Status	Number
1	Civil Servants	34
2	Contract Staff	45
Total		79

BPBD must serve 21 sub-districts with just 79 personnel, leading to challenges during disaster response, especially in remote areas. Personnel are also stationed at sub-district

disaster response posts. These posts were established by BPBD through a formal decree (No. 188.4/12/BPBD/IX/2023) to ensure rapid and integrated disaster response. These posts cover regions including Sebuk, Sembakung, Lumbis, Sebatik Island, and Krayan. Each sub-district disaster post coordinates with local authorities, collects disaster data, monitors vulnerable areas, initiates emergency rescues, and reports incidents to BPBD headquarters.

4.3 Budget Constraints and Infrastructure

Besides limited HR, BPBD Nunukan faces budgetary challenges. Funding is often insufficient for operations, equipment, and infrastructure necessary for effective disaster management.

Communication and coordination are key. BPBD Nunukan uses various information channels including electronic media, warning signs, mass media, and social media. It collaborates with RRI Nunukan in the "Kentongan" program for community education on disaster mitigation and preparedness.

Standard Operating Procedures (SOPs) are established for disaster response at both the district and sub-district levels. However, as of July 2025, a specific SOP for disaster mitigation was still under development.

4.4 SWOT Analysis of BPBD Nunukan

To assess BPBD's internal and external environment, a **SWOT analysis** was conducted, identifying:

- **Strengths:** Existing regulations, inter-agency cooperation
- **Weaknesses:** Limited human resources, budget, and infrastructure
- **Opportunities:** Community support, cooperation with institutions/NGOs, social media presence
- **Threats:** Lack of SOPs for mitigation, challenging geographic conditions

Strategic Recommendations (SO, WO, ST, WT):

- **SO Strategy:** Leverage existing regulations and social media for public outreach, and strengthen inter-agency programs.
- **WO Strategy:** Use community volunteers to address HR gaps, utilize tech for data and recruitment, and seek NGO partnerships for infrastructure.
- **ST Strategy:** Form SOPs using existing regulations, enhance collaboration to manage disasters in geographically isolated areas.
- **WT Strategy:** Improve HR capacity and increase disaster management budget through stronger budget advocacy and planning.

5. Closing

5.1 Conclusion

Based on the research findings and discussion, it can be concluded that the disaster mitigation management strategy implemented by the Regional Disaster Management Agency (BPBD) of Nunukan Regency involves various community-oriented programs. These include public awareness campaigns, training sessions, technical guidance, the establishment of disaster-resilient villages (Destana), student-based disaster response initiatives (Sispena), and the installation of disaster-prone zone signs.

The SWOT analysis revealed several supporting factors in BPBD's disaster mitigation efforts to enhance public knowledge, attitudes, and behavior. These include: the presence of local regulations governing disaster management across pre-disaster, emergency response, and post-disaster phases (e.g., Regent Regulation No. 36 of 2021 concerning the organizational structure and functions of BPBD Nunukan); the availability of mitigation-related work programs; effective interdepartmental collaboration; strong cooperation with related agencies and the community; utilization of media platforms such as social media, official

websites, and partnerships with RRI for disaster information dissemination.

However, several inhibiting factors were also identified, including: limited budget allocation; inadequate facilities and infrastructure; shortage of qualified and competent human resources; absence of a dedicated Standard Operating Procedure (SOP) for disaster mitigation; and the geographical vulnerability of Nunukan Regency.

5.2 Suggestions

1. It is necessary to enhance the quality and quantity of human resources within BPBD Nunukan, especially in terms of competence and technical expertise.
2. Increase budget allocation specifically for disaster mitigation efforts.
3. Improve and expand the availability of facilities and infrastructure to support BPBD's operational effectiveness.
4. BPBD should consistently implement community-based programs to raise awareness, knowledge, and behavioral responsiveness toward disaster risks.
5. A dedicated disaster mitigation SOP must be developed and implemented as a standardized reference for BPBD activities in future mitigation planning.

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