

Regional Disaster Management Agency Strategy In Flood Disaster Mitigation In Bontang City, East Kalimantan Province

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Abstract:

The research entitled "Regional Disaster Management Strategies in Mitigating Flood Disasters in the City of Bontang, Province of East Kalimantan" based on the events of the flood disaster that hit the City of Bontang, it is known that it is a natural disaster that often occurs compared to other natural disasters. So the Regional Disaster Management Agency needs to immediately improve flood management based on the mitigation aspect by evaluating and analyzing appropriate and fast strategies according to the existing conditions in the City of Bontang so that they can find out the right efforts and the constraints that affect them so that they can maximally reduce the risk of flood disasters efficiently and effective. This study aims to determine the strategies, constraints, and efforts of the Regional Disaster Management Agency in tackling floods in the city of Bontang through mitigation activities. Through analyzing Kooten's strategy theory using descriptive qualitative research methods and inductive approaches through data collection techniques namely interviews, observation, and documentation as well as data analysis techniques using triangulation techniques by testing the validity of the data that has been collected and through the stages of data reduction, data presentation, and withdrawal conclusion. Based on the results of the analysis it was concluded that the mitigation strategy of the Regional Disaster Management Agency in the city of Bontang has carried out a good strategy in several indicators, but there are obstacles that have caused the mitigation strategy to not be optimally implemented. So the authors suggest that the Regional Disaster Management Agency in the city of Bontang can continue to improve institutional quality in evaluating appropriate mitigation strategies according to existing conditions in various aspects.

Keywords: *Strategy; Mitigation; Flood; Disaster*

1. Introduction

Indonesia, with the world's largest archipelago and its unique geographic position at the intersection of three tectonic plates, faces significant complexities and challenges related to natural disasters. With more than 17,480 islands, Indonesia is situated between two continents, Australia and Asia, and bordered by the Indian and Pacific Oceans. This situation makes Indonesia highly vulnerable to various natural disasters, particularly those associated with volcanic activity and climate change. One concrete example is the high frequency of flooding in Indonesia. According to data from the National Disaster Management Agency (BNPB) from 2018 to 2023, floods ranked first in the number of disaster events, followed by extreme weather events such as tornadoes. This phenomenon is caused by several factors, including high rainfall, inadequate water infrastructure, and land use changes.

Bontang City, in East Kalimantan Province, serves as a concrete example of the complexity of flood disasters in Indonesia. The rapid growth of this city, driven by industrial activities such as mining and infrastructure development, has significantly altered the environmental landscape. As a result, natural water absorption has decreased, increasing the risk of flooding. Data shows that Bontang City ranks second in the number of disaster events in East Kalimantan Province, after Samarinda City. Additionally, other factors that exacerbate the situation include a lack of attention to disaster mitigation and climate change, leading to extreme weather conditions. Inadequate drainage systems and illegal activities upstream of rivers also

contribute to the increased risk of flooding. The impacts are not only limited to physical losses but also include serious social, economic, and environmental consequences.

In facing these challenges, the role of the Regional Disaster Management Agency (BPBD) becomes crucial. Through the MONEV (monitoring and evaluation) strategy, BPBD Bontang strives to regularly monitor and evaluate flood risks. However, to address this issue effectively, a comprehensive and collaborative strategy involving various stakeholders, including local governments, communities, and the private sector, is necessary. Therefore, through this research, the author intends to investigate the strategies implemented by BPBD in flood disaster mitigation in Bontang City, East Kalimantan Province. This is expected to provide a better understanding of disaster mitigation efforts and encourage the development of more effective and sustainable solutions in facing natural disaster challenges in Indonesia.

Indonesia, with the world's largest archipelago, faces a number of complex challenges related to natural disasters. With more than 17,480 islands and its location between two continents and bordered by two oceans, Indonesia is highly vulnerable to various types of disasters, particularly those related to volcanic activity and climate change. Data from the National Disaster Management Agency (BNPB) shows that floods dominate the frequency of disaster events in Indonesia, followed by extreme weather such as tornadoes. Factors such as high rainfall, lack of adequate water infrastructure, and land use changes are the main causes of frequent flood disasters. One concrete example is Bontang City in East Kalimantan Province, which faces serious challenges related to flood disasters due to rapid growth and industrial activities such as mining. The lack of attention to disaster mitigation and extreme climate change further exacerbates the situation. Although the Regional Disaster Management Agency (BPBD) Bontang has implemented the MONEV strategy for monitoring and evaluating flood risks, more comprehensive and collaborative efforts are needed to address this issue effectively. Therefore, research aimed at investigating BPBD's strategies in flood disaster mitigation in Bontang City is expected to provide a better understanding of disaster mitigation efforts and encourage the development of more effective and sustainable solutions in facing natural disaster challenges in Indonesia.

Table 1: Number of Flood Disasters by Sub-District in Bontang City, Year 2020-2022

District	Flood		
	2020	2021	2022
South Bontang	1	-	2
North Bontang	1	1	2
West Bontang	1	1	1

Source: BPS Kota Bontang 2022

Based on the data presented in Table 1, it is concluded that floods have consistently occurred in every district of Bontang City over the past three years. Heavy rainfall with high intensity leads to flooding in Bontang City. Another contributing factor is the increased water discharge, which is also caused by the flow from upstream to downstream areas. The tangible impacts felt by the residents of Bontang City during floods include effects on public health sanitation, disruptions to the economy, and hindered transportation access, which in turn affect the educational activities in several schools.

To help reduce disaster risk, the role of the government in Bontang City, East Kalimantan Province, is guided by the mandate of Law Number 24 of 2007 concerning Disaster Management, specifically through

Articles 5 to 8. These articles stipulate that the tasks and authority to reduce disaster risk in the relevant areas are the responsibility of the local government. This necessitates that the government engage in disaster risk reduction efforts, including public education on disaster awareness and preparedness, and encourage private sector participation to minimize the risk of future flood-related losses.

2. Research Method

The research method employed in this study is a qualitative approach. This approach was chosen because it allows the researcher to gain an in-depth understanding of the phenomenon under investigation and to explore various related aspects. According to Kirk and Miller, as cited by Suryabrata (2008), the qualitative approach involves direct observation and interpretation of existing phenomena. This approach enables the researcher to acquire experience in uncovering and understanding hidden aspects behind phenomena that are difficult to grasp broadly.

The qualitative approach in this study is descriptive in nature, aiming to provide a comprehensive depiction or explanation of the conditions of the subject being studied. The main objective is to obtain detailed and complete data from the subject and to link various variables with other factors. This research employs a case study approach, which is a type of research that investigates a problem with clear boundaries, collects data comprehensively, and utilizes various sources of information. The time, place, and cases studied are clearly identified in this research, encompassing programs, events, activities, or individuals related to flood disasters in Bontang City.

Operationalization of concepts involves breaking down theories or concepts into several parts to facilitate understanding and measurement. In this study, the operationalization of concepts is conducted by detailing the existing concepts into several dimensions and indicators aligned with the research objectives. One theory used is Kooten's theory, which comprises four dimensions: organizational strategy, program, resources, and institutional.

The data sources in this research include primary data sources, such as information from the Regional Disaster Management Agency of Bontang City and related communities, as well as additional data in the form of documents from BPBD. Informants are selected based on purposive sampling, chosen for their perceived knowledge and understanding relevant to the research problem.

The primary research instrument is the researcher himself. The researcher is responsible for collecting data, analyzing information, and drawing conclusions based on the research findings. Data collection techniques include observation, interviews, and documentation. Observations are conducted using non-participatory research to directly observe flood mitigation in Bontang City. Interviews are conducted using semi-structured techniques to gather in-depth information from informants, while documentation is used to collect data from documents related to flood disasters.

The data analysis technique used is the interactive analysis model, which includes data reduction, data display, and conclusion drawing. Data reduction involves summarizing, selecting important points, and creating relevant themes. Data display is conducted through various forms such as tables, diagrams, and logical narratives. Conclusion drawing is performed by interpreting findings and ensuring their validity through repetition and data tracing.

The chosen research location is the Regional Disaster Management Agency of Bontang City, which is directly related to the flood disaster issues in the area.

3. Results and Discussion

3.1 Overview of Bontang City

Bontang City is one of the cities in East Kalimantan Province, located approximately 120 km from Samarinda, the provincial capital of East Kalimantan. This city covers an area of approximately 161.9 km², consisting of 3 districts and 15 sub-districts. These three districts are South Bontang District, North Bontang District, and West Bontang District. Bontang City has a population density of 305,907 inhabitants, with a diverse mix of ethnicities and religions.

Geographically, Bontang City is situated at 113°30'-114°07' East Longitude and 1°35'-2°24' South Latitude, encompassing an area of 49,757 hectares, predominantly marine territory (34,977 hectares or 70.30%), while its land area is only 14,780 hectares (29.70%). Bontang City is a significant industrial hub in East Kalimantan Province, home to several large companies, including those in the fertilizer industry.

The geographical boundaries of Bontang City are as follows:

1. Northern Boundary: Teluk Pandan District, East Kutai Regency.
2. Eastern Boundary: Makassar Strait.
3. Southern Boundary: Marang Kayu District, Kutai Kartanegara Regency.
4. Western Boundary: Teluk Pandan District, East Kutai Regency.

Based on the data, Bontang City consists of three districts: West Bontang District, North Bontang District, and South Bontang District. West Bontang District is the largest (121.01 km²), followed by North Bontang District (33.03 km²), and South Bontang District (17.94 km²). The administrative regions of Bontang City include North Bontang District, West Bontang District, and South Bontang District. North Bontang District consists of six sub-districts: Guntung, Loktuan, Gunung Elai, Api-api, Bontang Baru, and Bontang Kuala. South Bontang District consists of six sub-districts: Satimpo, Tanjung Laut, Berbas Pantai, Berbas Tengah, Tanjung Laut Indah, and Bontang Lestari. West Bontang District consists of three sub-districts: Belimbing, Gunung Teliha, and Kanaan. Below is a geographical map of Bontang City.

As one of the cities in East Kalimantan Province, Bontang City serves as a focal point for economic and socio-cultural development within East Kalimantan Province and other provinces, particularly South Kalimantan and Central Kalimantan. In the MP3EI (Master Plan for the Acceleration and Expansion of Indonesia's Economic Development), within the Kalimantan economic corridor, Bontang City, along with Samarinda and Balikpapan in East Kalimantan Province, is directed to promote the development of the trade, agriculture, and mining sectors. Looking to the future, as the heartbeat of a vibrant economy, this city is also a center for services and trade, contributing to the progress of Indonesia's development. Therefore, the government must prioritize the realization of accelerated regional development across all areas related to population, supported by adequate facilities and infrastructure, especially in disaster-related fields.

3.2 Strategy of the Regional Disaster Management Agency in Mitigating Flood Disasters in Bontang City, East Kalimantan Province

In this research, the author uses the Kooten Strategy concept to analyze the strategies of the Regional Disaster Management Agency. This aims to identify the strategies implemented by the agency through four types of strategies:

1. Organizational Strategy
2. Program Strategy
3. Resource Strategy
4. Institutional Strategy

3.2.1 Organizational Strategy

The organizational strategy of the Regional Disaster Management Agency (BPBD) of Bontang City in reducing flood disaster risk focuses on prevention through the evaluation and implementation of both structural and non-structural mitigation. The agency is committed to continuously reviewing mitigation activities to positively contribute to flood disaster management efforts. In its implementation, BPBD Bontang prioritizes prevention by strengthening structural mitigation systems, such as improving drainage systems, protecting forest areas, and creating evacuation points. Additionally, they undertake non-structural mitigation by developing information systems and educating the community. Planned, integrated, and comprehensive services are the main principles, involving other stakeholders and the community in the flood disaster mitigation process. Despite facing various challenges, BPBD Bontang has shown a strong commitment to addressing and reducing the impact of flood disasters in accordance with accountable and transparent good governance principles.

The organizational strategy of BPBD Bontang in reducing flood disaster risk focuses on comprehensive prevention efforts through the evaluation and implementation of both structural and non-structural mitigation. This strategy concept reflects the established vision and mission of the organization, with the primary goal of preventing flood disasters and effectively reducing their impacts. Firstly, BPBD Bontang prioritizes the review and improvement of flood disaster mitigation. This is done by strengthening structural mitigation systems, such as improving drainage systems and forest protection, as well as creating strategic evacuation points. By focusing efforts on structural mitigation, the agency hopes to reduce vulnerability to flood disasters by improving infrastructure that is a primary cause of flooding.

In addition, the organizational strategy also involves non-structural mitigation efforts, such as developing information systems and conducting educational campaigns on disaster risk for the community. This step is crucial for increasing public awareness and understanding of flood disaster risks and actions that can be taken to reduce them. By involving the community in the mitigation process, BPBD Bontang hopes to create a more resilient environment against flood disasters.

Furthermore, the implementation of this organizational strategy requires close collaboration and coordination with various related stakeholders, including local government, relevant agencies, and civil society. By involving multiple parties, BPBD Bontang aims to maximize the effectiveness of flood disaster mitigation efforts and enhance community resilience to disasters. Despite facing various challenges and complexities in dealing with flood disaster risks, BPBD Bontang reaffirms its commitment to providing planned, integrated, and comprehensive services to the community. The principles of accountable and transparent good governance are the foundation in executing this organizational strategy, ensuring that every action taken is always oriented towards the interests and well-being of the community.

Overall, the organizational strategy of BPBD Bontang in flood disaster mitigation emphasizes the importance of prevention as the main approach to reducing disaster risk. By combining structural and non-structural mitigation efforts, involving various stakeholders, and applying good governance principles, BPBD Bontang aims to create a safer and more resilient environment for the community in facing flood disaster threats.

3.2.2 Program Strategy

The organizational strategy of the Regional Disaster Management Agency (BPBD) of Bontang City to reduce the risk of flood disasters is based on a comprehensively developed program strategy. These programs aim to integrate and unify the primary objectives, policies, and phased steps of the organization's activities. The process of formulating this strategy involves the application of specific methods or techniques to ensure optimal implementation of activities in accordance with established policies.

BPBD Bontang has designed a flood disaster mitigation program aimed at reducing the impact of floods in the region. This program is based on field needs assessments involving various relevant parties and is established with agreed-upon budgets and implementation schedules. The program focuses on three main aspects: prevention, preparedness, and mitigation.

First, in the preventive aspect, BPBD Bontang takes measures to prevent the occurrence of flood disasters beforehand. This includes constructing evacuation points in each sub-district in Bontang,

developing urban infrastructure and drainage systems in collaboration with the Public Works and Spatial Planning Agency (PUPR), and implementing comprehensive changes in disaster mitigation approaches. These measures aim to reduce flood vulnerability by improving the infrastructure systems that are the primary causes of flooding.

Second, in the preparedness aspect, BPBD Bontang develops Quick Response Teams (TRC) and Disaster-Responsive Sub-Districts (KALTANA). These teams are intended to provide rapid responses through field monitoring of potential disasters, enabling BPBD to respond quickly to floods and reduce the risk of disaster impacts.

Third, in the mitigation aspect, BPBD Bontang implements a Disaster Communication, Information, and Education (KIE) program for the community. Through this program, the community is educated about the steps to take during a flood disaster, enabling them to respond quickly and appropriately. This is expected to reduce the risk of flood disaster impacts by enhancing community preparedness and knowledge.

The implementation of these programs involves relevant stakeholders such as the PUPR agency, the community, and other institutions. Collaboration and coordination among stakeholders are crucial for effectively executing these programs. Through this comprehensive program strategy, BPBD Bontang hopes to reduce the risk of flood disasters and enhance community resilience against disaster threats in Bontang City.

3.2.3 Resource Strategy

The resource strategy of the Regional Disaster Management Agency (BPBD) of Bontang City for reducing flood disaster risk is based on efficient management of human resources and budget, as well as the adequate management of facilities and infrastructure. First, BPBD Bontang recognizes the importance of human resources in managing flood disasters. They implement a strategy of recruiting volunteers and providing training to the community and members of the Quick Response Team (TRC). This training aims to produce competent human resources in disaster management, expand communication networks, and enhance community preparedness in facing flood disasters.

Second, in terms of budget management, BPBD Bontang ensures efficient and relevant allocation of funds for flood disaster mitigation activities. They rely on resources from the Regional Revenue and Expenditure Budget of Bontang City. The available budget is used to support flood disaster mitigation activities, including capacity building and service quality improvement, procurement of safety equipment, communication channels, operational vehicles, and personnel training. Careful analysis is conducted to ensure that the planned programs align with the available budget.

Third, BPBD Bontang also focuses on the adequate management of facilities and infrastructure to support the implementation of flood disaster mitigation activities. Facilities and infrastructure, including equipment, infrastructure, and other facilities, are essential in facilitating the operations of BPBD Bontang in executing its programs.

Based on interviews, it can be concluded that BPBD Bontang's resource strategy encompasses human resource management, efficient budget management, and adequate management of facilities and infrastructure. With this approach, BPBD Bontang hopes to reduce flood disaster risk and improve preparedness and response to disasters in Bontang City effectively and efficiently.

3.2.4 Institutional Strategy

The institutional strategy implemented by the Regional Disaster Management Agency (BPBD) of Bontang City includes several strategic steps tailored to the environmental conditions and needs of the region to address flood disaster risk. First, BPBD Bontang coordinates with agencies across districts and cities to comprehensively reduce flood disaster risk in East Kalimantan Province. In this regard, they strive to collaborate with other agencies to strengthen the response to floods affecting the area, especially those originating upstream to downstream, such as in Kutai Kartanegara Regency.

Second, BPBD Bontang leverages the unique environmental conditions of Bontang City, referred to as a city with "three urban faces." They use this condition as a basis to coordinate volunteers and take swift and comprehensive mitigation actions in handling flood disasters. This strategy aims to ensure that the areas

covered can be addressed quickly and comprehensively, making the response to flood disasters more effective.

Third, BPBD Bontang undertakes flood disaster risk reduction efforts through ecological preservation. They utilize urban areas bordering forests to absorb water from floods. One of their methods is increasing tree planting and the number of trees in Bontang City. Thus, they aim to turn urban forests into a natural structural mitigation activity for flood disasters without damaging the existing ecology.

From the interviews, it can be concluded that BPBD Bontang wisely employs institutional strategies, leveraging the existing ecological system in their region to carry out flood disaster mitigation programs. This strategy relies on inter-agency cooperation, utilizing unique environmental conditions, and ecological preservation as key steps in addressing flood disaster risk.

3.3 Inhibiting and Supporting Factors Bontang City Disaster Management Agency Flood Disaster Mitigation in Bontang City, East Kalimantan Province

The Regional Disaster Management Agency (BPBD) of Bontang City faces both supporting and inhibiting factors in its flood disaster mitigation efforts. The primary supporting factor is the active participation of the Bontang City community in flood disaster management. The presence of numerous disaster volunteers ready to assist during flood events is a significant asset in reducing disaster risk. Community organizations, including humanitarian and youth groups, also contribute assistance and feedback to the government in its flood disaster mitigation efforts. This support fosters the concept of the pentahelix in disaster management, where all stakeholders, including the community, actively engage in ensuring collective safety and well-being. Additionally, the high level of social awareness among the Bontang community is evident in their enthusiasm for providing logistical support to flood victims. The community's initiative and swift response in helping those affected by floods are valuable assets in flood disaster mitigation efforts.

However, BPBD Bontang also encounters several inhibiting factors. One major challenge is the limitation of budget, facilities, and infrastructure, which constrains the implementation of flood disaster mitigation programs. The institutional capacity of BPBD Bontang is also not yet optimal, impacting the performance of human resources and available facilities. Inadequate execution of work programs results in poor organizational performance, jeopardizing the achievement of goals in reducing flood disaster incidents. Institutional renewal and improvement are crucial to effectively executing flood disaster mitigation programs.

Interviews and observations reveal that the Bontang community has shown high levels of concern and participation in flood disaster mitigation efforts. Nonetheless, the primary challenges lie in budget constraints and institutional weaknesses within BPBD Bontang. Continued support and attention from the Bontang City government are essential to overcoming these inhibiting factors and enhancing the effectiveness of flood disaster mitigation efforts in Bontang City.

3.4 Regional Disaster Management Agency Efforts to Increase Resilience, Preparedness and Regional Strength to Face Flood Disasters

The Regional Disaster Management Agency (BPBD) of Bontang City has undertaken various efforts to enhance resilience, preparedness, and regional strength in facing flood disasters. One of the key steps taken is the improvement of the institution itself. It is known that the institution has not received adequate attention; however, with a series of disasters affecting Bontang City, the local government has become aware of the urgency of institutional improvement. Therefore, BPBD Bontang must enhance its institutional capacity to effectively implement disaster management programs supported by adequate infrastructure and facilities. This is crucial to create a conducive working environment for staff, which in turn will boost morale and productivity in carrying out disaster mitigation tasks. The Head of the Regional Disaster Management Agency of Bontang City emphasizes the importance of institutional improvement as the key to achieving a good level of resilience, preparedness, and regional strength in facing flood disasters.

Institutional improvement encompasses not only internal aspects but also the enhancement of the quality and effectiveness of established mitigation programs. In this context, the enhancement of resilience, preparedness, and regional strength in Bontang City is not solely focused on institutional aspects. These efforts also involve reducing the influence and impact of flood disasters and improving inter-agency coordination. The aim is to optimize response and disaster management, enabling the region to be more prepared and resilient against future flood threats. From interviews and observations, it is concluded that institutional improvement is a crucial step in enhancing the resilience, preparedness, and regional strength of Bontang City in facing flood disasters. This will help create a conducive work environment, improve the efficiency of mitigation programs, and enhance overall natural disaster management infrastructure.

4. Conclusion

The findings of this study conclude that the Regional Disaster Management Agency of Bontang City has successfully implemented flood disaster mitigation measures effectively and efficiently, in line with the defined strategic framework. The strategy encompasses various aspects, ranging from programs, institutions, to resources and organization. In its program strategy, the primary focus is on flood disaster mitigation efforts, both structural and non-structural, while considering three main prevention aspects: preventive, mitigation, and preparedness. However, there are obstacles encountered in achieving the success of these mitigation strategies. One major obstacle is the lack of attention and support from the government towards the Regional Disaster Management Agency of Bontang City. This lack of support includes budget and infrastructure aspects, which affect the institution's ability to carry out disaster mitigation activities. Nevertheless, there are supporting factors that contribute to enhancing the success of disaster mitigation. The enthusiasm of the community to be trained as disaster relief volunteers, as well as the high humanitarian spirit in alleviating the impact of floods in Bontang City, are examples of these supporting factors. To overcome obstacles and improve the success of flood disaster mitigation, the Regional Disaster Management Agency of Bontang City needs to make efforts to enhance readiness, resilience, and potential strength of the region. This can be achieved by improving infrastructure and institutional conditions to be better prepared to face disasters. By coordinating with stakeholders, flood disaster mitigation efforts can help eliminate or at least reduce the impact of flooding in Bontang City.

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