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The Role of the Regional Disaster Management Agency (BPBD) in Preventing Flood Disasters in Mandailing Natal Regency

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Abstract

Higher than usual rainfall and an inability to absorb water optimally have caused flooding in Mandailing Natal Regency. Geographical conditions that include mountains, highlands, lowlands, and coasts also contribute to the potential for complex disasters. This study aims to analyze the role of the Regional Disaster Management Agency (BPBD) in flood prevention and identify inhibiting factors. A qualitative descriptive approach was used, with data obtained through interviews, observations, and documentation. The results of the study indicate that BPBD carries out its role through pre-disaster mitigation, including media appeals, training, construction of safety structures, non-structural mitigation based on community empowerment, and the establishment of Disaster Resilient Villages. At the emergency response stage, BPBD deploys a Rapid Reaction Team (TRC) to assess the situation, while post-disaster recovery is carried out through infrastructure reconstruction, victim trauma assistance, establishment of command posts, damage inventory, and evaluation. The main obstacles include budget limitations and cross-sector coordination. The conclusion of this study confirms that optimizing the role of BPBD requires better synergy with the central government and the community to increase the effectiveness of flood prevention and handling in Mandailing Natal.

Keywords: BPBD; flood; mitigation; emergency response; Mandailing Natal.

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INTRODUCTION

Indonesia is currently threatened by natural disasters such as flooding, which occurs when water above the normal surface overflows into the river bed and floods the land along the riverbank.(Natawidjaja, 2021; Yulianto et al., 2021). Floods can also occur if rainfall is higher than usual, which can cause flooding in residential areas.(Ulum, 2013). Thus, the drainage system—including natural rivers and streams as well as existing artificial flood control systems—is unable to absorb the rainwater, causing overflows. Floods hit Indonesia almost every season; the amount of damage caused by flooding and the frequency of flooding often increase. The unavoidable negative impacts include loss of property or even life.(Azizah et al., 2021).

Indonesia is a country prone to various natural disasters, including floods that often occur in various regions. Floods not only cause material losses, but also casualties, as well as damage to infrastructure and the environment. According to data from the National Disaster Management Agency (BNPB), the frequency of floods in Indonesia shows an increasing trend every year. This condition demands an active role from the government, especially the Regional Disaster Management Agency (BPBD), in efforts to prevent and overcome flood disasters.(Kasih et al., 2007; Sariasih, 2022).

Mandailing Natal Regency has many factors that can cause disasters, including geography, climate, social, cultural, economic and technical factors.(Hidayat et al., 2023). Geographically, Mandailing Natal has a fairly large area—the largest in North Sumatra, above Langkat Regency which is the second largest regency in North Sumatra. Topographically, Madina Regency has many hills, hills, highlands, in addition to lowlands and coastal areas. Both of the above are also important aspects in disaster issues in Madina which has the potential for quite complex disasters, such as floods which cause quite concerning damage.(Matondang et al., 2021).

Mandailing Natal Regency, as an area with diverse topography—from mountains to coast—has a high vulnerability to flooding. High rainfall and environmental damage, such as deforestation, exacerbate the risk of flooding in this area.(Coal, 2021). The flood disaster that occurred in December 2021, for example, resulted in thousands of houses being submerged and infrastructure being damaged, and forced the local government to declare a disaster emergency status.(Pasaribu & Putri, 2021).

BPBD Mandailing Natal Regency has a strategic role in preventing flood disasters through various mitigation programs. These efforts include socialization to the community, construction of flood-retaining infrastructure, and coordination with various related parties. However, the effectiveness of BPBD's role is often constrained by various factors, such as limited budget, human resources, and lack of community participation.

In addition, BPBD Mandailing Natal Regency faces challenges in overcoming flooding caused by land subsidence due to excessive groundwater extraction. This land subsidence increases the vulnerability of the region to flooding, especially in coastal areas. Rising sea levels and global climate change also exacerbate the risk of tidal flooding in the region.(Miftakhudin, 2021). Mitigation efforts carried out by BPBD include the construction of infrastructure such as giant sea walls, improving drainage systems, normalizing rivers, and building reservoirs.(Chairani et al., 2024). In addition, BPBD also conducts socialization to the community regarding the importance of protecting the environment and disaster preparedness. However, the implementation of this strategy is often hampered by budget limitations and coordination between institutions.(Bariroh & Surtikanti, 2024).

The limited human resources trained in disaster management are also a significant obstacle. BPBD requires experts who are able to plan and implement mitigation programs effectively. The lack of specific training and education in the field of disaster management results in low capacity in dealing with emergency situations.(Firdausi et al., 2024). Community participation in flood prevention efforts still needs to be improved. Awareness of the importance of protecting the environment and playing an active role in mitigation programs is often low. BPBD seeks to empower local communities through the formation of disaster-resilient villages and preparedness training, but active participation from the community is still not optimal.(Koesuma et al., 2024).

Document Accepted 9/9/25

To increase the effectiveness of the BPBD's role in flood prevention, synergy is needed between local governments, communities, and the private sector. This collaboration can strengthen capacity in dealing with disasters through increased budgets, human resource training, and active community participation in protecting the environment and disaster preparedness.(Nilawangsa et al., 2023).

The role that has been carried out by the Regional Disaster Management Agency (BPBD) in dealing with the flood disaster in Mandailing Natal Regency includes providing services for residents affected by the disaster, providing temporary housing, building public kitchens, and distributing clothing and food needs to the community. Data on regional disaster management facilities can be seen below:

Table 1. Data on Disaster Management Facilities in Mandailing Natal Regency

	BPBD MANDAILING CHRISTMAS					
1.2.1.	Phone/Fax		:	(0636) 8001606		
1.2.2.	Radio Frequency		:	-		
1.2.3.	Total Personnel		:	71 people		
1.2.4.	Vehicles					
	a.	Vehicle Type	:	Water tank	:	1 Unit
		* Brand	:	Isuzu		
		* Water Tank Capacity	:	5000 L		
	b.	Vehicle Type	:	Pick Up	:	2 Unit
		* Brand	:	Isuzu		
	c.	Vehicle Type	:	Pick Up	:	1 Unit
		* Brand	:	Ford		
	d.	Vehicle Type	:	Double Cabin	:	1 Unit
		* Brand	:	Isuzu		
	e.	Vehicle Type	:	Field Kitchen	:	1 Unit
		* Brand	:	Isuzu		
	f.	Vehicle Type	:	Passenger Car	:	1 Unit
		* Brand	:	Isuzu		
	g.	Vehicle Type	:	Passenger Car	:	1 Unit
		* Brand	:	Toyota		
1.2.5.	Equipment					
	a.	LCR Boat	:	1 Unit		
	b.	Polyethylene Boat	:	2 Unit		
	c.	Folding Boat	:	3 Unit		
	D	Water Pump Machine	:	2 Unit		
	e.	Chainsaw	:	5 Unit		
	f.	Fire Striker	:	10 Unit		
	g.	Water Tank Trailer	:	1 Unit		
	h.	1000L Water Tank	:	1 Unit		
	i.	Family Tent	:	20 Unit		
	j.	Platoon Tent	:	2 Unit		
	a.	BNPB Tent	:	1 Unit		

The table above shows that the Regional Disaster Management Agency (BPBD) of Mandailing Natal Regency has various facilities and infrastructure to support disaster management. In terms of communication, BPBD is equipped with an active telephone/fax, although it does not yet have a radio frequency. There are 71 personnel supported by several operational vehicles, including a 5000 liter water tank, pick-up, double cabin, field kitchen, and passenger car. In addition, BPBD has important equipment such as boats (LCR, polyethylene, folding), water pump machines, chainsaws, fire fighters, water tank trailers, and refugee tents (family, platoon, and BNPB assistance). These facilities show BPBD's readiness in dealing with disasters, although improving communication facilities and adding equipment will further strengthen the response to emergency situations in the future.

Document Accepted 9/9/25

In this study, several previous studies and research references are presented that are considered relevant. Research by Novan (2020) analyzes the role of government in flood risk management in Samarinda City. The results of the study show that the government has carried out its role quickly and appropriately according to the needs of the situation, supported by good coordination with related agencies and stakeholder involvement.(Novan, 2020). Meanwhile, research by Sari (2020) in Gresik Regency found that BPBD played a role in increasing the capacity of equipment and staff services to deal with flood disasters. The program for placing facilities and logistics and providing assistance to flood victims needs to be carried out more accurately to increase the efficiency of victim evacuation.(Sari et al., 2020). Research by Kusumajati and Kurniawan (2019) examines the role of BPBD in disaster management in Pekalongan Regency, emphasizing the importance of prevention, emergency response, and post-disaster recovery measures, with the BPBD coordination function as a key element in the success of the disaster management process.(Kusumajati & Kurniawan, 2019). Research by Fergiawan (2022) shows that the strategy of the Tidore Islands City BPBD, despite facing obstacles in the number of personnel and low public awareness, can be optimized through disaster mitigation training and environmental education.(Fergiawan, 2022). In addition, Fikri (2022) found that the South Lampung BPBD had carried out its responsibilities in accordance with Articles 8 and 9 of Law Number 24 of 2007, although the implementation of post-disaster rehabilitation and reconstruction was still not optimal in terms of effectiveness and efficiency.(Fikri, 2022).

This study aims to analyze the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in Mandailing Natal Regency, including the mitigation steps taken, such as socialization to the community, construction of flood-retaining infrastructure, and coordination with various related parties. In addition, this study also focuses on identifying factors that are obstacles for BPBD in carrying out its duties, such as budget constraints, lack of human resources, and minimal community participation. This study is expected to provide a comprehensive picture of the effectiveness of the strategies that have been implemented by BPBD and offer recommendations to improve the performance of this institution in preventing future flood disasters.

The novelty of this study lies in the in-depth analysis of the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in Mandailing Natal Regency, which combines an evaluative approach to the obstacles to policy implementation with the local geographic and socio-cultural context. Unlike previous studies that more generally discuss disaster mitigation strategies in urban areas or on a national scale, this study specifically explores the challenges and opportunities of BPBD in areas with complex topography, such as Mandailing Natal, which includes mountains, lowlands, and coasts. By utilizing the latest empirical data, this study also integrates theoretical approaches to disaster management with relevant practical recommendations to improve the institutional capacity of BPBD in the local context. This study is expected to be able to fill the literature gap related to the adaptation of disaster mitigation strategies in unique geographic conditions while at the same time providing real contributions to the development of more effective and sustainable disaster management policies.

RESEARCH METHODS

This study uses a qualitative approach with a descriptive type to understand the phenomena experienced by research subjects, such as behavior, perception, motivation, and actions, holistically through descriptions of words in a natural context. (Moleong, 2021). The descriptive approach is used to describe variables systematically, actually, and accurately without comparing or connecting one variable with another, with the aim of providing a clear picture of the facts and relationships between observed phenomena. (Sugiyono, 2017). This study describes the condition of the research object based on facts found in the field, focusing on the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in Mandailing Natal Regency and the inhibiting factors that influence this role. Data collection was carried out through observation, interview,

documentation, and literature study methods to obtain accurate and in-depth information related to the problems studied.

This research was conducted at the Regional Disaster Management Agency (BPBD) Office of Mandailing Natal Regency, located in Jalan Willem Iskandar, Panyabungan District, Mandailing Natal Regency, North Sumatra, with postal code 22977. This location was chosen because of its relevance to the focus of the research on the role of BPBD in preventing flood disasters in the region.

This study uses primary and secondary data as sources of information. Primary data was obtained through observation of the role of the Regional Disaster Management Agency (BPBD) in disaster preparedness in Mandailing Natal Regency, as well as interviews with competent informants. Secondary data was obtained from official BPBD documents, reports, and archives, which function to complement and support information from primary data to provide a more comprehensive picture.(Creswell, 2019).

The informants of this study consist of three categories. The key informant is Mr. Mukhsin Nasution, S. Sos., Head of BPBD Mandailing Natal Regency. The main informants include Mr. Nazaruddin Habib, S. Sos., Head of Prevention and Preparedness Division of BPBD, and Mr. Idham Kholid Nasution, A. Md., Village Head of Panyabungan District. Additional informants include Mr. Pakar, a community member of Mandailing Natal Regency. The selection of informants was carried out using purposive sampling techniques to obtain relevant data.

Data collection in this study was conducted through observation, interviews, and documentation. Observations were conducted directly at the research location to understand the role of BPBD in preventing flood disasters in the Mandailing Natal Regency. Structured interviews were used to obtain information from informants regarding the role of BPBD, while documentation in the form of notes, photos, and relevant documents supported the validity of the data obtained. This combination of methods provides in-depth and comprehensive data.

Data analysis in this study includes data collection, reduction, presentation, and drawing conclusions. Data were collected through observation, interviews, and documentation to obtain complete information. Data reduction was done by summarizing and focusing on important things to find relevant themes and patterns. Data presentation was done narratively to facilitate understanding of the relationship between phenomena. Conclusions were drawn by verifying data findings, connecting them to theory, so that they can answer research problems specifically and in depth.(Miles et al., 2014).

RESULTS AND DISCUSSION

The Role of the Regional Disaster Management Agency in Flood Disaster Prevention in Mandailing Natal Regency

Disaster management is a comprehensive effort guided by Law No. 24 of 2007 concerning Disaster Management and the Regulation of the Regent of Mandailing Natal Regency No. 11 of 2022. In preventing flood disasters, the Regional Disaster Management Agency (BPBD) plays a role in providing services to affected residents, including temporary housing, public kitchens, and distribution of clothing and food needs.

In addition, the local government is tasked with restoring facilities such as roads and housing for people affected by the damage. The government's seriousness in handling disasters is demonstrated by referring to disaster risk maps to optimize disaster mitigation and preparedness programs. This study analyzes the role of BPBD in preventing flood disasters in Mandailing Natal Regency using Handoko's theory (2016) to understand the effectiveness and results of informant responses related to policies and implementations that have been carried out.(Handoko, 2016).

Pre-Disaster

In the pre-disaster stage, the Regional Disaster Management Agency (BPBD) of Mandailing Natal Regency implemented a disaster mitigation program aimed at communities in flood-prone areas. The steps taken include building evacuation routes and providing refugee camps in high-risk areas. Mr. Mukhsin Nasution, Head of BPBD Mandailing Natal Regency, explained that BPBD's role in preventing flooding includes strategic efforts to increase community preparedness and reduce the risk of disaster impacts. This step

Document Accepted 9/9/25

reflects BPBD's commitment to protecting communities from the threat of flooding through planned and targeted mitigation actions.

"Yes, the role of BPBD Mandailing Natal Regency in preventing flooding is by making printed and electronic appeals, then carrying out capacity building activities in the form of training, and making regulations in the form of disaster risk assessment documentation."

The pre-disaster was also explained by Mr. Nazaruddin Habib, S.Sos.. As the Head of the Prevention, Preparedness, Logistics, and Equipment Division of the Regional Disaster Management Agency in Mandailing Natal Regency:

"In the role of BPDB Mandailing Natal Regency for flood disaster prevention, it is supported by funding from DIPA funds (APBN/APBD) to support routine activities and operations of institutions/departments, especially for PRB activities, then disaster contingency funds for preparedness activities at the pre-disaster stage, the availability of Ready Funds for humanitarian assistance when a disaster occurs or when an emergency is declared, as well as Grant-style social assistance funds, namely funds allocated for post-disaster assistance in the Region."

The pre-disaster was also explained by Mr. Idham Kholid Nasution, A.Md. as the Village Head of Penyabungan District:

"The role of BPBD for the community here is to carry out structural mitigation, namely by building safe buildings in disaster-prone areas, and carrying out non-structural mitigation, namely by empowering the community through mutual cooperation."

The pre-disaster was also explained by the expert as a member of the local community in Mandailing Natal Regency:

"The role of BPBD for the people of Mandailing Natal Regency is also carried out through policies such as the establishment of Disaster Resilient Villages, Disaster Resilient Families, and the Preparation of Disaster Management Plan Documents."

Based on interviews, pre-disaster flood management in Mandailing Natal Regency involves the implementation of disaster mitigation programs by providing evacuation routes for communities in flood-prone areas. BPBD carries out various efforts, such as providing appeals through print and electronic media, holding training to increase community capacity, and conducting structural mitigation through the construction of safety buildings in at-risk areas. In addition, non-structural mitigation is carried out by empowering communities through mutual cooperation activities, as well as the formation of Disaster Resilient Villages, Disaster Resilient Families, and the creation of Disaster Management Plan Documents. BPBD's role is also supported by funding from various sources, including DIPA (APBN/APBD) for operational PRB activities, disaster contingency funds for pre-disaster preparedness, Ready-to-Use Funds for humanitarian assistance during emergencies, and grant-style social assistance funds for post-disaster recovery. These efforts reflect BPBD's comprehensive approach to systematically reducing flood disaster risks.

Emergency Response

In the emergency response phase, mitigation is carried out by prioritizing the rescue of vulnerable groups, evacuation of flood-affected communities, and distribution of clothing and food assistance. This emergency response strategy was explained by Mr. Mukhsin Nasution, Head of the Regional Disaster Management Agency (BPBD) of Mandailing Natal Regency, who emphasized that BPBD actively implemented these steps to ensure public safety during the flood disaster in Mandailing Natal Regency. This effort demonstrates BPBD's commitment to providing a fast and targeted response when a disaster occurs.

"The strategy implemented by the BPBD of Mandailing Natal Regency is like sending a TRC to the location where the report from the TRC is used as a benchmark to determine the next steps, whether it is necessary to determine the status or just normal handling."

The Emergency Response was also explained by Mr. Nazaruddin Habib, S. Sos. as the Head of the Prevention, Preparedness, Logistics, and Equipment Division of the Regional Disaster Management Agency in Mandailing Natal Regency:

"BPBD carries out various strategies in this regard to increase public awareness of flood disasters, including Making maps or plans of disaster-prone areas, making disaster alarms, providing counseling and education to communities in disaster-prone areas, and

Document Accepted 9/9/25

establishing guidelines and directions in accordance with the policies of the Regional Government and the National Disaster Management Agency."

The Emergency Response was also explained by Mr. Idham Kholid Nasution, A.Md. as the Village Head of Penyabungan District:

"Here, they also carry out flood mitigation education strategies that can provide benefits to the community, such as Increasing public understanding of the dangers of flooding and how to reduce the risk, helping the community recognize early signs of disaster, providing knowledge about actions to be taken when a disaster occurs, increasing community preparedness in dealing with disasters and reducing the negative impacts of disasters."

The Emergency Response was also explained by the Expert as a Local Community in Mandailing Natal Regency:

"BPBD carries out a flood management strategy here by evacuating to higher ground. Be aware of the water current carrying clothes and blankets, then do not drive a car in a flooded area carrying food and water, then turn off the electric switch and bring additional equipment, secure the house, and place goods in a safe place from flooding, prepare clean water storage, be aware of places where strong flash flood currents pass."

Based on interviews, emergency response in flood management in Mandailing Natal Regency includes a priority on rescuing affected communities and distributing clothing and food aid. BPBD implements an emergency response strategy by deploying a Rapid Reaction Team (TRC) to the disaster location, where the TRC report is used as a basis for determining the next steps, such as determining emergency status or normal handling. To increase public awareness, BPBD also creates maps of disaster-prone areas, installs disaster alarms, provides counseling and education to communities in vulnerable areas, and establishes guidelines and directions that are in line with local government and National Disaster Management Agency policies. These efforts demonstrate BPBD's systematic approach to responding to and managing flood disasters.

Post Disaster

In the post-disaster stage, mitigation is carried out by recording damage data, restoring economic empowerment, improving social conditions, and repairing facilities and infrastructure damaged by flooding. Mr. Mukhsin Nasution, Head of the Regional Disaster Management Agency (BPBD) of Mandailing Natal Regency, explained that the role of BPBD in this stage focuses on restoring the conditions of the affected community and infrastructure, to ensure that the community can return to normal activities with the support of adequate facilities. These steps reflect BPBD's commitment to providing long-term solutions to overcome the impact of flooding.

"In the role of BPBD here, first ask for assistance from the Center through a proposal if the disaster is in emergency response status, then if it is not in an emergency response position, together with the community, work together to clean up the debris of the disaster, then distribute basic life assistance to disaster victims."

Post-Disaster was also explained by Mr. Nazaruddin Habib, S.Sos. as Head of Prevention, Preparedness, Logistics, and Equipment of the Regional Disaster Management Agency in Mandailing Natal Regency:

"The role of BPBD in Mandailing Natal Regency is also to carry out activities in the post-natural disaster stage, such as rebuilding damaged buildings and roads, helping trauma victims, establishing aid command posts, conducting inventory and evaluation of damage, and continuing monitoring."

The post-disaster was also explained by Mr. Idham Kholid Nasution, A.Md. as the Village Head of Penyabungan District:

"The role of BPBD in directing the community is also carried out with several steps to prevent flooding from occurring, such as maintaining the surrounding environment, avoiding building houses on riverbanks, implementing selective logging and reforestation programs, disposing of garbage in its place, diligently cleaning water channels, building breakwaters, and mangrove forests."

The post-disaster was also explained by the expert as a member of the local community in Mandailing Natal Regency:

Document Accepted 9/9/25

"The role of BPBD in providing flood disaster assistance, such as preparing emergency equipment needed by disaster victims to survive, namely emergency tents, cooking equipment, electric generators, emergency lights, heavy equipment for evacuating victims, emergency water pumps, medical equipment, blankets, eating and drinking equipment, and so on."

Based on interviews, after the flood disaster in Mandailing Natal Regency, BPBD recorded damage data, performed economic empowerment recovery, improved social conditions, and repaired damaged facilities and infrastructure. BPBD requested assistance from the central government through proposals, rebuilding damaged infrastructure, helping trauma victims, establishing aid command posts, conducting damage inventory and evaluation, and continuing monitoring. In addition, BPBD also directed the community to prevent future flooding by not building houses on riverbanks, implementing selective logging and reforestation programs, disposing of garbage in its place, cleaning water channels regularly, building breakwaters, and planting mangrove forests. These steps aim to ensure comprehensive recovery and increase community preparedness for future disasters.

Inhibiting Factors of the Role of the Regional Disaster Management Agency in Flood Disaster Prevention in Mandailing Natal Regency

The following is a statement from several sources related to the inhibiting factors of the role of the Regional Disaster Management Agency in preventing flood disasters in Mandailing Natal Regency. Based on the results of interviews conducted by researchers regarding the obstacles to the role of Regional Disaster Management in preventing flood disasters in Mandailing Natal Regency. Explained by Mr. Mukhsin Nasution as the Head of the Regional Disaster Management Agency of Mandailing Natal Regency, he said that;

"Yes, here are the obstacles to the role of BPBD in preventing flood disasters, including the lack of facilities and infrastructure, the lack of routine disaster preparedness groups in implementing disaster mitigation, the lack of public awareness of the dangers of disasters, the lack of utilization of trees along the river, and many people still throw garbage in the river."

By Mr. Nazaruddin Habib, S.Sos. As the Head of the Prevention, Preparedness, Logistics, and Equipment Division of the Regional Disaster Management Agency in Mandailing Natal Regency, he also explained the strategies used to overcome obstacles in Regional Disaster Management in Flood Disaster Prevention in Mandailing Natal Regency:

"Strategies that can be carried out to overcome obstacles in flood disaster management are structural mitigation, cultural mitigation, physical mitigation, environmental mitigation, early warning systems, evacuation plans, and counseling."

Based on the description of the interview above, the author concludes that the inhibiting factors for the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in Mandailing Natal Regency include the lack of facilities and infrastructure, irregular implementation of disaster mitigation by disaster preparedness groups, low public awareness of the dangers of disasters, lack of utilization of trees along the river, and many people still throw garbage in the river. To overcome these obstacles, the strategies carried out include the construction of flood retaining walls, cleaning the river from garbage and sediment (structural mitigation), increasing public knowledge and attitudes to build a resilient community (cultural mitigation), making maps of flood-prone areas, building flood control infrastructure, and flood-resistant buildings (physical mitigation).

In addition, river basin management, maintaining river or gutter environments, reforestation, and proper waste management (environmental mitigation) are carried out. Other strategies include building a monitoring and early warning system in areas frequently affected by flooding (early warning system), preparing evacuation plans, and providing education to increase awareness among people living in disaster-prone areas.

CONCLUSION

Based on the research results, it can be concluded that the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in Mandailing Natal Regency has been carried out through three

main stages. In the pre-disaster stage, BPBD carries out capacity-building activities through training, structural mitigation by building safety buildings in vulnerable areas, non-structural mitigation through community empowerment, as well as policies for the formation of Disaster Resilient Villages and Families and the preparation of Disaster Management Plan Documents. In the emergency response stage, BPBD sends a Rapid Reaction Team (TRC) to the disaster location to determine strategic steps, such as making maps of disaster-prone areas, installing disaster alarms, providing education to the community, and setting directions according to government policies. In the post-disaster stage, BPBD carries out recovery, including rebuilding infrastructure, assisting trauma victims, establishing command posts, inventorying damage, and monitoring. However, BPBD faces several obstacles, such as a lack of facilities and infrastructure, low public awareness, lack of utilization of trees along rivers, and the habit of people littering. To overcome these obstacles, BPBD implements structural, cultural, physical, and environmental mitigation strategies, early warning systems, evacuation plans, and outreach to increase the overall effectiveness of flood prevention.

In an effort to optimize the role of the Regional Disaster Management Agency (BPBD) in preventing flood disasters in the Mandailing Natal Regency, researchers provide several suggestions. First, BPBD is expected to remain consistent and maintain the principle of rapid response in disaster management, including through increasing disaster preparedness and mitigation effectiveness. Second, the people of Mandailing Natal Regency are advised not to build houses in flood-prone areas in order to prevent the risk of loss of life and material losses. Collaboration between BPBD and the community is needed to create a safer and more resilient environment against disasters.

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