

# IMPLEMENTATION OF FLOOD DISASTER MITIGATION POLICY IN GORONTALO REGENCY (CASE STUDY IN TIBAWA AND LIMBOTO DISTRICTS)

DJEFRİYANTO NUSI<sup>1</sup>, ARIFIN TAHIR<sup>2</sup>, ROSMAN ILATO<sup>3</sup>, JURIKO ABDUSSAMAD<sup>4</sup>, YANTI ANETA<sup>5</sup>

<sup>1,2,3,4,5</sup>Gorontalo State University, Indonesia

Corresponding Email: yantianeta@ung.ac.id

**Abstract**--This study aims to describe the implementation of flood mitigation policies for the Government of Gorontalo District in Tibawa and Limboto Districts including structural mitigation and non-structural mitigation carried out, as well as describe the determinants of policy implementation including communication factors, resource support, attitudes of implementers, and bureaucratic structure. implementing institution. The results of the study found that the implementation of the Gorontalo District Government's flood mitigation policies in the Tibawa District and Limboto District were carried out through: 1) Structural mitigation in the form of making drainage, building riverbanks, and through the Destana program related to making evacuation routes and installing disaster-prone signs; 2) Non-structural mitigation in the form of the Destana program through disaster emergency response simulations and psychosocial training. Implementation of flood disaster mitigation policies The Gorontalo District Government has also paid attention to the determinants of flood disaster mitigation policy implementation such as effective communication, adequate resource support, positive attitude of policy implementers, and an ideal bureaucratic structure. This research produces a comprehensive form of mitigation and a model of policy implementation from an ecological perspective.

**Keywords**--Implementation, Government Policy, Flood Disaster, Forms of Mitigation.

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## 1. INTRODUCTION

The whole world including Indonesia is currently facing the impacts of climate change. Climate change according to Law 32 of 2009 concerning Environmental Protection and Management is a change in climate that is caused directly or indirectly by human activities, causing changes in the composition of the global atmosphere and besides that it is also in the form of changes in natural climate variability observed over a period of time. compared to.

Climate change can cause an increase in extreme weather which results in an increase and intensity of disasters, especially hydrometeorological disasters such as floods, landslides, abrasion and others (Bappenas, 2021). Increases in temperature and changes in rain patterns in the form of increases in air temperature and changes in intensity and patterns of rainfall, can affect the season period, namely the dry season is longer than the rainy season is shorter, and vice versa (Bappenas, 2021). This climate change is exacerbated by human behavior that damages the environment such as cutting down trees and poor waste management (Malihah, 2022). The results of research conducted by the European Commission Environment Directorate General of 15 European Union member countries during the

period 2000 to 2020 show that climate change is one of the impacts of municipal solid waste (MSW) or solid waste produced every day from all human activities. The impact of climate change on the marine and coastal, water, agriculture and health sectors.

Flood disaster is the most frequent disaster in Indonesia. In 2020, out of 4,650 disaster events in Indonesia, 1,518 of them are floods. In 2021, floods will still dominate disaster events in Indonesia. BNPB data for December 24 2021 states that out of 3,009 disaster events that occurred in 2021, 1,268 of them were floods.

Gorontalo Regency is one of the areas in Indonesia that is vulnerable to the impacts of climate change. This vulnerability is manifested in hydrometeorological disasters, one of which is flooding. The Gorontalo District Climate Disaster Rapid Assessment (2016) has projected flood vulnerability in several areas in Gorontalo District by looking at rainfall, land cover, slope or slope, and flood events. The report states that Gorontalo Regency has flood-vulnerability areas, most of which are in urban areas and several villages located in the middle, south and east of Gorontalo Regency. The results of the projection on Dasarian-2 November 2019 show that there are 5 areas that are very vulnerable to flooding, namely the Villages of Diloniyahu, Sidoharjo, Potangga, Ilo Heluma, and Monggolito (Rapid Assessment of Climate Disaster in Gorontalo Regency, 2016).

The results of a spatial analysis of flood risk in the Limboto Watershed (DAS) conducted by Taslim and Akbar (2018) show that almost all alluvial plains in all sub-districts are in high to very high vulnerability zones at risk of flooding. Especially in Limboto and West Limboto Subdistricts, where Limboto City is the capital of Gorontalo Regency which can cause potential losses as well as major threats to the sustainable development of these areas. Based on the results of a spatial analysis conducted by Taslim and Akbar (2018), several areas identified as being at risk of flooding include the villages of Hutabohu, Tunggulo, Tenilo, Bolihuangga, Teratai, Hunggaluwa, Kayubulan, Hepuhulawa, Dutulanaa, Hutuo, Bulota, Bongohulawa, Pone, Huidu, northern Huidu, Ombulo, Yosonegoro, the southern area of Padengo and Hay-haya. The following is the result of a flood disaster risk analysis in Limboto and West Limboto Districts in 2018.

The disaster mitigation policy is a policy that is considered appropriate to be carried out by the Government of Gorontalo Regency in tackling flood disasters in Gorontalo Regency. The problem of climate change that has an impact on agriculture and other development sectors (Yogiswara & Sutrisna, 2021) encourages the Gorontalo Regency Government to optimize the implementation of flood disaster mitigation policies through structural and non-structural mitigation. The implementation of these policies needs to ensure that there is effective communication between policy implementers, adequate resource support, a positive attitude from policy implementers towards flood disaster mitigation policies, as well as a supportive bureaucratic structure (Anirwan, 2022).

The government through Law Number 24 of 2007 concerning Disaster Management has divided the implementation of disaster management into three stages namely pre-disaster, during emergency response, and post-disaster (Article 33). Mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building in dealing with disaster threats (Dewi, 2019). Dewantoro et al. (2021). Mitigation is carried out at the pre-disaster stage in a situation where there is a potential for a disaster to occur. Kelman (2014) further emphasizes that investment in disaster risk reduction can be more directed at non-structural mitigation, namely mitigation in the form of awareness and increasing community capacity in dealing with disasters.

Building the environment, increasing disaster resilience and climate change is one of the seven Development Agenda of the 2020-2024 RPJMN. Policy directions related to the development agenda are carried out through: 1) Improving the quality of the environment, carried out by integrating efforts to prevent, mitigate and restore environmental pollution and damage, as well as institutional strengthening and law enforcement in the environmental sector; 2) Increasing disaster and climate resilience, carried out through strengthening the convergence between disaster risk reduction and climate change adaptation; 3) Low-carbon development, carried out through efforts to reduce

emissions and emission intensity in priority sectors, namely energi, land, waste, industry and marine (BNPB Strategic Plan 2020-2024).

## 2. METHODS

This research uses a qualitative approach that has an inductive mindset where this research departs from facts and data from field findings regarding the analysis of the implementation of government policies in flood disaster mitigation in Gorontalo Regency which is then juxtaposed with the theoretical framework used. The method used in this study is the case study method because it will intensively investigate the implementation of the government's flood disaster mitigation policy carried out by BPBD Gorontalo Regency. This research will focus on the various details of each component of the implementation of the flood disaster mitigation policy and the factors that determine its success. According to Neuman (2013: 47), case study research examines various characteristics of a few cases. These cases can be individuals, groups, organizations, movements, events or geographic units

## 3. RESULTS AND DISCUSSION

### Implementation of flood disaster mitigation policies in Tibawa District and Limboto District, Gorontalo Regency

Field findings related to the implementation of flood disaster mitigation policies are divided into two research sub-foci, namely structural mitigation and non-structural mitigation.

## 4. STRUCTURAL MITIGATION

Field findings show that the implementation of government policies related to structural mitigation in Gorontalo District with case studies in Limboto District and Tibawa District includes building drainage or water canals in Hunggaluwa Village, Limboto District and building River Cliffs in Datahu Village, Tibawa District.

### a) Making Drainage or Water Channels

According to the informant LT, drainage has been made since 2018 in the Tibawa District "... the 2018 drainage, if I'm not mistaken, is in Tibawa, Tibawa District, Lalulunga River" (Interview, 31 May 2022). Meanwhile, according to Informant LZ, the people of Hunggaluwa Village, Limboto District, drainage has also been made in their area, or what the LZ Informant calls "water channels" (Interview, 22 August 2022) since 2019. The TK informant, Head of Hunggaluwa Village, Limboto District, also conveyed the same thing. .

So for the Hunggaluwa sub-district government program in collaboration with the regional government, what is being done here is to handle floods through making drainage. The drainage was made in an area prone to flooding in the Hunggaluwa Village, namely in neighborhood 3 in 2019. The construction of the drainage work was carried out to prevent flooding, especially flash floods due to the frequent overflow of the Bionga River which crosses the Hunggaluwa Village (Interview, 11 August 2022)



Figure 1. Drainage/Water Canals in Hunggaluwa Village, Limboto District

Construction of drainage, as stated by the TK informant previously, was carried out to prevent flooding, especially flash floods caused by overflowing rivers in the area. Apart from that, making this drainage can also prevent flooding in areas below the foot of the mountain, as stated by Informant LT

...as for drainage, there is a school where drainage is made to prevent the waters from sloping because it's like that at the foot of the mountain. So he (drainage) collects water from the mountain. So he (drainage) circulates the water so that it does not enter the school to prevent flooding by ensuring that the water is directed (Interview, 31 May 2022)

Making drainage is considered not effective in reducing the risk of flooding in the Hunggaluwa Village, Limboto District. This was conveyed by Informant LZ who is a resident in Hunggaluwa Subdistrict who said that the environment was still flooded even though drainage had been made since 2019. (Interview, August 22, 2022).



Figure 2. Drainage/Water Canals in the Hunggaluwa Village Area, Limboto District

Informants LZ and RD said that the drainage can be made bigger so that it can be effective and prevent overflow from the drainage or water canals that are made "... (my hope) I want to make the canal (drainage) bigger, so that it doesn't flood, it also overflows (water ) from the gutters (channels) is water" (Interview, 22 August 2022). Kindergarten informants conveyed the same thing, who said that the government can ensure that there are no blockages in the drainage, so that water can flow smoothly and floods can be prevented. So that, related to flood management is indeed a big problem for people who live in cities like in this Hunggaluwa Village. Drainage problems, when rainfall is high, the channels or drainage are sometimes not smooth which causes water blockages so that water overflows onto the roads. This is what often happens. So that in the future I hope that there will be no blockages in this drainage, so that floods in Hunggaluwa Village which are within the scope of the city are really handled properly. Because it is also a complaint from the community regarding this drainage problem. (Interview, 11 August 2022).

Making drainage based on the information submitted by the informant LT was carried out through a third party and under the responsibility of the Gorontalo Regency BPBD prevention department "Yes, use a third party. If the drainage goes into prevention. (Interview, 31 May 2022) The informant YT conveyed the same thing, "The drainage construction is also here, usually in field 3. In my field, it's only physical mitigation. Just providing education" (Interview 21 March 2022)

## 5. RIVER CLIFF DEVELOPMENT

In addition to constructing drainage/water channels, structural mitigation to prevent the risk of flooding in Gorontalo District with case studies in the Sub-Districts of Limboto and Tibawa was carried



out by constructing riverbanks. The making of this river bank was carried out in 2017 in the Tibawa District based on the information submitted by the LK informant. The same thing was conveyed by Informants AW and AN Informants who are the community and village government in one of the villages in the Tibawa District who said that the cliffs had been made since 2017 with direct support from the Government.



Figure 3. River cliffs in Datahu Village, Tibawa District

The construction of riverbanks is intended to prevent the community from being threatened by the impacts of floods such as landslides.

If it's called mitigation, it means avoiding the community from the threat of danger. If structural means physical development to avoid disasters, for example the construction of river banks to prevent cliffs from landslides due to floods (Interview, 20 August 2022). Another purpose of making riverbanks is to prevent river water from overflowing which can cause flooding as stated by Informant LT.

(making river cliffs) prevent the river water from overflowing, because it is rather low. Because the river water discharge is too high so that the water can overflow. So we are trying to make a high embankment of about one to one and a half meters on the Lalunga River (31 May 2022).

The impact of making riverbanks is felt to be ineffective in preventing flooding. This was conveyed by the Informant AW, who is a community in the area around river basins that have had river cliffs installed. When asked whether river cliffs are effective in preventing flooding, the Informant AW answered "If it floods, why don't you ask it is still flooding" (Interview, 20 August 2022). The same thing was conveyed by the AN informant who is the Village Government of Datahu, Tibawa District.

Around 2020 there are still major flood disasters, especially in Lalunga Hamlet. The people around there were flooded because of the high water level. (Installation of the river bank) It's been effective but not too effective or not optimal because the cliffs are there. I have asked the people around there, the length is not that optimal. Actually, it's already going to be longer, but maybe there are still problems with people who own land in that part of the land where permission is not granted. (Interview, August 20, 2022).

Due to the ineffectiveness of the river cliffs built by the Government, the community hopes that the cliffs will be strengthened and increased in width and height as stated by Informants AW and Informants RA. The same thing was conveyed by the AN informant who was a representative of the

Village Government who said that the widening of the river bank was constrained by land permits from the community. The Village Government is also willing to facilitate mediation with the local community.

Actually, it's already about to be extended, but maybe there are still problems with people who own land in that part of the land where no permits are given for this land. but maybe I also as the village government hope that it can be rebuilt where the local government pays attention that the cliff needs to be added again. Later we will mediate with the parties there (Interview, 20 August 2022)

## 6. NON-STRUCTURAL MITIGATION

The results of the field findings show that the implementation of government policies related to non-structural mitigation in Gorontalo District with case studies in Limboto District and Tibawa District is by implementing the Disaster Resilient Village (Destana) program which is only carried out in Tibawa District, namely Datahu Village and Isimu Raya Village.

### Implementation of the Destana Program in Datahu Village, Tibawa District

The formation of Destana in Datahu Village was carried out in 2016 as conveyed by Informant JK who is the communication and information coordinator of Destana in Datahu Village "So for the formation of Destana in 2016, the implementation of communication with the formation of the team is in Datahu Village" (Interview, 20 August 2022) . The same thing was conveyed by the AN informant representing the Datahu Village Government who said that Destana in Datahu Village was formed in 2016. The AN informant also said that at the beginning of the formation of Destana, a disaster management simulation was carried out in Datahu Village to prepare themselves when facing a flood disaster in Datau Village.

"(Formation of Destana in Datahu Village) around 2016, as I recall, it was implemented in Pohuwato. Then carry out a disaster simulation carried out on Libuo Beach. So they were there simulating how to handle a disaster when it happened in Datahu Village. Because Datahu Village is a disaster-prone village because it is hit by floods almost every year". (Interview, 20 August 2022).

One of the activities in the Destana program is conducting a disaster emergency response simulation. It is known that Destana in Datahu Village has conducted three simulations from 2016 to 2018. This was conveyed by Informant JK.

"So yesterday we had a disaster emergency response simulation. We had three activities at that time, where at that time the first activity was centered on the Batudaa Beach location in 2016, then the following year (2017) we held the same activity in Gorut, namely at Monano Beach. So after that again (2018) we are in the last Pohuwato for a simulation of emergency response activities"(Interview, 20 August 2022).

The simulation is carried out to train the preparedness of volunteers in the event of a disaster, find out the areas that are most vulnerable and are predicted to experience severe impacts when a disaster occurs, to ensure the flow of coordination and communication among volunteers, as well as evacuation procedures. This was also conveyed by the informant JK.

"So their position when disaster strikes, they are ready for Destana. They will know where (locations) are most vulnerable, meaning those that are most badly affected when a disaster occurs. (From the simulation it is known) his position (which will be most affected) is in Lalunga Hamlet. So every time a disaster occurs, Destana volunteers will definitely come to the location to see whether the impact of the flood will be more severe or not. We also ensure that communication is going well via telephone or WA (whatsapp) so that vulnerable people, such as the elderly, children, have been evacuated first". (Interview, 20 August 2022)

Through the Destana program, structural mitigation efforts have also been carried out, such as making evacuation routes to determining evacuation locations. This was conveyed by the informant JK.

“So for that (evacuation route) there must already be one. Yesterday, after the simulation, we installed it, because we know it is already prone to flooding. So what we focus on is evacuating babies and old people (elderly) to places like mosques. The mosque has a high foundation, so it won't be directly flooded” (Interview, 20 August 2022)

Informant IP also conveyed the establishment of an evacuation route through the Destana program. Apart from the Tibawa District, this evacuation route has also been made in other sub-districts.

“This evacuation route was in Bilato, in Juria. So it depends on the village too. The BPBD is pushing for an evacuation route. So it has to be in the Destana form. In Padengo, in Haya-Haya there is, in Tualango there is also. So in what year did the Regent issue the policy? And those involved in the community. already that one time. That's why there are about twenty stages in the destana” (Interview, 22 March 2022)

“Informant SJ also conveyed the determination of the location of the evacuation when he was directed to the Mobile Brigade Command Headquarters due to its high location. “Yesterday the problem was that we still didn't have a building, so yesterday during the flood it was only directed to the Mobile Brigade Headquarters, maybe the location is a bit high there” (Interview, 19 August 2022).

It is known that the Regent gave directions to the Village Government to build sports facilities as an evacuation location. This was conveyed by the YT informant as follows,

“Yes Well, that's one of the local government policies. Through the Regent, he said that it was mandatory to carry out the construction of HEAVEN, so sports facilities, right? So apart from sports facilities it is used as an evacuation site. Maybe that's perhaps the consideration of the Regent that it is mandatory for every region and village to build HEAVEN. We also see that almost all village and sub-district areas already exist”. (Interview, May 21, 2022)

In addition to making evacuation routes, through the Destana program installation of disaster-prone signs so that people can avoid or not carry out activities in areas prone to flooding. This was also conveyed by the informant JK.

“The information (disaster-prone signs) already exists. So we have standardized the signs that were there when the flood was impassable. It is already vulnerable because there is a road close to the river. So when there is a flood, (people and vehicles at risk) will be thrown into the river” (Interview, 20 August 2022)

The same thing was conveyed by the IP informant who explained that the installation of signs aims to inform the community of areas prone to natural disasters such as floods and other disasters “the aim is to inform the public, if this area is a flood-prone area, this area is prone to fires, prone to landslides, prone to coastal abrasion, earthquakes.” (Interview, March 22, 2022). The YT informant also said that installing these disaster-prone signs can increase people's awareness

“The aim is to provide caution to the public if there is a landslide in that place. So the community continues to be aware that this location will occur frequently. So is the flood area. We place them in vulnerable places” (Interview, 21 March 2022)

The informant YT said that the installation of signs was carried out in areas prone to disasters.

“Last year the BPBD installed signs, one example is if there are disaster-prone points, we put signs there. Because it is a provision and an obligation that must be carried out by the BPBD. This is so that the public can know exactly that the location is prone to disasters” (Interview, 21 March 2022).

The implementation of the Destana program, according to Informant JK, was considered effective despite the lack of facilities, especially for evacuation in the event of a flood. In addition, several volunteers were affected by the flood disaster because they came from the same area.

In my opinion, yesterday's problem was effective for the Destana team. It was just that the facilities were inadequate when we helped someone who was in a flood situation. We ourselves are also sometimes still in a state of flooding and must continue to help the people affected by the flood. We

continue to carry out direct initiatives for emergency response to help people affected by floods (Interview, 20 August 2022)

#### Implementation of the Destana Program in Isimu Raya Village, Tibawa District

The implementation of the Destana program in Isimu Raya Village is different from the implementation of the Destana program in Datahu Village. Based on information from the RT informant who is a member of Destana in Isimu Raya Village, it is known that the Destana program in Isimu Raya Village is no longer active "In Isimu Raya Village it is less active, I myself am active, the others are no longer active" (Interview, 20 August 2022). In addition, until the time the interview was conducted, there had been no recruitment of new members for the Destana program in Isimu Raya Village "There are no more new members" (Interview, 20 August 2022).

Destana Desa Isimu Raya is known to have been formed since 2007. At the beginning it was formed, there were 12 volunteers who ran the Destana program. Then in 2010 there were 13 people. Currently, only 1 person is still active, namely the RT Informant.

From 2010, only 13 people were active in Tagana, Tibawa District. 12 people are no longer active in class of 2007. I don't know about the batch after 2007 (Interview, 20 August 2022).

Based on information from RT informants, at the beginning of the formation of Destana, training was held regarding psychosocial support for children. Destana volunteers were also provided with evacuation equipment such as life jackets, ropes, flashlights, inflatable boats and other equipment. At the end of the interview, the RT informant conveyed his hope to the government to provide allowances for Destana volunteers. Allowances are expected to be given per activity in the amount of IDR 100,000 for every one day of activity.

### 7. CONCLUSION

The implementation of the Gorontalo District government's flood mitigation policy in the Tibawa and Limboto sub-districts has been carried out through structural and non-structural mitigation efforts. Structural mitigation in the form of making drainage or water canals, building riverbanks, as well as through the Destana program related to making evacuation routes and installing disaster-prone signs. While non-structural mitigation is carried out through the Destana program related to disaster emergency response simulations and psychosocial training.

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