



LANDSLIDE DISASTER MITIGATION IN RAHTAWU VILLAGE GEBOG KUDUS

Faikhotur Rohmah¹, Icha Khusnul Mawaddah², Dany Miftah M. Nur³

¹ Institut Agama Islam Negeri Kudus, Indonesia

² Institut Agama Islam Negeri Kudus, Indonesia

³ Institut Agama Islam Negeri Kudus, Indonesia

Email: rohmah@ms.iainkudus.ac.id¹, ichakhusnu@ms.iainkudus.ac.id², dany@iainkudus.ac.id³

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Abstract:

Natural disasters are uncontrolled natural events or occurrences that can cause serious damage to the environment, property, and human life. Natural disasters can occur due to various natural factors such as geology, weather, or atmospheric activity. Landslides are one of the natural disasters that often occur in Indonesia as a country with various geographical conditions and different regional topography. Landslides can be triggered by various factors, namely earthquakes, vegetation, and climate. The increase in groundwater levels causes the soil to become saturated, so that the shear strength of the soil decreases. Disaster mitigation is an effort made to reduce the risk of disasters, both before and after a disaster occurs. Disaster mitigation can be done through physical development or increasing public awareness. Disaster mitigation carried out includes spatial planning, development of disaster-resistant infrastructure, environmental monitoring, community outreach, and disaster preparedness. This study aims to examine landslide disaster mitigation and to determine the active involvement of the Rahtawu village community in landslide disaster mitigation. The qualitative method is descriptive in nature with data collection carried out through interviews, observations, and documentation to determine disaster mitigation efforts from the government and local communities.

Keywords: Landslide Disaster, Mitigation, Rahtawu.

INTRODUCTION

Disaster is a phenomenon that cannot be avoided by humans. This phenomenon can occur at any time, suddenly or through a process that occurs slowly anywhere and anytime. Law No. 24 of 2007 concerning Disaster Management states that a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of the community caused by natural factors, non-natural factors and human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts (Sukamto *et al.*, 2021; Zulfa *et al.*, 2022). Disasters are divided into three, namely natural disasters, non-natural disasters, and social disasters. Natural disasters are events that are beyond human control and come unexpectedly, when, where, and how the disaster occurs (Purwadi *et al.*, 2023; Biomi *et al.*, 2024).

Indonesia is one of the countries that has a geographical area that is prone to landslides. In recent years, the destructive power and intensity of landslides in Indonesia have increased, so that the losses incurred have also increased (Wahyudi & Alhadi, 2021; Hardiawan & Mahardhani, 2022). For this reason, mitigation or actions are needed to reduce the impact of the disaster. In general, mitigation can be carried out structurally with a focus on repairing/strengthening slopes or non-structurally with a focus on educating the community around the slope. Landslides themselves can be caused by several



factors, such as slope shape, vegetation, earthquakes, and climate on the slope (Simehate *et al.*, 2023; Putra *et al.*, 2024).

The northern part of Kudus Regency borders the Muria Mountains with steep slopes and unstable soil structures, especially during the rainy season, increasing the risk of landslides that can endanger residents and damage infrastructure (Zulfa & Widyasamratri, 2023; Alfaris, 2024). One of the villages in Kudus Regency that is prone to natural disasters is Rahtawu Village which is located in the far north directly bordering the Muria Mountains. There are four hamlets in Rahtawu Village, namely Gingsir Hamlet, Semliro Hamlet, Wetan Kali Hamlet, and Krajan Hamlet which are spread across the curve of the Muria slope hills. In Rahtawu Village, landslides often occur when entering the rainy season, the government and local people have predicted that there will be a landslide disaster because it is estimated from the weather and climate of the rainy season. So, collaboration between the government and the community is needed for the landslide disaster mitigation process (Cipta *et al.*, 2023; Alfaris & Nur, 2025).

In general, according to Law no. 24 of 2007 disaster mitigation is defined as an appropriate planning effort to minimize the negative impact of disasters on humans. Disaster mitigation is one of the disaster management activities, which include: First, pre-disaster activities, namely prevention, mitigation, preparedness, and early warning activities, Second, activities during a disaster, including emergency response activities, SAR (Search and Rescue) activities, emergency assistance, and evacuation, and Third, post-disaster activities which include selection, rehabilitation, and reconstruction activities. This study aims to examine landslide disaster mitigation and to determine the active involvement of the Rahtawu village community in landslide disaster mitigation (Marzuki *et al.*, 2023; Rahmawati *et al.*, 2024).

RESEARCH METHOD

This research uses qualitative research methods. Qualitative research is research that emphasizes the aspect of in-depth understanding of a problem (Orenstein *et al.*, 2023). This research was conducted by exploring data and information sourced from the research location. The data was obtained from the people of Rahtawu Village, which is located in Gebog Sub-district, Kudus Regency, Central Java Province.

This research is descriptive, identifying the active involvement of the Rahtawu Village community, as well as how the village community responds before or after a natural disaster. This research aims to examine disaster mitigation and to find out the active involvement of Rahtawu village community in landslide mitigation.

The type of research used by researchers is field research (Mattke *et al.*, 2022). Field research is research conducted to intensively study the background and conditions of the research location. In simple terms, the observation method in this field research can be interpreted as direct observation activities at the research location to obtain the necessary information (Kim, 2024). This research focuses on collecting data directly from the Rahtawu Village community through

interviews, observation, and documentation to find out the disaster mitigation efforts of the government and the local community (Lim, 2024).

FINDINGS AND DISCUSSION

Landslide Disaster Mitigation

Law Number 24 of 2007 concerning Disaster Management explains that a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of the community caused by natural factors, non-natural factors and human factors resulting in loss of human life, environmental damage, loss of property, and psychological impacts. The disaster management cycle consists of 3 stages, namely:

1. Pre-disaster

Pre-disaster is the stage of a disaster in conditions before it occurs, including:

A. Prevention and Mitigation

Mitigation according to King is defined as actions taken before a disaster occurs with the aim of reducing or eliminating the impact of the disaster on society and the environment. Prevention carried out in Rahtawu village such as terracing, building buildings with strong foundations, and maintaining the sustainability of vegetation around the cliffs.

B. Preparedness

Preparedness is planning actions and ways to deal with disasters. Preparedness relates to activities and steps taken before a disaster to ensure effective response to the impact of hazards, including timely and effective early warning.

2. When a Disaster Occurs

Disaster management is when a disaster occurs or occurs. The activities carried out are emergency response or management.

3. Post-Disaster Stages

Carried out after a disaster occurs and after the emergency response process has been completed, including:

A. Rehabilitation, namely the repair and restoration of all aspects of public or community services to an adequate level in post-disaster areas with the main target of normalizing all aspects of government and community life, namely by cleaning the soil covering the road, because there is only one access road to Rahtawu village, namely the main road.

B. Reconstruction, namely the rebuilding of all facilities and infrastructure, institutions in post-disaster areas.

The landslide disaster factor in Rahtawu Village, namely bare land with the cooperation between the village government and the Djarum Foundation which carried out reforestation, is now much more resolved even though small landslides still occur. The early warning system uses HWS and warning signs which are in fact disaster warnings. At present, HWS is no longer functioning, but there are still warning signs that can be read by the local community and tourists. This is a form of government education to appeal to the community and tourists to be careful and obey the regulations that have been made.

Active Community Involvement in Disaster Mitigation

Adaptive capacity related to disasters, communities are required to be able to anticipate and respond to changes that occur, Kumalasari (2014) said that adaptive capacity is the ability of a system to adapt to climate change by reducing the potential for damage by utilizing social and economic resources, technology, access to information related to climate change and the ability of institutions to adapt.

According to Mr. Wawan as a village official, the involvement of the community or youth in disaster mitigation in Rahtawu Village is called Desa Tangguh Bencana (DESTANA) which was formed in 2020, tasked with analyzing or anticipating existing disasters and functioning as a communication facilitator related to disasters from the village to the district or leaders. The government held socialization related to how to analyze disasters and provide education so that the community knows the various types of natural disasters that exist.

The involvement of the government and the community after the disaster is to work together to clean up the remains of the landslide that covers the road, because there is only one access road to Rahtawu Village and that is the main road, so after the landslide the government immediately urges community groups to work together. The district government is also involved when the landslide is very large and covers the main road of Rahtawu Village to help with heavy equipment, logistical assistance, and supporting equipment.

Disaster mitigation education is also held in schools in Rahtawu village through socialization related to providing insight to students about disasters and creating Disaster Safe Education Unit (SPAB) activities. This activity is carried out as an effort to improve and encourage the impact of disasters in an educational institution. The main objective of SPAB is to improve students' understanding and abilities in dealing with disasters, both in regular, emergency, and post-disaster situations. But at present this activity is no longer held.

The community sees a disaster by observing the weather contour. During the rainy season, the community understands that there will be landslides and during the dry season there will be drought. The community already understands and anticipates when the change in season occurs because landslides have not only occurred once or twice, but the people of Rahtawu Village have experienced this disaster several times.

The attitude of the Rahtawu village community to maintain the environment so that it remains sustainable and obeys the regulations that have been made and agreed upon together in the form of implementing strict regulations related to indiscriminate logging or deforestation, burning of agricultural and plantation land, waste disposal, and waste management, including household waste and waste from tourism activities must be disposed of in their place and it is prohibited to throw it into the river. Meanwhile, organic waste such as livestock manure and organic waste are processed by residents into organic fertilizer to support sustainable plantation activities. The assertiveness in this case aims to maintain the river environment and maintain the cleanliness of the surrounding nature in Rahtawu Village.

CONCLUSION

This study examines landslide disaster mitigation in Rahtawu Village, Gebog District, Kudus Regency. Landslide disasters in this area often occur, especially during the rainy season, and can cause significant damage. Disaster mitigation is carried out through various efforts, including spatial planning, infrastructure development, and increasing public awareness. Active community participation is very important in disaster mitigation.

Collaboration between the government and the community in cleaning up the remains of landslides and protecting the environment shows awareness and commitment to reducing disaster risks. Factors such as slope, vegetation, and climate also play a role in increasing the potential for landslides. Overall, disaster mitigation must involve prevention, preparedness, rehabilitation, reconstruction, and post-disaster. This study is expected to be the basis for further research in developing the concept of learning landslide disaster mitigation.

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