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## DISASTER MANAGEMENT IN GEOTOURISM AREA

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### A. Introduction

Disasters are events caused by natural, non-natural, and human factors that can threaten or disrupt people's lives and livelihoods, and result in loss of life, environmental damage, loss of property, and events that will affect psychologically for those victims who experience it.

Disasters that often occur include floods, landslides, fires, droughts, and many more. And among all the disasters that occur partly due to natural factors such as climate change, volcanic eruptions, tsunamis and partly caused by human activities such as deforestation, development without regard to the environment, illegal mining, and many more. With the many disasters that often occur in tourist areas in Indonesia, the government and local communities should seek solutions, namely by providing disaster management infrastructure to reduce the risk of greater disasters for tourists and local communities.

Disaster management or disaster mitigation is an activity that can reduce the number of casualties or damage if a disaster will occur. This disaster management includes pre-disaster, during-disaster, and post-disaster. This disaster management can be done by socializing the dangers of disasters that often occur in tourist areas, training on disaster management, building disaster-resistant infrastructure by paying attention to building structures and building layouts located in safe tourist locations. Information boards are also an important aspect that must exist in every tourist area to provide information about what causes a disaster to occur.

The location or location for handling emergencies in the event of a disaster is also important to consider and choose appropriately to reduce the effects of the disaster (Kahani, Ghazi, Akbari, & Hosseini, 2016). Losses caused by natural disasters cannot be completely eliminated or avoided, but some facts in the field show that implementing a disaster mitigation system in an area can help communities to recover faster from crises caused by disasters (Van den Honert, 2016).

The geotourism area is a location point that really needs disaster mitigation system because the geotourism area is a tourism object area that is closely related to nature and the surrounding environment such as community settlements, beaches, mountains to protected forests. According to Manyoe et al, (2021) geology is an important aspect of the tourism development of an area. One of the factors in natural tourism locations is absolutely controlled by the geological setting in the area. The natural beauty of an area cannot be separated from the existing geological elements in terms of beauty, constituent materials, and the process of its formation.

This tourism presents a variety of natural beauty related to earth science or geological aspects. The main focus of this tourist attraction is the diversity of geological phenomena concerning the landscape, geological structure, earth history, rocks, minerals, fossils, and the process of occurrence of all these phenomena. Therefore, natural disasters are very prone to occur in every geotourism area, considering that geotourism areas are very closely related to nature.

The involvement of the government and the community in the development of tourism objects and the implementation of disaster mitigation is very necessary considering that tourism objects are managed by the community and assisted by the local government as a facilitator. The community needs a good understanding of disaster mitigation as a tourism area manager. Security and safety of tourists is also part of the task of managing geotourism areas as a form of joint countermeasures. the government regularly shares information to remind local communities of the risks and actions to be taken in an imminent emergency.

### B. Discussion

Aspects of disaster mitigation must pay attention to the security of vulnerable areas, disaster safety standards, and safe evacuation routes. Information boards are media that are needed as a medium of information and education for tourists who come. By structuring the environment and building infrastructure with good disaster-safe standards in each area, it will attract more tourists to visit.

The main purpose of building tourist area objects and good management of tourist areas is so that tourists can feel satisfaction and comfort while in tourist areas. Improving tourist safety is also considered a very appropriate effort in ensuring the satisfaction and comfort of tourists towards tourist destinations. To support the safety of tourists, we can do this by minimizing the risk of

hazards and accidents with the existence of disaster-safe infrastructure and the presence of guards covering all residents to guard all buildings and properties of these tourist destinations.

There have been many examples of disasters that have occurred in geotourism areas in Indonesia. One of them is the earthquake in the Special Region of Yogyakarta in 2006, which damaged the tourist destinations of Borobudur Temple and Prambanan Temple. Also, the tsunami in Aceh in 2004 has damaged several tourist destinations such as the Baiturrahman Grand Mosque, Weh Island in Sabang, and others on the island. Aceh. Therefore, it is necessary to have disaster mitigation in every tourism area.

Disaster risk reduction must be carried out by taking into account aspects of sustainable management and the participation of all relevant parties, both the government and the local community. This effort is carried out with a mature plan and prioritized. These priority actions need to be taken to implement sustainable disaster risk reduction efforts and mutual agreement is needed to realize an integrated joint effort.

The priority of disaster risk reduction must be carried out as a priority for the government and residents and must be supported by strong institutions as a driving force, identify existing problems, assess and predict future disaster risks, and monitor the implementation of the early warning system, utilizing existing disaster knowledge, education, and training to build awareness of all groups for personal safety and resilience to disasters in all communities, reducing the factors that cause disaster risk, strengthening mentality in dealing with disasters at all levels of society so that responses are carried out when disasters occur. happen more effectively.

Information technology that is developing rapidly in our day and age is one of the infrastructure facilities that can be applied in increasing the safety of tourists. With access to information via the internet, tourists can easily get various information about geotourism areas, both all existing tourist objects and various information as a safety measure for tourists in the event of a disaster. One of the safety information technologies that must be developed is the Disaster Quick Response and Geographic Information System Disaster-Save Track.

In implementing the disaster mitigation system in the community, several stages are needed. Therefore, it can be implemented properly. These stages are the socialization stage and the training stage.

### **1. Socialization**

The socialization stage is the interaction process between presenters (resource persons) to participants (community) so that, they can learn together to gain knowledge through the communication process. This socialization is carried out to build communication and cooperation between fellow managers of tourist attraction areas to implement disaster management for the common good. This activity is an initial introduction process where we learn the basics of disaster to what will be done to implement the disaster management together.

In the socialization process, the presenters will bring some learning materials or main discussions to the community, the discussion materials must be following the facts and data in the field. Then this data will be conveyed to the local community. The method of delivering material must be good to create a space for discussion or reciprocity between the presenters and the community.

### **2. Training**

The background of this training is according to the condition of the Indonesia region which is very prone to disasters. And many tourist areas in several regions in Indonesia are heavily impacted by the disaster. So this activity is carried out to provide a comprehensive understanding of disasters in tourist areas and can reduce damage to potential fatalities. In this training stage several stages must be carried out including the following:

#### **2.1 Training Preparation Stage**

At this stage, the person in charge of the training implementation compiles all the requirements that will be used during the training. Prepared all data from various literature studies, identified locations and any disasters that could occur, and contacted all community groups who would be involved. After coordinating with all relevant institutions, the relevant institutions then carry out initial preparations such as knowing the background and objectives of the training, studying literature, selecting areas prone to disaster impacts, preparing needs that support training, and coordinating with other institutions that are members of the program. the training. Then set one idea as the goal of this training.

#### **2.2 Training Planning Stage**

At this planning stage, all relevant institutions develop planning stages of further activities such as preparing correspondence, identifying training budgets, forming committees, preparing training agendas, determining the material to be delivered by representatives from each institution, including understanding natural phenomena, disaster management, Contingency Plan, Kodal & Coordination (command, obstacle, communication, info), Regional disaster management plan

(evacuation map, basic data, evacuation signs), In the planning stage of this training there is a communication process between organizations. Communication exists to share information, ideas, or opinions from each participant. Communication is discussed to achieve common goals together. But still on the main duties and responsibilities of each person in that position. The entire training remains responsible for overseeing the flow of training materials until the follow-up plan until the training activities are completed.

### **2.3 Training Implementation Stage**

At the stage of implementing this training, a good communication process between individuals, teams, and groups is needed. Good communication can affect the interaction of one individual with another individual so that the communication process occurs. The interaction allows participants to share information, experiences, and knowledge with other individuals. In this training, there will be many interactions, including interactions between the organizing team, between participants, and resource persons.

At this stage, the training participants will be divided into several groups to see whether the interaction and communication that has been established is good or not. Because these groups were formed to train how to solve problems together, make joint decisions and take alternative or joint solutions which will later become a reference for joint decision making when a disaster occurs.

The communication applied is a medium for delivering information, ideas, skills, and so on. In the training, the resource persons conveyed information related to disaster risk reduction through several media in the form of oral, pictures, photos, diagrams, and films. Or with a variety of brain teasers on pictures, sentences, motion, and other instructions. That way the participants will understand and establish a good relationship between the training organizers and the training participants.

### **2.4 Evaluation Stage**

At this stage, the organizers evaluate the training activities that have been carried out and if there are deficiencies, they will be corrected in the next disaster mitigation training. With the understanding of delivering material about disasters and disaster management simulations that occur, it is hoped that they can become a scientific guide for participants to deal with future disasters. With the knowledge that has been given, it is hoped that participants will be able to understand natural phenomena, natural disaster management (cycle: event, response, rehabilitation, recon, mitigation, and preparedness including disaster risk reduction), understand early warning systems, disaster management plans (self-evacuation) and skills to facilitate Self Evacuation.

Botubarani village has a variety of natural wealth and a million interesting history for us to see and learn. There are several attractions in this village. Among them are whale shark tourist areas, Batubarani beaches, and Batubarani sites. The tourist attraction areas and residential areas in this village are all close to the sea, so it is necessary to have socialization or disaster mitigation training that must be given to the people in this botubarani village.

The arrangement of tourist sites in botubarani village is not too good and there is no disaster-safe standard building infrastructure. This tourist location still requires a lot of needs for various information media, both in the form of disaster information boards and technology-based disaster knowledge media as information, education, and evacuation media such as disaster Quick Response and Geographic Information Systems disaster-save track. It is hoped that in the future with more attention from the government and residents, the village of botubarani will become a tourist area of Botubarani that not only offers beautiful tourism.

## **C. Conclusion**

This disaster management can be done by socializing the dangers of disasters that often occur in tourist areas, training on disaster management, building disaster-resistant infrastructure by paying attention to building structures and building layouts located in safe tourist locations

Information boards are also an important aspect that must exist in every tourist area to provide information about what causes a disaster to occur.

Socialization is very important to know the response given by the community. Training to provide a comprehensive understanding of disasters in tourist areas and can reduce damage to potential fatalities. And the last is the evaluation stage, where the organizer evaluates the training activities that have been carried out and if there are deficiencies, they will be corrected in the next disaster mitigation training. With the understanding of delivering material about disasters and disaster management simulations that occur, it is hoped that they can become a scientific guide for the community to deal with future disasters.

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## Glosarium

Disaster:	Events that are caused by many natural events are called natural disasters while events that occur due to an epidemic, or technological failure are called non-natural disasters.
Education:	efforts to change attitudes and behaviour of a person in an effort to mature themselves through training
Mitigation:	efforts to reduce the risk of disasters that will occur through increasing public awareness from socialization
Socialization:	a process that introduces how to determine a person's response and reactions

## Biography

### Yustina Damogalad



Born on August 24, 2000. Yustina is a 7th semester student of the Geological Engineering study program at the State University of Gorontalo. Yustina is active in intra and extra campus organizations. In 2019 Yustina participated in Indonesian Debate Competition Mathematics and Natural Science Faculty level in Gorontalo State University and also participated in the Student Creativity Program (PKM-PE) and (PKM-KC). Yustina graduated from SD: SD N 1 LOLAK, SMP: SMP N 1 LOLAK and SMA; SMA N 1 LOLAK.



### Intan Noviantari Manyoe

Born in Limboto, Gorontalo. Intan holds a bachelor's degree in Geophysics and a master's degree in Geological Engineering from Hasanuddin University. Intan is a lecturer in the Geological Engineering major, Universitas Negeri Gorontalo and Head of the Geological Engineering Laboratory. The main focus of his research is renewable energy/geothermal, geotourism, geophysics and geological hazard.

Intan participated in a young lecturer apprenticeship program carried out by the Directorate General of Higher Education at Universitas Gadjah Mada in 2009. She participated in geothermal trainings conducted by the Ministry of Energy and Mineral Resources, UGM, ITB, Utrecht University, The Netherlands Organization for Applied Scientific Research and Geothermal Capacity Building Indonesia-Netherland in 2017. She joined in international collaborative research in the field of eco-geotourism with the Research Institute for Humanity and Nature, Kyoto, Japan and joined in geothermal scientific writing with lecturers at the Institute Technology of Petronas (ITP), Malaysia.

Intan received several awards, including a certificate of commendations from three Japanese professors; Dean of FMIPA, Rector of UNG; Directorate General of Higher Education; and the President of the Republic of Indonesia. Communication with Intan via email [intan.manyoe@ung.ac.id](mailto:intan.manyoe@ung.ac.id) or website [www.intanmanyoe.com](http://www.intanmanyoe.com).