

Natural Disaster Mitigation Management in the case of Mount Tangkuban Parahu Eruption in West Java

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Natural Disaster Mitigation Management in the case of Mount Tangkuban Parahu Eruption in West Java

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Abstract

Disaster prevention and recovery in Indonesia is one of the most important sectors. Indonesia as a disaster-prone country must certainly be able to carry out disaster management properly. This is important so that losses arising from disasters do not hamper national development and progress.

The purpose of this research is to conduct a study on the Management of Eruption Natural Disaster Mitigation in Mount Tangkuban Parahu in order to be able to prepare themselves in facing various disaster threats, essentially, qualitatively, which can provide a more effective and efficient picture of the problem.

The data collection technique was carried out by direct observation to the West Java provincial BPBD, and the location area was likely affected by the eruption of Mount Tangkuban Parahu which was the object of research by the researchers themselves assisted by the research members, as well as collecting data/information related to the research material. In addition, data collection is also carried out through structured interviews to capture information that cannot be obtained through observation.

One of the efforts of the regional government in the area of prevention and preparedness of the Regional Disaster Management Agency of West Java Province is to prepare themselves in facing various disaster threats. Mitigation Management is a life analysis that must be reviewed periodically by policymakers. In principle, commitments or agreements with stakeholders in disaster management planning are mapped in detail, structured and comprehensive.

Password : Natural Disasters; Mitigation Management; Eruption; BPBD

INTRODUCTION

Indonesia is an archipelagic country, very vulnerable to the effects of climate change. In Indonesia, disasters due to climate change are mostly in the form of hydrometeorological disasters. BNPB 2011 data shows that floods, landslides, and floods accompanied by landslides reached 57% of the total disasters that occurred in Indonesia. Various disaster events have provided the empirical experience to the people of Indonesia in terms of facing and reducing disaster risks.

Hadi Purnomo & Ronny Sugiantoro (2010) stated that 87% of Indonesia is prone to natural disasters, 383 districts or municipalities are prone to natural disasters from 440 regencies or municipalities throughout Indonesia. In addition, the condition of Indonesia with a large and unbalanced population, ethnic diversity, religion, customs, culture and class makes Indonesia very vulnerable to natural disasters. Natural disasters such as earthquakes, tsunamis, floods, volcanic eruptions, landslides, and hurricanes that often occur in Indonesia certainly have devastating effects, also causing suffering and loss for both society and the country.

53 With the frequent occurrence of natural disasters in Indonesia, disaster risk management (disaster risk management) is needed for better and systematic handling of disaster relief. The problem that arises is that there are still many Indonesian citizens who do not know and understand what a disaster is, how to anticipate and overcome a disaster, so that the risks posed by the disaster are as minimal as possible, and who is responsible for the disaster. 28

Mitigation policies both structural and 26 non structural must support one another. The use of technology to predict, anticipate and reduce the risk of a disaster must be balanced with the creation and enforcement of an adequate set of regulations supported by an appropriate spatial plan. 18

Facing the threat of disaster, the Indonesian government has a great interest in building a disaster management system in the country, in the form of a National Disaster Management Agency (BNPB) formed not apart from the development of disaster management during the independence period until natural disasters in the form of a devastating earthquake in the Indian Ocean in the Indian Ocean in 20th century. Meanwhile, these developments were greatly influenced by the context of the situation, scope and 7 paradigm of disaster management.

The Regional Disaster Management Agency (BPBD) as a non-departmental government agency that carries out disaster management 52 asks in both provincial and district/city areas is guided by policies determined by the National Disaster Management Agency.

The occurrence of natural disasters in the form of an eruption, the last occurred on Mount Tangkuban Parahu where the eruption occurred on Friday, July 26, 2019 at 15:48 WIB. Ash column height 41 was observed approximately 200 meters from the top of the peak. The role of B 31 B at the central level and BPBD at the regional level has a role to protect the nation from the threat of disaster by building a culture of disaster risk reduction and preparedness in facing disasters to be an integrated part of national development and to build a disaster management system quickly, effectively and efficiently.

RESEARCH PURPOSES

The purpose of this research is to conduct:

- 1) BPBD Mitigation Management Study along with problems arising from disasters in West Java Province;
- 2) Study of Mount Tangkuban Parahu Eruption Natural Disaster in West Java.
- 3) BPBD Mitigation Management Analysis Study on the Eruption of Mount Tangkuban Parahu in West Java.

30 RESEARCH METHODS

This research is based on the type of analytical descriptive research by collecting and recapitulating data not only recorded in the form of numbers but clearly and profoundly explained about the mitigation management of residents affected 40 by the eruption of Tangkuban Parahu volcano based on scientific analysis of BNPB of West Java province.

The data collection technique was carried out by direct observation to the 10 Regional Disaster Management Agency (BPBD) of West Java province, and the location area was likely affected by the eruption of Mount Tangkuban Parahu which was the object of research by the researchers themselves assisted by research members, as well as collecting

data/information related to research material. In addition, data collection is also carried out through structured interviews to capture information that cannot be obtained through observation.

LITERATURE REVIEW

State of the Art

From tracing a number of studies relating to disaster mitigation management, the author wants a novelty that contributes to novelty in the form of a Study on Mitigation Management Analysis of the Regional Disaster Management Agency (BPBD) Against the Eruption Natural Disaster of Mount Tangkuban Parahu in West Java.

Disaster Risk Management is disaster management as an applied science (applicative) that seeks, by systematic observation and analysis of disasters to improve measures, related to prevention (preventive), reduction (mitigation), preparation, emergency response and recovery.

Mitigation Management

Disaster Mitigation Management is a series of efforts to reduce disaster risk, both through physical development and awareness raising and capacity building to face the threat of disaster.

Mitigation is defined as an effort aimed at reducing the impact of disasters. Mitigation is a series of efforts to reduce disaster risks, both through physical development and awareness and enhancing the ability to face the threat of disaster. Mitigation as referred to in Article 44 letter c is carried out to reduce the risk of disaster for communities in disaster-prone areas.

Disaster mitigation as referred to in Article 15 letter c is carried out to reduce the risks and impacts caused by disasters on communities in disaster-prone areas, whether natural disasters, human-made disasters or a combination of both in a country or community. There are 2 types of disasters, viz.

- (1) Natural disasters which are a series of disasters caused by natural factors, namely in the form of earthquakes, tsunamis, volcanic eruptions, floods, droughts, typhoons, landslides, etc.
- (2) Social disaster is a disaster caused by humans, such as social conflict, community disease and terror. Disaster mitigation is a step that really needs to be done as a major starting point of disaster management.

Important points in disaster mitigation: a) Information and maps of disaster prone areas are available for each type of disaster; b) Socialization to increase public understanding and awareness in facing disasters, because they live in disaster prone areas; c) Knowing what needs to be done and avoided, and knowing how to save yourself if a disaster arises; d) Arrangement and arrangement of disaster prone areas to reduce the threat of disaster.

Mitigation is divided into two types, namely:

a) Structural Mitigation

Structural mitigation is an effort to minimize disasters through the construction of various physical infrastructure and using technological approaches, such as the creation of special channels for flood prevention, volcanic activity detection devices, buildings that are earthquake resistant, or the Early Warning System used to predict tsunami waves. Structural mitigation is an effort to reduce vulnerability to disaster by means of technical engineering of disaster-resistant buildings.

⁶ b) Non-Structural Mitigation

Non-structural mitigation is an effort to reduce the impact of disasters other than the above mentioned efforts.

Various potential natural disasters related to climate change can cause losses ¹⁰ in the form of loss of property and loss of life. The potential losses caused by the disaster can be reduced through mitigation. Mitigation is defined as an effort to reduce and prevent the risk of loss of life and property through both structural and non-structural approaches. Structural mitigation is an effort to reduce disaster risk through physical development and technical engineering of disaster resistant buildings, while non-structural mitigation is an effort to reduce disaster risk in a non-physical nature such as policy, community empowerment, institutional strengthening, care.

In reducing disaster risk, non-structural mitigation is more sustainable because it provides security in the long run. Disaster risk reduction through traditional wisdom is a form of non-structural mitigation. Traditional wisdom is traditional knowledge that is ⁴⁷ unique to a particular community or culture that has been developing for a long time, and is the result of a process of mutual relations between the community and its environment, being a reference to behave, practice and be passed on from generation to generation.

Eruption

The eruption is the process of releasing material from a volcano. These materials can be in the form of lava, gas, ash, and others. This material will later be released into the atmosphere or to the surface of the earth in erratic quantities. The eruption occurs because of the movement of magma from the bowels of the earth. The movement of magma is caused by the strong gas pressure from the bowels of the earth which continuously pushes the magma out.

There are two types of volcanic eruptions.

1. Explosive eruption

This type of eruption is marked by a loud bang. Magma and other material come out of the bowels of the earth accompanied by a strong boom so that the sound is also so loud.

This type of eruption has occurred on Mount Krakatoa, causing many casualties.

2. Eruption is effusive

This type of eruption is characterized by the release of magma in the form of molten lava. The difference with explosive eruptions is that gas pressure is not so strong, so magma comes out in the form of lava flows to the mountain slopes. The sound generated is not too loud.

⁷ **Regional Disaster Management Agency (BPBD)**

Regional Disaster Management Agency (BPBD) is a non-departmental government agency that carries out disaster management tasks in provincial and district/city areas based on policies established by the National Disaster Management Agency.

⁴⁶ History BPBD which is part of the structure ²² of the National Disaster Management Agency (BNPB) was formed not apart from the development of disaster management during the independence of natural disasters in the form of a devastating earthquake in the Indian Ocean in the 20th century. Meanwhile, this development was greatly influenced in the context of the situation, scope, and paradigm of disaster management. Seeing the current reality, various disasters motivated by geographical, geological, hydrological, and demographic conditions encourage Indonesia to build a vision to build national resilience in the face of disasters.

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The tasks of the BPBD are the same as BNPB, namely to provide guidelines and direction for disaster management efforts that include disaster prevention, disaster management, rehabilitation, and reconstruction in a fair and equitable manner.

Natural disasters

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Natural disasters are natural events that have a large impact on human populations. Natural events can include floods, volcanic eruptions, earthquakes, tsunamis, landslides, snowstorms, droughts, hail, heat waves, hurricanes, tropical storms, typhoons, tornadoes, wildfires, and disease outbreaks. Some natural disasters do not occur naturally. An example is a hunger, which is a shortage of food in large quantities caused by a combination of human and natural factors. Two types of natural disasters caused by space events rarely affect humans, such as asteroids and solar storms. Disaster management in Indonesia is one of the most important sectors. Indonesia as a disaster-prone country must certainly be able to carry out disaster management properly. This is important so that losses arising from disasters do not hinder the development and progress of the nation. Natural disasters are a bad impression rather than events or a combination of activities originally created, such as volcanic eruptions, earthquakes, land collapse, typhoons) and human activities. Due to the stunt of human nature, natural disasters often cause emergencies, causing financial and structural losses, even to death. This loss depends on the ability to avoid or avoid disaster and resilience.

Volcano eruption is one of the disasters that often occur in Indonesia. This is influenced by the location of the entry of Indonesia which is in the path of the volcano (ring of fire) and is spread across most of the major islands in Indonesia. The existence of these volcanic paths causes earthquakes and eruptions. One of the last eruption disasters was Mount Tangkuban Parahu eruption on Friday, July 26, 2019, at 15:48 WIB. Ash column height was observed approximately 200 meters from the top of the peak. Tangkuban Parahu Mountain is one of the mountains located in West Java Province, Indonesia. About 20 km to the north of Bandung, with a height of 2,084 meters.

DISCUSSION

Mount Tangkuban Parahu Nature Tourism Park based on Minister of Agriculture Decree Number: 528 / Kpts / Um / 9/74 dated 3 September 1974 with an area of 1,660 Ha consisting of 1,290 Ha of Nature Reserve and 370 Ha of Nature Tourism Park. According to the administration of the region, this area is included in the Sagalaherang Subdistrict, Subang Regency, and Lembang District, Bandung Regency. While geographically located between 6 ° 44 " South Latitude and 107 ° 37 ' East Longitude.

In general, the topography of this region is undulating with steep slopes of 30% - 50%. The height of the place reaches 1150-2684 m above sea level. Tangkuban Parahu mountain has a shape like an inverted boat, so the name matches the shape according to the local language called Tangkuban Parahu which means the boat is upside down. Based on the classification of Schmidt and Ferguson, the climate in this region is classified as type B climate with an average rainfall of 2,000 - 3,000 mm / year. Temperatures range between 15 ° C - 29 ° C and average air humidity of 45% - 97%.

TWA Mount Tangkuban Parahu produces 2.4 m³ / second or 207,360 m³ / day of water discharge, with excellent water quality (clear, odorless with a neutral taste). This water source is channeled through the Cipanguseupan River, Cihaseum, Cikoneng, Cimuja, Ciasem, Cihaji, Cijengkol, and Cijalu River. The Tangkuban Parahu area is included in the Citarum, Cilamaya, Ciasem, and Cipunagara watersheds. Potential tourism in TWA Mount Tangkuban Parahu among others in the form of lush mountain forest

landscape of plants and trees that cause microclimate and mountains that often look foggy and caldera crater of Mount Tangkuban Parahu. Besides that, the beautiful panorama of mountains, forests, and plantations seen from the peak of Tangkuban Parahu is very charming.

This phenomenon is a strong reason to compare the perceptions of tourists towards disaster mitigation during a visit so that it becomes an appropriate disaster mitigation recommendation based on the knowledge of disaster. and interest in visiting based on perceptions of domestic and foreign tourists in TWA Mount Tangkuban Parahu.

Conditions When Disasters Occur

When natural disasters occur the picture of the situation is also not much different from the war situation. Chaos, destruction, panic, casualties, and people screaming, running, and trying to save themselves. In the event of a disaster that does not occur suddenly, the community can still prepare themselves, but the atmosphere of anxiety, chaos, and ⁴⁴ic remains clearly visible. Natural disasters that occur in many parts of the world will cause a lot of damage, destruction, and loss of life so that the struggle to provide assistance from volunteers, the community, and the government never stops, alternating happens everywhere. Emergency conditions are very serious, not only save the lives of victims but also risk the lives of volunteers. The eerie atmosphere in the disaster area is an area of struggle both for volunteers and victims to fight for life or death.

Disaster Risk Management

According to Syarief and Kondoatie (2006) quoting Carter (2001), Disaster Risk Management is disaster management as an applied science that applies, by systematically observing and analyzing disasters to improve actions, related to prevention. (preventive), reduction (mitigation), preparation, emergency response, and recovery. Management in disaster relief is important matters for top management which includes planning (organizing), organizing (organizing), leadership (directing), organizing (coordinating), and controlling (controlling).

The objectives of Disaster Risk Management include:

1. Reducing or avoiding the physical, economic, and mental losses suffered by individuals or society and the country.
2. Reducing the suffering of disaster victims.
3. Speed up recovery.
4. Provide protection to refugees or people who are displaced when their lives are threatened.

According to Agus Rahmat (2006: 12), Disaster ²⁹Risk Management is all activities that cover aspects of disaster planning and management, before, during and after a disaster known as the Disaster Risk Management cycle which aims to include:

1. Prevents losing one's soul
2. Reducing human suffering.
3. Provide ²⁰formation to the public and also to the authorities regarding risk. Reducing damage to the main infrastructure, property, and other economic resources.

Disaster Relief Stages

¹⁴The stages or phases in disaster relief are known as the disaster management cycle. The disaster management cycle ¹⁰illustrates the process of disaster management which is basically a pre-disaster action, before the disaster, during a disaster, and after the disaster, as shown in Table 1 below :

Table 1. Stages of Disaster Assistance

Name of Researcher	Recommended stages
Wolenksy (1990)	mitigation and preparedness
	immediate pre and post impact
	Short-term recovery (two years)
	Long-term recovery (ten years)
Waugh (2000)	prevention
	planning and preparedness
	response
	recovery
Helsloot and Ruitenber (2004)	Preparedness
	emergency
	recovery

Key Response at each stage

Understanding each of the stages in disaster risk management is very important. The effectiveness of disaster risk management is not only activities when handling disaster relief, but includes all activities as in the 4 (four) phases of disaster risk management as follows:

1. The stage of government preparedness needs to emphasize the safety of people's lives in the disaster area. Disaster risk management practices in an integrated and comprehensive manner are absolutely necessary. On the other hand, understanding the disaster in society is an important part of this phase. In this case, the community needs to understand their responsibilities and actions in the event of the disaster.
2. The phase of disaster risk management mitigation that emergency activities focus on reducing the negative consequences of disasters. Key responses during the mitigation period include decisions on economic development, land-use policies, infrastructure planning such as roads and public facilities, and identification of resource discoveries to support investment.
3. The response phase is very needed good coordination from various parties. Coordination makes it possible to provide assistance to people affected by disasters quickly, precisely, and effectively.
4. The recovery phase is the phase of assessment and rehabilitation activities of disaster destruction. In this phase, the emphasis is on the process of distributing aid. The process includes determining and monitoring assistance to affected communities.

Role of Various Parties

The success of disaster risk management is inseparable from the role of various parties such as volunteers, communities, Non-Governmental Organizations (NGOs), or Non-Governmental Organizations (NGOs), governments, and even the international community. The cooperation of the various parties will accelerate overcoming various disaster problems and minimize the impact of risks caused by disasters quickly and effectively, both short term and longterm in the affected area.

Disaster Risk Management System in Indonesia

The Government of Indonesia officially and legally handles disaster management by forming a National Coordinating Board (Bakornas). The task of Bakornas is to formulate and determine policies, coordinate implementation, and provide standards and direction for disaster management efforts. Bakornas handles the coordination of emergency relief and rescue efforts in collaboration with the Coordinating Minister for People's Welfare, Minister of Social Affairs, Minister of Transportation, Military, local government, and private institutions. Disaster Risk Management in Indonesia at the national level is handled by the National Coordinating Board (BAKORNAS) or the National Management Agency.

The National Disaster Management Agency (Bakornas PB) is a coordinating body for interdepartmental departments at the central level. This organization was formed based on Perpres No. 83 of 2005, led by the Vice President as Chairperson, which is under and directly responsible to the President. Disaster Management and Refugee Management (Bakornas PBP) at the national level, while at the provincial level is called the Refugee Coordination Unit (Satkorlak PBP). Satkorlah PBP is a provincial level organization led by the Governor, who is responsible for carrying out disaster management in his area. The main task of the Satkorlak PBP is to coordinate disaster management efforts in accordance with the policies set by the National PBP Bakpraas.

Disaster management at the district or municipality level is carried out by the Implementing Unit (Satlak PBP), and for implementation in the field, it is handled by the Gegana Unit (Satgana PBP). Refugee Implementation Unit (Satkorlak PBP). Satkorlah PBP is a provincial level organization led by the Governor, who is responsible for carrying out disaster management in his area. The main task of the Satkorlak PBP is to coordinate disaster management efforts in accordance with the policies set by the National PBP Bakpraas.

Disaster management at the district or municipality level is carried out by the Implementing Unit (Satlak PBP), and for implementation in the field, it is handled by the Gegana Unit (Satgana PBP). The Disaster Management Implementing Unit (Satlak PB) is an organization at the district/city level that is leveled by the Regent or Mayor, which is responsible for carrying out disaster management in his area by considering the policies and technical direction of the National Bakornas PB, in addition to regulating records carried out by related agencies dinas office and periodically report and explain its activities to Bakornas through Satkorlak PBP. RI Law No. 24 of 2007 concerning Disaster Management explains several matters relating to the disaster cycle as mentioned in table 2 below.

Table 2. Stages in Disaster Management

No	Kegiatan	Keterangan
1	Kesiapsiagaan (Preparedness)	Serangkaian kegiatan yang dilakukan untuk mengantisipasi bencana melalui pengorganisasian serta melalui langkah yang tepat guna dan berdaya guna
2	Mitigasi (Mitigation)	Serangkaian kegiatan untuk mengurangi risiko bencana, baik melalui pembangunan fisik maupun penyadaran dan peningkatan kemampuan menghadapi ancaman bencana.
3	Tanggap darurat (Response)	Serangkaian kegiatan yang dilakukan dengan segera pada saat kejadian bencana untuk menangani dampak buruk yang ditimbulkan, yang meliputi kegiatan penyelamatan dan evakuasi dasar, perlindungan, pengurusan pengungsi, penyelamatan serta pemulihan prasarana dan sarana
4	Rehabilitasi/Pemulihan (Rehabilitation/recovery)	Perbaikan dan pemulihan semua aspek pelayanan publik atau masyarakat sampai tingkat yang sasaran utama untuk normalisasi atau berjalannya secara wajar semua aspek pemerintahan dan kehidupan masyarakat pada wilayah pasca bencana.
5	Rekonstruksi (Reconstruction)	Pembangunan kembali semua prasarana dan sarana kelembagaan pada wilayah pasca bencana, baik tingkat pemerintah maupun masyarakat dengan sasaran utama tumbuh dan berkembangnya kegiatan perekonomian, sosial, budaya, tegaknya hukum dan ketertibana, dan bangkitnya peran serta masyarakat dalam segala aspek kehidupan bermasyarakat pada wilayah pasca bencana erupsi

Birth of Law No. 24 of 2007 concerning Disaster Management and implementing regulations that have been prepared, it is hoped that the response to the disaster situation will be faster so that disaster risk management becomes more effective. Effective management of disaster risk requires a combination of four concepts, namely all hazards, overall, integrated, and community preparedness. An integrated approach to effective disaster management requires active collaboration from various related parties. That is, all organizations with their respective duties work together in managing disasters.

The community consisting of each individual is expected to always be alert to the dangers of disasters and know how to protect themselves, their family homes, and their belongings from disaster hazards. If each of them can take action to protect against the impact of the disaster hazard, it certainly can reduce the threat of a hazard. The thing to note is that the focus of the response on preparedness, mitigation, response, and recovery activities can be done well so that the impact of disaster events will be more minimized.

Types of Mitigation

Mitigation is divided into two types, namely structural mitigation and non-structural mitigation

a) Structural Mitigation

Structural mitigation is an effort to minimize disasters through the construction of various physical infrastructure and using technological approaches, such as the creation of special channels for flood prevention, volcanic activity detection devices, buildings that are earthquake resistant, or the Early Warning System used to predict tsunami waves. Structural mitigation is an effort to reduce vulnerability to disaster by means of

technical engineering of disaster-resistant buildings. A disaster-resistant building is a building with a structure that is planned so that the building is able to survive or suffer damage that is not dangerous if the disaster in question occurs. Technical engineering is a structural design procedure that takes into account the action characteristics of a disaster.

b) Non-Structural Mitigation

Non-structural mitigation is an effort to reduce the impact of disasters other than the above-mentioned efforts. It can be within the scope of policymaking efforts such as making a regulation. The Disaster Management Act (PB Law) is a non-structural effort in the policy area of this mitigation. Another example is the creation of urban spatial planning, community capacity building, even to the point of activating various other activities that are useful for strengthening community capacity, also part of this mitigation. This is all done for, by, and in communities that live around disaster-prone areas.

Non-structural policies include legislation, regional planning and insurance. Non-structural policies are more related to policies that aim to avoid unnecessary and damaging risks. Of course, before risk identification is needed first. Physical risk assessment includes the process of identifying and evaluating the likelihood of disasters and their possible impacts.

Mitigation policies both structural and non-structural must support one another. The use of technology to predict, anticipate, and reduce the risk of a disaster must be balanced with the creation and enforcement of an adequate set of regulations supported by an appropriate spatial plan. The frequent occurrence of floods and landslides during the rainy season and drought in several places in Indonesia during the dry season is mostly caused by weak law enforcement and the use of spatial areas that are not in accordance with the conditions of the surrounding environment. The technology used to predict, anticipate, and reduce the risk of a disaster must also endeavor so as not to disturb the ecological balance in the future.

Methods and Objectives of Mitigation

The purpose of the mitigation strategy is to reduce losses when a hazard occurs in the future. The main objective is to reduce the risk of death and injury to the population. Secondary objectives include reducing damage and economic losses caused to public sector infrastructure and reducing economic losses caused to public sector infrastructure and reducing private sector losses to extent that they might affect society as a whole. These goals may include encouraging people to protect themselves as far as possible.

Mitigation strategies must be designed for the proposed application. disaster mitigation programs implemented in the Philippines cannot possibly be implemented directly in Peru. There are some standard solutions. Some individual elements and mitigation techniques will be applicable.

The main objectives (ultimate goals) of Disaster Mitigation are as follows:

- a) Reducing the risks/impacts caused by disasters, especially for the population, such as fatalities (deaths), economic losses (economic costs), and damage to natural resources.
- b) As a foundation (guidelines) for development planning.
- c) Increase public knowledge (public awareness) in dealing with and reducing the impact/risk of disasters, so that people can live and work safely.

Considerations in Developing a Mitigation Program (especially in Indonesia):

- a) Disaster mitigation must be integrated with the development process

- b) Focus not only on disaster mitigation but also on education, food, labor, housing, and other basic needs.
- c) Synchronous with local social, cultural, and economic conditions
- d) In the informal sector, it is emphasized how to increase the capacity of the community to make decisions, help themselves and develop themselves.
- e) Using local resources and resources (according to the principle of decentralization)
- f) Studying the development of safe house construction for the poor, and the choice of additional cost subsidies to build a house.
- g) Learn the reshuffle techniques (patterns and structures) of settlements.
- h) Studying land use to protect people who live in areas that are vulnerable to disasters and losses, both socially, economically, as well as political implications.
- i) Easy to understand and be followed by the community.

Disaster Mitigation Policies and Strategies

1. Policy

Various policies that need to be taken in disaster mitigation include:

- a. Dalam disaster mitigation efforts need to build the same perception for all parties both government officials and all elements of the community whose provisions are regulated in general guidelines, implementation instructions, and fixed procedures issued by the relevant agencies in accordance with their respective unit task units.
- b. Disaster mitigation is carried out in an integrated and coordinated manner involving all the potentials of the government and the community.
- c. Preventive efforts must be prioritized so that damage and casualties can be minimized.
- d. Strengthening forces through cooperation with all parties, through community empowerment and campaigns.

2. Strategy

To implement the policy, the following strategies were developed:

1) Mapping.

The first step in a mitigation strategy is to map disaster-prone areas. At this time various sectors have developed disaster-prone maps. The disaster-prone map is very useful for decision-makers, especially in anticipating natural disaster events. However, until now the use of this map has not been optimized. This is caused by several things, including:

- a. Not all regions in Indonesia have been mapped yet
- b. The resulting map has not been well-socialized
- c. Disaster maps are not yet integrated
- d. Disaster maps that are made using different base maps make it difficult in the process of integration.

2) Monitoring.

By knowing the level of vulnerability early, it can be anticipated if at any time a disaster occurs, so that it will easily make a rescue. Monitoring in vital and strategic areas in services and economics is carried out in several disaster-prone areas.

3) Dissemination of information

Dissemination of information is carried out among others by giving posters and leaflets to Regency / City and Provincial Governments throughout Indonesia that are prone to disasters, about procedures for recognizing, preventing, and handling disasters. Providing information to print and electronic media about disasters is one way of disseminating information with the aim of increasing awareness of geological disasters in

a particular region. Local government coordination in terms of information dissemination is needed given that Indonesia is very broad.

4) Socialization and Counseling

Dissemination and outreach on all aspects of disaster to SATKOR-LAK PB, SATLAK PB, and the community aim to increase awareness and preparedness to face disasters at any time. Important things that need to be known by the community and Regional Government are about living in harmony with nature in the disaster area, what needs to be done and avoided in disaster-prone areas, and knowing how to save themselves in the event of a disaster.

5) Training / Education

The training was focused on the procedures for evacuation and rescue in the event of a disaster. The aim of the exercise is to emphasize the flow of information from field officers, technical officials, SATKORLAK PB, SATLAK PB, and the community to the level of evacuation and rescue of disaster victims. With this training formed high preparedness to face disasters will be formed.

1) Early Warning

Early warning is intended to notify the level of activity of observations continuously in a vulnerable area with the aim that early preparation can be done to anticipate if at any time of a disaster. The early warning is disseminated to the public through local governments with the aim of providing public awareness in avoiding disaster. Early warning and monitoring results of disaster-prone areas in the form of technical advice can be in the form of other ways to divert road routes (temporary or so on), evacuation and or relocation, and other handling recommendations.

Disaster Mitigation Management

Disaster mitigation management planning is carried out by taking the following steps :

- a) Strengthening institutions for disaster management.
- b) Remind emergency response capabilities.
- c) Increasing community awareness and preparedness on issues related to disaster risk.
- d) Increase security against disasters in infrastructure and utility systems.
- e) Improve security against disasters in strategic and important buildings.
- f) Improve security against disasters in residential areas and public facilities.
- g) Increasing security against disasters in industrial buildings.
- h) Increase disaster safety in school buildings and school children.
- i) Paying attention to security against disasters and the rules of earthquake and tsunami resistant buildings and floods in the process of making new construction.
- j) Increase experts' knowledge about disaster phenomena, vulnerability to disasters, and mitigation techniques.
- k) Incorporating disaster risk assessment procedures into spatial / land use planning.
- l) Improving the community's recovery ability in the long term after a disaster occurs.

Mitigation Activities

A disaster is an event or a series of events that threaten and disrupt people's lives and livelihoods caused by natural factors and/or non-natural factors as well as human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts. Disasters can take the form of fires, tsunamis, earthquakes, volcanic eruptions, floods, landslides, tropical storms, and others. Therefore the role of disaster mitigation is needed in order to reduce the impact of disasters that occur. Some of the disaster mitigation activities include:

- a. disaster risk identification and monitoring;
- b. participatory disaster management planning;
- c. the development of a culture of disaster awareness;
- d. implementation of physical, non-physical, and disaster management arrangements;
- e. identification and recognition of sources of danger or threat of disaster;
- f. monitoring of natural resource management;
- g. monitoring of the use of high technology;
- p supervision of the implementation of spatial planning and environmental management
- i. other disaster mitigation activities.

Based on the time cycle, disaster management activities can be divided into 4 categories:

- a. activities before the disaster occurs (mitigation)
- b. activities when a disaster occurs (protection and evacuation)
- c. activities right after the disaster (search and rescue)
- post-disaster activities (recovery/healing and repair/rehabilitation)

CONCLUSION

After the eruption of Mount Tangkuban Parahu in 2019, the success of the Management of Natural Disaster Mitigation in Mount Tangkuban Parahu in West Java can proceed with the following steps:

1. Coordinate volunteers (NGOs or NGOs) with the government (BPB 23) in the post-disaster response scenario through actual activities depending on people and communities.
2. The involvement of the surrounding community in understanding / complying with the results of the study of the impact/danger of the eruption of Tangkuban Parahu volcano is very important and made community activities deeply rooted in the community and culture in a surrounding area. They can show the real needs and priorities for the problems faced, so they can provide responses and corrections to the plans that will be implemented in tackling the eruption disaster if it happens in the future.
3. The availability of BPBD Mitigation Management Studies on the Eruption of Mount Tangkuban Parahu in West Java has encouraged the community to respond to emergencies quickly, efficiently, fairly and the available resources can be utilized optimally and effectively. The emergence of community participation, in community groups, is a form of grassroots groups that play an important role in disaster risk management systems.

Recommendation

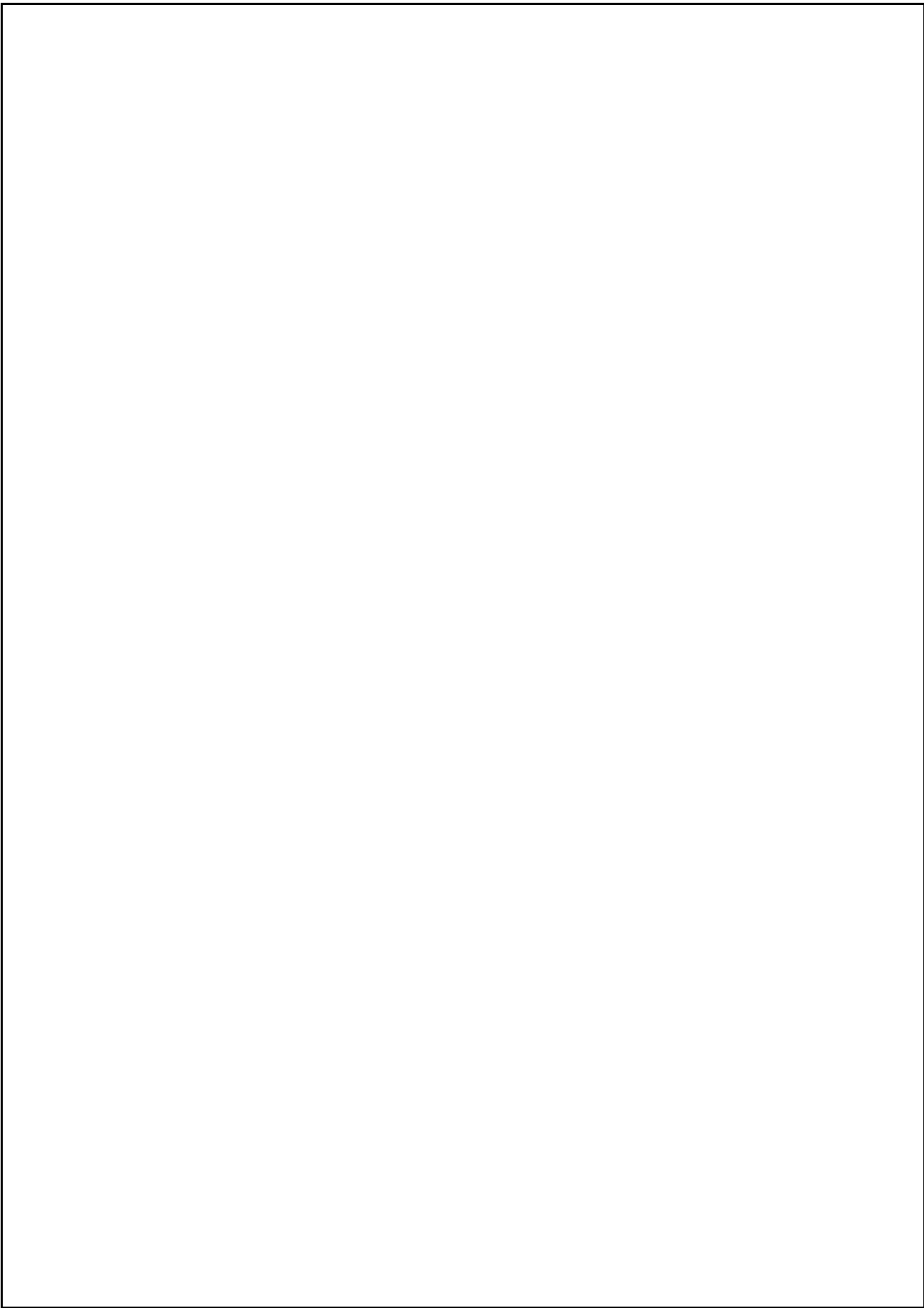
There are several things that are still lacking in this research that need to be followed up through further research, while the recommendations of this study are as follows:

1. Communities around Tangkuban Parahu Mountain, traders, tourists, and climbers are not allowed to approach Ratu Crater and Upas Crater with a radius of 500 meters and are not allowed to stay overnight in the active crater area within the Tangkuban Parahu complex.
2. Communities around Mount Tangkuban Parahu, traders, tourists, climbers, and tour operators of Mount Tangkuban Parahu to be aware of increased volcanic gas concentrations and are advised not to linger on the active crater rim of Mount Tangkuban Parahu in order to avoid exposure to gases that can impact for mental health and safety.

3. Communities around Mount Tangkuban Parahu, traders, tourists, climbers, and tour operators of Mount Tangkuban Parahu to be aware of sudden phreatic eruptions without preceded by obvious volcanic symptoms.

REFERENCE

- Kodoatie Robert J.dan Rostam Sjarief,2006.*Pengelolaan Bencana Terpadu*. Jakarta:Yarsif Watampone.
- PP No 21, 2008, concerning the Implementation of Disaster Management
- UU No 24 Tahun 2007, about Disaster Management
- Nursa'ban, Sugiharyanto, dan Khotimah, 2010. *Pengukuran Kerentanan Longsor Lahan Sebagai Upaya Mitigasi Bencana Di Perbukitan Menoreh*. *Jurnal Penelitian Saintek*, 15(2):42-52.
- Sugiharyanto, Wulandari, T., dan Wibowo, S., 2014. *Persepsi Mahasiswa Pendidikan IPS Terhadap Mitigasi Bencana Gempa Bumi*. *JIPSINDO*, 2(1):164-182.
- Wibowo, H.A., Wasino, dan Setyowati, D.L., 2012. *Kearifan Lokal dalam Menjaga Lingkungan Hidup (Studi Kasus Masyarakat di Desa Colo Kecamatan Dawe Kabupaten Kudus)*. *Journal of Educational Social Studies* 1(1):25-30.
- G. Bankoff, G. Frerks, D. Hilhorst (eds.) (2003). *Mapping Vulnerability: Disasters, Development and People*
- H. Abraham, Jonathan, *Disaster Management in Australia: The National Emergency Management System, Emergency Medicine*,2006.
- Departemen Kekeruhan RI, *Pedoman Teknis Penanggulangan Krisis Kesehatan Akibat Bencana*, 2007.
- Kompas, *Bencana Gempa dan Tsunami*, 2006
- Proyek Sphere, *Piagam Kemanusiaan dan Standar Minimal Dalam Response Bencana*, Grasindo, Jakarta, 2004
- Purnomo, Hadi & Sugiantoro, Ronny, *Manajemen Bencana*, Media Pressindo, Jakarta, 2010
- Purnomo, Hadi & Utomo, Hargo, *Keefektifan Kerjasama Antar Lembaga Dalam Operasi Pemulihan Bencana , Studi Empiris di Yogyakarta dan Jateng*, *Jurnal Ekonomi & Bisnis*, Fak. Ekonomi UGM, Yogyakarta, 2008
- Anonim, 2014^a. *Rencana Aksi Nasional Adaptasi Perubahan Iklim (RAN API)*. Badan Perencanaan dan Pembangunan Nasional (BAPPENAS). Jakarta.
- Anonim, 2014^b. *Indeks Rawan Bencana Indonesia*, Direktorat Penanggulangan Risiko Bencana, Deputi Bidang Pencegahan dan Kesiapsiagaan, Badan Nasional Penanggulangan Bencana (BNPB). Jakarta.
- Naryanto, H.S., 2011. *Analisis Risiko Bencana Tanah Longsor di Kabupaten Karang anyar,Provinsi Jawa Tengah*. *Jurnal Penanggulangan Bencana*, 2(1):21-32.
- Sugiharyanto, Wulandari, T., dan Wibowo, S., 2014. *Persepsi Mahasiswa Pendidikan IPS Terhadap Mitigasi Bencana Gempa Bumi*. *JIPSINDO*, 2(1):164-182.
- https://id.wikipedia.org/wiki/Badan_Penangulangan_Bencana_Daerah
- <https://bnpb.go.id/>
- <http://clearlyexplained.com/>
- <https://www.wisegeek.com/what-is-a-natural-disaster.htm>
- https://id.wikipedia.org/wiki/Gunung_Tangkuban_Parahu Abdullah, Irawan, *Konstruksi dan Reproduksi Sosial atas Bencana Alam*, Fak Pascasarjana Universitas Gajahmada, Yogyakarta, 2008.



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