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Original Article

Kaba Volcano Disaster Mitigation Analysis in Rejang Lebong Regency, Bengkulu Province

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ABSTRACT
Indonesia, as an archipelago located in the "Ring of Fire," has a high intensity of volcanic activity. Mount Kaba, one of the active volcanoes in Bengkulu Province, is classified as a type A volcano due to its significant eruption history since 1600. Mount Kaba poses significant hazards, including lava flows, pyroclastic material ejections, and toxic gases. This study focuses on areas vulnerable to Mount Kaba's disasters, covering the sub-districts of Selupu Rejang, Sindang Dataran, and Sindang Kelingi. The study aims to understand the impact of Mount Kaba's activity on the community, the disaster potential affecting community awareness, the disaster risk level due to Mount Kaba's volcanic activity, and the coordinated mitigation and evacuation plans. The results show that Mount Kaba's activity has both positive and negative impacts on the surrounding communities. Positive impacts include increased soil fertility, tourism opportunities, and economic growth. However, negative impacts include disruptions to social activities, economic losses, and environmental damage. This study highlights the importance of increasing community awareness about Mount Kaba's disaster risks and the importance of disaster mitigation. Recommendations include continuous educational programs, improved early warning systems, adequate infrastructure development, and regular evacuation drills. Good coordination between local government, BPBD, educational institutions, and non-governmental organizations is crucial to ensuring community preparedness for potential Mount Kaba disasters.

KEYWORDS
Disasters; Mitigation; Mount Kaba; Volcanoes

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INTRODUCTION

Indonesia is an archipelagic country with a fairly high intensity of volcanic disasters, due to Indonesia's geographical location which is located in the ring of fire (Putra, Ahmad P, 2011). Indonesia's geographical location on the Ring of Fire makes it one of the countries with the highest intensity of volcanic activity in the world. (Maharani, 2023)

Indonesia itself has 127 active volcanoes or around 13% of the world's active volcanoes, consisting of 76 type A volcanoes, 30 type B volcanoes and 21 type C volcanoes (Adri et al., 2021). Mount Kaba, which is located in Bengkulu Province, has a recorded history of eruptions, such as the eruption in 2009. These eruptions provide evidence that the mountain is still active and has the potential to erupt again. The Bukit Kaba TWA area is a tropical mountain forest ecosystem covering an area of 14,650.51 hectares located at 102°35'-102°45' East Longitude and 3°30'-3°37' South Latitude (Hendra Luat P Sihombing, 2020).

Apart from negative impacts, the eruption of Kaba Volcano also has a positive impact by increasing the potential of affected land which needs to be optimized (Purnama, 2017). Volcanic eruptions can produce fertile soil because it contains nutrients such as potassium and phosphorus which are good for plants. This land is very suitable for agriculture and can increase crop yields (Indira Lintang, 2023). This mountain with a height of 1,938 meters above sea level offers exotic views. The peak of this mountain is decorated with two craters, each of which is green and brownish white.

Sumber Urip Village experienced a significant economic increase thanks to the fertile and nutrient-rich soil resulting from the volcanic activity of Mount Kaba Volcano, enabling farmers to grow various types of vegetables with abundant and high-quality harvests. Mount Kaba's volcanic activity had a significant social impact, especially disruption to community social activities due to mass evacuations that separated families and communities. One of the impacts of the volcanic eruption was paralyzing community activities such as farming and earning a living, because they were forced to evacuate for quite a long time (Suarjana et al., 2020). Prihatiningsih et al. (2020) examined public perceptions of the risk of volcanic eruptions and the level of preparedness in Indonesia.

This research also refers to several international studies that highlight volcanic disaster mitigation strategies that have been implemented in various countries, such as the early warning system in Japan (Fournier d'Albe, 2019) and the community approach to preparedness in the Philippines (Kelman & Mather, 2020). By comparing approaches that have been implemented in other countries, it is hoped that a more effective mitigation model can be obtained for the communities around Mount Kaba.

The novelty of this research lies in combining local data from Mount Kaba, especially Sumber Urip Village, with a global comparative approach such as mitigation strategies in Japan and the Philippines. This research highlights the positive impact of volcanic activity on increasing agricultural yields, which is still rarely discussed. In addition, this research offers an analysis of the sustainable use of volcanic land through a community participatory approach. The integration of geographical, social and ecological aspects makes this research more comprehensive in forming an adaptive and contextual disaster mitigation model. Research purposes for:

RQ1: Find out how the community around Mount Kaba is facing the Kaba Volcano disaster.

RQ2: Know the factors that influence the level of public awareness.

RQ3: Understand the risk of disaster due to Mount Kaba's volcanic activity on local residents and infrastructure.

METHOD

Overview Method

The research was conducted in Sido Urip Village, Bengkulu Province using a qualitative descriptive method. According to I Made Winartha (2006), this method involves analyzing, describing, and summarizing various conditions and situations based on data collected through interviews or observations related to field problems. Data was collected through in-depth interviews, participant observation, and document study. In-depth interviews were conducted face-to-face to obtain information directly from research subjects. Participatory observation involved researchers in the daily activities of subjects to gain a comprehensive picture of the phenomenon. Document studies involved collecting and analyzing related documents, such as reports, notes, and articles.

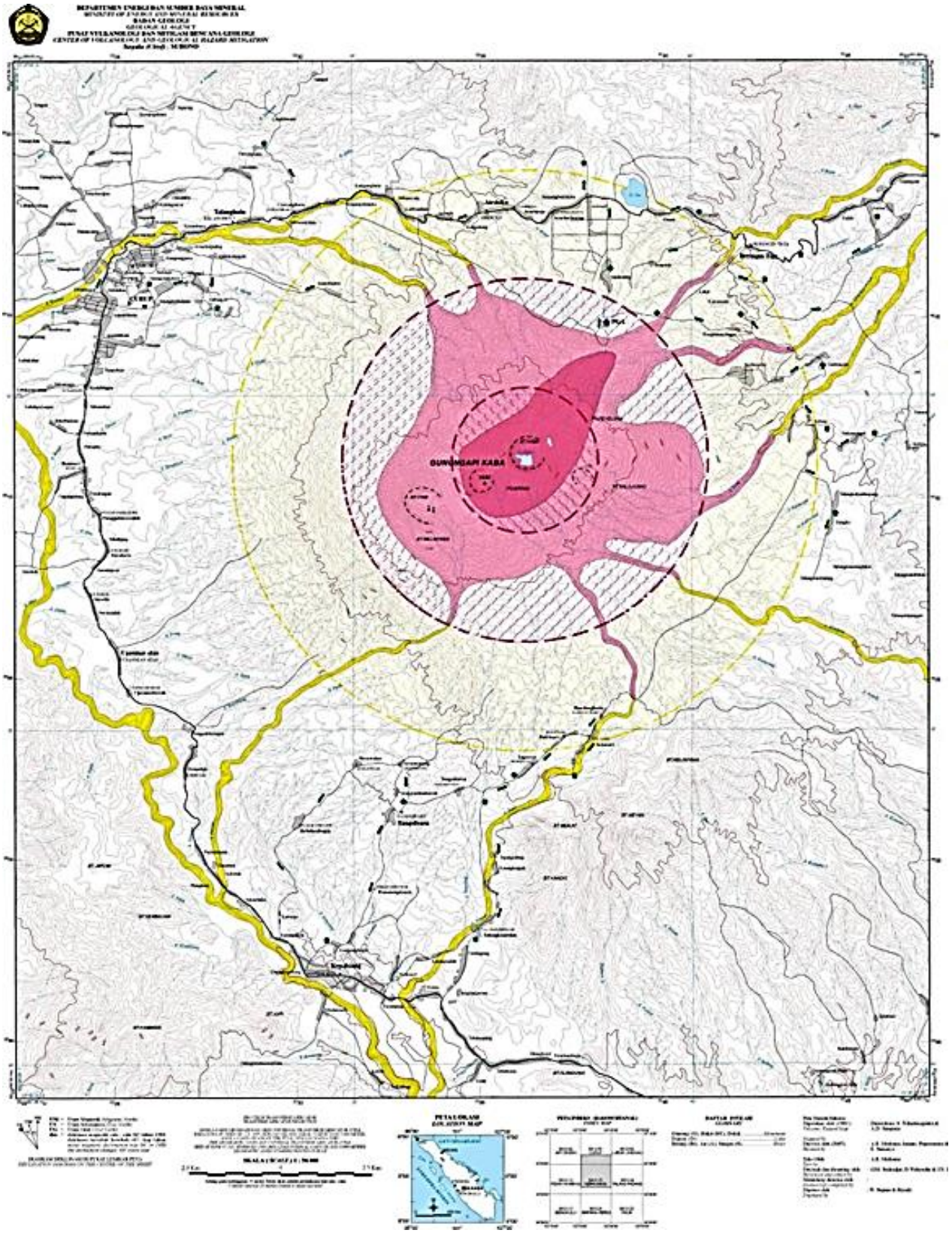

Figure 1. Map of volcano-prone disaster areas

This research was conducted in rejang lebong regency, bengkulu province, with a focus on areas affected by the volcanic activity of mount kaba. This research uses a qualitative descriptive method with a case study approach to analyze disaster mitigation strategies that have been implemented in the research area. The research procedure includes several stages, namely literature study regarding volcanic disaster mitigation. Field data collection through direct observation and interviews. Analyze data to evaluate the effectiveness of existing mitigation strategies.

For data collection techniques data is collected through (1) Direct observation of the condition of disaster mitigation infrastructure; (2) In-depth interviews with affected communities, local governments and related institutions. Data were analyzed using the thematic analysis method, which involves grouping data based on the main research themes. In addition, comparisons were made with disaster mitigation strategies in other countries to obtain the best recommendations for disaster mitigation on Mount Kaba.

RESULT AND DISCUSSION

Mount Kaba, an active volcano located in Selupu Rejang, Rejang Lebong Regency, Bengkulu Province, Indonesia, offers an interesting and challenging climbing experience for nature explorers. From Curup City, this mountain can be reached by traveling about 15 km to the southeast. The peak of Mount Kaba is enchanting with two craters with different characteristics, one green and the other brownish white, providing a spectacular natural view. The eruption of the Kaba volcano has had various impacts on agricultural conditions in the surrounding areas. The Kaba Volcano Observatory, the Center for Volcanology and Geological Disaster Mitigation, stated that the status of Mount Bukit Kaba in Rejang Lebong Regency, Bengkulu, has remained on alert since it was declared in September 2009. Apart from the negative impact, the Kaba volcano eruption has had a positive impact, especially on the potential of the affected land which needs to be optimized (Purnama, 2017).

Table 1. Population Data

No.	Gender	Total population
1	Man	1.178
2	Woman	1.117

Source: Sumber Urip Village Office

The positive impact of the activity of the Kaba Volcano

1. Fertile Land

Volcanic eruptions can produce fertile soil because it contains nutrients such as potassium and phosphorus which are good for plants. This land is very suitable for agriculture and can increase crop yields (Indira Lintang, 2023). Volcanic eruptions can produce volcanic material rich in nutrients around the mountain slopes. The formation of the Kaba mountain complex was influenced by tectonic activity in the same direction as the Sumatran fault pattern and antithetically trending southwest and northeast (Raharjo et al., 2022). The activity of the Kaba Volcano fertilizes the soil in Sumber Urip Village by spreading volcanic material which is rich in essential minerals such as potassium, phosphorus and calcium. This material increases organic content and improves soil structure, and releases nutrients slowly, providing a continuous supply of nutrients for plants. In Sumber Urip Village, soil fertility obtained from the volcanic activity of the Kaba Volcano allows farmers to grow various types of vegetables with better results and high quality. Many farmers use land affected by the volcanic eruption to grow crops, producing abundant harvests. (Purnama, 2017b).

2. Tourism

Development and development of a region into a tourist destination depends on the attraction itself which can be in the form of natural beauty, historical places, social ways of life and religious ceremonies (Reddy Prayoga, 2017). Volcanic eruptions can create spectacular natural views and attract the attention of tourists. This mountain with a height of 1,938 meters above sea level offers exotic views. The peak of this mountain is decorated with two craters, each of which is green and brownish white. Tourism on Kaba Hill is growing rapidly thanks to the presence of Mount Kaba, waterfalls and Kaba hot springs). Economically, tourism has a positive impact on the people in an area. Tourism development in an area or tourist destination has an impact on economic aspects that can improve community welfare (Herlianti et al., 2022).

The peak of this mountain is decorated with two craters, each of which is green and brownish white. There are two routes that can be taken to reach the top. The first route offers views of dense forest full of bushes with ravines on either side, while the other route has been paved using asphalt. The growth of a well-developed tourism industry encourages the emergence of various new livelihoods such as entrepreneurs and

accommodation employees, restaurant managers, snack sellers and tourism managers who directly contribute to improving the socio-economic conditions of local communities. (Daniel Pakpahan, 2016).

3. Economy

Tourism in Indonesia is recognized as one of the economic pillars which plays a role in bringing in foreign exchange, increasing regional income, attracting investment, and opening up jobs to reduce unemployment (Rizkiyah et al., 2019). Concept of Economic Impact of Tourism Tourists who come to a destination within a certain period of time, use its resources and facilities. usually spend money for certain purposes (Hermawan, 2016). . This volcanic activity has enriched the soil around the village with minerals and nutrients that are excellent for agriculture. Increasing agricultural output meets local needs and allows farmers to sell products to a wider market, increasing their income significantly (Suarjana et al., 2020). Sumber Urip Village experienced a significant economic increase thanks to the volcanic activity of Mount Kaba Volcano. This volcanic activity has enriched the soil around the village with minerals and nutrients that are excellent for agriculture. With increased agricultural output, the people of Sumber Urip village gain greater economic benefits. Vegetables grown in this village, such as potatoes, carrots and cabbage, are in demand in local and foreign markets. The development of the tourism industry has an important role in motivating the development of regional development. (Gede Sugiyanta, n.d.).

Negative impacts of Kaba volcanic activity

1. Social impact

Volcanic eruptions have significant negative social impacts. One of them is crippling community activities, such as farming and earning a living, because they were forced to evacuate for a long time due to volcanic eruptions (Suarjana et al., 2020). The main potential dangers of volcanoes that have a direct impact on human life include hot clouds, ejections of incandescent material, heavy ashfall, lava flows and toxic volcanic gases (Setiyawidi, 2011). Mount Kaba's volcanic activity has had significant social impacts, especially eruptions that have damaged land and infrastructure, required mass evacuations, separated families, disrupted routines, and created uncertainty and high levels of stress. Volcanic eruptions often require mass evacuations, leaving families and communities separated. This evacuation process not only disrupts daily routines but also forces people to leave their homes and possessions, creating uncertainty and high levels of stress.

2. Economic impact

The most prominent impact is the change in the economic conditions of the local population, apart from that the biggest impact of the eruption was in the hamlets close to the erupting volcano (Putu Ananda Citra, 2014). The economic impact of Kaba Volcano activity is not always positive. Increased volcanic activity can cause major economic losses due to eruptions that damage agricultural land, infrastructure and property. Residents living around mountains often face the risk of evacuation and temporary loss of livelihood.

Potential disasters that influence the level of public awareness

A disaster is an event or event outside of normalcy that damages or disrupts human life, resulting in losses or casualties that exceed the ability of local communities to cope using only their own resources. (Neni et al., n.d.). The problem of natural disasters is something that often occurs in Indonesia, in fact every year there are natural disasters. (Lenny Pratiwi Rahmawati, 2024) Potential disasters that affect the level of public awareness due to volcanic activity involve identifying the dangers of volcanic eruptions which can have a serious impact on local areas and communities. Increasing the ability to face mountain disasters needs to be prepared including outreach to communities living around the foot of the mountain (Mencapai et al., 2013).

Sumber Urip Village, which does not yet have knowledge about volcanoes and the impact of disasters, needs to be provided with education regarding volcanoes, the characteristics of Mount Kaba, and the position of Sumber Urip Village. Mitigation is defined as actions taken before a disaster occurs with the aim of reducing or eliminating the impact of a disaster on society and the environment (Nugroho, 2018b). For the people of Sumber Urip Village who have never had knowledge about volcanoes, the impacts of disasters that may occur, as well as activities that can be carried out after a disaster, activities that can be carried out are providing knowledge regarding volcanoes, the characteristics of Mount Kaba and the position of Sumber Urip Village. This activity is related to reducing the risk of the volcanic eruption

disaster, both loss of life and property. Disaster risk reduction efforts are carried out by considering sustainability and participation from all elements of society (Pahleviannur, 2019).

The level of disaster risk due to Mount Kaba's volcanic activity on local residents and infrastructure

The Indonesian region is an area that is vulnerable to disasters because plate movements often occur which trigger earthquakes, ground movements, tsunamis and other natural disasters. (Maryadi Budi Wiyono, 2018) Disaster risk is the potential for losses incurred as a result of disasters in an area within a certain period of time which can be in the form of death. injury, illness, life at risk, loss of sense of security, displacement, damage or loss of property, and disruption of community activities (Rivaldo Kading et al., 2020). The damage that occurs includes loss of property, environmental damage, and loss of life/injury (Rizky, 2019). Disaster mitigation is efforts made in the community to reduce vulnerabilities and increase the community's ability to reduce disaster risks, for example: disaster training, emergency management training (PPGD) and others. (Lestari et al., 2016)

1. Physical Vulnerability Analysis

Vulnerability reflects a situation where the level of resilience has decreased due to the influence of external factors that threaten various aspects of life, livelihoods, natural resources, infrastructure, economic productivity and welfare (Balahanti et al., 2023). Results of physical vulnerability analysis based on the number of houses, public facilities and critical facilities. Based on the analysis, there are 9 sub-districts with a high risk level, namely the sub-districts of Kakaskasen Dua, Paslaten One, Talete Dua, Talete One, Matani One, Matani Tiga, Kolongan, Tondangow, and Kampung Jawa.

2. Social analysis

The results of social analysis show social vulnerability based on population density and vulnerable populations. (Seli Septiana Pratiwi1, n.d.). From the results of this analysis, there are 8 villages with a high level of risk. In Sumber Urip Village, the risk is also high due to the high population density and large number of vulnerable residents.

A. Pre-Disaster

The Bukit Kaba Volcano, which erupted in 1883, has a height of 1,938 meters above sea level and is located in the Sumber Urip village area with an area of 650 square kilometers and a population of 2,158 people. In the pre-disaster stage, preparedness and mitigation measures are very important to minimize risks and losses due to the eruption of Kaba Volcano. This involves mapping risk zones based on potential disaster maps to identify dangerous areas that need to be avoided, such as pink zones that are prone to lava flows and hot clouds. The early warning system for disasters is an important aspect in the disaster mitigation system because it is the starting point for awareness of the emergence of disasters (Siti Irene Astuti D and Sudaryono, SU, 2010).

B. During a Disaster

Bukit Kaba Volcano has the potential to erupt at any time, which could cause flooding, landslides and ashfall that damage infrastructure and cause severe damage to plants and animals. Severe environmental damage is also a significant risk, including damage to forests and ecosystems that could affect the ecological balance in the area. To face these risks, Sumber Urip Village has been trained through a disaster management program implemented by the Indonesian Red Cross and the German Red Cross (GRC). This program aims to increase residents' preparedness in facing disasters and reduce the risk of losses that may occur. Through this program, village residents are expected to be more prepared and resilient in facing the possible eruption of the Bukit Kaba Volcano and its impacts, so that they can minimize losses and ensure their safety when a disaster occurs.

C. After the Disaster

After the eruption of the Bukit Kaba Volcano ended and the situation was declared safe, the recovery phase in Sumber Urip Village began with a focus on rehabilitation and reconstruction. The first step is to assess the damage caused to infrastructure, agricultural land and private property. Apart from physical risks from damage to infrastructure and agricultural land, there are also social and economic risks that the community must face. Comprehensive and sustainable recovery, which includes physical, psychological and educational aspects, is essential to ensure that village communities can return to normal life and be better prepared to face possible future disasters.

CONCLUSION

Analysis of the Kaba Volcano disaster mitigation in Rejang Lebong Regency, Bengkulu Province, shows that this area is very vulnerable to volcanic activity, with a history of eruptions that can damage infrastructure and threaten people's lives. Research reveals that public understanding of the dangers and mitigation measures is still limited, and existing early warning systems are inadequate to provide fast and accurate information.
In addition, evacuation routes and facilities are not adequate for large eruption scenarios. This infrastructure needs to be improved to ensure rapid and safe evacuation. Evacuation training and simulations for the community are still not routine, so readiness to face volcanic disasters is low. Increasing the frequency and quality of drills is essential to ensure the public knows what actions to take when an eruption occurs.

Based on this research, mitigation of the Kaba Volcano disaster in Rejang Lebong Regency still faces several main challenges. The level of community preparedness is still low, especially in understanding evacuation routes and the use of early warning systems. Only around 35% of the public know the evacuation routes, while the other 65% do not have sufficient understanding of emergency response procedures.

Apart from that, disaster mitigation infrastructure is still not optimal. Of the 10 existing evacuation routes, only 4 routes have clear direction signs. Evacuation shelters are still limited, with only 2 main evacuation points having adequate clean water and sanitation facilities. This condition increases the risk to public safety when an eruption occurs.

From a policy aspect, coordination between regional government, BNPB and the community has not been effective. Compared with mitigation models in other countries, such as a seismic sensor-based early warning system in Japan and a community approach in the Philippines, mitigation strategies on Mount Kaba still need to be strengthened through increased education, monitoring technology, and better infrastructure development.

This research has several limitations that need to be considered. The main limitation lies in the limited primary data, where the number of respondents interviewed is relatively small and does not represent all layers of the affected community, so that the picture of community preparedness is not completely accurate. In addition, limited access to official government data, especially regarding disaster mitigation policies at the regional level, hinders in-depth analysis of the effectiveness of strategies that have been implemented. This constraint has an impact on the limited ability of research to provide comprehensive and data-based evaluations of existing mitigation policies.

For future research, it is recommended that the scope of the study be expanded by involving a larger number of respondents and a variety of social, economic and geographical backgrounds, in order to obtain a more comprehensive representation regarding the level of community preparedness. This approach will increase the validity of findings and enrich socio-cultural analysis in the context of disaster mitigation. Additionally, longitudinal studies with long-term monitoring are needed to more accurately assess the effectiveness of mitigation policies over time. This approach will enable dynamic identification of changes in community behavior and policy impacts, so that future research can produce sharper, more contextual and applicable recommendations for sustainable disaster mitigation policy making.

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REFERENCES

Adri, W., Sabri, L. M., & Wahyuddin, Y. (2021). Making A Map Of Volcano Disaster Evacuation Path And Shelter Location Distribution Using Network Analyst Method (Case Study: Mount Merapi, Boyolali-Magelang). In Undip Geodesy Journal January (Issue 10).

Balahanti, R., Mononimbar, W., Pierre, I., & Gosal, H. (2023). Analysis Of Flood Vulnerability Levels In Singkil District, Manado City. Spatial Journal, 11, 2023.

Bryanson Sihombing, R., Muh Sarkowi, H., Jl Sumantri Brojonegoro No, R., Lampung, B., & Geophysical Engineering, J. (n.d.). Modeling And Analysis Of Subsurface Structure Of The Kepahiang Hot And Geothermal Prospect Area Based On The Heavy Force Method. In Journal of Exploration Geophysics (Vol. 4, Issue 2).

Daniel Pakpahan. (2016). Socio-Economic Description Of The Population Working At The Tanjung Setia Beach Tourism Object.

Hefri Oktoyoki, 2 Safnizar, 3 Paisal Ansiska. (2023). Reflection_Contribution_Environmental_Development. Journal of Geography and Geography Education.

Hendra Luat P Sihombing1), Gunggung Senoaji 2), M. F. B. (2020). Study On The Potential And Ecotourism Management Strategy In The Bukit Kaba Natural Tourism Park, Bengkulu Province Hendra. NATURALIS – Journal of Natural Resources and Environmental Management Research, 9(1), 77–90. https://ejournal.unib.ac.id/index.php/naturalis/article/download/12233/6023

Herlianti, E. V., Sanjaya, R. B., Studi, P., Tourism, D., Interdisciplinary, F., Kristen, U., & Wacana, S. (2022). The Positive Impact Of Tourism On Culture, Economy And The Environment In Kasepuhan Cipta Mulya. In Critical (Vol. 2).

Hermawan, H. (2016). The Impact Of The Development Of The Nglanggeran Tourism Village On The Economy Of The Local Community. Tourism Journal, III(2). http://ejournal.bsi.ac.id/ejurnal/index.php/jp

Lenny Pratiwi Rahmawati. (2024). Mapping Landslide-Prone Areas Using Community-Based Geographic Information Systems (GIS) in Kebonagung Village, Sawahan District, Nganjuk Regency ARTICLE INFO ABSTRACT. 12, 64. https://doi.org/10.23960/jpg.v12.i1.28561

Lestari, P., Paripurno, T., Kusumayudha, S. B., & Ramadhaniyanto, B. (2016). Environmental Communication For Mount Sinabung Eruption Disaster Mitigation.

Maharani, N. (2023). Analysis of Basic Volcano Knowledge among Children at the Dharma Jati I Orphanage in Klungkung, Bali Province. PENDIPA Journal of Science Education, 7(2), 320–326.

Mario Norris1), W. Y. (2020). yjohan,+6.+ANALYSIS+DIVERSITY+TYPES OF+PLANTS+BOTTOM+AT+THREE+HEIGHTS+IN+GARDENS+TOURISM+NATURE (1). Journal of Natural Resources and Environmental Management Research, volume 9 number 2.

Maryadi Budi Wiyono. (2018). Analysis Of Landslide Risk In Harapan Jaya Village, Way Ratai District, Pesawaran District.

Reach, G., Bachelor, D., & Geography, P. (2013). Analysis Of Community Preparedness Toward The Mount Merapi Disaster In Dompol Village, Kemalang District, Klaten District Publication Articles.

Neni, Y., Aurora, S., Ip, M., Si, H., Ode, L., Ip, S., Si, M., Yusnaldi, M., Pd, M. M., Program, A., Magister, S. S.-2, Disaster, M., National, K., Management, F., University, P., Indonesia, P., Stin, D., Tinggi, S., & Negara, I. (n.d.). Civil-Military Synergity To Realize Good Government (Case Study: Implementation Of Civil-Military Synergity In The Framework Of Developing Disaster Resilient Villages In Selupu Rejang District, Rejang Lebong District, Bengkulu Province, 2010-2015).

Nugroho, A. (2018a). Development Of A Learning Model For Mount Eruption Disaster Mitigation At Mount Slamet Slope Primary School. In E-ISSN Community Service Journal (Vol. 1, Issue 2).

Nugroho, A. (2018b). Development of a learning model for mount eruption disaster mitigation at mount slamet slope primary school. In E-ISSN Community Service Journal (Vol. 1, Issue 2).

Prawiradiputra, B. R. (2011). Food Crop To Support The Rehabilitation Of Livestock On The Slope Of Mount

Merapi.

Purnama, S. (2017a). Dynamics of Interface Position on the Coast of Kebumen Regency, Central Java. Indonesian Geography Magazine, 31(2), 1. https://doi.org/10.22146/mgi.25493

Purnama, S. (2017b). Dynamics of Interface Position on the Coast of Kebumen Regency, Central Java. Indonesian Geography Magazine, 31(2), 1. https://doi.org/10.22146/mgi.25493

Putu Ananda Citra. (2014). Changes in the Socio-Economic Conditions of the Glagaharjo Village Community After the 2010 Merapi Volcano Eruption.

Raharjo, S. A., Saputra, A. V., & Rahadinata, T. (2022). Identification of subsurface geological structures based on 3D modeling of gravity data (case study of the Kepahiang geothermal potential area). Core Journal of Physics, 5(2), 28. https://doi.org/10.20884/1.jtf.2022.5.2.7248

Reddy Prayoga, Z. M. (2017). Physical Geographical Overview of Pulung Kencana West Tulang Bawang Agrotourism Park.

Rivaldo Kading, A., Tungka, A., & Sembel, A. (2020). Analysis Of The Lokon Volcano Disaster Risk Level In Tomohon City [50] Analysis Of The Lokon Volcano Disaster Risk Level In Tomohon City (Vol. 17, Issue 2).

Rizkiyah, P., Culinary Arts Study, P., Lombok Tourism, P., Travel Business Management Study, P., Tourism, J., & Medan Tourism, P. (2019). Pentahelix Synergity In Tourism Recovery Post The Sinabung Volcano Eruption Disaster In Karo District, North Sumatra. 7(2), 2338–8633.

Rizky, A. L. P. (2019). Volcano Eruption Disaster Mitigation Education Using Pasga Educative Games (Volcano Prepared Forces).

Seli Septiana Pratiwi1, D. S. R. , D. W. A. , P. P. A. (n.d.). 6399-24550-1-PB potential. Journal of Community Service.

Setiyawidi, I. S. S. (2011). Utilization of Geographic Information Systems for Disaster Vulnerability Levels of the Tangkubanparahu Volcano Eruption.

Suarjana, I. G. P., Christiawan, P. I., & Nugraha, A. S. A. (2020). Social and Economic Conditions of Community Refugees from the Mount Agung Eruption Disaster in Ban Village. Undiksha Geography Education Journal, 8(1), 33. https://doi.org/10.23887/jjpg.v8i1.23475

Gede Sugiyanta. (n.d.). Factors That Push And Pull Tourists To Visit The Tourism Object Mount Dempo Pagar Alam City.