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Adaptive Tourism Policy-Making in the Face of Natural Disasters: A Case Study of Mount Merapi, Indonesia

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A B S T R A C T

This study aims to analyze how natural disasters, particularly the eruption of Mount Merapi, impact policy-making in the natural tourism sector of Sleman Regency. Using qualitative approach, data were collected through interviews, observation, documentation, and literature review. The results show that the impacts of the Merapi disaster, such as environmental damage, socio-economic changes, loss of life, and economic paralysis, lead to the development of disaster policies in the tourism sector. The policy-making process is carried out in stages, including problem identification, needs analysis, goal formulation, policy model selection, social indicator determination, and building public support. The resulting policies include the establishment of Disaster Resilient Villages/Urban Villages (*Destana/Kaltana*), the use of the *SI PANDU MERAPI* application, the installation of an Early Warning System (EWS), and the training of tourism volunteers. These policies have increased community preparedness, restored tourist confidence, and boosted post-eruption visits. However, some impacts, such as damage to vehicle engines due to volcanic ash, have not yet been addressed through specific government policies. This study concludes that risk-based and participatory mitigation policies can strengthen the resilience of the tourism sector. However, they need to be complemented by more comprehensive policies to address all disaster impacts.

INTRODUCTION

How do natural disasters impact policy-making in the Mount Merapi nature tourism sector in Sleman Regency? This question is the primary focus of this study, considering that the region is one of the most vulnerable areas to Mount Merapi eruptions while also having high natural tourism potential. The eruptions of Mount Merapi are a type of natural disaster that significantly affect various aspects of community life, including tourism. The impacts are not only physical and environmental but also social, economic, and related to public policy.

Indonesia is highly prone to natural disasters due to its geographical location at the convergence of three major tectonic plates: Eurasia, Indo-Australia, and Pacific. This makes the country susceptible to earthquakes and volcanic activity. One of the most active volcanoes with a long history of eruptions and significant impacts is Mount Merapi, located in Sleman Regency, Special Region of Yogyakarta (Eko, 2021).

Mount Merapi is an active volcano and is often perceived as dangerous by local communities. However, it also serves as a natural resource that supports the surrounding population (Banurianto, 2022). According to Banurianto (2022), "The level of danger from a volcano largely depends on the frequency of eruptions and the population density around the volcano."

Mount Merapi is known not only as a disaster threat but also as a natural tourism asset with substantial potential to support the local economy. The Lava Tour Merapi area is a prime destination, combining natural beauty with disaster narratives as key attractions. Nevertheless, this potential also carries high risks, particularly when volcanic activity increases and disrupts the stability of tourism areas (Raysa Relegia, Bakti Setiawan, 2018).

Natural disasters, such as eruptions of Mount Merapi, cause a wide range of impacts, from infrastructure damage, contamination of clean water sources, respiratory problems, and skin irritation to crop destruction, socio-economic changes, and threats to tourist safety (Saptutyningsih, 2020). During eruption periods, there have been ten increases in eruption intensity, including the event on March 4, 2024. Consequently, Mount Merapi eruptions affect the surrounding tourism sector, particularly regarding tourism adaptation in disaster-prone areas, recovery efforts, innovation, and fluctuations in visitor numbers. According to *ESDM* (2024), "The increased intensity of eruptions has impacted the tourism sector."

Disaster management involves a series of efforts, including the establishment of policies for developing the slopes of Mount Merapi as nature tourism areas and tourist villages, the development of tourism potential into ecotourism concepts, and the facilitation of formal and non-formal educational tourism (Endah, 2018). In this context, policy-making by local governments is crucial to balance the utilization of tourism potential with the protection of communities and tourists from disaster risks. Government commitment is vital for successful tourism development, as strong commitment mobilizes available resources to accelerate and optimize tourism growth (Jhonni, 2020).

Therefore, this study aims to analyze how natural disasters, particularly Mount Merapi eruptions, influence policy-making in the tourism sector of Sleman Regency. Using a case study approach, this study explores the extent to which policies consider risk mitigation, disaster adaptation, and sustainable tourism management. According to various experts, policy can be defined as deliberate actions or inactions taken by individuals, groups, or governments, involving decisions among

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alternatives to achieve specific goals (Rohmatul Fitri, 2015). According to Rohmatul Fitri (2015), "The science and art of decision-making ultimately aim to help humans make the best possible choices."

This study offers novelty by specifically analyzing the impact of Mount Merapi disasters on tourism policy-making in Sleman Regency, using a systematic approach from problem identification to public support building. Previous studies, such as Priyono & Rosari (2023) and Jon Tasrif & Rahmiyanti (2024), focused more on spatial planning evaluation and nature tourism development without thoroughly examining policy processes. Similarly, Fitriani et al. (2021) analyzed disaster mitigation management by the *BPBD* (Regional Disaster Management Agency) at Mount Tangkuban Perahu. The similarity lies in the broader theme of disasters and tourism. While these and other studies, such as Dewi et al. (2020) and Kusuma Sanjiwani & Putu Kerti Pujani (2020), highlight the importance of mitigation and the role of government in developing sustainable tourism in disaster-prone areas, and share some of the same study locations, this study differs by involving local actors and emphasizing social indicators and risk-based policies, which were not explored in depth in earlier studies.

Policy-making in the Mount Merapi nature tourism sector in Sleman Regency is influenced by the identification of disaster impacts, including risk hazards and both direct and indirect experiences with natural disasters. According to van Tulder, R., Verbeke, A., Piscitello, L., and Puck (2022), "Policies in disaster management arise from the impacts of such natural disasters." Accordingly, the policy-making process follows several stages:

1. Identification of problems and needs
2. Analysis of problems and needs
3. Communication of policy plans
4. Formulation of policy objectives
5. Selection of policy models
6. Determination of social indicators
7. Building public support (Willa Wahyuni, 2022)

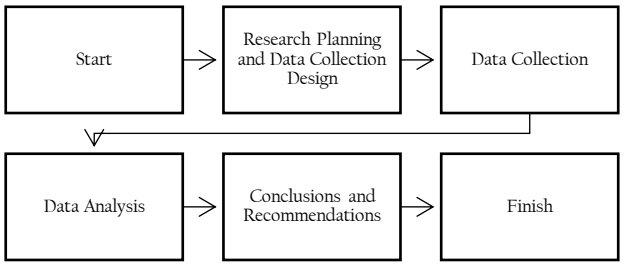
Willa Wahyuni (2022) states that this policy-making process results in the formulation of policies addressing the impacts of Mount Merapi disasters on the tourism sector. The results of this analysis are expected to contribute to the strengthening of a responsive, risk-based policy system and serve as a reference for the development of safe and sustainable tourism in disaster-prone areas.

METHOD

This study used qualitative research approach, which involved collecting descriptive data in the form of written or spoken language from individuals and groups that could be observed. This qualitative approach was employed to explain and analyze phenomena related to individuals or groups, events, social dynamics, attitudes, beliefs, and perceptions (Cendekia, 2024). According to Cendekia (2024), "Qualitative research is a method that uses descriptive data to analyze and understand a phenomenon."

The data collection in this study involved interviews with representatives from the *BPBD* and local communities around Mount Merapi, direct field observations in affected areas, and documentation from relevant institutions. In addition, a literature review of journals and official websites (e.g., *ESDM*, *BPBD* Sleman) was conducted to support the analysis. Two types of data were used: primary and secondary. Primary data were obtained directly from relevant stakeholders through face-to-face interviews, including local residents around Mount Merapi and representatives from *BPBD* Sleman. The researchers also conducted on-site field observations to directly assess the conditions of disaster impacts and the policy-making process in tourism areas. These data are considered primary because they were obtained directly from first-hand sources through the researcher's own interactions or direct observations. Secondary data included documents, archives, books, journals, and official government sources, such as those from *ESDM*, *BPBD*, and the Department of Tourism. The following were the research stages carried out by the researchers:

Flowchart 1. Research Stages



This method was chosen because this study focused on exploring complex and context-dependent social phenomena and policies that could not be measured quantitatively. Data analysis was conducted qualitatively, following the steps of data reduction, data presentation, and conclusion drawing. Interview data were transcribed and analyzed to identify patterns and themes related to the policy-making process. To ensure the accuracy and credibility of the information, data were validated through source and method triangulation. Conclusions were drawn by interpreting the thematic patterns that emerged and comparing them with relevant policy-making theories and literature. The findings were then used to formulate adaptive, risk-based policy recommendations.

RESULTS AND DISCUSSION

This study aims to examine how the eruption of Mount Merapi affects tourism activities in Sleman Regency and to analyze the government's policy-making process. It shows that the impacts of Mount Merapi's natural disasters have led to policies aimed at improving disaster management strategies. The findings indicate that the eruption of Mount Merapi significantly affects the tourism sector in Sleman Regency, with consequences that are not only physical but also social, economic, and psychological.

An interesting finding from this study is that nine specific impacts of the Mount Merapi eruption are identified. However, not all of these impacts are directly addressed or used as the basis for government policy-making. This highlights certain mismatches or limitations in the policy formulation process, where only some impacts are considered relevant or prioritized. This finding is important because it opens the door for evaluating the policy focus to ensure a more comprehensive approach that covers all dimensions of the impacts experienced by the community. According to Saptutyningsih (2020), the indicators of the impacts of Mount Merapi's natural disasters are as follows:

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Environmental Damage

The eruption of Mount Merapi produces lahar floods and pyroclastic flows, resulting in severe damage to ecosystems, including the destruction of vegetation, soil contamination by volcanic materials (which also affects clean water sources), and the disruption of ecological balance. Agricultural land, forests, and the habitats of flora and fauna are also severely affected (Saptutyningsih, 2020). Volcanic eruptions also cause various forms of environmental damage, including vegetation loss, wildlife migration, ecosystem destruction, and changes to agricultural land. According to the Indonesian Law on Environmental Protection and Management No. 32 of 2009, environmental damage is defined as any direct or indirect change to the physical, chemical, or biological properties of the environment that exceeds established criteria for environmental harm (Zairin, 2016). Indirect environmental damage includes, for example, damage to vehicle machinery.

Figure 1. Damage to Vehicle Engines

Source: *Musium Petilasan Mbah Maridjan*

Based on interviews with residents of the Merapi area in Sleman Regency, "As a result of Mount Merapi's eruption, there is significant environmental damage; however, the government's disaster mitigation policies serve as a response to the impacts of the natural disaster." The research findings indicate that environmental damage has caused destruction of agricultural land, forests, and habitats for flora and fauna. Consequently, the government has developed and maintained evacuation routes in the tourism sector to help reduce and restore damage to land, forests, and wildlife habitats. However, there are currently no government policies addressing damage to vehicle engines.

Figure 2. Environmental Damage from Pyroclastic Flows of Mount Merapi Causing Ash Rain

Source: *BPBD* SLEMAN

Socio-Economic Changes

There has been a shift in the community's livelihoods from agriculture to the informal sector, such as volcanic sand mining. Relocation has also caused changes in social structures and community interactions. The agricultural sector has been disrupted due to damaged crops, failed harvests, and loss of income for farmers. Infrastructure, including roads, irrigation systems, and markets, is damaged, which hinders the distribution of goods and leads to increased logistics costs. Tourism declines, and rehabilitation costs are high, requiring the government to allocate substantial funds for evacuation, aid, and recovery. Many people lose their jobs. However, after the affected areas recover, the soil becomes fertile again, increasing agricultural potential. It is undeniable that development is closely linked to both communities and the environment. How development is planned significantly affects sustainability for society and the environment alike.

Currently, development is a priority to support and improve community welfare. Infrastructure development, in particular, is being accelerated by the government to ensure that it benefits the entire population and facilitates mobility, enabling social and economic needs to be met (Ningrum, 2022). Relocation has also caused changes in social structures and community interactions. The agricultural sector has been disrupted due to damaged crops, failed harvests, and loss of income for farmers. Infrastructure, including roads, irrigation systems, and markets, is damaged, which hinders the distribution of goods and leads to increased logistics costs. Tourism declines, and rehabilitation costs are high, requiring the government to allocate substantial funds for evacuation, aid, and recovery. Many people lose their jobs.

However, after the affected areas recover, the soil becomes fertile again, increasing agricultural potential. According to interviews with *BPBD* Sleman, "Communities in the Merapi area rely heavily on the region's ecosystem and natural tourism for their livelihoods. However, due to the eruption of Mount Merapi, people are forced to leave their jobs and homes."

The research findings indicate significant socio-economic changes among residents. The volcanic disaster causes damage to tourist sites, alters infrastructure, and results in the loss of housing. In response, *BPBD* Sleman established Disaster-Resilient Village (*Desa Tangguh Bencana/Destana*) and Disaster-Resilient Urban Village (*Kelurahan Tangguh Bencana/Kaltana*) throughout the *KRB* (Hazard Zone) III area, the zone at highest risk from Merapi eruptions. The goal is to build community capacity so residents can recognize risks, respond quickly to disasters, and recover independently. This initiative is reinforced through training and the formation of local volunteer teams. Furthermore, efforts are being made to repair existing tourist sites and, when conditions allow, develop new tourist attractions.

Casualties and Injuries

Major eruptions, such as the one in 2010, caused hundreds of casualties and injuries due to pyroclastic flows, lahars, and explosions. Victims suffered not only physical injuries but also psychological trauma, prompting the government to take measures to address these impacts. Although the emergency situation has ended, this does not mean that the problems facing communities around Mount Merapi have been fully resolved.

Many residents sustained injuries, and some were unable to be saved as a result of the eruption (Levani et al., 2022).

Figure 3. Victims of the Mount Merapi Natural Disaster in Sleman Regency

Source: Detik.com

Based on interviews with staff from the Prevention and Preparedness Division of *BPBD* Sleman, it is reported that "when there are signs of a potential eruption, residents often lack awareness to evacuate to safer areas, resulting in insufficient preparedness during emergency situations." Records indicate that burn injuries are usually caused by falling debris. Indirect impacts can also include psychological issues such as stress and trauma resulting from the disaster, including shock, the loss of family or close relatives, and the loss of property, housing, or livelihoods.

The research findings show that hundreds of people have suffered casualties and injuries, primarily due to exposure to pyroclastic flows, lahars, and explosions. The impacts are not only physical but also psychological, prompting the government to implement various disaster mitigation policies. One such policy is the launch of the *SI PANDU MERAPI* application by *BPBD* Sleman, a digital guide for disaster mitigation. This application provides real-time information, such as evacuation routes, assembly points, emergency shelters, and the activity status of Mount Merapi, accessible to both residents and tourists to enhance preparedness. In addition, 36 units of the Early Warning System (EWS) have been installed in the Sleman area, with approximately 80% located in the Mount Merapi region.

This system functions to detect potential hazards, such as pyroclastic flows and cold lahar floods, and provides early warnings to the community. To support effective mitigation, *BPBD* Sleman routinely maintains the EWS, issues Volunteer Identification Cards (*KIR*), and conducts regular training sessions. *KIR*s are awarded as recognition to volunteers who have completed training, including tourism operators who play a critical role in evacuation during disasters.

Economic Paralysis of Residents

The eruption of Mount Merapi causes significant economic paralysis among local communities. Economic activities are halted or severely reduced due to both direct and indirect impacts of the disaster, affecting sectors such as agriculture, trade, and tourism. Infrastructure is damaged, and road access is disrupted, resulting in long-term recovery needs. Consequently, the government implements policies to address the decline in community livelihoods. As noted by *BPBD* Sleman, residents in the Merapi area heavily rely on the region's ecosystem and natural tourism for their economic activities. Damage to infrastructure, agriculture, livestock, and other livelihoods not only disrupts income but also leads to the loss of housing and property. In response, the government implements recovery measures, including infrastructure repair and program renewal, to restore the local economy.

The research findings indicate that Mount Merapi's eruption causes a significant economic paralysis for surrounding communities. Economic activities in agriculture, trade, livestock, and tourism come to a standstill, resulting from both direct and indirect impacts of the disaster. Infrastructure damage and disrupted road access worsen the situation, making recovery a lengthy process. The destruction of supporting facilities and the loss of livelihoods cause residents to lose not only income but also homes and property. To address these challenges, the government enacts several mitigation policies, including infrastructure repair and renewal of local economic programs. These measures aim not only to restore damaged sectors but also to reduce overreliance on tourism and agriculture. Communities are encouraged to diversify their livelihoods, for example, by developing local crafts or utilizing residual volcanic materials as educational or geotourism attractions, thereby promoting recovery and revitalizing the local economy.

The findings also show that natural disasters at Mount Merapi significantly impact the tourism sector in Sleman Regency. These impacts demonstrate that tourism is highly vulnerable in disaster-prone areas, particularly on the slopes of the volcano. This aligns with Saptutyningsih (2020), who states that volcanic eruptions can cause substantial economic and social losses in the tourism sector. Such impacts have led to the development of adaptive, mitigative, and sustainable disaster policies. These policies do not emerge instantly but are formulated through a systematic decision-making process. Decision-making is a conscious process of choosing among alternatives to achieve a desired outcome. According to Schemerhorn, the decision-making process is not complete until actions are taken to implement decisions and address any shortcomings (Hardianto et al., 2021).

In every organization, decision-making is crucial as it affects the direction and performance of the institution. Therefore, applying decision-making theory is important to ensure that each decision is rational, systematic, and based on thorough analysis (Taufiq Hidayah et al., 2022). Public policy-making consists of several stages designed to facilitate understanding and formulation of effective policies. The following outlines the decision-making process for the tourism sector:

Problem and Needs Identification

The initial stage of public policy-making in the tourism sector, particularly in disaster-prone areas such as Mount Merapi, begins with identifying problems arising from volcanic activity. Mount Merapi is one of the most active volcanoes in the world, and its periodic eruptions have had significant impacts on tourism activities in surrounding areas.

The main problems identified include disruptions to tourism during eruptions, damage to tourism infrastructure, and decreased tourist interest due to safety concerns. In addition, there are urgent needs from the community and tourism

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operators, such as the implementation of an Early Warning System (EWS), safe evacuation routes, and adaptive tourism promotion strategies suitable for post-disaster conditions.

Based on interviews, local residents reported, "The community does not feel involved in the problem identification process." The research findings confirm that the first stage of policy-making involves identifying problems and needs. Most tourism operators and local residents feel insufficiently involved in the initial risk identification process. Therefore, this identification stage serves as a critical foundation for formulating policies that are not only reactive but also preventive and adaptive, ensuring the sustainability of tourism in disaster-prone areas like Mount Merapi.

Problem and Needs Analysis

Once the main problems and needs are identified, the next stage involves a thorough analysis of causal factors, impacts, and the relationships between variables affecting the tourism sector in disaster-prone areas such as Mount Merapi. This analysis includes risk evaluation for infrastructure, economic impacts on tourism operators, and the government's capacity for disaster mitigation. The analysis shows that low mitigation preparedness and weak coordination between government agencies and tourism operators are root causes of the problem. In addition, the need for risk-based tourism planning and preparedness training is identified as a critical priority.

This stage aims to develop a comprehensive understanding of the underlying causes, impacts, and social conditions that necessitate post-disaster tourism policies. The analysis relies on historical disaster data, interviews with tourism operators, and reviews of previously implemented policies. Findings indicate that many tourism operators do not fully understand safety standards for disaster-prone areas. The government is perceived as focusing more on emergency response than on prevention and education. Consequently, the most urgent needs of the community include disaster education, evacuation infrastructure, and real-time information on the volcano's status.

Policy Plan Communication

A policy plan is drafted to directly address specific policy issues. Conceptually, such a plan helps improve understanding, governance capacity, or awareness of an issue, even if it does not immediately solve the problem. According to Escobedo Garcia & Ulibarri (2022), "Governments often require public and private institutions to prepare written plans as part of environmental regulation compliance." Although many of these plans are never fully implemented, the policy requirement to create plans persists. Many plans only meet the minimum policy requirements without detailed implementation guidance. Plans are often prepared solely to comply with legal requirements or to access government funding rather than to be actively executed. However, the process of drafting a plan can raise internal awareness, strengthen inter-agency collaboration, and organize useful data. Therefore, transparent communication of policy plans is essential in the policy-making process.

Transparency in policy formulation is crucial to enable community members and stakeholders to provide input and enhance policy legitimacy. In the case of Mount Merapi, information regarding the development of tourist evacuation routes, placement of Early Warning Systems, and restrictions on visitor access during heightened volcanic activity must be communicated openly through community forums, local media, and information boards at tourist sites. According to Zaidi (2021) "The emergence of a policy decision marks the end of one process, the decision-making process, and the beginning of another: the strategy and planning required for deliberate actions supporting the policy.". The research findings indicate that limited communication has left many tourism operators unaware of the direction and content of government policies. Transparent dissemination of policy information allows the community and tourism operators to provide input and feel involved in the process. This is also important for building public trust.

Formulation of Policy Objectives

Public policies are generally aimed at achieving specific objectives, rather than being the result of random or uncoordinated actions. In the context of modern political systems, public policy does not emerge spontaneously; it is the outcome of deliberate planning by actors involved in the political process. Based on the identification and analysis of issues, policy objectives are formulated to address problems in a concrete and targeted manner. In the context of the Merapi tourism sector, the policy objectives are to enhance the resilience of tourist destinations against natural disasters, ensure the safety of visitors and tourism operators, and promote the sustainability of the local economy through disaster-informed tourism. These objectives form the foundation for developing strategic programs and establishing indicators for policy success.

Policy objectives are designed to address the root causes of problems and the main needs identified in previous stages, providing strategic direction for the safe and sustainable development of the tourism sector. The research findings indicate that the primary focus of these objectives is on visitor safety, the continuity of local economic activities, and the development of risk-based tourism. Nevertheless, public policy remains adaptable and can be revised or refined in response to changes in circumstances that affect its implementation. This demonstrates the flexible nature of public policy, which can be adjusted to reflect evolving conditions and development dynamics. Such adjustments and improvements are also influenced by feedback and evaluations from the community (Hutabarat & Fahmi, 2025).

Selection of Policy Models

The selection of a policy model is carried out by considering the complexity of the issues, the actors involved, and the effectiveness of the approaches used. In this case, the policy model adopted is a participatory and adaptive model, in which policies are designed by involving various stakeholders, including local government, tourism managers, academics, disaster relief volunteers, and local communities. This approach allows policies to remain flexible and responsive to the dynamic nature of disasters, which may change at any time. The chosen model serves to determine the most appropriate approach in addressing the problems at hand. For the tourism sector in disaster-prone areas, a participatory and adaptive model is considered the most relevant.

Research findings suggest that a top-down approach is less effective due to the limited participation of tourism communities. Consequently, a collaborative (multi-actor) model

has begun to be implemented through disaster risk reduction forums. Designing models that map the relationships between interconnected or causal variables also helps facilitate understanding and the development of analytical frameworks in public policy (Damayanti, 2010).

Determination of Social Indicators

According to Damayanti (2010), "It is necessary to establish various criteria or indicators that can be used to assess and compare a range of policy options in order to determine the most realistic and feasible alternative." Social indicators are needed to measure the impact of policies on communities and their social environment. In the context of Merapi tourism policy, the indicators used include: (1) the level of preparedness among local communities and tourism actors, (2) the number of visitors after a disaster, (3) the extent of community involvement in mitigation training, and (4) public perceptions of safety in the tourism area. Evaluation results show that regions with stronger social indicators tend to recover more quickly from disaster impacts and are better able to sustain their tourism sector. These social indicators are thus used to evaluate policy effectiveness and assess its impact on society. Some of the developed indicators include post-eruption tourist visits, the frequency of disaster preparedness training, and the preparedness level of tourism communities.

Building Public Support

The final stage is building public support as a form of community participation in the policy process. Public support is a crucial element to ensure that policies can be implemented effectively and sustainably. In the Merapi tourism area, community participation in evacuation drills, the formation of tourism awareness groups (*Pokdarwis*), and the use of disaster information applications such as *SI PANDU MERAPI* indicate that residents are beginning to engage actively in policy processes. Research findings show that strong community involvement is directly correlated with the successful implementation of disaster mitigation policies in the tourism sector. Beliefs and policy preferences are the strongest predictors of support and mobilization. Communities that perceive policies as effective, fair, and efficient are more likely to support and position themselves as active participants. Incentive-based policies (such as subsidies) are generally preferred. This study highlights that confidence in policy effectiveness and fairness, along with preferences for specific policy designs, are key to building public support and fostering political mobilization (Simon, 2023).

This stage aims to build public awareness and engagement so that resulting policies gain social legitimacy and broad support in their implementation. Community participation in tourism-based mitigation policies continues to grow through training programs, resilient tourism volunteers, and the involvement of residents in evacuation routes. The *SI PANDU MERAPI* program has successfully enhanced disaster literacy among tourism communities. Local residents also expect a greater role in designing emergency response systems at tourist sites. Through these stages, the policies produced are expected to provide effective and sustainable solutions in responding to the impacts of volcanic eruptions.

Policies are often the product of discussions among various political groups with different interests. On the other hand, decentralization and community involvement create opportunities for local governments to take part in decision-making processes. This condition introduces a new dimension in policy implementation, where the role of local governments becomes more significant in adapting policies to local needs (Hutabarat & Fahmi, 2025). Based on interviews with key informants, this study concludes that the policies are aligned with government regulations. The Sleman Regency Disaster Management Agency (*BPBD* Sleman) has introduced a series of policies in response to the impacts of the Mount Merapi eruption, particularly to support the sustainability of the nature-based tourism sector.

The policies implemented by *BPBD* Sleman are part of a broader strategy and response to the multidimensional impacts of the Merapi eruption, encompassing social, economic, and environmental aspects. In the tourism sector, these policies go beyond disaster response and serve as a foundation for developing risk-mitigation-based tourism. The results show that community-based preparedness through the establishment of *Destana/Kaltana* has succeeded in improving public knowledge in disaster management. The growing confidence of tourists to return, supported by digital mitigation efforts using the *SI PANDU MERAPI* application, represents an important innovation in providing real-time information for both visitors and local residents. Moreover, multi-stakeholder collaboration, including coordination with *PVMBG*, *BNPB*, and local volunteers, has fostered a more integrative and participatory mitigation system. The recovery of the tourism sector after the eruption reflects the positive impact of these policies. This is evident in the reduced number of casualties, increased tourist confidence, and a rise in tourist visits post-eruption, as exemplified by the growth of activities such as the Merapi Lava Tour.

Table 1. Tourist Visitor Data, 2018-2022

Year	Number of Tourists
2018	491,522
2019	409,434
2020	408,953
2021	201,336
2022	444,586
Total: 1,955,831	

Source: Yogyakarta Special Region Tourism Office, 2021

Statistical data on tourist visits indicates an improvement in the tourism sector, which cannot be separated from the role of disaster mitigation policies implemented by the local government. These policies are considered successful in rebuilding public trust in the safety of tourist areas. The increase in tourist arrivals can be understood as an indicator of the policy's success. Thus, there is a positive correlation between the effectiveness of disaster policies and visitor numbers, which ultimately contributes to the recovery and growth of the local economy, except in 2021, when a decline occurred due to the pandemic.

However, challenges remain, such as ensuring the sustainability of evacuation infrastructure, providing continuous education for tourism actors, and integrating disaster policies into tourism spatial planning. This study reinforces earlier findings by Priyono & Rosari (2023), which emphasized the importance of integrating disaster aspects into tourism spatial planning. Further, this study contributes a more specific

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dimension of public policy by focusing on how decision-making processes are shaped by disaster pressures and impacts. Unlike previous studies that only focused on risks or tourism development, this study highlights the interaction between disaster impacts and policy responses, particularly at the local level.

As discussed above, it can be concluded that the policies adopted by *BPBD* Sleman are not only reactive but also proactive and based on systematic risk analysis. The decision-making process was carried out gradually and participatively, taking into account social, environmental, and local economic realities. In this context, local government policymaking plays a crucial role in balancing the utilization of tourism potential with protecting communities and tourists from disaster risks. Government commitment is therefore a critical factor in achieving success in the tourism sector. As Rohmatul Fitri (2015) explains, policy is a set of actions, deliberate or not, taken by individuals, groups, or governments, involving decisions and the selection of alternatives to achieve specific goals.

The cumulative and multidimensional impacts of the Mount Merapi disaster have prompted local governments to design mitigation policies that also ensure the sustainability of the tourism sector. Through a comprehensive public policy approach, tourism around Merapi has not only recovered but also evolved into an educational tourism model based on disaster mitigation. With the right policies from *BPBD* Sleman, the approach has shifted from emergency response to a disaster-mitigation-based tourism system. These policies have become a model for building disaster-resilient tourism. The findings of this research show that the Mount Merapi disaster has significant and multidimensional impacts on the tourism sector in Sleman Regency, including environmental damage, economic paralysis, social changes, as well as loss of life and injuries.

These impacts trigger a systematic, step-by-step policymaking process by the local government, particularly *BPBD* Sleman, which involves problem identification, needs analysis, goal formulation, policy model selection, and community involvement in implementation. The resulting policies, such as the establishment of Disaster-Resilient Villages and Urban Villages (*Destana/Kaltana*), the development of the *SI PANDU MERAPI* application, and the installation of an Early Warning System (EWS), have successfully strengthened the preparedness of both communities and tourism actors against potential disasters. Furthermore, tourism in the Merapi area has been transformed into an educational, disaster-mitigation-based form of tourism, which not only sustains visitor appeal but also reinforces the resilience of local communities. Cross-stakeholder collaboration and active community participation have been key elements in the successful implementation of these policies. Other findings also show that tourist confidence has begun to recover, as evidenced by the increase in visits after the eruption, reflecting the effectiveness of the applied risk mitigation policies. Therefore, a responsive, risk-based public policy approach is a vital foundation for building a safe, sustainable, and disaster-resilient tourism sector.

CONCLUSION

This study shows that the Merapi volcanic eruption has had significant impacts on the environment, society, and local economy, particularly in the tourism sector. These impacts prompt the government, especially *BPBD* Sleman, to implement policies such as the establishment of Disaster-Resilient Villages/Urban Villages (*Destana/Kaltana*), the installation of Early Warning Systems (EWS), and the use of the *SI PANDU MERAPI* application. These policies have proven effective in enhancing community preparedness and restoring tourists' confidence to visit the area, as reflected in the increase in post-eruption visitor numbers. The policymaking process is carried out in stages with active community involvement. Collaboration between the government, tourism actors, and the community has supported responsive and sustainable policies, promoting disaster-mitigation-based tourism. The limitations of this study include its geographic focus solely on Sleman and the subjective nature of the data due to limited interviews and access.

Local governments should develop tourism policies that explicitly incorporate disaster mitigation as part of spatial planning and destination development programs. Risk-based zoning is necessary to prevent overuse of disaster-prone areas while maintaining ecosystem balance. Regular education programs on disaster risks and protocols are essential, especially for tourism actors such as guides, Lava Tour jeep drivers, homestay managers, and tourists. The government should also strengthen programs for local-economy-based development and cultural/wisdom-based village tourism. The *SI PANDU MERAPI* application should continue to be developed, with expanded features (such as real-time reporting systems), and widely disseminated across all stakeholder groups. Replicating this policy model in other disaster-prone areas with similar geographic characteristics could position *BPBD* Sleman's approach as a model, adapted to local conditions. Annual evaluations of the effectiveness of implemented mitigation policies are recommended, including assessments of evacuation infrastructure, EWS readiness, and community involvement. It is further suggested that such evaluations be conducted across multiple regions simultaneously and supplemented with quantitative data to produce stronger and more comprehensive results

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