

ANALYSIS OF DISASTER KNOWLEDGE, PREPAREDNESS, AND PERCEPTIONS ON MITIGATION STRATEGIES IN KOTA SABANG URBAN DEVELOPMENT PLANNING AS A DISASTER-PRONE TOURIST DESTINATION

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ABSTRACT: This study aims to analyze the knowledge, preparedness, and perceptions of the community regarding appropriate and effective disaster mitigation strategies in the urban development planning of Sabang City, a tourist destination vulnerable to natural disasters such as earthquakes, tsunamis, and floods. The research employs a qualitative approach. Data were collected through in-depth interviews with various stakeholders, including government officials, community leaders, and tourists. The results indicate that the level of knowledge and preparedness for disasters among the population in Sabang City varies significantly, with the majority of respondents displaying low awareness and preparedness levels. Factors such as education level and previous disaster experience were found to have a significant influence on community preparedness. Furthermore, the existing mitigation strategies in Sabang City have not been fully effective, particularly in terms of public awareness, education, disaster-resilient infrastructure development, and inter-agency coordination.

Keywords: Disaster Knowledge, Preparedness, Perceptions on Mitigation Strategies, Sabang City

1. INTRODUCTION

Natural disasters are one of the natural phenomena that have significant impacts on human life. The effects of natural disasters can cause enormous losses, both in terms of human casualties and property damage. In general, disasters occur when hazards meet vulnerabilities that are not adequately balanced by sufficient capacity [1]. One of the most destructive natural disasters we have ever experienced was the earthquake and tsunami that struck Aceh in 2004, claiming a large number of lives in addition to causing environmental and material damage [2]. The lack of public knowledge about the potential for a tsunami at that time worsened the situation and increased the number of casualties. Furthermore, inadequate urban planning, particularly in coastal areas, was a major obstacle to disaster mitigation efforts and has the potential to increase the number of casualties in the future.

Indonesia's tourism industry is vulnerable to disasters if not managed properly, which can impact the tourism ecosystem and the achievement of tourism sector targets such as the number of tourists, foreign exchange revenue, employment, and others. The frequent occurrence of disasters in Indonesia is a key factor affecting the achievement of these performance targets. To reduce disaster

risks, disaster mitigation efforts are necessary [3]. Disaster mitigation refers to efforts to reduce disaster risks, either through physical development or raising awareness and enhancing the capacity to face disaster threats [4].

Adaptation and mitigation are responses to disasters. Adaptation strategies focus on efforts to adjust or adapt to disasters that occur, while mitigation strategies aim to reduce the impact of such disasters. Adaptation is one form of response to disasters. Both adaptation and mitigation are efforts to reduce the negative impacts of natural phenomena, such as disasters, and emphasize the management of unavoidable situations [5].

In disaster mitigation efforts during the pre-disaster phase, it is necessary to establish safe zones near key areas and provide access to evacuation routes leading to these safe zones. Evacuation routes should be designed with considerations for speed of access, sufficient road width, and ground covering materials that allow rescue vehicles to directly access the location, ensuring the evacuation process can proceed quickly and [6].

Disaster mitigation in coastal areas includes both structural and non-structural mitigation. Non-structural mitigation involves early warning systems, lifeguards, and the establishment of disaster-prepared communities. Meanwhile,

structural mitigation is divided into mechanical, vegetative, and a combination of both [7]. Structural mitigation includes the preparation of maps and evacuation routes, installation of signage directing people to evacuation sites and gathering points, provision of early warning systems related to tsunami threats, establishment of shelters as evacuation points during disasters, and the construction of breakwaters to reduce the impact of tsunami waves. Meanwhile, non-structural mitigation involves enhancing the capacity and preparedness of communities and tourism managers in dealing with tsunami disasters, developing land-use policies in coastal areas that are safe from disasters, establishing disaster risk reduction forums to increase community capacity, and creating zoning for mangrove areas and coastal forests as part of the green belt [8]. The government's vision in the Disaster Management Master Plan for 2022-2045 is "Realizing a Disaster-Resilient Indonesia for Sustainable Development" [9].

Developing disaster-resilient and safe tourism is one of the strategic steps taken by the government to provide comfort, protection, and safety to tourists and local communities from the adverse effects of disasters. The primary goal is to protect investments in the tourism sector and related industries, including the local economy in tourism areas. Additionally, this initiative aims to create synergy in policy direction for tourism development in disaster-prone regions or destinations [10].

Developing disaster-resilient tourism must be synergized with disaster management, which includes the pre-disaster, during-disaster, and post-disaster stages. This implementation is carried out through the alignment of tourism and disaster management policies, as well as collaboration among stakeholders. The program is divided into five stages, aimed at providing quick and responsive resolution and collaboration steps in addressing recovery and ensuring long-term resilience, particularly in the tourism sector, using a reintegrated disaster tourism management framework [11].

The role of stakeholders in disaster mitigation programs and tourists' expectations regarding disaster mitigation at tourist destinations hold significant value for the development of tourist destinations that cater to the needs of visitors. Additionally, the alignment between the reality at the destination and tourists' expectations has a significant impact on tourist satisfaction, their decision to choose the destination, and their intention to return. Tourists expect an enhancement and strengthening of stakeholder roles in implementing disaster mitigation programs at destinations [12].

Efforts are needed to develop strategies for dealing with disaster or crisis events, especially when certain forms of crises and disasters have the

potential to occur or recur over time [13]. The tourism industry has experienced various disasters and crises during the planning period, highlighting the need for preparedness in facing future disasters. The planning stage serves as the initial step in integrated disaster tourism management [14].

This stage is carried out through the preparation of prevention plans, tourism disaster management plans, and tourism recovery Plan [15]. Planning within this framework aims to establish controls that can positively impact tourism post-disaster [16]. Additionally, this stage will provide input for the feedback process in the subsequent stages to be implemented by various stakeholders.

The importance of disaster mitigation in the planning and development of tourism areas in Sabang City lies in its marine tourism potential, which is the main attraction for tourists. However, its geographical location in a disaster-prone zone, such as earthquakes and tsunamis, requires the integration of mitigation measures in the development of these tourism areas.

2. METHODS

The method used in this study is a qualitative method. The qualitative method is a way used to solve research problems that are not related to numbers, and this research focuses on facts in the field [16]. This study employs the data analysis model of Miles and Huberman, as this method is well-suited to the research objectives. According to the Miles and Huberman model, qualitative data analysis consists of three parts: data reduction; data display; and conclusion drawing and verification.

This research uses a qualitative approach to gain an understanding of disaster knowledge, preparedness, and mitigation, as well as perceptions of urban planning in Sabang, a tourist city. Interviews were conducted with officials from relevant agencies, community leaders, and tourists to explore policies and their implementation in the field. The purpose of this research design is to provide a detailed description of the functions of government agencies in handling disasters.

3. RESULTS AND DISCUSSION

The research findings show that respondents who have experienced disasters, such as earthquakes and tsunamis, tend to be more proactive in seeking information related to disaster mitigation. They are more aware of the risks compared to respondents who have not experienced a disaster. Respondents working in the Sabang Tourism Office access disaster information more frequently from various sources, including social media, television, radio, and communities.

Social media emerged as the primary source of information for most respondents, particularly those

with higher education levels. This indicates a reliance on digital platforms to obtain disaster mitigation information. However, respondents with lower educational backgrounds tend to be less active in seeking information, highlighting the need for a more inclusive approach to disaster education.

Respondents generally felt either "Somewhat Prepared" or "Unprepared" for disasters, with only a few considering themselves "Prepared." Those who felt "Prepared" were individuals with more knowledge and experience in disaster simulation programs. There was a tendency for younger and more highly educated respondents to feel more prepared. This indicates that educational experiences and exposure to disaster mitigation information influence their level of preparedness.

Public awareness of disaster risks in Sabang City is still relatively low. Most respondents were unaware that Sabang, as a tourist destination, has a high risk of natural disasters. This lack of awareness increases the risk for both the community and tourism stakeholders. The low level of awareness highlights the need to integrate disaster mitigation into the planning and development of tourism facilities. More widespread education is necessary to ensure that everyone, including those working in the tourism sector, has a good understanding of the necessary mitigation measures.

Nearly all respondents suggested improving public outreach and education, as well as enhancing infrastructure and coordination between stakeholders. Outreach and education were the most dominant themes in respondents' suggestions, indicating the need to increase the community's capacity to understand disaster risks and the mitigation actions that can be taken. Suggestions regarding infrastructure improvements show that respondents feel the current infrastructure is inadequate to protect them from the impacts of disasters.

There is a need for stronger cooperation between local governments, communities, and relevant agencies to ensure better preparedness. Most respondents were unaware of the mitigation measures being implemented. This indicates that the government needs to improve disaster mitigation outreach to various community groups, especially in the highly vulnerable tourism sector.

The low level of preparedness suggests that disaster simulation programs and preparedness training need to be held more regularly and involve more stakeholders, including the community and the tourism sector. Respondents believe that disaster mitigation involves not only education but also strengthening infrastructure and cross-sector coordination. Disaster-resistant infrastructure, such as evacuation routes, signage, and earthquake-resistant buildings, needs to be improved and upgraded.

Suggestions for Improving Preparedness from the responses provided on several key themes are as follows:

2. Public Outreach and Education (22 mentions). Many respondents felt that there needs to be an increase in public outreach and education regarding disaster mitigation.
3. Community Preparedness (15 mentions). Improving community preparedness emerged as an important focus, indicating that most respondents believe the community is not yet ready.
4. Early Warning Systems (14 mentions). Respondents emphasized the importance of improving early warning systems.
5. Infrastructure (12 mentions). Respondents also felt that infrastructure needs to be strengthened to improve preparedness.
6. Inter-Agency Coordination (8 mentions). Coordination between agencies was also seen as necessary for better disaster management.

Almost all respondents stated they "Strongly Agree" that disaster mitigation should be an important part of Sabang City's development planning. This indicates a high level of awareness regarding the importance of considering disaster risks in the context of development, especially for tourist areas like Sabang. However, only a few respondents were aware of any disaster mitigation policies implemented by the Sabang City Government. Most answered "Don't Know" regarding the implementation of disaster mitigation in development policies. This highlights a lack of communication between the government and the public regarding existing mitigation policies. Most tourists also showed ignorance about disaster mitigation preparedness in Sabang. Tourists tend to focus more on basic facilities such as roads and hospitals, paying less attention to disaster mitigation aspects. This underscores the need to improve communication about the mitigation efforts being undertaken, both to local communities and tourists.

Some obstacles to integrating disaster mitigation into development planning in Sabang include a lack of disaster-aware human resources, insufficient outreach on mitigation efforts, and a lack of coordination between relevant stakeholders. Many respondents were unaware of these challenges, indicating a lack of community involvement in disaster mitigation efforts. The limited public communication about disaster mitigation is one of the greatest challenges. The government needs to enhance education campaigns and disaster preparedness training to ensure that both the community and tourists have a better understanding.

Respondents identified several important aspects in city development planning, namely:

1. Almost all respondents considered that the location of development is a crucial factor, given the potential disasters such as tsunamis that could impact buildings in high-risk zones.
2. Respondents mentioned that disaster-resistant building design and urban spatial planning are important aspects that need to be addressed to reduce the risk of damage caused by disasters. that supports preparedness, such as evacuation routes, signage, and emergency facilities, is also considered very important.
3. Respondents from the Tourism Office and the Public Works and Spatial Planning Office (PUPR) emphasized different aspects as being important.
4. Respondents from the Tourism Office focused more on spatial planning and building design, while the Public Works and Spatial Planning Office emphasized supporting infrastructure.

There are differing views regarding the management of Sabang City as a tourist city. Some respondents stated "Yes," that management has been running well, while others answered "Don't know."

Respondents with a better understanding of disaster mitigation and those more frequently involved in tourism activities tend to rate the city's management as good. Respondents who answered "Don't know" generally came from groups that are less involved in the management or decision-making processes related to development. The high level of awareness that disaster mitigation should be part of development planning indicates potential support from the community and stakeholders to integrate mitigation aspects into development planning. However, this also highlights the need for concrete actions to be taken by authorities to realize this support.

The differing opinions on whether the city is well-managed as a tourist destination point to an information gap among respondents. Some members of the community feel that the steps taken are sufficient, while others feel they do not have enough information to assess the situation. This indicates the need for greater transparency and more effective communication from the authorities regarding disaster mitigation efforts and city management.

Most respondents answered "Don't Know" regarding the implementation of disaster mitigation in development policies by the Sabang City Government. This indicates a lack of information or communication regarding public policies related to disaster mitigation. Only one respondent mentioned that the government had undertaken disaster mitigation efforts. This may suggest that only a small portion of the community or agencies truly understand the policies and mitigation actions being implemented.

Location of development and building design often become the primary focus in development planning, especially to ensure resilience against disasters. Additionally, the importance of supporting infrastructure, such as evacuation routes, highlights that disaster mitigation encompasses not only building structures but also integrated planning for the safety of the community. Tourism, as a sector with a domino effect on the social and economic life of the community, requires the involvement of various stakeholders. This involvement can take the form of collaboration and synergy between different parties, each with their respective roles [17]. Collaboration among stakeholders is considered crucial for the success of a tourism destination [18]. Therefore, collaboration in building resilience to natural disasters within the tourism sector must be considered a key factor in sustainable development [19].

These findings align with previous research by [12], titled Disaster-Resilient Tourism Development Policy Through Collaboration and Integrated Disaster Tourism Management, which concluded that the strategic steps the government can take include collaborating with stakeholders to achieve tourism resilience to disasters or crises. This collaboration process supports the goal of joint innovation with contributions to the enhancement or strengthening of national social and economic frameworks. The integrated disaster tourism management framework is used to assess the policy implications and collaboration strategies in building disaster-safe tourism. This aims to provide quick and responsive resolution and collaboration steps in addressing recovery and long-term resilience, particularly in the tourism sector. The development of this framework will have a positive impact on the future development of disaster-resilient tourism, enabling Indonesia's tourism industry to withstand disasters or crises that may affect the country in the future.

The research by [21], titled Analysis of Disaster Vulnerability and Economic Vulnerability for the Development of Disaster-Resilient Tourism Policies (Case Study of Batu City, East Java), showed that disaster risk reduction can be achieved through collaboration and cooperation between local governments, academics, entrepreneurs, communities, and the media in disaster mitigation efforts. Mitigation efforts can be carried out through reforestation activities, particularly for reducing landslide risks, and socializing health protocols to reduce the impact of COVID-19. The institutional actor analysis in this research showed that the Regional Disaster Management Agency (BPBD) played a key role in disaster management during COVID-19 in Batu City. Efforts and awareness from local governments down to the village or sub-district level regarding risk mitigation in the pre-disaster, during-disaster, and post-disaster phases have been

implemented, and there is a strong direct influence between one government department and another.

The study titled Management of Tourism Areas Based on Disaster Mitigation (Case Study of Senggigi Beach), concluded that Senggigi Beach requires more attention in terms of disaster mitigation, such as the creation and installation of disaster risk maps, additional evacuation signs, evacuation route maps, shelters, coastal barriers or structures as wave breakers, and watchtowers. These measures are essential to provide a sense of security and comfort for tourists visiting the area[21].

4.CONCLUSION

This study focuses on the importance of integrating disaster mitigation into the development planning of Sabang City, a tourist city with high vulnerability to disaster risks. The research findings reveal that community knowledge and preparedness for disasters vary and are influenced by several key factors:

1. Respondents who had experienced disasters and had good access to information through social media and communities demonstrated higher levels of preparedness.
2. Individuals with higher education levels and men generally felt more prepared to face disasters compared to women and those with lower education levels.
3. There remains a low level of awareness and knowledge among the community and related parties regarding disaster mitigation, indicating the need for enhanced education and outreach.

In the context of disaster mitigation-based development planning, this study identified several key points:

1. Awareness of the importance of disaster mitigation in development planning is relatively high; however, it must be ensured that this aspect is implemented in practice and not merely as a formality.
2. Selecting safe development locations and improving supporting infrastructure should be prioritized to reduce disaster risks.
3. Transparency in disaster-based planning and effective communication between the government and the community are essential to ensure support and participation from all parties.

The involvement of tourists in disaster mitigation is also a point of concern:

1. Information about disaster preparedness needs to be effectively communicated through various media at tourist destinations.

2. Conducting disaster preparedness simulations and promoting evacuation routes in tourist areas can help raise tourists' awareness.

Recommendations for Disaster Mitigation Strategies in Sabang City:

1. Implement an intensive and inclusive education program for communities that have not experienced disasters or lack information.
2. Utilize social media and community networks for the widespread and rapid dissemination of disaster mitigation information.
3. Improve the quality of disaster preparedness infrastructure and optimize early warning systems.
4. Build stronger coordination between the government, related agencies, and the community.
5. Ensure disaster mitigation is genuinely integrated into city development planning, with safe development site selection that complies with disaster safety standards.
6. Enhance transparency in disaster-based planning and communication between the government and the community.
7. Provide easily accessible information for tourists and involve them in disaster preparedness activities.

This study illustrates that Sabang City has great potential to develop disaster-resilient tourism through proper development planning and active participation from both the community and tourists. The implementation of these recommendations is expected to enhance preparedness, reduce disaster risks, and establish Sabang City as a safe, sustainable, and disaster-resilient tourist destination.

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