

Strategy for the Development of a Sustainable Tourism Area Based on Disaster Mitigation in the Trusmi Batik Region

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Abstract. Amid the risk of natural disasters, sustainable tourism development requires mitigation efforts capable of ensuring the safety of the area while supporting the community's economic activities. The Trusmi Batik Area in Cirebon Regency, as a cultural tourism destination, faces the threat of flooding that has the potential to disrupt tourism activities, the batik trade, and community life. This study aims to develop a flood disaster mitigation strategy that can be implemented in the Trusmi Batik Area to reduce disaster risks and support the sustainability of tourism and trade activities in the region. The method used in this study is a descriptive qualitative approach through field observations and in-depth interviews with community leaders, batik business owners, and relevant agencies. The analysis indicates that flooding in the Trusmi Batik Area is influenced by physical factors such as high rainfall, a relatively concave topography, the proximity of residential areas to rivers, and inadequate drainage capacity, as well as non-physical factors such as land-use changes, low public awareness regarding environmental cleanliness, and suboptimal drainage management. Based on these findings, a disaster-mitigation-based tourism development strategy was formulated. It includes periodic drainage normalization and maintenance; environmental education and community cooperation; the provision of trash bins; the addition of green open spaces and infiltration wells; riverbank management; land-use control; and the strengthening of the Disaster-Resilient Village Program (Destana) through training and disaster simulations. This strategy is expected to reduce flood risks while supporting the development of the Trusmi Batik Area as a safer, more resilient, and sustainable tourism destination.

Keywords: Disaster Mitigation, Sustainable Tourism, Trusmi Batik District, Development Strategies.

1 Introduction

A disaster is a condition that can disrupt the continuity of community life through environmental damage, material losses, and the loss of livelihoods on a large scale. In general, a disaster is defined as an event that causes destruction or damage to infrastructure and social interactions, thereby hindering the continuity of a community. Furthermore, according to Law No. 24 of 2007, a disaster is an event that can threaten and disrupt community life, caused by natural, non-natural, or human factors, resulting in loss of life, ecosystem damage, property loss, and psychological impacts on people. One of the most common natural disasters in Indonesia is flooding. This disaster not only causes physical damage but also impacts social and economic activities as well as regional development.

Amid the risk of natural disasters, Indonesia continues to strive to boost the tourism sector as one of the pillars of the national economy. Nearly every province in Indonesia is working to develop its own tourism programs by highlighting the beauty and uniqueness of its culture and natural landscapes. One cultural tourism activity that visitors can engage in is learning about and appreciating a region's traditional crafts. Indonesia is known for its diverse array of traditional crafts, which serve as the identity of each region—one of which is batik. Batik not only holds cultural value but also serves as a tourist attraction capable of driving economic growth for local communities through trade, the creative industries, and tourism services.

One of the thriving cultural tourism areas in Cirebon Regency is the Trusmi Batik Area, located in Weru and Plered Districts, West Java Province. This area serves as both a production and trade hub for Cirebon's distinctive batik, which is recognized nationwide. The quality of the products, the diversity of patterns, affordable prices, and easy access make Trusmi Batik a popular shopping destination that is always bustling with tourists. The development of this area also contributes significantly to regional economic growth through increased activity in trade, small and medium-sized industries, and the tourism sector.

Data from the Cirebon Regency Regional Medium-Term Development Plan (RPJMD) shows that the tourism sector has experienced significant growth, with total tourist visits reaching 513,854 in 2020 and increasing to more than 1,097,023 in 2024, underscoring the sector's importance to regional development. On the other hand, Cirebon Regency also faces the risk of natural disasters, including floods, which have occurred in several subdistricts. This indicates that environmental vulnerability must be a focus in regional development planning. In recent years, Cirebon Regency has seen an increase in hydrometeorological disasters, particularly floods that have occurred in several subdistricts, including Weru Subdistrict. The Weru area is experiencing rapid human development, particularly in the Trusmi Batik tourism and commercial districts.

According to the Cirebon Regency Disaster Risk Assessment, Weru Subdistrict is classified as an area with a relatively high level of flood hazard and risk. This indicates that the Batik Trusmi tourism area not only holds significant economic potential but is also highly vulnerable to flooding, which could disrupt the activities of both residents and tourists. If the flood risk in this area is not addressed seriously, the fre-

quency and impact of future flood events may increase. In the long term, this situation has the potential to cause damage to infrastructure and disrupt community activities, while also jeopardizing the sustainability of tourism operations in the Batik Trusmi area. Given these conditions, it is necessary to develop a flood disaster mitigation strategy that takes into account the area's physical conditions, community characteristics, and the sustainability of tourism activities in the Batik Trusmi area. This study aims to develop a flood disaster mitigation strategy that can be implemented in the Batik Trusmi area. The results of this study are expected to serve as input for local governments and stakeholders in supporting the development of a safer and more sustainable Batik Trusmi area through the implementation of flood disaster mitigation strategies.

2 Materials and Methods

This study employs a descriptive qualitative approach. The research was conducted in the Trusmi Batik District, Weru Subdistrict, Cirebon Regency, West Java. This area was selected because it is a major center for tourism and the batik trade and is highly vulnerable to flooding.

Data collection was conducted through field observations, interviews, and documentation. Observations were used to identify the existing conditions of the area, particularly regarding factors contributing to flooding, such as drainage conditions, land use, and tourism and commercial activities. Interviews were conducted with government agencies, business operators, and community leaders; these informants were selected because they were considered to have the necessary understanding, experience, and direct involvement in issues related to flooding and tourism activities in the Trusmi Batik Area.

The first stage involved a descriptive analysis of the factors causing flooding and the level of flood vulnerability based on observations, interviews, documentation, and secondary data. The second phase involved analyzing community perceptions of flood disaster mitigation and examining the relationship between disaster mitigation and tourism activities in the Trusmi Batik Area. Subsequently, all analysis results were synthesized to formulate a flood disaster mitigation-based tourism development strategy tailored to the area's characteristics.

2.1 Data Collection

The data in this study were obtained through primary and secondary sources. Primary data were collected through field observations and direct interviews with sources relevant to the study, such as community leaders, batik business owners, and relevant agencies. Field observations were conducted to identify the existing conditions of the area, particularly regarding factors contributing to flooding, such as drainage conditions, land use, and tourism and commercial activities. Interviews were conducted to gather information on the causes of flooding, mitigation efforts that have been implemented, and the management of the tourism area. Secondary data was obtained from

the Central Statistics Agency (BPS), the Regional Disaster Management Agency (BPBD), Bapperida, the Disaster Risk Assessment (KRB), the Spatial Planning Document (RTRW), the Medium-Term Regional Development Plan (RPJMD), as well as various literature and research findings related to tourism area development and disaster mitigation. All of this data was used as the basis for analyzing the conditions of the area and formulating a disaster mitigation strategy for the Batik Trusmi area.

Operational Definitions of Variables

The variables used in this study consist of flood causes, public perceptions of flood disaster mitigation, and the development of tourism based on flood disaster mitigation. Flood causes were measured through drainage conditions, land-use changes, rainfall intensity, the presence of infiltration areas, and environmental management. The variables regarding public perceptions of flood disaster mitigation were measured through the public's knowledge of floods, experiences with floods, perceptions of flood risk levels, perceptions of government mitigation efforts, and public participation in mitigation activities. Meanwhile, the variables related to flood disaster mitigation-based tourism development were measured through aspects of area safety and comfort, accessibility of tourist areas, environmental management, disaster mitigation efforts, and the sustainability of tourism activities. Each variable was analyzed based on field observations and interviews with stakeholders, supported by secondary data, to provide a comprehensive picture of conditions in the Trusmi Batik Area. The results of this analysis were then used as the basis for formulating a flood-mitigation-based tourism development strategy for the Trusmi Batik Area.

3 Results And Discussion

3.1 Results

The development of a flood mitigation strategy for the Trusmi Batik Area was based on research findings from previous studies, namely the identification of flood-causing factors and the area's vulnerability level, the relationship between mitigation and tourism activities, and an analysis of community perceptions regarding flood mitigation. The results of the analysis indicate that flooding in this area is influenced by a combination of physical and non-physical factors. Physical factors include high rainfall intensity, relatively low-lying topography, inadequate drainage capacity, and a reduction in water absorption areas due to increased built-up areas. Meanwhile, non-physical factors relate to low public awareness regarding environmental cleanliness, the continued presence of buildings along riverbanks, and suboptimal area management in reducing flood risks. Furthermore, the results of a community perception analysis indicate that the community understands the threat of flooding, but participation in prevention and preparedness activities still needs to be improved. Based on these conditions, a mitigation strategy was developed that integrates structural and nonstructural mitigation measures as an effort to reduce flood risk in the Trusmi Batik Area.

Table 1. Flood Disaster Mitigation Strategies in the Trusmi Batik Area

Issues	Analysis Results	Theoretical Basis	Mitigation Strategies	Contribution to Tourism Development
The drainage capacity is insufficient to handle rain-water runoff	Narrow drainage channels were found to be clogged with sediment and trash, thereby obstructing water flow.	Structural Mitigation (Triana, 2017)	Normalization of drainage channels, widening of drainage channels at flood-prone areas, and periodic cleaning of channels.	Ensuring accessibility for tourists and the smooth operation of the batik trade.
Accumulation of trash in rivers and drainage channels	The community still disposes of trash into rivers, causing blockages in water flow	Nonstructural Mitigation and Public Perception	Promote environmental education, provide trash bins, and organize regular community cleanup activities.	Improving the cleanliness and comfort of tourist areas
Decrease in water absorption areas	The area is dominated by buildings, resulting in a decrease in the soil's ability to absorb water.	Structural Mitigation and Sustainable Tourism	Increasing green open spaces, constructing infiltration wells, and regulating development on land that serves as a water infiltration area.	Improving landscape quality and destination appeal
Buildings are located along riverbanks	Some buildings narrow the river channel and reduce water storage capacity.	Nonstructural Mitigation and Land Use Planning	Redevelopment of riverbank areas in accordance with land-use regulations and oversight of new construction.	Creating well-organized and safe tourism corridors.
Community capacity	Some community	Community Perceptions	Conducting preparedness	Enhancing tourists' sense of

remains limited	lim-	members have never participated in disaster preparedness training.	and Preparedness	Disaster	training, simulations, forming disaster response volunteers.	flood and disaster tourism holders	safety and the preparedness of stake-
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Source: Author’s Analysis, 2026

Based on Table 1, the proposed mitigation strategies consist of drainage normalization, environmental education and waste management, the addition of green open spaces and infiltration wells, riverbank management, and the strengthening of the Disaster-Resilient Village Program (Destana). These strategies were formulated based on the results of an analysis of the area’s physical conditions , community perceptions, and the relationship between mitigation and tourism development in the Trusmi Batik Area.

3.2 Discussion

The first strategy formulated involves normalizing drainage by widening channels, constructing U-ditch channels in areas with limited capacity, periodically dredging sediment, and installing control basins to facilitate maintenance. This strategy was developed based on observations showing that several drainage channels had narrowed and become clogged due to sediment and trash, preventing optimal water flow. These conditions meant that the drainage system lacked the capacity to handle storm-water runoff during heavy rainfall. According to Triana’s (2017) theory, this strategy constitutes structural mitigation because it involves improving physical infrastructure to reduce flood risk.

The next strategy is to improve environmental education, provide trash bins, and conduct regular community cleanup activities. This strategy was developed based on interview results indicating that trash buildup in drainage channels and rivers remains one of the causes of obstructed water flow. Therefore, it is necessary to educate the public on the importance of maintaining environmental cleanliness, provide trash bins in commercial and tourist areas, and conduct periodic community service activities to clean drainage channels and riverbanks. This strategy is a form of nonstructural mitigation that focuses on increasing public awareness and participation in reducing flood risks.

The next strategies involve increasing green open spaces, constructing infiltration wells, and regulating land use. These strategies were developed based on research findings indicating that the Batik Trusmi area is dominated by buildings, which has reduced the soil’s ability to absorb water. The proposed measures include utilizing vacant land as green open spaces, constructing infiltration wells and biopore holes in residential areas and public facilities, and regulating development on land that still serves as a water-absorption area. The report also explains that this approach aligns with the implementation of the Climate Village Program (ProKlim) in residential

areas with limited land availability. In addition to enhancing the area's capacity to absorb rainwater, green open spaces also serve as a supporting element of the tourist area's landscape.

The riverbank management strategy was developed based on observations showing that there are still structures along the river, which could potentially reduce the river's capacity to carry water flow. The strategy is implemented by establishing riverbank boundaries, providing inspection paths, managing the environment along the riverbanks, and monitoring new construction to ensure it does not impair the river's function. These management efforts are carried out without disrupting the community's economic activities and are designed to ensure that land use remains in compliance with riverbank regulations.

The final strategy is to strengthen the Disaster-Resilient Village Program (Destana). This strategy was developed based on the results of a community perception analysis, which showed that some community members have never participated in disaster preparedness training, indicating that community capacity still needs to be enhanced. Proposed efforts include conducting preparedness training, flood response simulations, establishing a disaster volunteer corps, and mapping out evacuation routes and assembly points. This strategy will be implemented through coordination among the village government, the Regional Disaster Management Agency (BPBD), and the community to enhance community preparedness for disasters such as floods.

Overall, the mitigation strategy formulated consists of structural and nonstructural mitigation measures. Structural mitigation includes drainage normalization, the addition of green open spaces, the construction of infiltration wells, and riverbank management. Meanwhile, nonstructural mitigation includes environmental education, community service activities, and the strengthening of the Disaster-Resilient Village Program (Destana). These strategies were developed based on the results of an analysis of the factors causing flooding, the relationship between mitigation measures and tourism activities, and community perceptions, with the aim of supporting flood risk reduction in the Trusmi Batik Area.

4 Conclusion

Based on the research findings, the flood mitigation strategy for the Trusmi Batik Area was developed based on the identification of flood-causing factors, the area's vulnerability level, the relationship between mitigation and tourism activities, and the community's perceptions of flood mitigation. The research findings indicate that the formulated strategy integrates structural and nonstructural mitigation measures as efforts to reduce flood risk in the area.

Structural mitigation includes normalizing and increasing drainage capacity, adding green open spaces, constructing infiltration wells, and managing riverbank areas. Meanwhile, nonstructural mitigation is carried out through environmental education, the provision of waste management facilities, the implementation of regular community service activities, and the strengthening of the Disaster-Resilient Village Program (Destana) through preparedness training, disaster simulations, and the formation of

disaster response volunteers. These strategies were developed based on the area's physical conditions, community characteristics, and the management needs of the Trusmi Batik Area, so they can serve as a guide for flood risk reduction efforts while supporting the area's sustainability.

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