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Governance Capacity and Sustainability Integration in Lusi Island: A Proposed Integrated Governance–Sustainability Framework

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Abstract

Post-disaster dark tourism destinations face complex governance challenges because environmental recovery, community livelihoods, tourism development, disaster memory, and long-term sustainability must be managed simultaneously. This study examines governance capacity at Lusi Island, Sidoarjo Regency, Indonesia, and develops an Integrated Governance–Sustainability Framework (IGSF) to explain how governance capacity facilitates sustainability integration. A qualitative single-case study was conducted using semi-structured interviews, field observations, document analysis, and source triangulation involving government representatives, BUMDes, Pokdarwis, boat operators, MSMEs, and visitors. The data were analysed thematically through deductive and inductive coding. The findings indicate that Lusi Island possesses significant environmental, social, economic, and historical assets, including a rehabilitated mangrove ecosystem, community-based tourism activities, local livelihood opportunities, and a post-disaster historical narrative. However, destination development remains constrained by fragmented institutional authority, limited inter-organisational coordination, uneven facility utilisation, environmental pressures, and fluctuating visitor numbers. Governance capacity emerges through three interrelated dimensions: stakeholder engagement, institutional capacity, and adaptive governance. Stakeholder engagement supports participation and knowledge exchange, institutional capacity facilitates the coordination of responsibilities and resources, while adaptive governance enables responses to changing socio-ecological conditions. The study proposes the IGSF as an empirically informed conceptual framework positioning governance capacity as the enabling institutional mechanism connecting post-disaster destination characteristics with environmental, social, economic, and institutional sustainability. The framework provides a basis for strengthening integrated governance and long-term destination resilience.

KEYWORDS

post-disaster tourism; dark tourism; tourism governance; governance capacity; sustainability integration; lusi island.

Introduction

Tourism destinations increasingly face the challenge of pursuing economic benefits while maintaining environmental quality, community well-being, cultural resources, and institutional continuity. This challenge is particularly evident in destinations where tourism development is closely connected with environmental recovery, local livelihoods, and changing socio-economic conditions. Previous studies have shown that destination development depends not only on the availability of tourism resources but also on the capacity of local actors to manage economic, socio-cultural, political, technological, and environmental dimensions collectively (Rahmawati et al., 2020; Ritchie & Crouch, 2003; Salsabila & Eddyono, 2026). Sustainable destination development therefore requires

more than the establishment of tourism facilities or the growth of visitor numbers. It requires institutional arrangements through which different actors can coordinate resources, responsibilities, and interests over time.

The governance dimension becomes important because tourism destinations involve multiple actors with different resources, interests, and responsibilities. Government institutions, local communities, tourism businesses, community organizations, and other stakeholders may influence, and be influenced by, destination development. Stakeholder participation provides opportunities for these actors to contribute to tourism planning and implementation, while stakeholder collaboration facilitates communication, resource sharing, and the coordination of different interests (Byrd, 2007; Nurranto, 2026). Recent tourism studies similarly indicate that community participation, institutional coordination, supportive policies, and collaboration among stakeholders are important conditions for sustainable destination development (Allyreza & Rahmi Winangsih, 2023; Handayani et al., 2023; Megananda & Indartuti, 2023; Sentanu & Mahadiansar, 2020). However, stakeholder participation or collaboration alone does not necessarily indicate that a destination possesses sufficient governance capacity. Participation concerns the involvement of relevant actors, whereas governance capacity concerns the institutional ability to coordinate those actors, mobilize resources, implement decisions, and respond to changing conditions.

This distinction is important because sustainable tourism requires the integration of several objectives that may compete with one another. Environmental conservation may depend on community participation, while local economic benefits may depend on the continued quality of environmental resources. Similarly, tourism development may require infrastructure and investment while simultaneously creating pressures on ecosystems and local communities. Destination competitiveness research has therefore emphasized the interaction of economic, political, socio-cultural, technological, and environmental dimensions rather than treating destination performance as the result of a single factor (Ritchie & Crouch, 2003; Salsabila & Eddyono, 2026). Governance research adds another perspective by emphasizing stakeholder relationships, institutional coordination, and multi-actor arrangements as important elements of destination management (Allyreza & Rahmi Winangsih, 2023; Handayani et al., 2023; Nurranto, 2026). These studies demonstrate the importance of governance and collaboration, but they provide less explanation of how governance capacity enables different sustainability dimensions to be pursued simultaneously within a complex destination context.

The issue becomes more complex in destinations associated with disasters. Post-disaster destinations may simultaneously involve environmental rehabilitation, community recovery, livelihood reconstruction, heritage interpretation, and tourism development. Consequently, tourism management in such settings cannot be reduced to the attraction of visitors or the generation of local economic benefits. It requires institutional arrangements that can accommodate changing environmental conditions, community interests, historical narratives, and competing development priorities. Research on dark tourism has examined destinations associated with death, disaster, tragedy, memorialization, and the interpretation of difficult heritage, with particular attention to visitor motivation, memorialization, disaster interpretation, destination recovery, and ethical representation (Cai et al., 2022; Gerster et al., 2021; Karki, 2020; Madhuwanthi & Dassanayake, 2022; Saad et al., 2024; Wang et al., 2023). Nevertheless, a landscape affected by disaster should not automatically be classified as a dark tourism destination. Such classification requires evidence that disaster-related history, memory, interpretation, or visitor engagement with the consequences of tragedy forms part of the tourism experience.

This distinction is relevant to Lusi Island in Sidoarjo Regency, East Java. Lusi Island emerged through sedimentation associated with the 2006 Sidoarjo mudflow disaster and has subsequently undergone environmental rehabilitation, particularly through mangrove development. The area has gradually acquired several functions, including environmental conservation, education, fisheries, and tourism. Previous studies concerning Lusi Island and the surrounding Tlocor area have examined mangrove rehabilitation, community empowerment, tourism services, stakeholder collaboration, and coastal management (Amriel et al., 2025; Fahruddin et al., 2024; Hariadi et al., 2022; Lubis & Wahyudi, 2022; Ramadhan & Sukmana, 2023; Rimadevi et al., 2022; Santoso et al., 2024). These studies provide important evidence concerning environmental recovery and local tourism development. However, they largely address particular components of destination development rather than examining how governance capacity connects environmental, social, economic, and institutional sustainability within the destination.

Existing studies also identify several governance-related challenges in the Lusi Island and Tlocor context, including fragmented institutional coordination, overlapping administrative responsibilities, legal uncertainty, infrastructure limitations, and the need to balance environmental conservation with socio-economic development (Avenzoar et al., 2024; Christy & Hardjati, 2025; Sukmana et al., 2024; Wulandari et al., 2024). These findings are important because they indicate that the principal challenge is not simply the absence of tourism resources or community involvement. Rather, the challenge concerns how different institutional responsibilities, community interests, environmental objectives, and tourism activities can be coordinated within a common destination-management process. In this respect, previous research has established what problems exist, such as coordination, empowerment, environmental management, and infrastructure constraints, but has provided less explanation of the governance mechanism through which these dimensions can be integrated.

The broader literature reveals a similar limitation. Sustainable tourism research has developed multidimensional approaches that consider environmental, social, economic, cultural, and managerial dimensions of sustainability (Khan et al., 2022; Petrevska et al., 2020; Punzo et al., 2022;Thukia et al., 2022; Zhao et al., 2023). Destination competitiveness research emphasizes the interaction among economic, political, socio-cultural, technological, and environmental dimensions (Ritchie & Crouch, 2003; Salsabila & Eddyono, 2026). Tourism governance research focuses more specifically on stakeholder participation, institutional coordination, collaborative governance, and multi-actor partnerships (Allyreza & Rahmi Winangsih, 2023; Handayani et al., 2023; Lekatompessy et al., 2023; Nurranto, 2026). Meanwhile, dark tourism studies have concentrated mainly on visitor experiences, memorialization, disaster interpretation, and the representation of tragedy (Cai et al., 2022; Gerster et al., 2021; Saad et al., 2024; Wang et al., 2023). Thus, the literature provides substantial knowledge about what should be sustained, which actors should be involved, and how disaster-related tourism experiences are constructed, but provides less integrated explanation of how institutional capacity enables these objectives and actors to be coordinated across sustainability dimensions.

The research gap addressed in this study is therefore

primarily conceptual and contextual. Conceptually, existing tourism governance research tends to emphasize stakeholder relationships, participation, or institutional coordination, whereas sustainability studies commonly treat governance as one component of destination sustainability or competitiveness. These perspectives do not sufficiently specify governance capacity as an enabling institutional capability through which environmental, social, economic, and institutional objectives can be coordinated. Contextually, this limitation is particularly relevant to post-disaster destinations such as Lusi Island, where environmental conditions continue to change and tourism development intersects with community livelihoods, environmental rehabilitation, and the interpretation of a disaster-affected landscape. The present study therefore does not assume that stakeholder collaboration is equivalent to governance capacity. Instead, it examines governance capacity as the broader institutional ability to mobilize stakeholder engagement, coordinate institutional responsibilities, and adapt management responses to changing destination conditions.

Within this perspective, three dimensions are used as an initial analytical lens: stakeholder engagement, institutional capacity, and adaptive governance. Stakeholder engagement concerns the involvement, communication, participation, and coordination of actors who possess different interests and resources. Institutional capacity concerns the ability of institutions to coordinate responsibilities, implement programs, mobilize resources, and maintain policy and administrative continuity. Adaptive governance concerns the ability of institutions and stakeholders to respond to changing environmental, social, and economic conditions through flexibility, learning, and adjustment. These dimensions are analytically related but conceptually distinct from general stakeholder participation or collaborative governance. Their relevance to the Lusi Island case is examined empirically rather than treated as predetermined findings. Accordingly, the three dimensions function as an initial sensitizing framework that guides the analysis, while the empirical findings determine how the dimensions are confirmed, refined, or qualified.

Based on this research problem, the present study examines Lusi Island as a post-disaster tourism setting in which the relationship between disaster-related landscape transformation, environmental rehabilitation, community involvement, and tourism development can be investigated. The study cautiously considers its potential dark-tourism characteristics based on the presence of disaster-related historical narratives and visitor engagement with the transformed landscape rather than assuming that the site's disaster origin alone establishes its dark-tourism classification. The study aims to examine how governance capacity is manifested through stakeholder engagement, institutional capacity, and adaptive governance; to investigate how these governance processes relate to the integration of environmental, social, economic, and institutional sustainability; and to develop an empirically informed Integrated Governance–Sustainability Framework (IGSF) based on the findings. The framework is proposed as a conceptual interpretation of the Lusi Island case rather than as a validated model with general causal applicability.

The study contributes to tourism governance and sustainable tourism research in three respects. First, it distinguishes governance capacity from stakeholder collaboration by emphasizing the institutional capabilities required to coordinate actors, resources, responsibilities, and adaptation. Second, it connects governance processes with the integration of multiple sustainability dimensions in a post-disaster tourism context, where environmental recovery, community interests, tourism development, and disaster-related interpretation intersect. Third, it provides an empirically informed IGSF that can be used as a basis for further examination of governance and sustainability integration in comparable post-disaster destinations. The framework is therefore intended not as a universally applicable model, but as a conceptual contribution whose transferability requires further examination across different post-disaster and socio-ecological contexts.

Methods

This study employed a qualitative approach using a single-case study design to examine governance capacity and its relationship with sustainability integration in a post-disaster tourism setting. A qualitative case study was selected because it enables an in-depth examination of governance processes, stakeholder interactions, and destination-management practices within their actual social and institutional context (Stake, 1995; Yin, 2008). This approach suits examining complex destination-management processes because governance capacity is shaped by interactions among institutions, communities, tourism actors, environmental conditions, and local economic activities, not a single measurable factor.

The study was conducted at Lusi Island, Sidoarjo Regency, East Java, Indonesia. Lusi Island was selected as the research site because it represents a distinctive post-disaster tourism setting in which environmental rehabilitation, mangrove conservation, community livelihoods, disaster-related historical narratives, and tourism activities coexist within a dynamic socio-ecological context. The destination emerged from sedimentation following the 2006 Sidoarjo mudflow disaster and has since developed into an area associated with environmental recovery and tourism. This context provides an appropriate setting for examining how governance capacity operates when environmental, social, economic, and institutional interests need to be addressed simultaneously.

The case was bounded geographically by Lusi Island and the Tlocor tourism access area directly associated with its tourism activities. Tlocor was treated as a connected access and tourism-management setting rather than as a separate tourism case. The institutional boundary covered actors who were directly involved in, or had direct responsibilities related to, tourism management, community participation, local economic activities, and environmental management in the study area. The temporal boundary covered the fieldwork period from February to July 2026.

The unit of analysis was the governance process surrounding tourism and sustainability management at Lusi Island, particularly the ways in which stakeholders participate, institutions coordinate responsibilities and resources, and actors respond to changing environmental, social, economic, and tourism conditions. The study therefore did not treat individual stakeholders as isolated units of analysis but examined their roles and interactions within the bounded destination context.

The single-case design was selected because Lusi Island provides a context in which post-disaster environmental transformation and tourism development occur simultaneously. Previous tourism research has demonstrated that destination development is influenced by interactions among economic, socio-cultural, political, technological, and environmental dimensions, as well as by the capacity of local actors to manage these dimensions collectively (Salsabila & Eddyono, 2026). The case therefore provides an opportunity to examine governance capacity as an institutional process connecting different sustainability concerns rather than treating sustainability as a collection of independent destination attributes.

Participants were selected using purposive sampling to obtain information-rich perspectives from stakeholders directly involved in, or closely associated with, the management and use

Table 1. Distribution of Research Participants

Stakeholder category	Participant Position	Number
Government	Disbudporapar Sidoarjo Regency representative	1
Government	Head of Tlocor Hamlet	1
BUMDes	BUMDes member	1
Pokdarwis	Pokdarwis member	1
Tourism service provider	Boat operator	1
MSMEs	Local MSME actors	5
Visitors	Lusi Island/Tlocor visitors	5
Total		**15**

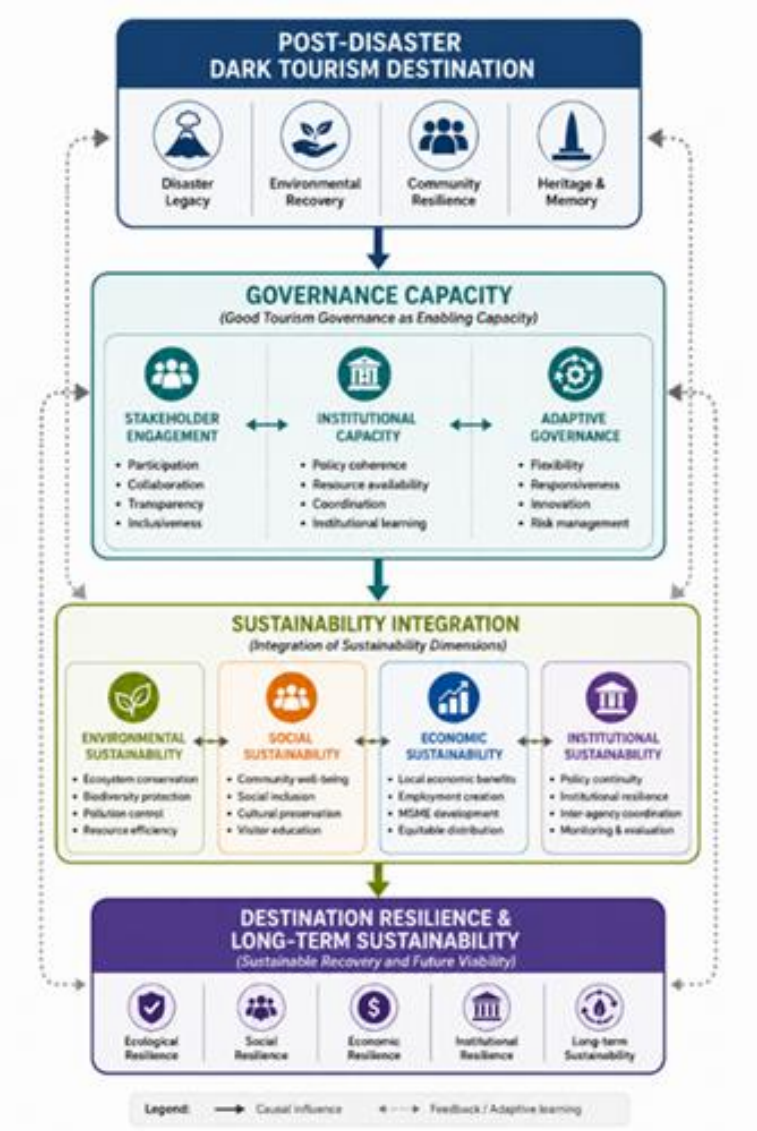


Figure 1. Conceptual Framework

of Lusi Island. Purposive sampling was considered appropriate because the study required participants with direct experience, knowledge, or involvement in destination governance, tourism activities, community participation, environmental management, local economic activities, or visitor experiences (Patton, 2002). The selection process also considered the different positions, responsibilities, and experiences of actors within the destination governance system.

A total of 15 participants participated in the study, representing six stakeholder categories. The government category consisted of two participants, namely one representative of the Sidoarjo Regency Culture, Youth, Sports and Tourism Office (Disbudporapar Kabupaten Sidoarjo) and one Head of Tlocor Hamlet. The destination-management and community organizations were represented by one BUMDes member and one Pokdarwis member. Tourism service providers consisted of one boat operator, while the local tourism economy was represented by five MSME actors. Finally, five visitors were included to provide perspectives concerning visitor experiences and perceptions of the destination (see Table 1).

The inclusion of different stakeholder groups was intended to capture variations in authority, responsibility, experience, interests, and access to destination-management processes. Government representatives were included because of their administrative and tourism-management responsibilities. The Head of Tlocor Hamlet was included to represent the local territorial and community perspective. BUMDes and Pokdarwis participants were selected because of their involvement in community-based destination management. The boat operator

and MSME actors represented local tourism-service and economic activities, while visitors provided perspectives from the users of the tourism destination. Such stakeholder diversity is relevant because sustainable tourism development involves actors with different interests, responsibilities, and capacities (Byrd, 2007; Nurranto, 2026).

Participants were recruited through a combination of direct institutional contact, key-informant referral, and direct approaches at the research site. Initial contact was established with relevant government and community institutions to identify individuals who met the study criteria and possessed direct knowledge of Lusi Island. Key informants subsequently assisted in identifying other relevant participants within the destination-management and community networks. In addition, local tourism actors and visitors were approached directly at the research site. Combining these recruitment approaches enabled the researcher to obtain perspectives from both institutional actors and participants who were directly involved in everyday tourism activities.

Participants were included when they had direct experience with, involvement in, or sufficient knowledge of Lusi Island, its tourism activities, destination management, environmental management, community economic activities, or visitor use. Government and community representatives were selected based on their institutional or territorial responsibilities. BUMDes and Pokdarwis participants were selected based on their involvement in destination and community activities. Boat operators and MSME actors were selected based on their direct participation in tourism-related economic activities. Visitors were included when they had visited Lusi Island or the Tlocor tourism area during the research period and were able to provide relevant information about their experiences and perceptions. Individuals without direct experience or sufficient knowledge relevant to the research objectives were excluded.

The sample was designed to provide cross-stakeholder perspectives rather than statistical representation. The adequacy of the sample was considered based on the relevance and diversity of information obtained from the different stakeholder categories and the extent to which the collected evidence addressed the research questions. The purpose was therefore to obtain contextual and information-rich accounts of governance processes rather than to achieve statistical generalization.

Data were collected between February and July 2026 through three primary sources: semi-structured interviews, field observations, and documentary materials. These sources were treated as distinct forms of empirical evidence. Source triangulation was conducted subsequently as part of the procedures for establishing the trustworthiness of the findings. Semi-structured interviews were conducted with the 15 participants identified through the sampling process. The interview guide was informed by the initial conceptual framework but was designed using open-ended questions to allow participants to explain their experiences and introduce issues that were not anticipated in the initial framework. This approach was used to reduce the risk that the data would be restricted to predetermined theoretical categories.

The interviews addressed several broad areas, including stakeholder participation, institutional roles and responsibilities, coordination practices, policy implementation, resource availability, environmental management, community welfare, local economic activities, tourism operations, responses to changing destination conditions, and perceptions of Lusi Island's post-disaster characteristics. Follow-up questions and probes were used to obtain explanations and concrete examples when participants raised relevant issues.

The conceptual framework therefore functioned as a sensitizing framework rather than a fixed interview or coding structure. Participants were encouraged to describe governance practices in their own terms, including situations involving coordination difficulties, institutional constraints, changes in tourism activities, environmental concerns, community interests, or unexpected developments. Issues emerging from the interviews that were not represented in the initial framework were retained for subsequent analysis. This procedure allowed empirical findings to modify or extend the initial analytical assumptions.

Field observations were conducted at Lusi Island and the Tlocor tourism access area to examine the physical, environmental, social, and tourism-management conditions of the destination. The observations focused on environmental conditions, mangrove areas, tourism facilities, boat transportation, visitor activities, MSME activities, community participation, destination maintenance, and tourism-management practices. Observation notes were used to distinguish directly observed conditions from information obtained through participant accounts.

Documentary materials consisted of relevant tourism policies, planning documents, management-related documents, field documentation, and available visitor information. These materials were examined to identify formal institutional responsibilities, destination-management arrangements, environmental programs, and other information relevant to governance and sustainability. The combination of interviews, observations, and documentary materials provided complementary evidence for understanding destination-management practices and development constraints, consistent with qualitative tourism research using multiple data-collection techniques (Rahmawati et al., 2020).

The collected data were analysed using thematic analysis through an iterative deductive–inductive process. The analysis began with repeated reading of interview materials, observation notes, and documentary materials to develop familiarity with the empirical data. Initial coding was then conducted to identify relevant statements, practices, experiences, institutional conditions, and recurring patterns.

The initial conceptual framework informed the development of sensitizing categories, particularly concerning governance capacity and sustainability. However, the analysis was not restricted to these predetermined categories. Empirical materials were also examined inductively to identify unexpected issues, divergent experiences, and relationships that emerged during the research process. This approach allowed the analysis to move between theoretically informed categories and empirically generated patterns.

The analytical process consisted of several stages. First, the researcher conducted repeated reading of the empirical materials and identified descriptive codes. Second, related codes were compared and grouped into broader categories. Third, potential themes were developed by examining relationships among the categories. Fourth, themes were reviewed against the original interview accounts, observation notes, and documentary materials to assess their consistency and explanatory relevance. Finally, the themes were interpreted in relation to the research questions and the initial conceptual framework.

Five broad analytical areas were examined: governance capacity, environmental sustainability, social sustainability, economic sustainability, and institutional sustainability. Governance capacity was examined through three initial analytical dimensions: stakeholder engagement, institutional capacity, and adaptive governance. These dimensions were treated as analytically distinct rather than as predetermined findings.

Stakeholder engagement concerned the involvement, participation, inclusiveness, transparency, and communication of relevant actors in destination-management processes. Institutional capacity concerned institutional responsibilities, policy implementation, resource availability, administrative arrangements, and organizational learning. Adaptive governance

concerned the ability of actors and institutions to respond to changing environmental, social, economic, and tourism conditions through flexibility, adjustment, learning, and risk management.

To avoid conceptual overlap, coordination was not treated as an automatic indicator of all three governance dimensions. Coordination was coded under stakeholder engagement when the evidence concerned interaction, participation, communication, or negotiation among actors. It was coded under institutional capacity when it concerned formal organizational responsibilities, administrative arrangements, or institutional implementation. It was considered part of adaptive governance only when the evidence demonstrated adjustment, learning, flexibility, or modification of governance practices in response to changing conditions. This distinction was used to maintain analytical separation among the governance dimensions.

The analysis also considered divergent and negative evidence. Differences between government representatives, community actors, tourism operators, MSME actors, and visitors were not automatically treated as inconsistencies. Instead, divergent accounts were examined as potential evidence of differences in institutional position, experience, interests, or access to decision-making. Themes were retained when they demonstrated sufficient explanatory relevance across the available evidence or provided meaningful insight into differences among stakeholder perspectives.

The relationships among the analytical themes were examined iteratively to determine how governance processes were associated with the integration of environmental, social, economic, and institutional sustainability. The final conceptual interpretation was developed only after the empirical patterns had been examined across stakeholder groups and data sources. Accordingly, the Integrated Governance–Sustainability Framework (IGSF) was treated as an empirically informed outcome of the analysis rather than as a predetermined model.

Figure 1 presents the initial conceptual framework that guided the study. The framework positions the post-disaster tourism setting as the contextual foundation in which governance and sustainability processes occur. The initial framework considers disaster-related landscape transformation, environmental recovery, community conditions, and heritage and memory as contextual characteristics relevant to destination management.

At the analytical centre of the framework is governance capacity, which is initially examined through three dimensions: stakeholder engagement, institutional capacity, and adaptive governance. Stakeholder engagement concerns participation, inclusiveness, transparency, and communication among relevant actors. Institutional capacity concerns institutional responsibilities, policy implementation, resource availability, and organizational learning. Adaptive governance concerns flexibility, responsiveness, learning, adjustment, and risk management in response to changing destination conditions.

The framework also initially considers sustainability through environmental, social, economic, and institutional dimensions. Environmental sustainability concerns the maintenance and recovery of ecological resources. Social sustainability concerns community participation, welfare, and social inclusion. Economic sustainability concerns local economic opportunities and the distribution of tourism-related benefits. Institutional sustainability concerns continuity, coordination, policy implementation, and the ability of institutions to maintain destination-management functions.

The framework was used as a sensitizing framework rather than a predetermined model to be confirmed by the empirical data. Accordingly, the relationships presented in Figure 1 were treated as initial analytical expectations. During data collection and analysis, empirical evidence that supported, challenged, extended, or contradicted these expectations was retained for further examination. The empirically refined relationships among governance capacity and sustainability dimensions are presented in the Results and Discussion sections.

Result and Discussion

General Characteristics of Lusi Island and the Tlocor Tourism System

Lusi Island is located in Jabon District, Sidoarjo Regency, East Java, at the mouth of the Porong River. Unlike conventional coastal destinations, Lusi Island was not formed as a natural island but emerged through the accumulation of Sidoarjo mudflow materials transported through the Porong River. The formation of the island was followed by dredging and environmental rehabilitation, particularly through mangrove planting, before management of the area was transferred to the Ministry of Marine Affairs and Fisheries (KKP) in 2015. The transformation from a post-disaster landscape into a mangrove-based tourism area has subsequently given Lusi Island multiple functions, including conservation, environmental education, research, fisheries, and tourism.

The tourism system of Lusi Island is closely connected to Tlocor Marine Tourism in Tlocor Hamlet, Kedungpandan Village. Tlocor functions as the principal gateway and supporting area for Lusi Island because visitors must first arrive at Tlocor Pier before travelling to the island by boat. Consequently, the two areas form an interconnected tourism system despite being managed under different institutional authorities. Tourism activities at Tlocor include ticketing, parking, transportation, trading, and visitor services, whereas Lusi Island functions primarily as the destination area where visitors experience the mangrove ecosystem, coastal landscape, and post-disaster tourism characteristics.

Field observations identified several facilities on Lusi Island, including gazebos, a pier, a building used for meetings or accommodation, a clean-water installation, and a KKP supervisory facility. Supporting facilities are also available in Tlocor, including parking areas, MSME kiosks, a Tourism Information Center (TIC), a boat garage, tourism icons, and transportation facilities. However, several facilities have not been utilized or maintained optimally. The TIC does not operate at full capacity because no permanent staff are assigned, while the rescue boat provided for the destination has not been operated because its technical condition is not yet adequate.

Figure 2 shows that visitor activity within the Tlocor tourism area and illustrates the role of the gateway area in supporting the Lusi Island tourism system. The field report indicates that visitors pass through Tlocor before continuing to Lusi Island, making visitor movement in Tlocor an important component of the overall destination system.

Lusi Island as a Post-Disaster Dark Tourism Destination

The empirical findings indicate that the dark tourism character of Lusi Island (Figure. 3) is primarily associated with the history of the Sidoarjo mudflow disaster and the subsequent transformation of the landscape. The formation of the island itself constitutes an important element of the visitor experience because the physical landscape reflects a process of disaster, sedimentation, environmental rehabilitation, and tourism development.

Pak Buhasan explained that Lusi Island was formed through the accumulation of mud material transported through the Porong River. This historical account is also communicated to visitors during boat journeys to the island. The finding indicates that local tourism actors contribute to the transmission of destination narratives through direct interaction with visitors. Thus, the historical significance of Lusi Island is not conveyed exclusively through formal interpretation facilities but also through community-based interaction.

Field observations further identified several visitor activities, including viewing the coastal landscape, observing mangrove vegetation, walking around the destination, taking photographs, resting in gazebos, and receiving information concerning the history and environmental recovery of the island. These activities demonstrate that the tourism experience combines recreational, educational, conservation, and historical elements.

The post-disaster character of Lusi Island is therefore reflected not simply in its historical origin but in the continuing transformation of the landscape. The destination represents a sequence of disaster, environmental change, ecological rehabilitation, and tourism development. This transformation forms an important component of destination identity and provides the contextual basis for integrating dark tourism with environmental and community-oriented tourism.

Visitor Numbers and Tourism Activity

Tlocor Marine Tourism serves as the principal gateway to Lusi Island. Because visitors travelling to Lusi Island must cross from Tlocor Pier by boat, visitor statistics from Tlocor Marine Tourism provide an empirical indication of tourism dynamics within the wider Tlocor–Lusi Island system. The visitor and revenue data obtained from BUMDes Kedungpandan are presented below.

Table 2 shows substantial fluctuations in visitor numbers. Visitor arrivals increased from 102,621 in 2019 to 119,119 in 2020, before declining to 90,504 in 2021. Visitor numbers subsequently decreased to 44,656 in 2023, 28,674 through June 2024, and 3,308 in the available 2025 records. The decline indicates that tourism activity has not followed a stable growth trajectory.



Figure 2. Visitor Activities at Tlocor Marine Tourism–Lusi Island
Source: Researcher documentation, 2026



Figure 3. Lusi Island
Source: Researcher documentation, 2026

Table 2. Visitor Numbers and Gross Revenue of Tlocor Marine Tourism

Year	Visitor Numbers	Gross Revenue
2019	102.621	Rp477.681.626
2020	119.119	Rp922.639.000
2021	90.504	Rp910.095.000

Year	Visitor Numbers	Gross Revenue
2022	-	-
2023	44.656	-
2024*	28.674	-
2025	3.308	-

Source: BUMDes Kedungpandan, processed by the researchers, 2026.
Note: 2024 data represent cumulative records through June, while 2025 data represent the monthly records available in the document. Revenue data were available only for 2019–2021.



Figure 4. Three Boats Provided by Tlocor Marine Tourism
Source: Researcher documentation, 2026.

Table 3. Stakeholder Involvement in Lusi Island–Tlocor Tourism Development

Stakeholder	Form of Involvement
Ministry of Marine Affairs and Fisheries (KKP)	Management of Lusi Island and mangrove conservation.
BPLS	Development of access infrastructure.
BBWS Brantas	Authority and asset-related role in the Tlocor area.
DISPORAPAR Sidoarjo Regency	TIC, parking area, tourism facilities, supporting transportation, rescue boat, and road improvement.
Pasmar 2	Area arrangement through the Kampung Bahari Nusantara programme.
Directorate General of Sea Transportation	Boat operator legality and SKK certification.
Village Government	Support for BUMDes and local economic development.
BUMDes Kedungpandan	Business management and MSME/kiosk management.
Pokdarwis	Tourism operations and boat transportation.
Local community	Boat operation, MSMEs, tourism services, and local historical narratives.
PLN	Electricity infrastructure support.
Higher education institutions	Community empowerment, research, and assistance.

Source: Researchers' analysis, 2026.

The interview findings provide further explanation of the implications of these fluctuations for local tourism activities. Pak Buhasan reported that tourism activity remained relatively busy from late 2022 to early 2023, when boat crossings could reach approximately 25–40 trips on Sundays. However, since April 2023, declining visitor numbers have reduced demand for boat transportation. He explained, “Since April 2023, the boat operators usually work odd jobs elsewhere.” Pak Kasiono similarly reported that BUMDes faced financial pressure because of high operational costs, stating that “income tends to stagnate or run at a deficit because operational costs are high.”

These findings demonstrate that visitor fluctuations have consequences beyond tourism statistics. Changes in visitor demand affect transportation services, MSME activity, BUMDes revenue, and the continuity of tourism-related livelihoods. Tourism development therefore generates economic opportunities, but the stability of these opportunities remains closely associated with the capacity of the destination to maintain visitor flows.

Accessibility and Boat Transportation

Access to Lusi Island is provided exclusively through water transportation from Tlocor Pier. Field observations identified three boats operating as the principal transportation facilities. The crossing takes approximately 30 minutes and costs IDR 25,000 per person. During periods of high visitation, visitors may need to wait because of limited transportation capacity (see Figure 4).

The boat service has both transportation and socio-economic functions. Visitors depend on the service to reach Lusi Island, while residents use their boat-operating skills as a source of tourism-related income. The report indicates that the boats were acquired through the local tourism organisation with financing support from BUMDes Kedungpandan.

The physical environment also affects navigation. Pak Buhasan explained that navigation depends on tidal conditions and that operators monitor water conditions through the lunar calendar. He reported that the waterway has become increasingly shallow because of continuing sedimentation, creating difficulties for boat movement during low tide. Pak Kasiono similarly reported that the route to Lusi Island has become shallower, affecting boat access during periods of low

water.

The evidence indicates that transportation accessibility is therefore directly connected to environmental conditions. The tourism system depends on boat transportation, while boat transportation itself depends on the changing physical characteristics of the Porong River and surrounding coastal environment.

Environmental Sustainability

Environmental sustainability at Lusi Island is closely associated with the rehabilitation of a post-disaster landscape. Following the formation of the island through sedimentation, rehabilitation activities included dredging and mangrove planting. Field observations show that mangrove vegetation now dominates substantial areas of the island and forms an important ecological and visual element of the tourism experience.

Pak Buhasan reported that the rehabilitation process included dredging and mangrove planting undertaken by BPWS and Brantas for approximately three years. The mangrove ecosystem subsequently became an important environmental asset of Lusi Island. Visitors interact directly with this environment when moving through the island and using its tourism facilities.

The research also identified an estimated carrying capacity of approximately 360 visitors per day. This capacity indicates that tourism development needs to consider ecological limits when increasing visitor activity. The mangrove ecosystem has potential to support educational and conservation-oriented tourism, but increased visitation needs to remain compatible with environmental protection.

At the same time, environmental sustainability remains challenged by continuing physical changes. Observations and interviews identified sedimentation of the Porong River, shallowing of the navigation route, damaged embankments, and inadequate maintenance of environmental and tourism infrastructure. Pak Buhasan explained that water depth near the pier has become considerably shallower because of continuing sedimentation, while Pak Kasiono reported that damaged embankments have allowed river water to enter surrounding pond areas and affect local fish resources.

The findings consequently indicate that environmental sustainability at Lusi Island is not limited to the preservation of mangrove vegetation. It also requires continuous adaptation to sedimentation, tidal conditions, embankment deterioration, navigation constraints, and the maintenance of tourism infrastructure.

Social Sustainability and Community Participation

The development of Lusi Island has generated changes in the social and livelihood activities of communities in Tlocor and surrounding areas. Community members participate directly in tourism services through boat transportation, food and beverage businesses, visitor services, and tourism organisations.

Pak Kasiono explained that tourism has contributed to the local economy by creating opportunities for residents whose previous occupations were primarily related to fishing. He stated, “Tourism plays an important role in improving the local economy. Many fishermen have shifted their occupations to become tourism boat operators, and housewives have opportunities to sell products in the tourism area.”

The finding is supported by observations showing that boat operators, food and beverage sellers, and other local businesses are concentrated around Tlocor as the gateway to Lusi Island. The transformation of fishermen into tourism boat operators represents an adaptation of existing local skills to a changing economic environment.

Community participation has also become more organised institutionally. According to Pak Kasiono, boat transportation was initially managed independently by residents without a formal organisation. In 2016, BUMDes proposed that the service be organised under a more structured management arrangement, with boat procurement supported through BUMDesma financing.

Pak Buhasan further explained that Pokdarwis is responsible for boat-operator operations, while traders are managed through BUMDes. The organisational structure of Pokdarwis includes a chairperson, vice chairperson, secretary, treasurer, and boat operators. This indicates that tourism activities have evolved from informal community initiatives toward more structured local institutional arrangements.

Social sustainability is also reflected in the continuity of local cultural practices. Pak Kasiono explained that the community continues to conduct the annual Ruwat Dusun tradition, including the larung saji ritual in the river. The continuation of this practice indicates that tourism development has not displaced local cultural activities.

However, the sustainability of community participation is affected by tourism fluctuations. When visitor numbers declined, some boat operators returned to other occupations. Thus, community participation has expanded through tourism, but the continuity of tourism-based livelihoods remains vulnerable to changes in visitor demand.

Economic Sustainability and Local Tourism Value Chain

The findings demonstrate that tourism development has created a local economic network connecting transportation, MSMEs, BUMDes, Pokdarwis, and visitors. Boat transportation occupies a particularly strategic position because visitors cannot reach Lusi Island without using the crossing service.

The research identified nine kiosks around Tlocor that provide food, beverages, and visitor needs. Some are privately managed, while others are associated with BUMDes and Pokdarwis. Pak Buhasan explained that “there are nine kiosks managed by BUMDes, some privately owned and some also managed by Pokdarwis.”

This arrangement indicates the emergence of a local tourism value chain in which visitor expenditure is distributed across several local economic activities. Visitors contribute to parking services, food and beverage purchases, ticketing, boat transportation, and other services before reaching Lusi Island.

Nevertheless, the economic sustainability of this system remains dependent on visitor activity. The decline in visitor numbers has reduced boat crossings and affected local businesses. The findings therefore demonstrate a tension between tourism as a mechanism for livelihood diversification and tourism as a source of economic vulnerability when visitor demand becomes unstable.

The economic dimension should consequently not be assessed only through visitor numbers or gross revenue. The findings indicate that long-term economic sustainability also depends on the capacity of BUMDes, Pokdarwis, MSMEs, and local communities to maintain economic activity during periods of declining visitation.

Stakeholder Engagement and Institutional Capacity

The research identified extensive stakeholder involvement in the development of Lusi Island and Tlocor Marine Tourism. The actors include national and regional government institutions, village institutions, BUMDes, Pokdarwis, local communities, private or state-owned organisations, and higher education institutions. Each stakeholder contributes different resources, responsibilities, infrastructure, administrative functions, or community-based services (see Table 3).

Table 3 demonstrates that destination development involves a relatively broad network of stakeholders. BPLS contributed to access development, Pasmar 2 supported area arrangement, the Directorate General of Sea Transportation provided administrative legality for boat operators, DISPORAPAR supplied tourism facilities, BUMDes supported local businesses, and Pokdarwis managed tourism operations. Higher education institutions also contributed through community empowerment programmes.

However, the findings indicate that the existence of many stakeholders does not automatically produce integrated governance. Lusi Island is under KKP authority, whereas Tlocor is associated with BBWS Brantas assets and tourism services are operated by Pokdarwis and BUMDes. The functional relationship between the core destination and gateway area is therefore stronger than the institutional integration between the organisations responsible for them.

The interview with Pak Buhasan confirms this institutional differentiation. He explained that after dredging and mangrove rehabilitation, management of Lusi Island was transferred to KKP in 2015. At the gateway, however, Pokdarwis and BUMDes manage different components of tourism operations, with Pokdarwis responsible for boat operators and BUMDes managing traders.

The research further identified several examples of policy output–policy outcome gaps. The TIC established by DISPORAPAR has not operated optimally because it does not have permanent personnel. The rescue boat provided for tourism activities has also not been operated because its technical condition is inadequate. Similarly, equipment provided through a university community empowerment programme for local drinking-water production could not be optimally used because local water salinity did not match the specifications of the equipment.

These findings suggest that the principal institutional challenge is not the absence of stakeholder involvement but the difficulty of translating multiple contributions into joint and sustained action.

Adaptive Governance in a Changing Socio-Ecological Environment

Adaptive responses emerged particularly clearly in relation to environmental and operational conditions. Boat operators adjust crossing activities according to tidal conditions, while destination users respond to changing accessibility and water levels. Pak Buhasan explained that navigation is strongly dependent on tidal conditions and that operators monitor these conditions before conducting crossings.

However, these adaptations remain predominantly operational rather than institutionalised within a long-term governance mechanism. Environmental pressures such as sedimentation, changing river morphology, damaged embankments, and fluctuating visitor numbers require continuous adjustment, but institutional fragmentation and limited resources constrain the development of a systematic adaptive strategy.

The findings therefore support adaptive governance as an empirical dimension of governance capacity, but with an important qualification: adaptation at Lusi Island is currently more visible through practical responses by local actors than through an integrated institutional learning system.

Integrated Governance–Sustainability Findings

Cross-analysis of the findings indicates that environmental, social, economic, and institutional sustainability are strongly interconnected. Mangrove conservation provides an environmental foundation for tourism, while community participation provides tourism services and local livelihoods. Visitor activity generates economic opportunities, but declining visitation affects the sustainability of these livelihoods. Institutional arrangements determine whether environmental, social, and economic activities can be coordinated and sustained.

Three governance-capacity dimensions emerged from this empirical pattern: stakeholder engagement, institutional capacity, and adaptive governance. Stakeholder engagement is evident in the participation of government institutions, local organisations, communities, and tourism actors. Institutional capacity is reflected in the distribution of responsibilities, infrastructure provision, organisational arrangements, and resource mobilisation. Adaptive governance is reflected in practical responses to environmental and tourism changes.

At the same time, the evidence reveals uneven development across these dimensions. Local stakeholders participate extensively in operational activities but have more limited influence over strategic planning. Institutions have contributed substantial infrastructure and programmes, but fragmented authority and weak coordination reduce continuity. Local actors demonstrate adaptive practices, but these responses have not yet been consistently incorporated into an integrated long-term governance system.

The empirical findings therefore indicate that governance capacity should not be understood simply as the number of participating institutions. Rather, it concerns the ability to connect stakeholder participation, institutional responsibilities, resources, and adaptive responses into coordinated destination management.

Empirically Informed Integrated Governance–Sustainability Framework

The empirical findings provide the basis for the Integrated Governance–Sustainability Framework (IGSF). The framework positions governance capacity as an enabling mechanism connecting the post-disaster dark tourism context of Lusi Island with environmental, social, economic, and institutional sustainability.

The framework is grounded in three interrelated governance dimensions. Stakeholder engagement concerns participation, communication, local knowledge, and involvement in tourism and environmental activities. Institutional capacity concerns the distribution of responsibilities, implementation of programmes, availability and utilisation of resources, and coordination among institutions. Adaptive governance concerns the ability of stakeholders and institutions to respond to environmental changes, tourism fluctuations, and emerging operational problems.

The sustainability dimensions are similarly interconnected. Environmental sustainability concerns mangrove conservation, sedimentation, ecological protection, and carrying capacity. Social sustainability concerns community participation, cultural continuity, local knowledge, and community-based tourism. Economic sustainability concerns local livelihoods, MSMEs, boat transportation, BUMDes, and tourism-related income. Institutional sustainability concerns coordination, authority, programme continuity, infrastructure utilisation, and long-term governance arrangements.

The findings therefore suggest that the central challenge of Lusi Island is not a lack of tourism resources or stakeholder involvement, but limited integration among existing actors, resources, policies, and destination functions. The IGSF consequently treats governance capacity as an enabling institutional capability through which the post-disaster tourism context can be connected with multidimensional sustainability.

Importantly, the framework is presented as an empirically informed and proposed framework, rather than a validated causal model. The evidence supports the existence of relationships among governance capacity and sustainability dimensions within the case, but further comparative and longitudinal research would be required to establish whether these relationships can be generalised beyond Lusi Island.

Governance Capacity as an Enabling Institutional Capability

The findings indicate that governance capacity at Lusi Island is better understood as an integrated institutional capability than as the mere presence of multiple stakeholders or formal organisations. The destination involves government institutions, KKP, local government, BUMDes, Pokdarwis, boat operators, MSMEs, local communities, and other supporting actors. However, the presence of these actors has not automatically produced an integrated governance

arrangement. The empirical evidence shows that stakeholder involvement is relatively strong in operational tourism activities. At the same time, authority over strategic planning, infrastructure, programme continuity, and destination management remains distributed across institutions with different mandates. This distinction is important because stakeholder participation and governance capacity are related but analytically different. Stakeholder engagement concerns the extent to which relevant actors participate, communicate, exchange knowledge, and contribute to tourism activities. In contrast, governance capacity concerns the institutional ability to translate these interactions into coordinated and sustained management processes. This interpretation extends the stakeholder-oriented perspective of sustainable tourism, which emphasises the importance of stakeholder relationships and shared interests, by showing that participation alone does not ensure institutional coherence (Byrd, 2007; Nurranto, 2026).

The Lusi Island case therefore qualifies the assumption that greater stakeholder participation necessarily produces better destination governance. Local actors have developed substantial operational roles through boat transportation, MSME activities, Pokdarwis, environmental maintenance, and the transmission of local historical narratives. Nevertheless, their influence over strategic decision-making remains more limited. The case consequently demonstrates a difference between participation in implementation and participation in governance. This finding complements previous research that emphasises community participation and collaborative management in tourism development (Handayani et al., 2023; Hariadi et al., 2022; Lekatompessy et al., 2023). At the same time, it suggests that collaboration should not be evaluated only from the number of actors involved or the existence of cooperative activities. More important is whether those relationships provide meaningful opportunities for actors to influence decisions, coordinate resources, and maintain continuity across programmes.

The distinction also clarifies the analytical boundary between the three dimensions of governance capacity used in this study. Stakeholder engagement refers primarily to interaction, participation, communication, inclusiveness, and the involvement of actors in tourism activities and decision processes. Institutional capacity refers to the ability of organisations and institutional arrangements to define responsibilities, coordinate programmes, mobilise resources, implement policies, and maintain accountability. Adaptive governance refers to the ability to adjust management responses when environmental, economic, or tourism conditions change. Coordination therefore has different meanings across these dimensions: it represents interaction and negotiation when analysed as stakeholder engagement, formal role alignment and programme implementation when analysed as institutional capacity, and adjustment based on changing conditions when analysed as adaptive governance. This distinction prevents governance capacity from becoming a broad label that simply reproduces the concept of collaboration (Handayani et al., 2023; Lekatompessy et al., 2023; Megananda & Indartuti, 2023).

Institutional Capacity and Fragmented Destination Authority

The strongest institutional challenge identified in the case is not the absence of institutions but the fragmentation of authority across the Lusi Island–Tlocor tourism system. Lusi Island functions as the principal destination area under KKP authority, while Tlocor serves as the gateway where ticketing, parking, transportation, trading, and visitor services are organised through local institutions, including BUMDes and Pokdarwis. This arrangement creates functional interdependence between the two areas, but their institutional boundaries are not accompanied by an equally strong mechanism for integrated destination management. The findings therefore support previous research showing that tourism development requires institutional coordination and collaborative arrangements among actors with different responsibilities (Allyreza & Rahmi Winangsih, 2023; Megananda & Indartuti, 2023). However, the Lusi Island case demonstrates more specifically how institutional fragmentation can persist even when collaborative activities already exist.

The evidence of underutilised facilities illustrates this institutional problem more clearly than the mere existence of formal organisations. The Tourism Information Center (TIC) has been provided but does not operate optimally because it lacks permanent personnel. Similarly, the rescue boat has not been fully operational because of technical limitations, while water-processing equipment provided through university assistance could not be optimally utilised because its specifications did not correspond to local water salinity. These conditions indicate a gap between policy or programme outputs and operational outcomes. Infrastructure provision has occurred, but the institutional arrangements required for staffing, maintenance, technical adaptation, financing, and continued operation have not always followed. Thus, institutional capacity should not be equated with the number of programmes or facilities produced. Rather, its relevance lies in whether institutions can sustain the use and coordination of those outputs over time.

This finding provides a more precise interpretation of the relationship between stakeholder engagement and sustainability. Local communities and tourism organisations can continue operating boats, kiosks, and tourism services even when institutional coordination is incomplete. However, these activities remain vulnerable when broader problems require joint action across institutional boundaries. The difficulty of maintaining infrastructure, responding to navigation problems, integrating tourism promotion, and sustaining programmes demonstrates that local initiative can compensate for institutional limitations only to a certain extent. The implication is not that local participation is ineffective, but that participation requires an institutional environment capable of converting local contributions into coordinated destination management. This interpretation extends the emphasis on community participation and BUMDes in tourism development by demonstrating that local institutional actors also depend on wider inter-organisational arrangements to sustain tourism benefits (Christy & Hardjati, 2025; Hariadi et al., 2022).

Adaptive Governance under Post-Disaster Environmental Conditions

Adaptive governance becomes particularly important because Lusi Island is not a physically stable tourism environment. Continuing sedimentation, shallowing of the navigation route, tidal fluctuations, and damaged embankments influence access, tourism operations, and surrounding economic activities. Boat operators adjust crossing activities according to tidal conditions, while mangrove rehabilitation and other environmental activities continue alongside tourism development. These practices demonstrate the existence of operational adaptation, but the findings do not provide sufficient evidence to claim that a fully institutionalised adaptive governance system has already been established. Instead, adaptation remains predominantly practical and reactive, particularly when local actors respond to immediate environmental or operational problems.

This distinction is important because adaptive governance should involve more than responding to change after a problem occurs. In the Lusi Island case, the available evidence shows adjustments in daily operations, but there is more limited evidence of recurrent monitoring systems, formal contingency planning, delegated adaptive authority, or institutionalised learning routines. Consequently, the study interprets adaptive governance as an emerging governance capacity rather than an established institutional condition. This interpretation is consistent with research emphasising flexibility, institutional

learning, and responsiveness in tourism and disaster-related contexts (Cheng et al., 2025; Kelman & Dodds, 2023). The contribution of the Lusi Island case is to show that adaptive capacity cannot be separated from institutional capacity: local actors may recognise environmental changes, but their ability to respond systematically depends on access to resources, authority, infrastructure, and inter-organisational coordination.

The environmental conditions also demonstrate that adaptation involves trade-offs between tourism accessibility, economic activity, and environmental management. Sedimentation can make the navigation route shallower and thereby increase operational difficulties for boat transportation, while damaged embankments may affect surrounding pond areas and local fish resources. At the same time, tourism depends on continued environmental quality and access to the island. Consequently, environmental sustainability cannot be pursued independently from the social and economic functions of the destination. The case therefore supports the view that post-disaster tourism requires governance arrangements capable of balancing environmental recovery, community livelihoods, and tourism development rather than treating these objectives as separate programmes (Cheng et al., 2025; Kelman & Dodds, 2023).

Sustainability Integration through Governance Capacity

The findings further indicate that environmental, social, economic, and institutional sustainability are empirically interconnected at Lusi Island. Mangrove rehabilitation provides an environmental function while simultaneously supporting tourism, environmental education, and the destination's identity. Community involvement in boat transportation and tourism services provides livelihood opportunities, while the continuity of tourism activities depends on the environmental and infrastructural conditions that enable visitor access. Similarly, institutional arrangements through BUMDes and Pokdarwis organise economic activities and tourism operations, but their effectiveness is affected by visitor fluctuations and operational costs. Sustainability therefore emerges through interactions among different dimensions rather than through independent sectoral programmes.

The economic evidence illustrates this interdependence particularly clearly. Tourism has created livelihood diversification for residents, including fishermen who have shifted into tourism boat operations and households that participate in trading activities. Nine kiosks around Tlocor provide additional economic opportunities through food, beverages, and visitor-related services. However, these benefits remain highly dependent on tourism demand. Visitor numbers declined substantially after 2020, reaching 44,656 in 2023, 28,674 through June 2024, and 3,308 in the available 2025 records. The decline was accompanied by reduced boat activity, and some boat operators returned to other forms of employment. This evidence indicates that local economic sustainability is not secured simply because tourism has generated new occupations; it also depends on the institutional and infrastructural capacity to maintain destination attractiveness and tourism continuity.

This finding complements multidimensional approaches to destination development that recognise economic, political, socio-cultural, technological, and environmental factors as interconnected (Salsabila & Eddyono, 2026). The present case, however, places greater analytical emphasis on governance as the connecting condition among these sustainability dimensions. Environmental programmes may continue without strong economic performance, and local tourism businesses may continue despite institutional fragmentation, but the long-term integration of these activities requires mechanisms that connect responsibilities, resources, participation, and adaptation. In this sense, governance capacity is not treated as another sustainability outcome. It is proposed as the institutional condition through which different sustainability objectives can be coordinated within a complex destination.

Lusi Island as a Post-Disaster Tourism and Dark Tourism Context

The findings also suggest that Lusi Island should be understood cautiously as a post-disaster tourism destination with dark tourism characteristics, rather than as a conventional coastal tourism destination. Its physical landscape originated from the sedimentation associated with the Sidoarjo mudflow disaster, and the history of this transformation is incorporated into visitor experiences through local narratives communicated by boat operators and other tourism actors. Visitors encounter a landscape shaped by disaster, environmental transformation, mangrove rehabilitation, and subsequent tourism development. These characteristics connect the destination to the broader post-disaster and dark tourism literature, which highlights the relationship among disaster landscapes, memory, interpretation, recovery, and tourism experience (Cai et al., 2022; Shekhar & Valeri, 2022).

Nevertheless, the findings also indicate that the disaster narrative has not yet been fully institutionalised through formal interpretation facilities or a comprehensive destination narrative. Historical information is transmitted substantially through direct interaction between visitors and local tourism actors, particularly boat operators. This condition is significant because it positions local communities not only as service providers but also as informal interpreters of the destination's post-disaster history. At the same time, it limits the extent to which Lusi Island can be characterised as a formally developed dark tourism destination. The case therefore qualifies existing dark tourism perspectives by showing that the post-disaster identity of a destination may emerge through everyday local practices rather than through formal memorial infrastructure alone. This observation is consistent with the broader literature that recognises the importance of interpretation, representation, and ethical engagement in disaster-related tourism (Cai et al., 2022; Kelman & Dodds, 2023; Shekhar & Valeri, 2022).

From Stakeholder Collaboration to the Proposed IGSF

The central conceptual implication of the findings is that stakeholder engagement, institutional capacity, and adaptive governance should be treated as analytically distinct but interdependent dimensions of governance capacity. Stakeholder engagement provides opportunities for local knowledge, participation, communication, and collective involvement. Institutional capacity determines whether these relationships can be organised through responsibilities, resources, programmes, and accountability. Adaptive governance concerns whether these arrangements can be adjusted when environmental and tourism conditions change. The evidence from Lusi Island demonstrates the relevance of all three dimensions, but it also shows that their interaction is incomplete. Stakeholder participation is relatively visible, institutional arrangements exist but remain fragmented, and adaptive practices occur but are predominantly reactive. The resulting governance capacity should therefore be understood as partial and developing, rather than as a fully consolidated system.

This interpretation provides the empirical basis for the proposed Integrated Governance–Sustainability Framework (IGSF). The framework should not be interpreted as a validated causal model. Rather, it represents an empirically informed proposition derived from the relationships observed in the Lusi Island case. The study provides evidence that stakeholder engagement, institutional arrangements, and adaptive responses are repeatedly associated with the implementation and continuity of environmental, social, economic, and

institutional activities. However, the single-case qualitative design does not establish causal effects or demonstrate that the same relationships will operate identically in other destinations. The IGSF is therefore more appropriately positioned as a conceptual explanation that requires further examination across different post-disaster tourism contexts.

The proposed framework also differs from approaches that primarily treat governance as one component of sustainable tourism assessment. Existing tourism governance research has established the importance of stakeholder participation, institutional coordination, and collaborative arrangements (Byrd, 2007; Handayani et al., 2023; Lekatompessy et al., 2023; Nurranto, 2026). Similarly, destination development research recognises the need to consider multiple sustainability and competitiveness dimensions simultaneously (Salsabila & Eddyono, 2026). The distinctive proposition of the IGSF is therefore not the introduction of stakeholder collaboration, institutional coordination, or sustainability dimensions themselves. Its contribution lies in bringing these elements together within a post-disaster destination context and positioning governance capacity as the institutional capability through which sustainability dimensions can be connected. This distinction addresses the empirical condition at Lusi Island, where environmental conservation, community livelihoods, tourism operations, and institutional programmes already exist but are not yet consistently integrated through a common governance mechanism.

Theoretical and Practical Implications

The theoretical implication of the study is that sustainable tourism in post-disaster destinations should be examined not only in terms of what is sustained but also in terms of how institutional capacity enables different sustainability objectives to coexist and interact. The Lusi Island case demonstrates that environmental rehabilitation, local livelihoods, tourism activity, and institutional continuity are mutually dependent but are managed through fragmented arrangements. Governance capacity therefore provides a useful analytical lens for understanding why the existence of tourism resources and stakeholder participation does not necessarily result in integrated sustainability. This perspective extends the emphasis on stakeholder collaboration and community participation found in previous tourism governance research by directing attention toward the institutional conditions required to connect those activities over time (Byrd, 2007; Nurranto, 2026).

Practically, the findings suggest that improving Lusi Island should not be limited to additional infrastructure development or visitor promotion. Greater attention is required to clarify the respective responsibilities of KKP, the Sidoarjo Regency Government, BBWS Brantas, BUMDes, Pokdarwis, and local communities; strengthen mechanisms for joint planning and monitoring; and ensure that tourism facilities are accompanied by operational responsibilities and maintenance resources. The economic vulnerability associated with declining visitor numbers also suggests the importance of strengthening local economic resilience rather than relying solely on increasing visitor volume. At the same time, environmental changes require management arrangements that can respond to sedimentation, navigation conditions, and infrastructure damage. These implications are consistent with research emphasising institutional coordination, community participation, and sustainable local tourism management (Handayani et al., 2023) (Megananda & Indartuti, 2023) (Rahmawati et al., 2020).

Lusi Island case demonstrates that the principal challenge is not the absence of tourism potential or stakeholder involvement, but the difficulty of integrating existing capacities into a coherent and adaptive destination governance system. The destination already contains environmental assets, local knowledge, community organisations, tourism services, and institutional programmes. What remains less developed is the institutional capacity to connect these resources through sustained strategic coordination. The proposed IGSF consequently offers an empirically informed framework for interpreting this condition: post-disaster tourism characteristics create complex sustainability demands; governance capacity provides the institutional means for connecting stakeholder engagement, institutional arrangements, and adaptive responses; and sustainability integration depends on the ability of these governance dimensions to operate together. The framework should therefore be regarded as a proposed explanatory model emerging from the Lusi Island case, rather than as a universally validated governance model. Further comparative and longitudinal research would be required to assess its applicability beyond this case.

Conclusion

This study concludes that sustainable tourism development at Lusi Island is fundamentally a governance capacity challenge rather than solely a tourism development or infrastructure challenge. The findings indicate that the destination possesses important environmental, social, economic, and historical resources, but their sustainability depends on the extent to which these resources can be managed through coherent institutional arrangements. The study identifies three interrelated dimensions of governance capacity: stakeholder engagement, institutional capacity, and adaptive governance. Stakeholder engagement facilitates participation and communication among actors, institutional capacity provides the organisational basis for allocating responsibilities and resources, while adaptive governance enables management responses to changing environmental and tourism conditions. This interpretation reinforces the importance of collaborative and stakeholder-oriented governance in sustainable tourism development.

The study further concludes that the main governance constraint at Lusi Island is fragmented institutional capacity rather than a lack of stakeholders. Local communities, BUMDes, Pokdarwis, government institutions, tourism operators, and MSMEs are already involved in destination activities, but their roles are not yet consistently connected through an integrated mechanism for strategic planning, programme continuity, facility management, and adaptive decision-making. Community participation is also more evident in operational tourism activities than in strategic destination governance. Consequently, strengthening governance capacity requires moving beyond the expansion of stakeholder participation toward clearer institutional responsibilities, stronger cross-organisational coordination, and greater opportunities for local actors to contribute to strategic decisions.

The principal conceptual contribution of the study is the proposed Integrated Governance–Sustainability Framework (IGSF). The framework positions governance capacity as an institutional condition through which environmental, social, economic, and institutional sustainability can be connected within a post-disaster tourism destination. It also recognises that the governance requirements of Lusi Island are shaped by its specific context, including disaster legacy, environmental change, community livelihoods, and local historical memory. In this respect, the IGSF extends governance-oriented tourism perspectives by bringing stakeholder engagement, institutional capacity, adaptive governance, and sustainability integration into a single empirically informed framework. However, because the framework was derived from a qualitative single-

case study, it should be understood as a proposed and empirically informed framework rather than a validated causal model.

From a practical perspective, the findings indicate that governance improvement should be directed toward specific institutional mechanisms. Destination authorities and local tourism institutions should establish clearer divisions of responsibility, while inter-organisational coordination should be supported through regular joint planning, monitoring, and evaluation. BUMDes and Pokdarwis should be more systematically involved in strategic tourism planning rather than being concentrated primarily on operational activities. Facility development should also be accompanied by clear arrangements for staffing, maintenance, financing, and utilisation so that infrastructure investments can generate sustained outcomes. In response to continuing sedimentation, tidal variation, and navigation constraints, adaptive management should incorporate routine environmental observation, agreed response procedures, and periodic review involving relevant local actors. These measures are consistent with the broader principle that tourism potential requires systematic management and sustained stakeholder collaboration to produce durable benefits.

The study has several limitations that define the scope of its conclusions. First, the research was conducted as a qualitative single-case study at Lusi Island–Tlocor; therefore, the findings are context-specific and cannot be statistically generalised to other post-disaster tourism destinations. Second, the participant coverage represents selected stakeholder perspectives and does not encompass all institutions involved in the wider destination system. Third, the interpretation of qualitative evidence may be influenced by researcher judgement despite the use of triangulation and other trustworthiness procedures. Fourth, the study examines governance and sustainability qualitatively and does not independently measure ecological recovery, long-term economic performance, or causal changes in sustainability outcomes. Finally, the cross-sectional nature of the study limits the ability to determine how governance capacity and sustainability relationships evolve over longer periods. These limitations mean that the IGSF should be treated as a conceptual proposition requiring further empirical examination.

Future research should therefore examine the IGSF through comparative and longitudinal studies involving different post-disaster or environmentally dynamic tourism destinations. Such research could assess whether the three dimensions of governance capacity consistently interact in different institutional and socio-ecological settings and could combine qualitative governance analysis with longitudinal indicators of environmental, social, and economic outcomes. Further research may also examine how changes in visitor demand, institutional arrangements, and environmental conditions influence the development of adaptive governance over time. Through such validation, the proposed framework can be refined from a case-based conceptual proposition into a more robust framework for understanding governance capacity and sustainability integration in post-disaster tourism destinations.

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DECLARATIONS

Authors must provide the relevant declarations below to ensure transparency, accountability, and research integrity. Include Author Contributions, Funding, Conflict of Interest, Generative Artificial Intelligence Use, Ethics Approval and Informed Consent, and Data Availability, as applicable.

Author Contributions: LL conceptualized the study, developed the methodology, conducted the formal analysis, and prepared the original draft; DA and MM supervised the research, validated the findings, reviewed and edited the manuscript, and approved the final version.

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Ethics Approval and Informed Consent: For research involving human participants, personal or confidential data, vulnerable groups, or other activities requiring ethical oversight, provide information on ethics approval, including the name of the approving institution or ethics committee and the approval number where applicable. Confirm that informed consent was obtained where required. If not applicable to the study, this should be explicitly stated.

Data Availability Statement: Indicate whether the data supporting the findings of the study are available and, where applicable, how they can be accessed (e.g., an institutional or disciplinary repository, as supplementary material, or from the corresponding author upon reasonable request). If the data cannot be made publicly available due to ethical, legal, confidentiality, privacy, commercial, or other legitimate restrictions, state the reason clearly.

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