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A Comparative Study of Mangroves Ecotourism Policy Implementation in the Municipalities of Bato and Pandan, Catanduanes

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ABSTRACT

This study examined the implementation of mangrove ecotourism policies in the municipalities of Bato and Pandan in Catanduanes Province. Anchored on policy implementation and local governance perspectives, the research aimed to assess existing policy and legal frameworks, determine the status of implementation, identify factors affecting implementation, and develop a governance framework suited to the local context. Using a mixed-method descriptive design, the study employed documentary analysis and survey checklists administered to selected local officials and stakeholders. Findings revealed that while both municipalities possess ordinances, resolutions, and related documents supporting mangrove ecotourism, implementation remains uneven. Bato demonstrated relatively stronger institutional support and promotional efforts, whereas Pandan showed limited documentation and operational mechanisms. Common challenges identified include weak institutional coordination, limited financial and logistical resources, insufficient trained personnel, and minimal integration into municipal tourism planning. The study concluded that the presence of policies alone does not ensure effective implementation. Institutional commitment, stakeholder collaboration, and sustained support mechanisms are critical to achieving sustainable mangrove ecotourism governance. Based on the findings, a contextualized governance framework was proposed to strengthen coordination, monitoring, community engagement, and policy enforcement in both municipalities.

Keywords: *Mangrove ecotourism, policy implementation, local governance, institutional support, Catanduanes*

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INTRODUCTION

The Philippine is ranked 15th in the world and 6th in Asia in terms of mangroves coverage (Funtraveler 2017). These ecosystems are not only ecologically vital but also hold significant socio-economic and cultural value for communities. They provide nursery ground for marine species, act as natural barriers against costal hazards, and sustain livelihood through fisheries and ecotourism opportunities (Primavera 2009; Walters et al.,2008). Increasingly, mangroves are recognized as critical assets for sustainable tourism, where conservation and community development are integrated

Catanduanes is emerging as a significant ecotourism site due to its extensive mangrove ecosystems, particularly in Barangay Batalay in Bato and in the mangrove reserve areas of Pandan. The Batalay Mangrove Eco Park features reforested mangrove areas with walkways, floating cottages, and a viewing tower, serving both as a conservation site and a community-driven tourist attraction (gocatanduanes.com). Meanwhile, the Pandan Mangrove Reserve supports biodiversity, protects the coastline from storm surges, and provides ecotourism activities such as paddling, bird-watching, and firefly viewing (gocatanduanes.com). These mangrove areas also create livelihood opportunities for local residents, including boatmen, tour guides, and other members, while simultaneously contributing to disaster risk reduction given the island's exposure to typhoons (Castillo & Alave, 2020; batocatanduanes.gov.ph).

While national-level mapping in 2000 estimated the total mangrove cover of the Philippines at approximately 256,185 ha (Long & Giri, 2011), localized assessments revealed that Catanduanes harbors about 1,735 ha of classified mangrove forests (Masagca & Masagca, 1999). At the regional scale, mangroves cover in Bicol increased substantially — from 13,499 ha in 2003 to 24,953 ha in 2010 — indicating that conservation and rehabilitation efforts have had measurable impacts (Aldea, 2019)

The Philippine government has recognized the mangroves' role and has implemented policies to conserve them while promoting their economic potential through tourism. Agencies such as the Department of Environment and Natural Resources (DENR), the Department of Tourism (DOT), and local government units (LGUs) have developed frameworks aimed at balancing conservation with community-based tourism development. However, the implementation of this policies remains a challenge, as weak enforcement, conflicting interest, livelihood restrictions, and governance gaps. continue to undermine effective management (DENR,2017; Garces et al,2021).

Given these realities, the need to examine how mangroves ecotourism policies are translated into practiced become pressing. While national frameworks emphasize conservation and sustainable tourism, the actual implementation at the community level often reveals tensions between environmental protection and livelihood needs. Understanding this dynamic is essential not only for strengthening policy enforcement but also for ensuring that mangrove blue forests continue to provide both ecological services and socio-economic benefits. This study, therefore, situates itself at the intersection of governance, conservation, and community- based ecotourism, with the goal of contributing to more effective and inclusive policy implementation.

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In Catanduanes, the island is becoming a notable ecotourism destination due to its extensive mangrove forests, particularly in Barangay Batalay in Bato and in the mangrove reserve areas of Pandan. The Batalay Mangrove Eco-Park features reforested areas with walkways, floating cottages, and a viewing tower, serving as both a conservation site and a community-managed tourist attraction (gocatanduanes.com). Similarly, the Pandan Mangrove Reserve protects the coastline, supports biodiversity, and offers ecotourism activities such as paddling, bird-watching, and firefly viewing (gocatanduanes.com). These sites also provide livelihood opportunities for local residents, including boat operators, tour guides, and other community members, while contributing to disaster risk reduction in this typhoon-prone island (Castillo & Alave, 2020; batocatanduanes.gov.ph).

In Catanduanes Island, the remaining mangrove forests cover approximately 1,671.3 hectares, representing only about 0.65 percent of the country's total mangrove area (Morales et al., 2014). Despite this relatively small coverage, these ecosystems play a vital role in maintaining ecological balance and supporting local economic activities, particularly through tourism. Conserving these mangroves is therefore crucial not only for environmental protection but also for their contribution to climate change mitigation and sustainable coastal development. Coastal zones and mangrove ecosystems require careful management to maintain their ecological integrity. While growing ecotourism presents economic opportunities, it also has the potential to harm fragile environments if not properly regulated. Establishing designated ecotourism areas and applying effective management strategies can help protect biodiversity while attracting visitors responsibly.

National-level mapping in 2000 estimated the total mangrove cover of the Philippines at approximately 256,185 ha (Long & Giri, 2011), whereas localized studies show that Catanduanes harbors about 1,735 ha of classified mangrove forests (Masagca & Masagca, 1999). Regionally, mangrove coverage in Bicol increased substantially from 13,499 ha in 2003 to 24,953 ha in 2010, demonstrating that conservation and rehabilitation efforts have had measurable effects (Dadea, 2019).

The Philippine government has recognized the importance of mangroves and implemented policies to conserve them while promoting their economic potential through tourism. Agencies such as the Department of Environment and Natural Resources (DENR), the Department of Tourism (DOT), and local government units (LGUs) have established frameworks to balance ecological conservation with community-based tourism development. However, challenges such as weak enforcement, conflicting stakeholder interests, livelihood constraints, and governance gaps continue to undermine effective management (DENR, 2017; Garces et al., 2021).

Given these realities, examining how mangrove ecotourism policies are translated into practice is imperative. While national frameworks emphasize conservation and sustainable tourism, local-level implementation often reveals tensions between environmental protection and community livelihood needs. Understanding these dynamics is essential for strengthening policy enforcement and ensuring that mangrove "blue forests" continue to provide both ecological services and socio-economic benefits. This study, therefore, situates itself at the intersection of governance, conservation, and community-based ecotourism, aiming to contribute to more effective and inclusive policy implementation in Catanduanes.

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Mangrove ecosystem, often described as "blue forests" provide invaluable ecological and socio-economic services. In the Philippines, they not only function as natural barriers against climate hazard and biodiversity reservoirs but also as potentials drivers of sustainable livelihoods through ecotourism. Despite this recognition, the translation of mangrove conservation policies into effective and inclusive implementation remains a persistent challenge, weak enforcement, conflicting stakeholder interest, livelihood restrictions, and governance gaps hinder the achievement of intended outcomes, leaving many communities vulnerable and ecosystem at risk.

This study is important because it addresses the intersection of policy, governance, and community-based ecotourism. While national framework and institutional guidelines from agencies such as the Department of Environment and Natural Resources (DENR) and the Department of Tourism (DOT) emphasize sustainability. There is limited empirical research on how these polices are carried out at the local level.by focusing on mangrove ecotourism sites, this research provided insights into how policies are interpreted, adapted, or resisted by communities, local governments and other stakeholders.

Moreover, the study contributed both to theory and practice. On the academic side it enriches the literature on policy implementation in the context of natural resources management and ecotourism governance. On the practical side, it offered evidence-based recommendations that can inform decision making by policymakers, strengthen local government capacities, and empower communities to take a more active role in managing their blue forest resources.

Finally, the research caries particular significance for Catanduanes Province, where mangrove ecotourism such as the Batalay Mangroves Eco-Park and and the Pandan Mangrove Reserve, faces governance challenges that threaten its long- term sustainability. By situating Catanduanes alongside established and emerging mangrove ecotourism sites across the Philippines, the study not only contributed to national discourse but also provided locally grounded insights that can guide and strengthen ecotourism development in the province and critically assess factors that explain success or failure.

Ultimately, this research underscored the urgency of building governance framework that's balance ecological sustainability with socio-economic development ensuring that mangrove ecotourism contributes meaningfully to both conservation and community well-being.

Current study showed that mangroves ecotourism has become a popular strategy for protecting the environment while also supporting the income of coastal community. In Southeast Asia, Activities such as boat paddling, kayaking, birdwatching, and even mangrove planting are now widely offered in tourism programs. These do not give only visitors unique experiences but also help raise awareness about the importance of mangroves and community involvement (Blanton et al., 2022). On the other hand, some scholars warned that if their activity are not managed properly, they may result in negative outcomes such us damage to ecosystem, commercialization of natural resources, and uniquely sharing of benefits (Frias 2017). The country such us Indonesia, Malaysia, and Thailand highlight that the success of mangrove tourism depends a lot on access, community involvement, and proper facilities. Without these, project often fail to last or to truly benefits local residents (Hakim, Siswanto, & Nakagoshi,2017: Kuniawati et al.,2023). At the same time, researcher argue that cooperation between the government, private sector, and

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communities is important so that decision-making and management responsibilities are shared fairly (Purwanti et al.,2022).

In short International studies agreed that mangrove ecotourism can bring both conservation and development benefits, but its long-term success depends on strong governance, clear support from institution, and making sure that communities are active participants rather than by standers.

LITERATURE REVIEW

In the Philippines, mangrove ecosystems are recognized for their remarkable ecological diversity, harboring more than 40 recorded species throughout the archipelago (Primavera, 2009). These forests provide critical ecological services, including coastal protection, fisheries support, biodiversity conservation, and carbon sequestration, thereby playing an indispensable role in climate change mitigation and adaptation (Kathiresan, 2012; Brander et al., 2012; Manafe, Kaho, & Risamasu, 2016; Sidik et al., 2018; Rizal, Sahidin, & Herawati, 2018). Despite their significance, mangrove ecosystems are increasingly threatened by anthropogenic pressures such as unsustainable land-use practices, logging, reclamation, and human encroachment, which compromise both ecological integrity and the livelihoods of communities dependent on them (Malik, Fensholt, & Mertz, 2015; Hafsar, 2018; Adegboyega et al., 2019). Scientific monitoring and structured management approaches are essential to preserve these ecosystems, ensuring they continue to provide both environmental and socio-economic benefits (Dharmawan et al., 2020; Melana et al., 2000).

To safeguard mangrove ecosystems in the Philippines, several national laws and policies have been enacted. Among the most notable are the Fisheries Code (RA 8550, later amended by RA 10654), the National Integrated Protected Areas System Act (RA 7586, later amended by RA 11038), and the Ecotourism Act, which collectively seek to regulate resource utilization, protect biodiversity, and promote sustainable livelihoods for coastal communities. However, studies have identified recurring challenges in policy implementation, including weak law enforcement, overlapping mandates among agencies, and limited participation of local residents in decision-making processes (Garces et al., 2017; DENR, 2017). These challenges often result in gaps between policy intention and actual outcomes on the ground, emphasizing the need for stronger institutional coordination and stakeholder engagement.

At the international level, research emphasizes the importance of robust institutional frameworks and active community participation for the sustainability of mangrove ecotourism initiatives. Purwani et al. (2020) introduced an institutional reinforcement model in Indonesia, demonstrating that sustainability can only be achieved when stakeholders contribute across ecological, economic, social, institutional, and technological dimensions. Their evaluation of the Crencrong Mangrove Ecotourism area in East Java revealed a sustainability rating of 76.20, with the ecological dimension scoring the highest due to low pollution levels, while social dimensions remained comparatively weak. Similarly, Hakim, Siswando, and Nakagoshi (2017) stressed that mangrove ecotourism success relies on accessibility, active community involvement, ecosystem health, and the development of well-designed tourism programs. These Southeast

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Asian cases underscore that governance structures and grassroots participation are equally critical in balancing tourism development with environmental conservation.

Within the Philippine context, several well-documented cases illustrate the complex interactions among ecological preservation, economic development, and governance structures in mangrove ecotourism. Puerto Princesa City is widely regarded as a pioneer in mangrove-based ecotourism. The Sabang Paddle Boat Mangrove Tour integrates conservation, environmental education, and livelihood opportunities, with women's groups playing crucial roles in operational management. Scholars have attributed the success of this initiative to strong local government unit (LGU) support, integration into broader municipal development planning, and consistent enforcement of local ordinances on cleanliness and waste management (Bennagen, 2016; Cuevas, 2020; Manalo, 2016). The experiences of Puerto Princesa demonstrate how political will, effective policy enforcement, and community-based management can yield substantial economic and environmental benefits, positioning the city as a national and international model of sustainable ecotourism.

Similarly, the Bakhawan Eco-Park in Aklan, managed by the Kalibo Save Mangrove Association (KASAMA) since the 1990s, exemplifies the integration of ecological rehabilitation, environmental education, and livelihood programs. Activities such as aquasilviculture and handicraft-making provide income for community members while revenues from tourism directly fund conservation efforts, ensuring both ecological and socio-economic sustainability (Sajise, 2015; Cruz, 2018). Likewise, the Del Carmen Mangroves Ecotourism Park in Siargao highlights the role of strategic branding and partnerships in attracting tourists through paddleboat and kayaking tours. Supported by LGUs, the Department of Environment and Natural Resources (DENR), and private sector partners, the initiative has become a flagship ecotourism program. Nonetheless, research cautions against risks associated with over-commercialization, poor waste management, and pressures from mass tourism, emphasizing the need for balanced growth (Perez & Tonco, 2021).

Emerging initiatives can also be observed in Catanduanes, such as the Batalay Mangrove Eco-Park in Bato. Early studies by Moralez et al. (2014) identified potential ecotourism sites in the province through the use of mapping, interviews, and tourist counts. Their findings suggested that ecotourism could provide alternative livelihoods for coastal residents but could also pose risks to marine ecosystems if not properly managed. More recent reports from the Provincial Environmental and Natural Resources Office (PENRO) indicate that local communities are exploring ecotourism as a livelihood option, particularly in response to fishing restrictions in protected areas. However, academic research in Catanduanes remains limited, despite the province's vulnerability to typhoons and the crucial role of mangroves in disaster risk reduction (Castillo & Aldea, 2020).

Further scholarship has examined the ecological, economic, and governance dimensions of mangrove-based ecotourism across the Philippines. Morales et al. highlighted the dual nature of mangrove ecotourism in Catanduanes as both a potential economic driver and an environmental risk, advocating for regulated tourism that enhances community livelihoods while safeguarding ecosystems. Acanto's study on the Ibajay Mangroves Eco-Tourism Park in Negros Occidental emphasized the ecological and economic value of mangroves as conservation sites and livelihood sources, highlighting visitor willingness to pay and

participatory management as key to sustainability. In Bohol and Palawan, Calandang and colleagues applied the Total Economic Value (TEV) framework to demonstrate the multidimensional benefits of mangroves, encompassing biodiversity, recreational value, and ecosystem services, while also highlighting the challenges of translating these valuations into effective governance measures. Meanwhile, Masa et al. analyzed the carrying capacity of the Olo-Olo Mangrove Forest and Eco-Park in Batangas, noting that current tourist levels remain sustainable but emphasizing the critical importance of carrying capacity as a tool for planning and governance. Jayagoda's research on Puerto Princesa further underscored how strong leadership, institutional support, and community-based management transformed the city into a recognized model of sustainable mangrove ecotourism.

Other studies have expanded the discourse on governance and management of mangrove ecotourism. Manican and Samonte proposed a risk management framework in Aklan, highlighting sustainability audits, staff training, and participatory planning as essential tools to integrate conservation with community welfare. Dione et al. assessed visitor welfare in the Calatagan Mangrove Forest Conservation Park using consumer surplus analysis, concluding that ecotourism remained financially viable at current user fees. Mercado's work on the Las Piñas-Parañaque Critical Habitat and Ecotourism Area (LPPCHEA) pointed to fragmented institutional arrangements and weak inter-agency coordination, stressing the need for harmonized governance. At the local level, Brillo and Simondac-Peria examined the Tawak Adventure, Nature, and Wildlife (TANAW) Park in Laguna, demonstrating how municipal initiatives can mobilize underutilized resources for inclusive rural development.

Regional studies provided additional insight into mangrove ecotourism governance. Blanton et al. examined Southeast Asian mangrove ecotourism, emphasizing the importance of ecosystem services and equitable benefit-sharing. Opa et al. evaluated mangrove tourism on Manthehage Island, North Sulawesi, identifying zones suitable for tourism versus conservation. Similarly, Vipriyanti and colleagues in Bali highlighted the importance of investing in human resources and biodiversity assessment. Purwanti et al. confirmed sustainability challenges in Indonesia, where ecological performance was strong but social inclusion remained weak. Titisari et al. proposed a strategic model linking mangrove ecotourism with the Sustainable Development Goals (SDGs) in Riau, demonstrating the potential of integrated governance frameworks.

Philippine cases further illustrated governance and ecological functions. Dela Peña and colleagues documented a community-managed afforestation project in Palawan supporting fisheries, household needs, and ecotourism through infrastructure upgrades. Raga-as et al. measured blue carbon stocks in Bakhawan Eco-Park, linking them to climate change mitigation. Anunciado et al. highlighted avian diversity in Cabadbaran City, emphasizing its ecotourism potential, while Novalino et al. confirmed the role of bird diversity in enhancing ecotourism attractions in West Sumatra. Purihin, Gevana, and Pulhin discussed community-based mangrove management under climate change, underscoring the roles of tenure rights, institutional support, and funding continuity in sustaining local initiatives. Askar demonstrated that ecotourism designed with synergistic partnerships and ecological safeguards can enhance community resilience without compromising mangrove health.

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Collectively, these studies demonstrated that the sustainability of mangrove ecotourism depends on the interplay of ecological assessment, economic valuation, institutional coordination, and community participation. Adaptive governance is essential, balancing ecological thresholds, local livelihoods, and evolving tourism demands to ensure that mangrove ecotourism contributes meaningfully to conservation and development objectives. Within this framework, ecotourism emerges as a strategic approach to harmonize environmental protection with community development, generating socio-economic benefits while safeguarding critical coastal ecosystems (Boo, 1990, 1992; Cobbinah, 2015; Cheia, 2013; Fennell, 2015; Elliott, 2012; Tuwo, 2011).

Central to the effectiveness of mangrove ecotourism is the active participation of local communities. Engaging residents in planning, management, and governance strengthens ecological conservation, enhances socio-economic benefits, and fosters a sense of ownership and stewardship (Abdullah et al., 2013; Harto, Sidiq, & Karneli, 2021; Arkwright & Kaomaneng, 2018; Basyuni et al., 2018; Situmorang, 2018; Liu et al., 2014). Social capital, traditional knowledge, and cooperative networks are particularly influential in sustaining participatory management models. Community-based approaches also support broader development objectives, including income generation, employment, and alignment with the Sustainable Development Goals (Latif, 2018; Fistiningrum & Harini, 2021; Musa, Fozi, & Hamdan, 2020; Goh, 2015; Aye et al., 2019; Salmah et al., 2021; Tampubolon & Wulandari, 2021). Without meaningful community engagement, ecotourism initiatives risk failing to deliver both environmental and socio-economic benefits.

Equally important are policy and governance frameworks that shape outcomes in mangrove conservation and ecotourism. Coherent local policies, strong institutional support, and adequate funding are critical for effective implementation (Asyiawati & Hindersah, 2020; Fatmo, Samin, & Akhyary, 2025; Mashur et al., 2024; Erlinda et al., 2020). Fragmented governance and weak enforcement undermine ecological protection and limit community benefits. Collaborative governance models, involving government agencies, communities, and private actors, enhance policy effectiveness, encourage shared responsibility, and support sustainable development (Putri et al., 2019; Nugraha, Samin, & Septiawan, 2025; Samin, 2021; Yanuard, Samin, & Kurnianingsih, 2024; Susanto, Samin, & Subiyakto, 2024). Integration of governance strategies with the SDGs ensures environmental, social, and economic objectives are addressed concurrently (Bappeda Siak, 2019; Titisari et al., 2022).

Economic valuation of mangroves complements ecological and governance considerations. Studies highlight the substantial financial, ecological, and protective benefits of mangroves, demonstrating their contribution to local livelihoods and conservation incentives (Rizal et al., 2018; Brander et al., 2012; Nobi et al., 2021; Susilo, Takahashi, & Yabe, 2017; Yeo, Noor, & Lee, 2013). Understanding tourist behavior, market preferences, and visitor expectations is essential to align ecotourism development with sustainability goals (González, 2019; Muktaf & Zulfiana, 2018; Jaafar & Maideen, 2012; Jaafar et al., 2015; Wirakusuma, 2014; Towoliu & Takaendengan, 2015). Integrating economic valuation with strategic tourism planning allows mangrove ecosystems to be leveraged sustainably, balancing conservation objectives with community development.

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Finally, methodological rigor is critical in research on mangrove ecotourism and conservation. Qualitative frameworks, including thematic analysis and secondary data interpretation, provide systematic approaches to understanding stakeholder perspectives, policy outcomes, and ecological impacts (Creswell, 2016; Johnston, 2014). Analytical tools such as ADO-ODTWA, SWOT, IFAS/EFAS, and dynamic simulation models are widely applied to assess ecotourism potential, policy coherence, and sustainable management strategies (PHKA, 2003; Titisari et al., 2022; Massiseng et al., 2020; Prasetya, Maharani, & Rahatmawati, 2018). These methods enable evidence-based decision-making that integrates ecological, socio-economic, and governance considerations in a holistic manner.

Mangrove ecosystems worldwide have long been recognized for their ecological, economic, and social importance. Beyond their role in biodiversity conservation, mangroves provide critical ecosystem services, including shoreline stabilization, carbon sequestration, and protection against coastal hazards. However, recent research highlights the complex challenges faced by these ecosystems, particularly in the context of coastal development and human activity, which have profound implications for sustainable mangrove ecotourism.

Recent studies emphasized the urgent need for adaptive management strategies to address these challenges. For instance, Khakhim et al. (2021) examined mangrove ecosystems in the Special Region of Yogyakarta (SRY), Indonesia, where two sites are designated as both protected areas and ecotourism destinations. Their findings revealed that expanding infrastructure projects, such as the Yogyakarta International Airport, coupled with pressures from tourism, aquaculture, and sand mining, have significantly altered the coastal environment. These anthropogenic pressures compromise the ecological functions of mangroves, threaten their long-term sustainability, and potentially reduce the viability of ecotourism activities. Using a triangulated research design involving secondary data analysis, field observation, and in-depth interviews, the study highlighted that mangrove persistence is contingent upon carefully regulated spatial planning and environmental governance. This underscored the importance of regional spatial plans and adaptive management to ensure that ecotourism development and conservation objectives remain mutually supportive, particularly in areas facing rapid environmental and socio-economic change.

This case aligns with broader findings in Southeast Asia, which suggest that the sustainability of mangrove ecotourism relies not only on maintaining ecological health but also on the capacity of governance and management frameworks to adapt to evolving developmental pressures (Purwani et al., 2020; Hakim, Siswando, & Nakagoshi, 2017). Effective ecotourism management requires adaptive governance**,** strategic land-use planning**,** and inclusive stakeholder participation**,** which together safeguard ecological integrity while promoting socio-economic benefits.

Further regional studies reinforced these conclusions. Nasution et al. (n.d.) investigated the integration of environmental policies in sustainable mangrove ecotourism in Sungai Apit District, Siak Regency, Indonesia. Through stakeholder interviews, document analysis, and field observations, the study identified persistent challenges, including weak institutional coordination, limited resources, and low community participation. The authors concluded that sustainable ecotourism depends on the synergistic combination of effective policy implementation and active community engagement to balance

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environmental conservation with economic development. These findings are highly relevant for emerging mangrove ecotourism initiatives in Catanduanes, where similar governance and resource challenges have been observed.

A complementary study in Pesisir Selatan Regency, Indonesia, explored the interplay between governance, community involvement, and technology adoption in sustaining mangrove ecotourism. Using data from 395 local respondents and Structural Equation Modeling (SEM), the researchers found that strong institutional governance and active community participation significantly enhanced the sustainability of mangrove ecotourism, while the adoption of technological tools remained limited due to poor infrastructure and low digital literacy. These insights emphasize the need for integrated management strategies that combine governance, social participation, and technological innovation—lessons that can inform the development of sustainable mangrove-based ecotourism in Catanduanes.

In addition to governance and community involvement, the ecological importance of mangrove ecosystems has been extensively documented. Adani et al. (2023) highlighted that mangroves act as natural buffers against floods and coastal disasters in Indonesia, emphasizing the role of conservation in mitigating climate-related hazards. Likewise, Arifanti et al. (2022) and Arkema et al. (2023) demonstrated that mangrove restoration and management contribute to climate change mitigation through blue carbon strategies, underscoring the global significance of these ecosystems in environmental policy and climate adaptation frameworks.

Community participation remains a cornerstone of effective mangrove management. Afifah et al. (2023) documented community-based conservation efforts in the Ayah Mangrove Forest in Central Java, illustrating how local engagement in ecotourism fosters both environmental stewardship and livelihood opportunities. Efendi (2013) similarly demonstrated that community-driven initiatives in Batam enhance mangrove conservation through sustainable practices and local stewardship. These studies collectively suggested that integration of policy frameworks with local community initiatives is essential for the long-term sustainability of mangrove ecosystems (Nasution et al., 2023).

Equally critical is the governance dimension. Ahmed, Charles, and Johnson (2023) examined multi-stakeholder forums in mangrove conservation, finding that collaboration among government agencies, local communities, and private actors strengthens policy implementation and ensures equitable benefit-sharing. Regional interventions in West Java further illustrate how institutional support can positively influence mangrove management outcomes (Fatimatuzzahroh et al., 2020). Together, these findings highlighted that robust governance structures are a decisive factor in sustaining mangrove ecotourism**.**

Technological applications have also been explored as potential enhancers of sustainable mangrove ecotourism. Ali and Frew (2014) and Ali (2022) discussed the role of ICT in promoting sustainable tourism, though they noted persistent challenges such as low digital literacy and insufficient infrastructure. These findings reinforce the need for technology to be integrated within broader governance and community-based frameworks to optimize ecological and socio-economic outcomes.

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Despite these efforts, mangroves continue to face significant threats from anthropogenic pressures. Cahyaningsih et al. (2022) documented the negative impacts of deforestation and land conversion on mangrove ecosystems in Indonesia, while Curoy et al. (2022) highlighted how coastal dynamism affects mangrove conservation in Southern Thailand. Ellison (2014) similarly stressed the vulnerability of mangroves to climate change and sea-level rise, further emphasizing the urgency of integrating conservation strategies, adaptive management, and community engagement to maintain ecosystem resilience.

In synthesis, the body of research indicates that sustainable mangrove ecotourism depends on a multifaceted approach. Effective conservation requires the integration of governance frameworks, active community participation, appropriate technology, and mitigation of anthropogenic pressures**.** These insights provide a strong conceptual foundation for examining mangrove ecotourism in Catanduanes, where similar ecological, social, and governance challenges are observed. By drawing on international and regional evidence, the present study positions Catanduanes within the broader discourse on mangrove sustainability and adaptive ecotourism management, highlighting the importance of coordinated policy, community engagement, and ecological stewardship for long-term outcomes.

Mangrove ecosystems serve as critical components of coastal environments, providing essential ecological, economic, and social functions. They act as natural buffers against coastal erosion, mitigate flood risks, and serve as carbon sinks, contributing significantly to climate change mitigation (Cannicci et al., 2008; FAO, 2007; Giri et al., 2011). Beyond their ecological roles, mangroves support coastal biodiversity, fisheries, and provide habitats for a variety of fauna, emphasizing their importance in maintaining ecological balance (Bengen, 2002). The integrated management of coastal and small island ecosystems has been recognized as essential not only for conserving natural resources but also for sustaining human livelihoods (Tahir & Baharudin, 2002). Despite their importance, Southeast Asia has experienced notable mangrove deforestation due to urban expansion, aquaculture, and other anthropogenic pressures, highlighting the urgent need for sustainable management to protect both ecological functions and community-based livelihoods (Richards & Friess, 2016).

In recent years, mangroves have increasingly been leveraged for ecotourism, creating economic opportunities while promoting conservation awareness. Ecotourism can serve as a powerful tool for conservation when guided by strong management and community participation (Friess, 2017). Structured management of mangrove ecotourism—including zoning, visitor regulation, and habitat protection—has been emphasized as necessary to maintain ecological sustainability (Kusmana & Istomo, 1993). In Indonesia, several studies illustrate practical applications of mangrove ecotourism. For instance, Arida et al. (2014) examined ecotourism dynamics in Bali, identifying key challenges and strategies for developing sustainable tourism in different ecotourism contexts. Similarly, Bato and Yulianda (2013) demonstrated that marine protected areas in Nusa Penida can provide socio-economic benefits while preserving marine and coastal resources. In the Seribu Archipelago, planning ecotourism based on ecosystem analysis has proven essential to align tourism development with ecological capacities and avoid environmental degradation (Putra, Anggoro, & Kismartini, 2015). Carrying capacity and ecological suitability assessments have also been widely applied to ensure that tourism does not exceed the environment's regenerative

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capacity, with studies in Coron, El Nido, and West Lombok underscoring the importance of monitoring and managing visitor numbers to maintain ecosystem health (Liabastre & Reider, 2022; Sukuryadi et al., 2020).

Central to sustainable mangrove management is active community engagement. Local participation not only supports conservation efforts but also ensures that livelihoods are enhanced alongside ecological protection. Community-based mangrove conservation initiatives in Indonesia demonstrate that involving local stakeholders in tourism and resource management fosters sustainable practices while providing socio-economic benefits (Syaiful et al., 2016). Integrating local wisdom and cultural practices into ecotourism strategies further strengthens conservation outcomes, as shown in various Indonesian studies where culturally-informed approaches improved both ecological and social results (Harto, Sidiq, & Karneli, 2021; Arida et al., 2014).

Effective governance frameworks and policy support complement ecological and community considerations. Coordinated management involving multiple stakeholders, including local governments, communities, and private sectors, has been emphasized as a key factor in sustainable mangrove utilization (Dahuri et al., 1996; Manan & Haryanto, 2018). Development plans at the village level, such as the Middle Term Development Plan of Jungutbatu Village (2014) and related local plans (Desa, 2014), illustrate the integration of environmental management, ecotourism development, and community participation, providing a policy framework to guide sustainable practices. Monitoring and adaptive management are further facilitated by technological tools such as remote sensing and GIS, which allow for the detection of mangrove forest changes and estimation of carbon stocks, linking ecological monitoring to broader environmental and climate policy objectives (Daulat, Pranowo, & Amri, 2018; Hermon, Ganefri, & Oktorie, 2018). Technological applications, including species distribution modeling and environmental management software, offer additional avenues for planning and conservation, though challenges such as infrastructure limitations and low digital literacy remain (Hu et al., 2020; Sudipa et al., 2020).

Mangrove ecosystems face persistent threats from human activity and climate change. Deforestation, land conversion, and coastal development compromise their ecological integrity and reduce their potential for sustainable ecotourism (Richards & Friess, 2016; Cahyaningsih et al., 2022). Even protected areas are vulnerable if governance is weak and community engagement is limited (Swangjang & Kornpiphat, 2021). Moreover, climate-related risks such as sea-level rise exacerbate the vulnerability of these ecosystems, reinforcing the urgency of integrating conservation strategies, adaptive management, and community participation to maintain ecosystem resilience (Ellison, 2014).

In synthesizing these studies, it becomes evident that sustainable mangrove ecotourism requires a comprehensive and integrated approach. Effective conservation strategies must combine ecological protection with community participation, robust governance, careful planning of tourism activities, and the strategic use of technological tools. Lessons from Indonesia and Southeast Asia provide valuable insights that can inform mangrove ecotourism development in contexts like Catanduanes, where similar ecological, social, and governance challenges exist. By applying these principles, stakeholders can design strategies that balance conservation, community welfare, and tourism growth, ensuring the long-term sustainability of mangrove ecosystems and the benefits they provide.

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Theoretical and Conceptual Framework

This study is grounded in three complementary theoretical lenses: Van Meter and Van Horn's Policy Implementation Model (1975), Elinor Ostrom's Institutional Analysis and Development (IAD) Framework (1974), and the Social–Ecological Systems (SES) Theory (2009). Together, these theories explain how policies are translated into practice, how institutions shape collective action, and how environmental systems interact with social actors in the governance of mangrove ecotourism sites.

Van Meter and Van Horn's model emphasizes that policy implementation is shaped by several interrelated factors, including policy standards and objectives, available resources, inter-organizational communication, and the disposition of implementers. In the context of mangrove ecotourism in Catanduanes, this theory helps explain how national and local ecotourism policies are operationalized by local government units (LGUs), tourism offices, and implementing agencies, and how clarity of objectives, institutional support, and resource availability affect outcomes.

Meanwhile, Ostrom's Institutional Analysis and Development (IAD) Framework highlights the importance of institutional arrangements and collective action in managing common-pool resources. It provides a lens to understand how local stakeholders—such as fisherfolk, community-based organizations, and local officials—create, negotiate, and comply with shared rules for sustainable resource use. This is especially relevant in the municipalities of Bato and Pandan, where the sustainability of mangrove ecotourism depends heavily on community participation, cross-institutional cooperation, and locally appropriate governance practices.

To further strengthen the study's ecological and governance perspective, the Social–Ecological Systems (SES) Theory is incorporated. SES Theory recognizes that ecosystems such as mangrove forests are deeply interconnected with the social systems that use and manage them. It emphasizes that sustainability depends on the alignment of governance structures, resource users, ecological conditions, and broader social contexts. Applying the SES framework allows the study to analyze how policies, institutional arrangements, and community behaviors directly interact with the ecological characteristics of mangrove areas. This theory helps evaluate the strengths and limitations of ecotourism implementation by considering both social dynamics and ecological outcomes.

By integrating these three theories, the study was able to examine mangrove ecotourism governance from a broad yet interconnected perspective. Van Meter and Van Horn's model offers a top-down understanding of how policies are implemented by government agencies and how factors such as resources, clarity of objectives, and communication influence outcomes. Ostrom's IAD framework complements this by highlighting the institutional and community-based processes that shape local decision-making, rule formation, and collective action. Adding the Social–Ecological Systems (SES) Theory further enriches the analysis by emphasizing the continuous interaction between social actors and the ecological conditions of mangrove environments. Taken together, these theories provide a comprehensive foundation for understanding how policies are adopted, practiced, and sustained within the mangrove ecotourism sites of Bato and Pandan, revealing the interplay of governance, community participation, and ecological realities that shape their long-term sustainability.

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Conceptual Framework

The study's conceptual framework is anchored on three complementary theories—Van Meter and Van Horn's Policy Implementation Model, Ostrom's Institutional Analysis and Development (IAD) Framework, and the Social–Ecological Systems (SES) Theory. Together, these theories guide the analysis of how mangrove ecotourism policies are formulated, implemented, and sustained within the municipalities of Bato and Pandan.

Van Meter and Van Horn's model provides the top-down analytical lens needed to assess the *status of mangrove ecotourism policy*, directly supporting Objective A. Its emphasis on policy standards, resources, organizational communication, and implementer disposition aligns with the study's examination of policy and legal frameworks, planning and financial support, institutional structures, awareness efforts, and monitoring mechanisms. Each component of Objective A corresponds to a critical variable in the model—demonstrating how national and local ecotourism policies are interpreted by LGUs, tourism offices, and environmental agencies and how implementation strengths or gaps emerge.

Ostrom's IAD framework supports the study's second objective by explaining the *factors that contribute to the status of the ecotourism policy* in both municipalities. The IAD highlights how local rules, stakeholder interactions, incentives, and institutional arrangements influence behavior. This helps identify how community organizations (such as BMETA and the Pandan Mangrove group), barangay officials, tour guides, and local resource users collectively shape the implementation environment. Through this theory, the study is able to analyze factors such as community participation, leadership, inter-agency coordination, informal norms, and local governance—thus revealing why certain supports or limitations exist in each site.

The SES Theory further strengthens the conceptual framework by linking social, institutional, and ecological conditions—directly informing Objective C, which examines issues in implementing mangrove ecotourism policies. SES explains how ecological characteristics (mangrove abundance, accessibility, biodiversity), social dynamics (livelihood dependence, awareness levels), and governance conditions interact and create implementation challenges. Using SES, the study analyzes how weak institutional coordination, insufficient resources, or limited community engagement may lead to systemic issues within the mangrove ecotourism system, such as poor monitoring, limited visitor management, or unsustained conservation practices.

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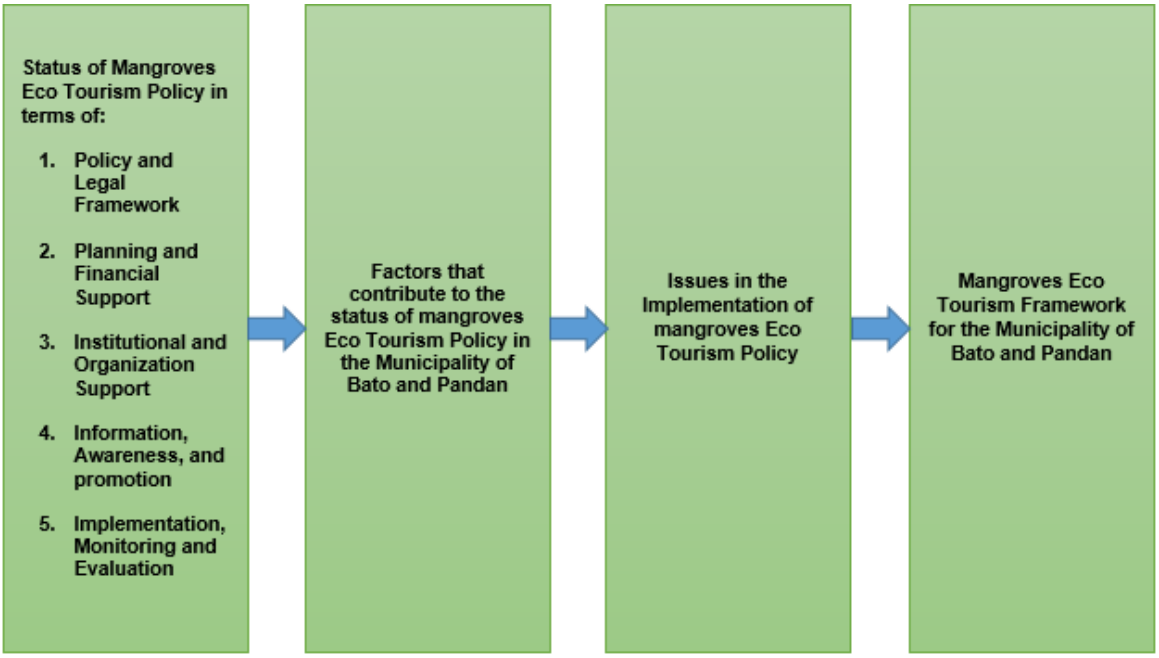

Figure 1: ***Conceptual Framework Model***

Together, the three theories support the formulation of an *ecotourism framework* for Bato and Pandan, addressing Objective D. Van Meter and Van Horn clarify what policies and support systems should be strengthened; the IAD identifies how local stakeholders can collaborate and participate in shared governance; and the SES Theory ensures that the recommended framework is ecologically grounded and socially responsive. By integrating insights from governance structures, institutional capacities, community participation, and ecological conditions, the conceptual framework provides a structured pathway for developing an ecotourism model suited to the context
of Catanduanes.

Through this combined theoretical foundation, the study is able to systematically connect policy implementation processes, institutional dynamics, community behavior, and ecological realities. This establishes a clear alignment between the theoretical framework, conceptual paradigm, and the study's four objectives, ensuring that each objective is analyzed comprehensively and supported by robust theoretical grounding.

Mangrove ecotourism has two important roles. First, it protects the ecosystem by preserving coastal areas, and second it helps provide livelihood for local communities. These roles can be seen not only in the Philippines but also in other parts of Southeast Asia. Different studies agree that mangrove ecotourism connects conservation with income opportunities for coastal residents (Blenton et al.,2022; Sajise,015; Cruz,2018; Perez & Tonco,2021; Castillo & Aldave ,2020). In order to protect and manage these efforts, national and local laws as the fisheries code, the NIPAS Act, and the Ecotourism Act were created to give guidelines for conservation and sustainable use (Garces et al.,2021; DENR,2017).

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Example from the Philippines shows both strength and challenges of mangroves ecotourism. In Palawan, Kalibo, and Siargao, the projects became successful because of good management and strong support from the community. These cases prove that when people and local government work together, the problems in implementation can addressed (Bennagen,2016; Cueva,2020; Sajse,2015; Cruz,2018; Perez & Tonco,2021).

Meanwhile the Bato Eco-Park in Catanduanes is still considered an emerging site, here, the community is starting to see ecotourism as another livelihood option, especially since fishing is becoming limited in some protected areas. Although not many studies have been written about this province, some authors already stressed that mangrove ecotourism is very important for both livelihood and disaster risk reduction because of the island's location in the Pacific Ocean. (Castillo & Aldave, 2020).

Overall, the literature shows that mangroves ecotourism works best when there is a balance between conservation and livelihood opportunities, supported by both government and community involvement. The Successful cases in Palawan, Kalibo, and Siargao serve as examples of best practices, but in Catanduanes the available studies are still limited and mostly focused conservation. These created gaps for the present study, which aimed to examine how the government implements mangroves ecotourism and how communities are involved in the process.

The reviewed literature revealed that mangrove ecotourism is framed by three central dimensions: ecological sustainability, economic potential, and governance. Across Philippine and Southeast Asian studies, mangroves are consistent recognized as multifunctional ecosystem that provide biodiversity conservation coastal protection, mitigation, and alternative livelihoods. However, while ecological value is strongly affirmed sustaining this benefits hinges on effective governance and community participation.

Philippine Cases such us Puerto Prinsesa, Bakhawan Eco-Park, and Del Carmen demonstrate that when local government exercise political will, enforce policies and support community organizations, mangrove ecotourism can generate both conservation outcomes and economic gains. Initiatives highlight the importance of institutional support, women's participation, and livelihood integration. Yet they also underscore risk of over-commercialization, weak enforcement, and mass tourism pressures. Similarly, international studies from Indonesia and Malaysia point to strong ecological performance but weaker social and institutional inclusion, reaffirming that governance gaps remains a universal challenge.

Economic valuation studies enrich the discourse by applying framework like total Economic Value (TEV) and consumer surplus analysis, quantifying benefits that range from ecosystem services to recreational opportunities. These approaches justify ecotourism as a financing mechanism for conservation but also reveal persistent issues in translating valuations into policy instruments and governance practices. Parallel research on carrying capacity, risk management, and intuitional coordination stresses the need for adaptive, science-based governance to prevent overuse and ensure long-term sustainability.

Emerging initiatives, particularly in peripheral provinces like Catanduanes, bring to light the vulnerabilities of sites with limited intuitional capacity and high dependence on natural resources. Studies identified opportunities for livelihood diversification through ecotourism but also warn of environmental

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risks, weak support systems, and governance fragmentation. This gap is critical, as less-documented areas such as Batalay Mangrove Eco-Park lack the institutional reinforcement and visibility enjoyed by more established ecotourism destinations.

Taken together, literature showed that mangrove ecotourism in the Philippines and South east Asia is an evolving governance innovation shaped by ecological, economic, and institutional dynamics. The convergence of findings highlights the necessitate of community engagement, integrated governance, and adaptive management. However, uneven implementation across sites, particularly in less developed and more vulnerable regions, signals the need for deeper inquiry into how policies are enacted at the local level. This underscore the relevance of examining governance processes in emerging sites like Catanduanes, where the stake of balancing conservation and development are especially high.

While mangrove ecotourism has been recognized as a sustainable strategy that balances environmental conservation and livelihood generation, existing studies in the Philippine have mostly focused on successful ecotourism models in nationally known sites such as the Bakhawan Eco-Park in Aklan, the Mangrove Paddle Tour in Puerto Princesa and the Del Carmen Mangrove Forest in Siargao. These studies often highlight best practices in management and community participation but pay limited attentions to the policy implementation processes that influence their outcome.

In contrast, the province of Catanduanes remain understudies in the field of mangrove ecotourism research despite its rich mangroves ecosystem and growing interest in tourism development. Available local literature and Government reports primarily describe the physical characteristic of mangroves areas or the activities conducted by local associations but lack in –depth analysis of how ecotourism policies and ordinances are implemented at the provincial and municipal levels.

Furthermore, there is no existing comparative study that examines how different local government and communities, within Catanduanes, such as Bato (Batalay Mangrove Eco- Park) and (Pandan Mangrove Reserve), interpret, adopt, and operationalize ecotourism policies. These gaps prevent a full understanding of the factors that contribute to either the success or failure of policy implementation and the sustainability of mangroves-based tourism projects in the province.

Hence, this study addressed the gap by conducting a comparative case study of mangrove ecotourism governance in Catanduanes. It aimed to analyze how policies are implemented, identified instructional and community-level challenges, and ultimately proposed an ecotourism governance framework that is specifically suited to the Catanduanes Context.

Mangroves ecotourism in the Philippines is seen a way to balance conservation with livelihood opportunities for coastal communities. National and local policies such as the Fisheries Code, the National integrated Protected Areas Act, and the Ecotourism Act provide a framework for protecting mangrove while promoting their economic potential. Yet implementation remain a challenge due to weak enforcement, overlapping agencies mandates, and limited community participation. Successful case like Puerto Princesa, Kalibo, and Siargao show that strong local government support and active community involvement can

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make ecotourism sustainable. However, other sites continue to face risk of commercialization, poor waste management, and uneven benefit sharing.

In emerging areas such Catanduanes, the issue is more pressing, mangroves are vital for both biodiversity and disaster risk reduction, but ecotourism initiative remain in their early stage and research is limited. Communities see ecotourism as an alternative livelihood amid fishing restriction, yet policies are applied and how governance is practiced, remain unclear. These conditions showed that while the Philippines has a strong policy on mangroves ecotourism, gaps between policy and practices persist, especially in less-studied provinces.

Objectives

This study aimed to analyze the implementation of mangroves ecotourism policies in Catanduanes Province by comparing the cases of Batalay Mangrove Eco- Park in Bato and Pandan Mangrove Reserve in Pandan with the end goal of developing an ecotourism framework for two municipalities.

1. Examine the Status of Mangroves Ecotourism Policy Implementation in the Municipalities of Bato and Pandan in terms of:
    a. Policy and Legal Framework
    b. Planning and Financial Support
    c. Institutional and Organizational Support
    d. Information, Awareness, and Promotion
    e. Monitoring and Evaluation;
2. Determine the Factors that Contribute to the Status of Mangrove Ecotourism Implementation in the two Municipalities in terms of:
    a. Environmental Factors
    b. Financial and Resource Factors
    c. Institutional and Governance Support
    d. Promotion and Market Access
    e. Human Resource and Capacity Factors
    f. Community Support and Participation;
3. Identify the Issues Encountered by the Implementers of the Mangroves Ecotourism Policy in the Municipality of Bato and Pandan; and
4. Develop a Mangroves Ecotourism Framework for the Municipality of Bato and Pandan.

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METHODS

Research Design

This study employed a comparative case study design utilizing a mixed-methods approach to examine the implementation of mangrove ecotourism policies in the municipalities of Bato and Pandan, Catanduanes. Case study research is particularly suitable for investigating contemporary phenomena within their real-life contexts, especially when the boundaries between the phenomenon and its context are not clearly evident (Yin, 2018). By adopting a comparative approach, the study was able to systematically analyze the similarities and differences in policy implementation across two municipalities, providing a more nuanced understanding of local governance processes in the field of mangrove ecotourism.

The mixed-methods approach allowed for a comprehensive examination of the research problem by integrating both quantitative and qualitative data (Creswell & Plano Clark, 2018). This approach recognizes that a single method alone may not fully capture the complexity of policy implementation, particularly in a context where institutional, environmental, and social factors interact. By combining numerical data with rich qualitative narratives, the study was able to produce findings that are both statistically descriptive and contextually grounded.

Quantitative data were gathered using a structured survey instrument. A checklist (Yes/No) format was used to determine the presence or absence of specific implementation mechanisms and factors affecting implementation. Responses were analyzed using frequency counts and percentages, allowing for a clear and straightforward representation of which factors were present across respondents.

Qualitative data were collected through key informant interviews (KIIs), focus group discussions (FGDs), and documentary analysis of municipal ordinances, resolutions, memoranda of agreement, and related policy documents. The qualitative component was analyzed using thematic analysis, which involves identifying, coding, and interpreting recurring patterns or themes within the data (Braun & Clarke, 2006).

This method allowed the research to uncover in-depth insights into governance mechanisms, institutional support, coordination challenges, and sustainability issues that could not be fully captured by numerical data alone. Through thematic analysis, patterns such as gaps in policy enforcement, lack of trained personnel, and weak integration into municipal tourism planning emerged as key themes, providing a contextualized understanding of the implementation process.

The integration of quantitative and qualitative data strengthened the study's overall validity and reliability. Methodological triangulation facilitated cross-verification of findings, enabling the researcher to compare and contrast numerical trends with qualitative insights, thereby creating a more comprehensive and robust understanding of policy implementation (Yin, 2018; Creswell & Plano Clark, 2018). This approach ensured that the study's conclusions and proposed governance framework are grounded in empirical evidence and reflect the actual dynamics of policy implementation in the two municipalities.

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Overall, this research design allowed for a holistic examination of both the structural and operational aspects of mangrove ecotourism policy implementation, ensuring that the findings are not only descriptive but also analytically rich. By combining frequency analysis, weighted mean computation, and thematic qualitative analysis, the study was able to provide actionable insights and support the development of a context-specific governance framework for sustainable mangrove ecotourism in Catanduanes.

This study aimed to contribute to the improvement of mangroves ecotourism governance in Catanduanes by identifying factors that contribute to the Status of Mangrove Ecotourism Implementation in the two Municipalities and identify the Issues Encountered by the Implementers of the Mangroves Ecotourism Policy in the Municipality of Bato and Pandan. Ultimately, it sought to develop a contextual ecotourism framework, promoting sustainable tourism while ensuring the protection of its mangroves.

Delimitation

This study was conducted in the Municipalities of Bato and Pandan in the province of Catanduanes, Philippines. These municipalities were selected due to the presence of established mangrove ecotourism initiatives and active community-based organizations involved in mangrove conservation and tourism-related activities. Both municipalities have implemented policies and programs related to mangrove protection and ecotourism development, making them appropriate sites for examining the status of mangrove ecotourism policy implementation.

The selection of the research locale was purposive, as the study specifically aimed to assess and compare mangrove ecotourism policy implementation in two municipalities with existing operational mangrove ecotourism sites. Conducting the study in these areas allowed for a contextualized analysis of governance structures, institutional support, community participation, and implementation mechanisms relevant to mangrove ecotourism development.

The comparative nature of the study required the inclusion of two municipalities in order to determine similarities and differences in policy implementation, operational support, and sustainability practices. The findings from these locales served as the bases for the development of a proposed Mangrove Ecotourism Framework applicable to similar coastal municipalities.

The respondents of the study consisted of key stakeholders directly involved in the implementation and management of mangrove ecotourism in the Municipalities of Bato and Pandan. These included representatives from the Local Government Unit (LGU), officers of registered people's organizations managing the mangrove sites, barangay officials, and members of mangrove ecotourism associations such as tour guides and boat operators.

A total of forty (40) primary respondents were selected from the two municipalities. The selection was based on purposive sampling, wherein individuals were chosen according to their active involvement, knowledge, and experience in mangrove ecotourism implementation. Purposive sampling is appropriate when respondents possess specific characteristics relevant to the objectives of the study, particularly in policy and program implementation assessments.

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The respondents provided quantitative data through structured questionnaires to assess the status of mangrove ecotourism implementation. In addition, selected respondents provided qualitative insights regarding factors affecting implementation and issues encountered in managing mangrove ecotourism activities. Their combined responses contributed to both the statistical comparison and thematic analysis necessary for achieving the study's objectives.

Materials

The primary research instrument used in this study was a structured questionnaire designed to assess the status of mangrove ecotourism policy implementation in the Municipalities of Bato and Pandan. The questionnaire was developed based on the objectives and relevant policy implementation and it was developed based on the study objectives and relevant policy implementation and ecotourism governance indicators.

Part I- Municipal profile

This gathered general information such as the land area, tourist arrival, monthly revenue range, conservation activities, operational consistency, and existing livelihood activities; the profile variables were included to provide contextual background of the respondents, particularly their organizational affiliation, position, years in service, and relevant trainings attended. These characteristics are important in understanding their level of exposure to policy implementation processes and in formulating grounded and context-sensitive recommendations.

Part II- Factors Contributory to the Status of Mangroves Implementation in Municipality of Bato and Pandan

This includes the possible factors that may contributes to the implementation of Mangroves ecotourism policies in both municipalities. This is done by placing a mark YES or No.

Part III- Issues Encountered by Implementers contained open- ended question to elicit qualitative insights regarding enabling factors, constraints, and implementation challenges. These responses were subjected to thematic analysis to identify recurring patterns and explanatory themes.

The use of both closed-ended question supports a mixed-methods approach allowing for numerical measurement and contextual explanation of findings. According to John W. Creswell, combining quantitative and qualitative instruments enhances the comprehensiveness of policy implementation studies by integrating statistical trends with stakeholder perspectives.

Prior to data collection, the instrument was subjected to expert validation to ensure content relevance, clarity and alignment with the study objectives.

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Statistical Analysis

The data gathered and percentage distribution were used to analyze categorical data from Part I of the questionnaire, such as tourist range, livelihood activities, and operationally.

1.The percentage was computed using the formula

Percentage=N/f×100

Where:

f=frequency of responses

N= total number of respondents

This method is appropriate for summarizing profile variables and categorical responses.

2. Weighted Mean

The weighted mean was used to determine factors that contributes to the status of mangroves Ecotourism Implementation in the two municipalities.

The formula for weighted mean is:

$X^{-}=N\sum fx$

Where:

X=weighted mean

F=frequency of each rating

X= numerical value of each rating (4,3,2,1)

N=Total number of responses

3. Thematic Analysis

The quantitative data were analyzed using descriptive statistics such as frequency distribution and weighted mean. A descriptive–comparative approach was employed to examine similarities and differences between the municipalities of Bato and Pandan.

Research from Part IV were analyzed using thematic analysis. The responses were carefully reviewed, coded, and grouped into recurring themes, representing enabling factors and implementation challenges. Thematic analysis is appropriate for identifying patters within qualitative data.

Data that were gathered from interviews, focus group discussions, documents reviews, and fields observation were analyzed using thematic analysis following Braun and Clarkes (2006) six-phase process. This process involved familiarization with the data through repeated reading of transcripts and fields notes,

generating initial codes by identifying meaningful statements related to policy implementation and community experiences, and searching for patterns and themes that captured the essence of the data. In interpreting the data, the researcher was guided by Van Mater and Vans Horn's (1975) policy Implementation Model, which emphasize the linkages between policy standards, implementing agencies, and external conditions affecting policy performance. This theoretical lens helped in identifying institutional bottlenecks, stakeholder coordination issues, and contextual challenges that shaped the outcomes of mangroves ecotourism initiatives.

Likewise, Ostrom's Institutional Analysis and development (IAD) Framework provided a complementary structure for examining how rules, actors, actors, and action situation interacted within the local governance of mangrove ecotourism. Through the IADS lens, the study analyzed institutional arrangement and collective action patterns that influenced decision-making, participation, and resource management. This theoretical perspective guided the organization and interpretation of themes, ensuring that findings were not only empirically grounded but also theoretically informed. Finally, the result was presented in narrative form, emphasizing cross-case comparison and the implications for sustainable ecotourism governance.

Sample size & Sample Strategy

The target population of the study consisted of one hundred sixty (160) registered members of mangrove ecotourism associations in the Municipalities of Bato (70 members) and Pandan (90 members), Catanduanes.

From this population, a total of eighty (80) respondents participated in the study. Specifically, forty (40) respondents were from Bato and forty (40) respondents were from Pandan. These respondents were actively involved in mangrove ecotourism activities such as tour guiding, boat operations, site management, conservation initiatives, and organizational leadership.

The study employed purposive sampling, a non-probability sampling technique wherein participants are selected based on their knowledge, involvement, and relevance to the research objectives. According to Michael Quinn Patton, purposive sampling is appropriate when respondents are chosen because they possess specific characteristics and direct experience related to the phenomenon under investigation.

Respondents were selected based on their active participation in mangrove ecotourism implementation and their familiarity with policies, operational practices, and management processes. The relatively high participation rate strengthened the reliability of the findings and ensured adequate representation from both municipalities for descriptive and comparative analysis.

Ethical Standards

Ethical considerations were strictly observed throughout the conduct of this study on mangrove ecotourism policy implementation in Catanduanes, particularly in the cases of Batalay Mangroves Eco-Park in Bato and the Pandan Mangrove Reserves. Prior to data collection, informed consent was obtained

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from all participants, including members of the Batalay Mangroves Ecotourism Tour Guide Association (BMETGA), local government officials, and other key stakeholders. The purpose of the research, the voluntary nature of participation, and their right to withdraw at any time were clearly explained.

Confidentiality and anonymity were ensured by coding participants' responses and excluding personally identifiable information from the manuscript. Given the small community context of the study sites, extra caution was taken to present findings in a way that would not indirectly reveal participants' identities. All interview data and documents were securely stored and used strictly for academic purposes.

In adherence to ethical standards in qualitative research, the study upheld respect, transparency, and integrity in representing stakeholder perspectives. Particular care was taken to faithfully and responsibly present the experiences of community members, especially regarding challenges such as limited institutional support, resource constraints, and sustainability concerns. The researcher ensured that interpretations were grounded in the data and that stakeholder voices were accurately and sensitively reflected in the analysis.

Data Gathering Tools and Techniques

The primary instrument for data collection was a structured questionnaire, which was divided into four parts to capture different aspects of the study.

Part I-Municipal Profile

This section collected demographic and professional profile information of the respondents, including organizational affiliation, position, years in service, and relevant trainings attended. In addition, this part gathered contextual data on tourist arrivals, monthly revenue generated from mangrove ecotourism, ongoing conservation activities, operational consistency of ecotourism sites, and existing livelihood activities within the municipalities. The items in this section were primarily closed-ended and analyzed using frequency counts and percentages to provide a descriptive overview of the respondents and the operational context of the ecotourism sites.

Part II-Status of Mangrove Ecotourism Implementation

This section focused on examining the current status of policy implementation in each municipality. Relevant documents were collected to facilitate this analysis, including municipal ordinances, resolutions, memorandum of agreement (MOAs), financial statements, and other official records. The data from these documents were analyzed to determine the presence of policy mechanisms, legal frameworks, institutional arrangements, and programmatic activities supporting mangrove ecotourism. The analysis relied on frequency counts to determine which policies and programs were operational and to identify gaps in implementation.

Part III – Factors Affecting Policy Implementation

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This part utilized a checklist format (Yes/No) to capture the perceived presence of factors that may facilitate or hinder effective policy implementation. Respondents indicated whether specific factors, such as institutional support, community participation, financial resources, trained personnel, and promotional activities, were present. Quantitative responses were analyzed using frequency counts and percentages, allowing for a clear depiction of the most prevalent enabling or constraining factors.

Part IV – Open-Ended Items and Qualitative Input

This section captured qualitative insights from respondents, particularly explanations for challenges encountered and suggestions for improvement. Qualitative data were collected through key informant interviews (KIIs**)**, focus group discussions (FGDs**)**, and documentary analysis. These data were analyzed using thematic analysis to identify recurring patterns, themes, and insights into governance, operational challenges, and sustainability of mangrove ecotourism programs (Braun & Clarke, 2006).

Data Gathering Techniques

The data were collected through the following procedures: (1) Permission and Coordination: Official permission was obtained from the Local Government Units of Bato and Pandan, as well as the officers of registered mangrove ecotourism associations, to conduct the study and access respondents. (2) Distribution of Questionnaires**:** The structured questionnaire was administered directly to respondents either in-person at their respective mangrove ecotourism sites or during scheduled association meetings. This ensured that respondents understood the questions and could provide accurate responses. (3) Clarification and Assistance: The researcher provided clarifications and assistance when respondents encountered difficulties in understanding any items, particularly those requiring numerical or Likert-scale responses. (4) Documentation and Observation**:** Official documents, site observations, and records (e.g., municipal ordinances, visitor logs, financial records, conservation activity reports) were reviewed to verify responses and ensure data accuracy. (5) Ethical Considerations**:** Respondents were informed that participation was voluntary, responses would remain confidential, and data would be used solely for research purposes. Informed consent was obtained prior to data collection (Creswell, 2014). (6) Data Handling**:** Collected questionnaires were organized, coded, and stored securely to ensure data integrity and confidentiality. Both quantitative and qualitative data were systematically processed for analysis according to the study objectives.

Qualitative tools such as the Semi-Structured Interview Guide, Focus Group Discussion (FGD), Document analysis, Field Observation were employed to capture diverse perspective and provide a holistic understanding of mangrove ecotourism governance. Semi-structured interviews were conducted with key informants such as local government officials, association leaders, tourism officers, and residents directly engaged in ecotourism activities across the study sites. These interviews allowed for in-depth exploration of individual experiences and insights regarding policy implementation and governance challenges.

Focus Group Discussion (FGD) were organized to validate findings from the interview and to further explore the collective experience of community members. This technique facilitate dialogue among

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participants enabling the identification of shared concerns, opportunities, and local strategies for sustaining mangrove ecotourism.

Documents analysis were complemented the primary data collection by reviewing municipal ordinances, constitution and bylaws of the Organization, Local Annual investment plan, MOA and project documents related to mangrove management and ecotourism initiatives. This process situates community perspective within the broader policy and institutional framework. Finally, field observation will be conducted during site visit to each case location.

Finally, field observations were conducted during site visits to each case location. These provide firsthand insights into the ecological conditions of the mangrove ecosystems, the quality of tourism facilities, and the governance practices in place. Observations also offered context for interpreting stakeholder narratives, to ensure that findings will be grounded in the realities of each site.

Together, these data-gathering tools ensure methodological triangulation, enhancing the credibility and depth of the comparative analysis across the two municipalities (Bato Mangroves Eco-Park and Pandan Mangroves Reserve Catanduanes Province.

RESULTS

This section presents the findings of the study on mangrove ecotourism policy implementation in the municipalities of Bato and Pandan, Catanduanes. The results are organized according to the key indicators of policy adoption, community engagement, conservation practices, and promotion of ecotourism. Quantitative and qualitative data are summarized to provide a clear understanding of the current status, trends, and differences between the two municipalities.

While not a primary objective of this study, the municipal profile is presented to provide essential context for understanding and discussing the comparative implementation of mangrove ecotourism in Bato and Pandan, Catanduanes. A municipal profile is presented to provide contextual grounding for the comparative analysis of mangrove ecotourism implementation in Bato and Pandan, Catanduanes. This section summarizes the demographic, organizational, operational, and economic characteristics of respondents and their respective municipalities, offering insights into the foundations of community-based mangrove ecotourism initiatives.

The total target population of the study was 80 respondents, with 40 participants each from Bato and Pandan to ensure equal representation. However, due to health-related reasons, one respondent from Bato was unable to participate, resulting in an actual total of 79 respondents (40 from Pandan and 39 from Bato). Despite this minor variation, representation between the two municipalities remained substantially balanced, allowing for meaningful comparative analysis.

In both municipalities, mangrove ecotourism initiatives are primarily managed through registered people's associations, indicating that implementation is largely community-based and association-driven.

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The majority of respondents were general members rather than officers, suggesting that the findings predominantly reflect grassroots-level perspectives.

Most participants reported approximately four years of involvement in mangrove ecotourism activities, indicating that both sites have relatively established initiatives. However, differences emerge in ecological scale, as one municipality manages a larger mangrove area (55 hectares) compared to 24 hectares in the other, reflecting variation in environmental coverage and operational demands.

Capacity-building exposure appears uneven, with more than half of the respondents reporting no attendance in seminars related to mangrove ecotourism. While tourist arrivals were generally moderate to high, monthly revenues remain modest, suggesting economic limitations despite visitor presence.

Conservation efforts and operational activities are conducted consistently, with most respondents reporting regular monthly initiatives and daily operations. Livelihood activities remain concentrated on core ecotourism services such as tour guiding, boat operations, and entrance fee collection, with limited diversification into other income-generating ventures.

Overall, this contextual profile provides a foundational understanding of the institutional, operational, and economic environment in which mangrove ecotourism policies are implemented in both municipalities.

To provide readers with a visual understanding of the mangrove ecotourism sites discussed in this study, a short video documentation was prepared. The video features the mangrove ecosystems of Bato and Pandan, highlighting boating activities, mangrove boardwalk pathways, and the view deck tower overlooking the mangrove forest and surrounding coastal landscape. The video can be accessed by scanning the QR code below.

Scan the QR Code to watch the video.

Figure 2: ***Video Documentation of the Mangroves Ecotourism***

Sites in Bato and Pandan Catanduanes

Part I. Status of Mangrove Ecotourism Policy Implementation in the Municipalities of Bato and Pandan

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Status of Mangroves Ecotourism Policy in the Municipality of Bato and Pandan in terms of: (1) Policy and Legal Framework (2) Planning and Financial Support (3) Institutional and Organizational Support (4) Information, Awareness, and Promotion (5) Implementation Monitoring and Evaluation.

1.Policy and Legal Framework

In terms of policy and legal support, Bato demonstrate a higher frequency of formal legislative measure compared to Pandan as reflected in table 2 below there are three (3) Municipal ordinances namely: 2025-056, a resolution no.2025-006 a resolution enacting municipal ordinance 2025-04 of Bato, Catanduanes,an ordiannce establishing the Bato Wildlife-anti trafficking and Protection program. Municipal Resolution No. Municipal Resolution No.2025-056 an ordinance providing for the establishment and development of public parks, and green spaces in the municipality of Bato, Province of Catanduanes and for other purposes. Another municipal resolution no.2025-004 A resolution embodying municipal ordinance 2025-02, An ordinance enacting the health and sanitation code of Bato, Catanduanes.

As summarized in Table 2. Status of Mangroves Ecotourism Policy Implementation in the Municipality of Bato and Pandan Catanduanes.

Municipal ordinance No.2025-04, An Ordinance Establishing the Bato, Catanduanes wildlife anti-trafficking and protection program, appropriating funds and prescribing penalties for violation thereof, and other purposes. Municipal Ordinances No.2025-10 and ordinance providing for the establishment and development of public parks, and green spaces in the municipality of Bato, Province of Catanduanes and for other purposes. Similar to Municipal ordinance 2025-02, this ordinance was created for the purpose of enacting the health and sanitation code of Bato, Catanduanes.

For the Executive Order An executive was enacted, EO No.14 Reorganizing the Municipal Tourism Development Council. of the Municipality of Bato Catanduanes, and Defining its Duties, Function and Responsibilities. A contract of service was made between the Local Governement Unit (LGU) of Bato and the Batalay Mangroves Eco Tour Guide Association (BMETGA as care taker of the Batalay Mangroves Eco Park. An addition to this, A Certificate of Registration of Workers association was issued to BMETGA by Department of Labor and Employment (DOLE) dated 2023.

A contract of service was made between the Local Government Unit (LGU) of Bato and the Batalay Mangroves Eco Tour Guide Association (BMETGA as care taker of the Batalay Mangroves Eco Park. An addition to this, A Certificate of Registration of Workers association was issued to BMETGA with a registration Certificate no.RO500-CA-1108089-23 by Department of Labor and Employment (DOLE) dated 2023.

In contrast, Pandan shows one (1) record of Municipal ordinance No. 2024-20 was created to provide for the preservation, reforestation, afforestation, and sustainable development of mangrove forest in Pandan, Catanduanes, providing penalties thereof, and for other purpose.

Contract of Service was also issued to institutionalize the management structure of Pandan Ecotour Guide Association as the caretaker of Pandan Mangroves reserve. PETGA was also issued a

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Certificate of Registration by DOLE however there is no data that exist for Executive Order (EO) related to tourism council reorganization.

Analysis of data showed that Bato has more documented legislative issuances related to mangrove ecotourism policy, specifically in terms of ordinances and resolutions. The existence of an Executive Order reorganizing the Tourism Development Council further suggests administrative structuring support in Bato.

On the other hand, Pandan shows the availability of foundational legal documents but with fewer legislative issuances. This suggests that while both municipalities Bato and Pandan recognize mangrove ecotourism legally, However, Bato exhibits stronger formal policy articulation based on document frequency.

Table 1: ***Status of Mangroves Ecotourism Policy Implementation in the Municipalities of Bato and Pandan Catanduanes***

No.	Indicators	Type of Documents	Municipalities		Year Coverage	Remarks
			BATO (No. of Issuances)	PANDAN ((No. of Issuances)		
1.	Policy and Legal Framework	Municipal Ordinance	3	1	2024-2025	Bato has more enacted ordinance (3) compared to Pandan (1), indicating stronger Legislative support.
		Municipal Resolution	3	1	2024-2025	Bato issued more resolution (3) than Pandan (1) reinforcing local policy commitment
		MOA	No formal MOA	No Formal MOA	-	No MOA exist in either municipalities
		Contract of Service	1	1	8/1/2025 to 7/1/2026	Both municipalities maintain approved contract of service, indicating operational support
		DOLE Certificate of Registration	1	1	2023	Both Association are DOLE Registered, indicating formal legal recognition.
		Executive order	1	Not Available	2024	Only Bato issued an EO,

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						reflecting stronger executive backing.
2.	Planning and Financial Support	Annual Investment Plan	P1,500,000,00	P7,000,000.00	2023-2025 (Pandan) CY 2024 (Bato)	Pandan allocated ₱7M for Tourism infrastructure Development while Bato allocated ₱1,500,000.00
		Local Development Plan	No allocation	P1,500,000.00	2023-2025	No budget allocated in Bato, focus on Mangroves Conservation
3	Institutional and Organizational Support	Program Projects and Activities Target	No allocation	P3,000,000.00	-	Pandan allocated ₱ 3M for Tourism Access & development, Capacity Enhancement.
		Office Target Plan	No allocation	P100,000.00	-	Pandan allocated ₱100,000.00 Promotion & Marketing Activities.
		Annual Cultural development Plan	No allocation	P100,000,00	CY2025	₱100,000.00; not exclusively for Mangroves ecotourism.
4.	Information, Awareness and Promotion	IEC Materials, Social Promotion	3	3	-	Limited distribution of IEC materials in both Municipalities.
		Social Media Promotion	1	No dedicated platform	-	Bato maintains an active Face book page: Pandan has no dedicated solely to mangrove ecotourism.
		Tourism Brochure	3	3	-	Brochure available in both Municipalities.
		Brgy. Assembly -Minutes of Meeting	2	1	2023	Both municipalities conduct Awareness campaign through barangay assemblies.
		MOA with tour guide operator	No formal agreement	No formal agreement	-	No formal agreement exists with tour guide Operator in either municipalities

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5.	Monitoring and evaluation	Accomplishment Report	Present	Present	-	Both municipalities maintain accomplishment reports.
		Monitoring of Tourist Arrival (Logbook)	Existing	Existing	-	Tourist arrival monitoring is in place in both municipalities.
		Use of Performance indicator or feed back	Not established	Not established	-	No formal performance Indicator or feedback system Are in established.

2. Planning and Financial Support

In terms of Planning, and budget allocation, both municipalities allocated 20% of their Economic Development Program (EDP) to ecotourism related activities however, a significant difference can be observed in the amount of budget allocation and program focus**.**

For the Municipality of Pandan, ecotourism development is incorporated in the Annual Investment Program (AIP) with a total allocation of ₱7,000,000.00 covering the period 2023–2025**.** The allocated fund is directed toward the development of tourism infrastructure such as pathway construction, signage installation, cottages, and other site improvements. This indicates that Pandan prioritizes physical and structural development of the tourism site, suggesting a strategy centered on improving visitor facilities and accessibility.

In comparison, the Municipality of Bato integrates ecotourism under its Local Development Plan (LDP) with a total allocation of ₱1,500,000.00 for CY 2025. Unlike Pandan, Bato's financial support focuses primarily on mangrove rehabilitation. This reflects an environmental conservation-oriented approach rather than infrastructure expansion. While the allocation is significantly lower than that of Pandan, the program emphasis demonstrates alignment with ecological sustainability objectives.

3.Instituinal and Organization support

Under institutional support, Pandan shows more explicit budgetary allocations tied to program implementation. Data shows that ₱3,000,000.00 for Program Projects and Activities (floating restaurant, kayak, etc.) ₱100,000.00 Office Target Plan (CY 2025) for promotion and marketing ₱500,000.00 under Annual Cultural Development Plan (2025), although not solely for mangrove ecotourism, this indicator suggest that Pandan demonstrates clearer financial documentation in terms of operational and promotional activities. However, it is also noted that some allocations are not exclusively dedicated to mangrove ecotourism activities.

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Based on documentary frequency and financial records as you can glanced in the Table 2, Bato appears stronger in formal legislative and policy documentation, with *multiple* ordinances, resolutions, and an Executive Order supporting the governance structure.

Pandan appears stronger in financial visibility and program-based allocation, particularly in infrastructure development and promotional activities. A review of municipal plans and information from key informants indicates that the allocated budget is intended to support the development of basic ecotourism infrastructure, as the mangrove site currently lacks facilities such as a pathway, cottages, and a view deck tower.

Both municipalities possess basic legal foundations (ordinance, resolution, registration, contracts), but their emphasis differs—Bato on regulatory structure and Pandan on budgetary and operational support.

In contrast, the Municipality of Bato has no budget allocation for mangrove ecotourism in its planning and budgeting documents and Institutional and organizational support. According to local stakeholders, this may be partly explained by the recent installation of the mangrove pathway and view deck tower in Batalay Mangroves Eco Park, which suggests that initial infrastructure development has already been undertaken.

Overall, the status of mangrove ecotourism implementation in both municipalities is supported by documentary evidence; however, the nature of support varies. Bato reflects stronger institutional formalization through policy issuances, while Pandan reflects more tangible financial and programmatic commitments based on recorded allocation.

4. Information, Awareness, and Promotion

The documentary evidence shows variations between Bato and Pandan in terms of information dissemination and promotional strategies for mangrove ecotourism.

In terms of IEC Materials, Bato recorded three (3) brochures, while Pandan recorded two (2) brochures. However, remarks indicate limited distribution in both municipalities. This suggests that while informational materials exist, their circulation may not be extensive enough to maximize outreach.

For Social Media Promotion, Bato maintains an active social media page dedicated solely for Mangroves Eco Park, whereas Pandan has no existing Facebook page dedicated to mangrove ecotourism. This reflects a difference in digital engagement strategies. Bato demonstrates online visibility, while Pandan relies more on offline or traditional forms of promotion.

Regarding Tourism Brochures, both municipalities recorded a frequency of three (3), indicating that printed promotional materials are available in both areas.

In terms of Barangay Assembly documentation (minutes of meetings/attendance), both municipalities recorded one (1) documented instance. This suggests that community-level awareness activities are present in both cases, at least in documented form.

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However, for MOA with Tour Operators, both municipalities recorded none, they have no formal Agreement while remarks indicate that both have contacts with tour operators. This suggests that partnerships exist informally but lack formal institutionalization.

Overall, Bato appears stronger in digital promotion due to the presence of an active social media platform and slightly higher IEC material frequency. Meanwhile, both municipalities rely on brochures and barangay-level engagement. A common gap in both areas is the absence of formalized agreements with tour operators, which may affect the sustainability and formal integration of mangrove ecotourism in tourism circuits.

5. Monitoring and Evaluation

In terms of monitoring and evaluation mechanisms, both municipalities demonstrate similar documentary compliance.

Finding reveals that, both Bato and Pandan have existing: (1) Accomplishment Reports (2025), (2) Monitoring of Tourist Arrivals (Logbook, 2025), (3) Financial Reports (2025). The availability of these documents shows that monitoring activities and financial tracking are being conducted in both municipalities. The documentation suggests operational reporting mechanisms are in place.

However, for the Use of Performance Indicators or Feedback Mechanisms, both municipalities recorded none. This indicates that while routine reports exist, there is no documented use of structured performance indicators (environmental, social, and economic) or formal feedback systems.

Both municipalities exhibit comparable monitoring practices based on document existence. They maintain operational and financial reports but lack structured evaluation tools and performance indicators or systematic feedback mechanisms. This suggests that monitoring is largely compliance-based rather than outcome-based.

Bato shows stronger digital promotion efforts, while Pandan lacks social media presence. Both municipalities possess printed promotional materials but with limited distribution. Such as, neither municipality has formalized MOAs with tour operators. In monitoring and evaluation, both municipalities maintain accomplishment, arrival, and financial reports. Both municipalities lack documented performance indicators and feedback mechanisms.

Thus, while foundational promotional and monitoring systems exist in both municipalities, gaps remain in formalized partnerships and structured evaluation frameworks. The findings under Institutional and Organizational Support revealed a notable disparity between the two municipalities in terms of formal planning instruments and financial allocation.

For the Municipality of Pandan, although there is no explicitly identified Program Projects and Activities (PPA) target document attached in the records, the municipality allocated ₱3,000,000.00 for tourism-related initiatives. The focus of this allocation includes tourism development, access improvement, site development, and capacity enhancement activities. This suggests that Pandan demonstrates

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organizational commitment through financial investment, particularly in strengthening tourism infrastructure and stakeholder capability.

In addition, Pandan allocated ₱100,000.00 under the Office Target Plan specifically for Promotion and Marketing initiatives. This indicates institutional recognition of the importance of visibility and tourism market positioning. Furthermore, under the Annual Cultural Development Plan for CY 2025, another ₱100,000.00 was allocated. However, it is important to note that this budget is not solely dedicated to mangrove ecotourism, but rather forms part of broader cultural development programming.

In contrast, the gathered data show no identified allocations or documented targets under these categories for the other municipality. The absence of clearly defined program targets and budget allocations may indicate limited institutional structuring or weaker organizational prioritization of mangrove ecotourism within formal planning documents.

Comparatively, Pandan demonstrates stronger institutional and organizational support in terms of financial allocation and programmatic focus. However, while funding is present, some allocations are not exclusively dedicated to mangrove ecotourism, which may dilute program impact. On the other hand, the absence of documented targets in the other municipality may affect implementation coordination, accountability, and long-term sustainability.

To provide a clearer comparative overview of these documentary indicators, Table 1 presents the consolidated frequency of policy-related documents, including ordinances, resolutions, executive issuances, contracts of service, and other legal instruments supporting mangrove ecotourism implementation.

Part II- Factors that Contribute to the Status of Mangrove Ecotourism

A. Environmental Factors

Both municipality of Bato and Panda highly recognized environmental factors such as climate change, typhoon, storm surge, tide conditions, signage damage, improper waste disposal as contributors. Records reveals that Pandan responses are generally slightly higher than Bato. For example, in Bato Climate Change, answered 36 “Yes”, while Pandan has 40 “Yes”, on the other hand High tide/low tide Bato answered 36” yes”, and Pandan 40” Yes”.

This shows that environmental challenges are universally seen as critical contributors to mangrove ecotourism implementation. Extreme weather events and tidal conditions limit boat operations and affect site infrastructure, making environmental management crucial.

B. Financial and Resource Factors

For financial and resource factors limited funding, reliance on DENR, and insufficient promotion budget are significant issues.
Bato shows slightly lower recognition, for funding focused only on rehabilitation (28 “Yes”) compared to Pandan (37 “Yes”)

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Financial support is a strong determinant as suggested by the data, as you can see, Pandan seems to have slightly more awareness of funding limitations, possibly reflecting differences in budgeting priorities or program visibility. As shown in Table 2, a brief overview indicates the Factors Contribute to the Status of Mangroves Ecotourism Implementation.

C. Institutional and Governance Support

Both municipalities report limitations in personnel, mayoral support, and LGU initiatives. Pandan shows higher recognition of lack of support from municipal mayor (39 "Yes") than Bato (30 "Yes" indicating that governance factors might have a larger perceived influence in Pandan.

Table 2: ***Factors that are Perceived to Contribute to the Status of Mangroves Ecotourism Policy Implementation***

No	FACTORS	BATO		PANDAN	
A. Environmental Factors		f	%	f	%
1	Climate change	36	92.31	40	100
2	Typhoons and extreme weather conditions	38	97.44	38	95
3	Storm surge and flooding	36	92.31	37	92.75
4	High tide and low tide conditions affecting boat operations	36	92.31	40	100
5	Damage to signage and cottages due to weather	39	97.5	40	100
6	Improper waste disposal affecting mangrove condition	38	97.44	40	100
B. Financial and Resource Factors					
1	Limited funding for mangrove ecotourism development	38	97.44	39	97.5
2	Funding is focused only on rehabilitation and protection, not tourism development	28	71.79	37	92.5
3	Reliance on funding from DENR	35	89.74	38	95
4	Insufficient budget for promotion and marketing	36	92.31	39	97.5
C. Institutional and Governance Support					
1	Limited personnel assigned to the mangrove ecotourism site	37	94.87	38	95
2	Lack of support from the Municipal Mayor	30	76.92	39	97.5
3	Lack of support from other government agencies	37	94.87	37	92.5
4	Limited LGU initiative in addressing waste management issues	33	84.62	38	95

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5	Lack of inclusion in official municipal tourism packages	39	97.5	36	90
D. Promotion and Market Access					
1	Limited promotion of the mangrove ecotourism site	36	92.31	33	82.5
2	Not included in tour packages	35	89.74	32	80
3	Low number of tourist arrivals	30	76.92	33	82.5
4	Low frequency of client visits	29	74.36	33	82.5
E. Human Resource and Capacity Factors					
1	Limited number of trained tour guides	37	94.87	37	92.50
2	Tour guides need additional training on mangrove ecotourism	38	97.44	28	70
4	Guide are not Properly Compensated	36	92.31	26	65
5	Lack of commitment among implementers	29	74.36	38	95
6	Availability of boat and boatman is limited	37	94.87	37	92.5
F. Community Support and Participation					
1	Lack of community cooperation in proper waste disposal	33	84.62	40	100
2	Need for stronger community support for mangrove protection	35	89.74	40	100
4	Community awareness on mangrove conservation needs improvement	37	94.87	39	97.50

Institutional support affects program sustainability. Where support is weak, even environmental or financial strategies may not translate into effective implementation.

D. Promotion and Market Access

Limited promotion and inclusion in tour packages affect the number of tourist arrivals and client frequency. Bato respondents gave more “Yes” to limited promotion (36 “Yes”) than Pandan (33 “Yes”) but Pandan reports better tourist arrival (39 “Yes”) suggesting that promotion strategies and package inclusion differ between municipalities. Effective promotion and integration in tourism packages are essential for increasing site visitation.

E. Human Resource and Capacity Factors

Both municipalities highlighted limited trained tour guides and boats as key contributors. Bato is slightly stronger on recognizing knowledge gaps (Tour guide knowledge: 38 “Yes”) while Pandan reported lower recognition (28 “Yes”). Compensation is a notable issue in Pandan (26 “Yes”) but less so in Bato (36 “Yes”).

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Human resources, training, and incentives are critical for maintaining site operations and ensuring visitor satisfaction.

F. Community Support and Participation

For community Support and Participation, data shows that Bato have indicated an 33 yes answer for Lack of Community Cooperation while Pandan answered 40 as Yes , on the other hand the need for stronger community support for mangrove protection, Bato shows that there are 35 who answered yes conversely Pandan slightly higher as it record 40 yes , For community awareness on mangroves needs improvement Bato is slightly lower having a yes of 37, while Pandan has 39,yes.

Part III- Issues Encountered by the Implementers of the Mangroves Ecotourism Policy in the Municipality of Bato and Pandan

Based on the focused group discussion (FGD) conducted at Batalay Mangroves Eco Tour Guide in Bato and Pandan Eco-Tour Guide Association in Pandan, the issues raised by the implementers were analyzed thematically and it has 5 major themes emerged, such as (1) Weak Policy and Institutional Support, (2) Financial Constraints, Lack of Promotion and Market Visibility, Capacity and Knowledge Gaps, Capacity and Knowledge Gaps,

1.Weak Policy and Institutional Support

The findings from the Focus Group Discussions revealed issues related to policy and institutional support in both study sites, though the nature of the concern differed between the two municipalities.

In Batalay Mangrove Eco Park in Bato, participants identified the absence of a specific mangrove ecotourism policy as a major concern. Implementers expressed that while general environmental or tourism policies may exist, there is no formal ordinance or policy framework solely dedicated to mangrove ecotourism. Participants also emphasized that political will and leadership support significantly influence program implementation, particularly in terms of funding allocation and resource mobilization. According to them, support from local leaders determines whether activities, maintenance, and promotional efforts can be sustained.

In contrast, participants from the Pandan Mangroves Reserve in Pandan did not directly mention the absence of policy. Instead, they emphasized the need for stronger and more consistent support from the Local Government Unit (LGU). Members also reported challenges in internal organizational communication, noting that effective coordination among tour guide members and officers remains a concern. They described communication gaps as affecting decision-making processes and the overall functioning of the organization.

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Overall, the findings indicate that both municipalities experience institutional-related challenges; however, Bato's concern centers on the absence of a formal policy framework and reliance on political leadership, while Pandan's concern focuses more on strengthening LGU backing and improving internal organizational coordination.

2. Financial Constraints

Financial limitations emerged as a common concern in both study sites. In Batalay Mangrove Eco Park in Bato, participants reported limited fund allocation to support mangrove ecotourism activities. They indicated that available funds are insufficient to sustain regular maintenance and development initiatives.

Similarly, participants from the Pandan Mangroves Reserve in Pandan identified limitation of funds as a major issue affecting site operations.

Across both municipalities, participants noted that financial constraints affect several operational areas, including maintenance of the mangrove area, promotion efforts, training and capacity-building activities, and infrastructure improvements.

3. Lack of Promotion and Market Visibility

Both Bato and Pandan participants emphasized the absence of sustained promotional activities for their mangrove ecotourism sites. During the FGD, participants expressed the concern that without promotion, tourist arrivals remain low, which consequently affects income generation.

Informants, from both municipalities shared the sentiment that "no promotion, no tourists, no income," highlighting the direct connection they perceive between marketing efforts and site sustainability.

Participants also indicated that limited promotional initiatives affect tourist arrivals, income opportunities, and the continuity of operations.

4.Capacity and Knowledge Gaps

Issues related to capacity and knowledge were also raised in both study areas. In Bato, participants emphasized the need to distinguish different mangrove species, noting that ecological knowledge is important in guiding visitors and explaining the environmental value of the site.

In Pandan, similar concerns were raised regarding the identification of mangrove species. Additionally, participants reported the need for tour guides to attend training and seminars related to tour guiding. They also mentioned limited capacity among some tour guides in performing their roles effectively.

These responses indicate that knowledge and skills development are concerns among implementers in both municipalities.

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5.Community Perception and Environmental Management

Community-related and environmental management issues were also identified during the discussions.

In Bato, some participants reported that certain residents perceive mangroves as obstructing boat routes, particularly in areas where fishing activities are conducted.

In Pandan, participants highlighted concerns regarding proper waste disposal within the mangrove area. They noted that maintaining cleanliness in the site remains an ongoing challenge.

The findings from Bato and Pandan Mangroves Eco Parks reveal significant governance limitations, funding constraints, capacity gaps, promotion deficiencies, and environmental challenges that hinder the sustainability and effectiveness of mangrove ecotourism initiatives. These results underscore the need for a structured approach that strengthens policy implementation, institutional coordination, and community engagement. Drawing from these insights, the next section proposes a Mangrove Ecotourism Governance Framework designed specifically for the local context of both municipalities, providing actionable guidance for enhancing ecotourism management and long-term sustainability.

DISCUSSIONS

Part I: Status of Mangrove Ecotourism Policy Implementation

1. Policy and Legal Framework

The documentary analysis revealed differences in the number and specificity of ordinances and resolutions supporting mangrove ecotourism between Batalay Mangrove Eco Park in Bato and the Pandan Mangroves Reserve in Pandan. Bato recorded more local legislative issuances related to mangrove ecotourism compared to Pandan, which had fewer documented ordinances specifically addressing the initiative.

From the perspective of Van Meter and Van Horn's Policy Implementation Model, clear policy standards and objectives are foundational to effective implementation. The presence of formal ordinances in Bato suggests that mangrove ecotourism has some degree of legislative recognition. However, the mere existence of policies does not automatically guarantee strong implementation. Policy clarity, enforceability, and consistency remain critical variables affecting performance.

Through the lens of Ostrom's IAD Framework, formal ordinances serve as "rules-in-form" that structure interactions among actors within the action arena. Where policies are clearly defined, roles and responsibilities become more predictable, reducing ambiguity in decision-making. In municipalities where fewer formal documents exist, governance arrangements may rely more on informal coordination mechanisms.

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The implication is that strengthening the legal foundation of mangrove ecotourism—through clear, specific, and enforceable ordinances—can improve institutional stability and reduce dependence on informal arrangements.

2.Institutional Mechanisms and Inter-Organizational Support

The documentary findings also indicated limited formalized agreements such as Memoranda of Agreement (MOAs) with tour operators and external partners in both municipalities. While tourism brochures and IEC materials were present, structured partnerships with private tourism stakeholders appeared minimal.

According to Van Meter and Van Horn, inter-organizational communication and enforcement activities significantly influence implementation success. Weak or undocumented partnerships may limit coordination between local governments, community associations, and tourism networks. This can restrict market integration and reduce the visibility of mangrove ecotourism initiatives. Under the IAD framework, collaborative arrangements are essential components of collective-choice rules. When partnerships are not formally institutionalized, coordination may depend on personal relationships rather than stable governance structures.

The implication is that formalizing partnerships through documented agreements can enhance accountability, clarify expectations, and strengthen tourism integration mechanisms.

3.Financial Documentation and Resource Allocation

The analysis of available financial documents revealed limited evidence of consistent and dedicated budget allocation for mangrove ecotourism in both municipalities. While some activities were conducted, documentation of sustained financial planning appeared constrained the findings reveal a notable disparity in financial support for mangrove ecotourism between the municipalities of Pandan and Bato. While Pandan allocated approximately ₱3,000,000 for mangrove ecotourism development, no dedicated budget allocation was identified in the planning and development documents of Bato. This difference appears to reflect the varying stages of ecotourism development between the two sites. In Pandan, the allocated budget is intended to support the establishment of essential infrastructure such as pathways, cottages, and viewing facilities, which are currently lacking in the mangrove site. In contrast, the Batalay Mangroves Eco Park in Bato already has already installed infrastructure including a pathway and view deck tower.

However, the absence of budget allocation in Bato's planning and budgeting documents may also indicate limited institutionalization of mangrove ecotourism within the municipality's development priorities**.** Without consistent financial support reflected in key planning instruments, the sustainability of ecotourism initiatives may depend heavily on community efforts rather than structured government programs. This finding highlights the importance of integrating mangrove ecotourism into formal planning and budgeting processes to ensure long-term governance support and program continuity.

Van Meter and Van Horn identify resource availability as a key determinant of implementation effectiveness. Policies without corresponding financial support risk becoming symbolic rather than operational. The absence of clearly institutionalized budget lines weakens program continuity and long-term sustainability.

From the IAD perspective, financial allocations form part of the operational rules governing the action arena. Without predictable resources, actors face constraints that limit their capacity to carry out conservation and tourism activities effectively.
The implication is that integrating mangrove ecotourism into formal municipal budgeting processes can enhance stability and ensure that conservation objectives are matched with financial commitments.

4. Information, Education, and Communication (IEC) and Capacity Support

Both municipalities documented the presence of IEC materials such as brochures and records of barangay assemblies. However, documentation of systematic and continuous capacity-building programs appeared limited.

Within the Social–Ecological Systems (SES) Theory, information dissemination and knowledge-building are critical components of adaptive governance. Effective management of ecological resources depends not only on legal frameworks but also on informed and capable actors.
When IEC efforts are present but not institutionalized or regularly updated, their long-term impact on environmental awareness and tourism development may be constrained.The implication is that IEC and training initiatives must move beyond compliance-based documentation and become integrated components of long-term ecological and tourism strategies.

5.Monitoring and Sustainability Mechanisms

The documentary analysis showed limited documentation of formal monitoring and evaluation mechanisms specific to mangrove ecotourism outcomes. While some activities were recorded, systematic performance indicators (environmental, economic, and social) were not consistently documented.
Van Meter and Van Horn emphasize that policy performance is influenced by feedback mechanisms and enforcement activities. Without monitoring systems, implementers lack structured feedback loops to assess whether objectives are being achieved.

In SES theory, sustainability depends on adaptive management—where ecological conditions and governance arrangements are continuously assessed and adjusted. The absence of documented evaluation mechanisms weakens adaptive capacity within the social–ecological system.

The implication is that institutionalizing monitoring frameworks with clear indicators can enhance accountability and long-term ecological sustainability.

The documentary evidence suggests that while both municipalities demonstrate efforts to institutionalize mangrove ecotourism, implementation remains partially institutionalized and unevenly structured. Legislative recognition exists but varies in depth and specificity. Financial and partnership

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mechanisms appear limited, and monitoring systems require strengthening. By integrating Van Meter and Van Horn's implementation variables, Ostrom's IAD framework, and SES theory, the analysis indicates that effective mangrove ecotourism governance requires: (1) Clear and enforceable local policy instruments (2) Stable and documented financial allocation (3) Formalized inter-organizational partnerships (4) Institutionalized monitoring and feedback mechanisms (5) Integration of ecological and tourism objectives These findings reinforce the need for a more cohesive governance structure that aligns legal, financial, organizational, and ecological dimensions of mangrove ecotourism in Catanduanes.

Part II-Factors that contribute to the status of Mangroves Ecotourism Implementation in the two municipalities.

1.Policy Execution and Operationalization

The findings on implementation status indicate that both Batalay Mangrove Eco Park in Bato and the Pandan Mangroves Reserve in Pandan demonstrate varying degrees of policy execution across identified indicators, including policy support, IEC activities, community participation, monitoring mechanisms, and resource allocation

Although policy instruments exist (as discussed in Part I), the implementation indicators suggest that operationalization remains uneven. Some components such as barangay assemblies and IEC distribution were present in both municipalities, while other mechanisms such as structured monitoring systems, formal partnerships, and sustained promotional integration appeared limited or inconsistently implemented.

According to Van Meter and Van Horn's Policy Implementation Model, the transition from policy formulation to implementation depends on several interacting variables, including clarity of standards, adequacy of resources, inter-organizational communication, and the disposition of implementers. The uneven implementation status across indicators suggests that while policy intentions may be articulated, enabling conditions for consistent execution are not uniformly institutionalized.

The implication is that implementation performance cannot be assessed solely by the presence of ordinances but must be evaluated based on operational consistency across governance dimensions.

2.Inter-Organizational Communication and Coordination

Implementation findings also show that coordination mechanisms between municipal offices, barangays, and community associations are present but not fully institutionalized. IEC materials and assemblies indicate some level of vertical communication; however, structured horizontal collaboration with tourism operators and external stakeholders remains limited.

Van Meter and Van Horn emphasize that inter-organizational communication is a critical determinant of policy performance. Weak communication channels may slow coordination, reduce efficiency, and create implementation gaps between policy directives and on-the-ground execution.

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Through the lens of the IAD Framework, these coordination gaps reflect weaknesses in the "action arena," where actors interact under defined rules. If communication mechanisms are not clearly structured, collective action becomes dependent on informal relationships rather than stable institutional arrangements. The implication is that strengthening formal coordination platforms—such as regular multi-stakeholder meetings and documented partnership agreements—can enhance implementation coherence and reduce fragmentation.

3.Resource Utilization and Administrative Capacity

The status findings suggest that while activities such as promotion, site maintenance, and training initiatives are undertaken, they are constrained by limited financial and human resources. This affects the continuity and scale of implementation efforts in both municipalities.

In Van Meter and Van Horn's model, resource availability is directly linked to implementation success. Even well-designed policies may fail if implementers lack adequate funding, staffing, or logistical support. The partial implementation of certain indicators suggests that resource constraints moderate the extent to which objectives are achieved.

From the IAD perspective, resource allocation shapes the incentives and capacities of actors operating within the governance system. When resources are limited, actors may prioritize short-term activities over long-term sustainability strategies. The implication is that strengthening administrative capacity, through predictable budgeting, staffing support, and structured planning, can improve the consistency of implementation across program components.

5.Monitoring, Evaluation, and Adaptive Governance

The findings indicate that while some evaluation practices are conducted, comprehensive monitoring systems using structured environmental, economic, and social indicators are not consistently institutionalized.

Within the Policy Implementation Model, monitoring and feedback mechanisms are necessary to ensure compliance and improve performance. Without systematic evaluation, implementation remains reactive rather than evidence-based.

Under Social–Ecological Systems (SES) Theory, sustainability depends on adaptive governance—where ecological conditions and socio-economic outcomes are continuously assessed and policies are adjusted accordingly. Limited monitoring reduces adaptive capacity, weakening long-term resilience of the mangrove ecotourism system.

The implication is that integrating formal monitoring frameworks into municipal governance can strengthen accountability and promote adaptive management practices.

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6.Community Participation and Local Engagement

The presence of barangay assemblies and community-based activities in both municipalities indicates efforts toward participatory engagement. However, the depth and institutionalization of participation vary.

Ostrom's IAD framework emphasizes the importance of collective-choice arrangements and clearly defined roles in managing common-pool resources such as mangrove ecosystems. Where participation is regular and rule-bound, governance becomes more stable and inclusive. Where participation is occasional or informal, sustainability may depend heavily on leadership dynamics.
From the SES perspective, active community participation strengthens the link between ecological stewardship and livelihood outcomes. Participation enhances local ownership, compliance, and long-term conservation behavior.

The implication is that institutionalizing participatory mechanisms—through formal committees, documented decision-making processes, and transparent reporting—can enhance both ecological sustainability and governance legitimacy.

The analysis of implementation indicators reveals that both Bato and Pandan exhibit partial but evolving institutionalization of mangrove ecotourism governance. While foundational elements such as ordinances, IEC efforts, and community assemblies are present, gaps remain in resource stability, structured coordination, and monitoring systems. By integrating Van Meter and Van Horn's Policy Implementation Model**,** Ostrom's IAD Framework, and SES Theory, the findings suggest that effective implementation requires alignment across policy clarity, resource adequacy, inter-organizational coordination, participatory governance, and adaptive monitoring mechanisms.

The status of implementation in both municipalities reflects transitional governance arrangements—where policy intentions exist, but institutional consolidation and system-wide integration remain ongoing processes

Part III- Issues Encountered by the Implementers of the mangroves Ecotourism Policy in the Municipality of Bato and Pandan

1.Institutional Support and Policy Gaps

The findings revealed that Batalay Mangrove Eco Park in Bato lacks a specific mangrove ecotourism policy and is highly dependent on political will for funding and program continuity. In contrast, the Pandan Mangroves Reserve in Pandan expressed the need for stronger LGU support and improved internal organizational communication.

This difference suggests varying levels of institutionalization between the two municipalities. In Bato, the absence of a formal policy framework indicates weak structural anchoring of mangrove ecotourism initiatives. According to Van Meter and Van Horn's Policy Implementation Model, effective

implementation depends on clear policy standards, available resources, and supportive inter-organizational relationships. Without a specific ordinance or defined policy standards, implementation becomes vulnerable to leadership changes and shifting political priorities. This explains why funding and operational continuity in Bato are perceived as dependent on political will.

Meanwhile, Pandan's issue is less about policy absence and more about coordination and internal communication. Through the lens of Elinor Ostrom's Institutional Analysis and Development (IAD) Framework, effective governance of common-pool resources requires clearly defined roles, communication mechanisms, and collective-choice arrangements. Communication struggles within the organization affect the "action arena," where actors interact and make decisions. Weak coordination reduces collective efficiency even when structural support exists.

The implication of these findings is that institutional strengthening must occur at two levels: formal policy institutionalization in Bato and organizational coordination mechanisms in Pandan. Strengthening local ordinances and clarifying governance roles can enhance policy stability and reduce dependence on individual political actors.

2.Financial Constraints and Resource Allocation

Both municipalities identified financial limitations as a major barrier affecting maintenance, promotion, training, and infrastructure development.

From the perspective of Van Meter and Van Horn's model, resource availability is a critical variable influencing implementation performance. Insufficient financial resources weaken the capacity of implementers to translate policy intentions into operational outcomes.

In Bato, where funding is linked to political will, resource allocation appears less institutionalized. In Pandan, financial limitation affects operational sustainability, particularly in maintaining services and conducting training. Under the IAD Framework, financial resources form part of the institutional rules that structure action situations. Limited resources constrain collective action and reduce incentives for sustained participation among members.

The implication is that financial sustainability mechanisms—such as diversified income streams, integration into municipal tourism plans, or formal budget allocation—are necessary to stabilize mangrove ecotourism initiatives. Without predictable funding, implementation remains fragile and reactive.

3.Promotion and Market Integration

Both sites emphasized weak promotion, summarized by the statement: *"No promotion, no tourists, no income."*

This reflects a gap between local ecotourism initiatives and broader tourism systems. From the perspective of the Social–Ecological Systems (SES) Theory, mangrove ecotourism operates within interconnected ecological, economic, and governance subsystems. Poor market integration disrupts the

linkage between resource sustainability and livelihood outcomes. Even if ecological conservation is maintained, weak market connectivity limits economic returns, which in turn reduces community motivation to participate.

Van Meter and Van Horn's model also highlights the importance of inter-organizational communication. Weak coordination between local tourism offices, provincial tourism networks, and community associations may explain limited promotional reach.

The implication is that mangrove ecotourism governance must not focus solely on environmental protection but also on economic linkages. Integration into provincial tourism circuits and digital marketing platforms can enhance visibility and income stability.

4.Capacity and Knowledge Gaps

Both municipalities acknowledged the need for improved ecological knowledge, particularly in identifying mangrove species. Pandan further emphasized the need for formal training and seminars for tour guides.

From the SES perspective, knowledge is a critical component of adaptive capacity within social–ecological systems. The ability of local actors to interpret ecological features enhances both environmental stewardship and visitor experience. Without sufficient knowledge and skills, the quality of ecotourism services may decline, reducing competitiveness and sustainability.

Through the IAD lens, capacity-building strengthens actors within the action arena, enabling more effective participation and rule enforcement. Training enhances collective competence and reduces implementation gaps.

The implication is that continuous capacity development should be institutionalized rather than conducted sporadically. Formal partnerships with academic institutions or environmental agencies may strengthen ecological literacy and professional standards among tour guides.

5.Community Perception and Environmental Management

In Bato, some residents perceive mangroves as obstructing boat routes, reflecting tensions between conservation and livelihood practices. In Pandan, waste management within the mangrove area was identified as an environmental concern.

The SES Theory provides a useful framework for understanding these dynamics. Mangrove ecosystems represent ecological subsystems that interact with social actors, including fishermen and tour guides. Conflicts arise when conservation objectives intersect with livelihood needs. In Bato, navigation concerns highlight trade-offs between ecological preservation and traditional fishing activities.

Under the IAD framework, such conflicts occur within the action arena where actors negotiate rules and resource use. Without inclusive decision-making mechanisms, compliance and support may weaken.

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The implication is that participatory governance mechanisms must be strengthened to balance ecological protection and livelihood considerations. Community dialogue and co-management strategies can reduce conflict and enhance collective ownership.

Taken together, the findings indicate that mangrove ecotourism governance in Bato and Pandan reflects varying institutional and operational challenges. Bato's primary gap lies in formal policy institutionalization and stable resource allocation, while Pandan's challenges center on coordination, capacity development, and environmental management.

By integrating Van Meter and Van Horn's Policy Implementation Model, Ostrom's IAD Framework, and SES Theory, the analysis demonstrates that successful mangrove ecotourism governance requires:(1) Clear policy standards and institutional support (2) Stable and diversified resources (3) Strong inter-organizational communication (4) Capacity development of local actors (5) Integration of ecological sustainability and economic viability.

These insights provide a theoretical foundation for developing a localized governance framework suited to the context of mangrove ecotourism in Catanduanes.

Part IV: Proposed Mangroves Ecotourism Implementation Framework

The proposed Catanduanes Mangrove Ecotourism Governance Framework is grounded on the empirical findings presented in the previous chapter and anchored in the Policy Implementation Model, the Adaptive Implementation Design (AID) model, and the Socio-Ecological Systems (SES) framework. This multi-theoretical foundation allows the framework to address governance limitations, funding constraints, capacity gaps, promotion deficiencies, and environmental challenges identified in both municipalities. By incorporating an outcome-oriented dimension, the framework provides a structured, context-sensitive approach to strengthening mangrove ecotourism implementation in Catanduanes Province.

While rooted in local institutional realities, the framework also considers broader sustainable development implications. Effective mangrove ecotourism governance, achieved through strengthened policy implementation, adaptive management, and attention to socio-ecological interdependencies, contributes not only to local administrative effectiveness but also to environmental conservation and inclusive economic growth. In this regard, the framework situates municipal action within the Sustainable Development Goals (SDGs) articulated by the United Nations, particularly SDG 14 (Life Below Water), SDG 15 (Life on Land), and SDG 8 (Decent Work and Economic Growth). Although the study does not directly measure SDG indicators, it highlights how robust local governance can advance these global objectives.

Framework Components

The framework conceptualizes successful mangrove ecotourism implementation as a function of interconnected governance, resource, capacity, stakeholder, and environmental systems. These components collectively shape policy effectiveness and sustainability.

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1. Policy and Institutional Strengthening

Findings indicate that gaps in policy and inconsistent institutional support significantly affect implementation, particularly in Bato, where the absence of specific local ordinances limits regulatory authority and structured revenue generation. In Pandan, while some local government support exists, implementers emphasized the need for clearer policy direction and stronger institutional backing.
The framework emphasizes the enactment or strengthening of municipal ordinances specific to mangrove ecotourism, formal recognition of community associations through agreements, and integration of ecotourism into local development and tourism plans. Institutionalized monitoring and evaluation mechanisms are likewise essential to ensure accountability and program continuity. Strengthening the policy foundation ensures clarity of roles, enforcement authority, and alignment between local government units and community-based organizations.

2. Sustainable Financing and Resource Allocation

Both municipalities reported limited financial resources as a constraint to operations, training, and promotional activities. The framework proposes transparent revenue-sharing systems, access to provincial and national tourism grants, and diversification of income-generating activities beyond core services such as tour guiding and boat operations. Adequate resources, emphasized by the Policy Implementation Model, are fundamental to transforming policy intent into sustained action and reducing dependency on political support.

3. Capacity Development and Professionalization

Uneven training and knowledge gaps among implementers affect service quality, environmental management, and organizational efficiency. The framework prioritizes continuous capacity-building programs on mangrove ecology, eco-guiding techniques, conservation practices, and organizational leadership. Standardized accreditation for tour guides and structured knowledge materials further professionalizes ecotourism services, enhancing policy translation at the operational level.

4. Promotion and Stakeholder Engagement

Limited tourist engagement and promotion deficiencies reduce site visibility and revenue potential. The framework underscores inclusion in official municipal and provincial tourism programs, digital marketing strategies, partnerships with educational institutions and travel operators, and strengthened community awareness initiatives. Coordinated stakeholder engagement among LGUs, tourism offices, environmental agencies, and community members reinforces shared responsibility for site sustainability.

5. Environmental and Operational Management

Environmental and operational challenges vary between municipalities. In Bato, local perceptions affect site operations, while in Pandan, waste management and environmental maintenance require continuous attention. The framework integrates environmental monitoring systems, waste management

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protocols, regular conservation activities, and community consultations to address social concerns. Operational guidelines for visitor management further ensure ecological integrity and visitor satisfaction.

Integrated Framework Logic

The framework positions Policy and Institutional Strengthening as the foundation. Supported by sustainable financing, enhanced capacity, active stakeholder engagement, and effective environmental management, these pillars collectively lead to improved implementation outcomes.

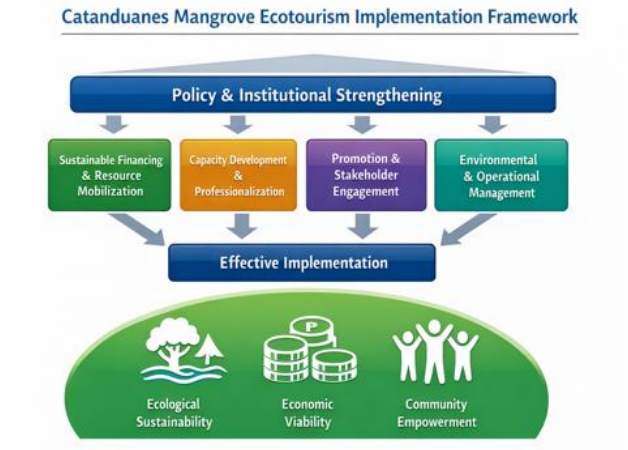

Figure 2: ***Proposed Mangrove Ecotourism Governance Framework***

Note: Diagram layout was generated with the assistance of an AI visualization tool based on the researcher's original framework design.

Ultimately, the framework aims to achieve: (1) Environmental sustainability; (2) Economic viability; (3) Community participation and empowerment (4) Institutional stability

The framework acknowledges that Bato's challenges are primarily governance-driven, while Pandan's constraints are largely operational and capacity-oriented. Both municipalities, however, require integrated, context-responsive strategies. The model demonstrates how the interplay of inputs, processes, outputs, and outcomes, guided by multi-theoretical insights (Policy Implementation Model, AID, SES), can translate local actions into sustainable mangrove ecotourism outcomes while contributing to global sustainability objectives.

Policy Adoption Mechanism

To facilitate institutional uptake, this study proposes a draft resolution for adoption by the Sangguniang Bayan of Bato and Pandan in Catanduanes. The proposed resolution operationalizes the framework as a guiding reference for planning, coordination, and monitoring of mangrove ecotourism initiatives.

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RECOMMENDATIONS

Based on the findings of this study on the status of mangrove ecotourism policy implementation in the municipalities of Bato and Pandan, Catanduanes, this section presents practical and evidence-based recommendations. These recommendations aim to address the gaps identified in policy adoption, community participation, conservation practices, and promotion of ecotourism, thereby providing actionable strategies to enhance sustainable management and governance of mangrove resources in the province.

1. To strengthen mangrove ecotourism in Bato and Pandan, it is recommended that both municipalities enhance the institutionalization of their policies and operational mechanisms by ensuring that legal frameworks, budget allocations, and administrative procedures are clearly defined, coordinated, and consistently implemented. This includes developing comprehensive mangrove ecotourism ordinances that articulate objectives, roles, and enforcement strategies, formalizing partnerships with tourism stakeholders to improve collaboration and accountability and institutionalizing systematic documentation and monitoring systems to track progress, evaluate effectiveness, and guide adaptive management. By grounding policy intentions in clear operational practices, reliable funding, and evidence-based management, these measures will support sustainable governance, improve organizational capacity, and ensure that mangrove ecotourism initiatives are both legally recognized and effectively implemented in Catanduanes.

2. To strengthen the implementation of mangrove ecotourism policies in Bato and Pandan, it is recommended that both municipalities focus on enhancing operational mechanisms, improving coordination among implementing actors, and institutionalizing systematic monitoring and evaluation processes. This includes establishing clear operational guidelines that translate policy objectives into concrete actions, ensuring consistent and predictable allocation of resources to support site maintenance, capacity-building, and promotional activities, and formalizing communication channels and collaborative arrangements among local government units, community associations, and tourism stakeholders. By grounding policy implementation in structured procedures, reliable funding, and evidence-based monitoring, these measures will improve the consistency, effectiveness, and sustainability of mangrove ecotourism initiatives, enabling both municipalities to translate policy intentions into tangible outcomes while maintaining adaptive and accountable governance practices.

3.To address the operational and governance challenges identified by implementers in Bato and Pandan, it is recommended that both municipalities strengthen organizational coordination, enhance technical and ecological capacity, and institutionalize mechanisms for adaptive management. This includes improving communication channels among local government units, community associations, and tourism stakeholders, providing regular training and professional development for tour guides and implementers, and establishing systematic environmental management practices such as proper waste disposal and species monitoring. Additionally, sustained financial support and promotional strategies should be ensured to increase tourist engagement and income generation, thereby reinforcing the viability of mangrove ecotourism. By focusing on these areas, municipalities can reduce operational gaps, foster community

participation, and create resilient, ecologically sustainable, and economically viable mangrove ecotourism initiatives in Catanduanes.

4. It is strongly recommended that both municipalities adopt and implement the proposed mangrove ecotourism governance framework. This framework provides a structured approach to coordinate stakeholders, enhance institutional support, strengthen community participation, and ensure sustainable conservation practices. By operationalizing this framework, local government units, people's associations, and tourism practitioners can systematically address gaps in policy implementation, improve ecotourism management, and promote long-term ecological and economic sustainability of mangrove resources in Bato and Pandan, Catanduanes.

5. It is recommended that the Sangguniang Bayan of Bato and Pandan formally adopt the Catanduanes Mangrove Ecotourism Governance Framework through the proposed draft resolution. Adoption of the framework will provide a structured and legally recognized mechanism for planning, coordination, and monitoring of mangrove ecotourism initiatives, ensuring alignment between local government units, community-based associations, and other stakeholders. This measure will enhance the sustainability of ecotourism operations, support local livelihoods, and contribute to broader environmental and socio-economic objectives aligned with the Sustainable Development Goals.

6. It is recommended that the municipalities of Bato and Pandan collaborate with the Catanduanes State University (CATSU) – Bachelor of Public Administration program to conduct extension programs targeting the tour guide associations, BMETGA and PETGA. Such collaboration can provide capacity-building, skills enhancement, and awareness-raising activities tailored to the needs of the tour guides. By leveraging academic expertise, these programs can strengthen community participation, improve service quality in mangrove ecotourism operations, and enhance the overall sustainability and effectiveness of ecotourism initiatives in both municipalities.

7. It is recommended that future studies explore additional aspects of mangrove ecotourism in Catanduanes, including the long-term economic impact on local communities, visitor satisfaction and behavior, and the effectiveness of specific conservation interventions. Research could also investigate the role of technology and social media in promoting mangrove ecotourism or conduct comparative studies with other municipalities in the Bicol Region. These avenues can provide deeper insights, validate findings, and support evidence-based improvements in the sustainable management of mangrove ecotourism initiatives.

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