

Conservation of Natural Resources Through Adaptive Governance Systems with Multi-Stakeholder Partnerships in Mandeh Island: Government Policy Transformation



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ABSTRACT: The Mandeh region is one of the favorite tourist destinations in West Sumatra, rich in natural and cultural resources but vulnerable to environmental degradation caused by pollution, overexploitation, and climate change. Government policies through environmental laws have been implemented to address these issues, but their impact on society, particularly on natural resources, is complex, as evidenced by the damage to coral reefs. To prevent the destruction of coral reefs as a valuable natural resource, it is necessary to implement conservation through an adaptive governance system via multi-stakeholder partnerships in the Mandeh Island area. This research employs a qualitative approach using phenomenological methods, including interviews, participatory observations, and policy document analysis. The results show that partnerships between the government and businesses began with the provision of tourism infrastructure, which expanded into broader partnerships with NGOs and communities in turtle conservation. Collaborative governance has taken the form of community-based coastal resource management on Serangan Island. Meanwhile, adaptive joint management has been developed by delegating part of the responsibility for turtle conservation and utilization to local communities through various agreements and MoUs. The study also reveals that the adaptive capacity of Serangan Island's community has progressed towards resilience against environmental and socio-economic changes. Two recommendations are proposed for natural resource managers in Serangan Island. First, a robust data collection and monitoring system needs to be developed for the governance of turtles, coral reefs, and marine biota. Second, social learning through dialogue, reflection, and evaluation should be implemented to reassess outdated governance practices.

KEYWORDS: conservation, natural resources, adaptive, Mandeh

INTRODUCTION

Natural resource conservation is a critical effort to sustain ecosystems and mitigate the negative impacts of human activities on the environment. Mandeh Island, located in West Sumatra, Indonesia, boasts rich biodiversity and stunning natural beauty, making it a highly potential area for tourism and economic development. Consistent with [1], "The Mandeh region is one of the favorite tourist destinations in West Sumatra. The combination of hills and a bay covering $\pm 18,000$ hectares, adorned with small islands in the middle of the bay, has earned Mandeh the title of the 'Raja Ampat of West Sumatra.' Located in Koto XI Tarusan District, South Coast, this tourist site is only a two-hour drive from Padang City by land." However, the increased human activities in this area also pose challenges to the sustainability of its natural resources.

The Indonesian government has taken various steps to protect and manage natural resources in Mandeh Island through the implementation of adaptive conservation policies. As explained in [2], Law No. 32 of 2024 plays a significant role in ensuring the continued relevance of conservation principles, strengthened by its implementation in the current context. This policy emphasizes the importance of governance approaches that are flexible and capable of adapting to environmental changes and the socio-economic needs of local communities.

In this context, an adaptive governance system refers to policies that are open to adjustment based on actual conditions in the field, ensuring that they remain effective and relevant in the face of changes. One approach implemented is multi-stakeholder partnerships, where various parties, including the government, communities, the private sector, and non-governmental organizations, collaborate to achieve sustainable conservation goals. These partnerships not only enhance the effectiveness of policies but also create opportunities for participation from all involved parties, fostering shared responsibility and commitment to preserving natural resources.

This collaborative approach is expected to transform conservation policies into more inclusive and responsive frameworks that address community needs and environmental dynamics. This research aims to identify effective strategies for implementing adaptive

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governance based on multi-stakeholder partnerships in Mandeh Island, as well as how adaptive conservation policies can provide long-term solutions for natural resource management in Indonesia. Based on the issues mentioned above, the research question formulated is: "How can government policy transformation support natural resource conservation in Mandeh Island through a multi-stakeholder partnership approach?"

METHODOLOGY

This study employs a descriptive qualitative method using literature review and case studies in the Kerinci community. According to [3], "Qualitative methods are research methods used to study natural object conditions (as opposed to experimental), where the researcher is the key instrument." Descriptive research in the qualitative context "aims to understand phenomena that occur naturally and provide clear descriptions based on the data obtained" [9] (Moleong, 2018:6). Data collection was conducted through observation, in-depth interviews with community leaders and cultural figures, as well as document analysis via literature reviews of government policies supporting natural resource conservation in Mandeh Island.

RESULTS

Adaptive governance is an approach that enables natural resource management to adjust to social, environmental, and economic changes. This theory emphasizes collaboration among stakeholders and policy flexibility, which is essential in the context of multi-stakeholder partnerships like those in Mandeh Island. Adaptive governance plays a crucial role in sustaining and enhancing the economy of tourism in areas with prime destinations. Nagari Mandeh Tourism Village is one such area with significant potential as a top destination. This is evident in its adequate tourism components, a community capable of developing local tourism potential, and facilities that meet tourists' needs during their stay in the village.

The potential for Nagari Mandeh Tourism Village to become a leading destination is advantageous, as it attracts tourists to visit and admire the natural beauty of Nagari Mandeh. The village aligns with five essential elements required to become a tourism destination, all of which Nagari Mandeh has fulfilled, positioning it as a strong contender for a top destination.

Nagari Mandeh's potential as a top destination is further demonstrated by the increasing number of visitors since 2018-2019. According to [4], the number of tourist visits in Pesisir Selatan Regency, West Sumatra, during the 2019 Eid holiday reached 795,747 visitors, a 489% increase from 2018, which only saw 135,000 visitors. This surge placed Pesisir Selatan in the top position among 19 regencies and cities, surpassing Padang City, Pariaman City, and even Bukittinggi City in tourist numbers.

Mandeh Island is located precisely in Teluk Carocok Tarusan and consists of several islands, including Tarajun, Sironjong Besar, Sironjong Kecil, Setan Kecil, Pulau Merak, and Pulau Cubadak.

In addition, data from [5] also highlights the significant increase in tourist visits to Pesisir Selatan Regency, particularly to Mandeh Island. This trend is illustrated in **Figure 1** below:



Figure 1. Tourist Visit Numbers in Pesisir Selatan Regency in 2023

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Various activities can be enjoyed in Pulau Mandeh, such as snorkeling, scuba diving, paragliding, camping, and fishing. At Sironjong Island, visitors can even jump off a cliff with a height of 15 meters. Puncak Mandeh is one of the most attractive spots to visit. From this location, tourists can admire the beauty of Teluk Carocok Tarusan. Puncak Mandeh also provides a dedicated area for enjoying the fresh air and taking in the surrounding scenery.

Pulau Setan is the most frequently visited island in the area. It features food stalls that serve as a source of livelihood for local residents. Below are some images showcasing activities that tourists have experienced in Pulau Mandeh.



Figure 2. Snorkeling Activities in Nagari Mandeh Tourism Village



Figure 3. Parachuting Activities in Nagari Mandeh Tourism Village



Figure 4. Fishing Activities in Nagari Mandeh Tourism Village

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Conservation of natural resources on Mandeh Island through an adaptive governance system with multi-stakeholder partnerships is a crucial approach to ensuring the sustainability of local ecosystems while supporting the socio-economic growth of the surrounding community. Below are the results and general discussions on this approach:

1. Results of Natural Resource Conservation

Improved Ecosystem Sustainability: By involving various stakeholders such as the government, local communities, NGOs, and the private sector, conservation efforts have become more effective. For instance, through coral reef restoration programs and mangrove forest preservation, both marine and terrestrial ecosystems on Mandeh Island have shown improved health. **Enhanced Local Economy:** Through partnerships, local communities are engaged in sustainable ecotourism, which provides economic benefits without harming natural resources. **Development of More Adaptive Government Policies:** The government can update policies and regulations based on feedback from stakeholders, making them more responsive to field needs and environmental changes.

2. Discussion on Multi-Stakeholder Partnerships

Strong Collaboration: These partnerships involve the government, NGOs, academics, local communities, and the private sector. Each party contributes differently, such as by providing data, funding, and environmental education for the community. **Addressing Conflicts of Interest:** In multi-stakeholder partnerships, conflicts of interest may arise, particularly concerning the distribution of economic benefits and access rights to natural resources. Adaptive governance plays a role in resolving these conflicts through flexible arrangements that align with evolving conditions. **Engaging Local Communities:** Empowering local communities as guardians and implementers of conservation is vital to achieving environmental sustainability and social welfare together.

3. Transformation of Government Policies

Participatory and Adaptive Policies: This system enables the government to adopt adaptive policies that are continuously updated based on environmental conditions and short-term evaluation results. **Development of Supportive Infrastructure:** The government can assist by building facilities that support ecotourism and conservation, such as conservation information centers and training facilities. **Enhancing Local Regulatory Capacity:** Policy transformation also includes adjusting regulations that involve local communities in decision-making processes for natural resource management.

Additionally, programs initiated by the government and local communities in conservation areas are necessary to support these efforts. According to [6], the following are seven conservation programs that can be implemented in conservation areas:

1. Agroforestry program

This program focuses specifically on forest conservation areas. Activities include collaborative forest management between the government and local communities through community forests or private forests. Agroforestry yields non-timber forest products as the primary result and serves ecologically as natural forests due to the stratified canopy of mixed shrub and tree species, including fruits and natural forest-origin tree species (Michon and Foresta 1995). Communities can also develop cultivation technologies through local wisdom.

2. Conservation Funds and Adoption Programs

These programs support conservation efforts in tourist areas. A conservation fund is a voluntary donation from tourists who care about environmental preservation. Adoption programs involve tourists "adopting" rare flora and fauna species. However, the adopted species are not taken home; instead, tourists provide financial support for conserving the selected rare species.

3. Endangered Wildlife Conservation

This program includes rescuing, rehabilitating, releasing, reintroducing, monitoring, and educating surrounding communities. Rescued and rehabilitated endangered wildlife undergo assessments of their health and habitat. Once their condition improves, the wildlife can be released back into their natural habitat. Reintroduction and monitoring continue even after release, involving local communities through education on wildlife protection and conservation.

4. Conservation Management

This management program aims to manage natural resources in conservation areas effectively. For example, in marine conservation areas, management can be carried out through ecotourism activities, which help mitigate risks and pressures from fishing activities. In mountain conservation areas, the program could involve creating water infiltration systems or rainwater harvesting systems for local farmers. The goal of conservation management is to enable communities to utilize their surrounding natural resources optimally without causing environmental degradation

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5. National Park Program



Figure 5. National Park

National parks are expansive areas designated as conservation zones for the diverse natural wealth found in Indonesia. They host numerous habitats for flora and fauna, including endangered species. Beyond preserving natural habitats, national parks can serve as breeding grounds for rare and endangered flora and fauna, particularly when their natural environments are unsuitable or under threat. This approach addresses concerns about habitat degradation and lack of protection for these species. To ensure their effectiveness, national parks must implement strong management and governance systems aimed at conserving rare flora and fauna.

6. Community Outreach / Public Participation Mobilization.

The Community Outreach program invites local communities to actively participate in nature conservation efforts. Initially, the community is introduced to the potential of their surrounding natural resources. This potential can be utilized for purposes such as tourism or to support local livelihoods. Following this, the community is encouraged to protect, preserve, and sustainably benefit from the environment. For example, residents in marine conservation areas do not necessarily need to work as fishermen to maintain the marine ecosystem; they can engage in other sectors such as transportation or aquaculture.

7. Monitoring Program

Monitoring is essential in areas where conservation programs are deemed successful. Addressed environmental issues still require regulation, policy, and management oversight to ensure sustained effectiveness. Monitoring also helps identify new problems and any changes occurring within the conservation area. Apart from environmental monitoring, it is equally important to oversee the infrastructure and facilities supporting tourism in Mandeh Island. For example, access roads to Mandeh Village are currently under improvement, although public transportation to the area is still unavailable. Visitors must use private vehicles such as cars or motorcycles to reach the village. There is also boat transportation managed by the local community to facilitate travel to the islands and other attractions within the Mandeh area. The condition of the roads to Mandeh Village has significantly improved, as depicted in the following image.



Figure 6. Road Conditions Leading to Mandeh Island Village

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The adaptive governance approach through multi-stakeholder partnerships in Pulau Mandeh has the potential to create a balance between natural resource conservation and community welfare. Transformative and adaptive government policies allow for more responsive conservation efforts, ensuring sustainable ecosystem management while addressing local needs.

CONCLUSION

The conservation of natural resources in Pulau Mandeh using adaptive governance systems through multi-stakeholder partnerships demonstrates that collaborative approaches are effective in sustaining ecosystems and fostering government policy transformation. By involving various stakeholders, such as the government, local communities, academics, and private sectors, the adaptive governance system addresses environmental challenges and economic demands simultaneously.

This framework not only prioritizes conservation but also considers social and economic aspects, enabling the government to adopt more inclusive and participatory policies. According to [7], Desa Wisata Nagari Mandeh holds great potential as a premier tourist destination. Its tourism indicators include: What to see: Pulau Setan (Soetan) and mangrove forests, What to do: Snorkeling and island tours, What to buy: Anchovies and nipah fruits, What to arrive: Accessible by motorcycle or car and What to stay: Availability of homestays.

Overall, 86.7% of locals and tourists rate Desa Wisata Nagari Mandeh's attractiveness as excellent, while 13.3% view it as adequate in terms of amenities and ancillary services. The results reveal that policies can be more responsive to local dynamics, supported by shared commitments to conserving Pulau Mandeh's natural resources. This transformation enhances efficiency, accountability, and transparency in resource management, while increasing community awareness of the importance of environmental conservation.

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