

THE ROLE OF STAKEHOLDER-BASED FOREST FARMERS' GROUPS IN THE MANGROVE ECOSYSTEM IN BURUK BAKUL VILLAGE, BUKIT BATU DISTRICT, BENGKALIS REGENCY

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ABSTRACT

Buruk Bakul Village is a coastal area with significant mangrove ecosystem potential that plays an important role in supporting local livelihoods. However, mangroves in this area are under pressure due to human activities and natural factors. This study aims to analyze the role of Forest Farmer Groups (KTH) in mangrove management and identify the positions of the stakeholders involved. The research employed a survey method with a qualitative approach. Data were collected through observation, interviews, questionnaires, and documentation, while respondents were selected using purposive sampling. Data analysis was conducted descriptively and supported by a power– interest approach to map stakeholder influence and interest. The results show that the KTH Sekat Bakau has a high level of interest and a strong influence, placing it in the key players category. KTH plays a major role in mangrove management activities, including planting, maintenance, rehabilitation, and monitoring. Other stakeholders such as the village government, NGOs, fisheries technical units, and community leaders also contribute according to their respective roles. KTH plays a crucial role in mangrove management in Buruk Bakul Village and requires stakeholder collaboration to ensure effective management.

Keywords: Forest Farmer Group, Mangrove, Stakeholder, Power–interest, Management

1. INTRODUCTION

Buruk Bakul Village is a coastal area in Bukit Batu Subdistrict, Bengkalis Regency, Riau Province, with significant coastal resource potential¹. This area is known for its extensive mangrove ecosystem, which plays a crucial role in maintaining coastal environmental balance and supporting the sustainability of local communities²⁻³. Most residents of Buruk Bakul Village rely on the fisheries sector and coastal resources for their livelihoods; thus, mangroves are vital to the economic and social well-being of the coastal community⁴.

However, the mangrove ecosystem in this region is beginning to face pressure from human activities such as logging, land conversion, and unsustainable utilization⁵.

Additionally, low public awareness of environmental conservation further accelerates mangrove degradation⁶. Natural factors such as coastal erosion are also primary causes of mangrove ecosystem degradation in coastal areas⁷. These conditions reduce environmental quality and fishing yields, directly affecting the well-being of coastal communities⁸.

In general, mangroves are important ecosystems with significant ecological functions. Mangroves serve as natural coastal barriers against erosion, ocean waves, and seawater intrusion⁹. Additionally, mangroves provide habitat for various marine species such as fish, shrimp, and crabs, which hold economic value¹⁰. Another equally important function is

serving as a carbon sink (blue carbon), which helps mitigate global climate change¹¹. Therefore, mangroves play a strategic role in maintaining the balance of coastal ecosystems sustainably⁹.

From an economic perspective, mangrove ecosystems provide various benefits to coastal communities, both directly and indirectly. Mangroves can be utilized through capture fisheries, aquaculture, and the development of mangrove-based businesses such as ecotourism¹²⁻¹³. Additionally, mangroves have social and educational value that can enhance public awareness of the importance of environmental conservation¹⁴. This demonstrates that mangroves have not only ecological value but also economic and social value that are interrelated in the lives of coastal communities.

Nevertheless, mangrove management still faces various challenges, such as low community participation, limited institutional support and a lack of coordination among stakeholders¹. Therefore, a management approach that directly involves the community is needed. Community-based approaches are considered more effective in ensuring the sustainability of natural resources because they foster a sense of ownership and responsibility among communities toward the environment. One form of community involvement in mangrove management is through Forest Farmers' Groups (KTH). KTH serves as a platform for communities to participate actively in the sustainable conservation and utilization of mangroves¹³. Through KTH, communities can be directly involved in mangrove planting, maintenance, and rehabilitation activities.

In addition, KTHs also play a role in raising public awareness and strengthening local institutions in coastal resource management. Effective mangrove management cannot be carried out by a single party alone but requires support from various stakeholders. The involvement of the government, supporting institutions, the private sector, and community leaders is

crucial to the success of mangrove management¹⁵. Such support can take the form of policies, technical assistance, or public outreach. Through stakeholder collaboration, mangrove management is expected to become more effective, integrated, and sustainable¹⁶. In Buruk Bakul Village, the Sekat Bakau Forest Farmers Group (KTH) is active in mangrove conservation activities. However, the role of the KTH in maintaining mangrove sustainability still needs further study to determine its contribution to mangrove management at the local level¹⁷.

2. RESEARCH METHOD

Method

This study employed a survey method with a qualitative approach to obtain a more comprehensive understanding of the role of Forest Farmers' Groups in mangrove management.

Procedures

Data collection involved observation to assess mangrove conditions and management activities, interviews to gather information on the role of the KTH and other stakeholders, questionnaires to obtain more structured data, and documentation as supporting evidence.

Respondents were selected using purposive sampling, based on the criterion that they were knowledgeable about and involved in mangrove management. Respondents included the chairperson and members of the Forest Farmers' Group (KTH), residents, village officials, the Fisheries Technical Unit (UPT), NGOs, and community leaders involved in mangrove management.

Data Analysis

Data analysis was conducted descriptively to explain the role of Forest Farmers' Groups in mangrove management based on field data. In addition, this study also employed stakeholder analysis using a power-interest approach to identify and map the levels of interest and power of each party

involved in mangrove management. The stakeholder analysis employs the power-interest grid approach developed by Reed et al.¹⁸ and has been used in research on natural resource management by Warningsih et al.¹⁹: a) Subject: Low power, high interest; b) Key Player: High power, high interest; and c) Context Setter: High power, low interest. d) Crowd: Low power, low interest.

3. RESULT AND DISCUSSION

Mangrove ecosystems are a key coastal resource that plays a vital role in maintaining environmental balance and the sustainability of surrounding communities. However, mangroves face pressures from both natural factors and human activities, requiring management efforts that are not only technical but also involve active participation from local communities. In this context, local stakeholder involvement is a key factor in shaping the direction and success of mangrove management.

Local stakeholders play a critical role in mangrove ecosystem management, particularly in implementing activities carried out directly within mangrove areas. Forest Farmers' Groups (KTH) are part of the community's social structure and play a role in various mangrove management and utilization activities, such as planting, mangrove rehabilitation, maintenance, and monitoring. In addition, the Sekat Bakau Forest Farmers' Group plays a role in various areas, such as:

Implementing the Mangrove Bank program (carbon sequestration) to drive the group's economy. This program involves collecting sediment/mud trapped around coastal areas, particularly in areas equipped with protective structures such as wave breakers (APO). That mud is then used as a growing medium for mangrove seedlings. In practice, this activity involves the group in collecting, processing, and using sediment, so in addition to its ecological function, the program also provides economic value through opportunities for mangrove propagation and coastal rehabilitation services.

Planting mangroves both in areas affected by erosion and in locations resulting from land-use conversion. Since its establishment, Sekat Bakau has planted over 25,000 mangrove seedlings. Planting is carried out in phases, taking into account site conditions, tidal patterns, and the mangrove species best suited to the location's characteristics. This activity aligns with mangroves' functions as natural coastal protectors, sediment traps, and habitats for various coastal species.

Sekat Bakau has been constructing breakwaters since 2024–2025 (100 m per year), totaling 200 m, to prevent more severe coastal erosion. Wave-breaking structures (APO) are man-made structures placed in coastal areas to prevent erosion and protect coastal ecosystems, particularly mangrove seedlings, from strong currents. These WBS are made from nibung tree trunks, which are mangrove-associated species.

Establishing a partnership with schools (elementary and junior high) in Buruk Bakul village through the signing of a Memorandum of Understanding (MoU) regarding the environment. Field activities include environmental awareness campaigns and mangrove planting by students. This activity aims to raise environmental awareness from an early age and encourage the younger generation's involvement in conservation. Environmental education is a key strategy in sustainable natural resource management¹⁴.

Establishing a partnership with a donor (Aramco Asia Singapore). Funding from Aramco Asia Singapore is provided as part of the company's Corporate Social Responsibility (CSR) program, which focuses on environmental sustainability and community empowerment. This partnership reflects a commitment to supporting mangrove rehabilitation and community empowerment through financial assistance and capacity-building for community groups. Partnerships with external stakeholders, such as the private sector, are a key factor in supporting the sustainability of

community-based environmental management programs²⁰.

To better understand the role and level of involvement of Forest Farmers' Groups in mangrove management, a stakeholder analysis is needed to identify each actor's interest and influence. Based on the stakeholder mapping results presented, the Forest Farmers' Group (KTH) in Buruk Bakul Village has a power score of 3 and an interest score of 4. These scores indicate that the Forest Farmers' Group is a stakeholder with a high level of interest and a fairly strong level of influence in managing the mangrove ecosystem in the Buruk Bakul Village area. These mapping results place the Forest Farmers' Group in the "key players" quadrant that is, a group with significant interest in the managed resources and the capacity to influence management implementation at the local level.

In addition to the Forest Farmers' Group, the sustainability of mangrove management is also influenced by other stakeholders. The village government is also in the "key players" quadrant but with a lower score than the Sekat Bakau Forest Farmers' Group, which acts as a facilitator and policy supporter in mangrove management. Non-Governmental Organizations (NGOs) are in the Context Setter quadrant, serving as partners in mangrove conservation and rehabilitation activities. The Fisheries Technical Unit (UPT Fisheries) is in the Crowd quadrant, providing technical information and partnering with the community in coastal resource management. Community leaders, including traditional and religious leaders in

the Subject quadrant, shape social norms and influence community behavior.

The KTH's role in mangrove management in Buruk Bakul Village encompasses three main aspects: conserving, managing, and rehabilitating the mangrove ecosystem. For conservation, the KTH, together with the community and local leaders, monitors the mangrove area to prevent damage. For management, the KTH and other stakeholders carry out activities related to planning, utilization, and sustainable community empowerment. Meanwhile, in rehabilitation, all stakeholders are involved in mangrove replanting and maintaining damaged areas. KTH Sekat Bakau serves as the primary actor in mangrove management at the local level, while other stakeholders act as complementary supporting partners.

4. CONCLUSION

Forest Farmers Group (KTH) serves as the primary implementer of activities related to mangrove conservation, management, rehabilitation, and planting, as well as maintenance of mangrove areas, canal barrier upkeep, and mangrove monitoring, thereby holding a crucial position within the community-based management structure. The active involvement of the Sekat Bakau group enables the mangrove management program to be implemented effectively, sustainably, and in a community-based manner. Therefore, synergy and cooperation among all stakeholders must continue to be enhanced so that mangrove management in Buruk Bakul Village can proceed optimally and sustainably.

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