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The Role of Government, Private Sector, and Community in Mangrove Conservation

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Abstract

Mangrove conservation plays a vital role in maintaining the balance of coastal ecosystems and mitigating climate change impacts. However, efforts to preserve these ecosystems are often impeded by land conversion, environmental degradation, and lack of coordination among the stakeholders involved. This article examines the application of multi-actor governance in mangrove conservation, focusing on the roles of government, the private sector, and local communities. This study employs a qualitative approach with thematic analysis, involving in-depth interviews and focus group discussions (FGDs) in several coastal areas of Indonesia that harbor significant mangrove ecosystems. The findings indicate that the government plays a key role in establishing policies and regulations; however, limited inter-institutional coordination remains a significant challenge. The private sector participates through corporate social responsibility (CSR) initiatives and sustainable partnerships, but their engagement is still suboptimal due to insufficient incentives and weak supportive policies. Local communities, particularly those residing adjacent to mangrove forests, play a crucial role in conservation despite ongoing tensions between short-term economic demands and long-term conservation objectives. Enhanced communication platforms and clearly defined incentives can facilitate more effective collaboration among these three actors, thereby strengthening sustainable mangrove conservation efforts. This article concludes that inclusive and coordinated multi-actor governance holds substantial potential to generate sustainable social, economic, and environmental outcomes for mangrove ecosystems and coastal communities.

Keywords: multi-actor governance, mangrove conservation, the role of government, private sector, community, collaboration, sustainability.

INTRODUCTION

Marine and coastal ecosystems, including mangroves, play a crucial role in maintaining ecological balance and supporting human livelihoods (Abelson et al., 2020; Giffin et al., 2021; Saunders et al., 2020; Trégarot et al., 2024). Mangroves, as one of the biodiversity-rich coastal ecosystems, function as shoreline stabilizers, carbon sinks, and vital natural resources that sustain coastal communities (Bunting et al., 2022). However, increasing pressures on the coastal environment—such as climate change, land conversion, and unsustainable resource exploitation—pose significant threats to the sustainability of mangrove ecosystems. Therefore, mangrove conservation demands a holistic and inclusive approach involving multiple

stakeholders, including the government, private sector, and local communities (Karimah, 2017). The concept of multi-actor governance is essential in mangrove conservation management, where synergy among these three actors can generate effective and sustainable solutions. Nonetheless, implementing this governance model often faces challenges related to coordination difficulties, conflicting interests, and policy frameworks that are not always aligned (Al Idrus et al., 2018).

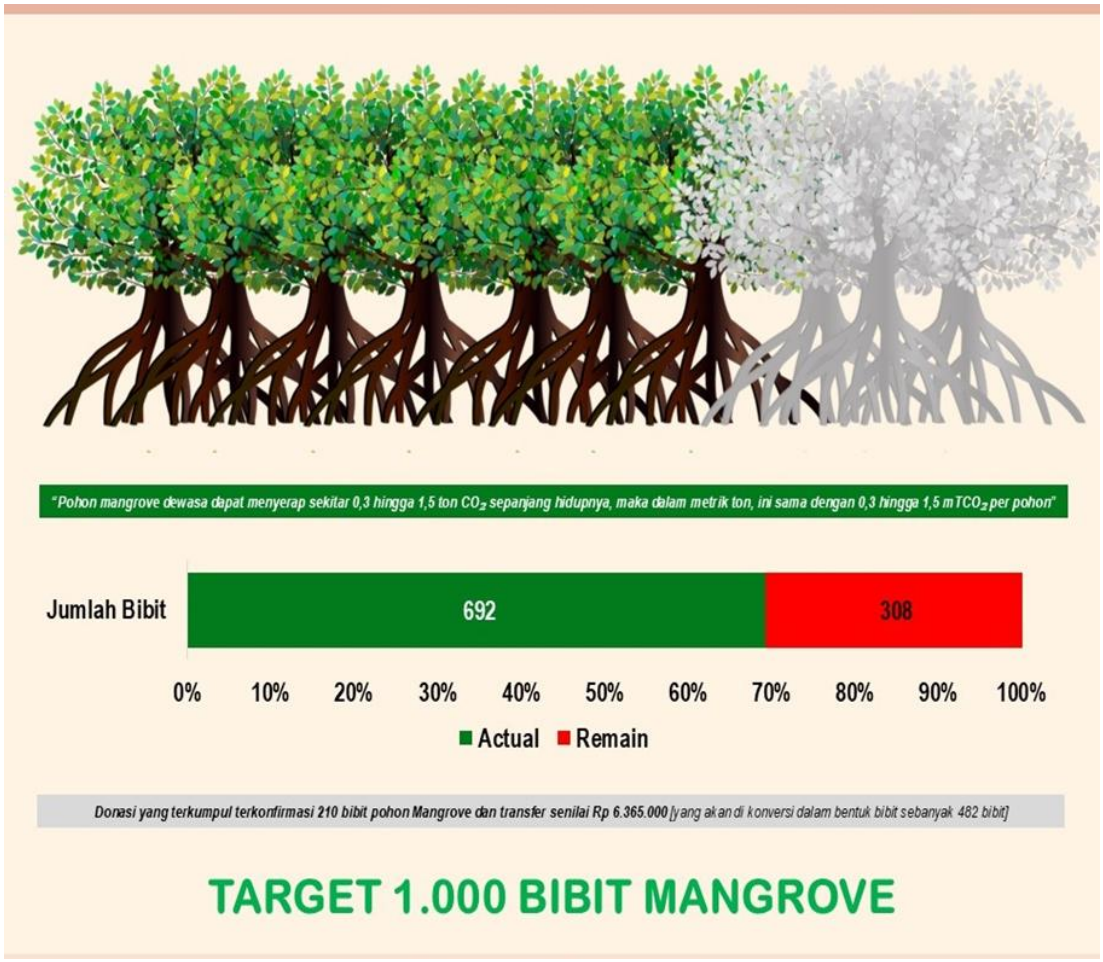

Figure 1. Target for planting Mangrove Seedlings as CSR from the private sector
Source: Inospro, 2024

Mangroves, as coastal ecosystems rich in biodiversity, possess significant ecological value, including their roles in coastline protection, carbon sequestration, and supporting marine life (Martuti et al., 2018). However, land conversion and ongoing degradation of mangrove ecosystems pose serious threats to environmental sustainability and the livelihoods of coastal communities. In mangrove conservation efforts, the role of the private sector is increasingly recognized as crucial to supporting ecosystem sustainability. Private investment in conservation not only focuses on nature preservation but can also positively impact local economies. Through corporate social responsibility (CSR) programs, public-private partnerships, and innovations in the green economy, the private sector can contribute to job creation, income generation, and facilitation of sustainable development (Akram et al., 2023; Sofyan et al., n.d.). However, despite this significant potential to generate economic benefits, the private sector's role in mangrove conservation is often constrained by lack of incentives,

unclear policy frameworks, and challenges in establishing mutually beneficial partnerships (Bimrah et al., 2022; Come et al., 2023; Himes-Cornell et al., 2018; John et al., 2022; Lee et al., 2014).

Marine and coastal ecosystems, including mangroves, play a vital role in maintaining ecological balance and supporting human livelihoods. Mangroves serve as biodiversity-rich coastal ecosystems, functioning as shoreline protectors, carbon sinks, and sources of livelihood for coastal communities (Bunting et al., 2022). Nevertheless, escalating pressures from climate change, land conversion, and unsustainable resource exploitation threaten their sustainability. Previous studies have underscored the importance of multi-actor governance in mangrove conservation while identifying critical gaps. For example, Suharti et al. (2016) examined institutional conflicts and overlapping policies in mangrove management in South Sulawesi, revealing how unclear access rights and poor coordination impede conservation efforts. Similarly, Armitage et al. (2009) highlighted the need for adaptive co-management frameworks to bridge gaps between government policies, private sector involvement, and community participation. Despite these insights, a comprehensive understanding of how to effectively integrate the roles of these three actors in Indonesia remains limited, particularly in addressing coordination challenges and harmonizing divergent interests.

This article aims to explore the specific roles of each actor in mangrove conservation, as well as the challenges and opportunities arising from multi-actor governance in Indonesia. By critically analyzing the contributions of government, private sector, and local communities within Indonesia's coastal regions, this study seeks to fill existing research gaps. Drawing on lessons from prior studies and incorporating empirical data from fieldwork, the research proposes a more inclusive and coordinated governance model. The findings are expected to inform policy enhancements, stimulate private sector engagement through innovative incentives, and empower communities by aligning conservation objectives with their economic needs. Ultimately, this study aims to provide actionable recommendations for sustainable mangrove conservation that balances ecological integrity, social equity, and economic development.

RESEARCH METHODS

The research method used in this study is a qualitative approach with case study analysis. The research steps are by collecting data using in-depth interview methods, focus group discussions, and field documentation. Interviews were conducted with various relevant actors, including representatives of local and central governments, private sector actors, and members of local communities involved in mangrove conservation programs. In addition, the documentation study was conducted by reviewing policy reports, existing mangrove conservation programs, and secondary data related to the status and development of mangrove ecosystems. The location of the research was carried out in the Karawang regency area, namely Muara Baru Village Beach, Cilamaya Wetan. The research location was selected based on the diversity of social, economic, and policy conditions in each region, as well as the level of involvement of the private sector and the community in mangrove conservation efforts. Data analysis uses a thematic analysis approach. This analysis aims to identify challenges and opportunities in the collaboration between the three actors as well as their impact on the

sustainability of mangrove conservation and the improvement of the community's economy. To verify the validity and realism of the data, this study uses a triangulation technique, which is by comparing the results of interviews with secondary data and existing case studies. In addition, the analysis of the interview results was carried out contextually to identify patterns and similarities of opinion between the actors involved. With the following Score Range:

Very satisfying : 36 – 43
Meet : 24 – 35
Enough to meet : 12 – 23
Under-Fulfilling : 0 – 11

Table 1. Mangrove Observation Instrument for Conservation Program at Muara Baru Beach, Cilamaya Wetan, Karawang.

OBSERVATION INDICATORS					
No.	**Criterion**	**Observation Results**			
		Survey Results		**Data Collection Results**	
A	**NATURE/BIO**	**Exist**	**None**	**Maximum Score ***	**Observation Score ****
1.	Conditions are still natural; Unique and beautiful	1	0	4	**3**
2.	There are unique biological phenomena (white sand beaches, virgin beaches, tidal regions, bird forests, monitor lizard habitats, etc.)	1	0	3	**3**
3.	Has a high type and diversity of mangrove types	1	0	3	**3**
4.	There are endemic and unique fauna/animals (birds, ring snakes, aquatic fauna)	1	0	3	**3**
5.	There is ease of wildlife observation	1	0	2	**2**
6.	There are opportunities for hiking (trekking, snorkeling, etc.)	1	0	2	**1**
7.	Comfortable air temperature and humidity	1	0	2	**2**
8.	Normal rainfall	1	0	2	**2**
9.	Small/household waste is well managed	1	0	3	**3**
	SUM	**9**	**0**	**24**	**22**
B.	**PHYSICAL ENVIRONMENT**				
1.	The physical environment is relatively natural	1	0	3	**2**
2.	It has a beach that is still predominantly natural	1	0	2	**2**
3.	Rate of land conversion is controlled	1	0	3	**2**
4.	Coastal areas are relatively protected from pollution	1	0	2	**2**
5.	The community uses mangroves for environmentally friendly	1	0	2	**1**

OBSERVATION INDICATORS					
No.	**Criterion**	**Observation Results**			
		Survey Results		**Data Collection Results**	
A	**NATURE/BIO**	**Exist**	**None**	**Maximum Score ***	**Observation Score ****
	productive activities (mangrove tourism)				
6.	There is a map of the area that accurately describes the mangroves	1	0	4	**3**
7.	Low risk of natural disasters (abrasion, landslides, floods, tsunamis)	1	0	3	**3**
	SUM	**7**	**0**	**19**	**15**
	TOTAL SCORE				**37**

Source: Primary data collected through field surveys and interviews with local stakeholders (Government of Karawang Regency, Private Sector CSR Teams, and Muara Baru Village Community), 2024

RESULTS AND DISCUSSION

The Role of Government in Mangrove Conservation

The government has an important role in determining the direction of mangrove conservation policies through regulations, regional zoning, and budget allocation. However, in practice, mangrove governance in Indonesia still faces institutional challenges and conflicts of authority between the forestry and marine sectors. A study by Suharti et al. (2016) shows that overlapping policies and lack of clarity on access rights are a source of conflict between local communities and formal institutions. This has an impact on the weak compliance of the community with conservation policies that they do not understand or consider fair.

In line with this, Armitage et al. (2009) stated that the success of complex natural resource management such as mangroves is highly dependent on adaptive co-management mechanisms—i.e. cross-actor collaboration with the ability to adapt to socio-ecological dynamics. The government cannot act alone but needs to be a liaison between sectors and local actors.

From the results of interviews with various government officials at the central and regional levels, it was found that the government's role in mangrove conservation is generally divided into three main areas: policy making, budget allocation, and supervision of the implementation of conservation programs. The government has a very important role in creating regulations and policies that support the protection of mangrove ecosystems, such as the implementation of mangrove protection zones and restrictions on the conversion of mangrove land into non-coastal land. Some of the policies that support mangrove conservation in Indonesia include the Regulation of the Minister of Environment and Forestry and ecosystem restoration policies launched by the government.

However, despite the fact that there are policies governing mangrove protection, the biggest challenge faced is the lack of coordination between government agencies, both at the central and regional levels. For example, land use arrangements between different ministries (such as the Ministry of Environment and Forestry and the Ministry of Maritime Affairs and Fisheries) are often asynchronous, slowing down policy implementation. In addition, the

limited budget allocation for mangrove conservation is also the main obstacle in realizing the goal of overall mangrove conservation. The government's success in managing mangrove conservation is highly dependent on the strength of inter-agency coordination, clear policies, and adequate budget support. Without more coordinated efforts, mangrove conservation programs will struggle to achieve their desired goals, despite high political commitment.

The Role of the Private Sector in Mangrove Conservation

The involvement of the private sector in mangrove conservation in Indonesia is generally carried out through Corporate Social Responsibility (CSR) programs. Several companies have carried out mangrove rehabilitation, especially around coastal industrial areas. Many companies participate in mangrove reforestation and restoration programs as part of their commitment to environmental sustainability. In addition, several companies are also utilizing technology, such as the use of satellite imagery for monitoring degraded mangrove land and data-sharing applications for community-based mangrove planting.

However, as revealed by Berkes (2009), the involvement of non-state actors in resource management must be supported by bridging organizations—liaison institutions that are able to bridge business logic with conservation goals. In Indonesia, the role of such institutions is still very minimal, so the involvement of the private sector tends to be ceremonial and less sustainable. Some companies still view mangrove conservation as a side hustle, rather than part of their core business strategy. In addition, the absence of concrete economic incentives and the lack of policies that overshadow private sector participation are the main obstacles.

To maximize the role of the private sector, clearer incentives are needed, such as tax reductions for companies that contribute to environmental restoration, as well as the building of close partnerships between the private sector and the government in conservation programs. Additionally, it is important that CSR programs are sustainable and integrated into long-term business strategies, not just incidental activities. Collaboration involving local communities is also key to success, as it can strengthen social capital and integrate traditional knowledge in conservation. Finally, the implementation of a transparent monitoring and evaluation system for private sector conservation programs is needed to measure impact and ensure accountability.

Figure 2. Planting Mangrove Seedlings on the Beach of Muara Baru Village, Cilamaya Wetan, Karawang Regency
Source: Inoshpro, 2024

The Role of Communities in Mangrove Conservation

Coastal communities are key factors in mangrove conservation, given their proximity to these ecosystems as well as their direct dependence on their ecological benefits, such as coastal protection, fishery resources, and livelihood support. A study by Suharti et al. (2016) in South Sulawesi shows that changes in access rights to mangrove forests can change the socio-ecological relationship of communities with these ecosystems. When traditional management rights are not recognized, there is often resistance to top-down conservation policies. In this context, Berkes (2009) emphasizes the importance of strengthening local capacity, recognition of traditional knowledge, and social learning as part of co-management. The key to the success of community-based conservation lies in creating a sense of ownership, which can only be realized through community involvement from the planning stage to implementation.

The findings of the study show that most local communities are involved in mangrove conservation activities through programs initiated by NGOs, governments, and the private sector. These activities include mangrove planting, ecosystem monitoring, as well as education and capacity building in sustainable natural resource management. However, challenges are still faced, especially regarding the low awareness and understanding of the public on the importance of mangroves for their survival. In addition, short-term economic stimulus, such as land conversion for agriculture or infrastructure development, are often obstacles to conservation efforts. Therefore, community empowerment through education and training is important to increase ecological awareness. In addition, the creation of economic incentives that are in line with conservation, such as the development of ecotourism or mangrove-based

products, can be a strategic approach to integrate conservation into people's daily economic activities.

Figure 3. Involvement of the Muara Baru Village Beach Community in mangrove planting activities
Source: Inoshpro, 2024

Challenges and Opportunities in Multi-Actor Collaboration

Although all three actors—government, the private sector, and the public—have important roles in mangrove conservation, the main challenge in multi-actor governance is poor coordination between these actors. The results of the analysis show that there is a gap in communication and understanding of goals between the government, the private sector, and the community. This often leads to inconsistencies between policies set by the government and implementation in the field involving the private sector and the community. In addition, differences in interests are also an obstacle. Governments tend to focus more on long-term interests for environmental conservation, while the private sector is more oriented towards faster economic gains, and people are more focused on short-term economic needs. These opportunities show that innovative approaches involving technology and nature-based economic models can provide solutions to address the challenges that exist in mangrove conservation. Building more inclusive partnerships, by strengthening the role of communities in the decision-making process, will increase the effectiveness of conservation programs.

Despite the major challenges faced, there are a number of opportunities that can be leveraged to strengthen multi-actor governance in mangrove conservation. One of them is the use of digital technology and big data to increase the effectiveness of mangrove monitoring and strengthen accountability between actors. In addition, increasing partnerships between the private sector and the community through ecotourism-based programs or mangrove-based

products can create sustainable economic benefits while supporting conservation. To overcome these challenges, a collaborative platform is needed that involves all parties in decision-making and monitoring the implementation of mangrove conservation programs. Strengthening the capacity of each actor to work within a framework of better collaboration and communication will be critical in achieving sustainable conservation goals.

Based on the discussion above which refers to the results of the scoring of the observation criteria in table 1, a total score of 37 is obtained and can be classified as follows: Very Fulfilling.

CONCLUSION

The multi-actor approach to mangrove conservation, as exemplified by the successful sustainable tourism development in Muara Baru Village, Cilamaya Wetan, Karawang Regency, demonstrates significant potential for both ecological preservation and economic prosperity in coastal communities. Despite inherent challenges in coordination, disparate interests, and resource limitations, substantial opportunities exist to enhance collaboration among various stakeholders. A more cohesive and coordinated strategy, leveraging these opportunities, can lead to more effective and sustainable multi-actor governance in mangrove conservation. Future research should focus on developing specific frameworks and actionable strategies for overcoming coordination hurdles and reconciling differing stakeholder interests in multi-actor mangrove management, particularly through the implementation of incentive mechanisms and conflict resolution models.

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