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The Role of Stakeholders in Strengthening the Mangrove Conservation in Banyuurip Mangrove Center, Gresik, East Java, Indonesia

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INDEXING

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ABSTRACT

Mangroves are plant formations in coastal areas that have an important role. The area of mangroves in Indonesia continues to shrink, so it is necessary to strengthen the role of the stakeholders to support mangrove conservation. This research used a descriptive qualitative methods, with SWOT analysis. The results of the research show that 10 stakeholders play a role, namely the local community, the Banyuurip Village Government, the Banyuurip Mangrove Center Admin Team, the Non-Governmental Organization Volunteer Alliance for Saving Nature (Arupa), the private company, namely PGN Saka, Lecturers from Brawijaya University, Lecturers from Raden Rahmat University, Mass Media is Mongabay, public figure is the Chairman of the Banyuurip Mangrove and Environmental Conservation Group and the East Java Provincial Forestry Service. There are 11 strengths, 8 weaknesses, 12 opportunities and 4 threats, thus making the position of internal and external factors equally strong. The best strategy formulation is to strengthen the synergy between stakeholders through communication forums, synergize mangrove conservation programs and community socio-economic empowerment to strengthen human resource capacity, open space for aspirations to strengthen community interests and power in mangrove management policies and improve mangrove governance in Banyuurip Mangrove Center.

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INTRODUCTION

Mangroves are coastal plant forms that have a significant role in the ecosystem, as well as described by Srikanth *et al* (2016), Friess *et* al (2020), Ellison (2021), Kathiresan (2021), and Charles *et al* (2020). Mangroves, found in tropical and subtropical forests along the coast, may tolerate salt and muddy substrates (Mejía-Rentería *et al*, 2018 ; Kumari *et* al, 2020 ; Lugo and Medina, 2020 ; Arceo-Carranza, 2021). Mangroves' ecological function is linked to the balance of the environmental ecosystem, avoiding land erosion caused by seawater intrusion, and delivering ecosystem services (Huxham *et al*, 2017 ; Ayyam *et al*, 2019 ; Singh *et al*, 2019). Mangroves are a valuable economic asset that can help society improve its socioeconomic well-being (Marlianingrum *et al,* 2019; Ramesh *et al*, 2022 ; Valenzuela *et al*, 2020).

According to Suman (2019), Arifanti *et al* (2021), Eddy *et al* (2021), Rumondang *et al* (2021), Turisno *et al* (2021), Ginting *et al* (2022), and Akram *et al* (2023), Indonesia has

spacious mangrove forests, albeit some of them are destroyed. Based on the research from Martin *et al* (2024), the total area of mangroves in Indonesia is 3,364,080 hectares, with a potential area of 756,183 hectares that can still be maintained. However, the extent of mangroves in Indonesia was 7,758,410 hectares in 2007 (Edwin *et al*, 2021). Mangrove damage in Indonesia is caused by a variety of factors, including human activities that are not wise in environmental management, such as the conversion of mangrove forests into fish ponds, factories, and residential areas, as well as the cutting down of mangrove forests for purely economic reasons, as described by Rudi and Harini (2021), Islam and Bhuiyan (2018), Setyadi *et al* (2021), Suharti *et al* (2021), Kadir (2023), Rendana *et al* (2023), and Sabdaningsih *et al* (2023).

The notion of sustainable mangrove conservation is to achieve mangrove protection through an integrated approach involving stakeholders such as local communities and the government (Lucrezi *et al* , 2019 ; Arifanti *et al* , 2022 ; Seva *et al* , 2022 ; Nijamdeen *et al*, 2022). Stakeholders must educate the community by improving the capacity and quality of human resources for mangrove management. Mangrove sustainability ensures that the ecological and economic functions of mangroves continue for current and future generations (Titisari *et al*, 2022). However, this effort can be carried out if stakeholders work together to increase mangrove conservation. Furthermore, understanding the weaknesses, strengths, opportunities, and threats is vital in strengthening the quality of human resources to support the sustainability of the mangrove conservation (Swangjang and Kornpiphat, 2021 ; Koda, 2023).

This research aims to identify the role of stakeholders in supporting sustainable mangrove conservation, Identify strengths, weaknesses, opportunities and threats in supporting sustainable mangrove conservation., and also formulate the role of threat stakeholders in supporting sustainable mangrove conservation.

LITERATURE REVIEW

The Importance of the Mangrove Conservation

Mangroves are plants that live and multiply in coastal areas and beaches that are still affected by the tides of sea water. The word mangrove is a fusion between the Portuguese languages mangue and grove in English language. Some experts define "mangrove" differently, but refer to similar things (Vaiga and Joseph, 2016). Tomlinson and Cox (2000) define mangroves are good as plants found in tidal areas and as a community. Mangroves are also defined as formations. Typical litoral district vegetation on the coast of the district Sheltered tropical and subtropical. Mangrove forests are one of the resources coastal territories that have a role important to be reviewed from a social, economic, and ecological aspect. Main function as a counterweight ecosystem and provider of various necessities of life for humans and other living things. Resources mangrove forests, in addition to being known to have potential economy as a provider of timber resources as well as as spawning grounds, nursery ground, and also as a feeding ground for fish and other marine life also serve to resist sea waves and seawater intrusion in the direction of land (Aditia *et al*, 2023).

The Role of Stakeholders in the Mangrove Conservation

The role of stakeholders is urgently needed in realizing sustainable mangrove conservation. Each region has stakeholders who have different interests and goals, this is also called divergence (Depary and Manar, 2024). To realize sustainable mangrove

management, synergy between stakeholders is needed which is characterized by cooperation for the same goal, namely mangrove sustainability. This synergy can minimize divergence between stakeholders (Nainggolan, 2024).

RESEARCH METHOD

Time and Location of the Research

The research was conducted in Banyuurip Village, Ujungpangkah, Gresik, East Java Province, Indonesia. The Banyuurip Mangrove Center, the Banyuurip Village office, the neighbourhood where group leaders or community leaders live, and parties (stakeholders) who have an interest in improving the sustainability of mangrove conservation used as data collection sites. The research conducted in 2024.

Type and Source of the Data

In this research, there were two sorts of data, consist of qualitative and quantitative. The data generated and collected is based on information relevant to the concerns covered in the research. This research's qualitative data includes information about the role of stakeholders. Meanwhile, the quantitative data in this study is processed data derived from SWOT matrix analysis, specifically EFAS and IFAS (Juliana *et al*, 2020). Data sources were obtained from primary and secondary. Primary data for this research was obtained from participants relevant to the research topic.

The participants were representatives of the local community at Banyuurip Village, the Banyuurip Village Government, the Banyuurip Mangrove Center Admin Team, the Non-Governmental Organization Arupa (Volunteer Alliance for Saving Nature), the Company, namely PGN Saka, Chairman of the Mangrove Conservation Group and Banyuurip environment from the Public Figure, Lecturers from the University of Brawijaya and Islamic University of Raden Rahmat Malang, Mongabay from the mass media, and also the Forestry Service of the East Java.

Data Collection

We decided to use the descriptive qualitative method. utilizing observation, comprehensive interviews, and analysis of documents or records, as well as designed by Natow (2020). Observation involves a structured process of recording and analyzing the manifestations present in the research subject. These manifestations encompass spontaneous behaviors, evolving interactions, and contextualized descriptions of conduct shaped by prevailing conditions.

Interviews are interactive sessions featuring open-ended questions, conducted by researchers to elicit information and enable participants to express their viewpoints (Roberts, 2020). As noted by Hennink et al. (2020), in-depth interviews involve targeted inquiries that explore core research issues alongside topics aligned with the study's objectives. Zhu et al. (2020) further highlight that insights derived from such interviews can inform a SWOT analysis by identifying key strengths, weaknesses, opportunities, and threats.

Documentation refers to the systematic collection of factual data and information through written sources, including archives, expert opinions, audio recordings, visual materials, and other research-relevant artifacts (Benzaghta et al., 2021). As Sant (2017) explains, it encompasses recorded actions presented in textual form, voice recordings,

images, or creative outputs. In this study, observational activities will be formally documented to serve as evidence within the data collection process.

Data Analysis

SWOT analysis is the systematic assessment of various internal and external aspects to develop new strategies for future role optimization. This analysis is founded on maximizing strengths and opportunities while minimizing weaknesses and dangers (Benzaghta *et al*, 2021). The decision-making process is always linked to the mission, goals, strategies, and policies. The strategy is computed using the IFAS (internal factor analysis strategy) Matrix and the EFAS Matrix (external factor analysis strategy), as described in (Arfan *et al*, 2021).

The IFAS matrix outlines internal factors, specifically strengths and weaknesses. Each factor is assigned a weight and rating, allowing for the calculation of individual scores (Sumarniasih & Made, 2020). The total of these scores constitutes the overall IFAS value. As Pontonusa et al. (2019) explain, the weighting of elements within both the IFAS and EFAS matrices is determined using a specific formula, detailed below

$$\alpha i = \frac{xi}{\sum_{i=1}^{n} xi}$$

Whereas
αi : the variable's weight
xi : the variable's value
i : 1,2,3, 4, 5, and etc
n : total number of variables

The EFAS matrix identifies external factors, specifically opportunities and threats. Each factor is assigned a corresponding weight and rating, enabling the calculation of individual scores. The cumulative total of these scores represents the overall EFAS value (Sumarniasih dan Made, 2020).

The Internal-External (IE) matrix is designed to identify stakeholder role positioning, thereby informing subsequent strategic actions. It comprises nine strategic cells and is organized along two principal dimensions: the IFAS matrix on the horizontal (X) axis and the EFAS matrix on the vertical (Y) axis. According to Wardhani (2020), the X-axis is divided into three distinct categories :

1) Score 4.0 – 3.0 = strong internal position
2) Score 2.99 – 2.0 = average internal position
3) Score 1.99 – 1.0 = weak internal position

The Y axis also has three categories, namely:

1) Score 4.0 – 3.0 = strong external position
2) Score 2.99 – 2.0 = average external position
3) Score 1.99 – 1.0 = weak external position

The SWOT matrix serves as a strategic alignment tool used to generate new strategy formulations. This process involves correlating key elements Strengths (S), Weaknesses (W), Opportunities (O), and Threats (T) to develop a range of strategic options. As outlined by Hayati (2023), the matrix yields four distinct strategy types: SO (leveraging strengths

to capitalize on opportunities), WO (addressing weaknesses by utilizing opportunities), ST (using strengths to mitigate threats), and WT (minimizing weaknesses to avoid threats):

1. The S-O strategy leverages an entity's full range of strengths to effectively seize and optimize available opportunities.
2. The W-O strategy seeks to capitalize on existing opportunities while systematically reducing internal weaknesses to enhance strategic effectiveness.
3. The S-T strategy involves leveraging current strengths to address and mitigate prevailing threats.
4. The W-T strategy focuses on strengthening defensive measures while actively minimizing internal weaknesses and steering clear of significant external threats.

RESULT AND DISCUSSION

The Role of Stakeholders in Strengthening The Quality Of Human Resources

The table below will indicate the following roles for each stakeholder:

Table 1. The Role of Stakeholders

Number	Stakeholders	Role
1	the local community	• Participate in community service activities related to mangrove maintenance and provide input to relevant parties.
2	the Village Government	• Establish communication with stakeholders to establish the Banyuurip Mangrove Center (BMC). • Assist community members with mangrove planting and nursery activities. • Build road access to the mangrove
3	Admin Team	• Create an information center to guide visitors to the Banyuurip Mangrove Center.
4	the Non-Governmental Organization	• Encourage stakeholders to support mangrove sustainability. • Enhance community capacity to negotiate with stakeholders about mangrove conservation.
5	Company	• Provide funds for mangrove preservation in Banyuurip Village through the company's Corporate Social Responsibility
6	Chairman of the Mangrove Conservation Group	• Assist the local community in developing a comprehensive work program and monitoring mangrove management operations. • Facilitate communication between the Banyuurip village authority and the community regarding mangrove maintenance

Table 1. Continued

7	Lecturers	• Strengthen human resource capability for mangrove management. • Develop action plans to address abrasion in Banyuurip Village. • Assist in placing synthetic geobags to protect mangroves from wave impact.
8	Mass Media	• Educate local populations on environmental sustainability by following up on mangrove issues. • Advise stakeholders on how to enhance human resource capability and improve human resource quality to sustain mangrove conservation.
9.	the Forestry Service	• Guide forest and land rehabilitation and community institutions in East Java. • Assist and collaborate with mangrove groups to stay current with advancements.

IFAS Matrix

Based on the results of identifying strengths and weaknesses, the IFAS matrix table is obtained as follows,

Table 2. IFAS Matrix

Number	Internal Factors (Strengths)	Weight	Rating	Score
1	The Banyuurip Village Government and the community have thorough planning in environmental management	0.050	4	0.20
2	The Banyuurip Village Government and the community held a discussion or deliberation regarding environmental management	0.050	4	0.20
3	Local community have an important role in mangrove conservation	0.100	4	0.40
4	Mangroves protect fishing boats from big waves	0.050	4	0.20

Table 2. Continued

5	The Banyuurip Village Government built communication with PGN Saka in establishing the Banyuurip Mangrove Center (BMC)	0.050	3	0.15
6	The Banyuurip Village Government has a high level of initiative in saving the environment	0.050	4	0.20
7	The Banyuurip Village Government acts as a director for assistance coming from the government and Lecturers to the Local community	0.050	3	0.15
8.	The Banyuurip Village Government has high commitment in environmental management	0.050	4	0.20
9.	The East Java Provincial Forestry Service is active in providing forest and institutional rehabilitation	0.050	4	0.20
10.	The existence of Synthetic Geobags provides land and mangrove protection against the threat of abrasion	0.050	3	0.15
11.	The Mangrove Biodiversity Nursery is	0.050	4	0.20

Table 2. Continued

	supported by CSR funds from PGN Saka			
	Sub Total			**2.25**
Number	**Internal Factors (Weaknesses)**	**Weight**	**Rating**	**Score**
1	Community potential is wasted because there is no government support in developing potential	0.050	4	0.20
2	Unscrupulous of the local community have made the coastal area of Banyuurip Village a rubbish dump	0.050	1	0.05
3.	Public transportation access to the Banyuurip Mangrove Center is still limited, only served by motorbike taxis	0.050	2	0.10
4	Banyuurip Mangrove Center does not yet have documents supporting the legality of tourism village institutions such as Master Development Plan, Safety Risk Management, and Disaster Mitigation	0.050	2	0.10
5.	Unfortunately, the community's mindset or belief in mangrove conservation is	0.050	2	0.10

Table 2. Continued

	only to secure economic interests			
6	Gaps in the local community's economy still exist, which can hamper mangrove conservation efforts	0.050	1	0.05
7.	Local communities' interest in mangroves is high, but their power in determining policy is low	0.050	4	0.20
8.	There are still very few community leaders in Banyuurip Village who are strong in mangrove conservation	0.050	2	0.10
	Sub Total			**0.90**
	Total IFAS			**3.15**

EFAS Matrix

Based on the results of identifying strengths and weaknesses, the IFAS matrix table is obtained as follows,

Table 3. EFAS Matrix

Number	External Factors (Opportunities)	Weight	Rating	Score
1	Sustainability of mangrove management can be achieved with careful planning such as road maps, strategic plans and data mining	0.130	4	0.52

Table 3. Continued

2	The damaged environmental conditions raise public concern, resulting in awareness of mangrove conservation	0.043	4	0.17
3	The importance of building trust, collaboration and integration with all parties in mangrove management	0.130	4	0.52
4	The importance of building trust, collaboration and integration with all parties in mangrove management	0.043	4	0.17
5	The East Java Provincial Government through related agencies can provide assistance in managing mangroves and fish catches for the local community	0.043	3	0.13
6	The East Java Provincial Government through related agencies can open up space for aspirations for the benefit of the community in mangrove management	0.043	3	0.13
7	Development of the creative economy, program innovation	0.130	3	0.39

Table 3. Continued

	through environmental events, diversification of tourism products, and strengthening local wisdom			
8.	Sensors and Geographic Information Systems can be used to monitor the condition of the mangrove ecosystem	0.043	2	0.09
9.	Educating the role of stakeholders in mangrove conservation can increase the human resource capacity of local communities, so that local communities have the power to protect their interests	0.043	4	0.17
10.	A firm policy from the Provincial Government in managing mangroves can prevent mangrove damage	0.043	3	0.13
11.	Regular coverage from the mass media can increase public awareness of preserving mangroves	0.043	4	0.17
12.	Synchronizing programs and communication forums between private companies	0.043	4	0.17

Table 3. Continued

	and local governments			
	Sub Total			**2.78**
Number	**External Factors (Threats)**	**Weight**	**Rating**	**Score**
1.	Community potential is wasted because there is no government support in developing potential	0.087	2	0.17
2.	The presence of unscrupulous residents from outside the village to cut down and destroy mangroves	0.043	2	0.09
3.	Big waves caused by natural disasters can attack mangroves	0.043	1	0.04
4.	Differences in stakeholders' needs for mangroves are prone to giving rise to conflicts of interest	0.043	1	0.04
	Sub Total			**0,34**
	Total EFAS			**3,12**

Internal External Matrix

The following are the results of the Internal External Matrix of the role of stakeholders in the Banyuurip Mangrove Center, which can be seen in the figure below,

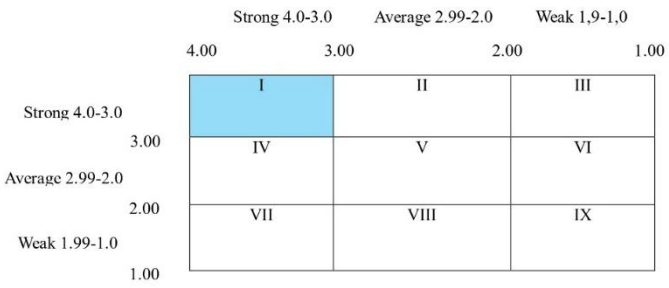

Figure 1. Internal External Matrix

Stakeholder involvement in enhancing mangrove conservation is positioned in Cell I, supported by an IFAS score of 3.15 and an EFAS score of 3.13. These figures reflect a robust condition across both internal factors (strengths and weaknesses) and external factors (opportunities and threats).

SWOT Matrix

Drawing on the assessments from the IFAS, EFAS, and Internal-External Matrix, targeted strategies can be formulated and implemented to enhance human resource capacity and promote the sustainability of mangrove conservation efforts. The corresponding strategic framework is presented in the table below,

Table 4. **SWOT Matrix**

S-O Strategies
• Establishing a communication forum between stakeholders is needed to strengthen synergy in sustainable mangrove management • Strengthening the human resource capacity of communities and mangrove conservation groups can be provided through economic empowerment, strengthening social institutions, and technical capabilities in mangrove management
S-T Strategies
• The Banyuurip Village Government and the East Java Provincial Forestry Service open space for community aspirations in mangrove management, so that they can empower the community's potential • Strengthening collaboration between stakeholders is needed to overcome mangrove damage, rehabilitate damaged mangrove forests, institutional development, and strengthen sustainable mangrove management policies
W-O Strategies
• Make a futuristic mangrove management plan to be able to fix all problems related to mangrove management • Opening space for local community aspirations in mangrove management is carried out by the Government to listen to community input
W-T Strategies
• Improve transportation access to the Banyuurip Mangrove Center to redevelop the community's potential in the socio-economic sector • Carry out cadres of the younger generation who will continue mangrove management in Banyuurip Village

CONCLUSION

The role of stakeholders in strengthening the mangrove conservation is important, according to their respective capacities and abilities. There are 11 strengths, 8 weaknesses, 12 opportunities, and 4 threats, which make internal factors and external factors in strong condition. The strategy that should be implemented is market penetration to increase tourist visits to the Banyuurip Mangrove Center, as well as the development and innovation of sustainable mangrove conservation.

This research formulates the strategies for strengthening the quality of human resources, consisting of enhancing synergy between stakeholders through communication forums, synergizing mangrove conservation programs and community socio-economic empowerment to enhance human resource capacity, opening space for aspirations to

strengthen community interests and power in mangrove management policies, and improving mangrove management at the Banyuurip Mangrove Center.

REFERENCES

Aditia, D., Suhendri, H., Gunawan, C. I., Yoga, T., Baizuri, A., & Munna, K. (2023). The Field School Of Human Resources As The Forming Character Of Youth Organizations In Mangrove Management On The Coastal Village. *Journal of Agricultural Socio-Economics (JASE)*, *4*(2).

Akram, H., Hussain, S., Mazumdar, P., Chua, K. O., Butt, T. E., & Harikrishna, J. A. (2023). Mangrove health: A review of functions, threats, and challenges associated with mangrove management practices. *Forests*, *14*(9), 1698.

Arceo-Carranza, D., Chiappa-Carrara, X., Chávez López, R., & Yáñez Arenas, C. (2021). Mangroves as feeding and breeding grounds. *Mangroves: Ecology, Biodiversity and Management*, 63-95.

Arfan, A., Nyompa, S., Rakib, M., & Juanda, M. F. (2021, November). The analysis of mangrove area as a marine eco-fisherytourism area in Luwu Regency South Sulawesi, Indonesia. In *Journal of Physics: Conference Series* (Vol. 2123, No. 1, p. 012009). IOP Publishing.

Arifanti, V. B., Novita, N., & Tosiani, A. (2021, October). Mangrove deforestation and CO2 emissions in Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 874, No. 1, p. 012006). IOP Publishing.

Arifanti, V. B., Sidik, F., Mulyanto, B., Susilowati, A., Wahyuni, T., Yuniarti, N., ... & Novita, N. (2022). Challenges and strategies for sustainable mangrove management in Indonesia: a review. *Forests*, *13*(5), 695.

Ayyam, V., Palanivel, S., Chandrakasan, S., Ayyam, V., Palanivel, S., & Chandrakasan, S. (2019). Coastal ecosystems and services. *Coastal ecosystems of the Tropics-Adaptive management*, 21-47.

B. Valenzuela, R., Yeo-Chang, Y., Park, M. S., & Chun, J. N. (2020). Local people's participation in mangrove restoration projects and impacts on social capital and livelihood: A case study in the Philippines. *Forests*, *11*(5), 580.

Benzaghta, M. A., Elwalda, A., Mousa, M. M., Erkan, I., & Rahman, M. (2021). SWOT analysis applications: An integrative literature review. *Journal of Global Business Insights*, *6*(1), 54-72.

Charles, S. P., Kominoski, J. S., Armitage, A. R., Guo, H., Weaver, C. A., & Pennings, S. C. (2020). Quantifying how changing mangrove cover affects ecosystem carbon storage in coastal wetlands. *Ecology*, *101*(2), e02916.

Eddy, S., Milantara, N., Sasmito, S. D., Kajita, T., & Basyuni, M. (2021). Anthropogenic drivers of mangrove loss and associated carbon emissions in South Sumatra, Indonesia. *Forests*, *12*(2), 187.

Edwin, M., Sulistyorini, I. S., Poedjirahajoe, E., Faida, L. R. W., & Purwanto, R. H. (2021). Structure and dominance of species in mangrove forest on Kutai National Park, East Kalimantan, Indonesia. *Jurnal Manajemen Hutan Tropika*, *27*(1), 59-59.

Ellison, J. C. (2021). Factors influencing mangrove ecosystems. *Mangroves: Ecology, Biodiversity and Management*, 97-115.

Friess, D. A., Yando, E. S., Alemu, J. B., Wong, L. W., Soto, S. D., & Bhatia, N. (2020). Ecosystem services and disservices of mangrove forests and salt marshes. *Oceanography and marine biology*.

Ginting, Y. R. S., Komarudin, G., & Carr, L. M. (2022). Study of changes in mangrove forest cover in three areas located on the east coast of North Sumatra Province between 1990 and 2020. *Journal of Tropical Forest Science*, *34*(4), 467-479.

Hayati, M., Mahdevari, S., & Barani, K. (2023). An improved MADM-based SWOT analysis for strategic planning in dimension stones industry. *Resources Policy*, *80*, 103287.

Huxham, M., Dencer-Brown, A., Diele, K., Kathiresan, K., Nagelkerken, I., & Wanjiru, C. (2017). Mangroves and people: local ecosystem services in a changing climate. *Mangrove Ecosystems: A Global Biogeographic Perspective: Structure, Function, and Services*, 245-274.

Islam, S. D. U., and Bhuiyan, M. A. H. (2018). Sundarbans mangrove forest of Bangladesh: causes of degradation and sustainable management options. *Environmental Sustainability*, *1*(2), 113-131.

Juliana, J., Monoarfa, H., & Jarianti, R. (2020). Sharia property business development strategy: IFAS and EFAS matrix model. *AFEBI Islamic Finance and Economic Review*, *5*(01), 24-42.

Kadir, H. A. (2023). Multispecies marginality: Mangroves and migrant Papuans in the margins of urban colonisation. *The Australian Journal of Anthropology*, *34*(2), 59-75.

Kathiresan, K. (2021). Mangroves: types and importance. *Mangroves: ecology, biodiversity and management*, 1-31.

Koda, S. H. A. (2023, December). Strategies for improving community participation in Mangrove Ecosystem Conservation in Teluk Kupang Coastal Areas (A case study of Nunkurus and Oeteta Villages). In *IOP Conference Series: Earth and Environmental Science* (Vol. 1266, No. 1, p. 012029). IOP Publishing.

Kumari, P., Singh, J. K., & Pathak, B. (2020). Potential contribution of multifunctional mangrove resources and its conservation. In *Biotechnological utilization of mangrove resources* (pp. 1-26). Academic Press.

Lucrezi, S., Esfehani, M. H., Ferretti, E., & Cerrano, C. (2019). The effects of stakeholder education and capacity building in marine protected areas: A case study from southern Mozambique. *Marine Policy*, *108*, 103645.

Lugo, A. E., & Medina, E. (2020). Mangrove forests. In *Coastal and Marine Environments* (pp. 117-133). CRC Press.

Marlianingrum, P. R., Kusumastanto, T., Adrianto, L., & Fahrudin, A. (2019, March). Economic analysis of management option for sustainable mangrove ecosystem in Tangerang District, Banten Province, Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 241, No. 1, p. 012026). IOP Publishing.

Martin, E., Ulya, N. A., Yunardy, S., Agustina, K., Meidalima, D., & Chuzaimah, C. (2024). Navigating Mangrove Protection: A Jurisdictional Approach to Climate Action in South Sumatra, Indonesia. *Climate Law*, *14*(1), 67-94.

Mejía-Rentería, J. C., Castellanos-Galindo, G. A., Cantera-Kintz, J. R., & Hamilton, S. E. (2018). A comparison of Colombian Pacific mangrove extent estimations: Implications for the conservation of a unique Neotropical tidal forest. *Estuarine, Coastal and Shelf Science*, *212*, 233-240.

Nainggolan, R. R. E., Abi Suroso, D. S., Argo, T. A., & Sagala, S. A. H. (2024). Multilevel governance for climate compatible development: A case study of mangrove governance in Indonesia. *Journal of Infrastructure, Policy and Development*, *8*(6), 3740.

Natow, R. S. (2020). The use of triangulation in qualitative studies employing elite interviews. *Qualitative research*, *20*(2), 160-173.

Pontonusa, M. L., Rumagit, G. A., dam Kapantow, G. H. (2019). Strategi Pengembangan Ekowisata Hutan Mangrove Di Desa Bahoi Kecamatan Likupang Barat Kabupaten Minahasa Utara. *Journal of Agribusiness and Rural Development (Jurnal Agribisnis dan Pengembangan Pedesaan)*, *1*(3).

Ramesh, D. A., Karthi, N., Dhivya, S., Infantina, A., & Priya, P. (2022). Economic assessment mangrove ecosystems' goods services of India. *Journal of Social Review and Development*, *1*(2), 42-51.

Rendana, M., Razi Idris, W. M., Abdul Rahim, S., Ghassan Abdo, H., Almohamad, H., Abdullah Al Dughairi, A., & Albanai, J. A. (2023). Effects of the built-up index and land surface temperature on the mangrove area change along the southern Sumatra coast. *Forest Science and Technology*, *19*(3), 179-189.

Roberts, R. E. (2020). Qualitative Interview Questions: Guidance for Novice Researchers. *Qualitative Report*, *25*(9).

Rudi, F. S., & Harini, R. (2021, March). The externalities value of mangrove forest conversion into fishponds in the coastal area of wulan delta in demak regency. In *IOP Conference Series: Earth and Environmental Science* (Vol. 683, No. 1, p. 012021). IOP Publishing.

Rumondang, A. L., Kusmana, C., & Budi, S. W. (2021). Species composition and structure of Angke Kapuk mangrove protected forest, Jakarta, Indonesia. *Biodiversitas Journal of Biological Diversity*, *22*(9).

Sabdaningsih, A., Adyasari, D., Suryanti, S., Febrianto, S., & Eshananda, Y. (2023). Environmental legacy of aquaculture and industrial activities in mangrove ecosystems. *Journal of Sea Research*, *196*, 102454.

Sant, T. (Ed.). (2017). *Documenting performance: The context and processes of digital curation and archiving*. Bloomsbury Publishing.

Schensul, S. L., Schensul, J. J., & LeCompte, M. D. (1999). *Essential ethnographic methods: Observations, interviews, and questionnaires* (Vol. 2). Rowman Altamira.

Setyadi, G., Pribadi, R., Wijayanti, D. P., & Sugianto, D. N. (2021). Mangrove diversity and community structure of Mimika District, Papua, Indonesia. *Biodiversitas Journal of Biological Diversity*, *22*(8).

Seva, T. A., Purwanto, W., & Latuconsina, A. R. (2022, February). Ecosystem conservation of Mangrove Education Center (MEC) in handling abration disaster at Pangkalan Jambi village based on stakeholder engagement perspective. In *IOP Conference Series: Earth and Environmental Science* (Vol. 986, No. 1, p. 012019). IOP Publishing.

Singh, P. K., Papageorgiou, K., Chudasama, H., & Papageorgiou, E. I. (2019). Evaluating the effectiveness of climate change adaptations in the world's largest mangrove ecosystem. *Sustainability*, *11*(23), 6655.

Srikanth, S., Lum, S. K. Y., & Chen, Z. (2016). Mangrove root: adaptations and ecological importance. *Trees*, *30*, 451-465.

Suharti, S., Andadari, L., Yeny, I., Yuniati, D., & Agustarini, R. (2021, February). Vague property status and future risk of mangroves: lesson learned from South Sulawesi, Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 648, No. 1, p. 012047). IOP Publishing.

Suman, D. O. (2019). Mangrove management: challenges and guidelines. In *Coastal wetlands* (pp. 1055-1079). Elsevier.

Sumarniasih, M. S., and Made, A. (2020). Strategy to Maintain the Regional Food Security in Province of Bali, Indonesia. *Journal of Experimental Agriculture International*, *42*(3).

Swangjang, K., and Kornpiphat, P. (2021). Does ecotourism in a Mangrove area at Klong Kone, Thailand, conform to sustainable tourism? A case study using SWOT and DPSIR. *Environment, Development and Sustainability*, *23*(11), 15960-15985.

Titisari, P. W., Chahyana, I., Janna, N., Nurdila, H., & Widari, R. S. (2022). Management Strategies of Mangrove Biodiversity and the Role of Sustainable Ecotourism in Achieving Development Goals. *Journal of Tropical Biodiversity & Biotechnology*, *7*(3).

Tomlinson, P. B., and Cox, P. A. (2000). Systematic and functional anatomy of seedlings in mangrove Rhizophoraceae: vivipary explained? Botanical Journal of the Linnean Society, 134(1-2), 215-231.

Turisno, B. E., Dewi, I. G. S., Mahmudah, S., and Soemarmi, A. (2021). Recovery policy and proper management of mangrove forests to preserve environmental sustainability and ecotourism in bangkalan Indonesia. *Journal of Environmental Management & Tourism*, *12*(8), 2188-2193.

Vaiga, M., and Joseph, S. (2016). Identification of mangrove and mangrove associates in Kannur district of Kerala including their economic–ecological linkages. *International Journal of Botany Studies*, *1*(5), 22-31.

Wardhani FK, Dini A. Strategy formulation using SWOT analysis, space matrix and QSPM: a conceptual framework. International Journal of Innovative Science and Research Technology. 2020;5(5):1520–7.

Zhu, Y., Zhong, N., Su, H., Ruan, X., Bao, J., Zhang, L., Du, J., Xu, D., Ding, R., Xiao, K & Zhao, M. (2019). Strengths, weaknesses, opportunities and threats (SWOT) analysis of reinitiation into methamphetamine abusers: qualitative findings from an exploration of methamphetamine abusers in Shanghai, China. *General psychiatry*, *32*(3).