

Mangrove Forest Management Stakeholder Social Network in Langkat Regency

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DOI: <https://doi.org/10.52403/ijrr.20221216>

ABSTRACT

This study examines the social network of stakeholders managing mangrove forests sustainably in Langkat Regency. The existing conditions that have occurred so far show that the government has yet to be able to synergize with stakeholders through a mangrove forest management program that involves local community participation in a sustainable, synergistic, and systemic manner. Identifying stakeholder networks is very important to become a reference in designing a systemic and sustainable mangrove forest management program. Stakeholders who manage mangrove forests in Lubuk Kertang Village and Pasar Rawa Village form a symmetrical relationship through participatory group partnerships. The existing network forms, including tenure aspects (forest land tenure rights), and social and economic constructions, provide a significant background and influence on efforts to rehabilitate degraded mangrove forests. Within this scope, social networks can be understood to determine access rights, management rights, and governance of mangrove forests. The purpose of this research is to find out the shape of the network and the role of stakeholders (actors and institutions) as managers of mangrove forests. The method used is qualitative, with descriptive analysis techniques to analyze the shape of the network and the role of stakeholders (actors and institutions) as managers of mangrove forests.

Keywords: [Social Networks, Stakeholders, Social Mapping, Mangrove Forest Management]

INTRODUCTION

Mangrove forest management in Langkat Regency, North Sumatra, affects changes in the socioeconomic life of the people who live around areas adjacent to mangrove forest areas. Various mangrove forest rehabilitation programs that various parties have carried out have accelerated the increase in the area of mangrove forests. The results of updating the National Mangrove Map (PMN) data for 2021 show an increase in area compared to the PMN area for 2013-2019, from 3,311,245 Ha to 3,364,080 Ha (National Mangrove Map, 2021). Based on data on mangrove forest areas for the 2019 period, the area of mangrove forest cover in Langkat Regency experiences uneven dynamics every ten years. Several sub-districts experienced an increase and decrease in mangrove areas even though one of the partnership programs has turned the mangrove area into an ecotourism area, such as in Rawa Village, Gebang District, and Lubuk Kertang Village, Brandan Barat District.

Table 1.1 Area of Mangrove Forest in Langkat Regency Period 1999-2019

Districts	1989 (Ha)	1999 (Ha)	2009 (Ha)	2019 (Ha)
Babalan	1,954.8657	992.8168	440.5948	854.9788
Besitang	1,418.8031	704.8458	968.9599	553.5068
Brandan Barat	3,160.3869	1,603.1180	2,225.7780	2,647.5011

Gebang	4,090.0903	2,294.2727	3,748.3098	3,100.5593
Pangkalan Susu	7,926.6856	6,229.3156	8,449.6702	8,198.2898
Pematang Jaya	467.1628	884.3756	1,076.9004	1,013.8851
Secanggang	7,871.3481	5,548.9015	7,342.9616	7,171.4829
Sei Lapan	121.9560	161.6180	93.2799	93.2799
Tanjung Pura	9,297.0651	8,205.71223	5,593.02	5,068.5564
Total	36,308.3636	26,624.98	29,939.4815	28,702.0402

Source: Hamzah et al, 2019

The instability of the area of mangrove forests in Langkat Regency is due to the weak synergy of multi-stakeholder programs in sustainably managing mangrove forests. Obstacles were found that showed the weak synergy of government programs and stakeholders in managing mangrove forests. In the implementation process, they often experienced overlapping in running programs, especially involving local community participation. Stakeholders walk alone with their respective programs. The Langkat Regency Government seems confused about collaborating with stakeholders to manage mangrove forests. Likewise, stakeholders do not understand the direction of the Langkat Regency government's policy in managing mangrove forests. This condition encourages researchers to design a social mapping model for stakeholder networks so that the synergy of stakeholder networks as managers of mangrove forests can be established.

LITERATURE REVIEW

Mangrove Forest Social Mapping and Cultural Ecology

North Sumatra Province's east coast waters are part of the Malacca Strait waters with significant marine fishery resource potential. The East Coast of North Sumatra has a coastline of 1,300 km and is a coastal area with a vast expanse of mangroves reaching 74,417.80 ha. (KLH, 2012; DKP Sumut, 2014). Mangrove forests stretch from the east coast of Langkat Regency to the South Labuhan Batu Regency with varying thicknesses (Muhtadi *et al.*, 2016). Mangroves grow on sheltered beaches or flat beaches, usually along the windward side of an island or behind a sheltered offshore coral reef. Most mangroves grow

well on muddy soils, especially where silt has accumulated. Mangroves grow and develop in an ecotone (transition) ecosystem whose existence is strongly influenced by land and sea factors (Hogarth, 2007). One of the factors on land that also influences the existence of mangroves is human activity that interacts with each other.

Thus, the behavior of the individual underlies the appearance of the behavior itself. Humans live in social groups with different environmental conditions. This difference can cause misunderstandings between groups when mixing and social interaction (Rudito *et al.*, 2008). Social mapping is used to describe patterns of social relations between individuals or communities that are observed. This social mapping is essential for researchers to see the potential for the closeness of existing relationships. Mapping is generally done to see the potential or opportunities that can be developed in community groups. Several mapping types include compiling community profiles, community assets, and social mapping (Gunawan *et al.*, 2021).

Social mapping becomes more meaningful if this study's results can explain the core cultural parts of a dynamic cultural system. According to Steward (1955), Cultural Ecology Theory describes the core part of the cultural system that is very responsive to adaptation because the adjustment to ecological pressures can directly affect the core elements of a social structure. In order to remain productive, the process of cultural change is simultaneously carried out by external parties and within the community itself. In the context of this study, the theory of cultural ecology is relevant to use, considering that conservation activities carried out by mangrove forest managers are created into various forms of cooperation in

a stakeholder network linkage, thus requiring analysis combined with social mapping.

Social mapping is making geographic and spatial representations in graphical form, not verbally, in which everything happens in society is summarized. Social mapping allows people to create maps to express their life stories and places of origin. This social mapping is also a learning process to understand the condition of the community and to plan actions that should be taken to improve the community's condition or encourage community progress. During the mapping process, community members gather and share information (Lyndon, 2003).

Actors, Institutions, and Stakeholder Social Networks

The role of actors and institutions in managing mangrove forests can explain how each actor's role (influence and interest) has on the sustainability of mangrove forest management in Langkat Regency. This actor analysis can be carried out by focusing on sustainability in managing mangrove forests in Langkat Regency. The results of this scoring can analyze each actor against other actors carried out during the interview. Analysis of the involvement of actors and stakeholder institutions has been carried out on the existence of mangrove forests in Pulau Pahawang Village. The mapping results explain how the actors position their roles in managing mangrove forests, divided into four quadrants: subject, key players, crowd, and context setter (Mustika et al., 2017).

The actors and institutions involved in managing mangrove forests in Langkat Regency may come from several groups, consisting of Government agencies, entrepreneurs, NGOs, and community organizations. Each actor has different interests in managing mangrove forests. Differences in interests and authority in managing mangrove forests can cause social problems and are also able to build strong social capital potential because each actor

and institution as a stakeholder tries to use the authority they have for their interests. (Febryano et al, 2015).

Community Participation in Sustainable Mangrove Forest Management

Destruction of mangrove forests on a large scale for the conversion of functions into aquaculture businesses and plantations causes the life cycle of fish and shrimp resources in the vicinity to be disrupted. Reduced marine life in this area means reduced income for small fishermen who operate around the coast, catching shrimp, crabs, and fishermen (Simbolon, 2010). Specifically, Fakhurrozy (2015) states that Ecosystem damage in North Sumatra Province is motivated by relatively low levels of community income, illegal logging, illegal opening of shrimp ponds, wrong perceptions about mangroves, and weak law enforcement.

Community participation is a form of social interaction that concerns various social science disciplines. According to some experts, participation is interpreted as an effort of community participation in an activity associated with development; it will be an effort of participation in development. Community participation is essential for the success of the development. In order to improve the management of mangrove ecosystems, it is necessary to involve the community in preparing the process of planning and sustainably managing this ecosystem. Sustainable management of mangrove ecosystems can be developed through socio-cultural methods of the local community that are friendly with mangrove ecosystems, in the form of counseling, information, and raising public awareness in managing mangrove ecosystems.

Conservation strategies involving local communities are seen as more effective than one-way conservation involving only the government. By increasing public awareness of the importance of the conservation function in an area, it will be able to maintain the balance function of the ecosystem and the economic function of the

area for the local community so that with the balance of the environmental ecosystem, it is hoped that optimization and sustainability of the management of the area will be achieved (Erwiantono, 2006). Community perceptions studied in this study are related to people's thoughts and opinions about issues and actions related to efforts to preserve and utilize mangrove forests (Gumilar, 2012). It is essential to know the community's perception of the mangrove forest and the planting plan that will be carried out to monitor the community's perception of the mangrove.

MATERIALS & METHODS

Research Approach

This study uses a qualitative approach with descriptive analysis techniques to identify and analyze the network forms and the roles of stakeholders (actors and institutions) as managers of mangrove forests and government involvement in stakeholder networks (actors and institutions) managing mangrove forests. Descriptive analysis techniques are carried out to collect data and information about the process or mechanism of the relationship between research subjects, presenting primary data, creating new categories and classifications based on conceptual arrangements, or analyzing various data and information into interrelated phenomena (Moleong, 2003). Researchers will enter into social conditions based on the community's perspective (emic view) comprehensively and holistically through involved observation (participatory observation) and in-depth interviews of mangrove management activities carried out by existing stakeholders (Bungie, 2017). This activity will get forms of multi-stakeholder involvement in the mangrove management network.

Data Source

The data sources used in this study include primary and secondary data, each of which is sourced as follows:

1. Primary Data

Primary data is obtained directly through in-depth interviews and Focus Group Discussions (FGD). The instrument used is an interview guide (interview guide) so that the primary data collection process becomes more focused. The primary data needed is in the form of a network and the role of stakeholders (actors and institutions) as managers of mangrove forests.

2. Secondary Data

Secondary data is data obtained indirectly from the object under study, which among other things, is carried out through literature studies, libraries, and archives/reports, such as:

- a. Data on mangrove forest management provided by the Langkat Regency Government to the village and other existing authorities.
- b. The data about the general condition of the research location includes geographic and demographic conditions—other data obtained from BPS, District, Village, and other related agencies.

Research sites

This research was conducted in two villages (Lubuk Kertang Village, Brandan Barat District, and Pasar Rawa Village, Gebang District) in Langkat District. The determination of the research location was based on the consideration that the two villages had developed mangrove conservation behavior through ecotourism-based management of mangrove forest areas.

Determination of Informants

The informants in this study consisted of base informants and key informants. The determination of the initial and critical informants was based on the criteria of the informants found in the field based on the snowball determination of the initial and subsequent informants (Moleong, 2003). There is no limit to the number of informants as long as sufficient field data is met.

Data analysis

The qualitative data analysis used in this study is a descriptive analysis using ongoing analysis techniques to analyze actors and institutions as stakeholders by comprehensively mapping social networks in mangrove management.

RESULT

General Description of Langkat Regency

Langkat Regency is one of the regencies located in North Sumatra Province. The capital of Langkat Regency is Stabat. The average distance from Medan City to Stabat City is \pm 45 km to the northwest. The name Langkat is said to have come from a type of tree known by the public as the Langkat Tree. This tree can be found growing around the Langkat River. This tree species is already rare and is currently only found in the interior forests of Langkat Regency. The tree's shape is similar to an olive tree, but the fruit taste is bitter and chelate.

Langkat Regency has an area of 6,263 km² or 626,329 Ha. Administratively, Langkat Regency consists of 23 sub-districts divided into 240 villages and 37 sub-districts. The boundaries of Langkat Regency are to the north by Aceh Tamiang Regency, to the south by Karo Regency, to the east by Deli Serdang Regency, and to the west by Southeast Aceh Regency. Geographically, Langkat Regency is located at coordinates between 3 14' – 4 13' Lu and 97 52 - 98 45 East Longitude, with an average altitude of 0-3000 m above sea level. Langkat Regency consists of twenty sub-districts, and 215 villages, with a population structure consisting of various ethnicities such as Malay ethnicity, Karo ethnicity, Javanese ethnicity, Toba Batak ethnicity, Mandailing ethnicity, Minangkabau ethnicity, Banjar ethnicity and several other ethnicities which mostly inhabit the area. Coast of Langkat Regency.

Community Socio-Economic Life in Mangrove Forest Management

The mangrove forest is a buffer zone for the life of the Langkat coastal community from

the threat of abrasion. In addition, mangrove forests also have an economic function for local people who make a living as fishermen in determining fishing zones that do not have to be far out to sea to catch fish. The existing condition of mangrove forests in Langkat Regency has experienced ups and downs regarding the area of mangrove cover. The change in the area of mangrove forests in Langkat Regency was motivated by the existence of mangrove management activities carried out by local people who continued to carry out logging for the charcoal, firewood, and building scaffolding industries. Changes in mangrove forest areas into non-forest areas are caused by human activities that convert land conversion into aquaculture and oil palm plantations. The results of BPDAS Wampu Sei Ular measurements (2006) showed that the conversion of mangrove land to ponds increased to 7,397.47 ha (Onrizal, 2010).

The degradation of the quality and quantity of mangrove forests in the coastal areas of Langkat Regency has negatively impacted the community's survival. Events of abrasion are increasing, and fishing zones are getting farther away, decreasing the number of catches of coastal fisheries so that the intrusion of seawater into land is increasing. The case of the sinking of Tapak Kuda Island, Tanjung Pura District, Langkat Regency, is concrete evidence of damage to mangrove forests in Langkat Regency (Onrizal et al., 2008). Damage to mangrove forests in Langkat Regency within 30 years has lost 30% of the total area of mangrove cover and damaged Indonesian mangrove forests reaching 57.6%. (Hamzah et al., 2020).

The mangrove forest in Lubuk Kertang Village, Brandan Barat District, has a mangrove area of 1,200 hectares with a 1-3 planting pattern and a density of 3,300 trees/ha. This condition has significantly decreased the area of mangrove forests yearly. The rate of deforestation occurred from 2005 to 2010. Mangrove forests have been massively damaged through various existing human activities. The increasing

population and economic needs have caused the community to change the function of land for timber product production activities, ponds, and oil palm plantations. Ironically, the clearing in that area was not accompanied by replanting the logged-over mangrove forests. Based on the results of research in the field, the condition of the mangrove forests in Lubuk Kertang Village had experienced severe damage. The information obtained reached 500-700 hectares of damage in 2010.

The socioeconomic life of the people of Lubuk Kertang Village currently has strong interactions with mangrove forests in managing and utilizing them. The understanding of keeping mangrove forests sustainable has been going on for a long time but has yet to be identified in the form of local traditions and culture, including the preservation of mangrove forests in Lubuk Kertang Village. A form of habit in managing identified mangroves is the result of an introduction process by external parties who teach local communities about conservation knowledge and the use of mangroves to produce products derived from mangroves. This is manifested in various forms of creation, such as handicraft mats, hat bags, culinary mangrove chips, and mangrove syrup. Utilization of the mangrove area is also used as a place for the cultivation of mangrove crabs, fish, and tourist objects that are already running.

Pasar Rawa Village, this area is also surrounded by a coastal area where there are several parts of the mangrove forest area, which are protected forest areas. However, at present, some areas have started to change their function into oil palm plantation areas and shrimp ponds by utilizing protected forest areas as private plantation land. With limited transportation that can only be traveled in some areas, this has led to an initiative by the parties to manage the forest area. This factor causes the depletion of the mangrove forest area in Pasar Rawa Village.

Changes in the mangrove forest area cannot be separated from the management of

protected forests in Pasar Rawa Village. Problems related to unclear ownership or status of land being transferred by the community. Determination of land boundaries that do not involve community participation and village officials who play an essential role in determining land boundaries. Differences in views between communities in using, converting, and making use of the land are surrounded by the low level of public knowledge about boundaries and rules for forest use, so that the community cannot use the land individually as well as opening up opportunities for entrepreneurs to take advantage of forest areas as land that can be utilized. as agricultural land, industry and so on.

Social Network of Stakeholders (Actors and Institutions) in Mangrove Management

The potential of mangrove forests can be used as ecotourism destinations, fish farming, crab farming, and shrimp farming. Existing mangrove stems are also used in everyday life as firewood and materials for making charcoal. The leaves are made into mangrove chips and syrup. This type of mangrove vegetation can be woven into handicrafts into mats, bags, and hats made from a type of mangrove, namely purun.

Stakeholders who manage mangrove forests in Lubuk Kertang Village form a symmetrical relationship. The initial group system consisted of the Mekar Mangrove Group, the Golden Mangrove Group, the Sustainable Mangrove Group, and the Teluk Indah Mangrove Group. Existing network forms, including tenure aspects (forest land tenure rights), and social and economic constructions, have a background and have a significant influence on mangrove damage as well as being able to provide benefits for efforts to rehabilitate degraded mangrove ecosystems, especially in Lubuk Kertang Village. Within this scope, social networks can be understood to determine access

rights, management rights, and governance of mangrove forests. Involve social relations and institutions.

In the system of ownership of mangrove forest land, the people of Lubuk Kertang Village recognize that the government owns the area through social forestry with the principle of partnership. Communities can access mangrove resources with existing regulations. Parties that utilize mangrove forest land include; individual, and the Mekar Mangrove group, the Golden Mangrove Group, the Sustainable Mangrove Group, the Teluk Indah Mangrove Group. The Lubuk Village Government Institution acts as a "spokesperson" between groups and government laws in managing and deciding matters regarding mangrove forest resources related to regulations issued by the village government.

The knowledge of the people of Pasar Rawa Village states that the mangrove forest is a protected forest area managed by the state, so a group was formed on the initiative of the local community. This group is called the Village Forest Management Institution (LPHD), chaired by Rudy Irwansyah. The LPHD group has collaborated with various parties, including the Ministry of Environment and Forestry, the Ministry of Village PDT, BUMN, Private Companies, Universities, and NGOs (Yagasu).

DISCUSSION

Analysis of Stakeholder Social Network Actors and Institutions

The involvement of actors and institutions as managers of mangrove forests plays a role (influence and interest) respectively towards the sustainability of mangrove forest management in Langkat Regency. This analysis of actors and institutions can be carried out with cohesion, influencing sustainability in managing mangrove forests in Langkat Regency. According to Febryano et al. (2015), the actors and institutions involved in managing mangrove forests in Langkat Regency can be categorized as

forming a symmetrical relationship. The pattern of social relations is formed based on the principle of partnership, which consists of various groups, such as Government Agencies, entrepreneurs, NGOs, and Community Organizations. Each actor and institution has different interests according to the authority they have obtained. This difference can lead to social tensions and can also build the potential for substantial social capital.

Actors and social networks as stakeholders in Lubuk Kertang Village and Pasar Rawa Village show a symmetrical pattern based on the principle of partnership. Communities can access mangrove resources with existing regulations. The parties that utilize the Lubuk Kertang mangrove forest land include; individuals (Hadyan Jamili Batubara), the Mekar Mangrove group, the Golden Bakau group, the Lestari Mangrove group, the Teluk Indah Mangrove group. Meanwhile, Pasar Rawa Village has a figure named Rudy Irwansyah, who founded the Village Forest Management Institution (LPHD) group.

CONCLUSION

1. The potential of mangrove forests in Langkat Regency is utilized as ecotourism destinations, fish farming, crab farming, and shrimp farming.
2. Socioeconomic life of the community has a strong interaction with mangrove forests in managing and utilizing it. The understanding of keeping mangrove forests sustainable has been going on for a long time but has yet to be identified in the form of local traditions and culture.
3. Forms of habits in managing identified mangroves result from a learning process from external parties that teach local communities about conservation knowledge and the use of mangroves to produce products derived from mangroves.
4. Stakeholders who manage mangrove forests in Lubuk Kertang Village form a symmetrical relationship. The existing network forms have a significant

influence on mangrove damage as well as able to provide benefits for efforts to rehabilitate degraded mangrove ecosystems.

5. The form of social networks can be understood to determine access rights and management rights, and governance of mangrove forests with ties to social relations and institutions.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Farid Aulia, Agustrisno. Mangrove forest management stakeholder social network in Langkat Regency. *International Journal of Research and Review*. 2022; 9(12): 151-158.

DOI: <https://doi.org/10.52403/ijrr.20221216>
