

# Improving the Local Economy Through Diversifying the Use of Mangrove Forests as Marine Resources

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## ABSTRACT

**Purpose:** This research aims to 1) Analysis of the economic infrastructure around the mangrove forest on the local economy; 2) Identify potential and opportunities for diversification of mangrove forest use; 3) Development of optimal action plans including production, marketing, and sustainability strategy planning. The research was conducted in East Pentadu and West Pentadu Villages, Boalemo Regency, which is one of the mangrove forest locations in Boalemo Regency, Gorontalo Province.

**Design/Methodology/Approach:** The research uses qualitative methods to analyze economic improvement through diversification of mangrove forest use. Data collection and data analysis techniques are carried out through observation and documentation with stages of data reduction, data presentation, and conclusion.

**Findings:** The research results showed that the development of tourist attractions in East Pentadu Village by utilizing the mangrove forest area began in 2017 and West Pentadu in 2022 offers great potential for local economic development. With the background of the beach location in East Pentadu Village which used to be a place for mooring fishing boats and the beach in West Pentadu Village which was not used, these two locations have been transformed into attractive destinations for visitors, both from inside and outside Boalemo Regency. Regarding the use of mangroves in overcoming the problem of managing tourist attractions, several steps need to be taken by the village government and community including forming working groups and dialogue between elements of society.

**Keywords:** *Local Economy; Diversification; Mangrove Forest; Marine Resources*

## INTRODUCTION

In coastal areas, mangrove forests have a very important role. Besides being rich in biodiversity, it also provides many benefits for the marine environment and society. From an ecological perspective,

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Page | 76

mangrove forests can function to prevent water intrusion, protect coastlines, habitat, and forage for various aquatic biota, as well as regulating the microclimate. Wood produced from mangrove forests can be used as construction material, material for making charcoal and pulp, as well as producing seeds (Rochana, 2010). Meanwhile, as an ecosystem, mangroves can be used as suppliers of natural shrimp and fish larvae (LPP Mangrove, 2008).

However, the quality of the environment and coastal resources in recent years has tended to decline, which is predicted to threaten its sustainability. The following image shows the area of mangrove forests in Indonesia which shows that in several years it tends to decrease.



Figure 1. Histogram of Indonesian Mangrove Area Diversity

The main problem is the degradation of mangrove forests which have been converted into fish/shrimp ponds, residential areas, and ports. Destructive and unsustainable fishing practices contribute to the decline in fish populations and the destruction of habitat around mangrove forests contributes to the decline in the function of mangrove forests (Tinianus, 2010; Ismail et al., 2019; Sihalohe et al., 2023). Furthermore (Ismail et al., 2019) explained that although there is a natural increase in the area of mangrove forest, in the Segara Anakan area, some of the mangrove area is used for rice fields, ponds and illegal logging.

Another thing is central government policy which has the potential to reduce biodiversity in mangrove forest areas. One of them is the target of shrimp cultivation of up to 250 percent which must be achieved by 2024. This policy will certainly require additional pond land of around 86,000 hectares (Hadie & Emawati, 2017). The policy implications will increase the damage to the mangrove forest ecosystem from the expansion of shrimp ponds. Many communities around mangrove forests rely on this natural resource as their main source of income and this threatens their livelihoods.

In the context of improving the local economy, many communities face significant economic challenges. Lack of adequate infrastructure facilities, and limited skills in utilizing marine resources to improve

the economy of local communities. Dako (2020) explains the economic development of communities around mangrove forests, for example by creating supra-intensive ponds that do not damage mangroves and are biodiversity friendly. Apart from that, Baderan (2020) said that in one of the women's empowerment programs, the Bajo tribe in Torosiaje Pohuwato had used mangrove fruit as processed food and handicraft products. Both statements open up great opportunities to improve the economic welfare of local communities. Coverage of sustainable ecotourism development (Putra, 2018; Fawaid, 2017; Purnamasari et al., 2022), green technology innovation (Darmawan et al., 2022), natural quarantine and coastal protection (Muhsimin et al., 2018), as well as the potential development of non-wood products (Diana et al., 2022).

The objectives of this research are: 1) Analyzing the existing economic infrastructure around mangrove forests to obtain an overview of the extent of natural resources and the contribution of mangrove forests to the local economy. At this stage, we also conduct surveys and interviews to determine income levels and main sources of income; 2) Identify potential and opportunities for diversification of mangrove forest uses such as developing craft products, mangrove-based ecotourism and land rehabilitation; 3) Development of optimal action plans including production, marketing, and sustainability strategy planning.

## **METHODS**

This research uses qualitative methods to analyze economic improvement through diversification of mangrove forest use. In general, when conducting research studies, a qualitative approach is used to identify and explore the potential for mangrove forest diversification, so that it becomes an alternative use of mangrove forest resources to improve the local economy.

The research will be carried out in Pentadu Village, Boalemo Regency, which is one of the mangrove forest locations in Boalemo Regency, Gorontalo Province. The research data sources are primary data in the form of data from local communities, village governments, and regional governments, in this case, related agencies. Data collection and data analysis techniques are carried out through: 1) observation, used to obtain data and information related to the economic level of local communities who utilize mangrove forest resources; 2) documentation, used to analyze data in the form of recorded interviews, photos, etc. To support the validity of the research data, research was carried out through in-depth observations and interviews as well as available references. For data analysis techniques, qualitative analysis is used with stages of data reduction, data presentation, and conclusion.

## RESULTS

### Location Overview

West Pentadu Village and East Pentadu Village are part of the Tilamuta District, Boalemo Regency. The area of West Pentadu Village is 5,353.87 Ha. This village borders Modelomo Village to the north, Laut Teluk Tomini Village to the south, Lamu Village to the west, and East Pentadu Village to the east. Based on the area, 1,036,733 hectares are used for housing, agriculture, public facilities, etc. The abundant natural potential in West Pentadu Village is not supported by natural conditions which are hit by floods almost every year.

The area of East Pentadu Village is around 2,800 Ha/M2. The mountainous topographic conditions cause this village to be dominated by agriculture and plantations. The natural potential in the form of the beach produces several types of fish in this area so it has great potential to open a tourist attraction as a source of village income. Apart from the abundant natural potential, it is also supported by the cultural diversity of the people who always maintain and maintain their cultural traditions. However, this area is prone to natural disasters in the form of flooding, no different from West Pentadu village.

Geographically, East Pentadu village consists of seven areas of land used, namely fields, swamps, mangrove forests, bushes, plantations, settlements, and empty land. However, spatially, the mangrove area in East Pentadu village is wider than West Pentadu village. Even though it is located in a coastal area, the most dominant land is fields so most of the population's livelihood is in agriculture and fishing. This is not much different from the West Pentadu Village area.

### Condition of Mangroves as an Economic and Social Facility

The abundant resources in East Pentadu and West Pentadu Villages, both natural resources and human resources, have great potential to improve community welfare. The people in both villages have a high work ethic. Of course, this is social capital that needs to be maintained and maintained. However, if you look at the development of mangrove forests in the two villages, it seems that up to now they have experienced physical disturbances due to the clearing of fields, ponds, and agriculture. Mr. Udin (pseudonym), one of the community members in West Pentadu village, said that:

“We are now prohibited from entering the mangrove area. Officers are guarding it, so we are no longer allowed to look for crabs or shrimp. They said they would be fined if caught.”

It was further explained that the prohibition on entering mangrove forests has been implemented since around fifteen years ago, considering that this area is prone to flooding, even today when the intensity of rain is high. One of the causes is the reduced function of mangroves in resisting seawater abrasion.

When observations were made in West Pentadu Village, several village roads were seen that had been built to cover part of the mangrove area. Likewise, residential areas located near mangrove forests are relatively new settlements. This condition shows that settlements in parts of West Pentadu Village occupy areas that were previously mangrove areas. The increasingly narrow mangrove area has the potential to invite natural disasters. The Regional Government of Boalemo Regency has issued a Regional Regulation regarding Integrated Coastal and Marine Resource Management. One of the articles in the Regional Regulation includes a prohibition on the use of methods that can damage mangroves that do not follow coastal economic characteristics, a prohibition on the conversion of mangrove ecosystems that do not consider the sustainability of coastal ecological functions, as well as a prohibition on cutting down mangroves for industrial, residential and other activities (Government Regulation Regency No. 2 of 2009).

Even though this Regional Regulation has been issued, the natural potential, especially the mangrove forests in these two villages, still provides opportunities for managing mangrove forests in a more useful direction without destroying them. By combining ecological, economic, and socio-cultural benefits, mangrove forests can be used as tourist attractions. Especially for East Pentadu Village, where the mangrove forest is still larger than West Pentadu Village, the East Pentadu Village Government has taken a policy to open tourist attractions funded by village funds since 2017. According to one of the hamlet heads we met, he said:

"When we built this place, it was previously a place to moor fishing boats. When fishermen go to sea, their boats are moored in that place (the sauce indicates the boat in question). The village continues to propose that it be made better so that when there are village activities it can be carried out in that place. The construction of this place cost a huge amount, around one hundred million. "As the days go by, people are starting to arrive, even local agencies are holding events at that place."

Since the opening of this tourist attraction, the village government has named the Tambang Hati Pelangi Mangrove Forest because the facilities built are filled with various colors to further attract tourists around the mangrove forest area.

Construction of tourist attraction locations began in 2017, specifically intended to facilitate village activities such as arts and cultural performances. Previously, this location was a place to moor fishing boats going out to sea. Since it was inaugurated by the sub-district government, many local people outside the Boalemo district have visited this location. Entering this location, visitors are treated to various types of plants, and from this location, you can also see the landscape of Lito Lahengo Island. At certain times visitors will also encounter several animals in the mangrove forest.

However, the current conditions are far from before. Since there were restrictions on human activities during COVID-19, the number of tourists decreased until it finally closed due to damage to the facilities provided. According to one of the villagers we met, there have been efforts to renovate this location to create ecotourism. However, it is hampered by quite large construction costs, such as replacing several bridge support pillars, toilet facilities that are not functioning, many walking boards have fallen off and several boat facilities for visitors have also been damaged.

Looking at the conditions of the tourist attractions in East Pentadu Village, the conditions found were not much different from those in West Pentadu Village. This village has abundant natural resource potential. Besides that, people who are quite active in village activities have social capital that must be maintained. Good relations between village communities (village heads, community institutions, village administrators, and the community) are proof of conduciveness that is always maintained. This is reflected in community participation in various community activities such as cultural activities which are often carried out in this village.

The enthusiasm of the community is quite active, in West Pentadu Village there are also several MSMEs actors engaged in the food and beverage industry. This is what motivated the West Pentadu village head to invite several MSME actors to fill the culinary tourism attraction initiated by the District Government. The sub-district received a grant to build culinary tourism by inviting cooperation with MSME actors in West Pentadu village. The location of the tourist attraction was chosen close to the mangrove so that the view looks very beautiful.

Since the inauguration of culinary tourism in West Pentadu Village on December 30, 2022, this culinary tourist attraction has been quite busy with visitors. On weekends, art performances are often held to liven up the location. Even the head of West Pentadu Village provided lights and electricity tokens. However, along the way, this culinary tourist attraction did not go as expected. In line with what the village head said:

"I have provided token electricity for them along with lights. They just have to fill in the token. Even though the stalls there are free for them. At first, I gave them free electricity, but over time they didn't fill it anymore. Finally, at night no more visitors came because there was no light. They reasoned that no one was buying food."

In our observations, culinary tourism is quite interesting to develop, especially because it is supported by the community, many of whom are involved in MSMEs, especially in the food industry. The development of culinary tourism objects is certainly an effort to improve the regional economy. One of the village officials we met stated:

"It's also difficult for me to force them to stay in that location. Even though they guard the place. They said there were very few visitors coming, while the cost of filling up electricity tokens was covered quite a lot. Finally, around July 2023 last year, no one was selling there anymore. So many of them started selling in their respective homes."

## **DISCUSSION**

Based on the results of the research conducted, two things need to be considered, namely social capital and responsibility factors.

### **Social Capital as a Source of Village Development**

The development of tourist attractions in East Pentadu Village which began in 2017 and West Pentadu in 2022 offers great potential for local economic development. With the background of the beach location in East Pentadu Village which used to be a place for mooring fishing boats and the beach in West Pentadu Village which was not used, these two locations have been transformed into attractive destinations for visitors, both from inside and outside Boalemo Regency. However, since the COVID-19 pandemic, when restrictions on human activity were implemented, there has been a decline in visitors, which has caused many tourist attraction facilities to suffer damage. This condition poses a serious challenge for the sustainability of tourist attractions.

Facing such challenges, community social capital is the key to encouraging revitalization and more sustainable development. The people in East Pentadu and West Pentadu Villages are mostly fishermen who are known to have a high work ethic. The social system formed in this society is composed of social units whose daily lives are always guided by a value system which is a valuable cultural symbol. The existence of trust, norms, and networks between individuals is a tool to support social interaction in society so it is an

important asset in facing various challenges and opens up opportunities to develop villages.

In the context of social capital, referring to Putnam's theory explains that social capital includes networks, norms and trust that facilitate cooperation between individuals in a society. In the villages of East Pentadu and West Pentadu, the high work ethic and collaboration of the community create a social network that enables sustainable management of mangrove forests. This theory shows that the stronger the social capital, the greater the potential for society to achieve common goals, such as preserving the environment and increasing welfare. By using this social capital, communities can develop management strategies that consider ecological and economic aspects, as well as encourage collective awareness of the importance of protecting mangrove forests as a vital resource.

Regarding the use of mangroves in overcoming the problem of managing tourist attractions, several steps need to be taken by the village government and community, including establishing working groups and dialogue between elements of society. The formation of the working group in question involves youth, community leaders, and local entrepreneurs to plan the renovation of tourist attraction locations. Carrying out dialogue and deliberation makes it possible to obtain solutions to create a sense of ownership while building collective commitment. It is indeed not easy to create enthusiasm and community participation amidst the community's minimum economic level (Maryuni, 2014).

Therefore, the next step that needs to be taken is to build partnerships with the government and non-governmental institutions to obtain technical and financial support. Apart from that, it is necessary to explore investment opportunities from private parties who are interested in developing ecotourism and culinary tourism.

By involving existing social capital, village governments, and communities can create effective synergies to overcome existing challenges. This effort will not only help restore tourist attractions but also improve community welfare and sustainably preserve the environment.

Social capital, which includes networks, norms, and trust among members of a society, is critical in creating effective cooperation. With a high work ethic and the ability to collaborate in facing challenges in the West Pentadu and East Pantadu communities consisting of youth, community leaders, and local business actors, social ties can be strengthened. Through regular dialogue and deliberation, the community can formulate comprehensive solutions to overcome the problems they face.

## Community Social Responsibility as Shapers of Village Development

The construction of tourist attractions in East Pentadu and West Pentadu Villages is a concrete example of community social responsibility in utilizing local natural and cultural resources. Since 2017, efforts to develop this location have not only aimed to attract tourists but also to facilitate arts and cultural activities that can strengthen social ties between residents. The location previously used to moor fishing boats has now been transformed into a public space that can be enjoyed by local people and visitors from outside the Boalemo district.

However, social responsibility does not only lie in physical development. In the context of the COVID-19 pandemic, the significant impact on visitor numbers underscores the importance of sustainability in tourist attraction management. Closures caused by damaged facilities demonstrate that communities and governments must work together to ensure that existing infrastructure is maintained. Renovation and maintenance of existing facilities is a shared responsibility, not only for the government but also for the people who benefit from the existence of this tourist attraction.

The people of West Pentadu Village, who are active in various village activities, show that social capital is very important in creating a conducive environment. Good relationships between village heads, community institutions, village officials, and the community create the synergy needed to support sustainable tourism development. Community participation in cultural activities creates a sense of ownership of the tourist attraction so that the responsibility to maintain and care for the location becomes stronger.

The existence of micro, small, and medium enterprises (MSMEs) in this village also adds a dimension of social responsibility. The village head's initiative to invite MSME players to develop culinary tourism shows that collaboration between the government and the community can encourage local economic growth. Culinary tourism close to mangroves provides its attraction, but the success of this initiative is very dependent on community support and the quality of the services provided.

Even though culinary tourism in West Pentadu Village experiences challenges in its implementation, the community's enthusiasm for being involved in various activities, including performing arts and providing the necessary facilities, reflects a collective spirit to improve conditions. Community social responsibility in this context involves not only efforts to maintain natural and cultural beauty but also creating economic opportunities that benefit all citizens.

From the perspective of participatory development theory, tourism conditions in the villages of East Pentadu and West Pentadu emphasize the importance of community involvement in the development process. In the context of developing tourist attractions, community participation in both planning and project implementation is very important so that their needs and aspirations are accommodated. Therefore, collaboration between government and society allows for more efficient use of resources. The existence of infrastructure and financial support from the government is in line with the local knowledge and skills of the community.

Overall, ecotourism development in East Pentadu and West Pentadu Villages reflects social responsibility that must be carried out by all parties. Collaboration between the community, government, and local economic actors is very important in ensuring that tourist attractions not only function as attractions for visitors but also as a means to empower communities, protect the environment, and preserve culture. By maintaining this commitment to social responsibility, these villages can develop tourism potential that is sustainable and beneficial for future generations.

## CONCLUSION

The high work ethic of the people of East Pentadu and West Pentadu villages is social capital that needs to be maintained and maintained. In developing the use of mangroves as a village potential for local economic development, there have been significant challenges along the way. Therefore, community social capital is the key to encouraging the revitalization and sustainability of tourist attractions around mangrove forests. Social capital, which includes networks, norms, and trust, plays an important role in building collaboration between society, government, and local economic actors.

Active community involvement in the planning and management of tourist attractions creates a strong sense of ownership and responsibility for the sustainability of these facilities. Through the formation of working groups and dialogue between elements of society, villages can develop sustainable management strategies, while preserving the environment and local culture. Community social responsibility is not only limited to physical development but also includes efforts to maintain infrastructure and create economic opportunities, such as developing culinary tourism.

Overall, the synergy between communities, government, and the private sector is essential to ensure that tourism development in these villages not only attracts visitors but also empowers communities, preserves the environment, and maintains cultural heritage. With a commitment to social responsibility, Pentadu Village can sustainably optimize its tourism potential for the future.

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