

# Local Community Participation on Ecotourism/Marine Tourism and Impact on Their Economy in Simakakang Island, Mentawai Regency, West Sumatra, Indonesia

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## ABSTRACT

The objective of this study is to analyze the potentials of ecotourism at Simakakang Island, Mentawai Regency and the economic participation of the local community. This study was done in August - October 2012. The data were collected by survey method and analysis data used by descriptive and qualitative. The result of the study shows that Simakakang Island has high potentials of ecotourism. It's supported with complexity ecosystem biodiversity e.g. mangrove, coral reefs and others coastal ecosystem. The priority potentials for ecotourism in this island i.e ; sandy beach, swimming, snorkeling, diving, surfing and hiking. This potential had been supported an economic benefit into government and the local community. Based on tourism zonation, have divided on ; sandy beach zone, snorkeling and diving, surfing and hiking zone. From the ecotourism/marine tourism potentials has gave an impact to the government around Rp1 Billion/year as tax revenue. And the ecotourism/marine tourism services have given the economic benefit an average Rp1,830,000.-/month for the local community. To development of ecotourism in this Island, easy transportation, information and communication services are very important.

**Keywords:** *ecotourism, coastal community participation, economic impact*

## INTRODUCTION

As the largest archipelago in the world, Indonesia has high potentials of natural resources and non natural resources abundant, one of which is a small island. Natural resources and environmental services in the area of small islands high enough as it is and as the basic capital in the implementation of Indonesia's development in the future. Potential that can be found in this small island in the form of productive natural resources, such as; *coral reefs, sea grass, mangrove forests, fisheries and conservation areas*. Small islands also provide a great environmental service because of its natural beauty as a driver of the marine tourism industry (eco / marine tourism). The development of small islands area is a process that will bring about a change in the ecosystem. These changes will take effect on the environment. The higher intensity of management and development carried out means higher levels of resource utilization, the higher the environmental changes that will occur in the area of small islands.

In addition to the renewable resources and nonrenewable resources potential, environmental services contained area of small islands, such as marine tourism and marine transportation is a potential that has a high value for the level of income of the surrounding community as well as national income with the diversity and beauty found in the small island and an attraction for tourism development.

Marine tourism is a direct benefit that can be enjoyed from the marine biodiversity, which give this activity a very important value to the people in coastal areas, especially in the areas that have coral reefs, sandy beaches and mangrove ecosystems. Coral reef ecosystems have considerable large appeal, mainly due to the beauty factors as well as various types of coral (Dahuri, 1993).



A fishery socio-economic analyst in New Zealand (Rees, E., (NY), alleges that the recreational fishing and marine tourism play a significant role in maximizing the value of New Zealanders economy obtain through the utilization of sustainable fisheries resources.

One of the small islands that have great potential in marine tourism development is a Simakakkang Island in Mentawai Regency. This study identified the potential of the Simakakkang Island as a marine tourism area and the participation of local communities in marine tourism. The objective of this study is to analyze the potentials of ecotourism at Simakakang Island, Mentawai Regency and the economic impact into to the local community.

## METHODS

This study was done on Simakakkang island – Mentawai regency, West Sumatera in August - October 2012. The data were collected by survey method, and for social economic data was collected by simple random sampling method from 40 respondents, i.e fishermen, farmer, tourist guide and culinary services. The analysis data was used by descriptive and qualitative analysis.

## RESULTS AND DISCUSSIONS

### Coastal Ecosystem in Simakakang Island

**Coral reef.** Identification result shows that the condition of coral reefs around Simakakkang Island waters is include category damaged, with an average percent cover of coral reefs was 14.38%. The kind of corals species are *Acropora* and *Non-Acropora*, and the types of *Non-Acropora* has more widely available. While the area of coral reefs is 1.36 km<sup>2</sup> or 136 ha. The diversity of coral reef has dominated in this region by *Non-Acropora* with middle criteria being of percent cover (PC) at 30-35%.

The greatest damage of coral in this island is found in the North West and the North, while the coral with the condition middle are found on the Southwest part of the island to the type of *Non-Acropora*. Based on the percent cover, the coral on Simakakkang island includes the percent cover of low magnitude, because the dominant damaged condition of corals (Table 1).

Table 1: Percent cover of coral reefs around Simakakang Island

Station	Percent Cover	Criteria
I : S 01° 98' 753" ; E 099° 56' 239"	5 %	Bad
II : 01° 98' 749" ; 099° 56" 527"	5 %	Bad
III : S 01° 59' 415" ; E 099° 34' 677"	10 %	Bad
IV : S 01° 59' 415" ; E 099° 34' 677"	30 %	Middle
V : S 02° 00' 063" ; E 099° 34' 173"	10 %	Bad
VI : S 01° 59' 718" ; E 099° 34' 788"	10 %	Bad
VII : S 01° 59' 892" ; E 099° 33'	35 %	Middle
Average	14,38 %	Bad

Source : Identification Report of Simakakang Island, 2012

The factors that the coral reef damage in Mentawai Islands is mainly caused by:

1. Coral reefs are taken for building materials
2. Catching of live fish by using poison *potassium cianida* in the past time
3. Some damaged by ship anchors moored

**Coral fish.** The species of coral fish are encountered around the island; *Chaetodon vagabundus*, *Heniochus pleurotaenia*, *Chaetodon vagabundus*, *Heniochus pleurotaenia*, *Balistapus undulates*, *Melychthis*



*niger*, *Odonus niger*, *Hallassoma lunare*, *Zanclus cornutus*, *Acanthurus lineatus*, *Ctenochaetus striatus*.. The abundance of coral fish (individuals / ha) of major fish groups, fish targets and fish indicators respectively; 8,910 individuals / ha, 5,331 individuals / ha and 682 individuals / ha, with the comparison is 13: 8: 1. This means that for every 22 fish were encountered in one 1 hectare of coral reefs in the waters of the coral reef Simakakkang island, the possibility of composition is 13 individual fish major, 8 individual fish targets and 1 individual fish indicator.

**Sea grass.** The composition seagrass ecosystem is set up relatively small, that can set up in the Northeast and Western on the Island with the type of *Thalasia hemprichii* and *Syringodium isoetifolium*. Where the density of each is 10.40% and 13.69%.

**Mangrove.** Mangrove on the Simakakkang island with an area of approximately 56,087 hectares or about 33.23% of the island region, there are plenty in the area of the bay and the east of the island, due to the influence of the tide that can fit on the island.

On this island, there are founded 14 (fourteen) species of mangrove, and other trees around the mangrove are coconut trees and other grass vegetation. The variety of mangrove species was planted in this island, namely; *Rhizophora apiculata*, *Rhizophora mucronata*, *Rhizophora stylosa*, *Bruguiera gymnorrhiza*, *Bruguiera parviflora*, *Bruguiera cylindrica*, *Ceriops tagal*, *Ceriops decandra*, *Aegialitis annulata*, *Aegiceras corniculatum*, *Aegiceras floridum*, *Excoecaria agallocha*, *Lumnitzera racemosa*, and *Xylocarpus granatum*. Based on growth and population of mangrove forest, the aged of trees are around 20 years. With distribution to group of ; trees, saplings and seedlings (Figure 1).

Utilization of mangroves by local communities and fishermen is only used for personal purposes, such as for canoe materials and houses on a small scale. In general, the level of damage to the mangrove ecosystem is relatively low, which is about 5%. The location with the most widely density mangrove in Simakakkang Island is founded in the Southern region, from the left side to the right side of the island.

**Suitability Analysis of Ecotourism (Marine Tourism).** Established on the analysis of suitability for beach tourism as presented in Table 2, the eastern region of the island have occupied in the first rank (the highest score) as a beach tourist with white sand and exotic beaches supports, while for areas southwest and southeast as the location of beach tourism in the ranks 2 and 3.

Table 2: Suitability Matrix for beach tourism

No	Parameter	Southwest			Eastwest			East		
		Condi- tion	Suita- bility	Score	Condi- tion	Suita- bility	Score	Condi- tion	Suita- bility	Score
1	Depth until bottom waters (m)	0-5	S1	9	0-5	S3	5	0-5	S1	9
2	Bottom water materials	Sand Coral	S2	8	Sand Coral	S2	8	Sand	S1	10
3	Current velocity (m/sec)	0-15	S2	6	0-15	S2	6	0-15	S2	6
4	Brightness (m)	7-8	S3	4	7-8	S3	4	7-8	S3	4
5	Beach type	Sandy, flat	S1	9	Sandy, flat	S1	9	Sandy, flat	S1	9
6	Coastal land cover	Coconut, open area	S1	8	Coconut, open area	S1	8	Coconut, open area	S1	8



7	Distance from fresh water (km)	0.5-1	S2	6	0.5-1	S2	6	0.5-1	S2	6	
Total				50					46	52	

Source: Modification from Bakosurtanal (1996)

Then, in terms of potentials developing a water attraction, especially for snorkeling and diving tourism activities, the region southeast and southwest is suitable for development in this area, that has supported by coral reefs which percent cover between 30-35% (middle), as presented in Table 3.

Based on analysis in Table 2 and 3 above, thus Simakakkang island can be separated in 5 zone; beach tourism, snorkeling, diving and hiking. And for the activities of surfing are found in the northwest side of the island, so for surfing activity the tourists usually make the resort in the Simakakkang island as a place to stay / rest area. The zoning of Simakakkang island is shown in Figure 1.

Table 3: Suitability analysis for snorkeling and diving area in Simakakang Island (Southwest and Southeast Area)

No	Criteria	Rank			Simakakkang Island Condition	CONCLUSIO NSS
		Bad	Middle	Good		
1	Topography	Very slope	Rather slope	Flat-ramps	Flat-ramps	Good
2	Land form	beach slope	Mainland	Reef flat and slope	Reef flat, slope	Good
3	Depth (m)	>15	5-15	<5	0-25	A part suitable
4	Current (cm/dt)	>25	18-25	8-18	15	Middle
5	Wave (m)	>1-	0,5-1	<0,5	0,10-0,80	Middle
6	Brightness (m)	<2	2-5	>=15	7-8	Good
7	Coral reef condition	No coral	Death coral	Life coral	Eastren - middle; Western – middle; northeast, southwest and southwest-broken	Good
8	sheltered from wave	Unsheltered	sheltered	sheltered	Southwest,south, southwest and east - sheltered and western Unsheltered	Good

Source : Arrangement Guidance of Marine Tourism Area, Marine and Fisheries Ministry, 2008



Figure 1. Map of Simakakkang island and tourism potential zonation

Baehaqie and Helvoort (1993), declare that the choice of un-appropriate location can lead to difficulties to choice in the development, both now or for the future. Many the negative impacts caused by errors in the estimation of the characteristics of the natural process in coastal areas, that caused by a general failure of the land use planning (zonation), that led to the fragility of the ecosystem and even infrastructure.

As Commonwealth Coastal Action Program (1997) noted, that the development of sustainable tourism is tourism development that brings into account the conservation area and changes in ecological communities. So, the sustainable tourism development is closely with associated the hospitality.

### **The Role Tourist Activity on Economics Aspect**

The number of visitors to the Simakakkang island from October 2011 until September 2012 are 285 guests or an average of 24 guests per month. The peak seasons can found in July until September every year, while in this time as the best seasons for surfing. The majority visitors come from Latin America / Brazil (50%), Australia (35%) and America, Europe and others (15%), and they headed for surfing, diving, snorkeling and other activity. The most visitors came to this island in the time big waves seasons in the period from April to September, as shows in Figure 2.

Nurisyah (2001), declare that the marine tourism is a recreational activity that has been preferred by a particular social group in Indonesian and the world society, and has been popular for a long time ago. Marine tourism usually always associated with the three S's (Sun, Sea and Sand), it means the type of tourism that provides beauty and natural comfort of a combination of sunlight, sea and clean sandy beaches. Various activities are generally carried out by the tourists in marine tourism, among others: include swimming, surfing, sunbathing, diving, boating, snorkeling, a walk or run along the beach.

The durations of guest visits to the island are for an average 10 days. An assuming each guest spending per day is around 300 US \$ per day for hotel, food, transport and guides, then the total revenue from this tourist activity is around 10 days x 285 guests x 300 US \$ or 855,000 US \$ per year. Thus the tax that can be drawn from this marine tourism amounted to 85,500 US \$ or approx. Rp. 1.- Billion/year, which as revenue for local governments. This result is relevant to Suryani *et.,al.* (NY), and Irianto (2011) that the development of marine tourism have gave a positif impact to the society income.



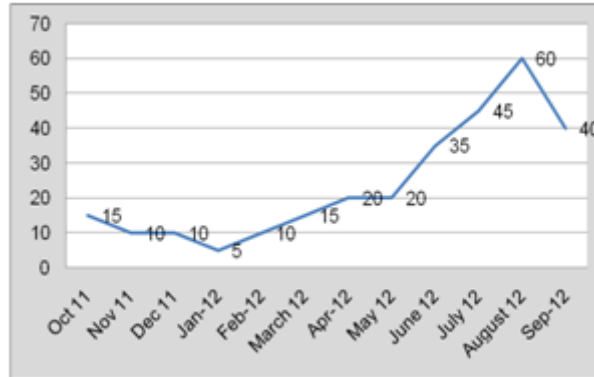


Figure 2. Guest destination in Simakakkang Island Oct 2011 – Sept 2012

### The Role of Local Community

The local community also has an important role in supporting marine tourism, namely in the form as fishermen, coconut farmers, clove farmers, tour guides and other businesses, such as sales of souvenirs and culinary. The average of income for the local community that has participated in visitors services is Rp. 1,830,000.- per month, the type of business that gave the largest revenue on income from the tour guides (Rp. 2,510,000.- / month) and the lowest income is fishing activities Rp. 1,450,000.- / month, as presented in Figure 3.

Community support is important for tourism, as it is an activity that affects the community economy. The tourism’s economic benefits are touted by the industry for a variety of reasons. Claims about tourism’s economic significance give the industry greater respect among the business community, public officials, and the public in general (Stynes, D.J., (NY); Mirbabayev, B.et al (NY))

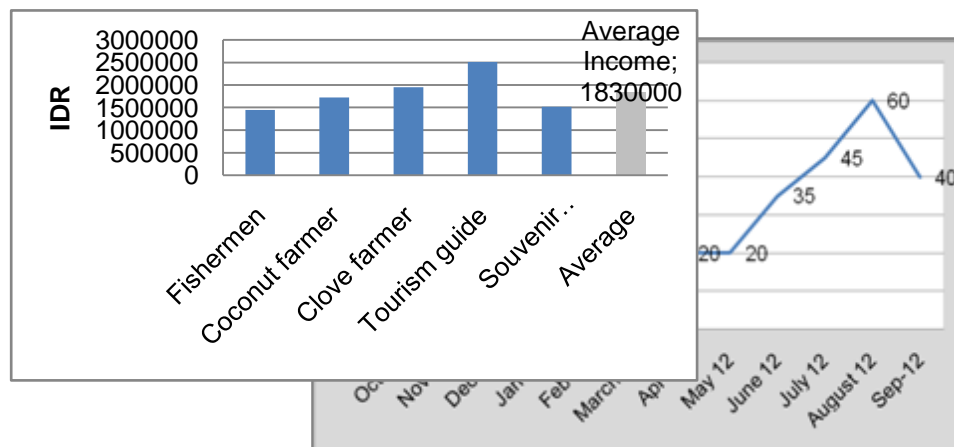


Figure 3. Average income of local communities around the Simakakkang Island  
Source : Primary data, 2012

### CONCLUSIONS

Simakakang island has high potential for ecotourism/marine tourism, with activity sandy beach, swimming, snorkling, diving, surfing, hiking, etc. The marine tourism has positive impact to the local government, that gave a revenue around Rp. 1.- Billion per year as government tax. And it has also given an economic benefit to the local community with an average Rp1,830,000.- / month.

### RECOMMENDATIONS

A great synergy between management of Simakakang island and local communities around the island is a necessary to build, it is for supports the sustainability of the eco-tourism with the local community based concept. To development of eco-tourism / marine tourism on the Simakakang island, it's very important to the improvement of transportation, communications and information facilities.

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