

# The Coastal Area Development Strategy Based on Community of Fishermen in Merauke Regency Indonesia

Z e f r i, P. Eddy Sanusi Silitonga

**Abstract:** *This study is entitled coastal community development strategy based on the community of fishermen in Merauke Regency. The concept of developing coastal areas in Merauke Regency is the main driver in increasing regional economic income with the main sectors of the chemical and marine resources. The purpose of this study to develop a strategy for the development of coastal communities in Merauke Regency. The methodology used is the method of social, economic analysis with the LQ method and SWOT analysis.*

*The results of the study were: based on the results of surveys and interviews with fishermen in merauke district, it was shown that the commodity of snapper became the main commodity of fishermen because the selling price was quite expensive. Especially china snapper (barramundi) where the price of dry air bubbles per ounce is between rp. 500,000 to rp. 800,000. To achieve the objectives of coastal zone development in merauke regency, development policies and strategies are formulated which will be used as a basis for formulating the direction of coastal zone development from the following spatial aspects: 1) space structure development policies and strategies; 2) space pattern development policies and strategies. Community empowerment strategy. In the corridor of the implementation of community empowerment activities is very dependent on the pattern of approaches and/or implementation, one of the implementations can be guaranteed that the implementation of these activities will encounter obstacles, not optimal and even fail.*

**Keywords:** *Development Strategy, Coastal Area, Community, Fishermen*

## I. INTRODUCTION

Coastal zone development, where integration, efficiency, quality and high acceleration will produce integrated coastal areas capable of:

- Moving production at centers of superior pro-small business production
- Providing assistance through counseling and training as well as technical assistance at production centers
- Developing an area-based sustainable marine and fisheries economic system.

Integrated coastal zone between marine and fisheries is the concept of regional-based maritime and fisheries development with regional management approaches and systems with principles: integration, efficiency, high quality and acceleration and based on local communities.

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Coastal area development in Merauke Regency requires a development strategy and the most important is how to empower local communities or fishing communities.

The development can be done with a spatial and non-spatial the development of the coastal area of the fisherman community in Merauke Regency, by:

- a. Identify potential resources including biological, non-biological, artificial and environmental services.
- b. Identify social, economic and cultural conditions.
- c. Formulating coastal zone development strategies based on community of fishermen.

Expected results from the study of community development in the preparation of the coastal community-based coastal management system are:

- a. Knowing the economic potential of the coastal area of Merauke Regency;
- b. Increased public awareness in maintaining and maintaining sustainable coastal areas;
- c. The formulation of the coastal area development strategy based on the community of fishermen, so that the resource potential of the coastal region can be maintained in a good and sustainable manner.

## II. LITERATURE REVIEW

In accordance with the geographical characteristics of the coastal area, it can be seen that the coastal region characterizes the existence of marine areas and in the form of islands. Where there is a close relationship and have dependency/interaction between ecosystems, economic, social and cultural conditions, both individually and in groups", so that the concept of spatial use that will be formulated certainly needs to consider the very specific conditions of the region.

For this reason, the utilization of coastal areas together with the territorial waters (sea) can be carried out optimally in order to realize the development process through efforts to increase the distribution of the results of production and service activities as well as the optimization of the functions of each activity on it. The use of land and sea areas needs to be planned in harmony and in harmony by considering:

- Areas that exist on land and sea and functional relationships in these areas (inter-functionalities)
- Potential space for coastal and marine waters.
- Physical limitations of nature, natural resources, habitat, and environmental ecosystems that exist both inland and sea areas.

In the context of coastal area management, the principle of integration is very important and plays a fundamental role as one of the keys to successful management. This is related to the nature of the coastal area which is often referred to as "the most complex system and multiple-use". Figure 2.8 provides an illustration of the coastal area as a multi-use area (Dahuri, 2004).

Given the dynamic function of the coastal and marine areas, Cicin-Sain and Knecht (1998) provide guidance that the elements of integration in coastal management are (1) sectoral integration; (2) integration of government; (3) spatial integration; (4) integration of science and management; and (5) international integration.

Sectoral integration requires coordination between sectors in the utilization of coastal resources. Integration between these sectors can be horizontal between sectors that utilize coastal resources, for example fisheries and marine tourism, or vertical, namely between sectors that utilize coastal resources and sectors that utilize land resources but have an influence on the dynamics of coastal and marine ecosystems.

Integration of government has the meaning of integration between government providers between levels in a context of the management of certain coastal areas. Management of a bay for example can involve more than one district/city government. Moreover, coordination and integration between levels of government such as between district/city governments and the provincial government or even the central government are needed in the context of the integration of this government.

Spatial integration provides a direction for space integration in coastal area management, which covers the land and marine areas. As stated earlier, there is a very strong relationship between terrestrial ecosystems and marine ecosystems. Thus coastal management must consider the interrelationship between ecosystems so that the integration of spatial management becomes an absolute necessity. In the Indonesian context, integration is now being developed or harmonized between terrestrial spatial planning and marine spatial planning (DKP, 2004).

The integration of science and management focuses on the integration between knowledge and knowledge related to coastal management. In this context, the integration of shared understanding between natural sciences and social sciences is very important so that the objectives of sustainable coastal management can be realized (Turner, 2000).

International integration requires the integration of coastal and marine management involving two or more countries such as in the context of transboundary species, high migratory biota and the effects of pollution between ecosystems. This integration for example is very necessary when the government must be involved in regional fisheries management (Regional Fisheries Management Organization) as required by the Code of Conduct for Responsible Fisheries (FAO, 1995) such as the IOTC (Indian Ocean of Tuna Commission) and others.

The coastal area of Merauke Regency is part of the Indonesian territorial waters which is part of the mandate of the Fisheries Law to carry out activities of sustainable management of fish resources and optimal use of marine waters for increasing the income of fishermen and fish cultivators while maintaining the sustainability of resources and the environment.

## III. RESEARCH METHOD

### A. Data Processing and Data Analysis Methods

There are various aspects to be considered for analysis in developing integrated coastal area development strategies. There are also these aspects are environmental, social and economic aspects.

### B. Spatial and Non Spatial Analysis Methods

Primary data include geophysical data (topography, hydro-oceanography, climate, soil water quality and others), biophysical (types of biological resources, water, SDI potential, composition of marine biota, diversity index, etc.), fisheries technology collected by conducting direct observations in the field and interviews with local people using the Participatory Coastal Resource Assessment (PCRA) method, while secondary data, both biophysical, socio-economic, cultural and spatial (related to maps) are carried out by collecting data from relevant agencies. This analysis is an alternative analysis that is used to identify various factors systematically in formulating PKKPT regional development strategies. SWOT analysis is the selection of relationships or interactions between internal elements namely strengths and weaknesses of external elements, namely opportunities and threats.

## IV. RESULT

### A. Regional Conditions

#### *Geographical Conditions*

Merauke Regency is located between 1370 - 1410 East Longitude and 50 - 90 South Latitude. Merauke Regency has an area of 46,791.63 Km or 14.67 percent of the total area of Papua Province and is the largest district in the Papua Province. Merauke Regency has 20 districts. The district is the widest district, reaching 5,416.84 km<sup>2</sup>. Meanwhile, Semangga District is the smallest district with only 326.95 km<sup>2</sup> or only 0.01 percent of the total area of Merauke Regency. The water area of Merauke Regency reaches 5,089.71 km<sup>2</sup>.

#### *Land Use Conditions and Land Status*

According to data processing in 2007 it can be revealed that Merauke Regency has 9 (nine) types of land cover, namely Dryland Forest, Mangrove Forest, Swamp Forest, Settlement, Dry Land Agriculture, Swamp, Bush / Shrub, Rice Field, and Savanna. Most of the land cover in Merauke Regency is dominated by Dry Land, Shrub and Savanna Forests which cover around 70% of the total area of Merauke Regency.

### B. Conditions for the Use of Sea Areas that Exist

#### *Potential of Marine Fisheries Resources*

Based on the Decree of the Minister of Marine and Fisheries No. KEP.45 / MEN / 2011 concerning Estimation of the Potential of Fish Resources in the Republic of Indonesia Fisheries Management Area, the estimated fish resource potential in WPP 718 is as shown in the following table.

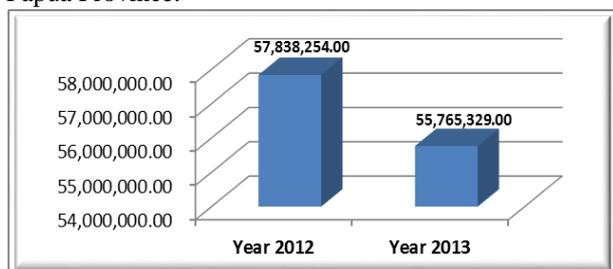


**Table 1. Estimation of Fish Resource Potential in WPP 718**

No.	Fish Resource Group	Potential (thousand tons/year)
1.	Large Pelagic Fish	50,9
2.	Small Pelagic Fish	468,7
3.	Demersal Fish	284,7
4.	Penaeid Shrimp	44,7
5.	Coral Consumption	3,1
6.	Lobster	0,1
7.	Squids	3,4
Total Potential		855,5

Source: Decree of the Minister of Maritime Affairs and Fisheries Number KEP.45 / MEN / 2011

The fisheries sector in Merauke Regency is also the largest in Papua Province.



**Figure 1. Development of Capture Fisheries Production in 2012-2013**

The number of fishermen in Merauke Regency in 2013 was 20,386 people, and 5,845 fishery households. Where fisheries households include cultivators (5.37%), arrests (88.47%), processing (4.01%) and collectors (2.22%).

#### Coastal Ecosystem Conditions

Based on the results of a WWF Indonesia survey in the Kimaam District area, especially in the SM region. Pulau Dolok (2012), found about 37 types of vegetation. This amount is very little because the Survey is only aimed at certain types of diameters and not overall. Or by the method and techniques used are different between carbon surveys and botany studies.

#### C. Demographic and Social Conditions

##### Population

In 2013 the population of Merauke Regency was 209,980 people. Of these, the male population reached 110,388 million and women reached 99,592 souls. The number of family heads was 49,461 households. The largest population is in Merauke District, which amounts to 93,999 people. The smallest population is in Kapitel District with a population of 1,825 inhabitants. Judging from the level of population density, the Merauke Regency has a population density of 4.49 people / km<sup>2</sup>. In 2013, the population growth rate in Merauke Regency reached 2.03 percent per year.

#### D. Regional Economic Conditions

##### Gross Regional Domestic Product (GRDP)

GRDP at constant prices, the average economic growth rate of Merauke Regency is as high as 7.11% per year. The high rate of economic growth must be followed by the economic development of each sector especially which directly benefits the community in relation to their income and takes into

account the sustainability of these sources of income. That is, if the community's income is based on the utilization of natural resources, then the pattern of utilization must be considered to be of a long-term nature with a minimum level of damage.

##### Per Capita Gross Regional Domestic Product (GRDP)

The level of income per capita of the population of Merauke Regency in 2008 reached Rp 14.28 million per capita and continued to increase to Rp 21.43 million in 2012, with an average per capita GRDP growth rate in 2012 of 3.87%. While the average GRDP per capita growth in Merauke Regency during the period of 2008 to 2012 was 3.22%.

## V. DISCUSSION

### A. Analysis of Economic Development of Coastal Areas of Merauke District

#### 1. Analysis of Featured Commodities

##### Location Quotient (LQ) Analysis of the Regency of Malacca Minapolitan Area

Location Quotient (LQ) method is one of the most well-known measurement techniques of the economic base model to determine the base or non-base sectors (Prasetyo, 2001: 41-53; Lincoln, 1997: 290).

As is known that the base sector is the sectors that have an LQ value > 1 while the non-base sector is the sectors that have the LQ value < 1.

The results of the calculation with the LQ method show that the agricultural sector including the fisheries sub-sector in Kabupaten Merauke has an LQ value <1, where the results of the analysis show that the LQ value of the agricultural sector including the fisheries sub-sector in Maluku Regency in 2011 is 0.621. Based on these conditions, it is only natural that Merauke Regency should make the fisheries sector as the prime mover of its development.

#### 2. Analysis of Potential of Fishing Fish in Coastal Areas Potential Fisheries Resources

Fisheries production in 2010 recorded 4,975.06 tons consisting of 4,585.30 tons (92.17 percent) of marine fisheries and 389.76 tons (7.83 percent) of land fisheries. The value of fisheries production during 2010 reached Rp. 132.97 billion. In 2010 there were 20,386 households in fisheries.

### B. Merauke Coastal and Marine Fisheries Ports

In an effort to increase the added value of fisheries activities in the Minapolitan area of Merauke Regency, it is necessary to support post-harvest infrastructure and facilities. Development of post-harvest infrastructure and facilities is directed at:

- Fisheries-based post-harvest development in the PPS-Merauke district of Merauke District and PPI plans in the Samkai District of Merauke District
- Development of a cooling chain system (cold chain system) for fishermen.

### C. Sustainable Potential Analysis of Merauke Regency Fishing Fishes

The sustainable potential analysis (MSY) that is used is a surplus production model developed by Schaefer where the data used is production data and capture efforts which are

presented in time series, as shown in Table 2.

**Table 2. Production and Number of Fishing Equipment in Merauke Regency from 2007 – 2011**

Year	Catch (Kg)	Catching Tools (Amount)	CPUE
2007	96458	16776	5,749762
2008	163342	20142	8,109522
2009	176670	26634	6,633251
2010	390095	55054	7,08568
2011	204801	28388	7,214351

Source: Capture Fisheries Statistics DKP Kab. Merauke 2007-2011

Based on the Shaefer model, the regression equation model is obtained as follows:

CPUE = a - bf, namely: CPUE = 6,684 - 9,33E-6. So that is obtained

MSY = -a2 / 4b = 1,197,102 kg

Fopt = -a / 2b = 358,199 Unit of fishing gear

The utilization rate up to 2011 was 204,801 / 1,197,102 = 17.11% and the maximum utilization rate (in 2010) was 390,095 / 1,197,102 = 32.6%.

Based on the results of the sustainable potential analysis (MSY) using the Schaefer model, the level of utilization as shown in Table 3 is obtained.

**Table 3. Production, Sustainable Potential and Level of Fisheries Resource Utilization In Merauke Regency**

Year	Production (Kg)	Sustainable Potential (MSY) (Kg)	Level of Utilization (%)
2007	96.458	1.197.102	8,058
2008	163.342	1.197.102	13,645
2009	176.67	1.197.102	14,758
2010	390.095	1.197.102	32,587
2011	204.801	1.197.102	17,108

Source: Capture Fisheries Statistics DKP Kab. Merauke 2007-2011

As stipulated by Azis (1984) referred to in Muksin (2006) which classifies that utilization rates are divided into three categories, namely:

1. The utilization rate of  $\leq 65\%$  is categorized underutilization underexploited;
2. Utilization rate of 65% - 100% categorized in optimal utilization;
3. The utilization rate of  $\geq 100\%$  is categorized in the utilization of overfishing.

From the results of the calculation of the level of utilization of fisheries resources in the waters of Merauke shows that the level of utilization is still underexploited. Therefore, it is necessary to develop so that fisheries resources can be utilized optimally and sustainably.

Development of infrastructure and production facilities, such as fishing ports and additional fishing equipment, need to be done to increase fisheries production.



**Figure 2. Conditions of the District and Coastal Areas Merauke**

### 3. Analysis of the Coastal Area Development of Merauke Regency

The above strategies are then sorted by rank based on the scores of the constituent elements, as presented in Table 4.

**Table 4. Determination of Priorities for Merauke Regency Coastal Area Management and Development Strategies.**

STRATEGY & ELEMENT SWOT		LINK	SCORE	RANK
Strategy 1	Increasing the scale of business in the Coastal Area of Merauke Regency and its surroundings by utilizing investments from the Regional Government or partners (stakeholders).	S1,S2, S3,O1 ,O2	2,40	1
Strategy 2	Development of capture and processing / post-production techniques;	W3,W4,W5, O1,O3	1,55	2
Strategy 3	Increasing the capacity of HR managers and beneficiaries of the Coastal Area of Merauke Regency	W3,W4,W5,O2, O3	1,35	3
Strategy 4	Empowerment of the local workforce as a side job or major in the management and utilization of the Merauke Regency Coastal area.	S4,S5, O1	1,05	4
Strategy 5	Development of integrated fisheries areas around the coastal area of Merauke Regency to optimize the utilization and management of Coastal Areas of Merauke Regency in Merauke Regency.	S1,S6, T3,T4 ,T5	1,05	5
Strategy 6	Development of better facilities and infrastructure for the operation of the Merauke Regency Coastal Area.	W1,O1	0,95	6
Strategy 7	Development of a marketing system that is in accordance with the function and role of the coastal region of Merauke Regency as the center of economic development for fisheries communities.	S2,S6, T1,T2	0,60	7
Strategy 8	Development of access to fisheries information and marketing of products through related institutions.	W1,W2,T1, T2	0,50	8



Figure 3. Development Strategy of the Merauke Regency Coastal Area with the SWOT Approach.

## VI. CONCLUSION AND SUGGESTIONS

### Conclusion

The results of the analysis and discussion of the conclusions in the study are as follows:

1. The concept of developing coastal areas in Merauke Regency is the main driver in increasing regional economic income with the main sectors of the chemical and marine resources. The condition of the GRDP of Merauke Regency in the fisheries sector and the results of the calculation of the LQ value of the fisheries sector are presented in the following table.
2. To achieve the objectives of Coastal Zone development in Merauke Regency, development policies and strategies are formulated which will be used as a basis for formulating the direction of Coastal Zone development from the spatial aspects as follows: 1) Space Structure Development Policies and Strategies; 2) Space Pattern Development Policies and Strategies
3. The orientation of the management and utilization strategies of the Merauke Regency Coastal Area based on the input of ecological, socio-cultural and economic data, an analysis is carried out using a SWOT analysis (Strength, Weakness, Opportunity, Threat). The decision-making process relates to the development of strategies and policies in the development process of the Merauke Regency Coastal Zone which is expected to have a strong influence on every direction of strategies and policies carried out in the development process of the Merauke Regency Coastal Area in Merauke Regency. Strategic planning is done by analyzing strategic factors (strengths, weaknesses, opportunities and challenges) in the current conditions. From the results of the weighting of the influential factors obtained the results that external factors (opportunities and threats) have greater influence than internal factors (strengths and weaknesses), towards the development of the Coastal Area of Merauke Regency, with a ratio of 2.45: 2.10.
4. Community Empowerment Strategy. In the corridor of the implementation of community empowerment activities is very dependent on the pattern of approaches and/or implementation, one of the implementations can be guaranteed that the implementation of these activities will encounter obstacles, not optimal and even fail. Some patterns of approaches and/or implementation of activities that are important to do are:

- a. The implementation of Capacity Building (training/education) in various lines of actors, some of the training needed to support the implementation of activities are:
  - Technical Training: Technique and management of Fishing, Handling and Processing of Fish, Fishing Tools and Materials, cultivation techniques, etc.
  - Clean Production Technical Training
  - Business Management and Marketing Training
- b. Integrated; Raising collaboration among relevant stakeholders/stakeholders, in order to obtain integrated support at the level of implementation of community empowerment.
- c. Facilitating Mentoring and Active Coaching; during the implementation process required active assistance/coaching by special facilitators who focus on technical matters related to the implementation of the production process and business management.

### Suggestions

1. The involvement of villagers in productive local economic activities is still very low because of the culture they have, the low ability to access business opportunities, and the low economic opportunities and business opportunities. Skill limitations, access to capital, and market access cause limited economic development at the village level.
2. This effort can be overcome if continuous guidance and assistance are carried out especially for indigenous Papuans to begin to be able to carry out economic activities in accordance with their wisdom.
3. This is useful to support their welfare and encourage the creation of local economic activities.

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