

# Area Development Model Based on Mangrove Wetland Essential Ecosystem, in Pangpang Bay Banyuwangi Indonesia

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## Abstract

Pangpang bay is one of the potential fisheries in Banyuwangi adjacent to the Strait of Bali, surrounded by mangroves, and currently becomes a concern of many parties, including the international one. For that reason, this research aims to know the condition of fisheries and mangrove areas in Pangpang Bay in terms of legal and institutional aspects, determine the potential of mangrove forests, the optimal number of sustainable fishing gear and determine the model of development of the Pangpang Bay. This research used descriptive method, the method of analysis used the legal and institutional aspects through an in-depth study and SWOT analysis. The results show that the policy (laws and regulations) for the development of the Pangpang Bay area needs to be coordinated together between the stakeholders involved, the institutions involved in the management of the Pangpang Bay area. Therefore, the development model of the Pangpang Bay Banyuwangi is model focusing on improving the welfare of fishermen and coastal communities, the sustainability of mangrove resources and surrounding areas, and regulation of fishing activities.

**Keywords:** Mangrove, Ecosistem Essensial, Teluk Pangpang.

## 1. INTRODUCTION

Mangrove area becoming the concern of Banyuwangi District Government and made as the Essential Ecosystem of Mangrove Wetland Area in Banyuwangi is Pangpang Bay Mangrove Area. Pangpang Bay Mangrove Area is the only remaining mangrove in the East Coast of East Java (Between Baluran National Park to Alas Purwo National Park) being in a large extent and quite good condition. However, efforts to use and manage this area has not been matched by an integrated development approach so that it causes a wide range of problems, such as, the gap of development levels among sectors. Therefore, in the end it causes various problems such as environmental degradation and decrease in the welfare of coastal communities around Pangpang bay.

The objective of the study is to determine the development model of Mangrove Bay Essential Ecosystem Area in Pangpang Bay, Banyuwangi.

## 2. LITERATURE REVIEW

Irnawati, et al in 2012, discussed the Model of Reef Fishery Management In Karimunjawa National Park. In addition to discussing the optimization of number of fishing gear/equipment, she also studied the institutional and policy aspects on the development of fisheries in the Karimunjawa National Park; 2) Rosalina, in 2011, conducted her research entitled Analysis on Pelagic Fisheries Development Strategy in Banyuasin District, South Sumatra Province. In this study, it was determined the optimization of fishing unit allocation, followed by a SWOT analysis to determine the best strategy in the development of pelagic fisheries. 3) Huda, 2008, studied Sustainable Mangrove Management Policy Strategy in the Coastal Area of East Tanjung Jabung District, Jambi. In the study, it was described the identification of mangrove destruction and its causes as an input in the management strategies towards more sustainable management by considering the aspects of mangrove function and role as a tool for coastal protection and protection naturally. 4) Neka, 2013, entitled Mangrove Forests Potential Study in Coastal Community Economic Development in Pangpang Bay Banyuwangi, assessed the potential of mangrove forests on the economic development of Wringin Putih Muncar community.

## 3. RESEARCH METHODS

The population in this study was the fishing communities which were located around Muncar. The method of sampling/respondent was by purposive random (random sampling with some criteria).

This research used descriptive method, and the data collection used survey and observation. The method of data analysis used legal and institutional aspects through in-depth study, as well as SWOT analysis as the basis for determining the empowerment development strategy of community around Pangpang Bay area.

## DATA ANALYSIS METHOD

### Legal and Institutional Aspects Analysis

The evaluation on the fisheries legal and institutional aspect was conducted through in-depth study, with interviews focused on several key figures (informants at the research location. The key informants were fishery officers, port officials, fishermen, traders and fish processing officers. The in-depth data analysis was conducted using descriptive qualitative.

### SWOT Analysis

The SWOT analysis was used to identify strengths and weakness of internal factors, as well as opportunities and threats of the external factors affecting an appropriate strategy for the development model of mangrove essential ecosystem in Pangpang bay.

The SWOT analysis was preceded by making matrix of *internal strategic factor analysis summary* (IFAS) and *external strategic factor analysis summary* (EFAS). Preparing IFAS and EFAS matrix was based on the analysis results of the system, namely by looking at the factors becoming internal strengths and weaknesses, and external opportunities and threats (Hunger & Wheelen, 2003).

## 4. RESULTS AND DISCUSSION

### LEGAL AND INSTITUTIONAL ANALYSIS

Essential ecosystem is an ecosystem or area that has a unique habitat or species of plants and wild animal and or has an important function as life support systems. Based on this, Pangpang bay is designated as the only wetland essential ecosystem in East Java because its coastal area is surrounded by mangrove. Pangpang bay as a bay with quite complex territorial division because most of the area is managed by Alas Purwo National Park, is partly managed by Indonesian State Forestry Enterprise (*Perhutani*) and partly managed by the local community. Therefore, it is required legal rules in integrated management.

Table 1. Regulations for Pangpang Bay Management Policy

Regulation/Law	Background	Mandate	Implementation	Constraints (Weakness)
<b>Law no. 45 of 2009 on Fisheries</b>	Utilization of Human Resource has not provided improvement of sustainable and equitable living standard	Applying the eleven principles of fisheries management	This law has had a clear legal mandate	Lack of coordination among agencies to establish good management
<b>Law no. 27 of 2007 in conjunction with Law No. 01 of 2014 on Management of Coastal Areas and Small Islands</b>	Coastal areas and small islands as the most vulnerable areas	Management of coastal areas and small islands is an integrated and continuous process	Management of coastal areas and small islands have been adapted to the characteristics owned by each location	This law has accommodated the ecosystem concept, but the coordination among stakeholders is still minimal
Regulation/Law	Background	Mandate	Implementation	Constraints (Weakness)
<b>Regulation of the Minister of Marine and Fisheries No. Per12/MEN/2010 on Minapolitan</b>	Accelerating the area development with fishing activity as part of the main activity of improving incomes and welfare	Encouraging the development of fishery area in the region to improve the regional economy and growth with fishing activities as its major driver	The linkage of spatial functional and hierarchy of settlements and agricultural systems unit	This regulation does not run optimally when there is minister change
<b>Law no. 26 of 2007 on Spatial Planning</b>	This law improves Law 24 of 1992	Region is a space constituting a geographical entity and all its associated elements	This law has had a clear mandate, but because the ecosystem concept has not been applied in this law, then it is not optimal	This law has not been imbued with the philosophy of ecosystem concept
<b>Local Regulation No. 13 of 2012 on Local Tourism Development Master Plan (RIPPDA) of Banyuwangi District</b>	Economic growth and distribution approach for public welfare	Construction oriented on regional development, relying on the community, and empowering communities covering various aspects	Tourism industry development includes the construction of structures (functions, hierarchies, and relationships) of tourism industry, competitiveness of tourism products, tourism business partnership, business credibility, and responsibility on the natural environment and the socio-culture	The structure developed does not comply with the existing pattern

<b>Law No. 41 of 1999 on Forestry</b>	Forestry planning process cannot be separated or becomes an integral part of national development plans	Forestry development organized based on the principle of benefit and sustainability, populist, justice, solidarity, openness and integrity	Implementation of forestry for the overall prosperity of communities equally and sustainably	This law has not been supported by a various related sectors
<b>Regulation of the Minister of Forestry No. 15/Menhut-II/2008</b>	Eradicating illegal logging in state forests and illegal timber trade, rehabilitation and conservation of forest resources, and community economic empowerment inside and outside the area	Realizing forestry and natural resources conservation area and the ecosystems which are safe and secure formal legally	Formulating and implementing policies and technical standardization in the field of Forest Protection and Nature Conservation	This regulation has not been supported by strong institutions in its management
<b>Law No. 5 of 1990 on Conservation of Natural Resources and Ecosystems</b>	Conservation of Biological Resources and the Ecosystem is a wealth with very high value of which the function integrity and preservation needs to be maintained	Ensuring the realization of natural resources conservation as well as the balance of its ecosystem so that it can better support efforts to improve community welfare and quality of life	Management of Natural Resource Conservation and its Ecosystem has been adapted to the principles of conservation and ecosystem approach	Decision-making for the management still is fixated on the area management so it still seems sectoral
<b>Government Regulation No. 68 of 1998 on Natural Reserve Area and Natural Conservation Area</b>	Minister of Maritime Affairs and Fisheries is authorized to establish nature reserves and conservation areas	Management of Natural Reserve Area and Natural Conservation Area is carried out in accordance with the function of the area	This Government Regulation has had a clear legal mandate, so that the application is still running well	This regulation is still sector so that it has not been integrated with other sectors

Based on the above table, it appears that the existing legislation is still sectoral and has not been able to integrate utilization activities with conservation activities. There are also some regulations that have not incorporated yet the ecosystem philosophy, which includes natural resources and human resources.

Mangrove wetland essential ecosystem area in Pangpang bay of Banyuwangi, has been already set with support from the Government of Banyuwangi District. The support is facilitating the establishment of the Forum which is later named as Mangrove Wetland Essential Ecosystem Forum of Pangpang Bay Banyuwangi District. In the forum, there are various stakeholders expected able to integrate the management in the Pangpang Bay region. Based on the results of institutional analysis, it can be seen in the following table:

Table 2. Analysis on Institutional Essential Ecosystem of Pangpang Bay Banyuwangi.

Institution	Roles in Forum	Roles in Banyuwangi Government	Policy direction
<b>Banyuwangi District Secretariat</b>	Chairman and Vice Chairman of the Forum	Banyuwangi District Regional Secretary, Assistant of Banyuwangi District Regional Secretary	Assisting in communicating and instructing Forum/Small Teams activities, such as invitation facilities, meeting places, etc.
<b>Alas Purwo National Park Office, Banyuwani</b>	Secretary I	Leading sector in maintaining and securing the forest and coastal regions included in the National Park area	Assisting in the management plan, and providing information related to Pangpang Bay
<b>Marine and Fisheries Agencies</b>	Secretary II	Leading sector in the activities of marine and fisheries in Banyuwangi area	Assisting in Pangpang bay management plan, and providing information related to the field of fisheries in Pangpang bay and surrounding areas, giving support to Government of Banyuwangi District in relation with the preparation of the management plan to its application
<b>Administrator of Perhutani, Forest Tenure Area (KPH) of South Banyuwangi</b>	Secretary III	Leading sector in forest and coastal zone management included at Perum <i>Perhutani</i>	Assisting in the management plan, and providing information related to Pangpang Bay

<b>Regional Planning Agency of Banyuwangi District</b>	Member	Leading sector in regional planning and development of Banyuwangi	Assisting in the management plan, and providing information related to Pangpang Bay
<b>Department of Agriculture, Forestry and Plantation of Banyuwangi District</b>	Member	Leading sector in agriculture, forestry and plantation in Banyuwangi district	Assisting in the management plan, and providing information related to Pangpang Bay
<b>Land Office of Banyuwangi District</b>	Member	Leading sector in activities related to land in Banyuwangi district	Never attending a meeting at the Forum level facilitated by Wetlands, the possibility is that the invitation letter is not delivered
<b>Department of Culture and Tourism of Banyuwangi District</b>	Member	Leading sector in cultural activities and tourism in Banyuwangi district	Assisting in the management plan, and providing information related to Pangpang Bay
<b>Agency for Community Empowerment and Village Governance of Banyuwangi District</b>	Member	Leading sector in community development activities in Banyuwangi district	Assisting in the management plan
<b>Agency for Environment of Banyuwangi District</b>	Member	Leading sector in all matters related to environmental sustainability in Banyuwangi district	Assisting in the management plan
<b>Conservation Section of Region of Banyuwangi, Natural Resource Conservation Office (BBKSDA) of East Java</b>	Member	Leading sector in the conservation of natural resources in the East Java region including in Banyuwangi district	Assisting in the management plan, and providing information related to Pangpang Bay
<b>Baluran National Park Authority</b>	Member	Leading sector in maintaining and securing the forest and coastal area included in the National Park area	Never attending a meeting at the Forum level facilitated by Wetlands, the possibility is that the invitation letter is not delivered
<b>Institution</b>	<b>Roles in Forum</b>	<b>Roles in Banyuwangi Government</b>	<b>Policy direction</b>
<b>Education Agency of Banyuwangi District</b>	Member	Leading sector in educational activities in Banyuwangi district	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Legal Section of Banyuwangi District Regional Secretariat</b>	Member	Leading sector related to the issue of legal products in the scope of Banyuwangi district Government	Never attending a meeting at the Forum level facilitated by Wetlands, the possibility is that the invitation letter is not delivered
<b>Muncar Police</b>	Member	Security in Muncar Subdistrict	Never attending a meeting at the Forum level facilitated by Wetlands
<b>Tegaldlimo Police</b>	Member	Security in Tegaldlimo Subdistrict	Never attending a meeting at the Forum level facilitated by Wetlands
<b>Muncar Subdistrict, Banyuwangi District</b>	Member	Providing services to communities in Muncar, Banyuwangi District	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Tegaldlimo Subdistrict, Banyuwangi District</b>	Member	Providing services to communities in Tegaldlimo, Banyuwangi District	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Kedungasri village, Muncar Subdistrict, Banyuwangi District</b>	Member	Providing services to communities in Kedungasri Village, Muncar, Banyuwangi District	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Kedungringin village, Muncar Subdistrict, Banyuwangi</b>	Member	Providing services to communities in	Providing support related to the sustainable management of Pangpang bay, proved by attendance

<b>District</b>		Kedungringin Village, Muncar, Banyuwangi District	in every Forum activity
<b>Wringin Putih village, Muncar Subdistrict, Banyuwangi District</b>	Member	Providing services to communities in Wringin Putih, Village, Muncar, Banyuwangi District	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Kedunggebang village, Tegaldlimo Subdistrict, Banyuwangi District</b>	Member	Providing services to communities in Kedunggebang Village, Tegaldlimo, Banyuwangi District	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>NGO, Indonesia Conservation Cadre Communication Forum, East Java Region</b>	Member	Advocating in East Java area conservation including Banyuwangi	Never attending a meeting at the Forum level facilitated by Wetlands, the possibility is that the invitation letter is not delivered
<b>HAPPI</b>	Member	Advocacy field related to the problems of coastal and small islands in the district of Banyuwangi	Providing support related to the sustainable management of Pangpang bay, proved by attendance in every Forum activity
<b>Nature Lovers Information Center of Besuki</b>	Member	Advocacy in the conservation field of Besuki region including Banyuwangi	Never attending a meeting at the Forum level facilitated by Wetlands, the possibility is that the invitation letter is not delivered
<b>Tjujuhbelas Agustus University, Banyuwangi</b>	Member	Education, research and community service	Assisting in the management plan, giving related information related to Pangpang bay, assisting meeting place facilities

The results of institutional analysis show that the policy roles and direction of institutions involved in in the management of Pangpang Bay is obvious, but in reality they have not been able to produce an effective and integrated management due to weak cooperation and coordination among institutions. It is also in line with Purwanti (2008) in Irnawati (2012) statement that there is disharmony in the management regulation and authority causing institutional conflicts.

Policy studies show that the existing policies and regulations are often in conflict, for example between the Law No. 32/2004 and Law No. 5/1990, the role of region on the management of conservation is still very low, causing legislation disharmony. According to Santoso (2008), some causes of policy disharmony are, among others, the strong sectoral ego that inhibits the establishment of coordination and cooperation in the Human Resources management in a sustainable manner, conflict of Human Resources management authority, the interests attached to various parties, the strong short-term agenda of certain institutions, and poor coordination among government institutions in the preparation of various legislations.

Irnawati (2012) asserts that the policy disharmony can also occur because there are too many rules and regulations. This results in limited stakeholders to identify and make the foundation for preparing policies and Human Resources management regulation. Disharmony can also occur because of a conflict between laws and the implementing regulations. It is frequently found that between regulations and government institution policies is inconsistent or contradictory.

## AREA DEVELOPMENT MODEL

In determining the development model of Pangpang Bay Area, Banyuwangi, it is also required SWOT analysis through focus group discussions and resulted model focus on welfare improvement of fishermen and coastal communities, sustainability mangrove resource and the surrounding area, and regulations of fishing activities. Big strategies obtained after the internal and external factors are combined, are as follows:

Table 3. Grand Strategy of Pangpang Bay Area Development.

IFAS/EFAS	Strengths (S)	Weakness (W)
Opportunities (O)	SO Recommendation: Community active participation in the improvement of knowledge and technology should be accompanied by the role of stakeholders, through the counseling and application of appropriate technologies that produce value-added products for the sake of public welfare based on Local community resource conservation (ecologysociography).	WO Recommendation : Determination on the boundaries of mangrove land outside the Alas Purwo National Park area agreed by stakeholders; followed by construction of access toward the mangrove forests by involving the society (intensive), it is not only economically profitable but also can be a means of communication of preservation area through guide of groups/stakeholders.
Threats (T)	ST Recommendation: The arrangement of capture fishery management with the optimization of the number of fishing gear that operates, including the laying arrangement of passive fishing gear. And rehabilitation of mangroves in the areas that are still vacant as an anticipation of environmental pollution.	WT Recommendation: The extent of mangrove forests becomes the capital availability of raw materials of processing products, at once becomes the base of preservation area with the added value of ecotourism that will uplift the local economy standard without leaving the resource conservation function of wetland resource/mangrove forest.

Based on the analysis stages performed until the SWOT analysis, the Essential Ecosystem Development Model of Pangpang Bay Area focuses on competitive commodity namely mangroves, which can be used as a focus for activity development around the Pangpang bay. Management and development of the Pangpang area bay is directed to the utilization of mangrove in terms of ecological and socio-economic and capture fisheries aspects, with regard to the potential of fish resources and the principle of sustainability. In addition, it is needed to increase the performance of cooperation among stakeholders that have joined the Mangrove Wetland Essential Ecosystem Forum of Pangpang Bay Banyuwangi, to better integrate the management in the Pangpang bay area. The Development Model is designed to build economic activity around the Pangpang bay effectively and efficiently as well as find solutions to the problems that exist in the current system.

## 5. CONCLUSION

Based on the analysis stages performed, then the conclusions that can be drawn are as follows:

- a. Policies (regulations and legislations) for the development of Pangpang bay area need to be coordinated together among the stakeholders involved so that the management can be performed more optimally. Institutions involved in the management of Pangpang bay area are members included in the Mangrove Wetland Essential Ecosystem Forum of Pangpang Bay, Banyuwangi District, that has been assigned by Head of Banyuwangi District through the Decree in 2012.
- b. In determining the development model of Pangpang Bay area, Banyuwangi District, it is also required SWOT analysis through focus group discussion and it is resulted model focus on increased welfare of fishermen and coastal communities, and mangrove resource sustainability and the surrounding, and control of fishing activities.

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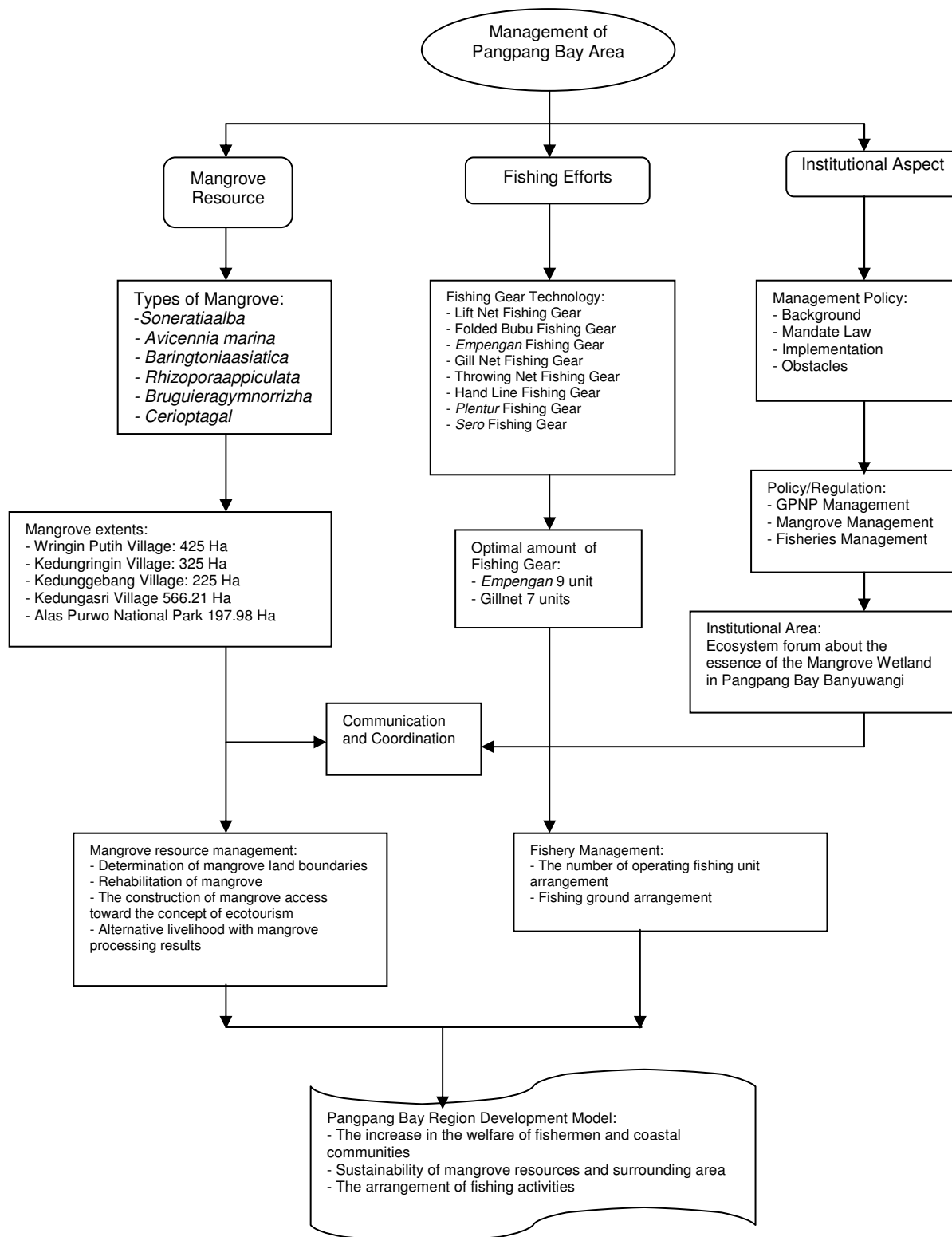


Figure 1. Development Model of Pangpang Bay Area, Banyuwangi District Based on Essential Ecosystem.