



# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## Developing Strategic Plan for Management of Mangrove in the Coastal Area in Jember, East Java Based on the 2014 Decree Number 1 on Management of Coastal Area and Small Island.

Lilik Ernawati\*, Nuddin Harahab, and Mulyanto.

Master's Program in Aquaculture Faculty of Fisheries and Marine Science, Universitas Brawijaya, Jl. Veteran, Malang 65145, Jawa Timur Province, Indonesia.

### ABSTRACT

Mangrove has pivotal role for ecosystem in coastal areas. Human activities taking place in coastal areas cause serious damage to the ecosystem in the area. The 2014 Decree number 1 has been established in Jember Municipality for a couple of years; however, the implementation of the decree has yet been effective and as the consequence, further study concerning to the implementation of the decree should be needed. The purpose of the study was to analyze the implementation of the 2014 Decree number 1 about management of coastal area and small island for management of the mangrove forest in Jember, social impacts emerging as the effect of the management of the mangrove forest in Jember, economic impact emerging as the effect of the management of the mangrove forest in Jember, and develop strategic plan for management of mangrove in Jember. The study was a descriptive study with both qualitative and quantitative approach. 55% of the decree was implemented effectively. In addition, the management of the mangrove forest in Jember resulted in social change and improved financial situation of the locals.

**Keywords:** Mangrove, effectiveness, decree

*\*Corresponding author*



## INTRODUCTION

Mangrove has major impacts towards ecosystem in coastal areas. It grows well in coastal areas that become estuary of large rivers and delta in which water stream contains a lot of mud [1]. In 2007, the total area of the national mangrove ecosystem was similar to 75% of total mangrove in Southeast Asia, or approximately 27% of the total area of mangrove ecosystem world wide. Unfortunately, the national mangrove ecosystem decreases rapidly. Based on the data from the National Coordinating Agency for Surveys and Mapping or Badan Koordinasi Survei dan Pemetaan Nasional the total area of mangrove forest in Indonesia was 3.2 million hectares [2]. Growing population in coastal areas has damaged mangrove ecosystem. Currently, there is only 60% of the total area of the national mangrove ecosystem [3]. In other words, the annual rate of mangrove destruction in Indonesia is 10%.

Currently, based on the 1999 Decree number 22 and its amendment that is the 2004 Decree number 32 about regional government, the regional government is responsible for management of coastal areas and coastal resources. The direct implication of the decrees is the establishment of the 2007 Decree number 27 and the 2014 Decree number 1, the amendment of the previous decree, about management of coastal area and small island. The damage taking place in coastal areas took place due to exploitation by regional institution, organization or the locals.

The 2014 Decree number 1 has been established in Jember Municipality for a couple of years; however, the implementation of the decree has yet been effective and as the consequence, further study concerning to the implementation of the decree should be needed. The government of Jember has yet been able to take preventive and counter measures to eliminate mangrove exploitation in their area. As the result, the locals keep damaging the mangrove areas.

The purpose of the study was to analyze the implementation the 2014 Decree number 1 about management of coastal area and small island for management of the mangrove forest in Jember, social impacts emerging as the effect of the management of the mangrove forest in Jember, economic impact emerging as the effect of the management of the mangrove forest in Jember, and develop strategic plan for management of mangrove in Jember.

## MATERIALS AND METHODS

The setting of the study was mangrove forest in the coastal areas of Jember. The forest was located in three villages, namely Sumberejo in Ambulu, Mojomulyo in Puger and Mayangan in Gumukmas, Jember.

The study was a descriptive study with both qualitative and quantitative approach. The purpose of the qualitative study was to capture current phenomena taking place in the setting of the study. Descriptive study was a type of study of which objective was describe a situation or event objectively.

The data collection methods were observation and in-depth interview where interview guide was used in order to elaborate potentials and issues around the implementation of the 2014 Decree number 1 in relation to management of mangrove in Jember based on social and local economic perspectives.

The primary data were ones related to socioeconomic condition in the coastal areas in Jember where the mangrove forest is located. The data were obtained from respondents that consisted of main informant, key informant and additional informants. The methods for obtaining the data were observation and in-depth interview. The informants were Head of the Department of Forestry, Head of the Department of Fisheries and Marine Ecosystem, Head of the Agency for Regional Development, Head of the three villages, regional government apparatus and some locals living around the mangrove forest. The locals referred to those having sufficient information about condition of the mangrove forest because they had been living there for a while.

**RESULTS AND DISCUSSION**

***Effectiveness of the Policy Implementation***

The observation towards the implementation of the mangrove management-related policy (the 2014 Decree number 1 about management of coastal areas and small islands) in Jember was conducted in Payangan and Puger Beach. The four components being observed were licensing and policy, utilization, right and responsibility of the locals and local empowerment.

**Table 1: Effectiveness of Mangrove Management- Related Policy Implementation**

Evaluated Element	Number of Element	Effectiveness of Mangrove Management in Payangan (%)	Effectiveness of Mangrove Management in Puger (%)
Licensing and Policy	23	69.57%	60.87%
Mangrove Utilization	13	53.85%	61.54%
Right and Responsibility of the Locals	5	60%	60%
Local Empowerment	11	36.36%	36.36%
Average		54.94%	54.69%
Rounded Average		55 %	55 %

Based on Table 1, the implementation of the 2014 Decree number 1 about management of coastal area and small island in Payangan and Puger Beach in Jember was 55% effective.

***Implications***

Social change is a change about social values, norms, and various patterns in a human life that occurs in society. The mangrove ecosystem in Jember can bring change for the local society. The impacts of the mangrove can be positive or negative ones.

The locals living around the mangrove ecosystem had made optimum efforts to preserve the ecosystem because they were well-aware of the benefits of mangrove for their lives. However, there were pros and cons. Some locals took care of the mangrove ecosystem but some other harvested the mangrove forest for their personal gain. The following was an excerpt of the interview with one of the informants, "Majority of the locals take care of the mangrove forest because they have realized that it benefits them. However, some people took advantage of the forest telling other people they have rights/ access to the forest. I laugh at them because the forest belongs to the government."

The negative social impacts of the mangrove management system in Jember were disagreement between the Department of Irrigation and the Department of Marine Science about which department is responsible for management of the mangrove ecosystem, the locals attempt to take advantage of the ecosystem, practice of illegal logging in the ecosystem and social jealousy between community groups that actively preserve the mangrove ecosystem and those that made zero attempt to preserve the forest.

The positive social impacts of the mangrove management system in Jember were the locals realized the significance of the mangrove ecosystem, the society used resources from the mangrove forest as their sources of income, the locals work together to preserve the mangrove ecosystem turning the area into place for learning, training and development.

In conclusion, mangrove management system in Jember brought social change in the society. It was in line with Auliyani's study [4] that conservation resulted in social impact for the local community in terms that their commitment to preserve mangrove ecosystem.

### ***Economic Implication***

Mangrove forest has major contribution to coastal economics because most people living around the area are fishermen. Ecologically, mangrove forest was the habitat of marine biota, and spawning ground for fish. Diverse mangrove species and their uniqueness would attract visitor, provides food source for marine biota and/or protect beaches and coastal areas from various threats such as sedimentation, abrasion, sea water intrusion, and as a source of habitat of marine biota [3].

The locals use the mangrove forest in Jember as an opportunity to improve their financial situation. Mangrove forests attracted fish that may increase the local's income. In addition, the locals also took advantage of the mangrove forests as fishing tour site. "Most of the locals are fishermen but now they start to shift to other profession such as being fishing tour guide. They rent their boats for visitors who want to go fishing." (IK 1).

"The second is there are plenty of fish there because there are a lot of coral reef in the area. If you go deeper, there are plenty of fish, crabs and shrimps and the locals are aware of that. The locals (KUD lumbalumba) started business related to tourism and they realize that they can do so because of the mangrove." (IK 1)

The mangrove ecosystem increased the local's economics. Based on the data, the average income of the locals increased between 80,000 and 100,000 rupiahs per day.

As an addition, some locals used the mangrove forest as source of raw materials to make syrup, chips and flour.

The Department of Fisheries and Marine Ecosystem explained that the locals had attended training related to utilization of resources from the mangrove forest into products with high economic value. The training was conducted 2 or 3 times a year. Besides that, the local government also conducted training for the local supervisors.

As a conclusion, mangrove ecosystem improved the local economic. It was in line with the findings of a study conducted by Mayudin [5] that well-maintained mangrove forest would give tremendous economic benefit. Auliyani [4] also mentioned that in terms of economics, ecological and economic utilization of mangrove forest could potentially increase welfare of the society.

### ***SWOT Analysis***

#### **Strength**

- The municipality of Jember had had local supervision group called "bahari lestari" to supervise any violation to mangrove forest management;
- Department of Fisheries and Marine Ecosystem conducted socialization and reforestation of the mangrove forest every year;
- Police Department, Marine Area Command and the Navy supervised undergoing management program of the mangrove ecosystem;
- Department of Fisheries and Marine Ecosystem conducted classes and training related to mangrove forest management regularly;
- Various institutions working in fisheries and marine ecology participated in the trainings;
- The government worked together with universities and conservation groups to carry out the management system of the mangrove forest;
- Mangrove management master plan had been established;
- There were fishponds supporting mangrove forest management.

**Weakness**

- The government had limited budget for the management of the mangrove ecosystem. The amount changed per year depending upon the regional government policy;
- There was disagreement related to area for management of the mangrove ecosystem based on the 2014 Decree number 23;
- There was discrepancy between the management system of the mangrove ecosystem in Jember and the implementation of the 2014 Decree number 1;
- There was not any clear pact about who the highest authority is in the management of the mangrove ecosystem;
- There was influence of the local autonomy in management of the mangrove ecosystem;
- None of the regional budget was allocated for management of the mangrove ecosystem;
- The socialization was temporary event;
- The head of villages and regions had yet been able to support the management of the mangrove ecosystem;
- There were very few government personnel facilitating the management program of the mangrove ecosystem and there was lack of synergy between government institutions responsible for the program;
- The head of the villages had yet supervised the implementation of the management of the mangrove ecosystem;
- The Department of Fisheries and Marine Ecosystem and the Department of Irrigation had yet worked together to ensure the implementation of the management program of the mangrove ecosystem;
- The Department of Fisheries and Marine Ecosystem was the only institution responsible for the program;
- The regional government had yet supported the implementation of the mangrove forest management program.

**Opportunity**

- Several local groups participated actively in the implementation of the mangrove forest management program;
- The society had realized social and economic contribution of the mangrove forest towards their lives;
- Several community groups conducted independent socialization related to the mangrove forest management program;
- The locals were aware of consequence caused by mangrove forest violation;
- Mangrove forest improved the local's income;
- The locals supported the mangrove forest management program socialization;
- The community groups had developed some products of which raw material was taken from the mangrove forest;
- One of the local community groups established cooperative where the locals could save and make some loan;
- Resources from the mangrove forest increased the local's income;
- There was a shift in the local's paradigm due to the positive effect of the mangrove forest management program.

**Threat**

- Some local groups were against the mangrove forest management program;
- Agreement between the locals and the community groups related to particular areas of the mangrove forest;
- Utilization of the mangrove forest had yet been optimum;
- The mangrove forest management program lacked of financial support;
- There was not any creative industry around the mangrove ecosystem;
- Poor coordination between the village government and supervision groups in carrying out the mangrove forest management program;
- There was lack of information about suitable mangrove forest management;
- There were many competitors in the implementation of the mangrove forest management program;

- There was lack of human resource in carrying out the mangrove forest management program;
- There was lack of infrastructure and facilities including means of transportation;
- Some of the locals were against mangrove reforestation.

### **Strategy**

#### *SO (Strength and Opportunities) Strategy*

The strategy was implemented where the strength of the mangrove ecosystem management program in Jember was to get the opportunity the area had. Therefore, SO strategy involves finding investor, both public and private institutions, in order to facilitate the mangrove ecosystem management program.

In order to attract investors, the existing mangrove ecosystem management program should be improved and the lack of budget to support the program should be solved immediately. Besides those, the mangrove forest in Jember should be developed into mangrove eco-tourism area.

Other strategies are developing master plan describing areas where mangrove ecosystem management program could potentially be implemented, and using information system for developing action plan and mapping the area.

The following strategy was to establish MoU between the stakeholders and the locals that support the mangrove ecosystem management program in Jember. At last, the government should provide an area so that the mangrove ecosystem management program may be implemented well without any issue related to the regional government policies.

#### *ST (Strength and Threat) Strategy*

The strategy referred to one in which the strength was used to anticipate some threat the government of Jember may encounter in the implementation of mangrove ecosystem management program. In this case, the government should ask the locals to participate actively in the program.

Furthermore, discussion about utilization and management of the mangrove ecosystem between the government and the locals should be conducted so that both regional and village government made the agenda became their priority. The discussion should involve role of both the village and regional government as well as Local Government's Agencies about the utilization and management of the mangrove ecosystem in Jember.

#### *WO (Weakness and Opportunities) Strategy*

The strategy referred to one in which the government of Jember used the opportunity they had to anticipate some threat they may encounter in the implementation of mangrove ecosystem management program. The government should take concrete measure by integrating the mangrove ecosystem management program into the medium and long-term development plan of Jember. The government should also consider the mangrove ecosystem management program as their priority. Besides those, the government should socialize the implementation of the 2014 Decree number 1 to OPD and the locals so that the two could work hand-in-hand in carrying out the program.

In addition, the regional government should motivate all parts of the society for implementation of the mangrove ecosystem management program in Jember so that all of them could take direct social and economic advantage of the mangrove ecosystem.

In order that the strategy ran well, the government should establish a regulation related to management and conservation of the mangrove ecosystem. Once the regulation had been established, the mangrove area would improve tourism sector in Jember.

### *WT (Weakness and Threat) Strategy*

The strategy referred to one in which the government of Jember should overcome the weakness in the implementation of mangrove ecosystem management program in order to avoid some potential threats. The WT strategy were empowering the locals through training and loans so that they were able to turn resources from the mangrove area into economic commodities. In other words, the training and the loan allowed the locals to start business or SMEs of which raw material came from the mangrove forest.

Due to the lack of infrastructure and facilities, the government should provide sufficient number of infrastructure and facilities so that the locals and the community group could carry out in the implementation of mangrove ecosystem management program well. The last was establishment of policy that turned the mangrove ecosystem in Jember as conservation area.

### **CONCLUSION AND SUGGESTION**

Based on the findings of the study entitled “Developing Strategic Plan for Management of Mangrove in the Coastal Area in Jember, East Java based on the 2014 Decree number 1 about Management of Coastal Area and Small Island, the conclusion are: a) the implementation of the decree about the management of the mangrove ecosystem in Jember is 55% effective. In other words, the policy implementation has yet been optimum; b) the mangrove ecosystem management program brings social change in the society; c) the mangrove ecosystem management program improves the local economics; d) SO (Strength and Opportunity) strategy is a strategy in order to find investor, both public and private institutions, in order to facilitate the mangrove ecosystem management program. ST (Strength and Threat) strategy is one where the government invites the locals to participate actively in the program. WO (Weakness and Opportunities) strategy is one where the government takes concrete measure by integrating the mangrove ecosystem management program into the medium and long-term development plan of Jember and making the program their priority. WT (Weakness and Threat) strategy is one in which the government of Jember empowers the locals through training and loans so that they were able to turn resources from the mangrove area into economic commodities. The government also facilitates establishment of SMEs and encourages the locals to run technology and IT (information technology)-based mangrove ecosystem management program.

Based on the conclusion, some suggestions the researcher would like to give are as follow: 1) the government of Jember should establish policy or regulation related to management of mangrove ecosystem in their area, more particularly one explaining job description of several public institutions responsible for management of the mangrove ecosystem; 2) the regional government should integrate the mangrove ecosystem management program in their middle and long-term development plan making the program their priority; 3) the government should ask the locals to participate actively in the mangrove ecosystem management program, for instance building fish pond around the mangrove ecosystem and asking their opinion while designing the program; 4) due to its economic contribution to the local society, the head of villages should motivate the locals to take part in the mangrove ecosystem management program; 5) future researchers should conduct further studies about mangrove ecosystem.

### **REFERENCES**

- [1] Dahuri, R. Keanekaragaman hayati laut: Aset pembangunan berkelanjutan Indonesia. 2008. Gramedia Pustaka Utama. Jakarta.
- [2] Saputro, G.B., Hartini, S., Yulianto. Peta Mangroves Indonesia. 2009. Pusat Survei Sumber Daya Alam Laut, BAKOSURTANAL. Jakarta.
- [3] Rahmawati. Upaya Pelestarian Mangrove Berdasarkan Pendekatan Masyarakat. 2003. Paper. Department of Forestry, Faculty of Agriculture, University of North Sumatera. Medan.
- [4] Auliyani, D.H. Pengaruh Rehabilitasi Mangrove Terhadap Kondisi Sosial Ekonomi Masyarakat Pesisir Kabupaten Rembang. 2013. Proceeding, Seminar Nasional Pengelolaan Sumberdaya Alam dan Lingkungan 2013. ISBN 978-602-17001-1-2
- [5] Mayudin, A. Kondisi Ekonomi Pasca Konversi Hutan Mangrove Menjadi Lahan Tambak Di Kabupaten Pangkajene Kepulauan Provinsi Sulawesi Selatan. 2012. 8(2): 90 – 104. ISSN 1693 – 9093.