

# Environmental Policy of Mangroves Management in Rembang Regency

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**Abstract.** Mangrove area is an area overgrown mangrove in a natural or artificial, to maintain the environmental sustainability of coastal areas. In addition to maintaining the ecosystem of biodiversity, the mangrove area also has a role to social-economic, and socio-cultural. Rembang regency is one of the districts on the north coast of Java which has a large mangrove area. However, due to the high economic activity in the region of Rembang Regency, the mangrove area becomes less and damaged. This research to describe how environmental policy to manage mangrove area in Rembang regency with qualitative descriptive approach. The result is the role of government and society gradually able to restore mangrove ecosystem. Moreover the district government through Environmental Agency has made a masterplan for the development of mangrove ecotourism in Pasarbanggi Village. The existence of sustainable mangrove conservation has a positive impact on the environment and society.

## 1 Introductions

### 1.1 Background

Coastal ecosystems are natural resources that have dynamic, unique and complex characteristics [1]. The coastal area is also home to a variety of environmental, economic and social activities. A lot of human activity is highly dependent on this place. As a result, if not well controlled, there will be imbalances between fields that will threaten the ecosystem of coastal environment. Coastal areas are basically composed of various ecosystems of each other interconnected [2]. One of the coastal ecosystems we know so far is the mangrove area. Mangrove area is a region that is formed either natural or artificial that serves to maintain the ecosystem of coastal environment. Mangrove area can be called “rainforest of the seas.

Referred to as the “rainforest of the seas”, mangrove zones functions as the backbone of coastal and offshore food webs. Not only are these forested wetlands a superb nursery habitat for marine life, but they also provide shoreline protection and are accordingly beneficial for local economies in approximately 123 countries/territories. Diminishing of mangroves area is as a result of shrimp farming (aquaculture), coastal development, and clear cutting for timber production. from 1980 to 2005, nearly 35,600 square kilometers of mangroves were destroyed. There is no estimate of original global mangrove cover, but according a general consensus that it was once over 200,000 square kilometers. And now it appears that more than 50.000 square kilometers, approximately one-quarter of the original mangrove area, have been lost [3]. With human

populations increasing at an astonishing rate in coastal areas, the next future it is crucial situations which need a policy and program solutions are implemented in the all mangrove-inhabited nations [4].

In the international, many organizations are have detailed guidelines to help their members develop more effective mangrove management plans. These organizations include but are not limited to, the United Nations (UN) Food and Agriculture Organization (FAO), International Tropical Timber Organization (ITTO), the Ramsar Convention, the International Society for Mangrove Ecosystems (ISME) [3]. Good mangrove management involves all stakeholders such as state, regional, private and non-profit organizations. Because the success of mangrove management policy is determined by good cooperation across sectors.

Mangroves plants have good adaptation characteristics. Like living in extreme environments with stagnant soil conditions, soils that have high salinity or unstable mud substrate conditions. In Indonesia there are about 202 species of mangrove plants, covering 89 species of trees, 5 species of palm, 19 species of climbers, 44 species herbs, 44 types of epiphytes and 1 type of nails. Some species are true mangroves and others are mangroves [5]. The Several mangrove plants are many things that can be utilized by the community ecologically, socio-economic and socio-cultural. As a result, in recent decades the extent of damage to the mangrove area tends to be very fast.

Rembang regency is one of the areas located on the north coast of Central Java Province. As a coastal area, Rembang regency has some mangrove areas, such as those located in Pasarbanggi village, Rembang District. Past mangrove conditions in the north coast of Java,

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especially in the Rembang Regency is very abundant. But because of the high activity of the community, of course have a negative impact on the ecosystem of mangrove areas. Central java north beach recorded the worst damage compared with java west pantura or east java pantura reach 96.5% [6]. The easy accessibility has contributed to the destruction of the mangrove area. In addition, factors that contribute to mangrove damage in Rembang include aquaculture, mangrove logging, reclamation and sedimentation and environmental pollution. According to Kismartini [7] reduced mangrove area in Rembang originated from the conversion of mangrove land into milkfish ponds in the 1960s and embankment of windu in the 1990s.

Mangrove species present in Rembang regency are 27 species, consisting of 12 major species, 2 minor mangrove species and 13 species of mangrove asosiation [8]. While the mangrove area in Pasarbanggi village, Rembang District is dominated by the type of rhizophora with sonneratia standing to the sea and avicenia standing to mainland. The condition of the mangroves area that suffered damage will certainly have a bad impact for the community and the sustainability of the surrounding environment. On that basis the district government through several related agencies began to pay attention and try to improve the mangrove area, especially in the village Pasarbanggi Rembang District. Therefore in this research will explain how environmental policy related to mangrove management in Rembang Regency.

## 1.2 Theory

### 1.2.1 Public policy

Public policy is an applied discipline that is multidisciplinary. The initial definition of public policy proposed by Harold Laswell and Abraham Kaplan [9] is public policy as a projected of goals, values, and practices. While George C Edwards III and Ira Sharkansky [10] define public policy as a government action in the form of government programs to achieve goals or objectives.

Meanwhile, according to David Easton [11] defines public policy as the allocation of values by force (legitimate) to all members of society. Public policy in its speakers is not in the void of values, it is in a complex organization and invites much value from its environment. Based on the opinion of some experts, the researcher concludes that public policy is something effort taken by institution or organization in this case sovereign government to solve the problem in order to be able to realize social welfare.

### 1.2.2 Environmental policy

As an applied discipline that can accommodate from other sciences. Policy studies can not stand alone. Therefore in this study researchers focused on environment-based policies in more specific policies in mangrove management. According to RI (Indonesia Republic) law number 32 of 2009 on Environmental

Protection and Management [12]. The environment is the unity of space with all things, power, circumstances, and living things, including human beings and their behavior that affect nature itself, the survival of life, and the welfare of human beings and other living beings.

Based on this environmental policy according to the researcher is a effort taken by the institution or organization in this case the government, to maintain the continuity of human environment and other living things. The environmental policy referred to in this research is the policy in the management of mangrove area in Rembang regency. In addition mangrove management policy in Rembang Regency purposes to restore and preserve the environment, also beneficial for economic, social and cultural and tourism sector for the surrounding community.

## 1.3 Research method

In this research, researcher used a qualitative descriptive approach aims to explain how environmental policy in mangrove management in Rembang regency. Qualitative descriptive approach [13] is a study that aims to describe social phenomena that occur in society. Then the data obtained from the primary and secondary data from the government, literature review and other documents related to mangrove area management.

In addition, to obtain the data the researchers conducted interviews to several informants supported by the results of observations in the field. Then the results are analyzed using techniques described by Miles and Huberman [14] consisting of three stages of data reduction, data presentation and conclusion or verification.

## 2 Results and discussions

The damage occurring to the mangrove ecosystem in Rembang Regency over the past 1 decade resulted in increased stakeholder awareness that the importance of mangrove ecosystems in coastal areas. Therefore, in this study will be presented environmental policy by the Government of Rembang regency in mangrove area management in the village Pasarbanggi, District Rembang. Before explaining the mangrove management policy, researchers will explain the problems that become obstacles in mangrove management.

### 2.1 The problems of mangrove management

The decrease of mangrove area in Rembang Regency that occurred in the period of 2000-2010 is due to the lack of understanding of the importance of mangrove functions and benefits ecologically and economically. Conversion of mangrove land into aquaculture areas, salt ponds, and population settlements will certainly have a negative impact on capture fisheries production and damage to the environment. Because the mangrove ecosystem is where fish and other plants breed. For mangrove land, itself is around 6.2 Ha only or quarter of

pond area. To more details will be explained in the table below :

**Table 2.1** Coastal land use in Rembang Regency

No	Land Use	Are (ha)
1	Settlement	2.69
2	Rice Fields	4.71
3	Embankment	24.42
4	Mangrove	6.2
5	Warehouse	1.35
	Totally	39.37

Source: Environmental Agency of Rembang Regency, 2015.

According to Mr. Sahal as a head of mangrove farmers [15], mangrove areas close to economic activities such as fishponds are often converted by the community for fishponds. This is because people still consider the mangrove area is a less functioning area so they are free to do all the activities. The lack of awareness of the community towards the environmental protection has a negative impact on the mangrove area. Like doing wild hunting and mangrove logging in the area of mangrove.

Then another problem is accessibility. Accessibility issues that exist in the region are divided into two, namely access to residential areas and access to the mangrove area. The second, access area is very important to support all economic activities or tours made by residents. If the accessibility to the mangrove area is good then the people will be helped in the mobility of daily activities. Besides that is the problem of facilities and infrastructure: in the form of roads, garbage facilities, drainage, sanitation needs. In addition, after the mangrove area opened for public / tourism, there are only visitors who do not heed the manager's appeal by dumping the garbage not on the place that has been provided in the mangrove area. Therefore, In the future, the government and other stakeholders must solve these problems to make the mangrove area of Pasarbanggi village be a better.

**2.2 The environmental policy of mangrove management**

As a coastal area that has a diversity of ecosystems environment. District really need policies to protect the environment. Local law No. 8 of 2007 on the management of coastal areas, marine and small islands [16], one of the purposes is to protect the mangrove ecosystem in Rembang. It is as set out in several articles such as article 12, which reads as follows:

1. Protection of coastal areas forested mangrove (Mangrove) is done to preserve the mangrove forests as a shaper of mangroves and breeding grounds for a variety of marine life as well as coastal protection from erosion of the sea and protective cultivation ponds behind him including the designation.
2. Criteria mangrove forested coastal area is a minimum of 130 (one hundred thirty) times the value of the average difference in the highest and lowest tides measured annual low tide line towards the west.

It is also supported with the support of government policy making local village (local Policy) is Perdes number 03 of 2014 [17] which specifically regulate and aims to protect the mangrove area in the village of Pasarbanggi, Rembang. This Perdes be agreement and commitment pasarbanggi villagers not to do illegal logging or other destructive interests of the mangrove areas. As outlined in article 20, paragraph 1.

*"Each person / group / organization banned cutting down trees in the forest damaging mangrove Pasarbanggi Village area. Penalties for offenders who violate the mangrove planting of 100 (one hundred) rods with maintenance".*

With the adoption of these policies is gradually people began to be aware and proactive in supporting environmental conservation efforts mangrove areas. Since it, Management of region becomes more manageable because of their youth are active in promoting the mangrove areas. Pasarbanggi mangrove ecosystem is one of the best on the north coast of Central Java. Mangrove in Rembang is a blend of natural mangrove and rehabilitation outcomes. With the support of the role of government, private and society. Effort to management through rehabilitation and conservation of mangrove ecosystems were able to restore gradually. For more details, following one of the image spot Pasarbanggi mangrove area.



**Fig. 2.1** Condition of Mangrove Area in the Village of Pasarbanggi

**2.3 Master plan of environmental agency in mangrove management**

Rembang district government through issuing BLH Masterplan development Pasarbanggi mangrove area in the village. Management of mangrove areas in the village Pasarbanggi is a demonstration of the Government of Rembang through Environmental Agency in cooperation with the Department of Marine and Fisheries as well as private parties. This is done to protect the ecosystem of the mangrove areas negative actions of people who are not responsible. Other than that expected by the master plan of the management of mangrove areas, in the future this area will benefit the community both in ecological, economic and socio-



cultural. The business initially had difficulties and obstacles. Many peoples around who feel that the plan of conservation land is hers. But aided by community leaders and youth in village areas Pasarbanggi, the public finally became aware and willing to work together to be active in the conservation of the mangrove area.

In the Master Plan for the management of mangrove areas will be developed as the follows:

### 2.3.1 Ecotourism of Mangrove Area

Ecotourism is meant is combining ecology (Environment) to the development of tourism. Ecotourism is a form of travel to natural areas that is done with the goal conserve the environment and preserve the life and welfare of the local population [18]. In the utilization of natural areas for ecotourism use approach to the conservation and utilization. Both approaches are implemented with emphasis on "preservation" than the utilization. Ecotourism development in the region can ensure the integrity and preservation of mangrove ecosystems. Ecotourism is more use of conservation approaches.



**Fig. 2.2** Mangrove Conservation Area By Environmental Agency of Rembang Regency in the Village of Pasarbanggi

Mangrove conservation efforts began well managed in 2014 with the construction of facilities to enjoy the mangroves area in the form of form of a bridge and gazebo which surrounds its area. Construction of the gate. Construction of access roads more adequate provision of facilities such as bins, toilets, area of the pavement.. Construction of bird observation post. During the observation conducted by researchers identified only the construction of bird observation post that had not been realized.



**Fig. 2.3** Red Bridge of Mangrove Area in The Pasarbanggi Village.

In the Mangrove conservation of Pasarbanggi contain 15 mangroves in mangrove plant species consisting of five true mangrove species and 10 types of associations. *Rhizophora mucronata* is the dominant species. In addition, the area mangroves as a habitat for 22 species of birds from 14 families were 7 of which are protected species [19].



**Fig. 2.4** Type of Mangrove in Mangrove Conservation Area

Development of ecotourism in mangrove areas, the government is also building a board walk that we know as the red bridge. Opening of mangrove area as a tourist a positive impact on the environmental, social and economic communities. From the opening environment of mangrove areas for ecotourism in accordance with the carrying capacity of the area [8]. So that this will not damage the environment or the mangrove ecosystem.



**Fig. 2.5** Management Activity by Community of Pasarbanggi Village

In the past this region has a fairly extensive mangrove areas are scattered from the District Kaliore. However since that time people do not notice their mangroves around their environment, then long mangrove ecosystem begins to decline because of the high economic activity from coastal communities. But over time with the management and improvement are done together. This region often become a pilot and be a tree planting mangroves. So that the existing ecosystem is becoming increasingly widespread and well ordered. In addition to being a place of environmental conservation and animal biodiversity. Pasarbanggi mangrove is also a tourist destination based environment.

### 2.3.2 Village tourism

Village tourism is a form of integration between the interaction, accommodation and support facilities are presented in a structure of a society that blends with the applicable rules and traditions [20]. In mangrove areas, the population still has a cultural tradition and a relatively original. There was also a special food, agricultural systems and social systems that foreshadowed tourism villages. Development of rural tourism will certainly accentuate on the side of life, social and cultural rights of coastal communities. So expect the tourists will get to know how everyday life of coastal communities survive.

### 2.3.3 Water travel area (the area of concept waterfront and water park)

In this mangrove area in the future will be developed tourist areas, namely water Waterfront and Waterpark. Waterfront is area that may include building or activity that is not directly above the water, but it is bound to visual / historical / physically associated with water as part of a broader scheme [21]. With the waterfront is expected to revive community life activities, such as

trade and also liaison between the banks. While the construction of the waterpark will increase tourist traffic in the local, so the impact on the growing economy of local people and income for the local government.

## 3 Conclusions

In this paper described environmental policy in Rembang, particularly in relation to mangrove management. Mangrove management policy is a step taken by the government to preserve the environment. Besides the mangrove areas are also having an impact on other sectors of public life around like economic, social, cultural and tourism, so we need a policy that guarantees the existence of mangrove areas for the life to come.

Mangroves region is an area that is very important in people's lives and vast coastal areas. Besides as an ecosystem for the environment is also beneficial for all aspects of human life. Therefore we need a commitment to the triangle actors ranging from governments, private sector, and the community itself to support environmental policy (Master Plan) management of mangroves in Rembang. With the master plan, the policy of mangrove management to be more structured and clear. So that conservation efforts mangroves region will go well, as well as plans to build ecotourism mangroves area in Rembang sub-district village Pasarbanggi can be realized.

Commitments undertaken by Environmental Agency of Rembang in developing the next mangroves area should be more adopted by other agencies. Synergy between actors also must be intensified in the future. It is quite important to avoid sectoral ego or the construction of a single area. Because the policy-making related to coastal resources, especially the development of mangrove areas is quite complex. Construction of Master Plan for development of mangrove areas is evidence of local governments pay attention to the environmental sector as a vital sector in society.

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