

The Regulation of Sustainable Mangroves and Coastal Zones Management in Indonesia

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Abstract

Mangroves are part of the forest ecosystem as a whole and lives between land and sea. Mangroves are very important in the management of coastal resources in Indonesia. In addition to having influence in the coastal ecological system, mangroves also have economic potential, which is derived from three main sources, namely: forestry, fisheries estuaries, and coastal/internal waters. Mangroves have an important role in protecting coastal and maintaining the habitat for several species with diversity in certain coastal zones. In the past 5 years, the condition of mangrove forests has decreased both in number and in their wide function as a buffer in the coastal zone. This was triggered by loosening licensing by the municipality or province to the entrepreneurs settlement, a location exploitation permit for companies or sites that are not environmentally friendly. This deterioration was also caused by overlapping legislation and mangrove forest management authority as part of the natural resources in coastal zones as well as illegal logging in mangrove forests.

The research method used in this paper is normative juridical, with the conceptual and statute approach. Based on data from the Ministry of Forestry of Indonesia, there are coastal zones in Indonesia that still have good potentials and vast areas of mangrove forests such as those in Papua, Eastern Borneo and Southern Borneo, Riau and South Sumatra. Sustainable and integrated management are necessary to prevent the loss of mangrove areas in Indonesia. The mangrove management should be integrated and sustainable and be based on local community.

Keywords: Regulation; Sustainable; Mangrove

Introduction

Background

The development of science and technology these days wants the governments to be more proactive to anticipate negative impacts. The greatest effect in the presence of it is the change of environment and ecosystem that is inherent in it. Those problems will escalate when the need of development and economic is to be fulfilled by the government. If the state, in this case, the government, and the local government has no mechanism to prevent pollution and/or damage, then surely the destruction and degradation of the environment will be inevitable.

The environment is the unity of all things, the power, circumstances and creatures, including human beings and their behavior, which affect the nature itself, the continuity of livelihood, and welfare of human beings and other creatures. In it, there are human beings, the environment, plants, animals and nature itself. For environmental protection and management, the Indonesian government on 3 October 2009, issued the Act No. 32 of 2009 on the Protection and Environmental Management (UUPPLH). This Act serves as the basis of national and state laws relating to the environment in all sectors (Umbrella Act) such as forestry, mining, marine and others.

One sector in environmental management in Indonesia perceived as a lack of concern is the management of mangrove forests. Some consider that the mangrove forests are dirty and muddy, do not give much benefit or even block the beautiful scenery around the coastal areas. Nevertheless, mangrove forests have an important role in the support system and coastal management in Indonesia. The mangrove forests are forests that grow in estuaries, tidal areas or seashores (coastal). Mangroves are unique because of a combination of the characteristics of plants that live on land and at sea. Generally, mangroves have roots that stand out (root breath/pneumatofor), as a way to adapt to oxygen-poor soil or anaerobic conditions.

From an economic perspective, mangroves can be empowered to cultivate fish or shrimps that will provide major economic benefits. Our traditional fishermen dependence on catching fish in the sea will be reduced in the presence of aquaculture or shrimps in mangrove areas. In addition, in economic terms, this business does not require cost or time to develop and energy compared to fishing in the sea.

The social impact of the mangroves is the establishment of inter-communication and social cohesion among coastal communities in order to develop it. Empowering the community of mangrove management not only brings in economic benefits but also strengthens the brotherhood among citizens in safeguarding their mangrove forests.

Environmental considerations are an important aspect of environmental management in Indonesia, especially environment of the sea because mangroves are home to some sea creatures to grow and thrive. Mangrove forests serve not only as a 'home' but also a place where sea animals and plants grow and thrive. Mangrove reforestation and destruction will result in decreased quantity and quality of the species that exist therein. Apart from that, Mangroves also contribute to reducing the impact of climate change due to absorption of mangrove forest on land as to give effect to the decrease in temperature of sea water around the mangroves.

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Another important fact about mangroves is that they also prevent sea water abrasion. This is important because of the geographical condition of Indonesia's archipelago and also the need to prevent natural disasters such as earthquakes and tsunamis. Some examples of tsunami cases in Indonesia could have actually been reduced if we had had good mangrove forests as a natural barrier system to prevent the waves from coming onshore.

On the other hand there are some things that cause destruction of the mangrove forests such as: excessive extraction/logging of mangroves, conversion of mangrove forests into ponds, residential or agricultural use with no regard to the principle of conservation and sustainability and ignoring coastal zones barren and arid without efforts of greening (e.g., with mangrove plants).

The mangrove forests along the coastal areas contribute to the security of the coastal zones by reducing the impact of hurricanes, cyclones and tsunamis. Mangrove forests also provide food and building materials for those who live in the areas. However, hundreds of thousands of hectares of mangrove forests in Indonesia have been converted into local fish farms, many of which have been abandoned and forgotten. This makes coastal areas unprotected and unproductive. The mangrove forests in the coastal islands of Java, Sumatra and other islands in Indonesia have suffered from severe damage or deforestation. Shrimp farms, in particular, have cleared a large number of mangrove forests paths and coral reefs along the coastal and marine environment. Shrimp diseases and decrease in productivity has led to the abandonment of pond areas excessively. These areas, as well as those along the north coast of Java, are vulnerable to storms, tidal waves, and coastal erosion. With the climate change causing an increased incidence of storms and rising sea levels, this vulnerability will escalate. Besides aquaculture, urban development, pollution, excessive timber harvesting from coastal forests and non-environmentally friendly fishing (PITRal) are the major factors in the destruction and degradation of mangrove forests.

Based on the condition of mangrove management, there are questions of how the framework for management of mangrove forests in Indonesia and how the legal instruments used to solve the environmental problems in the areas of mangroves and to prevent pollution and destruction of mangrove forests in Indonesia. In terms of integrated and sustainable management, there are questions of how is the management authority of mangrove forests in Indonesia either by government or by local government, also how is the law enforcement in the field of management of mangroves both preventive and repressive.

Research purposes

Based on what is mentioned above, we try to clarify all the problems that will appear and find alternative solutions that may be applied by the State in the management of mangrove forests in Indonesia so that someday we will have mangrove forests that not only benefit economically and socially but also have the function of the environment that are important in the system of management and sustainable environmental protection in Indonesia (sustainable development).

Because of that, the aims of this research are

1. To review and analyze the principles of mangrove forests protection as a natural resource.
2. To conduct a review and analysis of the legal instruments and international agreements, such as international conventions which are related with mangroves.

3. To review and analyze natural resources management authority conducted by the government and local government.

4. To analyze the framework of policy for sustainable management of mangrove forests in Indonesia.

Analysis

Condition of mangrove forests in indonesia

Mangrove forests are forests that are located in the coastal zones that are affected by the tide so that the mangrove forests are like swamps because they are always flooded. Mangroves are vegetation that grows between the tidal line. Mangrove forests are a general term used to describe tropical beach communities dominated by typical tree species or shrub that have the ability to grow in salty waters. Mangrove forests are forests that grow in coastal zones, usually in bays and estuaries which are characterized by: 1) not being affected by the climate; 2) being influenced by tides; 3) the land being flooded by sea water; 4) low coastal land; 5) forests having no canopy structure; 6) the kinds of trees which are usually composed of api-api (*Avicenia* sp.), pedada (*Sonneratia* sp.), Mangroves (*Rhizophora* sp.), Lacang (*Bruguiera* sp.), Nyirih (*Xylocarpus* sp.), Palm (*Nypa* sp.) etc.

Mangrove forests are distinguished from coastal forests and swamp forests. Coastal forests are forests growing along the coast, whose land is dry, and which never experience stagnant seawater or freshwater. Coastal forest ecosystems can be found along the steep coast above the tide. Areas of coastal forest ecosystems have sandy soil and may be rocky. While the swamp forest is a forest that grows in the area that is flooded by fresh water. Therefore, there is a swamp forest in plain areas usually located behind the brackish.

Mangrove forests protect the coastal zones from erosion and extreme weather. They provide a major breeding area for fish and home to many other animals, including water birds and marine wildlife. Not only in Indonesia but throughout the world's tropical regions, mangrove forests provide livelihoods for millions of people who live in coastal zones [1]¹.

Indonesia is a country that has so many islands that on every coast in Indonesia has mangrove forests. Indonesia is a country that has the largest mangrove forests in the world. In the 2010 data, areas of mangrove forests in Indonesia were around 4,251,011 hectares spread over several islands such as Java and Bali, Sumatra, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Irian. Some mangrove areas in Indonesia were reported damaged either directly or indirectly as a result of various human activities. The mangrove forests on the coastal island of Java, Sumatra and other islands in Indonesia have suffered from severe damage or deforestation. Every year the state of mangrove forests in Indonesia is increasingly alarming. If this condition persists, the mangrove forests will not survive in the long term. From the given data, it can be described that the condition of mangrove forests in Indonesia is experiencing tremendous pressure by various forms of activities that lead to the loss of mangrove forests in large numbers. This is very harmful considering the function of mangrove forests for coastal protection from abrasion. One of the affected areas of mangrove forest loss is the northern region of Java coast. This area suffers from severe abrasion caused by loss of mangrove forests due to various human activities.

Most of the mangrove forests have changed their status into pieces

¹<http://indonesia.wetlands.org/Kegiatankami/Mangrove/tabid/2839/language/id-ID/Default.aspx>

of land that have little or no attention to environmental aspects. One example of damaged mangrove forests is the one in Langkat, North Sumatra. The area was designated as "Wildlife" during the governance of the Netherlands. Named "Coral Ivory", The Ivory Reef area of about 9520 hectares is a habitat for various species of mammals, birds, reptiles, fish, and other lower animals and this area is also rich with various kinds of shellfish, crabs, shrimps and a variety of birds. But now the condition is very different in that some of the regions are nearly bare due to logging and land opening. About 2,000 hectares of this area has been transformed into shrimp farms. Uncontrolled exploitation and degradation of mangrove forests could result in changes in coastal ecosystem changes such as saltwater intrusion, coastal erosion and extinction of various species of flora and fauna. Damage to mangrove forests continuously potentially damages local economy, regionally and nationally in the fishery sector. The long-term damage to mangroves can reduce the production of the marine fishery. The destruction of mangrove forests can also cause dissolution of the ecosystem (the chain of our life will be disrupted) and consequently will cause an imbalance between living beings and nature.

A research states that mangrove forests have invaluable wealth. Based on the physical value contained in the mangroves, such as types of trees, animals, and other plants, we can extract logs, meat, fruits as well as leaves which are nutritious for health, human food, and animal feed. The Total Economic Value (TEV) per year in the mangrove ecosystem of Maduran Island is Rp. 49 trillion, Irian Rp. 32 is 9 trillion, East Kalimantan is Rp.178, West Java is Rp. 1.357 trillion, while for the whole of Indonesia the estimated total value is Rp. 820 Trillion. Traditional uses of mangroves have been performed in the Bintuni Bay, Irian which covers an area of 300,000 hectares which is estimated to generate USD. 100 Billion/year with an integrated fisheries management reaching Rp 350 billion/year and timber Rp. 200 billion/year. In addition to the physical value obtained, then the mangrove forests provide environmental services such as shoreline protection from the pounding waves, wind blowing, improving water quality, and controlling the sea water intrusion and other functions that are intangible [2].

As part of the coastal zones, mangrove management in an integrated way can refer to the definition in Article 6 of The Act No. 27 of 2007 on the Management of Coastal Zones and Small Islands, which is an integrated management of activities: (a) between the Government and Local Government; (B) between the Regional Government; (C) between sectors; (D) between the government, business and society; (E) between terrestrial ecosystems and marine ecosystems; and (f) between science and management principles [3].

Regulation of environment

Indonesia has very large coastal regions covered with different types of coastal plants such as mangroves, and furthermore Indonesia is a tropical country with the largest mangrove forests in the world, being about 3.2 million hectares. But it is unfortunate, since the mid-1980s, most of the coastal areas in Indonesia have undergone considerable damage mainly caused by converting forests to other and coastal interactions and other uses. To restore the functionality, benefits and environmental services of mangroves and other coastal forests, necessary efforts to rehabilitate and proper yet correct coastal management are recommended.

The law is the instrument used by the State and its people to create order. The law also has the characteristics of binding and provides guidelines for behavior. In its development, the law should provide

sanctions in order that parties that enter into legal products should comply with it. Imposition of sanctions is intended that the parties are aware or deterrent to commit violations in order to create peace and serenity in the society.

The environmental law as a functional law is a breakthrough of various legal studies and also slices of various non-law sciences. The biggest part of the environmental law in Indonesia is the administrative law as it is associated with environmental permits and their requirements and authority of the state in terms of management, protection, and its enforcement. Another related point is the criminal law relating to the perpetrators of pollution and or destruction of both private and legal persons, and also the civil law which emphasizes on how the mechanism of compensation is applicable to the victims. In addition to them, the tax law, the international law and the agrarian law as well as the spatial law, which give nuance and reinforcement in the environmental law.

In terms of multidisciplinary sciences, the environmental laws have a very high dependence on non-legal fields such as pure sciences of physics and chemistry; technology; health and others. For example, a legal scholar would not know how an environmental media is polluted or damaged if not through the parameters of experts of pure sciences and technology groups. For a specific example, it is understood that a river is polluted if the river water contains dangerous substances if some environmental media report this matter and that the water exceeds the Air Quality Standards (BMA) or Wastewater Quality Standard (BMAL). In contrast, the quantity and quality parameters of those pollution levels should be standardized in legal products such as Law or Rule from Government or the Regional Regulation so that it binds all parties and if this is not adhered to the parties will be penalized by either administration or criminal sanctions (repressive law enforcement).

Harjasoemantri in his book says that there are three pillars of development in Indonesia, namely economic, social and environmental. This gives the sense that the Development should pay attention to all aspects of how to gain an advantage (benefit) for development, creating good social conditions, as well as being environmentally sustainable. The second most important thing is that it is asserted that the three aspects are lined up and there is nothing more important than others. This means that economic interests must not take precedence over social and economic interests and vice versa. Specifically, this is actually reflected on sustainable development (sustainable development), which contains the sense of being conscious and planned efforts that combine environmental, social, and economic aspects into development strategies to ensure the environmental integrity and safety, capability, well-being as well as the quality of life of both present and future generations.

The Constitution of the Republic of Indonesia sets up clearly and explicitly about environmental management in Indonesia as set forth in the article 28H paragraph 1 of the 1945 Constitution that (1) "Everyone has the right to live in welfare and spiritual being, residence, and get good and healthy environment and the right to health services". This has become a firm grounding in environmental management in Indonesia. This article gives a few things that are important in environmental management in Indonesia. First, the right to environment is an absolute right and is secured firmly by the government. It means that ignorance of environmental rights is a breach of the constitution. Secondly, environmental rights include welfare and spiritual being, place of residence and, most importantly, good and healthy environment. To achieve both of these things requires two efforts of the government to

create a national environmental legal system that is integrated within the framework of environmental management.

Regulation of mangrove in Indonesia

In Indonesia, many regulations govern the mangrove, the regulations issued by the local government, the provincial government and from some of the existing ministries such as the Ministry of Environment and Forestry and the Ministry of Maritime Affairs and Fisheries. This has led to confusion in the public as well as businesses that will use the mangrove forest land and potential conflicts between government departments. At the implementation level, the spatial set is based on the Law No. 26 of 2006 on the Management of Spatial and the Act 27 of 2007 on the Management of Coastal Zones and Small Islands in an integrated manner. Both are different regulations but with the same spirit. The only difference is in the level of management areas with a limited scope of the Act 27 of 2007 on Coastal Zones and Small Islands. In level two is duumvirate of coastal management in the form of Regional Spatial Planning and Strategic Plan-Zonation Plan Strategic Plan for Coastal and Small Islands.

Management of mangrove areas cannot be regulated sufficiently by only regulations governing spatial planning. Various laws or acts are administered in the management of the region, either directly or indirectly, such as the Law No. 7 of 2004 on the Management of the Watershed (DAS). Another one is the in Government Regulation No. 38 of 2007 on The Government Authorities that regulate the authority of the manager of the activities relating to the types of activities that are intimately associated with the Law 32 of 2004 and the Government Regulation No. 7 of 2008. In addition, The Government Regulation No. 76 of 2008 on The Forest Rehabilitation and Reclamation Governing the Construction of RTK RHL DAS, RPRHL and RTnRHL. In addition, the Regulation of the Minister of Marine and Fishery No. 17 of 2008 on the Conservation of Coastal Zones and Small Islands is an indirect rule in the level of utilization of mangrove management. Of course, there are many other laws apart from those mentioned above.

There are three regulations that are closely related to mangrove management. The regulations are Presidential Decree No. 32 of 1990 on The Management of Protection Areas. It is said in this regulation that mangrove ecosystem is a protected area. Also arranged in it is the criteria of coast reserved lines (Article 14) and coastal areas with mangrove forests (Article 27). Presidential Decree No. 121 of 2012 of Coastal Rehabilitation, which is a regulation issued by Marine and Fisheries Ministry initiation, regulates a set of criteria of ecosystems damage, the rehabilitation phases, monitoring, participation and financing of rehabilitation activities.

The Presidential Decree 73 of 2012 on Mangrove Ecosystem Management Strategy (SPEM). Mangrove Ecosystem Management Strategies herein after referred to as the SPEM is an effort in the form of policies and programs to achieve the realization of sustainable management of mangrove ecosystems and sustainable welfare society based on the available resources as an integral part of national development planning system.

In a long-term plan, The Quality Standard of Destruction which contains the criteria of damages in ecosystems will be issued by the Ministry of Environment, Strategic Planning of Mangroves and Peat will be issued by the Marine and Fisheries Ministry and the Technical Instructions Mangrove Management District Level will be issued by each district. It should be recognized, that one of the various regulations requires the stakeholder to fight hard in an effort to manage

the mangrove areas. On the other hand, they should consider the various interests in the continuation of the mangrove ecosystem and with the problems that exist. In many regulations, the interests and the preservation of mangrove areas, then an opinion about the urgency of forming a single forum to bring together various interests appear. This forum is called by the name of mangrove working group. Department of Forestry as a technical department that bears the task of forest management, and the foundation and basic principles must be made based on the state laws, a scholarly foundation of relevant and related international conventions which Indonesia has also ratified.

Indonesia has several cooperation agreements with several countries. The bilateral and regional agreements are related to the protection and rehabilitation of mangrove forests. Here are some of the cooperation agreements with Indonesia:

(a). The Project of Mangrove Ecosystem Conservation and Sustainable use in the ASEAN Region. In this cooperation agreement, Indonesia is in partnership with the Japan International Cooperation Agency (JICA), which has the objective of the conservation and rehabilitation of mangroves. This agreement was valid between 2011 and 2014 in Bali with the allocation of funds (grants) amounted to US\$ 300,000;

(b). Promoting Local Communities Initiative on the Rehabilitation of Mangrove Ecosystem with Demonstration Activities in Bintan Island to Further Reduce Deforestation and Forest Degradation. This agreement aims to make local communities participate in the rehabilitation of mangrove ecosystems. Cooperation in partnership with the International Tropical Timber Organization (ITTO) took place in 2012 and 2014 in the area of Bintan, Riau Islands with a grant of US \$ 504,317 and the Government of India (GOI) US\$ 51,570.

Principles of environmental management

In the environmental law, several principles of environmental management are applied, which are:

- a. State responsibility;
- b. Conservation and sustainability;
- c. Harmony and balance;
- d. Integration;
- e. Advantage;
- f. Circumspection;
- g. Justice;
- h. Ecoregions;
- i. Biodiversity;
- j. Polluters Pay;
- k. Participatory;
- l. Local wisdom;
- m. Good governance; and
- n. Regional autonomy [4].

These principles are the basis for the management and protection of the environment in Indonesia. Several principles, according to researchers, serve as the basis for mangrove management in Indonesia:

1. State Responsibility Principle, it means:

- A. The state guarantees that the exploitation of natural resources will give advantages as much as possible for the welfare and quality of life of the citizen, both the current generations and future generations;
- B. The state guarantees the right of citizens to get good and healthy environment;
- C. The state prevents the exploitation of natural resources activities that cause pollution and/or environmental degradation.
2. Conservation and Sustainability Principle, it means everyone takes liability and responsibility to the next and current generation to make efforts for preservation of the ecosystems and make a better environmental quality, which in the international environmental law is known as intergeneration equity principle.
3. Harmony and Balance Principle means that exploiting the environment should pay attention to several aspects such as economy necessity, social, culture, protection also the preservation of ecosystem, known as sustainable development.
4. Integration Principle means that the protection and environmental management are done by combining various elements or synergizing various related components.
5. Advantage Principle means that all efforts either development activities conducted are adapted to the potential of natural resources and the environment for the improvement of social welfare and/or human dignity should be in harmony with the environment.
6. Local Wisdom Principle means that in environmental and protection management, the noble values that apply in society should be put into consideration.
7. Good Governance Principle means that protection and environmental management are inspired by participation, transparency, accountability, efficiency and justice principle.

From the several principles, the researchers deduce that the regulation which are related to mangrove management and these principles form a legal framework for sustainable mangrove management in Indonesia.

Sustainable development of coastal and marine

The regulation of biodiversity and non-biodiversity development in coastal and marine zones on national law framework needs the implementation of the principles of sustainable development of marine resources based on the Agenda 21 Chapter 17. The International Union for the Conservation of Nature and Natural Resources (IUCN), which is also known as The World Conservation Union, says that the sustainable development principle is a unity of the concepts of environmental protection and development, they are:

1. *Intra-generational and intergenerational equity; that is 'equitable' access to environmental resources both within the present generation as well as for future generations;*
2. *Application of the precautionary principle or approach;*
3. *The maintenance of biological diversity and biological integrity; both of these are vitally important for the continued existence of ecosystems.*

Furthermore, the last paragraph of "introduction", Agenda 21

Chapter 17, is implemented in following programs [5]:

"This requires new approaches to marine and coastal area management and development, at the national, sub-regional, regional and global levels, approaches that are integrated in content and are precautionary and anticipatory in ambit, as reflected in the following program areas": Integrated management and sustainable development of coastal areas, including exclusive economic zones;

- a. *Marine environment protection;*
- b. *Sustainable use and conservation of marine living resources of the high seas;*
- c. *Sustainable use and conservation of marine living resources under national jurisdiction;*
- d. *Addressing critical uncertainties for the management of marine environment and climate change;*
- e. *Strengthening international, including regional cooperation and coordination;*
- f. *Sustainable development of small islands."*

New approaches in coastal and marine zones development is a management approach in integrated coastal and marine zones either on local, national, sub-regional, regional and global, as stated in principle 4 of The Rio Declaration 1992 known as Integrated coastal management concept

"In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it"

Realizing that development in coastal and marine zones is done by various interests of public users, the integrated approach on coastal and marine zones should pay attention to precautionary principle and anticipatory in ambit in every impact from development activities as biodiversity rescue [6].

Realizing the importance of marine resources, especially in overcoming the economic crisis [7], awareness is raised to make the development of marine-based resources in addition to the natural resources of land as the mainstream of national development, and to get a better and stronger foothold. To optimize the value of resource benefits of coastal and marine zones for the development of coastal and marine zones in a sustainable way and to ensure the public interest broadly, policies and special handling by the government for the management of coastal and marine zones, which is a strategic policy and anticipatory integrated and sustainable for the coastal and marine zones, are required [8].

Sustainable marine development for natural resources management for coastal and marine zones was also regulated in the Johannesburg Declaration of 2002, which was then reinforced in the Plan of Implementation of the World Summit on Sustainable Development, 2002 which states that [9]:

Sustainable development

"Ocean, seas, islands and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical for global food security and for sustaining economic prosperity and the well-being of many national economies, particularly in developing countries. Ensuring the sustainable development of the oceans requires effective coordination and cooperation, including at the global and regional levels, between relevant bodies, and actions at all levels to....."

Development and expansion of coastal and marine zones are part of the national economy development which is expected to become a determining sector for maritime-oriented development. We can see in the political commitment, stated in Bunaken Declaration 1998, which shows Indonesian strong determination for maritime orientation in the direction of the national development strategies in the future. This commitment reflects and strengthens the determination for changing development vision from continental approach to maritime approach as aspired in Jokowi's Government 2014-2015 vision.

Mangrove Conservation in the Integrated Coastal Management Framework

Marine conservation requires cooperation and coordination based on 21 Agenda Chapter 17 (a), arranged in a holistic framework which involves the parties concerned with coastal and marine zones. Basically, natural resources management in coastal and marine zones will not only give an impact on one sector but also on other sectors. To prevent management conflicts between users, such as oil and gas exploration, fishery, tourism, development or anything related to on-land and port sectors, an integrated cooperation suitable with principles on Maritime Conservation in national and international is necessary.

Sectoral integrated management means that there is a coordination between duties, authorities and responsibilities among sectors or on specific government departments (horizontal integration), and among governments (vertical integration). Furthermore, the integrated management in science means that in the management of coastal and marine zones in order to conserve the sea uses interdisciplinary approaches, involving economics, ecology, engineering, sociology, law, environmental and other relevant sectors [9].

By the management system included in integrated coastal management in marine conservation, especially for mangrove management, there should be an integration and mutual understanding between the users and the government. As seen from the process and the institutional set up by integrated coastal management, many benefits can be obtained if a state has integrated coastal management in the management of natural resources in coastal and marine areas (mangroves). The Integrated coastal management is an approach to solving conflicts in coastal areas using systems, procedures, and structures that are based on the commitment of countries, both developed and developing countries.

Realizing the importance of the mangrove forests existence as one aspect of coastal biodiversity with several advantages in economy, ecology and also social, the concept of integrated and sustainable management based on integrated coastal management, including in the field of legislation is strongly required.

Integrated coastal management in terms of marine conservation is a new approach as regulated on the 21 Agenda Chapter 21 which says that the marine environment is an essential component of the global life support system [10].

Integrated coastal management is the management of natural resource use and environmental services in coastal and marine zones, by conducting a comprehensive assessment of natural resources and environmental services contained therein, which determines the expected goals and objectives of utilization, and then plan and manage the utilization of all activities, in order to achieve an optimum and sustainable development [10].

The expected goals of the integrated coastal management are

to achieve sustainable development in the marine zones, reduce damages to resources in coastal zones and the sea and the residential areas, maintain/sustain ecological processes and support for the life supporting system of biodiversity in the coastal and marine zones through spatial planning of the sea [11].

According to Rohmin Dahuri, integrated coastal management is an approach to the management of coastal and marine zones involving two or more ecosystems, resources and utilization activities (development) in an integrated way in order to achieve the development of coastal and marine areas in a sustainable way. The context of 'integrated' contains three dimensions, namely sectoral, scientific and ecological relevance.

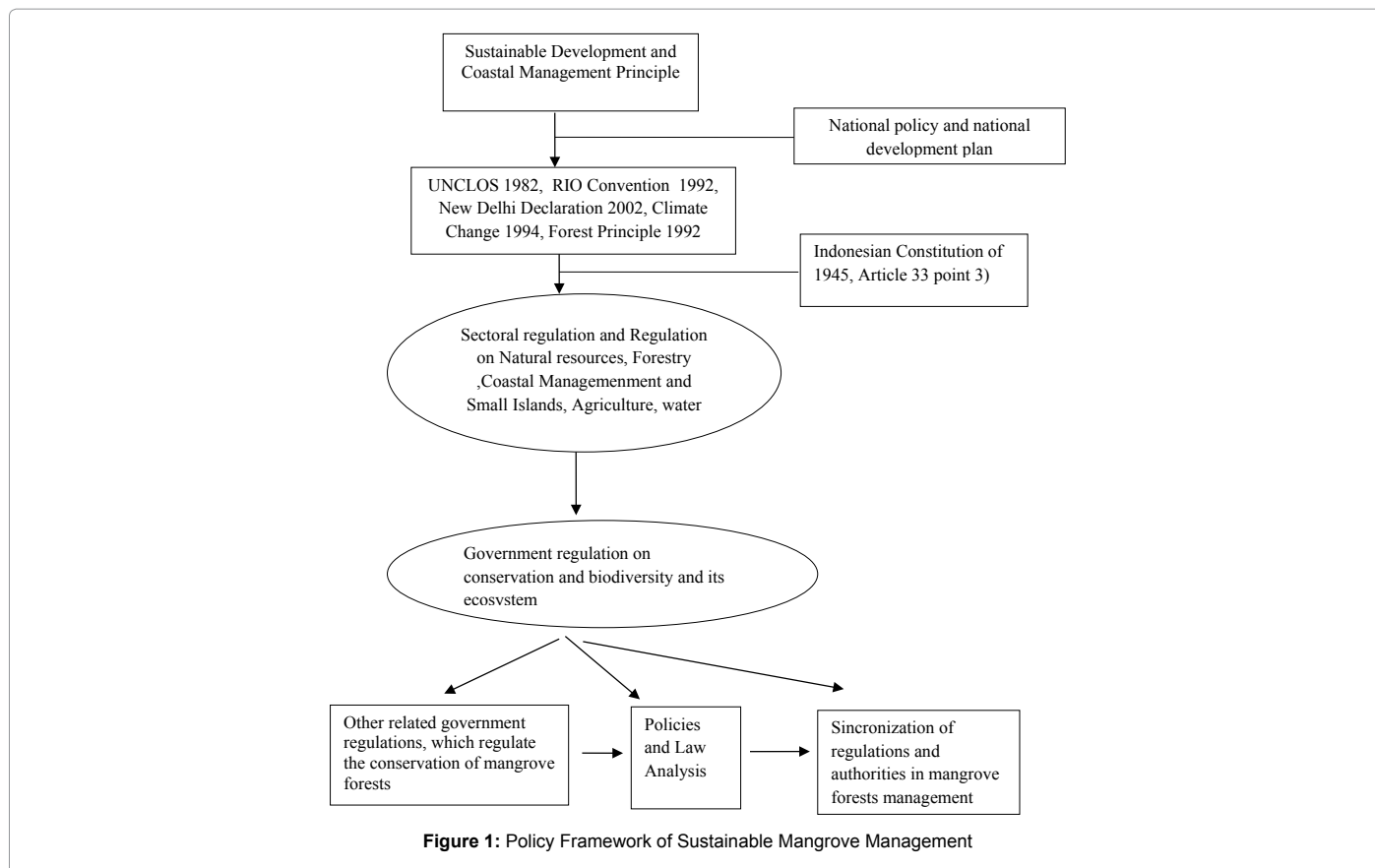
Marine conservation needs the integrated sectoral management which means there is a need for existence of coordination between the duties, powers and responsibilities between sectors or government agencies at the level of a particular government (horizontal integration), and between levels of government (vertical integration). Furthermore, the integrated management of scientifically means that the management of coastal zones and marine use interdisciplinary approaches (interdisciplinary approaches), involving economics, ecology, engineering, sociology, and other relevant components [11].

Government efforts to empower mangrove

According to the book published by the Ministry of Forestry and Environment 2013, Indonesia has been doing rehabilitation around Indonesia. The strategy adopted by the Ministry of Forestry to achieve sustainable mangrove managements are: (1) socialization functions of mangrove forests, (2) rehabilitation and conservation, (3) fundraising from any resources.

Efforts can be made to improve and preserve the mangrove, such as :

- Replanting mangroves
- Planting of mangroves should involve the community. The model may be that they are involved in breeding, planting and maintenance and utilization of mangrove forest conservation-based approaches. These models provide benefits to the community, such as the provision of job opportunities resulting in increased incomes.
- Rearrangement of spatial coastal zones: residential, vegetation, etc. Coastal regions may arrange into ecological cities once they can be used as a beach tourism (ecotourism) form of nature tourism or other forms.
- Increasing motivation and awareness to preserve and utilize mangrove responsibly.
- Increasing knowledge and application of local wisdom about conservation
- Increasing revenue of coastal people
- Communicating the program of mangrove forest conservation
- Applying Law enforcement
- Improving coastal ecosystem in an integrated and community-base. At attempts at improving coastal ecosystem, it is very important to involve local people, which in turn, can improve the welfare of coastal communities. It also implies that the concepts of local (indigenous) on the ecosystem and its preservation should be fostered and promoted back as far as it can support this program.



- Protecting the coastal communities which means to empower coastal communities surrounding the mangrove area. If in the mangrove area is protected and converted into mangrove tourist spot, local communities will be employed, provided a place for selling their products and also allowed to catch other marine life in the surrounding mangrove

Policy framework of sustainable mangrove management

The policy framework of sustainable Mangrove Management was given in Figure 1.

Conclusion

Mangrove management in Indonesia basically has had better progress. Legislation on the protection of mangroves at the central level (the Act) and at the local level (provincial and regency/city in the form of local regulation) has already existed. Meanwhile, efforts by the Government to invite the community to be aware of the environment of mangrove forests have been taken to protect the coast from threats and destruction caused by the human. Therefore, continuous supervision over the use and management of mangrove is required for the welfare of coastal communities.

References

1. <http://indonesia.wetlands.org/Kegiatankami/Mangrove/tabid/2839/language/id-D/Default.aspx>
2. Daulay A (2002) Konsep Pengelolaan Mangrove Berkelanjutan Dan.
3. (2014) Amendment To Law No. 27/2007 on The Management Coastal Zones and Small Islands.

4. (2009) Environmental Protection and Management.
5. United Nations Sustainable Development (1992) United Nations Conference on Environment and Development (UNCED), Agenda 21.
6. (1922) The Rio Declaration: Principle 15- the Precautionary Approach.
7. Budiharsono S (2001) Pembangunan Wilayah Pesisir dan Lautan, Pradnya Paramita, Jakarta.
8. Pieris J (2001) Pengembangan Sumberdaya Kelautan, Pustaka Sinar Harapan, Jakarta.
9. World Summit on Sustainable Development (2002) Johannesburg Declaration on Sustainable Development.
10. Sorensen JC, McCreary (1990) Coast, Institutional Arrangement for Managing Coastal Resources. University of California.
11. Sunyowati D (2008) Kerangka Hukum Pengelolaan Wilayah Pesisir Berdasarkan Konsep Integrated Coastal Management Dalam Rangka Pembangunan Kelautan Berkelanjutan.

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