

COASTAL CONSERVATION POLICIES AND INTEGRATED COASTAL ZONE MANAGEMENT (ICZM) IN INDONESIA

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Abstract

The issue on coastal conservation serves as a base to make the management of a coastal area in an integrated way, known as the integrated coastal zone management (ICZM) concept. Studies on coastal conservation policy and ICZM in Indonesia have so far focused on implementations of relevant policies and regulations. The objective of this paper is to get an insight of the coastal conservation policies implemented in Indonesia. The coastal conservation policy of ICZM element is explained by examining: (1) Indonesian coastal areas (2) the political will of the government on environment issues in Indonesia; (3) the institutional capacity context in managing the coastal resources; and (4) the public participation in the coastal management. Indonesian objective of coastal management is to achieve sustainable development. However, after reviewing major elements on coastal conservation policy, it turns out that the policy is quite difficult to implement.

Keywords: Coastal Conservation; Coastal Management; ICZM; Indonesia

Introduction

Coastal ecosystems, as part of coastal areas, have a range of natural resources, which are potential to develop. One of the potentials is biodiversity ecosystems, which include coral reefs, sea grass, and mangrove. The ecosystems serve as nursery ground habitat for a variety of reef fish species, gastropods, bivalves, and the mangrove crab. The ecosystems also play an important role in ecological balance covering biological, physical and chemical factors [1]. Moreover, the quality of the ecosystems depends on the interaction between these three factors.

Meanwhile, coastal areas in general have some physical potential to develop as centers of fishing activities and tourism industries. However, when the coastal areas are disturbed by human activities, the potential will decline.

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Indonesian coastal areas are famous and rich with diverse natural resources and have the biggest sea biodiversity in the world because its coastal ecosystems like mangrove forests, coral reefs, and sea grass are very broad and diverse.

In Indonesia, coastal ecosystem has a strategic role and bright prospects for national development. However, currently the development of resources in Indonesia is still not optimal and sustainable. The main reason for this is that the planning and implementation of the development of coastal resources are still sectorial in nature. Each sector is developed without considering other relevant and closely related sectors. For example, the development of fishing areas is done without taking into consideration the interests of tourism areas. This can create conflicts of interest among the sectors involved in the activities in the same coastal region [2]. In addition, the sectorial approach in general does not care about the impact of the development on other sectors. In a serious case, they can kill other business sectors. For example, the chemical waste disposal by industries to the coastal environment can shut off pond businesses, fisheries, coastal tourism, and endanger human health.

Now, coastal resources are under pressure, either as repositories for the effluent of industrial processes and domestic waste, or as prime sites for reclamation to create land for industries, agriculture or settlements. Moreover, during the course of the last century, large cities, especially in Java Island, have expanded rapidly; their growth has become sufficient to disturb the coastal zone. On the other hand, Indonesia's population is increasing at an alarming rate, approaching 231 millions by the year 2010 [3]. Moreover, about 65% of the Indonesian people live in and around coastal cities, making the problem of managing Indonesian coastal zones, even more complex. There is no doubt that demographic pressures are exceptionally pronounced in Indonesia.

Planning and implementation of sustainable coastal resource that is not executed in an integrated way would only damage the resources because the characteristics and dynamics of natural coastal ecosystems are ecologically related to one another [4]. Fundamental challenge for planners and coastal area management is to facilitate economic development, and at the same time, to minimize negative impacts of all development activities and natural disasters. The development of coastal areas and communities are based on coastal resources to support the environment, so that the economic development can take place continuously. Therefore, to support the sustainable development of coastal environment, which is in accordance with the existing ecosystem, efforts of certain development methods of marine and coastal management are needed. In this case, the management effort for coastal areas and sea, integrated in the preservation of environment functions, is an important development area [5].

Coastal area has a big potential for a variety of development options. However, with the population growth and the rapid evolving activities in coastal areas for various utilizations, the ecological pressure on the ecosystem of coastal and marine resources is increasing. The increase of this pressure is threatening the existence and sustainability of ecosystems and coastal resources, marine and small islands [6]. Therefore, a policy for coastal conservation is required.

This study will discuss coastal conservation issue to support ICZM concept in Indonesia. The approach that will be described for a rational ICZM is based on the implementation of coastal conservation policy and regulation. This includes the political will of the government, regulation on boundaries for pollution and fisheries, institutional capacity, and public participation. In order to practice ICZM, planners need to understand the ways in which the natural environment and human activities are inter-connected to form a system. The aim of

ICZM is to establish a sustainable development of the coastal zone and its resources [7] so, it is important to get an insight on coastal conservation and ICZM.

Materials and Methods

This study is mainly based on literature review. Most of the analyses in this research are explorative and qualitative. The explorative study and its analysis are done for three purposes, which are to satisfy the researcher's curiosity and desire for better understanding; to test the feasibility of undertaking a more careful study; and to develop the methods to be employed in a more careful study [8].

Data and information are collected from relevant references, like books, journals, articles, and electronic journals. The information needed has been found by key words that have relevance in the coastal conservation policy towards ICZM and other knowledge in the topic of research.

The research process is developed based on three main activities, which are data collection, literature review, and analysis. Detailed procedure is described below:

a. Theoretical Framework and Empirical Base Development

This research develops the theory about coastal conservation and integrated coastal zone management (ICZM).

b. Collecting data and information regarding the implementation of coastal conservation and the relationship of ICZM in Indonesia.

After building the theoretical framework and empirical base, the data collection about the implementation of coastal conservation to support the ICZM concept in Indonesia, is conducted. These data include constitution, policies, law and regulations. The collected data are derived from secondary data such as literatures; official documents articles, journals, Internet, and other sources, since there is a limitation on primary data.

c. Analyzing Data

Derived from the academic understanding of the cases on coastal conservation in Indonesian context, the author will analyze the elements in coastal conservation policies toward the implementation of ICZM. Assessing the status of the implementation of coastal conservation and ICZM is useful to propose strategic recommendation to enhance coastal conservation in Indonesia.

Result and Discussions

Coastal Area

The coastline is an area, which has experienced relatively frequent physical changes, accretion as well as abrasion. In Indonesia, these changes may be caused by natural as well as human factors [9]. The natural factors include waves, sedimentation, coast morphology, tidal flats, eutectics, tectonics, volcanic activities, tsunami, chemical processing, etc., while the human factors comprise waste disposal, brackish-water ponds, salt processing, etc. Since both of the natural and human factors may bring about serious problems for the coastal area, the management of coastal resources deserves our special attention [5].



Fig. 1. The physical Map of Coastal Areas in Indonesia [10]

Table 1. Coastal and Marine Ecosystem in Indonesia [14]

Coastal statistics, 2000	
Length of coastline (km)	95,181
Percent of population within 100 km of the coast	96%
Area of continental shelf (km ²)	1,847,707
Territorial sea (up to 12 nautical miles) (km ²)	3,205,695
Claimed Exclusive Economic Zone (km ²)	2,914,978
Coastal Biodiversity and Protection Areas Data, 1990s	
Area of Mangrove forest (km ²)	23,901
Percent of mangrove forest protected	33%
Number of mangrove species	45
Number of seagrass species	12
Number of Scleractinia Coral Genera	77
International Legal Net Trade in Live Coral, 1997 (number of pieces)	-787,045
Number of Marine or Littoral Protected Areas, 1999	102
Wetlands of International Importance, Extent (km ²), 2000	2,427
Fisheries Production	
Average Annual Capture (excludes aquaculture) in metric tons:	
Marine Fish, 2000	3,705,745
Molluscs and Crustaceans, 1997	320,670
Aquaculture Production (in metric tons):	
Total (includes freshwater), 2000	993,727
Marine and Diadromous Fish, 1997	186,500
Molluscs and Crustaceans, 1997	X
Aquatic Plants, 1997	157,000
Fish Consumption and Trade, 2000	
Per Capita Food Supply from Fish and Fishery Products (kg/person)	20
Fish Protein as a % of Total Protein Supply	10%
Annual Trade in Fish and Fisheries Products Imports (thousand \$US)	97,854
Percent change since 1980	552%
Exports (thousand \$US)	1,586,936
Percent change since 1980	651%
Fishing Effort, both freshwater and marine	
People Employed in Fishing and Aquaculture, 2000 (number)	5,118,571
Docked Fishery Vessels, 1995-98 (number)	86,240

Conceptually urgency of coastal and ocean zone in Indonesia is based on three main reasons [11], namely: first, the fact that Indonesia is the world's largest archipelago country consisting of 13,466 pieces of small islands [12], with a coastline of 81,000 km, the longest in the world after Canada. In addition, most of the Indonesian territorial sea is about 5.8 million km² or 75% of the total area of Indonesia [13, 20]. With natural conditions such as the ones mentioned above, coastal areas and oceans as part of the integral dimension of the island nation, its wealth of natural resources which is large and diverse; the natural resources can be restored (such as fishery resources, mangrove forests, sea grass and coral reef), resources that cannot recover and need services of coastal environment.

Second, with the increasing development of activities and of the population that will reach an estimated 235 million people in 2015, supported by the fact that the natural resources in the land area are diminishing, the oceans and coastal areas will become the center of economic growth as well as new object of hope for the sustainability of Indonesia's national development in the future.

Third, is the concentration of a shift in global economic activities, from European-Atlantic axis into African and Asian axis; Changes in concentration will surely bring consequences that are not light for coastal and sea areas of Indonesia.

Political Will and Regulations

The political will of government is one of the important aspects in creating sustainable coastal management in Indonesia because the government has a power to make policies and regulations and also goal to achieve sustainable coastal management. Integrated coastal resources management is the existence of sustainability in the use of coastal resources. As the area that was used for various sectors of development, the coast has a complexity of issues, problems, opportunities and challenges [15]. There are some legal bases for coastal areas, namely:

1. Law No. 5 of 1990, Conservation of Natural Resources and Ecosystem Act
2. Law No. 24 of 1992, Spatial Planning Act
3. Law No. 23 of 1997, Environmental Management Act
4. Law 22 of 1999, on Local Government Act
5. Government Regulation No. 69 of 1996, the implementation of the rights and obligations, and The Forms of Role of Society in spatial planning act
6. Presidential Decree No. 32 of 1990, the Management of Protected Area
7. Ministerial of Home Affairs Decree No. 8 of 1998, the Implementation of Local Spatial Planning Act
8. Law No. 27 of 2007, Management of Coastal area and Small Island Act

A strong governmental will is necessary to ensure the law enforcement of the relevant policies with regard to the coastal conservation management in Indonesia. Political will and related regulations/guidance are important in developing the coastal management and become a starting point to encourage the ICZM implementation. Regarding the policy and regulation aspects, currently, Indonesia has a specific or regulation on environmental issues and there are some environmental regulations, which can support coastal management development in Indonesia, but it still needs improvement.

Institution Capacity to Implement Coastal Conservation Policy

Regarding a comprehensive development of the Asian Development Bank (ADB) [16], the characteristics for the development have featured (1) local-based, (2) increase in welfare-oriented, (3)-based partnerships; (4) holistic; and (5) development.

Local based development is carried out not only locally but also involves resources, so that it eventually returns to a local resource, which can be enjoyed by local communities. Thus, the principle of comparative competitiveness will be implemented as a basic or first step for achieving it. Development based on local population does not create a local audience or observers outside the system, but involves them in the development.

Welfare-oriented development focuses on public welfare and does not increase production. These adopted principles change, as this is the achievement of further development of the target-directed macroeconomic variable. The comprehensive development is made in the form of business, mutual partnership between local people (the poor) with a more capable person. Partnership will open the access of poor people to technology, markets, knowledge, capital, management, and grow the business wider.

The development in the holistic development covers all aspects. For that, every resource used should be local. Most coastal communities are dependent on the marine sector (fisheries), but this does not mean that all people have to depend on the fishery. All the people get benefits from fishing, industries are contributing to a potential degradation of fish resources, a production decline, increased production costs, the income declines and welfare decreases. The symptoms are similar to what is called the tragedy of property [17].

Sustainable development also includes economic and social aspects. The sustainability of economic development means that there is no economic exploitation of the resources. In this regards, it is necessary to provide the institutional, and to provide access for each perpetrator. The sustainability of social development does not mean that the fights, which destroy or replace the system, and positive social values, have been long practiced by the community.

Community involvement in the core of interactions is where the people as its core business and the community of farmers interact, although sometimes a lot of experience is needed for the implementation constraints. Other relationships such as partnerships with the farmers that have the production means are also a model of partnership that needs to be developed the future.

In order to improve the ability of the community, especially in the coastal areas, the Department of Marine Affairs and Fisheries (DKP) has implemented several approaches [16]. These approaches are: (1) job vacancies as an alternative source of another income for the families, (2) approach the people with capital resources with emphasis for the creation of self-financing mechanism, (3) approach people with the new technology, more successful and efficient, (4) approach the market with the community, and (5) to build solidarity and collective action in the community center. Fifth approach is implemented with attention to the true aspirations, desires, needs, income, and potential resources for the community.

Institutional capacity aims to enhance the capacity of governments, business/private, non-governmental groups and communities, to plan and manage the coast efficiently and

effectively. It also aims to improve institutional arrangements for coastal management. This implies addressing capacity building on a long-term, strategic level. Concepts such as leadership, awareness, and constituency building are part and parcel of institution building.

There are also various rules and regulations, which have been provided by the government with regard to the importance of boundaries, pollution and fisheries along the Indonesian coastline. Therefore, it can be said that the existing rules and regulation are adequate to support the coastal conservation management in Indonesia. Although there are various training programs as well as inter-institutional collaboration among the relevant institutions, the institutional capacity in Indonesia is still limited. This can be seen from the limited ability and capacity of the existing institutions to solve implementation problems in regard to the coastal conservation management in Indonesia.

Public participation

Community Based Management (CBM) is defined as a management approach of natural resources, such as fisheries, which put the knowledge and environmental awareness of local communities as a basis for management [16]. Community-based management is a system management of natural resources in a place where local people are actively involved in the process of natural resource management.

In the Indonesian constitution of 1945 it is said that: land, water and the natural resources therein shall be controlled by the State and shall be utilized for the greatest benefits (welfare) of the people. The provision explicitly wants to be implemented by the state and have control over natural resources, especially coastal and ocean resources, directed towards the achievement of the benefits as big as possible for the prosperity of the people and must also be able to achieve justice and equity as well as improve the life of coastal communities and promote coastal villages. In the implementation, the pattern of coastal and ocean resources is formed; this is in a contrary to what has been outlined in the article, the implementation is still a top down, meaning the management of all coastal activities and ocean resources, from policy making, planning, implementation, evaluation and monitoring, are done entirely by the government without involving participation of local communities. Viewed by the characteristics of coastal and sea both in terms of natural resources and people, the management of coastal and sea areas should directly involve the local community. On this basis and with the government policy of the Republic of Indonesia on Regional Autonomy and decentralization in the management of coastal and ocean resources, management and proper utilization of coastal resources directly involve the participation of local communities in the planning, implementation, monitoring and evaluation, so it can guarantee the welfare and viability of local communities and the preservation of coastal resources.

In the final analysis, the wealth of a country is based upon its power to develop and to effectively utilize the innate capacities of its people [17]. Referring to the assumptions in order to anticipate Regional Autonomy problems, it is providing an independent, responsible, efficient and effective community that has the ability to utilize natural wealth for the prosperity of the people. In this regard, community development in the coastal area is an integral part of the management of coastal and marine resources for prosperity of

communities, so there is a need to use an approach where society as an object as well as the subject of development.

Every person has the right and obligation to participate in the management of the living environment [15]. The effort to engage the public at the earliest feasible point in the policy planning process provides an opportunity for assessing public desires and needs, clarifying elements of controversy, and evaluating the full range of policy options. Information is a prerequisite to effective public participation, and governments have a responsibility not only to provide information on environmental matters available to the public in a timely and open manner, but also to ensure that citizens are able to provide constructive and timely feedback to government [19].

Public participation can be seen as an essential means for increasing environmental as well as political awareness, for clarifying the choices to be made, and for seeking social consensus on the balance to be sought between economic development and environmental concerns. The balance between economic and environmental development, with environmental consideration is defined as a conscious and planned endeavor to utilize and manage wisely the resources in continued development to improve the quality of life [15].

The public participation in Indonesia with regard to the coastal conservation management is still relatively low. This is because only certain interest groups and stakeholders are involved in the decision-making process of policies, rules and regulation related to coastal conservation management. The government and other institutions have to increase the awareness and public participation in order to realize a better coastal conservation management in Indonesia.

Conclusions

Indonesia's coastal zone with thousands of islands is using a spatial approach to manage coastal area, decentralization and regional autonomy as a policy to handle diversity and complexity of the problems. Indonesia has the political will for coastal conservation management. However, the current political will is not really strong to be implemented. Although the general policies to the protection of the coastal environment are specifically mentioned in the constitution, law and regulation, the law enforcement still remains a major problem. Institutional capacity is another important element in developing ICZM, especially for a country that has not much experience on it. Capacity of government institutions in Indonesia to increase existing coastal conservation policy and ICZM implementation still needs to be improved. One of weaknesses related to the capability of government institutions in Indonesia is in controlling and monitoring aspects. The implementation of the ICZM concept and coastal conservation policy are not only in institutional reform, but it must be socialized to the people and create the awareness among Indonesian people to apply the ICZM principles to practical life. Since many people in Indonesia still perceive that coastal and marine resource is abundant and a social good, and use or exploit them as renewable resources; therefore, increasing public awareness is important.

Acknowledgments

This research has been supported by grant of BLN 2011 by Directorate General Higher Education (DIKTI), Ministry of Education and Culture of Republic Indonesia.

References

- [1] J.W. Nybakken, **Marine Biology: An Ecological Approach**, Harper and Row, New York, 1982, p. 446.
- [2] R. Dahuri, *Decentralizing and Delegating ICM to Regional and Local Communities: A Precarious Balance of Authority, Capacity and Consistency*, **UNESCO Oceans and Coasts Pre-World Summit on Sustainable Development Conference Paris**, 2001, pp.1-20.
- [3] * * *, **Indonesian Population Projection, BPS: Jakarta**, Badan Pusat Statistik, Statistic Indonesia, 2010, <http://www.bps.go.id/eng/>(accessed at 20.12.2013).
- [4] A.Vallega, **Fundamentals of Integrated Coastal Management**, Kluwer Academic Publishers, Dordrecht, 1999, p.288.
- [5] R. Dahuri, **Integrated Coastal and Marines Resource Management**, Pradya Paramita, Jakarta, 1996, p.305.
- [6] J.G. Titus, R.A. Park, S.P. Leatherman, J.R. Weggel, M.S. Green, P.W. Mausel, S. Brown, C. Gaunt, M. Trehan, G. Yohe, *Greenhouse Effect and Sea Level Rise: The Cost of Holding Back the Sea*, **Coastal Management**, 19(2), 1991, pp. 171-204.
- [7] C. P. Pergent-Martini, *Ecological Research for Integrated Coastal Zone Management: Introduction*, **Journal of Coastal Conservation Policy**, 8 , 2002, pp. 107-108.
- [8] E. Babbie, **The Practice of Social Research**, Wadsworth Publishing Company, Belmont, California, 1992, p. 640.
- [9] A.R. Dietriech Bengen, **Toward Sustainable of Coastal and Marines Development**, Potpourri Thoughts, Bogor, 2002.
- [10] * * *, **Indonesian Map, Physical Map of Indonesia**, 2009, <http://www.ezilon.com/maps/asia/indonesian-physical-maps.html>(accessed at 20.12.2013).
- [11] T. Kusumastanto, **Optimizing development and environmental issues at coastal area: problems and solution for sustainable management of Mahakam Delta proceeding of International Workshop, 4-5 April 2001**, Jakarta, Center for Coastal and Marine Resources Studies, Bogor Agricultural University, p. 196.
- [12] * * *, **Geospatial Information Agency**, Hasil survey geografi dan toponimi, Badan Informasi Geospasial, 2012, <http://www.bakosurtanal.go.id/> (accessed at 20.12.2013).
- [13] * * *, **Ministry of Maritime Affairs and Fisheries**, Marine Fisheries Statistics 2011. Jakarta, 2013, <http://www.kkp.go.id/en/> (accessed at 20.12.2013).
- [14] * * *, **Coastal and Marine Ecosystems - Indonesia**, Earth Trends country profile, 2003, <http://pemsea.org/pdf-documents/profile-CME-indonesia.pdf> (accessed at 20.12.2013).
- [15] M. Kusuma Atmadja, *Legal and institutional aspects of coastal zone management in Indonesia*, **Marine Policy**, 20(1), 1996, pp. 63-86.

- [16] V.P. Nikijuluw, **Population and Social Economic Community and Their Strategic Empowerment in Integrated Coastal Resources Management Context**, Center for Coastal and Marine Resources Studies, Bogor Agricultural University, 2001, pp. 1-17.
 - [17] H.S. Gordon, *The Economic Theory of a Common Property Resource: The Fishery*, **Journal of Political Economy**, **62**, 1954, pp. 124-142.
 - [18] F. Harbison, C.A. Myers, **Education, Manpower and Economic Growth: Strategies Of Human Resource Development**, McGraw-Hill, New York, 1964, p. 229.
 - [19] * * *, **Coastal Zone Management: Integrated Policies**, Organization for Economic Cooperation and Development, Paris, 1993, pp.19-124.
 - [20] * * *, **Indonesian Fisheries Book**, Ministry of Marine Affairs and Fisheries, Japan International Cooperation Agency, Jakarta, 2009, p. 84.
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Received: February, 05, 2014

Accepted: August, 19, 2014