Integrated Community Based Coastal Management: Lesson From The Field

Sudharto P. Hadi 1*
1Study Program of Environmental Studies and Faculty of Social and Political Science, Diponegoro University Jl. Prof. Soedharto, SH, Tembalang, Semarang
*sudhartophadi@yahoo.co.id and sudhartophadi@undip.ac.id

Abstract. Coastal abrasion has been occurred throughout coastline of Java reaching 745 km at length, account for 44% of total Java’s coastline. This phenomena is caused by reclamation, cutting of mangrove, land-use change and other human activities specifically at coastal area. Coastal abrasion stimulates flood or tidal flood, when sea level rise, the sea water flows to the land undated fish pond, settlement and other infrastructures standing at coastal area. Tidal flood destroys settlement lead to significant decrease of property value: land and house. Coastal abrasion caused lose people’s job and income. One measure taken by local community is mangrove cultivation intended to prevent sea level rise flowing to the inland. However many efforts taken by community frequently fail because of un-integrated approach. This paper reviews a mangrove plantations in Mangunharjo, district of Tugu, Semarang, Central Java by utilizing an innovative approach integrating environmental, economic and social aspect. These mangrove cultivations environmentally useful to prevent coastal abrasion, economically creating income for local people and socially supported by local community. These three approaches ensure sustainability of mangrove’s culture.

Keywords: Coastal abrasion-ecological, economical, social approaches

1. Introduction
Coastal area is a strategically located for various activities such as port, industry, settlement, recreation, fisheries, agriculture etc. These activities are overlapping each other and uncontrollable causing environmental and social impacts. One significant environmental impacts is coastal abrasion predicted caused by reclamation by a company. Reclamation causes the change of current pattern destroying coastal line, in turn, degrading fish ponds. When sea level rises, it undated fish pond, settlement and other infrastructures, disrupting of day to day activities, threatening health and economic of local people. This phenomena has been occurring throughout of Java coast where coastal abrasion reach 745 km at length or 44% out of coastline (Kompas Daily Newspaper, 25 January 2017). Based on data published by Ministry of Marine and Fisheries showing that coastal abrasion reach 1.950 hectare per year (Kompas Daily Newspaper, July 26, 2017). The loss of coastal land during the last fifteen years reached 29.261 hectare. In Mangunharjo a village located at district of Tugu, Semarang, Central Java has been experienced coastal abrasion and tidal flood since 1999 degraded coast line of 3.5 km at length and eroded the main land up to 1.7 km to the settlement of people. This paper reviews the measure and approaches taken by local people in dealing with coastal abrasion and how are they sustained. At a global level, sea levels rise threaten coastal area possibly could be up to 98 cm at the end of this century. Williams et al (2017: 6) noted the importance of coastal area indicating that within 25 km of the coastline live 1.4 billion people, account for 20% of the world population. Coasts contribute revenue to the GDP of a country indicated by Greek tourism providing 24% of its GDP (Bank of Greece (2015)) and Greece’s tourism confederation (SEPE) expected 25 million tourists to visit in 2016. It is also shown by Columbia in which coastal tourism is the third highest source of foreign exchange after oil and coal.
2. Literature Review
Maliao et al (2009: 818) studied coastal resource management (CRM) in the Philippines and concluded that CRM is generally implemented under the co-management framework. They suggest that the key aspect of co-management is the empowerment of the community to participate, control and influence institutional decisions affecting their lives. This CRM strategy is referred to as community based coastal resource management (CBCRM).

Esteban et al (2017: 78) on their studies on awareness of costal floods in Jakarta suggest that to enhance resilience, it is required not only to construct dykes to protect against a tsunami but also to plant mangrove forests. Zagonari (2008: 803) concluded that for achieving coastal quality, an integrated approach is always better than a non-integrated approach. Coastal management must consider all stakeholders involved by focusing at local rather than at national scales, on users rather than on uses.

David Romero Manrique de Lara, Sera Corral. 2017 (160-161) noted that integrated approach practiced was able to identify the root of the problems and impacts of unsustainability issues and explore the measures from their own view. By facilitating a dialog, local people and public authorities could collaborate a teamwork to reach solutions. These ensure the sustainability of the project by having supports from all stakeholders.

Aheto et al (2017: 53) outlined that due to limited resources and their capacity, local communities cannot manage coastal ecosystems by themselves. Aheto et al viewed that co-management is an approach in which the government shares certain authority, responsibilities and functions of coastal resources management with resources users as partners. Co-management should include rule-making and rule enforcement through local government units by virtue of proximity to the resource management areas.

Abreu et al (2017: 17) noted the importance of the interaction between traditional and scientific knowledge for having solutions to environmental and social problems. View of community member having experience of the problems would be importance to have a good solution.

3. Material and Methods
The type of research is descriptive analysis outlining the efforts and approaches taken by local people in dealing with coastal abrasion and how are they sustained. The case study taken is the village of Mangunharjo, sub-district of Tugu, Semarang City. The data gathered through informal interview, physical observation and document analysis. The data then analyzed quantitatively and qualitatively.

4. Results and Discussion
Water The village of Mangunharjo has been experiencing coastal abrasion since 1999 at 3.5 km at length and 1.7 km flows to the settlement destroying 110 hectare of fish pond. Based on research done by Anggoro (2011: 2), the driving factor of coastal abrasion was largely a reclamation done by a wood processing company. The company agreed to negotiate with local people and achieved an agreement to give a part of compensation for impacted local people. Government of Central Java provided seed money for rehabilitating coastal abrasion by building coastal belt. The project was done through self help (mutual assistance) among local people. They designed a coastal belt, utilized materials such as sand, concrete bús, bamboo, stone, etc locally and mobilize the workers from their villages. The seed funding from the Provincial Government could build a coastal belt for 1.2 km. The government provided further funding for the later years. In addition, local people initiated to explore funding from other sources such as the Ministry of Marine and Fisheries,. Up until now the remaining abrasion area is about 600 meter out of 3.5 km. To strengthen the coastal belt, local people initiated to plant a mangrove a long the line of coastal belt. Mangrove grows well and help make fish pond recovered, in turn, it can be planted again with shrimp and milk fish. People now earn from harvesting shrimp and crab at the average of Rp 125.000,- per day. They also earn money by providing boat service for people doing fishing around the fish pond. The self help of local people in building a coastal belt and planting mangrove attracted attention from various pupils and students from various places of Indonesia and abroad. They visit Mangunharjo and help planting mangrove. Students from various countries such as China, Japan,
Thailand, Vietnam, French, Germany, Belgium, South Korea visited Mangunharjo and learned how people doing mutual assistance to deal with their coastal problems. Various private companies also take part in planting and maintaining mangrove.

5. Conclusion
The mutual assistance of people in Mangunharjo dealing with coastal abrasion is the key success of sustainability. Local people involved at the earliest stage of planning in developing coastal belt and planting mangrove. The government provided a seed funding, the academician provide advice and facilitation. Private company also involved in mangrove culture. Local people have a sense of ownership, if the problems with a coastal belt and mangrove occur, local people will do mutual assistance to fix it and replant it. The sense of ownership is also supported by the fact that their fish pond is now can be planted and give income again. Local people also benefit from having many visitors from domestic and abroad. It is recommended for the government to help local people to finish building coastal belt dealing the remaining costal abrasion. The well grown mangrove in Mangunharjo which is now called mangrove forest is one of the few coastal green area in Semarang City. It is required to determine the areas as conservation area through spatial planning revision otherwise the area will be utilized by private sector as industries.

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