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**Social factors for coastal management: A short review and some insights**

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**Abstract**

Integration of social-economic and environmental perspectives are important in making the goal of coastal management to be obtained within expectation. In this review paper, the social factor is focused upon in particular. This is due to the fact that human cannot escape from surrounding which becomes their habitat niche. From this review, the social factors are known as 1) human attitudes, 2) differences of social-cultural values, ethics and classes, 3) population growth, 4) stakeholder/citizen perceptions, 5) involvement of social/public community, 6) anthropogenic activities, and 7) the involvement of managers and governance. Most dominantly, anthropogenic activities involved aquaculture, fishing, shipping and port activities, sediment mining, salt extraction, and tourism.

**Keywords:** Coastal management; Human activities; Social factors

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**Introduction**

In general, sustainable development remains an interesting aspect in both academia and politics (Boda 2018). In this paper, the coastal ecosystem is focused because it is one of the most anthropogenically-received area and altered region worldwide, by both natural and human factors including the large population size concentrating along the coastal area (Rojas et al. 2014). The human use on the coastal ecosystem for benefit gain has largely degraded the coastal ecology Therefore, coastal

management is a current challenge in which this is dependent on coastal research on all aspects integrating social, economy and environment. For example, Josephs and Humphries (2018) studied the monetary valuations of ecosystem functions, commenting that the behaviours and psycho-social motivations of environmental management should not be overlooked.

The social factor is one of the components in the coastal management besides the integration of economic and environmental factors. One successful coastal management is always much dependent on the understanding and

coordination among social-economic and environmental collaboration. To start with coastal management, an eastern ecosystem can borrow and refer to an existing successful story of coastal management in the western ecosystem. This should involve many adaptive management strategies of the factors in the new coastal ecosystem to be managed. The society living the west differ from culture and economy when compared to that in the east. The educational levels, past experiences, and social belief or religion are all parts of a social perspective that could potentially determine the success of the new coastal management. Sridhar et al. [1] presented a literature review and comprehensive analysis of coastal zone management practice through a political, economic, social, technological, legal and environmental approach. Pacheco et al. [2] found that management of the interactions between social/economic interests and the coastal environment requires practical, interdisciplinary assessment techniques. The objective of this paper is to review papers published from 1992 to 2018 about coastal management with special reference to social factors.

## Methodology

In this review paper, keywords 'coastal management' were put to find the available papers based on Scopus database between 1992 and 2018, searched on December 31, 2018. Out of the search, only abstracts with keyword 'social', were chosen.

## Review Findings

From the literature, social factors have always been discussed since they are parts for effective coastal management besides the economy and environmental factors. This review paper identified the following seven points.

## Human attitudes

By using a nature-based salt marsh restoration project on Martha's Vineyard, Massachusetts, Josephs and Humphries [3] assessed the role of human attitudes and preferences in evaluating social success for ecosystem management. They suggested that strong public support for individual initiatives can misconstrue complexities in stakeholder preferences that emerge in more comprehensive management considerations. Boda [4] found that the economic choice approach and social choice approach are compared and contrasted both theoretically and practically in relation to a coastal erosion control project currently being planned by the U.S. Army Corps of Engineers in Flagler County, Florida, U.S.A. Based on an interview survey among some of the stakeholders in the shrimp value chain on the southwestern coast of Bangladesh, Paul and Røskft [5] reported eight negative influences were treated as conflict generating factors. They reported that a trend that the social factor (attitudinal conflict-generating factors) were more prominent where the brackish water intrusion and brackish water shrimp farming were dominant. Landless people and marginal farmers were the two pioneer groups most intensively involved in these conflicts. Above both studies involve human attitudes in the effective management of the coastal environment.

## Differences in social-cultural values, ethics and classes

Katili et al. [6] investigated community's social-cultural value and local wisdom that covering conservation of the coastal biodiversity in Gorontalo Province, Indonesia. They studied the character education of coastal ecosystem biodiversity in primary school by learning with a prototype of conservation character-based materials. They identified that the conservation character-education based on social-cultural values, specifically local wisdom, is the most appropriate educational

model to encourage the pattern of biodiversity coastal ecosystem management. Agustono and Aulia [7] studied the forms of local wisdom that used for managing coastal areas at Langkat Regency. They analysed the relationship and or the effect of the social, economic condition and social culture of the coastal community in order to take the benefit and conservation of Langkat's coastal area. They found that: the local wisdom in the coastal area community was a part of the local tradition process that comes from life experiences for years. According to Eder [8], class, ethnic, and gender differences among fisherfolk powerfully influence how the benefits and costs of coastal resource management programs are perceived and experienced in Philippine fishing communities. These and other social differences also limit the efficacy of community participation in these programs and hence the role that local communities can be expected to play in fisheries co-management regimes. Steyaert et al. [9] focused on the challenge of managing the production and application of knowledge in social settings, in which scientists themselves come to play a role. They showed how scientific knowledge can acquire heuristic value when used in the context of intervention research, as well as revealing some of the ethical dilemmas this may pose for the role of the researcher.

### Population growth

According to Ehrlich and Holdren [10], two theorems out of five which provide a framework for realistic analysis are 1) population growth causes a disproportionately negative impact on the environment, and 2) problems of population size and growth, resource utilization and depletion, and environmental deterioration must be considered jointly and on a global basis. These two theorems are still relevant and continually be used to solve global environmental coastal pollution in a holistic way.

Coastal region of the State of Santa Catarina in Brazil, Tischer et al. [11] found that the major sources of pressure are population growth and tourism, which end up generating a series of effects to the natural environment. Karrasch et al. [12] focused on improving the inclusion of ecosystem services in planning processes and clarifies the linkages with social impacts. The method operations the ecosystem service approach and social impact analysis and demonstrates that social demands and the provision of ecosystem services are inherently connected. The social demands are highly related to population expansion. Melloul and Collin [13] focused on the problem of most efficiently fulfilling the water requirements of society for sustainable water resources management. Management planning measures employed with regard to Israel's coastal aquifer have been used to illustrate this approach. Observation of Israel's experience indicated markedly reduced effectiveness where such measures have failed to be properly synchronised with societal needs. The increment of population size had caused bacterial contamination contributed by the discharge of untreated domestic sewage. Therefore, all the above citations point the impact of population growth on coastal management.

### Stakeholder/citizen perceptions

Mani-Peres et al. [14] evaluated the stakeholder perceptions of a particular region in coastal zones can be useful for identifying environmental impacts that occurred in the past, especially in the absence of preterit data and effective monitoring. Rojas et al. [15] studied the main problems related to the use of resources and coastal management in Argentina, leading to coastal erosion, from the perceptions of stakeholders and decision makers. Jones et al. [16] studied the citizens' perceptions of three coastal zone management policies (hold the line, managed realignment and no active intervention) along with the influence of social capital on the level of social

acceptability of these proposed policy options. Regarding the influence of social capital, through the results of an ordinal regression, it was observed that institutional and social trust influence positively citizens' level of agreement for the managed realignment policy.

### **Involvement of social/public community**

Crawford [17] reported that, in 1991, the House of Representatives Standing Committee on Environment, Recreation and the Arts presented a report to the Australian Parliament on the protection of the coastal environment. The report follows an extensive public inquiry by the parliamentary committee during which it visited various parts of the Australian coastline and held discussions with approximately 500 people from all sections of the community. Baquiano [18] used Social Representations Theory (SRT) to uncover how some residents of a coastal community in Iloilo, Philippines collectively comprehend coastal resource management. They found that the value of SRT in understanding how groups co-create their shared reality; as well as point toward the theory's practical relevance in addressing current environmental issues. Garmendia et al. [19] explored the scope of a participatory integrated assessment process, known as Social Multi-Criteria Evaluation (SMCE), in the context of Integrated Coastal Zone Management (ICZM). They reported that improving the integration of diverse expertise and values can lead, through a mutual learning process, to the definition of relevant policy options and sound decisions in the face of complexity, value conflict and unavoidable uncertainty. According to Vanclay [20], integrated coastal zone management (ICZM) would be significantly enhanced if there was a greater connection to the field of social impact assessment (SIA). They presented a general case outlining the potential use of SIA in ICZM, with reference to the Wadden Sea Region where applicable. Important lessons (aphorisms, franchises) from SIA are highlighted. Gomes et al. [21] investigated the

contribution to the social diagnosis of the estuarine sector of the state through the analysis of three communities located in wetland areas in the municipality of the state capital, Macapá. Blackett et al. [22] conducted a series of New Zealand case studies and indicated that positive or negative environmental outcomes are largely the result of how the negotiation proceeds, who is involved, how resource management agencies behave and the nature of the physical environment.

### **Anthropogenic activities**

De Oliveira et al. [23] evaluated the influence of human activities and natural impacts on the characteristics of a macrotidal beach in northeastern Pará, Brazil. In this social aspect, the uncontrolled urban expansion, associated with natural conditions, is the main factor responsible for the erosive processes observed in the northwestern sector of the beach. Leslie et al. [24] interviewed stakeholders in the Xuan Thuy National Park (Vietnam), connecting these with a narrative review of existing research into a social and environmental change in the park to understand research gaps and challenges for vulnerable coastal areas like the Nam Dinh coast. They suggested that whilst the effects of a changing environment on physical health and economic activity are increasingly well understood, effects on wellbeing and social relations can be even more immediate and profound in daily living. Since tourism is the primary economic activity, Mata-Lara et al. [25] conducted a study based on a two-pronged approach that included a characterization of the town's population socioeconomic indicators, as well as their use and perception of easily identifiable marine resources (coral reef, fish and water quality), applying surveys to close-ended questions.

### **Involvement of managers and governance**

Wakita and Yagi [26] clarified the reasons for the poor implementation of the Guideline for

Integrated Coastal Management (ICM) Plans in Japan using a theoretical approach. Lack of a scheme that would provide national subsidies to local governments after approval of their ICM plans by the national government and the diminished position of the coordinating national agency are identified as major factors hindering implementation of the Guideline. The major similarity problem solutions recommended between Brazil [23] and Japan [26] is that both of them are based on the aspect of social that involve the managers, policymakers and the governing body in power. Leschine et al. [27] reported the distinctly pro-environment and pro-development advocacy coalitions to exist for Puget Sound's contaminated sediment problem. In the coastal zone of Pehuén Co and Monte Hermoso, Argentina, Rojas et al. [15] reported the lack of a strong social capital in the region and the existence of formal monitoring and sanctioning procedures developed by distant governmental institutions have increased the overexploitation of coast and beaches.

## Concluding remarks

In this review paper, the social factor is focused upon in particular. From this review, the social factors are known as 1) human attitudes, 2) differences of social-cultural values, ethics and classes, 3) population growth, 4) stakeholder/citizen perceptions, 5) involvement of social/public community, 6) anthropogenic activities, and 7) the involvement of managers and governance. This is due to the fact that human cannot escape from surrounding which becomes their habitat niche. Based on the management of the coastal area, all the citations above do mention the involvement of the social aspect. These human involvements range from human participation in decision making of justifiable coastal management to human activities that pollute the coastal ecosystem. Most dominantly, anthropogenic activities such as aquaculture, fishing, shipping and port activities, sediment mining, salt extraction, and tourism all take place in the coastal ecosystems.

However, the above human activities are often not compatible with each other. Hence, conflicts over the interest of a particular social group are always present and becoming problems that need to give and take attitudes and mutual understanding from all social groups involved.

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