Trat Province is located in the east of Thailand and has borders with Cambodia to the east, and the Gulf of Thailand to the south. The second biggest island of Thailand is Koh Chang, belonging to this province, together with more than 50 surrounding smaller islands, forms the popular tourist destination of Thailand. The Thai Government declared Mu Koh Chang as a special administrative zone for sustainable tourism development in 2002. An estimated 30% of the coral reef areas are within the jurisdiction of Mu Koh Chang National Park which was established in 1982. Mu Koh Chang was also selected as one of the demonstration sites for coral reef subcomponent under the UNEP/GEF Project on Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand. Pollution Control Department and relevant government agencies in consultation with local administration offices and local communities develop a management strategy for natural resource conservation, pollution control, reversing environmental degradation and best land uses in the coastal area of Trat Province. Based on the root cause analysis, the main environmental problems are solid waste, wastewater, coastal erosion, sediment load from coastal development, inappropriate land use in coastal area, unsustainable fisheries, inappropriate tourism activities and oil spill. The natural resources degradation includes coral reefs, seagrass beds, mangroves, terrestrial forest, sandy beaches, endangered species and fishery resources. Five management policies are proposed, i.e., solid waste management, wastewater management, land use management, coastal and marine resources management and sustainable tourism practices. Each management policy consists of five measures. i.e., scientific research support, promoting knowledge to support effective management of natural resources and environment, coordination and participation of relevant agencies, raising public awareness, improvement of laws and regulations for effective management, financial support for management and monitoring and evaluation. Under each proposed measure, there are projects/activities, priority, key agencies, supporting agencies, budget, key performance indicator (KPI) and status. There is a total of 245 proposed projects and needs about seventy million USD for implementation. Long-term financial support and better coordination among government agencies and stakeholders are important factors for sustainable use of coastal resources in the area.

**References**

Pollution Control Department (2008). Measures for Management of Natural Resources and Environment in Mu Koh Chang, Trat Province. (in Thai)

UNEP.(2007). Coral Reef Management Plans-Thailand. UNEP/GEF Project on Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand. (in Thai)

UNEP.(2006). Land-based Pollution Management Plans-Thailand. UNEP/GEF Project on Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand. (in Thai)

## Social responsibility, awareness and participation of local communities are key to effective CZM: a case study in Orissa, East Coast of India

Meera SWAIN

Centre for Women's Studies, National Institute of Social Work and Social Science, Bhubaneswar 751023, Orissa, India

E-mail: meeraswain@rediffmail.com

Fishers, fishing households and fishing communities worldwide are not homogeneous. Each location has its unique social and ecological context that needs to be considered for implementation of coastal zone management (CZM) and awareness programmes and their impact assessment. Coastal communities in many locations around the world face a growing degree of insecurity as a result of poverty and high dependence upon natural resources. This vulnerability is often compounded by declining resources, high population growth, limited alternative livelihoods, limited access to land, economic and political marginalization, unsustainable land use practices and development, competition and conflicts over resources, health burdens, and civil strife. In Orissa, a state along east coast of India, some villages along the shore are situated a few meters ( < 2 m) above mean sea level(MSL) in the Kendrapara district and are frequently prone to the fury of tidal waves causing erosion and sea water intrusion. As a result, most of the agricultural fields are lost due to sand filling and saline intrusion. In two villages, Satabhaya and Pentha, people mostly depend on marine fishery and agriculture. However, due to severe coastal erosion and seawater intrusion, the life and property of these coastal people and the communities are at stake. The major problems faced by these people are; i) Constant shifting of households, ii) shifting of livelihoods, iii) loss of

agricultural lands and ownership of land holdings, iv) loss of mangrove forest due to its indiscriminate use as fuel wood, v) lack of alternative livelihoods, vi) rising discontentment among people resulting in refusal of government rehabilitation programmes etc. As a result people very often engage in social conflicts. Therefore, the social responsibility on the part of the government, non government organisations (NGO) and community level should be extended to give them their basic human rights. Awareness of the local people about the use and conservation of the natural environment and resources, and their participation in checking the coastal erosion is essential to make the CZM programmes successful and effective and to enable the coast to be used sustainably and ensure its long-term protection. The effectiveness of the current CZM programmes were assessed through a survey within randomly selected households in communities living in the two villages. The fragmentation of management, lack of communication and collaboration between stakeholders, inadequate government funding and poor community support are the main obstacles to effective CZM. Therefore, there is need to integrate the local communities resident within the areas or dependent on the resources for their livelihoods.

**Natural hazard assessment over Iranian coastlines**

B. MAJDI [1], A.KEBRIAEE [2], MSOLTANPOUR [3], A.DANEKAR [4] & J.KARIMI [5]

[1]Formerly, Graduate Student, K. N. Toosi Univ. of Tech E-mail: b_majdi@sina.kntu.ac

coast and Port Engineering, Ports and Maritime Organization, Iran E-mail: kebriaee@pso.ir

[3] K. N. Toosi Univ. of Tech.
E-mail: soltanpour@kntu.ac.ir

[4] Tehran Univ. of Natural Resources.
E-mail: danehkar@nrf.ut.ac.ir

[5] Coastal and Port Engineering office, Ports and Maritime Organization, Iran
E-mail: Karimi.jalal@yahoo.com

## INTRODUCTION

Coastal areas are usually subjected to disasters due to natural hazards. Detecting probable hazards in coastal areas, preparing suitable policy and basic planning are essential to reduce disasters due to a certain hazard. Making proper management decisions will result in preventing from inappropriate development as well as reducing disasters and irreparable damages in the area. Coastal hazards are comprised of geological (earthquake, land-slide, settlement, liquefaction), climatology and hydrological (drought, heavy storms, heavy freezing, flooding and heavy rain) and marine hazards (storm surge, storm waves, water level variations and tsunami). Considering other experiences in the world, an appropriate method is applied for overall hazard assessment in coastal areas. In the mentioned method, each hazard is considered in the study area based on conducted analysis and the hazards are graded based on the intensity to four categories from 1 to 4, where 4 is the more intense one. Finally, effects of all the hazards are considered together in order to obtain an overall hazard assessment. The overall assessment is graded through 7 levels from 1 to 7 (very low to very high level of hazard).

## HAZARD ASSESSMENT AND CLASSIFICATION

Gradation of hazard intensity in an area requires scientific judgment, understanding the history of hazards and getting acquainted with contributing parameters in hazards. A powerful statistical system is also required for predicting time and location of hazards. The system must be updated regularly. In this study, seven types which are more effective in the coastlines are investigated and graded in four categories from mild (i.e. 1) to sever (i.e. 4) and are presented in Table 1, separately for the seven hazards.

## OVERALL HAZARD ASSESSMENT

In addition to separate assessment of each hazard, an Overall Hazard Assessment, OHA, is to be performed for general assessment of a certain area. Therefore, available hazards are classified to dynamic and non-dynamic categories. Dynamic Hazards occur in a very short period and result in sever disasters, which are earthquake, land-slide, liquefaction, storm waves, heavy storms and Tsunami. On the other hand, some hazards such as shoreline change occurs during long periods and result in minor disasters and are known as non-dynamic hazard. In order to simulate OHA parameter grade of each hazard, both dynamic and non-dynamic ones, are squared and a double value is assigned to dynamic items to magnify dynamic hazards and finally, averaging the obtained quantities, the OHA value is achieved.

## CONCLUSION

A comprehensive method is introduced here for .assessing environmental hazards in coastal areas,