

India has been identified as one among the most vulnerable countries to the impacts of global warming related accelerated sea level rise. This is mainly due to the extensive low-lying coastal area, high and increasing population density, frequent occurrence of cyclonic storms, high rate of coastal environmental degradation due to pollution and non-sustainable development. Possible global warming and change in regional climate may be reflected in sea surface temperature, frequency, intensity and tracks of storms, and sea level. Rise in sea level could result in the loss of rich cultivable land due to inundation, saltwater intrusion into coastal ecosystems and into groundwater systems and damage to coastal biodiversity. Though the 11 major and 130 minor ports and numerous fishing harbours located in the coastal zones are economically very important, they add a lot to the degradation of coastal environment through ballasting and introduction of invasive species and releasing of grease, oil and solid wastes. Increasing number of factories pollute the coastal freshwater resources. Coastal aquaculture invites saltwater intrusion far inland. Overdraft of groundwater in coastal zones has permanently degraded the groundwater in some of the States. Sand quarrying, construction of buildings and unscientific coastal protection walls have impact on both land and water resources. Rivers joining the coastal seas and backwaters carry tremendous loads of domestic wastes and industrial pollutants. Agricultural development release pesticides and fertilizers into the water far above permissible limits. East and west coasts are vulnerable to severe tropical storms. Storms of various intensities hit the coasts almost every year, causing casualties and widespread damage. Rules and regulations at the national and state levels to protect the coastal zones and the coastal resources become farce because of various political, financial and social reasons. Government machinery is often slow and without coordination among different departments involved. Coastal zones are becoming more and more environmentally significant, as life and economy of the country are largely dependent on it and increasing population, urbanization, industrialization and agricultural expansion are posing threat to it, making sustainable management a challenging issue. This paper is an assessment of the environmental significance of the coastal zones of India in the changing scenarios of population, environment, economy and politics. A review of existing coastal zone regulation act, constitutional provisions,

efficiency of the institutional mechanism in the implementation of regulations and various social issues in the coastal zones in view of the new trends associated with globalisation have been made. Suggestions for effective implementation of the coastal protection strategies and adaptation measures have been provided.

Ecohydrology - The interplay between biota and hydrology for the sustainable ecologic functioning of estuarine and marine areas in south-eastern Portugal

Luis CHICHARO, Alexandra CHICHARO, Ben-Hamadou RADHOUAN & Pedro RANGE

International centre for Coastal Ecohydrology/
University of Algarve, Portugal
E-mail: lchichar@ualg.pt

The Ecohydrology approach applied to estuaries and coastal areas is based on the interplay between hydrology and biota, which can be tuned for restoring, improving and sustaining water quality and ecosystem functions. This approach considers the entire river basin and its ecologic and hydrologic processes as a template for the implementation of integrated solutions. The Guadiana estuary and adjacent coast, in the south east of Portugal, have been used for developing and testing ecohydrologic solutions and approaches. This area has been affected by the construction of the largest dam in Europe, the Alqueva dam, completed in 2002. Changes in ecosystems functions and associated uses by human populations were observed, particularly in terms of estuarine nursery functions and coastal fisheries. We propose several solutions based on the dual regulation hydrology-biota to improve water quality and to allow long term sustainable uses of estuarine and coastal resources.

Lessons learned in the development of coastal management strategy for Trat Province, Thailand

Makamas SUTTHACHEEP^{1*}, Thamasak YEEMIN¹, Pornsook CHONGPRASIT², Se SONGPLOY¹, Wichin SEUBPALA¹, Dussanee CHOIETHONG¹ & Sittiporn PENSASUN¹

¹ Department of Biology, Faculty of Science, Ramkhamhaeng University, Bangkok 10240, Thailand
* E-mail: msutthacheep@yahoo.com

² Marine Environment Division, Pollution Control Department, Bangkok, Thailand