

hazards the Conference advised that no damage to mangroves and coral reefs be allowed, and there should be strict implementation of 500 m zone free of human habitation and construction. Moreover, plantation of casuarinas and coconut trees be entertained. (12) As mining of coastal placers is indispensable in national interest, sustainable mining with due regard to natural eco-systems and restoration of ecology, landscapes, etc., be considered favourably in the grant of exploration and mining leases. (13) As already emphasized, there will ever be need for installing forecasting and warning systems, as also proposed by the Government to minimize the losses due to seismogenic tsunamis.

The marathon deliberations of the Conference came to end after the Valedictory Function with Prof. D. Jayakumar, Former Vice-Chancellor, Periyar University as Chief Guest. The function was also graced by Prof. S. Vaidyasubramanian, Dean (Planning and Development) of SASTRA, who presided over the function. The Conference came to a close after expressing copious thanks by Dr. Eugene Wilson.

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TSUNAMI AND THE COASTAL REGULATION ZONE (CRZ)

The March 2005 issue of the *JGSI* carried some interesting items relating to Tsunami. Most of the authors unequivocally advocated strict implementation of the Coastal Regulation Zone (CRZ) norms as one of the remedies for future disasters. Even in the recently held (9th to 11th February, 2005) 'International Conference on Coastal Hazards' at Thanjavur, one of the recommendations pertains to CRZ.

The CRZ notification (dated 19.2.1991 and subsequent amendments) was issued by the Ministry of Environment & Forests, (Department of Environment, Forests and Wildlife), Government of India. Development activities in the coastal region have to adhere to the norms laid out in the CRZ notification which has four categories namely CRZ I, CRZ II, CRZ III and CRZ IV. The notification imposes restrictions on certain activities in the coastal regions lying between High Tide Line (HTL) and Low Tide Line (LTL) and between HTL and 500 m landward of HTL and the CRZ I encompasses areas which are ecologically sensitive (already identified and as may be declared as such by the Government from time to time) and the contiguous area between HTL and LTL. No new construction is permitted within 500 m of the HTL. The CRZ II includes areas which are already developed close to the shoreline, as is the case with coastal cities and towns. In this zone, construction of buildings can be taken up only on the landward side of the existing road. The areas covered under CRZ III include stretches that are relatively undisturbed (urban areas which are not substantially built up and rural areas). The land here up to 200 m from the HTL is to be declared as "No Development Zone". Designated authorities can permit

construction of hotels, beach resorts, dwelling units in the area lying between 200 m and 500 m (from the HTL). Andaman, Nicobar, Lakshadweep archipelago and other offshore islands come under the CRZ IV. The restriction on developmental activities is similar to that in the CRZ III.

The recent tsunami has demonstrated that the CRZ rules even if implemented rigorously, will be of little help in saving life and property in terrains which are flat and featureless. Fixing a horizontal distance of 200 m or 500 m from the HTL makes little sense when the (storm, cyclonic and tsunami) waves can travel far inland and cause extensive damage. To take care of such an eventuality, it is desirable to insert another clause which accommodates altitude as an additional criterion for demarcating set back line. The modification to the CRZ (I, III & IV) notification can be "200 m (or 500 m as the case may be) from the HTL or +3 m contour, whichever is farther from the HTL.

In the case of developed (cities and towns) areas, for which there is practically no set back line (CRZ II), it is imperative to have other protective measures like preserving the existing mangroves and sand dunes, planting casuarina trees, etc. Emplacement of hard structures like sea walls can be the last option, that too in places where it is absolutely necessary to save some important structures, at any cost. This may be even at the cost of loosing the adjacent beaches/structures.

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