

# **CZM PROSPECTS, ISSUES AND SOLUTIONS**

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## **1.0 INTRODUCTION**

Coastal Zones today are focus of increasing development activities resulting in deterioration in ecosystem. The coastal Zone has been put to considerable risk due to inadequate planning, management, and lack of environment impact assessment studies and ever increasing population pressure. Increased human activity along the coastal zone has resulted in environmental degradation and decay in ecosystem. Therefore, there is an urgent need for intelligent management of coastal zone.

Our country with its vast off lying territories has a coastline of nearly 7,500 KM long with variety of habitation features like vast stretches of back waters- Estuaries Lagoons Bays Mangroves Coral reefs Sea Grass beds etc., Over a period of time people have settled near water bodies along the banks of river or on the coastlines as these locations offered availability of water easy transportation and strategic concern. Coastal population is increasing significantly due to rapid development of harbours urban sites and spread of Aquaculture. The increase of population will have a significant impact on coastal region. As per the statistics by the year 2005, 50% of the world population would be living in cities and about 50% of that along the coastal cities.

With the burgeoning population and increasing industrialization the ECOLOGY along the coast is under threat. With coastal states competing with each other for maximum investment on the coast like establishment of new ports - open wharf age, power plant oil installations etc., the ECOLOGICAL BALANCE along the coast is being disturbed sharply. Marine trade- Electrical Power Generation- Insecticide and Pesticide- radio active Isotopes and Domestic Sewage is severely affecting the aquatic life in shallow water of the sea. Such unregulated use of coastal zones and its degradation has to be stopped and the natural resources have to be conserved by controlling their depletion.

On the other hand, a developing economy such as ours has to grow and therefore, developments along the coast need to be judiciously regulated. Towards this objective the Govt. of India enacted the Environmental (Protection) Act in 1986. The Ministry of Environment and Forest thereafter issued a Gazette Notification on Coastal Regulation Zone, on 19 Feb 1991.

This CRZ Notification is a timely legislation for judicious management of the coast. The Notification defines four types of Coastal Regulation Zones, depending upon whether the areas are ecologically sensitive and important, or areas are already developed or the areas are relatively undisturbed or whether the areas belong to Andaman and Nicobar, Lakshadweep. Depending upon the zone, the developments or construction activities are regulated by the concerned coastal zone Regulation authorities of state or Union Territory.

Keeping the public interest in mind, the Ministry of Environment and Forest has brought in several amendment to original Coastal Regulation Zone Notification and the definition of High Tide line for the purposes of uniformity in its demarcation has also been spelt out clearly. As per the amended Notification, the HTL is the line on land up to which the highest water line reaches during the spring tides. The HTL shall be demarcated uniformly in all parts of the countries by the demarcating authorities or authorities so authorized by the MOEF in accordance with the general guidelines issued in this regard.

As of now there are 07 authorized authorities to demarcate HTL however, there are no general guideline promulgated in this regard. The authorities authorized to demarcate HTL are as follows: -

- A) Space Application Centre , Ahmedabad
- B) Centre for Remote Sensing, Thiruvanthapuram
- C) Institute for Remote Sensing, Anna University ,Chennai
- D) Institute for Wetland Management and Ecological Designs,Calcutta
- E) National Hydrographic Office, Dehra Dun
- F) National Institute of Oceanography, Panjim, Goa
- G) National Institute of Ocean Technology (NIOT), Chennai

Today the biggest problem facing the country is that all the seven agencies above follow different methodologies whilst demarcating the HTL. The problem is further compounded where the agencies follow different ways to mark the Set-off lines (100m, 500m, etc..) landward from HTL for marking the no development zones. In view of the commercial implications, the distances from HTL has assumed a great significance and the concerned parties have taken up cases in the courts where HTL demarcated by one agency is pitted against the demarcation carried out by other agency. The problem is further engraved where the demarcating agencies have indulged in clarification of CZM Zones and even taken on the role of interpreting the CRZ act, in various ways and advising the State Governments. This is clearly not the started role of the demarcating agencies as per the CZM notification. The need of the hour therefore, is for all agencies to follow uniform methodology in demarcation of HTL and to follow uniform methodology in marking off the distances from HTL. For large-scale mapping needs (i.e. scales larger than 1:50,000) there is no substitute for walking over the coastline, and selecting the HTL by Geomorphological evidences, as is traditionally followed by the National Hydrographic Department. These methodologies can ensure accuracy of up to  $\pm 5$  metres, provided the stringent procedures for surveying laid down in the Surveying Manuals are followed, and the personnel deployed on survey task are duly qualified, certified and authorised by the national authority, the Chief Hydrographer to the Govt. of India

Space Application Centre Ahmedabad have carried out a satellite based land use mapping on a scale of 1:25,000 of the Coastal Regulation Zone using IRS LISS II and SPOT data. They have stated to achieve an accuracy of  $\pm 60$  to 120 metres. These maps are only sufficient for macro-level land use planning, however using these techniques alone to demarcate the HTL are not authentic and hence misleading. Without ground truth, such task has no use for the local State authorities and hence not advisable. Such ground truth and marking of details can only be achieved by physically walking over the coastline.

Institute of Remote Sensing Chennai: - Uses aerial photograph for delineating HTL and claim to have achieved on accuracy of  $\pm 1$  metre, however this accuracy is highly questionable as the time of taking aerial photograph will generate its own inaccuracy which could be up to  $\pm 20$  to 30 metres.

**Marking of Off Set lines:** - The overriding requirement of the CZM notification is that no point on the off-set line should be at a distance less than the 100/200/500 metres off from HTL. The procedures to mark off these off setlines are well known and internationally accepted, and used by National Hydrographic Department for decades.

We have one example of litigation in this regard, caused by poor understanding by the demarcating agency. In the figure an indented coast is shown. A building `A` is shown on shore. The HTL is shown as X1, Y1, Y2, and Y3. It can be seen that the distance of the building corner A can be measured off on the map to be 80 metre or 105 metre or 110 metre from the points Y1, Y2, Y3. All the three points Y1, Y2 and Y3 are on HTL.

**Solutions:** - In order to avoid numerous litigations, which are impediments on the way to sustained development and progress, following plan of action is recommended:

A. There is an immediate need, for detailed guidelines for demarcation of HTL. It is recommended that HTL be established by walking over only. In the guidelines, various associated issue like, geodetic aspect including datum, datum transformation parametres, horizontal and vertical control of survey must be addressed, to the desired degree of accuracy. The usage of equipment, and uniformity in the methodology, of survey should be specified. Confidence checks, for assessing the quality of data, and the responsibilities of the demarcating agencies, for certification of the work needs to be incorporated. The guidelines are required to be issued by MOEF.

B. Clear guidelines from MOEF are required for marking off the set-off distances from HTL. It should be clearly stated that no point on the set-off line should be less than the specified minimum distance from HTL (i.e. 100 or 500 metres as the case may be).

C. Training Rigorous training must be imparted to all personnel undertaking field survey for delineation of HTL. The Naval Hydrographic Department has already formulated a syllabus for this purpose, which is awaiting MOEF approval. Repeat/refresher training should also be ensured periodically, to keep pace with the changing technologies.

- (D) QA/QC- All field surveys undertaken must be put through Quality Assurance/Quality Check. Naval Hydrographic Department has a well-established and time proven QA/ QC cell at NHO Dehra Dun. The result of all field surveys should be examined and certified by the demarcating agencies in a similar fashion.
- (E) DataBase for CZM and integrated GIS be created, maintained and updated. The data created must be made available to all users and general public as required.
- (F) CZM charts on a scale of 1:25000 be printed and made available for sale to users.
- (G) Routine resurveys are undertaken in Ecologically sensitive area.
- (H) Constant Monitoring of changes in coastal areas for violation of CZM regulations, and for natural accretion / erosions.
- (I) Legislation on demarcation of Low Tide Line (LTL): - Generally LTL is defined as the line on land up to which the lowest water line recede during spring tide, however, this needs to be promulgated by MOEF and guidelines for its demarcation need to be issued.
- (J) Inter Tidal Zone: - Inter tidal zone is the area between HTL (High Tide line) and LTL (Low Tide Line). As of now there are no clear-cut regulations for preserving ecology in this area. The crying need for legislation in this regard to stop the gross misuse of this area by various agencies, without paying any heed to the ecology there in is considered essential.