

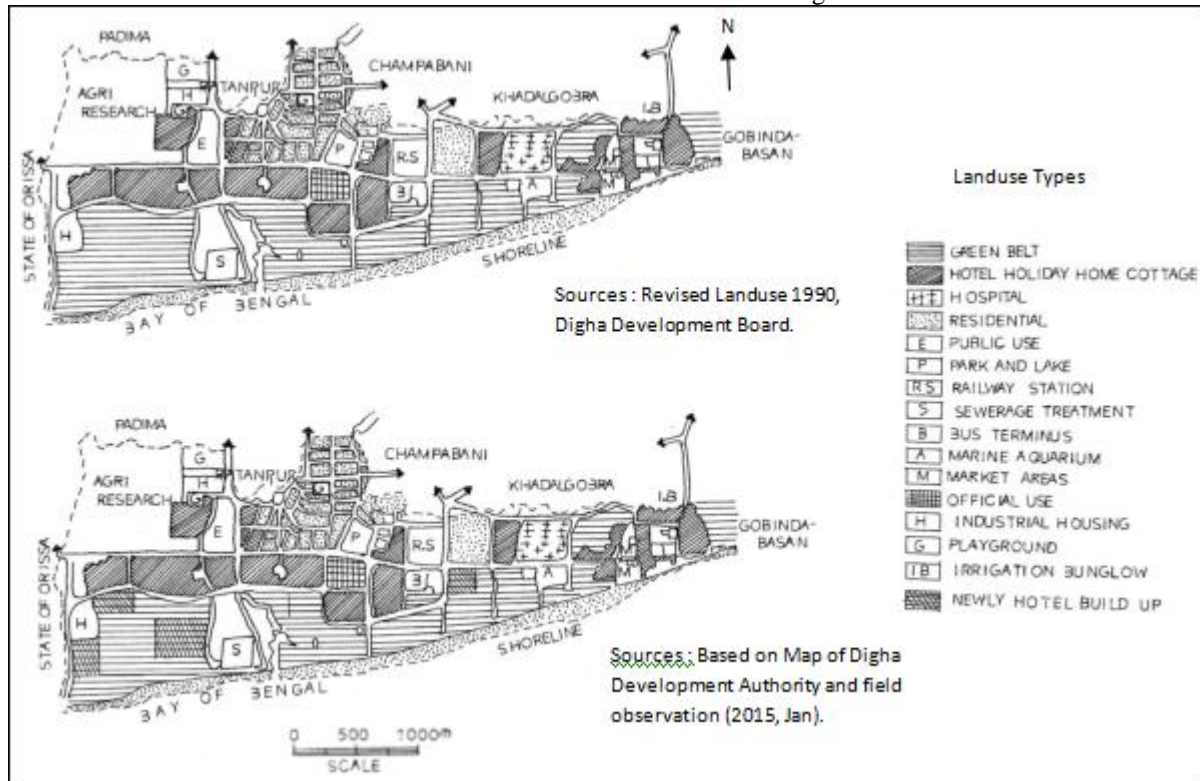






d) Hardware construction and its impact

Here are the maps for land use relating to hardware construction which gives a rough outline about the huge amount of shifting of environmental condition in time.



Changing Landuse Pattern of Digha in the Year of 1990 And 2015.  
 Figure 3

For the people of the coastal belt, sand dunes were nothing but sandy wastes in the context of land use pattern. Even today people do not understand the significance of sand dunes in the coastal belt. Entire study area coastal belts were vegetated by indigenous plant species even in the first half of the last century. But now it is used for the sites of settlement, pasture land, Farm forestry, Casuarina tree stands and for other tourism purposes. Digha beach resort is situated and expanded over the dune belt. Dune belts are reclaimed by the Forest Dept, Digha Development Board, and Irrigation Dept. for different land use facilities for tourism activities. Land use complexity for the fauna species and origin patches, and its effect to their genetic evaluation.

For comfortable and hospital accommodation for hosting of tourist is not sufficient in this area. To accommodate huge amount of tourist in this small area guest houses, lodges, hotel, resorts are densely situated. This is out of the capacity to maintain a ecofriendly environment. Its bad impact are listed below-

Table 3: Coastal tourism and Environment and their impact

Recreation sites	Location types	Period of emergence	Accommodation capacity at present	Impact types
Old digha	Water front location, dune surface built up area.	1957-60	Pvt. Sector 193 hotels. Govt. Sector 15 hotels.	Alternation of shoreline water table, vanishing sea beach, various failure modes of the sea

				wall structure, flooding and inundation pollution.
New digha	Dune surface built up area, backshore location.	1985	Pvt. Sector 52 hotels. Govt. Sector 17 hotels.	Wind erosion of the sand dune, alternation of the water table, waste product.
New digha N2 sector & bus stand.	Backshore location.	1990	Pvt. Sector 137hotels. Govt. Sector 52 hotels.	Various failure modes of the sea wall structure, Waste product.

e) Tourisms impact on Economy:-

The uncontrolled use of natural resources and exploitation of natural beauties always create a good economically profitable trading situation. The local area peoples and the peoples from the remote areas come here for different business. More than two thousand permanent shops of stationary goods, craft, and restaurants are situated here. The tourism in Digha has created a good transport business. About 150 private buses and 50 state govt. Buses, three local train and two express train per day business here. The agricultural production like Casuarina, groundnuts and fishing been made very popular to the tourist. This economy development is further attracting peoples to gather here.

**Table 4:** Digha decadal year population

Year	Population
1951	7190
1961	10535
1971	14692
1981	17426
1991	22386
2001	30336
2011	46532

Sources: Govt. of West Bengal Census Report.

This population growth is indication of a further risk for a man made ecological problem. Tourism, ecology and geomorphology are closely related by their mutual interaction. In the study area we see that the effect of tourism affected the ecology and geomorphology badly. A poor environmental situation has originated as a result of uncontrolled tourism. The flora and fauna species are facing trouble, some species have been vanished. This man made ecological crisis is a painful situation.

## 5. Conclusion and Remarks

Digha and its coastal region is a great resource to our state, we are proud of it. A proper maintained from the government side and responsibilities from tourists and inhabitants of this area must be taken to create a good healthy tourism here. Provided to the reconstruction of the sustain ecofriendly environmental condition. According to my view point the reconstruction process should be forwarded and completed by Environmental zoning and vulnerable zone analysis.

### 5.1 Environmental Zoning

Environmental zoning is a management option for coastal management. Environmental zoning refers to the categorization of coastal area according to its environmental importance and its subsequent utilisation.

We can identify following environmental zones in our study area-

- Undisturbed area: it is most sensitive zone from ecological point of view comprised of the zone between HTL and LTL. So it should be remained always undisturbed.
- CRZ-I: It is the zone between HTL and LTL and up to 500 m. Distance from HTL. It is also a fragile zone and is a area of scenic beauty. Hare any kind of development should be prohibited.
- CRZ-II: It comprises developed units of coastal area. There also should be some limitations on intensive development and new constructions. This zone should be developed behind CRZ-I.
- Village settlement sector: it comprises undeveloped areas along coastal area i.e. village units. It should be kept free from construction.
- Tourism sector: it should be developed at the back of CRZ-II & CRZ-III so that coastal systems remain undisturbed.
- Fishing sector: The wetlands should be utilized for fishery sector with their sustainability with some restrictions so that hydrological parameters remain unchanged.

### 5.2 Vulnerable Zone Analysis

The term zonation applies in a general sense to categories to the land surface into study areas and arrange them according in to degree of actual and potential biodiversity loss on Digha coastal belt.

**Table 5:** Risk Identification, Estimation, and Evaluation.

Phases of analysis	Risk assessment processes	Risk perception process
Risk identification	Event monitoring, statistical inference of this coastal belt.	Individual intuition, personal awareness.
Risk estimation	Magnitude of biodiversity loss	Personal experience intangible losses.
Risk evaluation	Cost/ benefit analysis, community policy.	Personality factors individual action.

Risk zone mapping involves a detail assessment and analysis of land use and land cover as well as biodiversity loss, on that particular area which is included in our study area. Risk zonation and risk perception have a role for creation of hazard zonation.

With the analysis of these phases vulnerable zone can be determined. According to my view point in Digha coastal belt, mainly two CRZ zone one and two are very harmful impact on coastal ecology. That's why some scientific systematic step is listed below.

**ZONE –I :** This is more vulnerable zone where the storm hazard are occur with great devastated power in view of placement of maximum settlement sector. And also it is ecologically sensitive, biologically productive and rich in habitat biodiversity. The area is almost degraded due to any storm event. The area has to be entirely avoided for settlement, recreation or other development purpose. Preferably left out regeneration of natural vegetation and attainment of natural stability in course of time through the both physical & human process active in the area.

**ZONE-II :** This area included the zone of economic activity such as fishery, salt processing, tourism recreation centre and infrastructures development. This area was inundated about 3-4 mt. during or after storm hazard and damages the occupational structure. Land use activity is to be properly planned so as to maintain its present status. Construction along the margin of this zone should not create.

Now New Digha is a dissipative coast with wide gentle beach. It is an important tourist centre. According to CRZ notification it is under CRZ- II which is developed in nature. But there should be limitation on construction and zone of development.

But actual scene is reverse where human intervention is much more higher having a population density greater than its capacity. Constructions are going on in high rate whereas Old Digha is a reflective beach due to greater slope. Here type of breaker is mainly is surging & planning. The engineering construction and human intervention have intensified these characters. As a result more and more reflection of energy occurs and consequently coaster erosion is common with high rate.

The rules for CRZ have been relaxed and diluted since 1991 through several amendments in 1974, 1977, 2001, 2002 & 2003 by which limit of no development have been relaxed. Thus coastal system and ecology have been systematically eroded by the government.

So it is the crucial time to take necessary step and strategies against such vulnerable condition, otherwise inhabitants of there have to pay the penalty of Government negligence and deliberate action as did during killer Tsunami on 26<sup>th</sup> December,2004.

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