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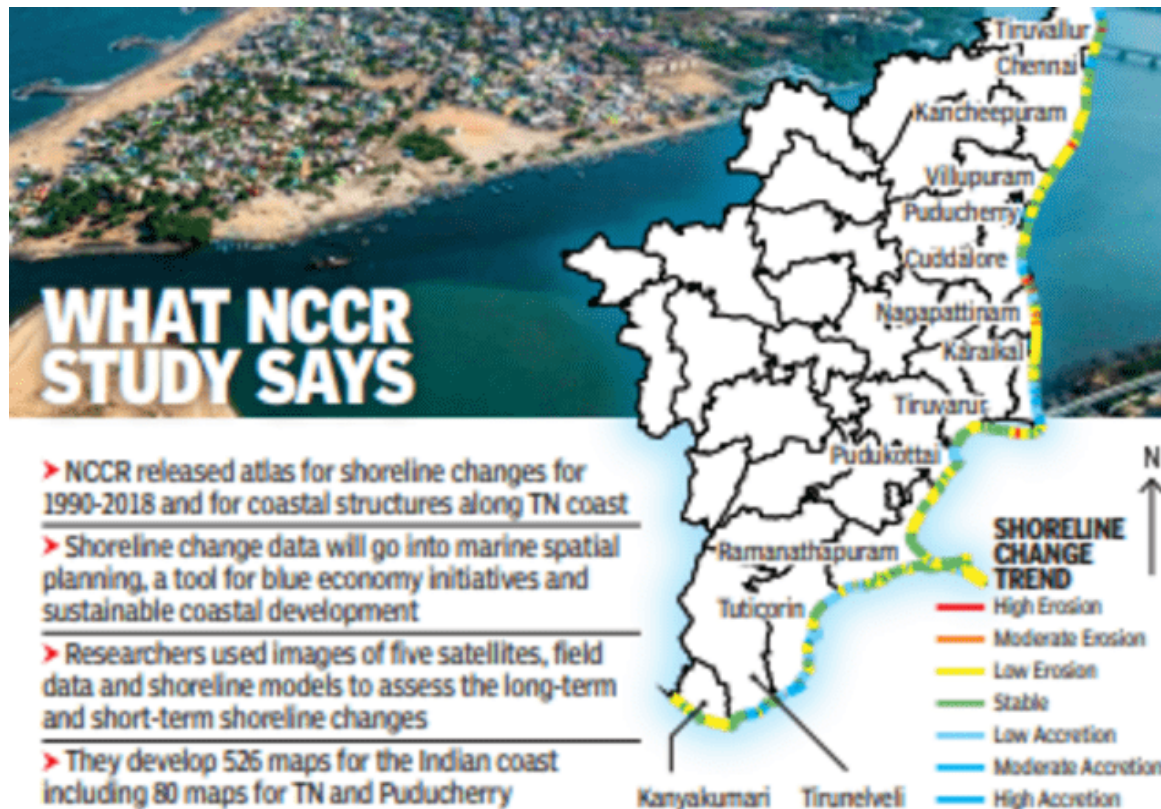
Coastline in Chennai, Tiruvallur & Kancheepuram changing shape

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CHENNAI: The groynes and breakwaters built to protect the coast from rough waves look picturesque, but city researchers mapping the coast have found the seawalls are causing untold damage to the coastline. These structures are protecting coasts in areas where they have been installed, but are resulting in erosion in adjoining areas.

A recent study by researchers from National Centre for Coastal Research (NCCR) found that nearly 50% of the 150km coast of Chennai, Tiruvallur and Kancheepuram is facing severe erosion, leading to 747 acres of land being lost. The study stated nearly 26km of the coast in these districts faces accretion (sand accumulation).



WHAT NCCR STUDY SAYS

- > NCCR released atlas for shoreline changes for 1990-2018 and for coastal structures along TN coast
- > Shoreline change data will go into marine spatial planning, a tool for blue economy initiatives and sustainable coastal development
- > Researchers used images of five satellites, field data and shoreline models to assess the long-term and short-term shoreline changes
- > They develop 526 maps for the Indian coast including 80 maps for TN and Puducherry

CAUSE OF EROSION, ACCRETION

- NATURAL CAUSES |**
Waves, tides, winds, nearshore currents, storms and sea level rise
- HUMAN INTERVENTION |**
Construction of harbours and ports, groynes, seawalls and jetties, dredging of tidal entrances and navigational channels, beach sand mining, destruction of mangroves and other natural buffers

HOW ARTIFICIAL STRUCTURES CAUSE EROSION

> Sediment moves parallel to and perpendicular to or from shore. Artificial structures interrupt sediment movement increasing the erosion

EROSION HOTSPOTS IN TN

- TIRUVALLUR**
Kattupalli port north | Chinnakuppam | Pulicat north | Periyakuppam | Kasikovil Kuppam
- KANCHEEPURAM**
Periyakuppam | Chinnakuppam | Oyalikuppam

ACCRETION HOTSPOTS IN TN

- CHENNAI** | Marina Beach
- TIRUVALLUR** | Pazhaverkadu

	Groynes/ jetty/pier	Port/fishing harbour
Tamil Nadu	251	45
Chennai	2	1
Tiruvallur	30	4
Kancheepuram	27	nil

This is mainly due to artificial structures such as ports, fishing harbours and seawalls along 50% of the coastline. The seawalls block the natural movement of sediments along the shore causing erosion and accretion in adjoining coastal areas, the study noted.

Tamil Nadu, with its 991.5km long coast, including artificial structures along a 134km stretch, is the fourth worst-affected coastal region in the country. Nearly 43% of its coast faces erosion with a loss of more than 4,450 acres of land. These findings were part of the shoreline change assessment atlas for 1990-2018 and the atlas of coastal structures along TN coast, released recently.

Chennai, with a 25km long coast, has seen accretion for nearly 10km. This includes the Marina beach. Researchers said the presence of Chennai Port has led to accretion south of the port and erosion towards the north.

“Accretion is not bad till it takes place in inlets preventing water exchange between the sea and estuary or backwaters, which affects its ecosystem. In Chennai, both Adyar and Cooum are blocked and there is no water exchange with the sea. This results in pollutants remaining in the estuary.

Water exchange is needed for health of the ecosystem such as mangroves,” said M V Ramana Murthy, director, NCCR. He explained that erosion in Thiruvallur is due to ports and in Kancheepuram due to a mix of development activities, structures such as the rock temple and groynes north of Muttukadu.

“All these are putting a lot of pressure on the coast,” he said. Kancheepuram is the third worst-affected district with 52km of its 84km coastline facing erosion. Ramanathapuram is the worst affected with 109km of its 272km coast facing erosion, followed by Nagapattinam where 60km of 126km coast is facing erosion.

In a recent Marine Spatial Planning (MSP) workshop, researchers discussed ‘soft’ alternative solutions such as beach nourishment and hybrid solutions to minimise impact of artificial structures.

The artificial reef and beach nourishment carried out to restore Puducherry's beaches are a good example. Tune Usha, group head, coastal hazards, training & capacity building, NCCR, said data on shoreline changes and coastal structures will be used to make decisions on coastal development and protection