Coastal Erosion

For Prelims: National Centre for Coastal Research, Marine Pollutions, Coastal processes **and** Hazards, Coastal Habitats and Ecosystem, Sea Level Rise, Disaster Management , Coastal Zone Management Plans , Flood Management Scheme, Coastal Management Information System

For Mains: Coastal erosion and its Impact on the Coastal Ecosystem.

Source: PIB

Why in News?

The Union Minister of State for Environment, Forest, and Climate Change, in a written reply to Lok Sabha, shared insights on **shoreline changes across the entire Indian coastline** from multi-spectral satellite images and field-surveyed data from 1990 to 2016 conducted by the **National Centre for Coastal Research (NCCR).**

- **NCCR**, an attached office of the **Ministry of Earth Sciences, Government of India**, has been mandated to carry out all **multidisciplinary research** under the central domain: Marine Pollutions, Coastal processes **and** Hazards, Coastal Habitats and Ecosystem **and Capacity Building and Training.**

What are the Key Observations of NCCR Regarding Coastal Erosion?

- Some stretches of **India's shoreline** are subject to varying degrees of **erosion** due to **natural causes** or **anthropogenic activities.**
- The **shoreline analysis** suggests that **34%** of the coast is eroding, **28%** is accreting and **38%** is in a stable state.
- The **state-wise analysis** suggests that in the **West Bengal (63%) and Pondicherry (57%)** coasts, erosion exceeds more than **50%,** followed by **Kerala (45%)** and **Tamil Nadu (41%).**
- **Odisha (51%)** is the only coastal state which is having more than **50%** of accretion.
- The receding coastline will cause **loss of land/habitat** and the **livelihood of fishermen** in terms of losing the space for **parking boats, mending nets** and **fishing operations.**

What Government Measures have been Taken to Combat Coastal Erosion?

- **Hazard Line: The Ministry of Environment, Forest & Climate Change (MoEFCC)** has delineated the **hazard line** for the entire coast of the country.
  - The hazard line is indicative of the **shoreline changes**, including **sea level rise** due to climate change.
  - This line is to be used by agencies in **Coastal States** as a tool for **Disaster Management** including planning of adaptive and mitigation measures.
- **Coastal Zone Management Plans:** The hazard line features in the new **Coastal Zone Management Plans** of the coastal States/Union territories approved by the MoEFCC.
- **Coastal Regulation Zone Notification, 2019 :** MoEFCC has notified **Coastal Regulation Zone**

Notification, 2019 with a view to conserve and protect **coastal stretches, marine areas** and to ensure **livelihood security** to the fisher and other local communities.
    - The coastal regulations, however, permit setting up of erosion control measures in the coast.
    - **No Development Zones (NDZ):** The notification also provides for **NDZ** along various categories of coastal areas to protect India's coastline from encroachment and erosion.
- **Flood Management Scheme:** This scheme is the **Ministry of Jal Shakti,** including anti-sea erosion schemes planned and executed by the State Governments with their own resources as per priorities of States.
    - The Union Government renders assistance to states which is **technical, advisory, catalytic and promotional** in nature.
- **Coastal Management Information System (CMIS):**
    - It has been initiated under the **Central Sector Plan Scheme "Development of Water Resources Information System".**
    - **CMIS** is a data collection activity carried out to collect **near shore coastal data** which can be used in **planning, design, construction and maintenance** of site specific coastal protection structures at vulnerable Coastal stretches.
- **Coastal Erosion Mitigation:** These measures have been taken up at **Puducherry** and **Chellanam in Kerala**, which helped in **restoration** and **protection of coastal areas** lost at Puducherry and flooding at **Chellanam Fishing Village.**
    - Technical support has been extended to the coastal States in the design of **coastal protection measures** at vulnerable stretches and preparation of Shoreline Management Plans.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelim:

Q. In India, the problem of soil erosion is associated with which of the following? (2014)

1. Terrace cultivation
2. Deforestation
3. Tropical climate

Select the correct answer using the code given below

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (b)

- Soil erosion is a natural process associated with geomorphic processes or agents such as running water, winds, coastal waves and glaciers.
- It occurs in forest lands, arid and semi-arid lands, agricultural lands, construction sites, roadways, disturbed lands, surface mines, glaciated and coastal areas and in areas where natural or geologic disturbances take place. In extreme cases, it may lead to total loss of soil and exposure of the bedrock.
- In India, the problem of soil erosion is most related to deforestation. Hence, 2 is correct.
- Perfectly conducted terrace cultivation captures the water. It is used for the purpose of inhibiting erosion, although extreme heavy rainfall will eventually erode the terrace. Without the terrace, the slope depends entirely on ground cover to prevent erosion. Thus, it can be said that terrace cultivation is a distant and a secondary cause of soil erosion when compared to deforestation. Hence, 1 is not correct.
- Regions in the tropical climate zones suffer the greatest rainfall-related soil erosion. While rainfall provides moisture critical for plant growth, it is also one of the prime causes of soil degradation, referred to as rainfall erosivity, which threatens food and water sustainability. However, tropical climate is not the most important soil erosion causing agent in India because the maximum area

under soil erosion comes under subtropical, temperate and alpine climate rather than a tropical climate. Hence, 3 is not correct.

- Therefore, option (b) is the correct answer.