GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 2116
ANSWERED ON 18/12/2025

SAFETY OF EROSION PRONE STRETCHES

2116 SHRI NARHARI AMIN:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the State-wise details of existing erosion-prone stretches along shore lines and the mitigation measures presently being implemented;
(b) the status of infrastructure created in recent years for coastal and marine research and the services being provided to coastal communities, fishers and disaster management agencies; and;
(c) the initiatives undertaken by the Ministry during the last year to enhance public awareness on coastal safety, ocean literacy and Earth Sciences, particularly among students and coastal population?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCES AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) National Centre for Coastal Research (NCCR), an attached office of Ministry of Earth Sciences has carried out an assessment of shoreline changes along the Indian coast using remote-sensing datasets and in-situ observations for the period 1990–2022. As per the analysis, 34.2% of the Indian coastline is eroding, 39.5% is stable, and 26.3% is accreting. State-wise status of shorelines is given in the table below.

Shoreline Change Status (1990-2022)				
Coastal States	**Coastal Length (km)**	**Erosion**	**Stable**	**Accretion**
		(In %)		
Gujarat	2175.7	31.2	46.1	22.7
Daman & Diu	52.3	29.4	15.8	7.1
Maharashtra	739.6	25.5	64.6	10.0
Goa	174.5	15.3	75.0	9.7
Karnataka	313.0	23.7	50.1	26.2
Kerala	593.0	43.9	35.7	20.5
Tamil Nadu	991.5	39.2	40.6	20.2
Puducherry	41.7	47.3	44.4	8.3
Andhra Pradesh	1027.6	31.0	24.9	44.0
Odisha	565.12	28.3	17.6	54.6
West Bengal	534.4	60.5	14.3	25.2
Total	7188.57	**34.2**	**39.5**	**26.3**

Mitigation Measures:

(i) NCCR has developed comprehensive shoreline maps for the Indian mainland at 1:25,000 scale, covering 9 coastal States and 2 Union Territories to identify erosion-prone zones, and shared these maps with Central and State agencies for mitigation planning. An updated Shoreline Change Atlas, along with its digital version, was released on 25 March 2022.

(ii) NCCR has supported coastal protection works in UT Puducherry and Chellanam (Kerala), leading to beach restoration and reduced flooding. Additionally, NCCR has prepared Shoreline Management Plans (SMPs) for Andhra Pradesh, Kerala, Puducherry and Tamil Nadu, integrating geomorphology, tidal inlets, eco-sensitive areas, infrastructure and socio-economic factors, as mandated by the National Green Tribunal. The Draft SMPs have been submitted to the respective State Governments along with Coastal Zone Management Plan (CZMP) maps and NCCR continues to provide technical support for their dissemination and implementation of mitigation measures.

(iii) Further, the Ministry of Home Affairs (MHA) has issued the "Guidelines for Appraisal and Release of Funds for Coastal and River Erosion" under the National Disaster Mitigation Fund (NDMF), announced on 20th June 2024, following the 15th Finance Commission's recommendations. These guidelines provide for both erosion mitigation works and resettlement of displaced populations through the National Disaster Response Fund (NDRF), with a recommended outlay of ₹1500 crore for 2021–26. This ensures that even smaller cities affected by erosion and climate-related hazards receive financial and logistical support.

(iv) Ministry of Environment, Forest & Climate Change 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. The hazard line features in the new Coastal Zone Management Plans (CZMP) of the coastal States/Union territories approved by the MoEF&CC

(v) MoEF&CC has also 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. The notification also provides for No Development Zones (NDZ) along various categories of coastal areas to protect India's coastline from encroachment and erosion.

(vi) In addition, considering the importance of collection of data on coastal processes towards coastal protection measures, a new component "Coastal Management Information System (CMIS)" was 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. Establishment of three sites each in the State of Kerala, Tamil Nadu and UT of Puducherry has been completed.

(b) In recent years, significant coastal and marine research infrastructure has been established to strengthen ocean observations, forecasting, and community-oriented services. Modern observational networks—including moored and drifting buoys, wave rider buoys, HF radars, coastal tide gauges, tsunami early warning systems, and marine water quality monitoring stations—have been expanded and upgraded along the Indian coast. High-performance computing systems, advanced ocean modelling facilities, and state-of-the-art laboratories for Coastal and Marine research have also been developed across various MoES institutes. The Indian National Centre for Ocean Information Services (INCOIS), an autonomous body under the Ministry of Earth Sciences (MoES) provides a comprehensive suite of ocean-based early warning services such as tsunami early warnings, storm-surge alerts, high-wave and ocean-current forecasts, and swell-surge advisories. INCOIS also issues Potential Fishing Zone (PFZ) advisories to assist fishermen in identifying areas of likely fish abundance, thereby saving time, fuel, and effort while enhancing their safety at sea. In addition, INCOIS also delivers specialized products such as search and rescue support, oil-spill trajectory forecasts, small-vessel advisories, marine heatwave information, and a range of ocean state services for coastal user communities, including state and district disaster management authorities.

The Government is actively integrating community participation and spatial planning as part of its approach to build effective and inclusive coastal resilience. This is reflected in the Integrated Coastal Risk Mitigation and Resilience Programme (ICRMRP), developed by the National Disaster Management Authority (NDMA). The ICRMRP adopts a seven-component framework that includes not only technical and infrastructural measures such as risk assessment, early warning systems, and ecosystem resilience, but also community capacity building and sustainable development planning. These components emphasize active involvement of local communities in resilience efforts and promote spatial planning that considers socio-economic vulnerability, environmental sensitivity, and long-term sustainability.

(c) The Indian National Centre for Ocean Information Services (INCOIS), strengthens awareness, preparedness, and response to ocean-related hazards through regular capacity-building programmes, including workshops, trainings, awareness events, and tsunami mock drills. In the past year, it organised two major marine multi-hazard awareness conclaves—one in Chennai (29 August 2025) for the East Coast and another in Goa (12 September 2025) for the West Coast—along with several specialized training courses and 15 field-level user interactions. Nearly 5,000 students visited INCOIS labs for educational exposure. INCOIS also conducted tsunami mock exercises on 15 October and 5 November 2025 and continued its support to coastal communities under the Tsunami Ready Programme. National Centre for Coastal Research (NCCR) has conducted the ‘Blue Belt’ - an outreach activity during this year at Puducherry and awareness campaigns were carried out regarding ocean literacy, services, and resources for sustainability. NCCR and MoES are conducting the coastal clean-up campaigns every year, across the coastal states & UTs, involving the students, researchers, academicians, stakeholders including fisher folks and citizens from all walks of life, Institutes, Universities, Colleges, Government Departments and NGOs for creating awareness about marine pollution and ocean literacy.

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