GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UNSTARRED QUESTION NO. 3256
TO BE ANSWERED ON 21.08.2025

Coastal vulnerability due to sea-level rise

3256. SMT. SUDHA MURTY:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

(a) whether Government has conducted any study to identify the stretches of India's coastline, including coastal cities, that are most susceptible to flooding and erosion due to rising sea levels caused by global warming; and
(b) whether Government is considering the construction of dikes or other long-term coastal protection measures in these vulnerable areas and if so, the details thereof?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI KIRTI VARDHAN SINGH)

(a) Sea level rise is a slow phenomenon and varies globally. Based on the study by the Indian National Centre for Ocean Information Services (INCOIS) an autonomous institute under Ministry of Earth Sciences and scientific studies, on an average, at present, the sea level along the Indian coast is estimated to be rising at about 1.7 mm/year. INCOIS has prepared a report on the projected climate change induced rise in sea levels and coastal vulnerability along the Indian coasts as part of the Deep Ocean Mission. This report presents a comprehensive assessment of future sea-level rise and its implications for coastal India and the associated vulnerable maps. INCOIS also has published Coastal Vulnerability Index (CVI) maps at 1:100000 scale for some major cities based on the assessment of probable implications on the coast due to sea level rise, coastal slope, shoreline change rate, coastal elevation, coastal geomorphology, tidal range and significant wave height.

The Cumulative Vulnerability Studies under Green Climate Fund - "Enhancing Climate Resilience of India's Coastal Communities" project highlights how climate risks affect coastal communities by considering hazards, ecosystem sensitivity, and livelihoods.

A ‘Hazard line’ has been demarcated by the Survey of India (SOI) taking into account the extent of the flooding on the land area due to water level fluctuations, sea level rise and shoreline changes occurring over a period of time.

The Coastal Management Information System (CMIS) is maintained by the Central Water and Power Research Station (CWPRS) under Ministry of Jal Shakti to address the challenges of coastal erosion through a scientific and data driven approach. CMIS was developed to systematically collect and analyze key coastal parameters to support effective coastal

protection planning, erosion mitigation, and climate adaptation by providing reliable, site-specific data.

National Centre for Coastal Research (NCCR), under the Ministry of Earth Sciences, has developed a digital atlas namely National Shoreline Atlas System (NSAS) wherein the shoreline changes, erosion, and accretion hotspots are identified periodically and this information is provided to the coastal States for coastal mitigation activities. NCCR offers scientific and technical support to coastal states by developing Shoreline Management Plans (SMP).

(b) Adaptation strategies and long-term coastal resilience-building measures are being undertaken to enhance preparedness in coastal areas.

i. The Government of India is implementing the National Action Plan on Climate Change (NAPCC), which comprises Missions in specific areas. All these Missions focus on strategies to combat the adverse impacts of climate change, and, are institutionalized and implemented by the respective Nodal Ministries/Departments. Further, States and Union Territories have prepared their respective State Action Plans on Climate Change (SAPCCs). The SAPCCs are designed to be context specific, and inter-alia, provide adaptation strategies considering each State's and UT's different ecological, social, and economic conditions.
ii. Integrated Coastal Risk Mitigation and Resilience Programme (ICRMRP), is developed by the National Disaster Management Authority (NDMA) which integrates community participation and spatial planning to build effective and inclusive coastal resilience.
iii. Ministry of Environment, Forest and Climate Change (MoEFCC) has notified the Coastal Regulation Zone (CRZ) Notification, 2019 with a view to conserving and protecting coastal stretches, marine areas and to ensure livelihood security for fishermen and other local communities. The CRZ Notification permits establishment of erosion control measures along the coast.
iv. Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) has been launched to comprehensively explore the possible area for development of Mangroves cover across various coastal States and Union Territories. Compensatory Afforestation Fund Management and Planning Authority (CAMPA) and programmes such as National Afforestation Programme etc. support afforestation activities across the country, including in coastal districts.

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