GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 1324
ANSWERED ON 31/07/2025

SEA-LEVEL RISE AND COASTAL CITY VULNERABILITIES

1324 DR. FAUZIA KHAN:

Will the Minister of **Earth Sciences** be pleased to state:

(a) the details of measures being taken to protect major coastal cities like Mumbai, Chennai, and Kolkata from rising sea levels;
(b) whether adaptation strategies are being developed to support smaller and mid-sized coastal cities that lack resources but face high vulnerability;
(c) if so, the details thereof and if not, the reasons therefor;
(d) the steps taken to safeguard critical infrastructure, freshwater sources, and livelihoods from flooding and saltwater intrusion in coastal regions;
(e) whether Government is integrating community participation and spatial planning for effective, inclusive coastal resilience; and
(f) if so, the details thereof and if not, the reasons therefor?

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

(a) Indian National Centre for Ocean Information and Services (INCOIS), an autonomous institute under Ministry of Earth Sciences has prepared an interim report on the projected climate change induced Extreme Sea Levels and coastal vulnerability along the Indian coasts as part of 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 for the 11 selected locations along the Indian coast. INCOIS also has published Coastal Vulnerability Index (CVI) maps at 1:100000 scale have been prepared including Mumbai, Chennai and Kolkata based on the assessment of probable implications to the coast due to sea level rise, coastal slope, shoreline change rate, coastal elevation, coastal geomorphology, tidal range and significant wave height.

Further, 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 (erosion or accretion) occurring over a period of time.

(b) &(c) Yes. Adaptation strategies are being developed to support smaller and mid-sized coastal cities that face high vulnerability but often lack adequate resources. The Government of India has initiated comprehensive strategies and action plans focused on climate change adaptation, mitigation, and resilience-building specifically for coastal areas as follows.

- the Government of India is implementing the National Action Plan on Climate Change (NAPCC) through MoEF & CC, which comprises Missions in specific areas. Six out of nine Missions under NAPCC focus on adaptation in water, habitat, agriculture, the Himalayan ecosystem, human health, and strategic knowledge of climate change. 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, thirty-four 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 different ecological, social, and economic conditions.

- the issuance of 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

- NCCR offers scientific and technical support to coastal states by developing Shoreline Management Plans (SMP). These SMPs not only focus on safeguarding the coast but also address challenges such as the unintended impacts of hard engineering structures and the escalating risks posed by climate change.

- NCCR, has undertaken the compilation of a report and atlas on coastal bio-shields across India's coastal states which provides detailed village-level data on existing bio-shields along the shoreline which act as nature based solutions.

(d) The various steps to safeguard the critical coastal infrastructure, freshwater sources, and livelihoods from flooding and saltwater intrusion in coastal regions are planned & executed by respective Maritime States/UT Governments. The Central government plays only a promotional, advisory & catalytic role in it. These projects are generally funded by States/ UTs from their own fund or from multilateral funding or through Central Assistance.

However, few of the steps taken by the Central Government to address the issues of coastal erosion are as given below:

- Implementation of Coastal Management Information System (CMIS): The CMIS was initiated during the 12th Five-Year Plan to address the challenges of coastal erosion through a scientific and data driven approach. Recognizing the absence of a dedicated coastal data repository, CMIS was developed to systematically collect and analyze key coastal parameters. The primary objective of CMIS is to support effective coastal protection planning, erosion mitigation, and climate adaptation by providing reliable, site-specific data.

- National Centre for Coastal Research (NCCR), an attached office of the Ministry of Earth Sciences, is mapping the shoreline changes along the Indian coast to enhance the country's preparedness to face coastal hazards like storm surges, tsunami, etc. and to guide towards sustainable coastal development. NCCR has prepared and published a status report on "National Assessment of Shoreline changes along Indian Coasts in March 2022.This report provides the status of coastline of the Indian mainland by classifying them into Erosion, Accreting and Stable coasts.

(e) &(f) Yes. The Government is integrating community participation and spatial planning as part of its approach to building 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.

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