

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
LOK SABHA  
UNSTARRED QUESTION NO. 1751  
TO BE ANSWERED ON WEDNESDAY, 13<sup>TH</sup> DECEMBER, 2023**

**RISING SEA LEVELS**

1751. SHRI D.K. SURESH:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether it is true that the sea level has been rising over the past century and the rate has accelerated in the recent decades;
- (b) if so, the details thereof;
- (c) whether the Government has identified the areas that are under the threat due to rise in sea level, if so, the details thereof; and
- (d) whether the Government has prepared any plan for the protection and preservation of the habitation, if so, the details thereof?

**ANSWER  
THE MINISTER OF EARTH SCIENCES  
(SHRI KIREN RIJJU)**

- (a) Yes sir.
- (b) According to the latest report by World Meteorological Organization (WMO) entitled "Provisional State of the Global Climate 2023", global sea level continued to rise in 2023. Further, the rate of sea level rise has accelerated in the recent decades. The WMO report says that: "The long-term rate of sea level rise has more than doubled since the start of the satellite record, increasing from 2.14 mm per year between 1993 and 2002 to 4.72 mm per year between 2013 and 2022."
- (c) The direct impact of sea level rise on coastal areas has not been carried out by the Ministry. However, Indian National Centre for Ocean Information and Services (INCOIS), an autonomous institute under Ministry of Earth Sciences has carried out the following studies by incorporating sea level change as one among many other parameters.
  - (i) Coastal Vulnerability Index (CVI) maps at 1:100000 scale have been prepared based on the assessment of probable implications to the coast due to sea level rise (climatic and momentary due to tsunami/storm surge), coastal slope, shoreline change rate, coastal elevation, coastal geomorphology, tidal range and significant wave height.
  - (ii) INCOIS has also prepared the Multi-Hazard Vulnerability Maps (MHVM) for the mainland of India at 1:25000 scale. These maps were prepared based on the composites of extreme water levels recorded by the tide gauges and published literature, shoreline change rate estimated from satellite data, rate of sea level change and high-resolution topographic data (Airborne Lidar Terrain Mapping, and Digital Terrain Models derived from Cartosat-1 data). The MHVM indicates the probable areas of the coast that would get flooded due to oceanogenic disasters like tsunamis and storm surges in 100-year return periods.

- (iii) 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.
- (d) The Ministry of Environment, Forest and Climate Change had notified the Coastal Regulation Zone Notification 2019 issued vide the Notification G.S.R. 37(E) dated 18th January 2019, with a view to ensuring livelihood security to the fisher communities and other local communities living in the coastal areas, to conserve and protect coastal stretches. As per the said Notification, coastal areas are declared as Coastal Regulation Zone, wherein setting up and expansion of industries, operation and process are restricted and require prior clearances for permitted and regulated activities as per provisions of the said Notifications.

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