

GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 663**  
ANSWERED ON 08/02/2024

**Rising Sea Level**

663 Shri C. Ve. Shanmugam:

Will the Minister of **EARTH SCIENCES** be pleased to state:

- (a) whether it is a fact that the sea level has risen tremendously over the past decade or so;
- (b) if so, the details thereof and the reasons therefor;
- (c) whether Government has analyzed the zones that would be under threat due to the continuous rise of sea level;
- (d) if so, the details thereof;
- (e) whether Government has any plan to protect the habitations; and
- (f) if so, the details thereof and if not, the reasons therefor?

**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: "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". The reason can be either long-term climatic or momentary due to storm surge associated with tsunami or cyclone.
- (c) & (d) The direct impact of sea level rise on coastal areas has not been carried out by the Ministry of Earth Sciences (MoES). However, Indian National Centre for Ocean Information and Services (INCOIS), an autonomous institute under MoES 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, 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.
- (e) Yes Sir.
- (f) 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 processing are restricted and require prior clearances for permitted and regulated activities as per provisions of the said Notification.

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