GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
STARRED QUESTION No. - *17
ANSWERED ON 08/12/2022

IMPACT OF GLOBAL WARMING

***17. SHRI PRAMOD TIWARI:**

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether Government has a plan for the protection and preservation of people and the areas which are under the threat of submergence due to factors arising from global warming;
(b) whether Government is considering long-term monitoring programmes to study the likely impact of increasing sea level on habitation, including agriculture, local businesses and lives of the people affected; and
(c) 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) to (c): A statement is laid on the table of the House.

STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY TO PARTS (a) to (c) OF STARRED QUESTION NO.* 17 REGARDING **'IMPACT OF GLOBAL WARMING** FOR ANSWER ON THURSDAY, DECEMBER 08, 2022

(a) Indian National Centre for Ocean Information Services (INCOIS) an autonomous organization of MoES, has prepared and published an atlas of Coastal Vulnerability Index (CVI) maps for the entire coastline of India at 1:100000 scale using data on sea level rise, coastal slope, shoreline change rate, coastal elevation, coastal geomorphology, tidal range and significant wave height. There are 526 maps prepared for entire Indian coast for identifying areas vulnerable to coastal erosion in 1:25000 scale along with 66 district maps, 10 state /UT maps. In addition, National Centre for Coastal Research (NCCR), Chennai an attached office of the Ministry of Earth Sciences (MoES) is monitoring the shoreline erosion since 1990 using remote sensing data and GIS mapping techniques. About 6,632 km long Indian coastline of mainland has been analyzed from 1990 to 2018. It is noted that about 32% of the coastline is under varying degree of erosion, 27% is of accreting nature and the remaining 41% is in a stable state. In terms of protection and preservation of people, the XVth Finance Commission has suggested that NDMA and/ or Ministry of Home Affairs may develop suitable norms for mitigation measures to prevent erosion and both the Union and the State Governments develop a policy to deal with the extensive displacement of people caused by coastal and river erosion.

(b) & (c) The direct impact of sea level rise on habitation, agriculture and local businesses were not carried out by Ministry of Earth Sciences. However, in addition to the Coastal Vulnerability Index (CVI), INCOIShas undertaken several activities to measure the ongoing sea level rise all along the coast of India. As per the studies conducted the sea levels are changing at different rates along the Indian coast. The long-term data on monthly mean sea levels obtained from the sea level gauges installed at the major ports were used to carry out the analysis. The rate of relative sea level change at 11 major ports are shown in the table below. Government of India, under Deep Ocean Mission (DOM) via INCOIS deploying various state of art instruments like Argo floats, glides. Along with these instruments and satellite data and models, INCOIS studying the impact of sea level in the Indian Ocean region.

Table: The relative sea level change at 11 major ports as follows.

Sl. No.	**Location**	**Rate of change of sea level (mm/year)**	**Duration of data used (years)**
1	Chennai	0.33	1916-2005
2	Diamond Harbour	5.16	1948-2005
3	Haldia	2.89	1972-2005
4	Kandla	3.18	1950-2005
5	Kochi	1.30	1939-2005
6	Mumbai	0.74	1878-2005
7	Paradeep	1.03	1966-2005
8	Port Blair	2.20	1916-1964
9	Vizag	0.97	1937-2005
10	Okha	1.50	1964-1991
11	Vizag	0.97	1937-2005

In addition, NDMA has constructed "Saline Embankment" in the State of Andhra Pradesh and Odisha to guide the flow and to avoid flooding and ingress of salinity into the habitations and agriculture lands under National Cyclone Risk Mitigation Project (NCRMP Phase-I)

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