GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
STARRED QUESTION No. *228
ANSWERED ON 10/08/2023

RISING SEA LEVEL IMPACT ON COASTAL AREAS

***228. SHRI MASTHAN RAO BEEDA:**

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

(a) whether Government is aware that India is one of the few countries which is at greatest risk of experiencing rising sea levels worldwide and subsequently, an increased risk of flooding;
(b) if so, the steps Ministry has taken to mitigate such effects;
(c) the steps Ministry has taken to enhance resilience against climate change for extra vulnerable States like Andhra Pradesh which has second longest coastline;
(d) Government's plan to invest in national projects like application of Space Technology to obtain real-time information on major disasters like floods and cyclones; and
(e) if so, the details thereof?

ANSWER
THE MINISTER OF EARTH SCIENCES
(SHRI KIREN RIJIJU)

(a) to (e): 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 (e) OF STARRED QUESTION NO.*228 REGARDING 'RISING SEA LEVEL IMPACT ON COASTAL AREAS' FOR ANSWER ON THURSDAY, AUGUST 10, 2023

(a) & (b) Yes Sir. As per the Intergovernmental Panel on Climate Change (IPCC) Working Group I report released in August 2021, global mean sea level increased by 0.20 (0.15-0.25) m between 1901 and 2018. The average rate of sea level rise was 1.3 (0.6-2.1) mm/year between 1901-1971, increasing to 1.9 (0.8-2.9) mm/year between 1971 and 2006, and further increasing to 3.7 (3.2 to 4.2) mm/year between 2006 and 2018. Based on scientific studies and the recent climate assessment report of the Ministry of Earth Sciences (MoES), the sea level in the Indian Ocean was observed to be rising at an average rate of about 1.7 mm/year with 3.3 mm/year in the recent decades (1993-2015). It was observed that the sea levels are changing at different rates along the Indian coast. The rate of sea level rise may also include manifestations in sea level change due to the subsidence or uplift of land at those locations. Since no long-term data on land subsidence or upliftment is available for these locations, the rate of increase of sea level due to the changes in climate could not be separated. National Centre for Coastal Research (NCCR), an attached office of MoES has developed WebGIS based digital Atlas namely National Shoreline Atlas System (NSAS) wherein the shoreline changes, erosion, accretion hotspots are identified periodically and this information is provided to the coastal States for coastal mitigation activities. NCCR also works with the coastal States and helps in designing suitable coastal protection structure to mitigate the effects of changing climate.

(c) Indian National Centre for Ocean Information System (INCOIS) has carried out Coastal Vulnerability Index (CVI) mapping to assess the probable implications of sea level rise along the Indian coast including coastal areas of Andhra Pradesh. National Centre for Coastal Research (NCCR) has studied the shoreline changes along Indian coast using satellite and field data and mapped the entire Indian mainland coast for the period 1990-2018. It is observed that 28.7% of the coastline is under varying degrees of erosion 21.7 % is under stable and 49.6% is under varying degree of accretion along the coast of Andhra Pradesh. Ministry of Environment, Forest and Climate Change (MoEF&CC) commissioned a study to assess the extent of the effects of climate change and rising sea levels on the Andhra Pradesh coastline. Under the project entitled "Enhancing Climate Resilience of India's Coastal Communities" supported by the Green Climate Fund an integrated coastal climate vulnerability assessment framework has been developed. The Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) is launched to comprehensively explore the possible area for development of Mangroves covering approximately 540 Sq. km. spread across 11 States and 2 Union Territories during five years commencing FY 2023–24 onwards. This will enhance resilience against climate change for extra vulnerable coastal stretches of Andhra Pradesh.

(d)&(e) Yes Sir. National projects on application of space technology to obtain real-time information on major disasters like floods and cyclones are already existing. Under Disaster Management Support Program, Indian Space Research Organisation (ISRO) continuously monitors and provides a near real time space based inputs on flood and cyclones to concerned central and state Disaster Management agencies of the country. National Information system for Climate and Environment (NICES) at National Remote Sensing Centre (NRSC), ISRO is providing information on geophysical variables, relevant to climate and environmental variables, derived from space and ground-based observations. These include ocean, atmosphere, terrestrial and cryospheric products, which are being made accessible through NICES/Bhuvan geoportal. NCCR has developed integrated flooding warning system (i-FLOWS) using space technology along with numerical weather models, GIS technology and flood modeling. Such system is operational for two coastal cities namely Chennai and Mumbai.

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