

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARRED QUESTION NO. 2426
TO BE ANSWERED ON 18.12.2023

Rising Sea Level

2426. SHRI MADDILA GURUMOORTHY:
SHRI MAGUNTA SREENIVASULU REDDY:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

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

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI ASHWINI KUMAR CHOUBEY)

(a) to (c) Sea level rise is a slow phenomenon and varies globally depending on local site factors. As per the Intergovernmental Panel on Climate Change (IPCC) Working Group I report released in August 2021, global mean sea level rose 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 2016 and 2018. In line with this global trend and based on the study by the Indian National Centre for Ocean Information Services (INCOIS) as well as the studies published in scientific literature, on an average, at present, the sea level along the Indian coast is estimated to be rising at about 1.7 mm/year. 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 upliftment 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.

Ministry of Environment, Forest and Climate Change (MoEFCC) has commissioned a study to assess the extent of effects of climate change and rising sea levels on the coastline including Andhra Pradesh. Under the project titled "Enhancing Climate Resilience of India's Coastal Communities", supported by the Green Climate Fund, an integrated coastal climate vulnerability assessment framework has been developed, including gender aspects, for use in adaptation planning at village and landscape levels, which includes assessment of physical, ecological and socio-economic vulnerabilities of the Indian coastal landscape.

Further, National Disaster Management Authority (NDMA) has undertaken the flood risk assessment for all the flood prone districts in India in consultation with the states. NDMA has undertaken the study to prepare district level flood hazard atlas. The preparation of flood hazard Atlas was entrusted to National Remote Sensing Centre (NRSC), Hyderabad. The district wise flood hazard Atlases have been prepared for most flood vulnerable states which includes the state of Andhra Pradesh. The Government of India is committed to take proactive steps in combating sea erosion and protection of India's coastal areas and the coastal communities. The MoEFCC has notified the Coastal Regulation Zone (CRZ) Notification, 2019 with a view to conserving and protecting coastal stretches, marine areas and to ensure livelihood security for fishermen and other local communities. The CRZ Notification permits establishment of erosion control measures (preferably soft solutions) along the coast.

To protect the coastal areas from erosion, initiatives such as mangrove plantations and shelterbelt plantations have been carried out for the entire coastline of India. A new scheme 'Mangrove Initiative for Shoreline Habitats & Tangible Incomes' (MISHTI) envisage to comprehensively explore the possible area for development of Mangroves covering approximately 540 Sq. Kms. spreading across 11 States and 2 Union Territories during five years commencing FY 2023-24 onwards.

Schemes / programmes such as the Compensatory Afforestation Fund Management and Planning Authority (CAMPA), National Afforestation Programme etc. support afforestation activities across the country, including in coastal districts of Andhra Pradesh. Besides, the State has its own conservation and afforestation programmes, including for mangroves. Further, the Central Water Commission has published guidelines for "Protection and Control of Coastal Erosion in India" in 2020 to provide the preliminary design parameters for suitable coastal protection works for different stretches of coastline. MoEFCC has also delineated the hazard line for the entire coast of the country. The hazard line is indicative of the shoreline changes, including sea level rise due to climate change. This line is used by agencies in Coastal States as a tool for disaster management including planning of adaptive and mitigation measures.

Further, National Disaster Management Authority (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).

(d) and (e) National Information system for Climate and Environment Studies (NICES) at National Remote Sensing Centre (NRSC), Indian Space Research Organisation (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.

Government of India, under Deep Ocean Mission (DOM) via Indian National Centre for Ocean Information Services (INCOIS) deploying various state of art instruments like Argo floats, glides etc. Along with these instruments and satellite data and models, INCOIS is studying the impact of sea level in the Indian Ocean region.

A web based Dynamic Composite Risk Atlas and Decision Support System (Web-DCRA and DSS) Tool for Cyclone impacts forecasting covering all 13 coastal States and Union Territories of the country has been developed under National Cyclone Risk Mitigation Project Phase II. The Web-DCRA tool provides real-time forecast for location specific cyclonic wind and inundation level due to storm surge, cyclone induced rainfall and riverine States for evacuation planning and placing of resources such as National Disaster Response Force, State Disaster Response Force, Fire and Emergency services and community volunteers/task forces for real time response.
