

**GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA**

UNSTARRED QUESTION NO:1573

ANSWERED ON:04.03.2015

GLOBAL WARMING

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Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether due to global warming the sea level is rising and posing threat to coastal villages in the country; and
- (b) if so, the details thereof and the reaction of the Government thereto?

Answer

MINISTER FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES (DR. HARSH VARDHAN)

(a) Sea-level rise is a very slow phenomenon and is manifested globally with pockets of sea-level rise/fall trends due to a variety of physical factors like normal subsidence, coastal erosion and siltation of river channels along the coastline, apart from global warming. Recently released Fifth Assessment Report (AR5) of Intergovernmental Panel on Climate Change (IPCC) suggests that global mean sea level has risen by 190 mm over the period 1901-2010. The satellite based linear trend during 1993-2011 is estimated to be 3.2 ± 0.5 mm/year that is about 60% higher than the best estimate of 2.0 mm/year by the Intergovernmental Panel on Climate Change (IPCC), 2007 Assessment Report. However, the estimated sea level rise by the tide gauge records (of over 200) for the period 1993-2009 is found to be about 2.8 ± 0.8 mm/year.

(b) Various studies have been undertaken using remote sensing techniques in the past for assessing the shoreline changes; mapping and delineation of entire coastal wetlands including beach vegetation, bio-shields, sea grass, opening of lagoons in certain cases and small islands etc including their regeneration/preservation. Earth System Science Organization-Integrated Coastal and Marine Area Management (ESSO-ICMAM) Directorate of the Ministry of Earth Sciences (MoES) has carried out mapping and demarcating of multi-hazard coastal vulnerability for the entire coast of India. Based on the recommendations of the expert committee report of the Prof M. S. Swaminathan, the Ministry of Environment and Forests (MoEF) is making efforts to implement an Integrated Coastal Zone Management (ICZM) Plan for India. Accordingly, the Central Government has issued CRZ-2011 notification with a view to ensure livelihood security to the fisher communities and other local communities, living in the coastal areas, to conserve and protect coastal stretches, its unique environment and its marine area and to promote development in a sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas, sea level rise due to global warming, does hereby, declare the coastal stretches of the country and the water area upto its territorial water limit, excluding the islands of Andaman and Nicobar and Lakshadweep and the marine areas surrounding these islands up to its territorial limit, as CRZ and restricts the setting up and expansion of any industry, operations or processes and manufacture or handling or storage or disposal of hazardous substances as specified in the Hazardous Substances in the aforesaid CRZ. The MoEF had also launched an Integrated Coastal Zone Management Project by establishing a Society of Integrated Coastal Management (SICOM). Under the project, SICOM would be implementing the four components, namely, (i) National Coastal Management Programme; (ii) ICZM-West Bengal; (iii) ICZM-Orissa; (iv) ICZM-Gujarat. National component includes (a) Demarcation of hazard line for mapping the entire coastline of the mainland of the country; (b) A National Centre for Sustainable Coastal Management (NCSCM) has been established within the campus of Anna University, Chennai with its regional centres in each of the coastal States/Union territories to promote research and development in the area of coastal management including addressing issues of coastal communities. Sea-level rise can have long term impacts along the coastline. In general, it is expected that east coast of India will be more vulnerable than the west coast because of its low lying nature and hence the tendency of coastal flooding will rise, if the sea level rises significantly. Multi-hazard approach that fully accounts for holistic coastal vulnerability arising from the Earthquake, Cyclones, Flood, Storm Surge and Tsunami etc is considered for developing hazard resistant design criteria for construction of on-shore infrastructure viz., houses, buildings, special economic zones (SEZs), ports, construction of bridges for evacuation of habitants in low lying zones like Sundarbans, Bay Islands etc, Industrial and Infrastructure Corridors. Future projections of sea level involve uncertainties which make it difficult to predict impacts with sufficient level of confidence. Quantifying the effects of heat and fresh water balance, as well as the large-scale circulation changes and basin geometry changes due to tectonic activities, through the use of observations and numerical models is crucial for understanding the subtle sea-level changes occurring in the north Indian Ocean. India's National Action Plan on Climate Change (NAPCC) outlines a strategy that aims to enable the country adapt to climate change and enhances the ecological sustainability of our development path.