GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA

STARRED QUESTION NO:109
ANSWERED ON:12.12.2013
RISE IN SEA LEVEL
Muttemwar Shri Vilas Baburao

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government is aware that the sea level is rising owing to global warming which pose a threat to the coastal villages of the country;

(b) if so, the details thereof and the reaction of the Government thereto;

(c) whether the unorganised development in coastal areas and decrease of green belt as a result thereof, unrestrained tourism and lackadaisical approach towards coastal conservation laws pose a grave environmental threat to the coastal areas and if so, the details thereof;

(d) whether the Government has conducted any study in this regard and if so, the outcome thereof; and

(e) the steps taken/being taken by the Government to address the problem?

Answer

MINISTER FOR MINISTRY OF SCIENCE & TECHNOLOGY AND MINISTRY OF EARTH SCIENCES (SHRI S. JAIPAL REDDY)

a)- e) A statement is laid on the Table of the House.

STATEMENT LAID ON THE TABLE OF THE LOK SABHA IN REPLY TO (a) to (e) OF STARRED QUESTION No. 109 REGARDING "RISE IN SEA LEVEL" ASKED BY SHRI VILAS MUTTEMWAR FOR ANSWER ON THURSDAY, DECEMBER 12, 2013

(a) Yes Madam.

(b) Sea level rise is a very slow phenomenon and is manifested globally with pockets of sea level rise/fall trends. Recently released Fifth Assessment Report (AR5) of Intergovernmental Panel on Climate Change (IPCC) suggests that global mean sea level has risen by 0.19m over the period 1901-2010.
Further, IPCC-AR5 reported that the mean rate of global averaged sea level rise was 1.7mm/year between 1901 and 2010 within which accelerated rate of 3.2mm/year was noticed between 1993 and 2010. Reported prevalence of similarly high rates between 1920 and 1950, the period of low global warming, suggests that sea level rise takes place in the background of several other physical factors like tsunami's, storm surges and tidal variations, swells, normal deltaic subsidence, coastal erosion and siltation of river channels along the coastline.

However, the trends of sea level rise as estimated to be 1.3mm/year by our scientists along the Indian coasts during the last 40-50 years. However, longer term sea level data is required over the north Indian Ocean (Bay of Bengal, Arabian Sea etc.) to capture the signal of faster rising sea level. Some parts of the Indian coastline have been facing coastal erosion and river mouths are experiencing deltaic subsidence. However, it has not been established that these manifestations are only due to rise in sea level. Appropriate protection measures arising out of the coastal erosion are addressed jointly by respective state governments and the Coastal Protection and Development Advisory Committee (CPDAC) of the Central Water Commission.

(c) Yes Madam.

(d)-(e) 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 states of Gujarat, Karnataka, Tamilnadu, Andhra Pradesh, West Bengal etc. Government of India has established 26 tide gauges to continuously monitor the pattern of sea level changes all along the Indian coastline. All of these tide gauge stations are transmitting data in real time to the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad under the Ministry of Earth Sciences (MoES).

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 instead of uniform Coastal Regulatory Zone (CRZ) framework. 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 through 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 has initiated Integrated Coastal Zone Management Project by establishing a Society of Integrated Coastal Management (SICOM). Under the project, SICOM will 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 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. It stresses that maintaining a high growth rate is essential for increasing living standards of the vast majority of people of India and reducing their vulnerability of the impacts of climate change.