GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
STARRED QUESTION NO. 240
TO BE ANSWERED ON 16.03.2020

Study on impact of global warming on marine life

*240. DR. AMEE YAJNIK:

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

(a) whether Government has conducted or proposes to conduct a detailed study on global warming and depletion of sources of water as a result thereof;
(b) if so, the details thereof and the technologies proposed to be used or being put into use to address the issue; and
(c) whether Government has conducted any study on the impact of global warming on marine flora and fauna and if so, the details thereof?

ANSWER

MINISTER FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI PRAKASH JAVADEKAR)

(a) to (c): A Statement is laid on the Table of the House.

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STATEMENT REFFERED TO IN REPLY TO PARTS (a) TO (c) OF THE RAJYA SABHA STARRED QUESTION NO. 240 BY DR. AMEE YAJNIK REGARDING 'STUDY ON IMPACT OF GLOBAL WARMING ON MARINE LIFE' DUE FOR REPLY ON 16.03.2020.

(a) Ministry of Earth Sciences has conducted several studies that have investigated the observed trend of summer-monsoon rains over India since 1950, in the backdrop of global warming. While the seasonal monsoon rains have decreased over many areas in north-central India, the frequency of occurrence of localized heavy precipitation has increased during the last 70 years. However the average rainfall as a whole over India does not show any significant trend.

Ministry of Earth Sciences has also set up a dedicated research centre called the Centre for Climate Change Research (CCCR) located at Indian Institute of Tropical Meteorology (IITM), Pune. It undertakes research on various facets of the science of climate change including impacts of climate change on Indian monsoon, especially its variability.

To ascertain the impact of climate change, Government of India has done a study titled "Climate Change and India: A 4X4 Assessment – A Sectoral and Regional Analysis for 2030s". The Assessment considered four major regions in India, namely, Himalayan region, the North-Eastern region, the Western Ghats and the Coastal Region with regard to observed climate and climate change projections in 2030s for key sectors such as agriculture, livestock, water, forest and human health. The impacts ascertained by the study were through various models. According to this study, climate change is likely to adversely affect the water balance in different parts of India.

As per the Fifth Assessment Report of Intergovernmental Panel on Climate Change (IPCC), in many regions, changing precipitation or melting snow and ice are altering hydrological systems, affecting water resources. Some glaciers continue to shrink, and this could have an impact on runoff and water resources downstream.

(b) The government is implementing the National Action Plan on Climate Change (NAPCC) to enhance the ecological sustainability of India's development path and address climate change in all regions of the country. NAPCC comprises, inter alia, eight National Missions including National Water Mission to ensure integrated water resource management helping to conserve water, minimize wastage and ensure more equitable distribution both across and within States. Key achievements under the Mission are as follows:

- Preparation of State Specific Action Plan for water sector based on scientific assessment of the supply and demand side of water resources and vulnerability to climate change.
- Bridging the critical governance gap through an institutional mechanism of state water budgeting on lines similar to that of financial budgeting.
- Baseline studies for improving water use efficiency for irrigation projects have been taken up in six states, namely Assam, Manipur, Telangana, Andhra Pradesh, Maharashtra and Kerala

- Comprehensive water database in the public domain: prepared India WRIS (Water Resource Information System), a portal for providing all information pertaining to surface and ground water.
- Revised National Water Policy (2012) adopted.
- Studies initiated aimed at water resource conservation in the context of climate change

Government of India has launched the Jal Shakti Abhiyan with a mission mode approach intended to improve water availability, including groundwater conditions in the water-stressed blocks. The important water conservation interventions are- water conservation and rainwater harvesting, renovation of traditional and other water bodies/tanks, reuse, bore well recharge structures, watershed development and intensive afforestation.

The Ministry of Earth Sciences through National Institute of Ocean Technology (NIOT) has set up desalination plants using Low Temperature Thermal Desalination (LTTD) utilising temperature difference between sea surface water and deep seawater to address the issue of drinking water.

(c) According to the IPCC Special Report on 'The Ocean and Cryosphere in a Changing Climate' released in 2019; many marine species across various groups have undergone shifts in geographical range and seasonal activities in response to ocean warming, sea ice change and biogeochemical changes, such as oxygen loss, to their habitats. Also, as per the report, marine heat waves are becoming more frequent and more intense as the ocean warms. These are causing disease and mass-mortality that put, for example, coral reefs and fish populations at risk.

Indian National Centre for Ocean Information Services (INCOIS) Hyderabad, an institution of the Ministry of Earth Sciences provides coral bleaching alert services which help estimate the probable spatio-temporal extent of coral damage due to thermal stress.

Considering the warming of the Indian Ocean, National Institute of Oceanography, a constituent laboratory of the Council of Scientific and Industrial Research has initiated time-series measurement sites in the coastal and open waters of the northern Indian Ocean, under a national program- Sustained Indian Ocean Biogeochemistry and Ecological Research (SIBER – India) with an aim to address impacts of climate change on biogeochemical processes and ecology. This project involves an integrated approach to addressing key issues related to climate change through observations and dedicated modelling framework.

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