GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 2629
TO BE ANSWERED ON WEDNESDAY, 11TH DECEMBER, 2024

EARLY WARNING SYSTEMS FOR NATURAL DISASTERS

2629. SHRI ANURAG SHARMA:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the details of advancements in climate change research and their implications for country's vulnerable regions;
(b) whether the rising frequency of extreme weather events such as floods and droughts has been disrupting livelihoods and economic stability;
(c) if so, the specific initiatives being implemented to address these challenges;
(d) whether partnerships and studies are currently underway to assess climate change impacts across critical sectors, including agriculture, water resources, and public health, if so, the details thereof;
(e) the details about the progress made in enhancing early warning systems for natural disasters particularly in rural and coastal areas; and
(f) whether the Government is ensuring that actionable data is made available to policymakers and communities to build resilience and safeguard the country's socio-economic fabric and if so, the details thereof?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) A state-of-the-art Earth System Model (ESM) has been indigenously developed at the Centre for Climate Change Research, Indian Institute of Tropical Meteorology (IITM) for generating climate change projections in the region. The National Climate Change Assessment report documenting the regional climate change projections has been released to benefit students, researchers, and policymakers. The report is available at https://link.springer.com/book/10.1007/978-981-15-4327-2. This report is the first of its kind where a comprehensive discussion has been made regarding the impact of human-induced global climate change on the regional climate and monsoon of the Indian subcontinent, adjoining the Indian Ocean and the Himalayas. Based on the available climate records, the report documents that the surface air temperature over India has risen by about 0.7 °C during 1901–2018, which is accompanied by an increase in atmospheric moisture content. The sea surface temperatures in the tropical Indian Ocean have also increased by about 1°C during 1951–2015. Clear signatures of human-induced changes in climate have emerged over the Indian region on account of anthropogenic GHG and aerosol forcing and changes in land use and land cover, which have contributed to an increase in the climatic extremes. India Meteorological Department (IMD) has prepared a Climate Hazards and Vulnerability Atlas of India for the thirteen most hazardous meteorological events, including Cold waves, Heat Waves, Floods, Lightning, Snowfall, Dust Storms, Hail Storms, Thunderstorms, Fog, Strong winds, Extreme Rainfall, Droughts, and Cyclones, which is helpful to safeguard the citizens living in the vulnerable regions.

(b) Yes.

(c) The Union Cabinet has approved the central sector scheme 'Mission Mausam' at an outlay of INR 2,000 crores over two years. The main aim of the mission is to make Bharat weather-ready and climate-smart and provide early warning to all. Mission Mausam is envisaged to be a multi-faceted and transformative initiative to tremendously boost India's weather and climate-related science, research, and services.

(d) Yes. Mission Mausam will cater to the weather & climate-sensitive sectors like agriculture, power, irrigation, shipping, water resource management, health, aviation, transport sector, disaster management, off-shore oil management, public safety, etc., by mitigating the impact of climate change and extreme weather events and strengthen the resilience of the communities to severe weather phenomenon.

(e) IMD has adopted new techniques and technology from time to time to detect, monitor, and provide timely early warnings for disruptive weather events. Initiatives and developments have been taken to improve the monitoring and forecasting of weather events by augmenting the observational network, numerical weather prediction models, and supercomputers.

IMD utilizes a seamless forecasting system at seasonal to nowcast scale and implemented well-defined Standard Operating Procedures (SOPs) for monitoring & forecasting weather hazards. IMD uses a state-of-the-art dissemination system to share all severe weather information and early warnings with disaster management authorities and the general public through various platforms/channels for necessary preparedness and to support mitigation measures.It includes social media, Common Alert Protocol, Mobile Apps, WhatsApp, and APIs. As a result, the vulnerable population in rural and coastal areas gets evacuated on time to safe shelters, thereby reducing the human death toll to a bare minimum.

(f) Yes. All the data, weather warnings, and climate projections are available to policymakers, the National Disaster Management Authority (NDMA), state disaster administrators and managers, and all stakeholders to help build a resilient society.

****