GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION No. 491
TO BE ANSWERED ON THURSDAY, December 03, 2015

Technology for forecasting Natural Calamities

491 SHRI PARIMAL NATHWANI:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Indian sub-continent is among the most disaster prone areas in the world and if so, the details thereof and the reasons therefor;
(b) whether the India Meteorological Department has been able to forecast natural calamities accurately and if so, the details thereof;
(c) whether adequate technology is available in the country to forecast natural calamities such as earthquake, cyclone, drought and floods etc.: and
(d) if so, the details thereof and if not, the reasons therefor along with the action taken/proposed to be taken by the Government in this regard?

ANSWER
MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES
(SHRI Y. S. CHOWDARY)

(a) Yes sir. The Indian sub-continent is amongst the most earthquake prone area in the world. Earthquakes occur along the "Alpine-Himalayan belt", which also runs through the Andaman Sumatra arc, Indo-Burmese arc, and Himalayan arc. The continued collision/subduction of Indian plate with the Eurasian and Sunda plates causes these earthquakes. These earthquakes highly impact in the Indian subcontinent. A few earthquakes also occur within the peninsular shield region of India, which are grouped under intra-plate category and occur due to internal deformation of the plate.

The Indian sub-continent is having 40 M.ha. of flood-prone area out of the total geographical area of 329 M.ha due to the spatial and temporal variations in temperature and rainfall.

Coastline of India is prone to cyclones during April-May and October-November periods with more frequency of cyclone landfall over the East coast of India.

(b) Yes sir. ESSO-India Meteorological Department (IMD) is responsible for monitoring, detection and forecasting of weather including severe weather events such as cyclones, heavy rainfall, extreme temperature etc. It provides forecast of these events at national, regional and state levels through its tree tier structure. In order to provide early warning of severe weather events, ESSO-IMD has setup a network of state meteorological centres to have better coordination with a state and other agencies.

Earth System Science Organization -National Center for Seismology (ESSO-NCS) is monitoring earthquake activity in and around the county round the clock through its national seismological network. There is no proven scientific technique worldwide exists so far to predict/forecast the occurrence of earthquakes with reasonable degree of accuracy in space, time and magnitude.

Monitoring of the seasonal (monthly / weekly rainfall scenario with reference to respective normal (mean value) is only carried out by ESSO-IMD to regularly assess and identify zones of deficit rainfall leading to drought conditions, the declaration of which remains with the mandate of Ministry of Agriculture in consultation with various state governments.

The Crop Weather Watch Group of MINISTRY OF AGRICULTURE coordinates with ESSO-IMD, Central Water Commission, Indian Council of Agricultural Research (ICAR) institutions and the State Governments to review on a weekly basis (on every Friday) the weather forecast scenario as it impacts on agriculture, level in Water Reservoirs monitored by the Central Water Commission (CWC), Progress of Sowing, Crop health including incidence of Pest Attacks and availability of inputs etc. The steps suggested under this process are available at www.agricoop.nic.in/weather.html.

In order to meet specific requirements of flood forecasting which is provided by central water commission, ESSO-IMD operates Flood Meteorological Offices (FMOs) at ten locations viz., Agra, Ahmedabad, Asansol, Bhubaneshwar, Guwahati, Hyderabad, Jalpaiguri, Lucknow, New Delhi and Patna. During the flood season, FMOs provide valuable meteorological support to the Central Water Commission (CWC) for issuing flood warnings in respect of the 43 rivers of India: i)Agra -Lower Yamuna and Betwa; ii)Ahmedabad -Narmada, Tapi, Mahi, Sabarmati,Banas and Deman Ganga; iii)Asansol -Ajay, Mayurakshi and Kangsabati; iv)Bhubaneshwar -Mahanadi, Brahmani, Baiterini, Bruhaba -lang, Subernarekha, Rushkulya and Vansdhara; v)Guwahati -Brahmaputra and Barak; vi)Hyderabad -Godawari and Krishna; vii)Jalpaiguri –Teesta;viii)Lucknow -Ganga, Ramganga, Gomti, Sai, Rapti Ghagra and Samda;ix)New Delhi -Upper Yamuna, Lower Yamuna, Sahibi; x)Patna -Kosi, Mahananda, Baghmati, Kamla, Gandak, Buri Gandak, North Koel,Kanhar, PunPun and Upper Sone.Central Water Commission (CWC) is working in close association with IMD and State Governments for timely flood forecast whenever the river water level rises above warning level. To meet the requirement of State Governments, ESSO-IMD Officers invariably attend all the meeting called by the State Governments for reviewing the preparedness on floods by various agencies.

(c-d) ESSO-IMD and ESSO-NCS has existing mechanism to coordinate with various state authorities. As such ESSO-IMD provide inputs to State Crop Weather Watch Group, State Disaster Management Authorities , Relief Commissioners. During cyclones a coordination mechanism with district authorities has also been established. Round the clock weather surveillance and forecasting system is operational at ESSO-IMD for continued monitoring, detection and warning of Cyclones; river basin scale meteorological support (monitoring and warning) for CWCs river flood warning system and other severe weather systems.

Operational forewarning systems are already in place by the Central Water Commission of the Ministry of the Water Resources for river basin scale flood. Fully organized protocol exists between ESSO-IMD,CWC and with the various designated disaster management authorities at centre and state levels for dissemination of weather forecast warning alerts and such existing dissemination protocol is always duly complied with.

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