GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION No. **2838**
TO BE ANSWERED ON THURSDAY, DECEMBER 18, 2014

CYCLONE CENTRES IN VARIOUS COASTAL STATES

2838. SHRI K.C. TYAGI:

Will the Minister of **EARTH SCIENCES** be pleased to state:

(a) whether Government proposes to expand the cyclone centres in various coastal States;
(b) if so, the details of such centres to be set up in the Twelfth Five Year Plan period in various coastal States, location wise; and
(c) the steps taken so far in this regard?

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

(a-b) No Madam. Under the oversight mechanism of Earth System Science Organisation (ESSO), an integrated cyclone and associated storm surge warning system is made functional all along the coastal and island regions. Such an effort has resulted into the considerable demonstrated improvement of cyclone forecast in respect of the Phailin cyclone during 08-14 October 2013 and the Hudhud cyclone during 06-14 October 2014.

For effective operational cyclone activities, an appropriate institutional mechanism comprising cyclone warning division at ESSO-India Meteorological Department (ESSO-IMD), New Delhi and three Area Cyclone Warning Centers (ACWCs) at Kolkata, Chennai, Mumbai and Cyclone Warning Centers (CWCs) at Bhubaneswar, Vishakhapatnam and Ahmadabad are made functional on 24X7 basis.

ESSO-IMD operates 24X7 monitoring of satellite based weather monitoring over the potential cyclogenic zones of the Bay of Bengal and Arabian Sea for detecting the cyclogenesis. Commissioning of the high performance computing (HPC) system has provided opportunity to assimilate satellite radiance, Doppler Weather Radar (DWR), OCEANSAT (scatterometer, total precipitable water content) data etc. of global oceans in to the global (22Km grid scale)/meso-scale (9Km grid scale) forecast systems. The performance evaluation of the updated global/meso-scale forecast systems in continuation with adoption of improved local forecast systems for the past 5-7 years have demonstrated enhanced forecast skill by about 18% quantitatively as far as the track and landfall forecasts of the tropical cyclones are concerned.

As and when the cyclone systems move in to the 500Km surveillance range of DWRs, identification of strong wind zones and pockets of heavy rainfall within the core cyclone area is carried out and their rapid changes are monitored on continuous basis. ESSO-IMD currently operates 5-Doppler Weather Radars (DWR) at Chennai, Machilipatnam, Visakhapatnam, Kolkata, Sriharikota on the east coast, 675 Automatic Weather Stations (AWS) and 1210 Automatic Rain Gauges (ARG) have been commissioned covering all districts of India. With the commissioning of the state-of-the-art observing, monitoring/ early warning and data visualization/information processing and communication technologies, several manual operations have been fully automated.

(c) By leveraging all available modeling and observing systems along with persistent efforts, ESSO-IMD is able to increase the lead time forecast of cyclones upto 5-7 days and to reduce the track and landfall errors of cyclones by about 7% over the last 3-4 years. ESSO continuously guides the expansion, planning and augmentation of land, ocean and satellite based observing systems and implementation of advanced data assimilation forecast systems along with augmentation of high end computing, network, data reception and warning dissemination infrastructure.

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