GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. - 2429
ANSWERED ON – 24/03/2022

LOSS TO GOVERNMENT PROPERTY DUE TO CYCLONES

2429. SHRI NEERAJ DANGI:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) details of Government property damaged due to cyclones during the last three years, State-wise;
(b) the number of cyclone warning centres in the country, and whether Government proposes to increase the number of these centres, if so, the details thereof; and
(c) the corrective measures being adopted by Government for these centres?

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

(a) This Ministry does not maintain centralized data regarding the details of the Government property damaged due to cyclones in the country. The primary responsibility of disaster management rests with the State Government and the State Government concerned undertakes the assessment of damages. Ministry of Earth Sciences has established a robust early warning system and has significantly improved the accuracy of weather forecasts.

(b) In order to cater to the needs of Cyclone Warning Services and Marine weather services, there are seven established Warning Centers covering the east & west coasts of our country. Among these, three are Area Cyclone Warning Centres (ACWCs) located at Chennai, Mumbai and Kolkata and remaining four are Cyclone Warning Centres (CWCs) located at Ahmedabad, Thiruvananthapuram, Visakhapatnam and Bhubaneswar. Area of responsibility of ACWCs and CWCs is shown in the Table below.There is no plan for establishing more number of CWCs as the requirements of the entire coastal belt of the country is covered by the existing centres as mentioned above.

Centre	**Coastal area***	**Maritime State/UT**
ACWC Kolkata	State: West Bengal UT: Andaman & Nicobar Islands	State: West Bengal UT: Andaman & Nicobar Islands
ACWC Chennai	State: Tamil Nadu UT: Puducherry	State: Tamil Nadu UT: Puducherry
ACWC Mumbai	State: Maharashtra & Goa	State: Maharashtra & Goa
CWC Thiruvananthapuram	State: Kerala & Karnataka UT: Lakshadweep	State: Kerala & Karnataka UT: Lakshadweep

CWC Ahmedabad	State: Gujarat UT: Dadra-Nagar Haveli-Daman-Diu	State: Gujarat UT: Dadra-Nagar Haveli-Daman-Diu
CWC Visakhapatnam	State: Andhra Pradesh	State: Andhra Pradesh
CWC Bhubaneshwar	State: Odisha	State: Odisha

*Coastal strip of responsibility extends upto 75 km from the coast line.

(c) India Meteorological Department (IMD) has one of the best Early Warning Services in the world related to Cyclones.

IMD has demonstrated its capability to provide early warning for Cyclones with high precision. As a result, the vulnerable population gets evacuated from the damage prone areas in a timely manner to safe shelters thereby reducing the human death toll to a bare minimum, in the recent years. It is noteworthy that death due to cyclones has been reduced to less than 100 in recent years.

IMD has continuously expanded its infrastructure for meteorological observations, data exchange, monitoring & analysis, forecasting and warning services using contemporary technology. IMD uses a suite of quality observations from Satellites, Radars and conventional & automatic weather stations for monitoring of cyclones developing over the Bay of Bengal and Arabian Sea. It includes INSAT 3D, 3DR and SCATSAT satellites, Doppler Weather Radars (DWRs) along the coast and coastal automated weather stations (AWS), high wind speed recorders, automatic rain gauges (ARGs), meteorological buoys and ships.

IMD has one of the best forecasting systems for predicting tropical cyclones using high resolution advanced mathematical models (including global, regional and cyclone specific models) for predicting tropical cyclones crossing both west and east coast of India and associated adverse weather over India. MoES has adapted global models from USA and UK under the bilateral cooperation for forecasting of cyclones. Global Forecasting System (GFS) with a resolution of 12 km and Global Ensemble Forecasting System (GEFS) with a resolution of 12 km have been adapted from NCEP, NOAA, USA and are being used operationally to provide forecast up to 7 days. Similarly, the Unified Model (UM) and unified Model Ensemble Prediction System (UMEPS) both with resolution of 12 km have been adapted from UKMO, UK to provide forecast up to 7 days.

IMD has a very effective Decision Support System for analyzing various observations at a single platform and predicting track and intensity of cyclones as well as the adverse weather like heavy rain and wind. IMD also utilizes storm surge and coastal inundation models and wave models output from Indian National Centre for Ocean Information Services (INCOIS), Hyderabad for issuing storm surge warning.

The Cyclone Warning Division (CWD) at IMD, New Delhi acts as a Regional Specialised Meteorological Centre for monitoring, predicting and issuing warning services on tropical cyclones developing over north Indian Ocean. It also carries out research on track, intensity, landfall and adverse weather associated with cyclones like heavy rainfall, gale wind and storm surge monitoring and prediction.

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