

GOVERNMENT OF INDIA  
 MINISTRY OF EARTH SCIENCES  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. - 2115**  
 ANSWERED ON – 16/12/2021

**FREQUENCY OF NATURAL DISASTERS IN THE COUNTRY**

2115. SHRI M.V. SHREYAMS KUMAR:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether there has been an unexpected increase in natural disasters like cyclones and floods in the country during the last four years and if so, the details thereof;
- (b) whether any study has been conducted to analyse the increase in natural disasters being caused due to climate change, if so, the details thereof; and
- (c) the details of the steps being taken to mitigate climate change disasters?

**ANSWER**

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

- (a) Yes Sir. There has been observed an increase in natural disasters like cyclones and floods in the country during last recent years. The number of Cyclones and Number of stations reported heavy and extremely heavy rainfall events since 2016 is given below. It can be seen that during recent years' frequency of cyclones and stations reporting very heavy and extremely heavy rainfall has been increased.

YEAR	Number of Cyclones		Number of stations Reported during SW Monsoon season (June to September)	
	TOTAL	Severe Cyclone	V. Heavy Rainfall	Extremely Heavy Rainfall
2017	3	2	1824	261
2018	7	6	2181	321
2019	8	6	3056	554
2020	5	5	1912	341

It has been found that there is a significant rise [+0.86 per decade] in the frequency of post-monsoon (October–December) season very severe cyclonic storms (VSCS) in the North Indian Ocean (NIO) during the past two decades (2000–2018). During the same period, frequency of extremely severe cyclonic storms (ESCS) over the Arabian Sea has increased. Also there is an increased frequency of localized heavy rainfall on sub-daily and daily timescales that has enhanced the flood risk over India, contributing to increased frequency and impacts of floods in urban areas.

- (b) Yes. Recent studies have reported significant rising trends in the frequency and the magnitude of extreme weather events over different parts of the world and also over various regions of India against a backdrop of global warming/climate change. The climate change assessment report published by the Ministry of Earth Sciences (MoES), notes that complex interactions between the earth system components amidst the warming environment and regional anthropogenic influences, have led to a rise in frequency of localized heavy rainfall events, drought and flood occurrences, and increase in the intensity of tropical cyclones etc. in the last few decades. This book also summarises the present status and future projection of climate change over India.

Also the report “Assessment of Climate Change over the Indian Region” published by MoES 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 Indian Ocean and the Himalayas. The report notes that surface air temperature over India has risen by about 0.7°C during 1901–2018 wherein the rise during 1986-2015 has been at a faster rate of about 0.15°C per decade. The complex interactions between the earth system components amidst the warming environment and regional anthropogenic influences have led to a rise in frequency of localized heavy rainfall events, drought and flood occurrences, increase in the intensity of tropical cyclones, increasing SSTs and sea level etc. Future projections of regional climate, performed under different climate change scenarios, too indicate robust changes in the mean, variability and extremes of several key climatic parameters over the Indian subcontinent and adjoining areas (e.g. land temperature and precipitation, monsoons, Indian Ocean temperature and sea level, tropical cyclones, Himalayan cryosphere, etc).

- (c) India Meteorological Department (IMD) is dedicated for monitoring, detection and forecasting of weather and climate including early warning for severe weather events such as, Cyclones, heavy rainfall, extreme temperature, thunderstorms, etc. Mitigation procedures are carried out by National Disaster Management Authority (NDMA) based on the warnings/forecasts issued by IMD. Further, the Government of India has initiated the National Cyclone Risk Mitigation Project (NCRMP) with a view to address cyclone risks in the country. The overall objective of the Project is to undertake suitable structural and non-structural measures to mitigate the effects of cyclones in the coastal states and UTs of India. NDMA under the aegis of Ministry of Home Affairs (MHA) is implementing the Project in coordination with participating State Governments and the National Institute for Disaster Management (NIDM). The Project has identified 13 cyclone prone States and Union Territories (UTs), with varying levels of vulnerability.

The main objective of the NCRMP is to reduce vulnerability of coastal communities to cyclone and other hydro meteorological hazards through;

- Improved early warning dissemination systems
- Enhanced capacity of local communities to respond to disasters
- Improved access to emergency shelter, evacuation, and protection against wind storms, flooding and storm surge in high areas
- Strengthening Disaster Risk Management (DRM) capacity at central, state and local levels in order to enable mainstreaming of risk mitigation measures into the overall development agenda.

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