

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UNSTARRED QUESTION NO.210
TO BE ANSWERED ON 08.12.2022

Extreme weather events

210. SMT. VANDANA CHAVAN:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) details of the number of recorded extreme weather events in the country, 2017 onwards, State/UT-wise;
- (b) whether any study has been conducted to see the proportion of population of the country, exposed to these events;
- (c) if so, the details thereof, and if not, the reasons therefor;
- (d) whether such events are expected to increase further due to the impact of climate change; and
- (e) whether Government is implementing any rehabilitation schemes for people affected by such events?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI ASHWINI KUMAR CHOUBEY)

(a) As per India Meteorological Department (IMD), 28 incidents of cyclonic storms and severe cyclonic storms were observed in Bay of Bengal, Arabian Sea and the land during 2017 to 2021, details given in *Annexure I*. 343 incidents of extremely heavy rainfall events were observed during 2017 to 2022, data provided at *Annexure II*. Average number of heatwave days (state-wise) from April to June computed for the period 2017 to 2021 is given in *Annexure III*. Average number of cold wave days (state-wise) from December to February computed for the period 2017 to 2021 is given in *Annexure IV*. Number of dust storm events (state-wise) during the period 2017 to 2021 is given in *Annexure V*.

(b) to (e) India has taken note of the Working Group II contribution to the IPCC Sixth Assessment Report (AR6) on 'Climate Change: Impacts, Adaptation and Vulnerability'. The report notes that global hotspots of high human vulnerability are found particularly in West, Central and East Africa, South Asia, Central and South America, Small Island Developing States and the Arctic. Further, as per the report, Asia is identified as one of regions most vulnerable to climate change, especially on extreme heat, flooding, sea level rise, and erratic rainfall. However, the report also notes that vulnerability and the burden of adaptation is highest for those who have contributed the least to global warming.

The risks due to climate change and climate extremes will rise throughout the world with increasing temperatures, with the historical emissions due to developed countries already causing a number of adverse impacts in different sectors and different regions. The IPCC findings are based on many studies which monitor extreme events in the environment. The science of attribution of these changes particularly to climate change is far more complex and

currently an evolving subject. Most studies of attribution so far have relied generally on mathematical modelling of climate change impacts.

The Government is implementing the National Action Plan on Climate Change (NAPCC), which is the overarching policy framework for climate action in India, covering mitigation, adaptation and generation of strategic knowledge on climate change. It comprises of national missions in the specific areas of solar energy, enhanced energy efficiency, water, agriculture, the Himalayan ecosystem, sustainable habitat, health, green India and strategic knowledge on climate change. Several of these missions are adaptation focussed. Further, 34 States/Union Territories have prepared State Action Plans on Climate Change (SAPCCs) consistent with the objectives of NAPCC. The Government through the National Adaptation Fund for Climate Change has supported adaptation measures of States/UTs in areas that are particularly vulnerable to the adverse impacts of climate change. A number of other measures are taken, keeping in view the threat of climate change, by various departments, ministries and entities of the Government, as part of their regular mandated activities and responsibilities

The Disaster Management Act, 2005 articulates the need for mainstreaming Disaster Risk Reduction into development planning. The central government has established a robust early warning system and has significantly enhanced accuracy of weather forecasts. Forecasting agencies are continuing their efforts for improvement of warning and dissemination systems vigorously. The India Meteorological Department (IMD) supports National Disaster Management Authority (NDMA) /State Disaster Management Authorities (SDMA) in framing necessary guidelines for the public with respect to different extreme weather events and the same are available in the public domain.

Relief, recovery, and rehabilitation are governed, inter alia, by the relevant provisions of the Disaster Management Act, 2005 and the guidelines, directives, and orders of the National Disaster Management Authority and the State Disaster Management Authorities. The constitutional, legal and administrative provisions relevant to disaster management and disaster risk reduction adequately address the management of disasters in the country.

The State Governments undertake relief measures in the wake of natural disasters from the State Disaster Response Fund (SDRF) already placed at their disposal in accordance with the extant norms. Additional assistance is extended from the National Disaster Response Fund (NDRF) as per established procedure. The assistance approved under SDRF/NDRF norms is provided in the form of relief.

Annexure I

ANNEXURE REFERRED TO REPLY IN PART (a) OF RAJYA SABHA UNSTARRED QUESTION NO. 210 DUE FOR 08.12.2022 REGARDING 'EXTREME WEATHER EVENTS' RAISED BY SMT. VANDANA CHAVAN.

Yearly and Monthly Frequency of Cyclones													
Period: 2017-2021													
Basin: BOB+AS+Land													
Intensity(Level): CS+SCS													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2017	0	0	0	1	1	0	0	0	0	0	1	0	3
2018	0	0	0	0	2	0	0	0	1	2	1	1	7
2019	1	0	0	1	0	1	0	0	1	2	1	1	8
2020	0	0	0	0	1	1	0	0	0	0	3	0	5
2021	0	0	0	0	2	0	0	0	2	0	0	1	5
Total	1	0	0	2	6	2	0	0	4	4	6	3	28

BOB:Bay of Bengal

AS:Arabian Sea

CS:Cyclonic Storm

SCS:Severe Cyclonic Storm

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Number of Heavy rainfall events during Southwest monsoon season (June to September)			
Year	Heavy Rainfall (>64.5 and 115.5 mm)	Very Heavy Rainfall (>115.6 and <204.5 mm)	Extremely Heavy Rainfall (>204.5mm)
2017	7656	1786	272
2018	6916	1889	316
2019	7766	2349	523
2020	8504	2209	371
2021	6429	1655	282
2022	7148	1875	296
Average	7403	1961	343

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State wise average number of Heatwave Days computed by averaging the number of heatwave days reported in the stations used in the study of that state during April to June						
State / UT	No of stations used for study	2017	2018	2019	2020	2021
Andhra Pradesh	7	10	8	13	3	4
Assam	2	0	0	0	0	0
Bihar	3	3	6	12	1	1
Chhattisgarh	2	3	0	3	0	1
Delhi	1	9	6	8	4	3
Gujarat	7	4	3	4	2	0
Haryana	2	13	9	8	3	2
Himachal Pradesh	1	0	0	0	0	0
Jharkhand	3	10	3	10	1	0
Karnataka	11	0	0	2	4	0
Madhya Pradesh	8	7	7	13	2	1
Maharashtra	11	6	8	15	5	0
Odisha	5	9	4	8	2	4
Punjab	2	12	4	8	1	2
Rajasthan	10	14	17	20	6	4
Tamil Nadu	5	8	2	11	4	3
Telangana	2	5	0	10	2	0
Uttar Pradesh	8	4	6	13	2	1
Uttarakhand	1	4	5	13	0	7
West Bengal	4	2	2	3	0	3

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State wise average number of Cold Wave days computed by averaging the number of cold wave days reported in the stations used in the study of that state during December to February					
State/UT	No of stations used for study	2017	2018	2019	2020
Jammu & Kashmir	2	5	7	14	18
Himachal Pradesh	1	0	1		17
Punjab	2	1	0	2	1
Haryana	2	4	5	10	9
Uttarakhand	1	0	0	1	0
Delhi	1	3	0	9	6
Uttar Pradesh	7	2	6	4	7
Rajasthan	10	2	7	5	5
Sikkim	1	0	0	0	1
Assam	2	1	0	1	0
Madhya Pradesh	8	2	1	8	4
West Bengal	4	1	3	1	1
Bihar	2	2	5	9	5
Gujarat	7	0	0	1	0
Jharkhand	3	2	5	5	3
Odissa	4	1	3	8	4
Tripura	1	1	0	0	2
Chattisgarh	2	4	2	6	6
Maharashtra	6	1	2	10	2
Telangana	2	1	7	8	2
Andhra Pradesh	1	3	8	1	6
Karnataka	1	0	0	0	0
Tamil Nadu	3	0	0	0	0

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DUST STORM EVENTS DURING THE PERIOD 2017-2021 (UPDATED TILL 6 DEC 2021)	
STATE	DUST STORM EVENTS
Dust storm events during <u>2021</u>	
Uttar Pradesh	5
Total	5
Dust storm events during <u>2020</u>	
Rajasthan	14
Total	14
Dust storm events during 2019	
Rajasthan	25
Total	25
Dust storm events during <u>2018</u>	
Madhya Pradesh	7
Rajasthan	74
Uttar Pradesh	150
Uttarakhand	6
Total	237
Dust storm events during 2017	
Rajasthan	5
Total	5