GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
STARRED QUESTION No. *161
ANSWERED ON 03/08/2023

IMPACT OF CYCLONES

*161 Shri C.Ve. Shanmugam:

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

(a) whether it is a fact that India has a huge coastline and the entire coastline and the people living near the coastline are severely affected due to continuous cyclonic storms;
(b) if so, the details of such storms and the number of people affected, including the lives lost during the last three years, year-wise and State-wise; and
(c) steps taken by Government to safeguard the lives of the people in future?

ANSWER
THE MINISTER OF EARTH SCIENCES
(SHRI KIREN RIJIJU)

(a) to (c): A Statement is laid on the Table of the House.

STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY TO (a) to (c) OF STARRED QUESTION NO. *161 REGARDING "IMPACT OF CYCLONES" TO BE ANSWERED ON AUGUST 03, 2023

(a) Yes Sir. As mentioned in the National Guidelines on Management of Cyclones (2008) and the National Disaster Management Plan (2019), about 7,516 km long coastline is prone to cyclones.

(b) Details of the cyclones and the lives lost during the last three years are given in Annexure.

(c) India Meteorological Department (IMD) has carried out studies in this aspect and prepared a map of hazard proneness of various coastal districts of the country based upon the frequency of total cyclones, total severe cyclones, actual/estimated maximum wind strength, probable maximum storm surge associated with the cyclones and probable maximum precipitation. Based upon the hazard criteria, 96 districts including 72 districts on the coast and 24 districts off the coast, lying within 100 km from the coast, have been classified as less prone, moderately prone, highly prone and very highly prone regions.

There are three Area Cyclone Warning Centres (ACWCs) and four Cyclone Warning Centres (CWCs) of IMD situated at Kolkata, Chennai, Mumbai, Thiruvananthapuram, Ahmedabad, Visakhapatnam and Bhubaneshwar to issue warnings and forecasts to the entire coastal region of the country.

IMD uses a suite of quality observations from satellites, radars and weather stations for monitoring cyclones developing over the Bay of Bengal and Arabian Sea.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. IMD has one of the best forecasting systems for predicting tropical cyclones using high resolution advanced mathematical models.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.

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.

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 thereby reducing the human death toll to a bare minimum. It is noteworthy that death due to cyclones has been reduced to less than 100 in recent years.

Annexure

Year	Basin	Type & Name of cyclone	Period	Max. Wind Speed (kt) during landfall	Crossing information (Landfall point and time)
2020	Bay of Bengal	SuCS AMPHAN	16-21 May	90 kt	West Bengal – Bangladesh coasts as a Very Severe Cyclonic Storm (VSCS) across Sundarbans, near Lat. 21.7°N and Long. 88.3°E during1000-1200 UTC of 20th May 2020.
	Arabian Sea	SCS NISARGA	01-04 June	60kt	Maharashtra coast close to south of Alibag near Lat. 18.4°N and Long. 72.9° E, as Severe Cyclonic Storm (SCS) between 0700-0900 UTC of 03rd June 2020.
	Bay of Bengal	VSCS NIVAR	22 -27 November	65kt	Tamilnadu and Puducherry coasts near Puducherry Lat. 12.1°N and Long. 79.9° E during 1800 – 2100 UTC of 25th November 2020.
	Bay of Bengal	CS BUREVI	30 Nov. - 05 Dec.	40 kt	Pamban area near Lat. 9.2°N and Long. 79.4°E around 0800 UTC of 03rdDecember 2020.
2021	Arabian Sea	ESCS TAUKTAE	14 -19 May	90kt	Saurashtra coast about 20 km northeast of Diu, near Lat.20.8°N and Long. 71.1°E during 1530-1730 UTC of 17th May 2021.
	Bay of Bengal	VSCS YAAS	23 – 28 May	75kt	North Odisha coast near Lat 21.4°N and Long. 86.9°E, about 20 km to the south of Balasore as a Very Severe Cyclonic Storm (VSCS) between 0500 & 0600 UTC of 26th May 2021.
	Bay of Bengal	CS GULAAB	24- 28 Sept	45 kt	North Andhra Pradesh – south Odisha coasts near Lat. 18.4°N and Long. 84.2°E during 1400 to 1500 UTC of 26th September 2021,
	Arabian Sea	SCS SHAHEEN	30 Sept-04 Oct	55 kt	Oman coast near Lat. 23.9°N and Long.57.3°E during 1900 to 2000 UTC of 3rd October,2021

2022	Bay of Bengal	SCS ASANI	07 May – 12 May	30 kt	Andhra Pradesh coast near Lat. 16.3°N and Long. 81.3°E between Machilipatnam and Narsapur during 1200-1400 UTC of 11th May 2022.
	Bay of Bengal	CS SITRANG	22nd-25th October	40 kt	Crossed Bangladesh coast between Tinkona and Sandwip close to Barisal(near Lat. 22.20N/90.40E during 1600 to 1800 UTC of 24th October
	Bay of Bengal	SCS MANDOUS	06-10 December	35 kt	North Tamil Nadu, Puducherry and adjoining south Andhra Pradesh coasts near Lat. 12.6°N and Long.80.2°E during 1800 - 2100 UTC of 9th December
2023	Bay of Bengal	ESCS MOCHA	09-15 May	100 kt	North Myanmar – Southeast Bangladesh coasts between KYAUKPYU (Myanmar) and Cox's Bazar (Bangladesh) close to North of Sittwe (Myanmar) near Lat. 20.3°N and Long.92.8°E during 0700-0900 UTC of 14th May
	Arabian Sea	ESCS BIPARJOY	6-19 June	65 kt	Saurashtra & Kutch and adjoining Pakistan coasts between Mandvi (Gujarat) and Karachi (Pakistan) close to Jakhau Port (Gujarat) near latitude 23.3°N and longitude 68.6°E during 1700-1800 UTC

CS – Cyclonic Storm; SCS – Severe Cyclonic Storm; VSCS – Very Severe Cyclonic Storm; ESCS – Extremely Severe Cyclonic Storm; SuCS - Super Cyclonic Storm. (1 kt = 1.85 kmph)

Deaths due to Cyclonic Storms

	YEAR			
STATE	2020	2021	2022	Grand Total
Andhra Pradesh	9	6	1	16
Bihar		1		1
Goa		3		3
Gujarat		79		79
Jharkhand		3		3
Karnataka		8		8
Kerala		9		9
Maharashtra	6	56		62
Odisha	4	4		8
Puducherry			1	1
Tamil Nadu	14		4	18
Telangana		3		3
West Bengal	86	2		88
Grand Total	119	174	6	299

*****