3-Days Residential Training Programme on ‘Cyclone Risk Mitigation and Management’

Date: 18th to 20th May, 2023

GUJARAT INSTITUTE OF DISASTER MANAGEMENT
BUILDING RESILIENCE

Gujarat Institute of Disaster Management
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1. BACKGROUND

Tropical Cyclones are highly destructive natural phenomena that pose a significant threat to both life and property. A tropical cyclone is a swiftly rotating storm that originates over tropical oceans, fueled by the energy it derives from the warm waters. The system consists of a low-pressure center, with clouds swirling towards the eye wall, which encircles the 'eye' which is the calm central part of the cyclone. While the diameter of a tropical cyclone typically ranges from 200 to 500 kilometers, it can extend up to 1000 kilometers.

Even during their early stages of development, tropical cyclones can cause extensive damage. These destructive phenomenon, comprise of several hazards which includes storm surges, flooding, extreme winds, tornadoes, and lightning. Each of these hazards, by itself, can cause significant harm. When combined, they interact with one another to create an exponentially increased risk of loss of life, damage to various infrastructures and properties.

The Indian subcontinent has been considered as one of the most severely affected regions by cyclones around the world. With a coastline spanning 8,041 kilometers, it is exposed to almost 10% of the world's tropical cyclones. On an average, five to six tropical cyclones form in the region annually, with two or three of them being potentially severe. The Bay of Bengal has experienced more cyclones than the Arabian Sea, but over the recent years there has been a pattern of highly intense tropical cyclones occurring in a shorter time frame over the Arabian Sea.

Over span of 20 years from 1998 to 2018, there were five extremely severe cyclones in the region. According to a special report issued by the UN Intergovernmental Panel on Climate Change (IPCC) in 2019, the Arabian Sea is showing a rapid response to signals of climate change, with the frequency of severe cyclones increasing threefold in recent years. The report has also highlighted that the intensity of tropical cyclones in the area is reaching unprecedented levels.

2. CYCLONE VULNERABILITY IN GUJARAT

Over the years, Gujarat has witnessed some major cyclone events. The 1998 Gujarat cyclone is widely regarded as one of the most catastrophic tropical cyclones in Indian history, which caused the deaths of at least 10,000 people, primarily in the state of Gujarat. Recently in 2021, an extremely severe cyclonic storm named Tauktae originated as a tropical depression off the coast of Kerala and eventually made landfall in the Saurashtra region, between Diu and Una. This was the strongest cyclone to hit Gujarat since the 1998 cyclone.

Gujarat experiences two storm seasons, which are in May and June during the onset of the monsoon and in October and November during the retreat of the southwestern monsoon.A vulnerability profile report of Gujarat State has identified those certain areas are at high risk of cyclones. Specifically, the coastal regions from Bhavnagar to Navsari are highly susceptible to cyclone risks, while Bhavnagar and Ahmedabad are classified as the 'very-high damage risk zone', and the remaining districts under consideration are in the 'high damage risk zone'.

The Arabian Sea is warming up at a higher rate than the Bay of Bengal, which increases the potential for more tropical storms to develop in the future. Additionally, one factor contributing to the slight

decrease in the duration of tropical cyclones in the Bay of Bengal is the long-term reduction in atmospheric humidity, which is rising at a greater rate over the Arabian Sea along with surface temperature.

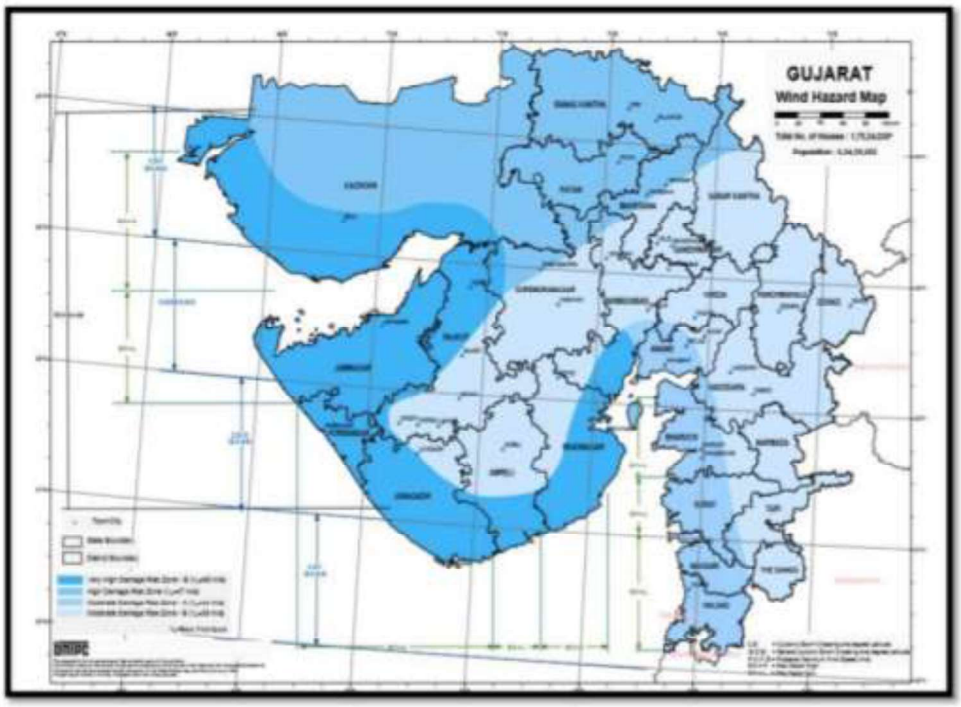

Figure 1: Image showing Wind/Cyclone Hazard Map of Gujarat

To cope with the increasing threat of extreme climate events, Gujarat which is vulnerable to climate change must prioritize the climate-proofing of their critical infrastructure, industry, and communities. There should be conduction of periodic district-level climate risk assessments and establishment of a unified emergency response framework to better manage the compounded impacts of such events and support recovery and reconstruction efforts. Cyclone Tauktae is just one recent example of the climate crisis's growing impact, and Gujarat must remain vigilant in building climate resilience, particularly at the local and regional levels. It is also essential to invest in cost-effective, nature-based resilient infrastructure, build decentralized capacity to respond to climate shocks, and design effective public information campaigns to prepare vulnerable communities against climate risks.

3. OBJECTIVES

The objectives of the proposed training programme are as follows:

i. To increase awareness of participant regarding assessment of cyclone hazards.
ii. To develop strategies for cyclone risk management at local levels and todecrease the susceptibility of coastal communities towards cyclones.

iii. To recognize the essential contribution of diverse stakeholders across multiple departments in mitigating disaster risks during cyclone events.
iv. To discuss and identify the gaps and challenges in current cyclone risk management.
v. To understand structural and non-structural mitigation measures in cyclone prone areas.

4. TARGET PARTICIPANTS

Sr. No.	Departments/Organizations	Level of Participants
1.	Agriculture and Co-operation Department	L-1, L-2
2.	Revenue Department • GSDMA	L-1, L-2
3.	Food and Civil Supplies Department	L-1, L-2
4.	Forest and Environment Department	L-1, L-2
5.	Home Department	L-1, L-2
6.	Narmada, Water Resources, Water Supply & Kalpsar Department	L-1, L-2
7.	Port & Transport Department	L-1, L-2
8.	Health & Family Welfare Department	L-1, L-2
9.	Roads & Building Department	L-1, L-2
10.	Education Department	L-1, L-2

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