

Webinar on Lightning Risk Mitigation and Safety Awareness

Dated: 26 & 30 November, 2021,

CONCEPT NOTE



Rationale

As per the report released by World Meteorological Organization (WMO), 21 August 2021, disaster related to a weather, climate or water hazard occurred every day on average over the past 50 years – killing 115 people and causing US\$ 202 million in losses daily. Over period of 50 years (1970 to 2019) due to climate change, more extreme weather and improved reporting number of disasters has increased by 5 times and the number of deaths decreased three fold. Hydrometeorological Disasters have accounted for 50% of all disasters, 45% of all reported deaths and 74% of all reported economic losses. More than 91% of these deaths occurred in developing countries (using the United Nations Country Classification).

Owing to its geo-climatic, geological and physical features, Gujarat is vulnerable to all major natural hazards. Climate change has attributed increased number of hydro meteorological disaster incidents in the region. As per Gujarat's State Action Plan on Climate Change (June 2021):

- Mean temperatures in Gujarat have risen in range of 0.2 - 2.9 degree Celsius between 1986-2019.
- Temperature can further increase by a maximum of 5⁰ Celsius & precipitation by 15% to 25% by 2100.
- Cold days and cold nights would decline even as the “frequency of hot days, hot nights and heatwaves are projected to rise considerably”.
- Talking about how Gujarat experiences 3.7 to 4.8 heatwaves per year, SAPCC states that little attention has been paid to design public facilities to adapt to heatwaves in the state.
- 45.67 per cent of the coast in Gujarat is under “high to very high risk category” due to an anticipated rise in sea level.

There has been notable increased number of deaths due to lightning whereas cyclonic activity has increased in terms of intensity as well as frequency in recent years. ***An analysis of statistics received from National Crime Record Bureau (NCRB), between 2011-2019 shows lightning is biggest killer in the state which accounts for on an average 23.2 % of total deaths caused by natural hazard followed by heatstroke 18.8 % and floods 15.7 % (Data Source: NCRB, Analysis: GIDM).***

Lightning Hazard in Gujarat

As per existing records, in India lightning & thunderstorm have accounted for maximum fatalities among the total deaths caused due to natural hazards.

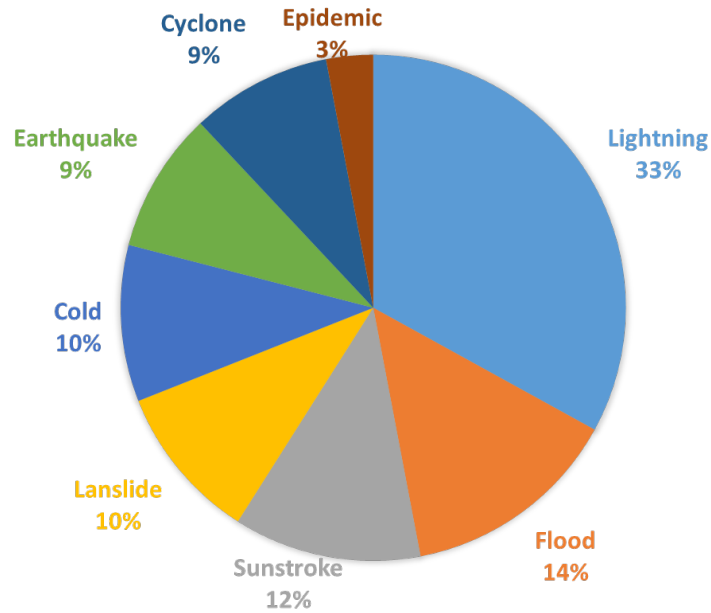


Figure 1: Fatalities due to Natural Hazards in India between 1967- 2020

(Sources: NCRB, National Statistic Board, Ministry of Home Affairs-Sitreps, MoHFW, IMS)

Gujarat is vulnerable to lightning and thunderstorm risk. Lightning & thunderstorm occurs mostly between June - October in Gujarat. According to National Crime Record Bureau, between 2008-2018, 576 deaths were caused due to lightning & thunderstorm. Gujarat witnessed 214474 lightning counts during the period 01 April 2019 to 31 July 2019 which accounted for 32 fatalities in the state. (Source: Mid- Monsoon 2019 LIGHTNING REPORT).

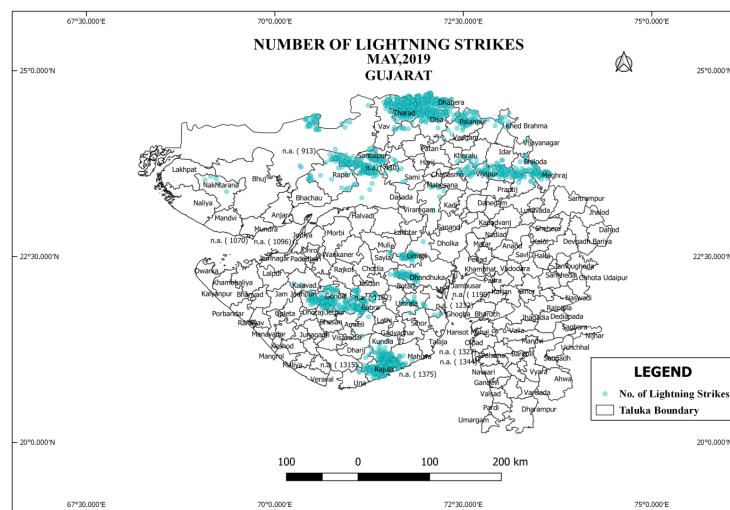


Figure 2: Number of lightning strikes in Gujarat in May 2019 at Taluka level

Gujarat has recently witnessed sudden rise in lightning and thunderstorms in many parts of the state. The recent spate of cyclones in coastal region has added to enhanced lightning. The rise in temperature and increasing pollution has catalyzed more lightning strikes, more so in the tribal dominant areas of Purvi Patti and even in urban hutments like Ahmadabad, Vadodara, Surat etc. Though lightning and thunderstorm have touched almost entire state but there are specific regions where more frequent and fatal lightning strikes are being reported. These are mainly in belt of Northern Gujarat, Central Gujrat and other regions.

Lightning vulnerability profile has been developed on the basis of number of fatalities and total number of lightning incidents recorded over a period of time. The map available in Figure 1 depicts lightning deaths reported by State Emergency Operation Centre over period of 5 years (2015-2019). As per the map, Kutch district is most prone to lightning risk followed by Banaskantha, Morbi, Jamnagar, Rajkot, Amreli, Bhavnagar, Vadodara Bharuch and Tapi.

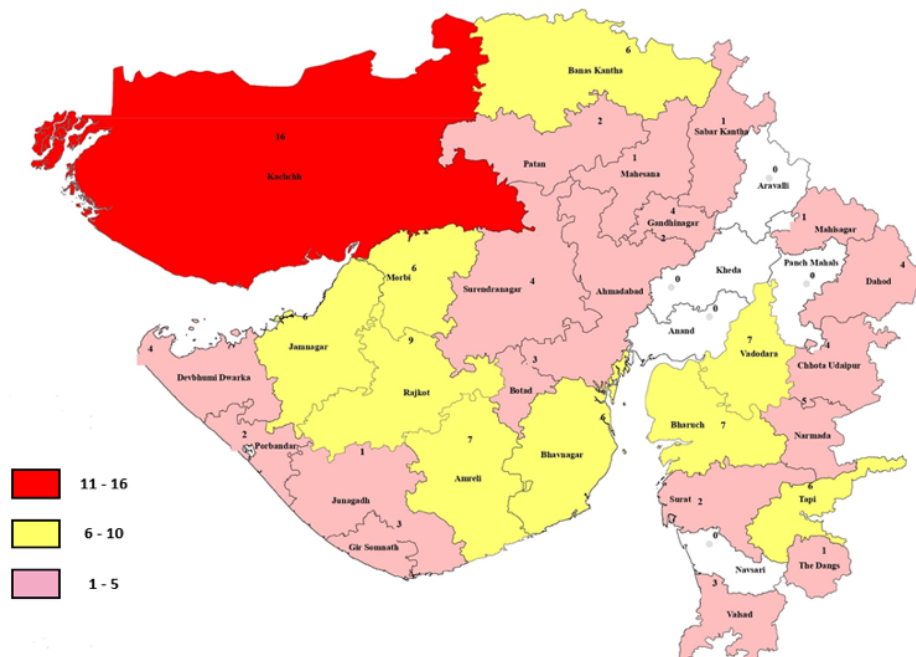


Figure 3: Map depicting total number of deaths due to lightning between 2015-2019

(Source: SEOC (Statistics), Map developed by GIDM)

Objective

Children, farmers, wild animals, flora and fauna are some of the worst victim of lightening hazard. Therefore, in order to generate a sense of awareness among the stakeholders **two webinar** concerning lightening risk mitigation and safety awareness is proposed.

Need of Orientation Program

It is pertinent to mention that India Meteorological Department (IMD) has started state of the art Lightning forecast system with adequate early warning of firstly 48 hrs. outlook followed by second observation of hotspots lookout period of 24 hours to third and final nowcast with 2-3 hours of precise prediction.

The early warning of 2-3 hours is adequate to warn public provided its timely and promptly disseminated to target masses. It has been observed that **95% casualty is in rural areas** and primary cause of death of 71% victims has been due to standing under tree during rain, thunderstorm or lightning. **Farmers in open field contribute to 66% deaths** and hence need to be educated how to save their life. Even there has been **35% deaths of children** who need to be sensitized about lightning safety (Source: CROPC). Death of animals specially cattle, goats, sheep and poultry have been rampant. Wild animals and rare breed of trees are major concern as lightning strikes on them goes unnoticed.

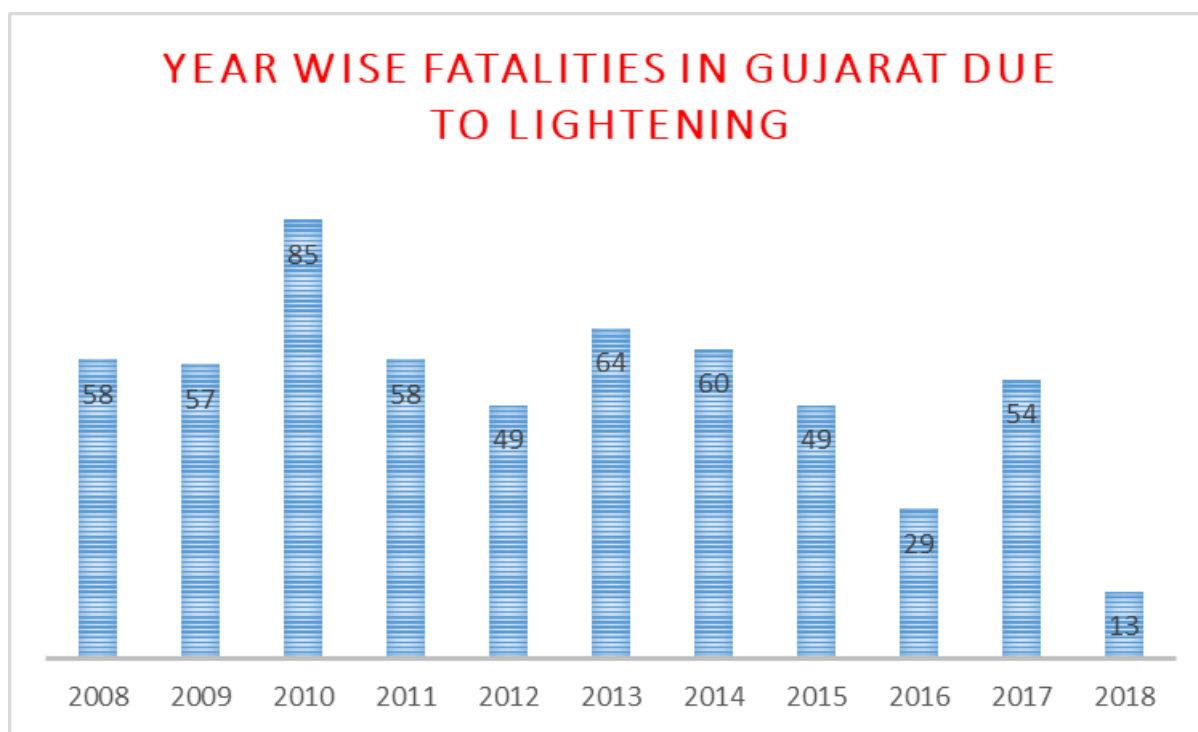


Figure 4: Year Wise fatalities recorded in Gujarat (Source: NCRB)

Lightning safety awareness and capacity building

The education, awareness and training on lightning and thunderstorm and Do's and Don'ts are of paramount importance. It has been observed that by awareness and training, losses can be reduced to a

great extent. Most of the lightning deaths are due to absence of lightning safe infrastructures like school, hospital buildings and other ill maintained structures. The lightning protection has been prescribed as per National Building Code but the implementations of the same is found wanting both in urban and rural areas are mostly ignorant to it.

Expected Participants

It is evident that children & farmers are some of the worst victims of lightning hazard. Further it has been found that there is considerable loss of flora & fauna by lightning hazard. In this regard, relevant stakeholders have been identified. Webinar is proposed for Education department, Agriculture & Cooperation Department, Forest & Environment Department and Rural Development Department.
