

Lightning Strikes & Climate Change: RSTV - Big Picture

Rajya Sabha TV programs and discussions are very insightful and informative from a UPSC perspective. In this article, we provide a gist of the RSTV Big Picture debate on lightning strikes and climate change. This topic is important for the environment section under the [UPSC syllabus](#).

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Context

Despite rapid advancement in technology, lightning strikes remain the most common reason for death by forces of nature. In just one day in July 2021, lightning strikes had claimed more than 70 lives in Rajasthan, Uttar Pradesh, and Madhya Pradesh. In June 2021, about 27 people were killed in lightning strikes in several districts of West Bengal.

Concerns:

- According to the last available statistics from the [National Crime Records Bureau](#), there were 8,145 deaths in the country attributable to forces of nature in 2019, and 35.3% of deaths were reported due to lightning.
- As per India's second annual Lightning Report, lightning strikes have killed 1,619 people between April 2020 and March 2021.
- The report also says that there has been a 34% rise in lightning strikes in the country.
- States like Odisha, Madhya Pradesh, Chhattisgarh, West Bengal, and Jharkhand have witnessed the maximum lightning strikes.

Recent Trends in Lightning Strikes

- Most studies indicate that in the last 25 years, there has been an increase in the frequency of lightning flashes and thunderstorms.
- Regions of Odisha, West Bengal, Chhattisgarh, and regions close to the Himalayan foothills have seen a consistent increase in lightning and thunderstorms.
- It was observed that around 1995 onwards, with the global increase in temperature, there was an increase in lightning strikes. Other factors like climate change and increased aerosol also cause lightning strikes.

Climate Change & Aerosol Concentration

- There is a positive relation between lightning and climate change as lightning strikes increase with the increase in temperature.
- Aerosol (a colloidal suspension of particles dispersed in the air) increases the frequency of lightning as observed in many studies.

Ground Realities

- Agricultural Lifestyle
 - The nature of agricultural work in India explains why farmers are one of the most affected groups in the lightning strike deaths.
 - After the onset of the monsoon, there is large-scale fieldwork agricultural practice.
 - The months of June, July involve paddy transplantation where farmers have to be with wet feet and knees immersed in water due to the nature of their work.
- Monsoon-Break to Active Transition
 - The lightning strikes increase visibility in the months of June and July every year.
 - Pre-monsoon and monsoon happen to provide both surface sitting for clouds and moisture which further accelerates the lightning.
 - This forms the climatological reason for increased lightning strikes.
- Forecast & Dissemination
 - There is a field-specific lack of proper information and warning.
 - But in certain cases, the short time difference between the dissemination and occurrence of lightning is the reason for the loss of human lives.

National guidelines

- There is a set of Do's and Don'ts prepared and published by the government.
- However, these guidelines rarely make it to the general understanding of village farmers.
- Despite technological advances, the information is not reaching the section of people who are most affected by this phenomenon.
- Creating awareness among common people hence becomes a challenge.
- Acknowledging the above challenges, it is important to implement more Lightning Protection Systems. It includes installations of Lightning Arresters on a large scale, especially in the prone areas.
- There should be safe shelters in the rural areas primarily to safeguard farmers who are the most vulnerable section.

Government Initiatives

- There are District Level Dissemination systems that provide warning on a 1-5 Days Scale, then there are 3-Hourly Alarms. These are done through various national and state-level institutions across the country.
- White Paper Initiative by NDMA coordinates the various state and national level institutions in disseminating these warnings.
 - The [National Disaster Management Authority \(NDMA\)](#), headed by the Prime Minister of India, is the apex body for Disaster Management in India.
- States like Odisha have introduced a school curriculum on lightning awareness for last-mile safety.
- The Damini app has been developed by the Indian Institute of Tropical Meteorology (IITM-Pune) and Earth System Science Organization (ESSO) under the Ministry of Earth Sciences.
- The app monitors lightning occurrences all over India and alerts the user of lightning near them by a GPS notification under 20km and 40km. It triggers warnings about lightning strikes three hours in advance which can help reduce losses to life and property.

Overview

- The dissemination of information to the last mile is crucial and effective measures must be taken in this direction.
- Region-specific initiatives could prove helpful in rescuing the farmers who are the largest victims of such natural disasters.