Emergency Alert System

For Prelims: Emergency Alert Systems in India, Cyclones, Floods**,** Landslides**,** Earthquakes

For Mains: Challenges faced by India's emergency alert systems, Disaster and Disaster Management.

Source: TH

Why in News?

A recent earthquake **of 6.4 magnitude hit Nepal on 3rd November 2023,** followed by an aftershock, which has exposed significant shortcomings in emergency alert systems in and around Delhi.

- As tremors rattled the region, both government and private alert mechanisms failed to reach a considerable number of people who experienced palpable shaking
- Emergency alert systems are mechanisms that provide early warning and notification of impending or ongoing disasters, such as earthquakes, cyclones**,** floods, landslides, etc.

What are the Emergency Alert Systems in India?

- **Google's Android Earthquake Early Warning System:**
  - This is a feature that uses the sensors in Android smartphones to **detect seismic activity and alert users** about potential earthquakes.
    - It also collects and shares the data with seismological agencies to improve earthquake detection and analysis.
  - Google launched this feature in India in September 2023, in collaboration with the **National Disaster Management Authority (NDMA)** and the **National Centre for Seismology (NCS)**, Ministry of Earth Sciences.
  - Google's alerts are triggered based on the **Modified Mercalli Intensity (MMI)** Scale, an alternative to the Richter scale.
    - The MMI scale measures the **effects of an earthquake at a specific location**. It describes the observed effects of an earthquake, including what **people experience and what happens to buildings and objects.**
      - **The MMI scale is different from the Richter scale and has a range of 1 to 12.**
- **Cell Broadcast Alert System (CBAS):**
  - The **CBAS** represents cutting-edge technology that empowers us to **disseminate critical and time-sensitive disaster management messages** to all mobile devices within specified geographical areas, regardless of whether the recipients are residents or visitors.
  - Common applications of Cell Broadcast include delivering emergency alerts such as severe weather warnings (e.g., **Tsunamis, Flash Floods, Earthquakes)**, public safety messages, evacuation notices, and other critical information.
  - It is developed in collaboration with the **Department of Telecommunications (DOT)** and the **NDMA** and other agencies to generate and disseminate the alerts.
- **Ministry of Earth Science's National Centre for Seismology (NCS):**

- This is the agency responsible for monitoring and reporting the seismic activity in India and its neighbourhood.
- It operates a network of seismological observatories across the country, and provides real-time data and information on earthquakes and tsunamis.
- It also maintains a website and a mobile app, called **BhooKamp**, to provide earthquake alerts and updates to the public.

What are the Gaps and Challenges in the Emergency Alert Systems?

- **Lack of Coordination and Integration:**
  - India lacks a **single, standardized emergency alert system**, resulting in inconsistent and unreliable information for both the public and authorities.
    - Multiple agencies and platforms operate independently, causing confusion, duplication, and delays in alert generation and dissemination.
  - During recent tremors around Delhi, the NCS website and app crashed, facing a **sudden surge in traffic when real-time information on the tremors** was crucial.
    - This incident highlights significant coordination challenges in managing emergency situations.
- **Lack of Accuracy and Timeliness:**
  - The emergency alert systems in India are not able to provide **accurate and timely information** on the location, magnitude, intensity, and impact of the disasters.
    - This is due to the **limitations in the data collection**, analysis, and transmission.
- **Lack of Awareness and Preparedness:**
  - The emergency alert systems in India are not able to reach and inform the masses effectively, due to the **lack of awareness and preparedness** among the public and the authorities.
    - Many people do not know how to access, interpret, and respond to the alerts, and often ignore or dismiss them as false alarms.
  - There is also a lack of **public education and awareness campaigns** on the disaster risks and mitigation measures and the response mechanisms.

Way Forward

- Develop a unified emergency alert system incorporating multiple channels like SMS, voice calls, social media, and traditional mediums.
  - **Establish seamless coordination and integration with key agencies like MoES, DoT, NDMA, IMD, and NCS.**
- Leverage advanced technologies such as satellites, and **Artificial Intelligence** to enhance data collection, analysis, and transmission.
- Strengthen the infrastructure by expanding seismological observatories, deploying additional sensors, and upgrading computing capabilities.
  - Aim for **near-instantaneous alert issuance,** providing **granular details on disaster location, magnitude, and impact.**
- Inform and engage the public on disaster risks, mitigation measures, and the functionality of emergency alert systems.
- Conduct **frequent drills involving stakeholders and communities** to test and refine alert systems and response mechanisms.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. (2020)

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