GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
STARRED QUESTION NO. *92
ANSWERED ON 13/02/2025

EARTHQUAKE PREPAREDNESS

***92. SHRI BABUBHAI JESANGBHAI DESAI:**

Will the Minister of **Earth Sciences** be pleased to state:

(a) the current status of earthquake preparedness and early warning systems in earthquake-prone regions of the country;
(b) whether Government can provide information on recent seismic activity in high-risk areas and the measures taken to mitigate potential risks: and
(c) the status of infrastructure resilience in earthquake prone regions, including the safety of critical facilities like hospitals, schools and bridges?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a)to (c): A statement is laid on the table of the House.

STATEMENT REFERRED TO IN REPLY TO PARTS (A) TO (C) OF RAJYA SABHA STARRED QUESTION NO. *92 REGARDING 'EARTHQUAKE PREPAREDNESS' FOR ANSWER ON 13TH FEBRUARY, 2025

(a) Current Status of Earthquake preparedness and Early Warning Systems in Earthquake Prone regions of the Country:

India has a well-defined National Seismological Network, expanded in the length and breadth of the country, that monitors seismic activity 24x7 around the corner in real-time mode and disseminates earthquake-related parameters and reports to various stakeholders and the public nationwide promptly through Bhukamp App and other unified Dissemination System (e.g. website; social media / whatsapp; twitter; telephone, Fax).

National Disaster Management Authority (NDMA) has undertaken the Earthquake Disaster Risk Indexing (EDRI) project to systematically address the challenges of rapid urbanization and ensuring earthquake resilience in growing cities and assess earthquake risk across Indian cities. The results of the EDRI and risk assessment have far-reaching implications, particularly in cities experiencing rapid urbanization. By integrating the risk index into urban planning frameworks, cities can adopt risk-informed decision-making, ensuring safer infrastructure development and community resilience. This initiative underscores NDMA's commitment to developing for proactive disaster risk reduction in urban India.

To address the community-based preparedness and raise awareness in earthquake-prone regions, NDMA runs TV and radio campaigns focused on earthquake preparedness, highlighting critical do's and don'ts during seismic events. Special programs like 'Aapda ka Samna', aired on Doordarshan, feature expert discussions on prevention and mitigation strategies, equipping the public with actionable knowledge to safeguard lives and property.

Additionally, The Bureau of Indian Standards (BIS) has developed a seismic zoning map of India to update stakeholders regarding earthquake precautionary measures.

Status of earthquake early warning systems:

Research efforts have started in India for developing an Earthquake Early Warning (EEW) System for Himalayan region, but these are still at a nascent stage. The National Centre for Seismology (NCS), Ministry of Earth Sciences has concerted efforts to develop an Earthquake Early Warning (EEW) System for the Himalayan region under its pilot project. However, National Centre for Seismology (NCS) under Ministry of Earth Sciences (MoES) is capable of recording any earthquake of M:2.5 and above in and around Delhi, M:3.0 and above for NE region, M:3.5 and above in Peninsular and extra-peninsular region, M:4.0 and above in Andaman region, and M:4.5 and above in border regions lying between 0 - 40 degree; N: 60 - 100 degree East. The details of the earthquakes reported by NCS are available in public domain through social media and on the website of NCS (*seismo.gov.in*).

(b) Yes. National Centre for Seismology (NCS), Ministry of Earth Sciences (MoES) monitors the earthquake activity in and around the country on 24x7 basis and this information is disseminated after the occurrence of the earthquake to all nodal state and central disaster management authorities in the least possible time. For this purpose, NCS maintains the National Seismological Network (NSN) comprising of 166 permanent seismological observatories spread across the country. The details of the earthquakes reported by NCS and the observatories of NSN are available in public domain through social media and on the website of NCS (*seismo.gov.in*).

Additionally, probabilistic seismic hazard maps by BIS and Seismic Microzonation of strategic cities falling in the seismic Hazard Zone III, IV, and V by NCS-MoES and with its technical partner institutes a step towards earthquake risk mitigation of the country.

(c) The status of infrastructure resilience in earthquake-prone regions of India varies from "Poor to Moderate", with significant concerns regarding non-compliance with building codes that were constructed earlier.

Infrastructure resilience in earthquake-prone regions is a key aspect of risk management. Multiple organizations are already working in this regard. As also explained above, NDMA has undertaken the Earthquake Disaster Risk Indexing (EDRI) project to address the challenges of rapid urbanization and ensure earthquake resilience in growing cities. Bureau of Indian Standards (BIS) has published criterion for constructing of earthquake resilient structures. The design of structure should be such that the whole structure behaves as one unit at the time of vibration rather than assemblage of parts. However, it is not economical to demolish and reconstruct most of the poorly built structures; for such poorly built structures BIS has prepared guidelines for their retrofitting. Also, HUDCO & BMTPC have published guidelines and brochures for construction and retrofitting of buildings**.** Based on these guidelines, critical facilities like hospitals, schools and bridges may be typically reinforced to withstand seismic forces, ensuring they remain operational during an emergency.

NDMA, has developed guidelines and formulates programs targeting earthquake risk mitigation to mitigate losses in a systematic and coordinated manner.

These initiatives are:

(I) Home Owner's Guide for Earthquake & Cyclone Safety (2019): The guide will make homeowners aware of various considerations and minimum requirements, which need to be taken care of while constructing and buying a house.

(II) Simplified Guidelines for Earthquake Safety (2021): It provides details based on the National Building Code of India 2016 (released by the Bureau of Indian Standards, Government of India) to those who are constructing a house and who are buying a flat in multi-storey buildings, which are made of either masonry or reinforced concrete (RC). This Guide focuses to address this aspiration of potential homeowners, and provides the basic information that they should have when constructing individual houses or buying flats in multi-storey buildings.

The National Centre for Seismology (NCS), Ministry of Earth Sciences (MoES) conducts Seismic Microzonation of cities in India to generate integrated seismological, geological, and geotechnical parameters for earthquake risk resilient structures/infrastructures and buildings.

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