

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOKSABHA
UNSTARRED QUESTION NO. 1916
TO BE ANSWERED ON FRIDAY, 30TH JULY, 2021**

AREAS PRONE TO EARTHQUAKES

1916. SHRI M. BADRUDDIN AJMAL:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the details of areas/regions prone to earthquakes in the Country;
- (b) whether any seismological study has been conducted by the Government during last five years in the said areas/regions;
- (c) if so, the details and the outcome thereof and if not, the reasons therefor;
- (d) the remedial measures taken/proposed to be taken by the Government in this regard;
- (e) whether it is true that many areas have become prone to earth quakes due to depleting ground water level in the country; and
- (f) if so, the steps taken by the Government to generate public awareness in this regard?

ANSWER

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

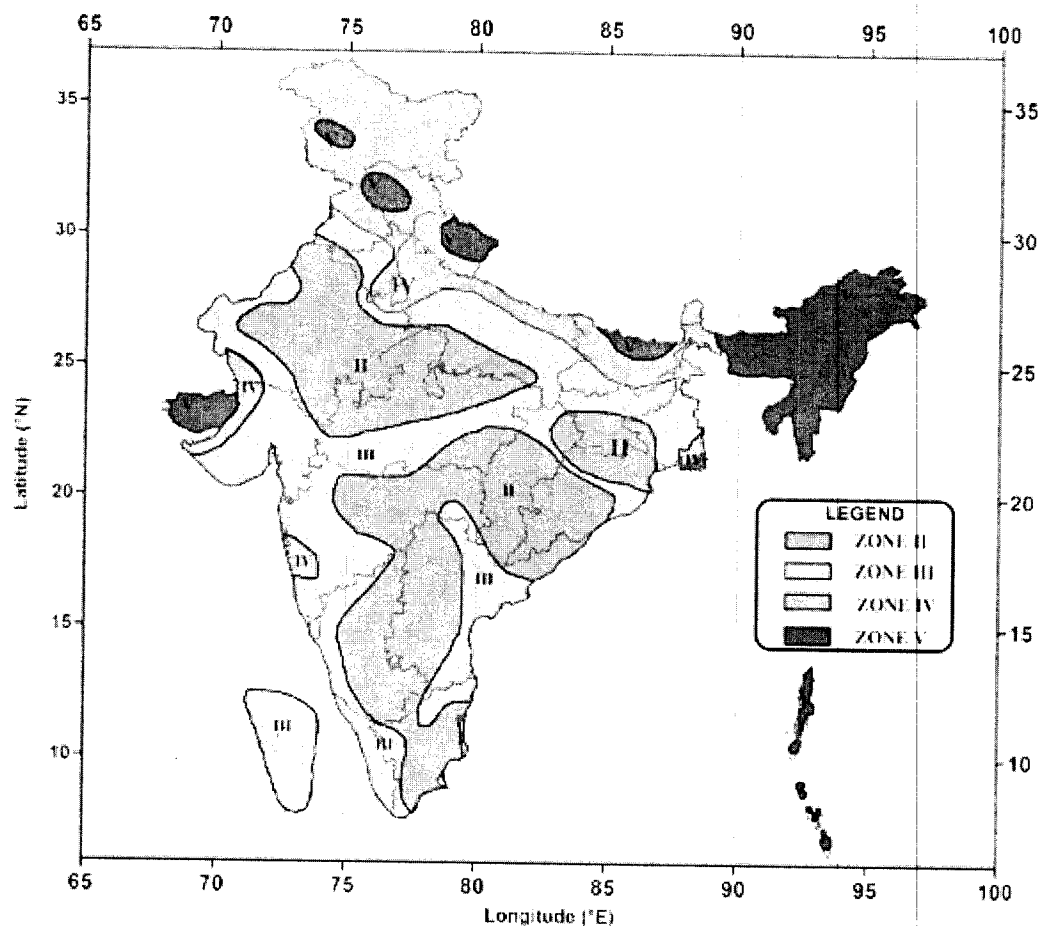
- (a) The whole country has been divided into four zones viz. zone V, IV, III and II according to the seismic zoning map of India prepared by Bureau of Indian Standards (BIS). A total of ~59% of the land mass of India (covering all states of India) is prone to earthquakes of different shaking intensities. As per the seismic zoning map of the country, the total area is classified into four seismic zones. Zone V is seismically the most active region, while zone II is the least. Approximately, ~ 11% area of the country falls in zone V, ~18% in zone IV, ~ 30% in zone III and remaining in zone II.

Details of states and areas in the country falling in different seismic zones (based on seismic zoning map of India) are given below:

- Zone V Parts of Jammu and Kashmir (Kashmir valley), western part of Himachal Pradesh, Eastern part of Uttarakhand, Rann of Kutch in Gujarat, part of Northern Bihar, all northeastern states of India and Andaman & Nicobar Islands
- Zone IV remaining parts of Jammu & Kashmir, Ladakh, remaining part of Himachal Pradesh and Uttarakhand, Some parts of Haryana, Parts of Punjab, Delhi, Sikkim, northern part of Uttar Pradesh, small portions of Bihar and West Bengal, parts of Gujarat and small portions of Maharashtra near the west coast and small part of western Rajasthan

- Zone III Kerala, Goa, Lakshadweep islands, some parts of Uttar Pradesh and Haryana, remaining parts of Gujarat and Punjab, some part of West Bengal, part of western Rajasthan, part of Madhya Pradesh, remaining part of Bihar, northern parts of Jharkhand and Chhattisgarh, parts of Maharashtra, parts of Odisha, parts of Andhra Pradesh and Telangana, Parts of Tamilnadu and Karnataka
- Zone II remaining Parts of Rajasthan and Haryana, remaining parts of Madhya Pradesh and Maharashtra, remaining parts of Odisha and Andhra Pradesh, remaining parts of Telangana and Karnataka, remaining parts of Tamilnadu.

The Seismic Zoning map of India is given below:



- (b) and (c) Yes, the entire country is monitored by National Centre for Seismology (NCS) under Ministry of Earth Sciences, a nodal agency of Government of India (GoI), by setting up of National Seismological Network (NSN) consisting of 115 observatories spread across the country. Earthquake data are disseminated in least possible time (5 - 8 minutes) among various stakeholders for information for mitigation and reduction of damages and saving lives. Apart from extensive research by NCS, earthquake data acquired by the centre are also available for conducting seismological research for addressing various issues of earthquake generating processes by different research and academic organisations of the country. The major outcome of these studies provides a deep insight into the earthquake processes and related parameters to assess the seismic hazards of the country. Earthquake awareness programs are being conducted for the safety to the people and property.

- (d) Seismic Microzonation of cities in India having population of 5 Lakh and above are taken up to generate inputs for constructing earthquake risk resilient buildings / structures to reduce and mitigate the impacts of earthquake shaking.

National Disaster Management Authority (NDMA) of India is engaged with conducting regular awareness campaigns every year through print, electronic as well as social media from time to time to sensitize programs on prevention and preparedness for building safety from earthquakes.

Beside, Government of India is poised to follow guidelines by the Bureau of Indian Standards (BIS), Building Materials & Technology Promotion Council (BMTPC) and Housing and Urban Development Corporation (HUDCO) etc. for design and construction of earthquake risk resistant structures to minimize the loss of life and damage to property caused by earthquakes. These guidelines are in wide circulation amongst the public and the administrative authorities responsible for the design and construction of earthquake resistant structures in earthquake prone areas.

- (e) and (f) Some of the recent studies advocated the role of fluid injection and withdrawal on seismogenesis but there is no linear correlation between the occurrence of earthquakes and ground water depletion because the occurrence of earthquakes is dominantly dictated by the structural heterogeneities and the behaviour of seismogenic faults at the source zones.
