

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOKSABHA
UNSTARRED QUESTION NO. 2056
TO BE ANSWERED ON FRIDAY, 30TH JULY, 2021**

SEISMIC MAPPING

**2056. SHRI RAJA AMARESHWARA NAIK:
SHRI VINOD KUMAR SONKAR:
DR. SUKANTA MAJUMDAR:
SHRI BHOLA SINGH:
SHRI RAJVEER SINGH (RAJU BHAIYA):**

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has done a seismic mapping of all the States in the country;
- (b) if so, the name of cities that fall under the high seismic zones of IV and V, State/UT-wise;
- (c) whether the Government has put in place adequate mitigation measures to reduce the impact of high intensity earthquakes in the country;
- (d) if so, the details thereof;
- (e) whether the India Meteorological Department has identified and mapped the earthquake prone zones, State/UT-wise particularly, Uttar Pradesh and West Bengal and if so, the details thereof; and
- (f) the probable reasons for bringing an area into such earthquake prone zones in West Bengal?

ANSWER

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

- (a) Yes, Considering the recorded history of earthquakes in the country, a total of ~59% of the land mass of India (covering all states of India) is prone to earthquakes of different 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.
- (b) List of important cities/towns of India that fall under the high seismic zones of IV and V, State/UT-wise, are given in table below:

City/Town	State/UT	Zone	City/Town	State/UT	Zone
Almora	Uttrakhand	IV	Jorhat	Assam	V
Ambala	Haryana	IV	Jalpaiguri	West Bengal	IV
Amritsar	Punjab	IV	Kooch Bihar	West Bengal	IV
Baharich	Utter Pradesh	IV	Kohima	Nagaland	V

Barauni	Bihar	IV	Kolkata	West Bengal	IV
Bhuj	Gujarat	V	Ludhiana	Punjab	IV
Bulandshahr	Uttar Pradesh	IV	Mandi	Himanchal Pradesh	V
Chandigarh	Chandigarh	IV	Monghyr	Bihar	IV
Darbhanga	Bihar	V	Moradabad	Uttar Pradesh	IV
Darjeeling	West Bengal	IV	Nainital	Uttrakhand	IV
Dehradun	Uttrakhand	IV	Patna	Bihar	IV
Deoria	Uttar Pradesh	IV	Parganas	West Bengal	IV
Delhi	Delhi	IV	Pilibhit	Uttar Pradesh	IV
Dinajpur	West Bengal	IV	PortBlair	Andaman & Nicobar	V
Ghaziabad	Uttar Pradesh	IV	Roorkee	Uttrakhand	IV
Gangtok	Sikkim	IV	Sadiya	Assam	V
Guwahati	Assam	V	Simla	Himanchal Pradesh	IV
Gorakhpur	Uttar Pradesh	IV	Srinagar	Jammu & Kashmir	V
Imphal	Manipur	V	Tezpur	Assam	V

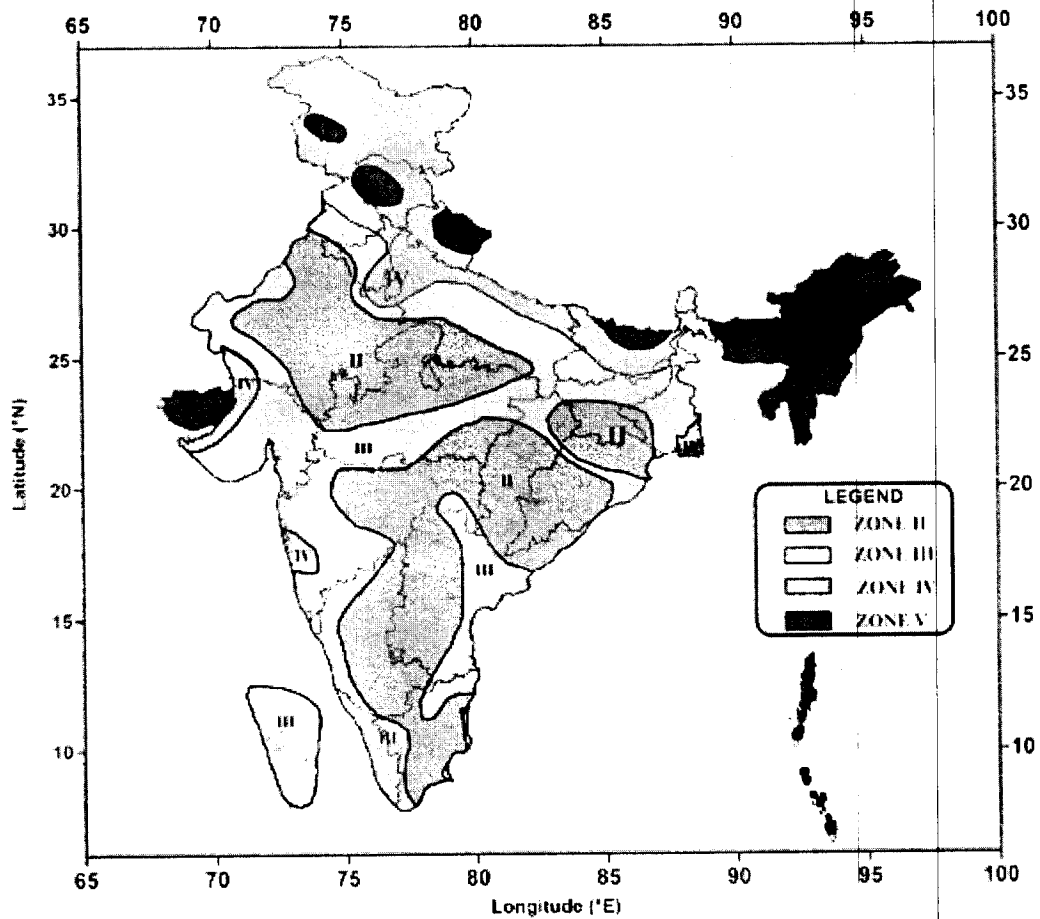
(c) and (d) National Centre for Seismology under Ministry of Earth Sciences is the nodal agency of Government of India (GoI), for monitoring earthquakes in and around the country. For this purpose, NCS maintains a National Seismological Network (NSN) consisting of 115 observatories spread across the country. The information of earthquakes reported by NCS is being disseminated to the concerned central and state disaster authorities in least possible time to initiate the adequate mitigation measures.

Secondly, Seismic Microzonation of cities in India having population of 5 Lakh and above is also considered. The purpose is to generate inputs for constructing earthquake risk resilient buildings / structures to reduce and mitigate the impacts of earthquake shaking and for minimising the damages to structures and loss of lives for safer urban planning.

Additionally, 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) Seismic Zonation map of the country (state wise) given by Bureau of Indian Standards (BIS) has categorised into several seismic zones (Zone II to Zone V) with variability of peak ground acceleration (PGA) (0.16g to > 0.36g) with of 10% of exceedance in PGA in 50-years as shown in figure below. According to this map the state of West-Bengal falls under Zone IV, III and II. Larger portion of West-Bengal state lies in Zone III. For the state of Uttar-Pradesh the state lies in Zone IV, III and II.



- (f) The seismic zones of the entire country including West Bengal are classified based upon the empirical seismic attenuation law with respect to the maximum credible earthquake source zone located at the vicinity of the area under study, which has further corroborated with historical seismicity and ground motions of the earthquakes observed in various parts of the country in past. This data was analysed by Bureau of Indian Standards to prepare a Probabilistic Seismic Hazard Zonation Map of India.
