

**INDIA METEOROLOGICAL DEPARTMENT
Earthquake Risk Evaluation Centre**

SEISMIC MICROZONATION OF NCT, DELHI

**Press Conference
of
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and Ocean Development, Government of India**

1. Background

Earthquake is the most dreaded natural disaster. Nearly 1 Lakh people have lost their lives in India alone during the last 100 years. Hence, compared to other natural disasters, earthquake calls for better pre-disaster prevention and preparedness rather than resorting to fateful measures of 'Rescue', 'Relief' and 'Rehabilitation'. About 30% of the territory of India falls in zone IV and V of the 'Seismic Zoning Map of India', which has high probability of earthquakes causing severe damages.

2. Government of India's initiatives for Earthquake Risk Reduction

Government of India have resolved to undertake measures for mitigation of 'Earthquake Hazard' and Department of Science and Technology has launched an intensive programme for generation of scientific parameters for Earthquake Risk Reduction resorting to measures of 'Prevention', 'Preparedness' and 'Pre-Disaster Mitigation Planning'. As regards to site-specific disaster mitigation and planning, concerted efforts are being made to carry out detailed Geoscientific Studies of the important Indian cities.

3. What is Seismic Microzonation?

The 'Seismic Hazard and Risk Microzonation' (SHRM) is a process of classifying the given geographic domain into small units of likely uniform Hazard (H) level (Peak Ground Acceleration - PGA, Spectral Acceleration - Sa), nature of hazard (susceptibility to liquefaction and slope failure) and Risk. The objective of Seismic Microzonation is to provide (a) probabilistic estimate of the hazard for each microzone due to earthquake shaking, (b) extent of likely damage to the built environment (dwellings, community structures, lifelines, industrial structures, monuments, heritage structures, etc.) and define damage ratio and people living in structures susceptible to damage, (c) retrofitting measures for the existing structures to render them safe and (d) specific guidelines for designing and construction of earthquake resistant structures belonging to microzones.

4. Seismic Microzonation of Delhi

'Delhi'-The National Capital Territory of India with its long history, rich culture and strategic importance, is of prime consideration for earthquake risk reduction and hazard mitigation planning. In view of this, Department of Science and Technology, has constituted a

multi-disciplinary working group of experts from India Meteorological Department, Geological Survey of India, Central Ground Water Board, Central Road Research Institute, Wadia Institute of Himalayan Geology, University of Delhi, I.I.T.-Delhi, I.I.T.-Roorkee and I.I.T.-Kharagpur. Earthquake Risk Evaluation Centre (EREC), a unit with multi-disciplinary specialization established in IMD, has been entrusted to collate the data, generate new inputs, integrate multi-thematic data and evolve Seismic Hazard Microzonation Map of NCT, Delhi.

Fifteen multi-thematic maps pertaining to 'Geoscientific', 'Geotechnical' and 'Site-Response' characterizations have been generated and integrated into first level seismic microzonation map of NCT Delhi categorizing in three hazard zones (Low, Moderate and High) (Plate-I).

These three hazard zones of NCT Delhi have further been discretized into nine units viz. (i) Ridge ambience of exposed rock: low hazard, (ii) Layer of impedance contrast at shallow depth (<30 m): moderate hazard, (iii) Weathered rock zone: moderate hazard due to weathering induced pronounced ground response, (iv) Chhattarpur Basin area: high hazard due to anticipated Basin effect, (v) Central Delhi area: moderate hazard due to site amplification in mid frequency level and Basin margin effect (vi) North-West Delhi plains (Bangar): moderate hazard due to thick soft soil strata, (vii) South Najafgarh sedimentary fill area (Dabar): moderate hazard due to high ground amplification and liquefaction, (viii) Zone of Basin margin effect in the western part of Delhi ridge: high hazard, (ix) Newer alluvium proximal to Yamuna river: high hazard due to Liquefaction Potential (Plate-II).

Earthquake Risk Evaluation Centre (EREC) has taken up further studies for Seismic Microzonation with higher precision on 1:10,000 scale. This would provide attributes of hazard for all microzones with site-specific details. The 'Hazard' would be integrated with results of collateral studies on 'Vulnerability Analysis' for final risk evaluation.
