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A. Seismic Microzonation of Urban centers: a tool for Disaster Mitigation and Urban Planning
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250 km from away from Delhi caused moderate damage to some of the buildings built on filled land or on soft alluvium. The Bhuj earthquake caused severe damage not only in the epicentral region, but even in Ahmadabad, about 200 km away, attributed to increased ground shaking on the soft alluvium. In the modern urban planning and development, microzonation of seismic hazard is an important aspect, for seismic design, estimation of liquefaction potential, land use planning as well as for addressing insurance concerns. Thus, Microzonation of major cities and other regions likely to be affected by future near or distant earthquakes is now regarded as an inevitable aspect of earthquake studies. Prevention of disaster includes all measures taken before an earthquake event in order to reduce the earthquake risk. As the earthquake hazard cannot be reduced or influenced, prevention/mitigation measures may include:

• Land use management taking into account local earthquake hazard
Considering local site effects,
• Reduction of the vulnerability of structures and infrastructural facilities, and,
• Reduction of the value at risk.

Seismic hazard in turn earthquake damage is commonly controlled by three interacting factors- source and path characteristics, local geological and geotechnical conditions and design of the structures. Seismic microzontaion is the process of assessment of the first two factors to provide a basis for estimating and mapping potential damage to buildings, which in other words is quantification of the risk. Obviously, all of this including preparation of microzonation maps would require analysis and presentation of a large amount of data –

Geologic, seismologic, engineering specifications etc. History of earthquakes, geometry and history of faults in the region, attenuation relationships, and ground amplification, liquefaction susceptibility are only few of the important inputs required. Presenting all of this information in the proper format, for the use of planners, developers, insurance companies etc. is another important aspect of microzonation. Considering the social and economic implications of this exercise, it is important that each of the parameters is carefully represented and the maps are presented with clarity, in appropriate scales and user friendly formats. It is essential to conduct a regional seismic hazard study based on detailed regional geological investigations preferably with an accuracy of 1:25,000 map scale coupled with seismological studies. It is preferable that these earthquake hazard maps should be defined with respect to spectral accelerations for competent site conditions. It is important to consider not only the acceleration amplitudes but also the frequency content of the motion, which has an influence on the structural response. The other output from the earthquake hazard study should be acceleration time history records based on the probabilistic method for the earthquake hazard assessment. These time history records can be used for site response analysis. Disaster management policy of urban areas / municipalities shall include the regulations related to the development based on microzonation maps and land use issues of disaster mitigation, and emergencies and rehabilitation. With these policies the job of the planning departments of the urban centers / municipalities is to develop and apply seismic microzonation in their urban master planning and to the control of land development and building.

Planning resources and strategies are needed to address problems of slum development. Urban reconstruction development plans must work with government agencies and private interests to develop workable methods. Democratisations of planning and development processes have played a huge role in allowing the public to make important decisions; these needs to be strengthened. A framework for continuous presence of elected local-level governments for their effective functioning to ensure provision of urban services and infrastructure must be strengthened.