

National Level Arrangements

At the national level the Ministry of Home Affairs will be the Nodal agency for execution of the project. A Project Management Board (PMB) will be constituted under the Chairmanship of Secretary, Border Management to provide overall guidance to the programme. The project implementation will be overseen by a Steering Committee (SC) consisting of the members of the Core Group on Earthquake Mitigation and representatives of various resource institutions across the country, under the chairmanship of the Joint Secretary, NDM. The SC will meet quarterly to review the progress of the programme and provide mid-term corrections if required.

National Level Arrangements

The seven designated **National Resource Institutions** are:

1. Centre for Environmental Planning and Technology (CEPT), Ahmedabad
Tel: 079 26302470
Programme Coordinator: Shri. V.R Shah
2. Indian Institute of Technology Kharagpur, Kharagpur
Tel: 03222 282246
Programme Coordinator: Shri Uttam Banerjee
3. Indian Institute of Technology Roorkee, Roorkee
Tel. 01332 285839
Programme Coordinator: Shri R. Shankar
4. Jawaharlal Nehru Technical University, Hyderabad (School of Planning & Architecture)
Tel: 040 23317006
Programme Coordinator: Shri Vijay Kishore
5. Manipal Institute of Technology, Manipal
Tel: 0820 2571061
Programme Coordinator: Shri R.P. Deshmukh
6. Maulana Azad National Institute of Technology, Bhopal
Tel: 0755 2557800
Programme Coordinator: Shri Nitin Dindorkar
7. School of Planning and Architecture, New Delhi
Tel: 011 2692049
Programme Coordinator: Shri Subir Saha

The National Resource Institutions will

Conduct training programmes for 250 faculty members from State Resource Institutions in a one-week special Trainers module in seismically safe construction within a time span of one year.

Develop and print course curriculum and training materials/ module for practising architects.

Put in place a framework /system for mandatory registration/ compulsory competency assessment of the practicing architects.

State Level Arrangements

In each State/UT, a State Steering Committee (SSC) will be formed out of selected members of various resource institutes across the State and specialists on the subject matter under the chairmanship of the State Relief Commissioner to review the progress of the programme at State level. The Steering Committee at the State level will meet quarterly to review the progress of the programme. The SSC will also decide on the number of serving /practising Architects to be trained at each SRI.

The State level Resource Institutions would be the Colleges of Architecture nominated by the State Government.

The State Resource Institutions will

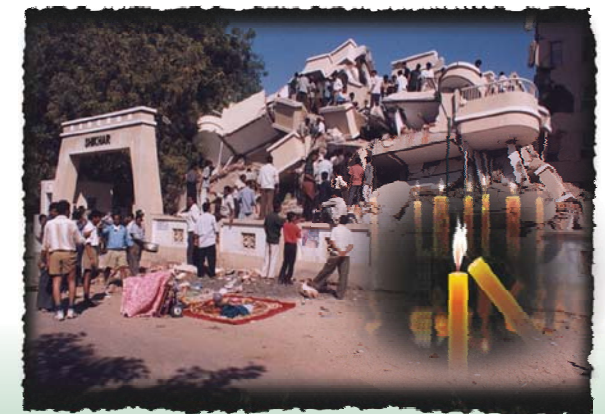
Conduct training programmes for 10,000 serving and practicing Architects in seismic resistant conceptualization, design and construction, building bye-laws/ BIS codes.

Consultancy for the State in ascertaining seismic safety of Architectural projects taken up by the State Government

A similar programme for training of serving/practising Engineers 'National Programme for Capacity Building of Engineers in Earthquake Risk Management (NPCBEERM) is also being implemented by the Ministry of Home Affairs.



National Programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM)



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Government of India

Ministry of Home Affairs

**National Disaster
Management Division**

Background

On account of its geo-climatic conditions, the Indian sub-continent is highly prone to multiple natural hazards including earthquakes- one of the most destructive natural hazards with the potential of inflicting huge losses to lives and property. Earthquakes pose a real threat to India with 60% of its geographical area vulnerable to seismic disturbances of varying intensities including the capital city of the country.

Every State and UT in the country have regions in the moderate (Zone III), high (Zone IV) or severe (Zone V) earthquake hazard zone. Almost the entire northeast region, northern Bihar, Himachal Pradesh, Jammu & Kashmir and some parts of Kutch are in seismic zone V, while Delhi, the entire Gangetic plain and some parts of Rajasthan are in seismic zone IV. It has been observed that an average of three earthquakes of magnitude 6.0 or more occur in India every year.

India is thus among the most earthquake prone countries in the world and in the last 15 years, we have experienced six earthquakes of moderate intensity. Although moderate in intensity, these earthquakes caused considerable losses to human life and property, highlighting the extreme vulnerability of the population and infrastructure to earthquakes. While earthquakes are natural hazards, the disasters are man-made. As has often been quoted, “**Earthquakes don’t kill, unsafe buildings do**”. It is the high vulnerability of our building stock that turns these hazards into disasters.

This high degree of seismic hazard of the country poses a real threat to millions of its people. Unfortunately, this is not reflected in the undergraduate engineering /architectural curriculum and most graduates in Civil engineering/Architecture from our universities would not have acquired the capacities to carry out seismic design/ construction.. Considering the increased construction activity throughout the country, this effectively results in the construction of buildings and structures with low earthquake resistance and an exponential increase in the vulnerability of our built environment. Hence any initiative towards Earthquake Risk Management should target

reduction in vulnerabilities and an increase in capacities at various levels.

The government is now emphasizing the inclusion of earthquake engineering elements in the undergraduate engineering and architectural courses. However, this will only address the new entrants to colleges of architecture. Practising architects need to be trained to ensure that all new constructions are earthquake resistant to keep from increasing the vulnerability and thus the risk associated with the built environment.

While structural safety is the main focus of Engineers, the structural configurations chosen by Architects control the overall behaviour of structures during earthquakes. Ensuring structural and operational safety of the buildings would require adequate attention to not only the structural design, but also the form and configuration of the building for lateral loads. According to the great earthquake engineer Late Henry Degenkolb-

“ If we have a poor configuration to start with, all that the structural expert can do is to provide a 'band-aid' to improve a poor solution as best as s/he can. Conversely if we start off with a good configuration and framing system, even a poor engineer cannot harm its ultimate performance too much”.

The role of the architects is thus crucial in the entire cycle of building construction: conceptualization, deciding the form and configuration, structural design and detailing, construction and provision of services and non-structural elements. In general, the Architect leads a team of professionals in the creation of a structure. Most decisions related to functional as well as structural aspects are taken by the Architect her/himself. Thus, even though the responsibility of ensuring safety is of the structural engineer, it is the Architect who certifies the structural stability of the building to the concerned authorities. So it is crucial that the architects be aware of the building behaviour in earthquakes and of the forces that act on various parts of a building during an earthquake.

Over the past two years, the Government of India has brought about a paradigm shift in the approach to disaster management. The approach proceeds from the

conviction that development cannot be sustainable unless disaster mitigation is factored into the development process. This policy also emanates from the belief that investments in mitigation are much more cost effective than expenditure on relief and rehabilitation.

One of the key programmes initiated by the Ministry towards sustainable Earthquake Risk reduction in the country is the **National Programme for Capacity building of Architects in Earthquake Risk Management (NPCBAERM)**. The programme envisages the development of capacities of 10,000 serving and practising Architects all over the country through leading engineering institutions at the National level (National Resource Institutions-N.R.Is) and State level (State Resource Institutions-S.R.Is)

Goal

The overall goal of the programme is **sustainable earthquake risk reduction in the country**.

Objectives of the Programme

The Objectives of the Programme are:

Ensure seismically safer habitats by training of practicing architects.

Capacity building of the Colleges of Architecture at the National and State levels for ensuring effective training of practicing architects in earthquake safety.

Development of Resource Materials/ training modules for sensitization/ training of architects

Putting in place a system of training and subsequently of certification for practicing architects.

Programme Implementation

An expert group meeting that included the National Core Group on Earthquake Mitigation members,

Council of Architecture, the Indian Institution of Architects and AICTE designated seven leading institutes /colleges (see list on other side) as National Resource Institutions (NRIs) to provide training in earthquake engineering to the faculty of State engineering colleges nominated by the respective State Governments as State Resource Institutions (S.R.Is) as advised by the Government of India.

The number of S.R.Is to be nominated has been decided depending on the number of registered Architects available in each State.

Faculty members in Architecture from each State Resource Institution are being trained at National Resource Institutes in a one-week special training of trainers' module to prepare potential Trainers for training of serving and practising Architects at the State/UT level.

250-faculty members across the country will thus be trained in a one-week' Trainers module in earthquake engineering components.

These faculty members would then undertake training of a total of 10,000 serving and practising Architects in seismic safe concepts, design, constructions and building byelaws/BIS codes etc in a one-week training module.

Practising architects will be required to complete the one week module at the State Resource Institutions (S.R.Is) and submit the certificate to the Council of Architecture (CoA). A system will be devised in consultation with CoA to make such certification mandatory.

The Ministry is also providing financial support for sensitization of architects. The Institution of Architects (IIA) will take up sensitization of architects in earthquake resistant features in different State Chapters of IIA around the country. The Ministry assists in organizing resource persons for sensitizing the architects of these chapters, as well as ensure the participation of the State Government in such training programmes.