National Resource Institutions

The eleven **National Resource Institutions (NRIs)** are

1. *Birla Institute of Technology and Science, Pilani (Tel: 01596 242090)*
   ***Programme Coordinator**: Shri Rajiv Gupta*
2. *Central Building Research Institute Roorkee, Roorkee (Tel: 01332 272243)*
   ***Programme Coordinators**: Shri B. S. Gupta & Shri Shailesh Aggarwal*
3. *Indian Institute of Science Bangalore, Bangalore (Tel: 080 23600690)*
   ***Programme Coordinator**: Shri B. K. Raghuprasad*
4. *Indian Institute of Technology Bombay, Mumbai (Tel: 022 25767000)*
   ***Programme Coordinator**: Shri Alok Goyal*
5. *Indian Institute of Technology Delhi, New Delhi (Tel: 011 26591190)*
   ***Programme Coordinator:** Shri T.K. Dutta*
6. *Indian Institute of Technology Guwahati, Guwahati (Tel: 0361 2690401)*
   ***Programme Coordinator:** Shri S.Talukdar*
7. *Indian Institute of Technology Kanpur, Kanpur (Tel: 0512 259 7867)*
   ***Programme Coordinator:** Shri S.K. Jain*
8. *Indian Institute of Technology Kharagpur, Kharagpur (Tel: 03222 255386)*
   ***Programme Coordinator:** Shri S.K. Nath*
9. *Indian Institute of Technology Madras, Chennai (Tel: 044 22578002)*
   ***Programme Coordinator:** Shri Meher Prasad*
10. *Indian Institute of Technology Roorkee, Roorkee (Tel: 01332 272349)*
    ***Programme Coordinator:** Shri Susanta Basu*
11. *Structural Engineering Research Centre, Chennai (Tel: 044 22542139)*
    ***Programme Coordinator:** Shri C. V. Vaidyanathan*

The National Resource Institutions will

Conduct training programmes for 420 faculty members from State Resource Institutes in six-weeks training module on seismically safe construction and retrofitting

Development of course curriculum and training materials for the above course.

Development and printing of course curriculum and training materials for two weeks' module for municipal/ PWD engineers and engineers in the private sector.

Providing technical support to State Resource Institutions for conducting training for serving/practising engineers.

One batch of training for faculty members/Government nominees from the States of Rajasthan, Gujarat, UTs of Daman & Diu and Dader & Nager Haveli has already been conducted by BITS, Pilani in October 2004. Tentative schedule for remaining trainings announced so far are: December 2004 (BITS Pilani-batch 2) January 2005 (IIT Roorkee batch 1, IISc Bangalore Batch 1), February 2005 (CBRI Roorkee-batch1, IIT Bombay-batch1, IIT Madras batch 1), March 2005 (IIT Roorkee-batch2, IIT Kharagpurbatch1, SERC Chennai batch 1), April 2005 (IIT Kharagpur-batch 2) May 2005 (IIT Roorkee-batch 3), July 2005 (IIT Bombay batch 2)

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 Engineers to be trained at each SRI and also the Lifeline buildings to be assessed for retrofitting.

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

The State Resource Institutions will

Conduct training programmes for 10,000 PWD/ Municipal engineers and private engineers in seismic resistant design and construction, building bye-laws/ BIS codes.

Assist Municipal bodies in review and amendment of building bye-laws.

Assist the State Government in formulating a framework for mandatory registration/ certification for engineers in private and public sector.

Consultancy for the State to assess seismic vulnerability and suggest retrofitting of key lifeline buildings

State Hazard Safety Cell

In all States /UTs, Hazard Safety Cells will be established to ensure compliance to building bye-laws and safe construction practices, creation of a framework to conduct certification courses/ mandatory registration of engineers and architects, review of building bye-laws, suggest necessary changes to incorporate BIS codes in building bye-laws etc. These Cells are being constituted from selected members of various State Resource Institutes / retired senior Engineers across the State and specialists on the subject matter under the chairmanship of the State Relief Commissioner to take up the above activities.

A similar programme for training of in-sevice/practicing Architects 'National Programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM) is also being implemented by the Ministry of Home Affairs.

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National Disaster Management Division
Ministry of Home Affairs
North Block, New Delhi

National Programme for Capacity Building of Engineers in Earthquake Risk Management

(NPCBEERM)

Government of India

Ministry of Home Affairs

National Disaster Management Division

NPCBEERM National Programme for Capacity Building of Engineers in Earthquake Risk Management

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.

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.

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 Engineers in Earthquake Risk Management (NPCBEERM).**The programme envisages the development of capacities of 10,000 serving and practising engineers 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:

To ensure seismically safe construction by training of the structural Engineers in the State government and private practitioners.

To put in place a system of training and subsequently of certification of Civil and Structural Engineers practicing in the private sector.

To put in place an appropriate techno-legal regime for ensuring seismically safe construction practices in all States/UTs.

To build the capacity of the Municipal bodies/Urban local bodies to implement this techno-legal regime.

Establishment of Hazard Safety Cells in all States/UTs to ensure compliance with building bye-laws and safe construction practices for creating a framework to conduct certification courses for engineers and architects.

Provide technical support to the State Governments in carrying out retrofitting of lifeline buildings and systems (through S.R.Is).

Outcomes of the Programme

The Programme envisages the development of capacities of 10,000 serving and practising engineers all over the country through leading engineering institutions at the National level, National Resource Institutions (NRIs) and State level, State Resource Institutions (SRIs).

Capacity building of the State Resource Institutions to carry out training of PWD/Municipal Engineers as well as engineers practicing in the private sector.

The building bye-laws of urban local bodies for seismic zones amended to include BIS codes for seismic safe construction.

Establishment of Hazard Safety Cells in all States/UTs to ensure safe construction practices.

Consultancy available to the States for retrofitting the lifeline buildings.

Framework developed for compulsory registration /certification courses for engineers practicing in private and public sector.

Programme Implementation

The National Core Group on Earthquake Mitigation constituted under the Ministry of Home Affairs, has designated all the IITs, IISc Bangalore and few other leading institutes/colleges (refer list on the other side) as National Resource Institutions **(NRIs)** to provide training in earthquake engineering to the faculty of State engineering colleges nominated by State Governments as S.R.Is.

Government of India has advised the States/UTs to nominate Civil engineering colleges as State Resource Institutions. Number of S.R.Is to be nominated has been decided depending on the number of practising engineers to be trained in each State.

Faculty members in Structural/Civil engineering from each State Resource Institution are being trained at National Resource Institutes in a six-week special module to prepare potential Trainers for training PWD/Municipal engineers and engineers practicing in the private sector at the State/UT level.

420 faculty members across the country will thus be trained in **'six weeks'** special module on earthquake engineering components.

These faculty members would then train a total of 10,000 Municipal / PWD / private engineers in seismic safe design, constructions and building bye-laws/BIS codes etc in a **two**-week training module.

State Resource Institutions would assist the State Government for creating a mandatory registration system/ certification system for engineers practicing in the private and public sector.

State Governments would identify lifeline buildings, which need to be functional in the event of an earthquake. State Resource Institutions will assist the State Government in the assessment and retrofitting of these buildings wherever necessary.

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 members of the Core Group on Earthquake Mitigation and representatives of various resource institutes across the country, under the chairmanship of the Joint Secretary, NDM. The SC will meet quarterly to review the progress of the programme.

A step towards Earthquake Risk Reduction