

Centre for North East Studies, Jamia Millia Islamia

NATIONAL WORKSHOP ON HOUSING, REHABILITATION AND RESILIENCE

11th-12th November 2011, Jamia Millia Islamia, New Delhi

RECOMMENDATIONS

New Delhi, Nov. 14 – The National Workshop on ‘Housing, Rehabilitation and Resilience’, which drew participation of five state governments from the North eastern states, the North Eastern Council as well as international and national experts to discuss issues arising from the Sikkim Earthquake of Sept. 18, 2011, met under the auspices of the Sikkim Studies Program of the Center for North East Studies on Nov. 11-12, 2011, and made the following recommendations for Sikkim as well as broader recommendations for the NER, taking into consideration the complex social, constitutional, political and cultural milieu of the region:

Immediate Steps:

1. Institutional and Policy

- The Government of Sikkim should strengthen the Sikkim State Disaster Management Authority (SSDMA), with professional Technical Experts, either as full members or as members of an Advisory Committee, and activate District Disaster Management Authorities (DDMAs) in each of the Districts headed by the District Collector and co-chaired by elected Members of the Zilla Panchayats on the basis of partnership and also providing an inclusive, community-driven approach.
- The SSDMA should announce a Sikkim State Disaster Management Policy (which must also include Rehabilitation and Recovery Strategy with regard to the recent earthquake of 18th September 2011) in the shortest possible

time, preferably before Dec 1, 2011. (The State Disaster Management Policy introduced by states like Gujarat, Assam, Kerala, etc. and the Post-Earthquake Rehabilitation Policy introduced in Gujarat 2001 and the Post-Kosi Floods Housing Reconstruction Policy introduced by Government of Bihar in 2008 can be used as models.)

- The existing comprehensive North East Regional Node for Disaster Risk Reduction in NESAC premises at Umiam, Meghalaya, can be the nodal agency with centres in each NE state with electronic and satellite connectivity. [The SSDMA would be the contact center with NESAC for this purpose.](#)
- Sikkim and each state of the NER should have a specially trained State Disaster Response Force (SDRF). Mizoram, Tripura and Arunachal Pradesh are taking steps in this direction.
- An Engineering College with B.Tech in Civil Engineering and specialization in Earthquake Engineering should be established under the Sikkim Central University. [Till the establishment of such a college, temporary affiliation may be sought with a nearby center of learning, such as IIT Guwahati / Kolkata University / BHU.](#)
- Special emphasis should be placed on strengthening multi-hazard-resilient Communication infrastructure with multiple redundancies based on the experience of the disruption of the BSNL telephone network in the Sikkim earthquake. Since existing communication systems tend to collapse in the event of a disaster, Ham Radio Operators (international association of ham radio network) and Community Radio Stations should be encouraged in every district. [For this purpose the National Institute of Amateur Radio \(NIAR\), Hyderabad could extend help in the matter.](#)

- Given the unique land ownership system and the absence of construction regulations in rural areas and weak compliance of the Building Codes in the urban areas, Government of Sikkim may consider a hybrid system of housing construction (promotion of traditional vernacular construction typologies in rural areas and code-compliant construction in urban areas) in the post-earthquake reconstruction of houses.
- The Government of Sikkim may set up a new Department for Disaster Management under a designated officer no lower than a rank of a Secretary/Commissioner who will report directly to the SDMA.
- The said officer will oversee all disaster preparedness, mitigation and prevention issues including post-earthquake rehabilitation, reconstruction of intermediate shelters and permanent housing, public infrastructure and amenities, early recovery and long term recovery.
- The designated nodal officer for Sikkim Earthquake Rehabilitation and Recovery may also be designated the Head of the Special Purpose Vehicle to be created within the Sikkim State Disaster Management Authority for coordinating the monitoring and implementation of the rehabilitation and reconstruction of damaged infrastructure, amenities, public assets, etc.
- State Disaster Management Authority must carry out rapid damage assessment in the affected areas, with specially trained manpower.
- Special attention may be given to landslide risk and vulnerability especially in the post-earthquake reconstruction phase.

- While framing a post-earthquake Reconstruction Policy, special attention needs to be placed to ensure that vernacular/traditional construction used in rural housing and especially in cultural heritage monuments is not replaced by “modern” RCC buildings.
- Retrofitting of the existing vulnerable buildings, including cultural sites, should be promoted in order to reduce their long-term vulnerability, since it is the most cost effective option available for disaster risk reduction.
- Detail technical guidelines should be evolved for Repair, Restoration and Retrofitting of the existing buildings of the most common building systems in the state.
- Extensive publicity may be given to the technical guidelines for repair, restoration, strengthening of damaged and retrofitting of vulnerable housing stock in the affected region.
- Through the National Bamboo Mission and State Missions, use bamboo/cane where possible for construction of private homes and official buildings. [Experiments may be initiated and conducted to test the efficiency of Bamboo as reinforcement material in RCC.](#)
- Rapid Visual Damage Assessment Guide should be evolved to enable engineers/suitably trained personnel to assess the damage category for the local building typologies as per internationally accepted norms.

2. Public Private Partnership, Community ownership

PPP:

- Since public awareness is at the heart of preparedness, an intensive campaign must be waged from door to door and village to village, involving students and teachers and using the excellent network of Panchayats in Sikkim to sensitize communities and to enable them to meaningfully participate in the reconstruction process.
- Community participation in the rehabilitation and recovery process may be ensured by facilitating owner-driven reconstruction (ODR) which was found most effective in the aftermath of Kutchh Earthquake and the system of performance and compliance-based release of financial installments like the one introduced in Gujarat after the 2001 earthquake need to be adopted.
- The Government of Sikkim should evolve technical guidelines for popular building systems including traditional/vernacular ones which are likely to be used for reconstruction of houses and infrastructure.
- People must be allowed to adopt any of these construction systems and any house plans to rebuild their houses with in accordance with the appropriate technical guidelines.
- A directory of independent professional groups, with experience in these sectors and endorsed by Central/State Governments needs to be developed; such a directory can be published, disseminated and put online for easy access.

- Governments may consider partnering with suitable field experience and technically competent NGOs as part of a PPP in these sectors.
- Compliance of regulatory regime such as Building Codes must be strictly enforced.
- In the North-east, construction should not be permitted in ecologically sensitive zones, including on wetlands and steep slopes, and existing vulnerable buildings, which have violated provisions, should be penalized.

3. Funding

- The financial assistance to be paid to earthquake victims who are entitled to compensation must be paid to house owners in installments, based on compliance.
- To ensure that the work is carried out properly as per the official technical guidelines, the successive entitlements must be released only after proper technical audit of the construction.
- Assistance could also be in the form of providing construction materials to the people at a subsidized rate.
- Material banks/depots could be set up at various locations to simplify the task of material procurement for earthquake victims.

- A single window building technology resource centre needs to be established at district levels to promote earthquake resistant building technologies including retrofitting techniques. Expert agencies like BMTPC and HUDCO may be involved.

4. Capacity Building

- Short-term Sensitization Programmes for elected representatives, community leaders and government officials at different levels may be conducted.
- Orientation and Refresher Programmes for engineers, NGOs, building artisans, and communities in disaster resistant building technologies including new construction, repair, restoration and retrofitting should be conducted.
- A mechanism for third party audit by engaging a professional technical agency for monitoring the quality of construction of houses, roads, bridges, etc. should be established.
- User-friendly manuals for Repair and Retrofitting for existing buildings similar to those developed by BMPTC, Ministry of Housing, Govt. of India, for Uttarakhand and Himachal Pradesh, should also be prepared for Sikkim and other North-eastern states.
- The workshop expressed deep concern over the vulnerability of lifeline structures (such as schools, PHCs, ICDS Centres), especially government ones. Clearance of the Project and Release of funds for new construction should be done only after approval by the competent state technical authority or Central Government technical agency.

- Launch at the earliest a well coordinated programme of training of building artisans, engineers, architects (from private and public sectors), and Contractors for effective implementation of rehabilitation programme including disaster resistant new construction, repair, restoration and retrofitting.

5. Rehabilitation and Retrofitting

- SSDMA will give special attention to the construction of appropriate intermediate shelters with active community participation for those people whose houses have been completely destroyed/severely damaged within a period of one to three months of the disaster.
- Prefabricated structures should be discouraged for intermediate shelters (These cannot meet the target of large quantities required after disasters and, that too in a very short time. This is also marred by high costs, and procurement and transportation delays.) [Considering the climatic conditions of Sikkim, use of GI sheets for temporary shelters may be avoided. It becomes very cold in winter and very hot in summer.](#)
- The SSDMA should formulate rehabilitation and reconstruction policy (after every disaster) on the recommendations emerging from the Rapid Damage Assessment Study including sub components like Capacity Building, Technology Options for Repair, Reconstruction and Strengthening/ Retrofitting and Relocation of settlements etc.

- Retrofitting Clinics may be established in every district to develop cadre of trained masons, contractors and engineers and provide information and guidance on retrofitting to the community
- Sikkim may consider creating a community based participatory monitoring system to track the progress, implementation of technical guidelines, grievance redressal etc along the lines of a mechanism which was put in place in Gujarat, Tamilnadu, Bihar through SETU kendras for every cluster of villages
- The rehabilitation program should include the following components.
 - a. Relocation of affected settlements to new locations, only in case of clearly unsafe sites.
 - b. Reconstruction of destroyed houses at existing sites.
 - c. Repair, restoration and seismic strengthening of damaged houses.
 - d. Strengthening of houses which are not apparently damaged but require strengthening as these are vulnerable and at risk

6. IEC: Literature, dissemination, communications

- UNDP's "Manual on Hazard Resistant Construction in India" to be translated into local languages for extensive use in the states.
- Public Awareness Campaigns by SSDMAs/State Disaster Management Departments to inform communities on 'Dos and Don'ts' at times of disaster through media (local channels – print and electronic media, Community Radio Station, as well as new technology such as SMS'.)

- Extensive publicity in different languages needs to be given to the technical guidelines/manuals for repair, restoration, strengthening of damaged and retrofitting of vulnerable housing stock in the affected region.

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