PROJECT BACKGROUND AND CONTEXT

# Background

The NE India encompassed by the ancient plate margin is seismically a very active zone. The 1897 Earth Quake of Shillong of 8. 7 Richter Scale is considered to be most massive which devastated the entire plateau and affected the NE region running about 650,000 square km masonry structures being present in the region. A revisit of the Shillong earthquake in the present day context may present a very damaging scenario because of the increasing population and rapid changes in building typology in the region. A hypothetical earthquake scenario for the 1897 Shillong earthquake would help to see the capacity of the state to handle such massive earthquakes. A well-crafted earthquake scenario provides a powerful tool to draft the mitigation policies and set priorities that will systematically reduce the impact of the earthquakes.

With this as the backdrop NDMA entrusted CSIR – NEIST, the development of science based earthquake scenario for M 8.7 Shillong Earthquake and coordination of project activities. The main responsibility of CSIR - NEIST Jorhat was creation of a scientific scenario for a repeat of M 8.7 Earthquake and to regulate fund to State Disaster Management Authorities (SDMAs) for the conduct of awareness generation and Capacity Development programs (IRS/TTx/MMEx) which were all performed directly by NDMA without involving/consulting CSIR –NEIST (Annexure IV). The project starting from November, 2015 was of one and a half year duration.

The organization activities- meetings/workshops (preparatory) for implementing public awareness (including Media Plan) throughout North East Region were organized directly by NDMA with assistance from ASDMA Guwahati. Seismic Hazard–Risk Evaluation is currently under the priority research agenda of CSIR- NEIST. The Institute is equipped with basic infrastructure and trained manpower for monitoring the seismicity of NE India on a real-time basis and actively engaged in seismic micro zonation and other risk reduction programs for the region. Over the years, NEIST has developed strong collaborative linkages with various State departments and Academic Institutions to intensify hazard risk reduction programs.

NEIST in partnership with NEC and State Disaster Management Authorities (SDMA) following the guidelines of NDMA formulated an action plan for strengthening the pre-disaster earthquake preparedness and mitigation programs. The NE consortium for Natural Hazard–Risk Reduction headed by NEC Shillong has decided to take up such programs more vigorously during for the 12th FYP. The expert group has identified Action Plan with the following major points:

* Phase wise expansion of the NEWSN (North East Wide Area Seismic Network), creation of seismic subnets & intensive monitoring with the involvement of State Agencies. Update information on active source zones/tectonic lineaments.
* Site Specific Seismic Early Warning & Hazard communication
* Identification of precursory phenomena & involvement of School/College students & teachers to support scientific community
* Adoption of Seismic Micro zoning procedures for NE State capitals & other populated urban areas. Creation of scenario earthquakes for Hazard-risk vulnerability assessment
* Involvement of locally available trained manpower to intensify the hazard reduction and public awareness programs.

Keeping the above into consideration CSIR-NEIST in association with NDMA implemented the scenario exercise for a repeat of the M.8.7 Shillong Earthquake to assess the anticipated impact on the North Eastern States.

## 1.1 Need of the Project

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Being situated in the seismically active zone the North Eastern region is vulnerable to high intensity earthquakes which can lead to massive destruction of the social, economicas well as the ecological condition of the State. The rapid increase of population and urbanization has changed the building typology as the traditional houses and buildings have been replaced by non-engineered concrete structures to accommodate the population. The change in the building typology taken with the high seismic vulnerability of the region presents a very damaging scenario in the event of an earthquake of high intensity. In an effort to provide an in-depth knowledge of the likely financial and human lives losses, so as to validate the need to develop mitigation strategies to reduce the impact the science of earthquake scenario has been developed in the recent past. A hypothetical earthquake scenario for the 1897 Shillong earthquake was developed to see the capacity of the state to handle such massive earthquakes. A well-crafted earthquake scenario provides a powerful tool to draft the mitigation policies and set priorities that will systematically reduce the impact of the earthquakes. Keeping the above into consideration NDMA entrusted CSIR-NEIST to implement the scenario simulation exercise for a sequel of the M.8.7 Shillong Earthquake to assess the anticipated impact on the North Eastern states.

## 1.2 Objectives of the Project

The objectives of the Project M 8.7 Shillong 1897 Earthquake Scenario: NE Multi –State Preparedness Campaign were:

1. Understand the direct and indirect consequences of a big Earthquakes
2. To assess multi-state earth quake disaster preparedness
3. To evaluate the State/District Disaster Management Plans and Identify Gaps
4. To identify and generate the greater level of awareness in community about the vulnerability of the region to high magnitude earthquake for risk reduction.
5. To generate awareness amongst the stakeholders and community about an earthquake of high magnitude to see the functioning of SDMAs and allied agencies during the disastrous situation
6. To facilitate inter-department and inter-state coordination in order to ensure organized and structured mechanism during the time of disaster.
7. Updating Response Plans at Various levels
8. Mass Casualty Management
9. Coordination between SDMAs, CSIR-NEIST and NDMA and all other stakeholders
10. Generate greater Awareness in the region

## 1.3 Expected deliverables from the Project

Based on the guided framework to cater to the expected deliverables of the project the following table is presented representing the key activities

**Table 1.1: Activities of the Project as per MoU of the Project as per MoU**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sr.No | Activity /Deliverable | Time line (Each quarter -3 months ) | | | | | |
| QTR-1 | QTR-2 | QTR-3 | QTR-4 | QTR-5 | QTR-6 |
| 1 | Scenario Development for repeat of M 8.7 1897 earthquake for the NE region (Interpretation of isoseismals of 1897 Shillong earthquake in MSK scale list of districts having various intensity levels) |  |  |  |  |  |  |
| 2 | Assessment of direct and indirect consequences due to repeat of M 8.7 Shillong earthquake in the region |  |  |  |  |  |  |
| 3 | Vulnerability assessment of the critical lifeline buildings training of state government engineers on Rapid Visual Screening |  |  |  |  |  |  |
| 4 | Facilitation of earthquake scenario information to NE States Viz. mass awareness generation, conduct of Capacity development Programs (IRS, TTX& Mock drills) for planning of multistate disaster response and evaluation of inter-agency and interagency coordination mechanism |  |  |  |  |  |  |
| 5 | Conduct of Schools sensitization workshops |  |  |  |  |  |  |
| 6 | Facilitation of conduct of multistate mega mock exercises –Gaps identification and subsequent integration of findings into scenario assessment report |  |  |  |  |  |  |
| 7 | Mass awareness activities in each NE States on the Scenario and State wise report preparation |  |  |  |  |  |  |
| 8 | Process documentation and submission of final project report (Loss/damage estimation, lessons learnt) |  |  |  |  |  |  |

**Source: MoU signed between NDMA and CSIR-NEIST, Jorhat, 15th Nov, 2013**