Earthquake Risk Mitigation Programmes
focusing NE India

Mahendra Meena

National Disaster Management Authority

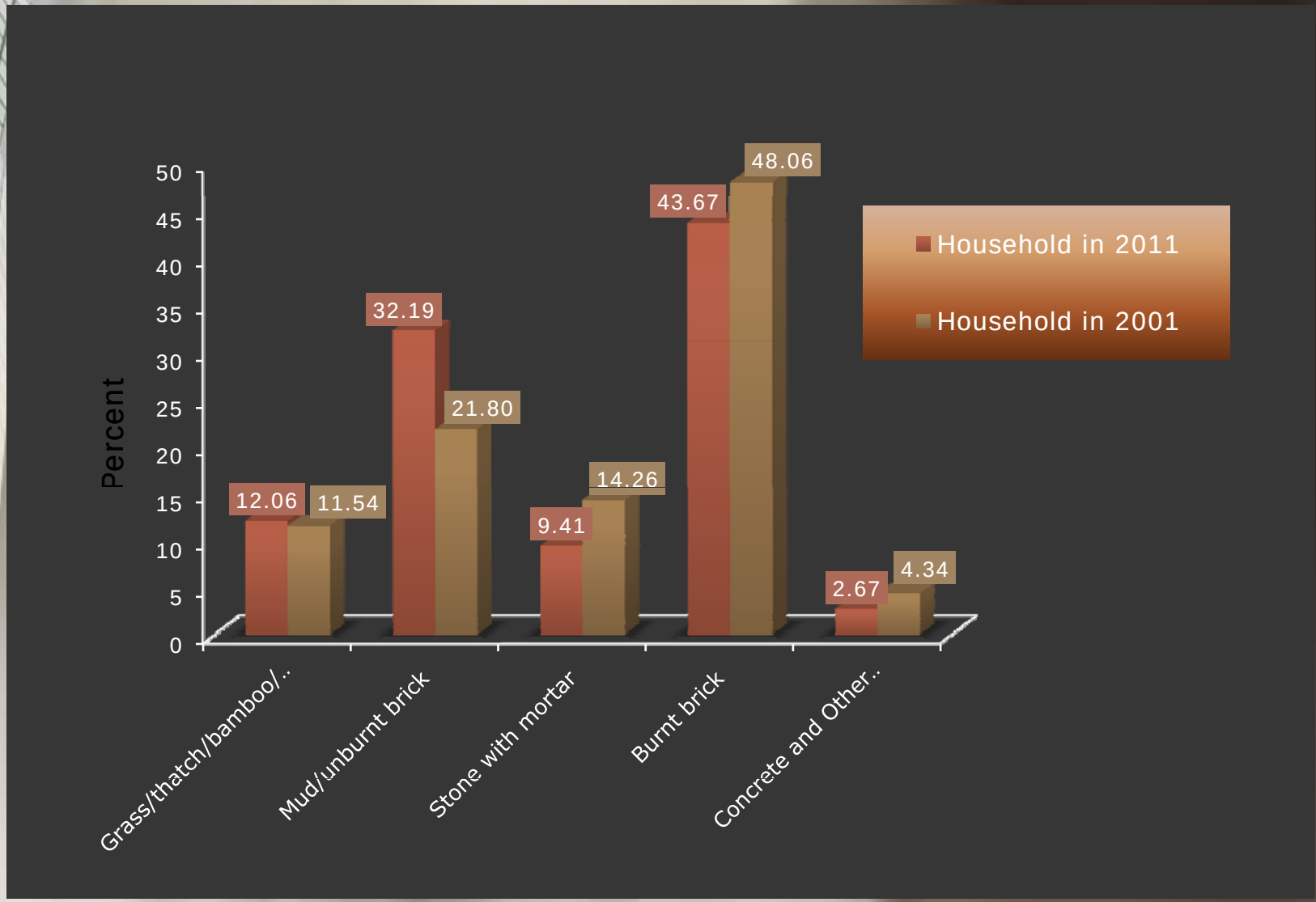
State Convention Centre, Shillong, April 30, 2018

Earthquake Risk

- 59 % of Indian landmass is prone to moderate to severe earthquakes
- Earthquakes are less frequent but quite damaging
- Unpredictability of earthquake hazard along with lack of preparedness leads to the disaster.
- In terms of risk of losses, earthquake has the highest fatality and damage potential

Earthquake risk management requires comprehensive Planning

Changing Built Environment



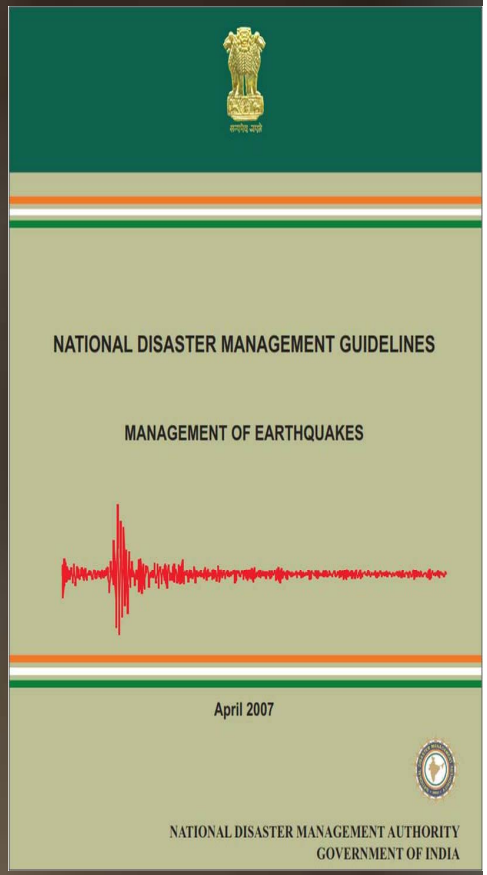
Challenges

- Huge stock of vulnerable structures
- Lack of awareness among various stakeholders about the seismic risk
- Inadequate monitoring and enforcement of earthquake-resistant building codes and town planning bye-laws
- Absence of systems of licensing of engineers and masons
- Lack of formal training among professionals in earthquake-resistant construction practices


Earthquake Risk
Mitigation
Efforts/Initiatives
by NDMA

Guidelines on Management of Earthquakes

- **Six Pillars for Earthquake Risk Management**
  - Earthquake Resistant Construction of New Structures
  - Selective Seismic Strengthening & Retrofitting of existing Priority Structures and Lifeline Structures
  - Regulation & Enforcement: Techno-Legal and Techno-Financial Regimes
  - Awareness & Preparedness
  - Capacity Development
  - Emergency Response

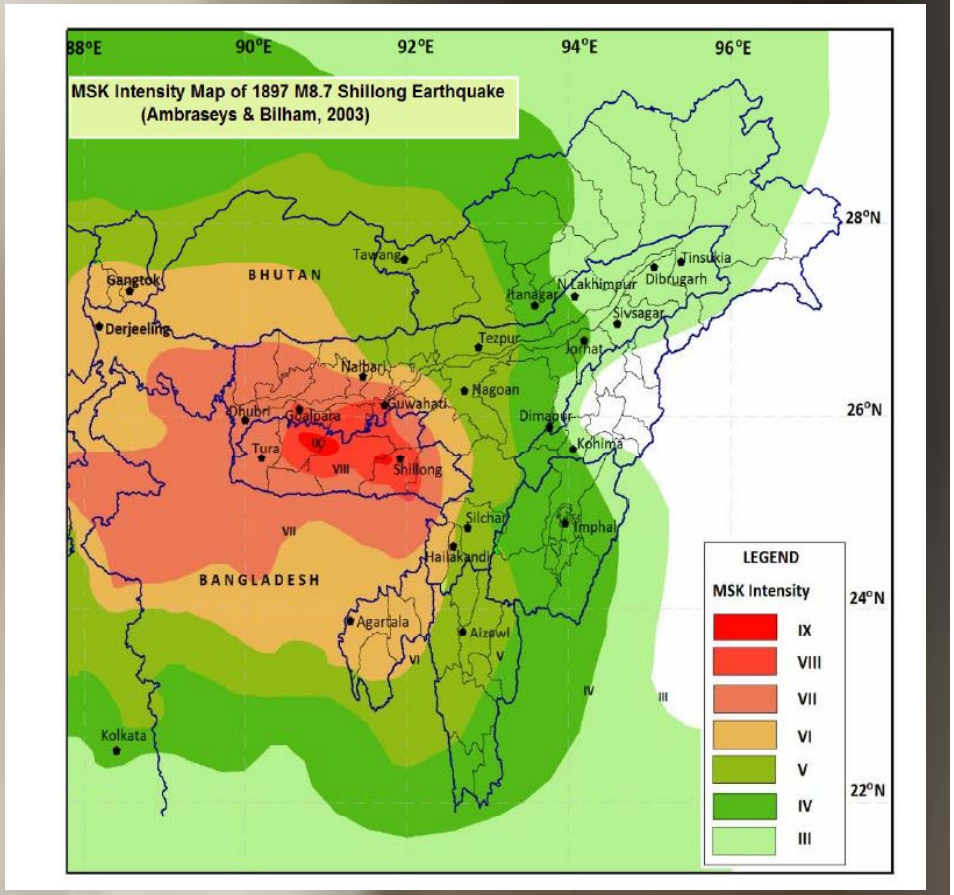


Seismic Vulnerability Assessment of Buildings Types in India

- Catalogue of building types in different parts of the country on the basis of sample surveys covering both urban and rural areas.
- Tech-doc presenting the proposed methodologies for vulnerability assessment of different building types.
- Vulnerability functions for different building types from the Typology Catalogue – one for each zone considered in the project.

M 8.7 Shillong 1897 Earthquake Scenario

- Scenario Development
- Mega Mock Exercise
- School Children Sensitization
- Awareness Generation
- RVS Training



Earthquake Hazard Zoning Maps and Atlases

- Prepared Earthquake Hazard Maps and Atlases for the country upto district level with sub-district boundary indicating:
  - State boundary with name, district boundary, district names,
  - earthquake zones, epicenter of past earthquakes of magnitude >5, major faults etc.
- Distributed the Maps and Atlases to all the stakeholders including States and Districts

Earthquake Disaster Risk Index for 50 cities and 1 District

- Cities include Itanagar, Guwahati, Dispur, Imphal, Shillong, Aizwal, Kohima Agartala in North East India
- Earthquake Disaster Risk Index (EDRI) for Buildings considering following parameters:
  - Hazard
  - Exposure
  - Physical Vulnerability

Earthquake Resistant Built Environment

- Development of simplified guidelines based upon BIS codes and NBC-2016 explaining the basic requirement of earthquake resistant constructions
- Development of a PRIMER on RVS to standardize the RVS methodology for dominant building types in India
- Development of guidelines on Hazard Vulnerability and Risk Assessment (HVRA)

National Earthquake Risk Mitigation Project: Under Conceptualization

- Enhancing Emergency Response Capacity
- Multi-hazard Risk Mitigation of Govt. Infrastructure
- Technical Assistance to Improve Disaster Risk Management

Measures States may take

- Standardized Building Permit System
  - Voluntary Licensing of Engineers
  - Scrutinizing Structural Design Basis Report (SDBR)
  - Recording of progress and checking at various construction stages of a building
- Structural Safety Assessment of Critical infrastructure and selective retrofitting thereon
- Training of Engineers, Masons, bar-benders etc.


Thank You