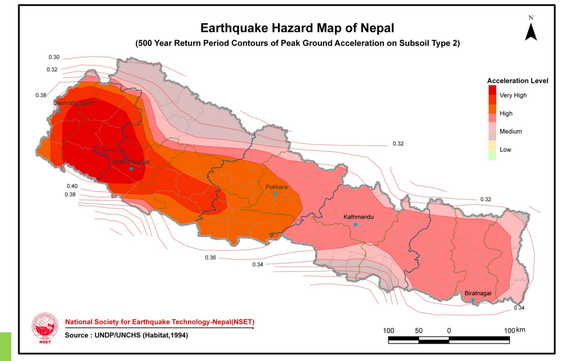
15th World Conference on Earthquake Engineering, 24 to 28 September 2012, Lisbon-Portugal, Paper No. 3881

Experiences of Shelter Response Planning for Earthquake Disasters in Kathmandu Valley

S. N. Shrestha, A. M. Dixit, G. K. Basyal & S. Chaudhary | National Society for Earthquake Technology - Nepal (NSET)

INTRODUCTION

- Kathmandu, the capital city of Nepal, with high population growth rate, lies in high seismic zone, large stock of building is weak,
- Lack of preparedness and awareness among the people and institutions,
- About 60% of the valley's building stock will be damaged beyond repair
- Shelter Planning and Preparedness is one of the key areas for improvement for better emergency preparedness,
- Shelter Response Strategy and Plan for Kathmandu Valley has been developed.



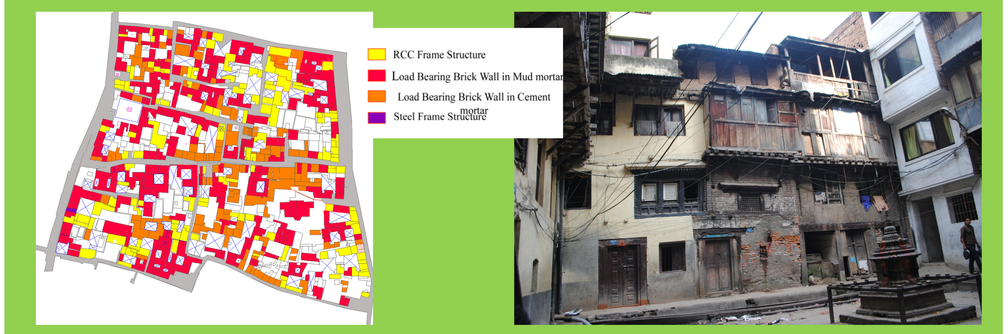


Figure: Type of Building Vulnerability in one of the city core in Kathmandu Valley

The Shelter Response : Need

- Nature of building stock in Kathmandu : weak
- Potential displacement : estimated 1.5 – 2 million
- Providing shelters for such large number of people : a great challenge for Nepal,
- Strategy and plan for shelter response beforehand is must for effective response and rehabilitation of victims
- *Build back better*

Objectives

- To formulate framework for shelter plan for KV in case of disaster,
- To develop improved capacity to assess and address post-disaster shelter recovery needs and shelter planning

Methods

- Review of past works
- Development of broad framework of shelter response strategy plan
- Consultation and workshop: shared ideas and feedback from stakeholders
- Open Spaces : Inventory (Participatory)
- Shelter Models and layouts : Developed
- Comprehensive Shelter Plan Preparation

Lessons from Past Studies: The Process

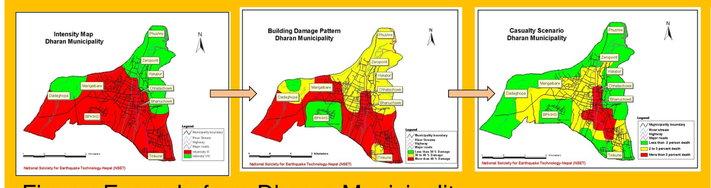


Figure: Example from Dharan Municipality

Risk Assessments > Casualty Estimations > Open Spaces Survey > Identification of Evacuation Sites > Preposition of Water Supply System

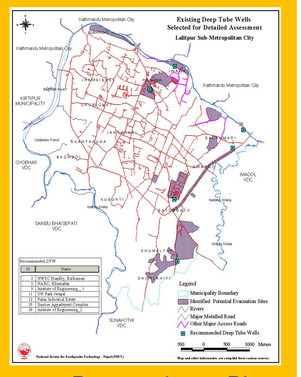


Figure: Disaster Preparedness Plan for Lalitpur Sub-Metropolitan City

Earthquake Scenario: Kathmandu Valley

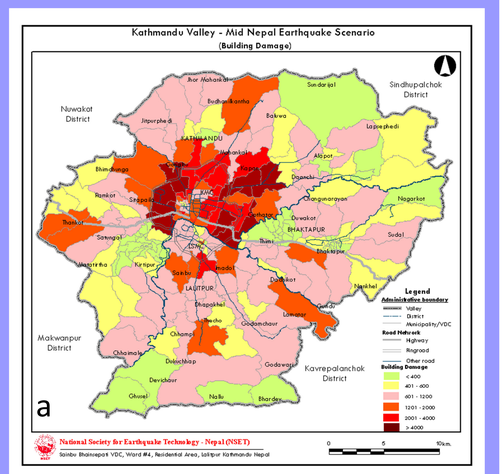
The process:

- Based on SEDM (JICA 2002)
- Estimations for 2009 population of KV

Shelter Need Assessment

Scenario:

- Total displaced population = 800,000
- No. of displaced families = 160,000 (with average household size of 5 persons per family)
- Families taking shelter with families and friends (approx. 5 %) = 8,000
- Families taking shelter in damaged houses or self managed temporary shelters nearby original houses (approx. 5%) = 8,000
- Migrated families (approx. 2%) = 4,000
- No. of families requiring shelter in shelter camps = 140,000 (total population = 700,000)



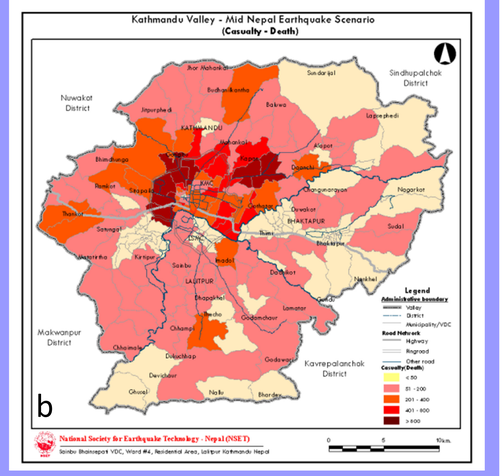
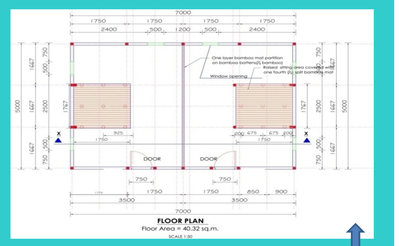
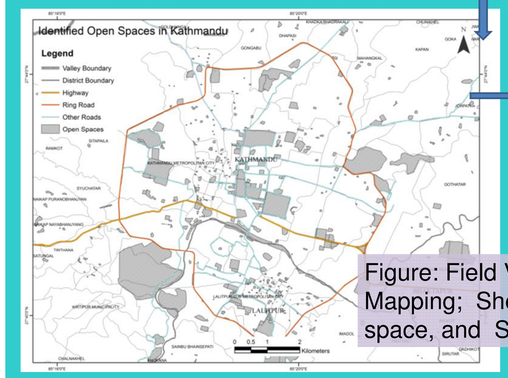


Figure: (a) Building Damage Estimation; (b) Casualty Estimation, for scenario earthquake in Kathmandu Valley

Shelter Planning: Results from Open Spaces Survey





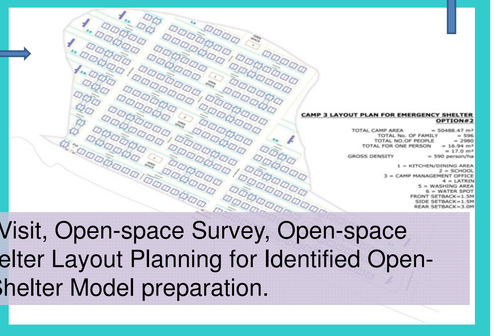


Figure: Field Visit, Open-space Survey, Open-space Mapping; Shelter Layout Planning for Identified Open-space, and Shelter Model preparation.

District /VDCs	No. of Sites	Total Area (Ropani)	Usable Area (Ropani)
Kathmandu District			
Kathmandu Metrop. City	266	9435.0	5569.4
Kirtipur Municipality	13	2543.0	1384.5
VDCs	209	5281.0	3484.7
Lalitpur District			
Lalitpur Sub-metrop. City	137	6453.0	4841.8
VDCs	209	3947.0	1849.9
Bhaktapur District			
Bhaktapur Municipality	17	971.0	703.5
Madhyapur Thimi Municipality	13	1096.0	740.9
VDCs	23	490.0	303.4
Total	**887**	**30216.0**	**18878.10**
Usable area about 62 %			1 Ropani = 508 square meters

Lessons and Way Forward

1. The shelter framework prepared will need proper implementation strategy as well as commitment of the concerned authorities and other stakeholders.
2. Wider dissemination of the plan, awareness rising from local communities to national authorities, decision makers is needed.
3. Regular update of information, and improving plan on time basis is also essential for the better implementation and to make plan live.

USAID FROM THE AMERICAN PEOPLE

For more information:

National Society for Earthquake Technology - Nepal (NSET)

Sainbu V.D.C. Ward No. 4, Bhainsepati Residential Area, Lalitpur, P.O.Box: 13775, Kathmandu, Nepal

Tel: (977-1) 5591000, Fax: (977-1) 5592692, 5592693

E-mail: sshrestha@nset.org.np, adixit@nset.org.np

Website: www.nset.org.np