TeLL-Net Meeting, Kobe, 19 January 2006

Experience of NSET in Post-Earthquake Pakistan

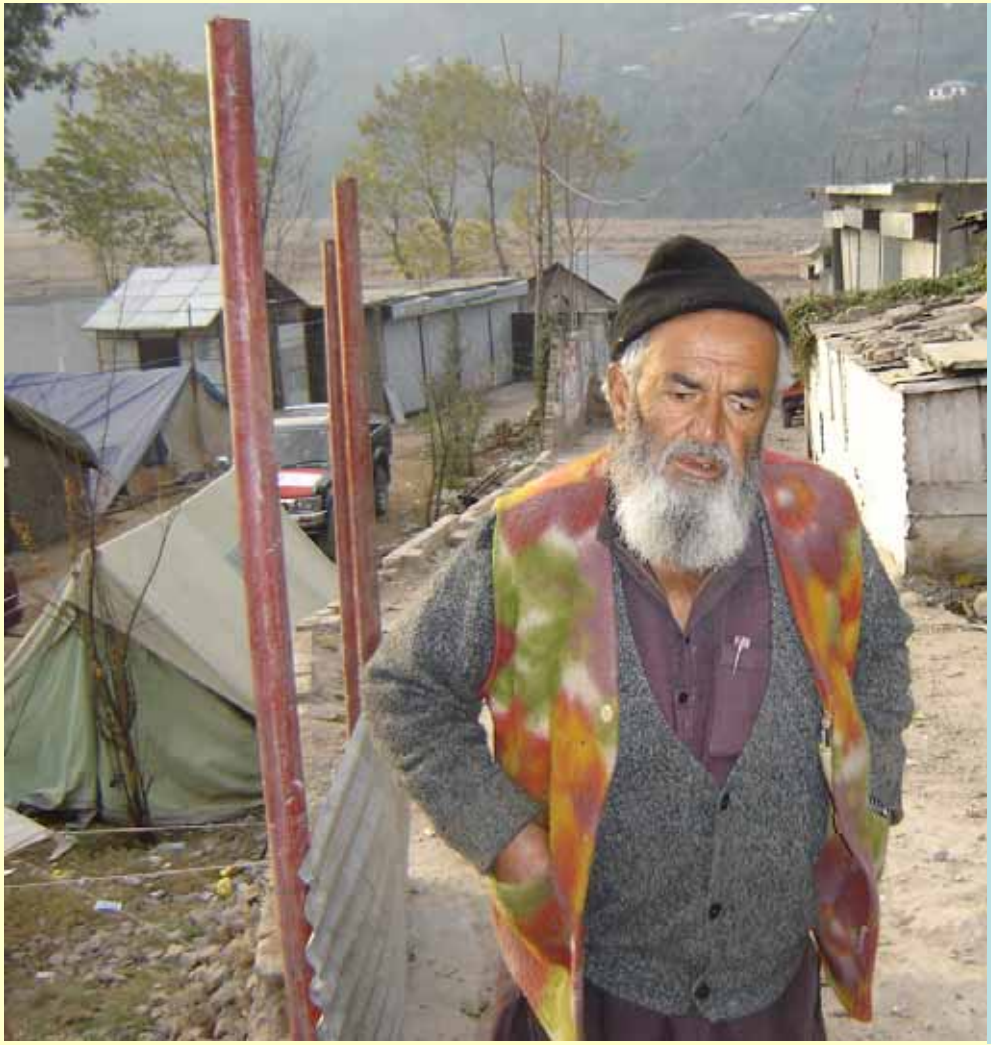
Building Vulnerabilities in Earthquake Affected Areas of Pakistan
and
Efforts towards Influencing incorporation of Earthquake Resistance
in
Transitional and Long Term Reconstruction:
an
Experience of NSET

Amod Mani Dixit,

Executive Director, NSET

www.nset.org.np

8 October South Asia Quake



- Epicenter : Muzaffarabad
- Magnitude: 7.6 Richter
- Time : 08:50 local time
- Affected Areas:
  - AJK
  - NWFP
- Casualties:
  - 100,000 Plus Including 35,000 children
    most victims buried in the debris
- Home less:
  - 330,00 households

NSET in Pakistan

UNDP Pakistan invited NSET for:

- Capacity Building for Reconstruction of Earthquake Affected areas in AJK of Pakistan

Bringing NSET's Experience to the Earthquake – Affected Areas of Pakistan

- **Training on Earthquake Resistant Construction for:**
  - **150 Engineers and Sub-engineers**
  - **Skill upgrading of 600 Working Masons**
  - **One day orientation to 1000 Self Builders, Contractors, Activists and Volunteers form NGOs**
- **Two Demonstration Buildings at Muzaffarabad and Bagh**
- **Two Shake Table Demonstrations**
- **Two TOT for Engineers and Sub Engineers**

Achievement during 19 November 2005 to 12 January 2005

- Organized two series of Training programs for engineering communities and self-builders.
- Trained so far:
  - **176 Engineers and Sub Engineers**
  - **130 Masons**
  - **200 Self Builders**
  - **Construction of Two Earthquake-resistant Model Buildings using prevailing/customary building materials**

Mason’s Training

Masons Training

Sub Engineers Training

Engineers Training

Project Progress Review

Additional Activities

People are confused whether to use the repair and use the building or demolish it

What to use and what not to
Throwing away the stones
Collecting the Rebars for re use

- **Inputs to Temporary Shelters**
- **Building Assessment**
- **Repair and Strengthening Schemes**

What we Learned?

- Earthquake Vulnerabilities are similar across developing countries
- Lack of knowledge with key players of Building Construction
  - Failure to transmit the lessons of past earthquake e.g. Quetta earthquake of 1936
- Lack of technological knowledge with the people
- Technical Knowledge for avoiding earthquake disasters are available in the countries, need to implement the knowledge, such as the Building Code
- It’s not difficult to bring in information and knowledge: can be done with relatively smaller efforts!

Common Structural Vulnerabilities

Traditional Construction Mud Roof over Rubble Stone Masonry

Takh (Timber braced Stone Masonry): Timber Frame is a good earthquake resistant structure, but walls are not

Out-of-plan collapse of walls

Private Residence

Private Residence

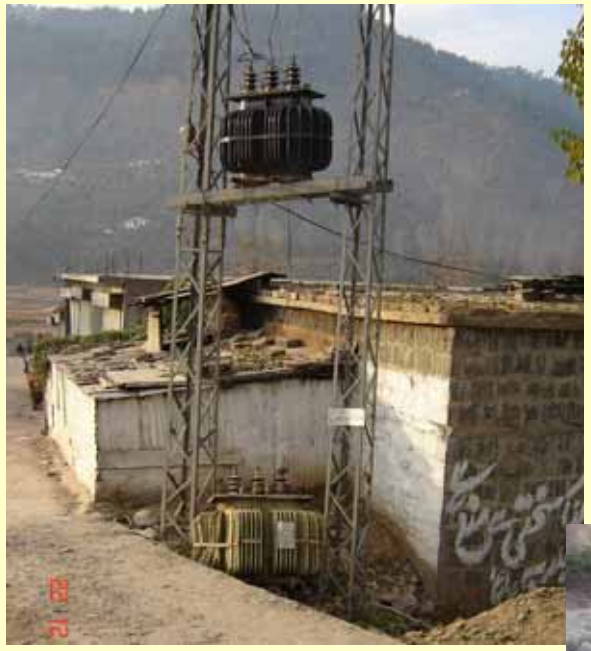
Government Buildings Especially Vulnerable

A Hotel

School Buildings are Extremely Vulnerable in Developing Countries

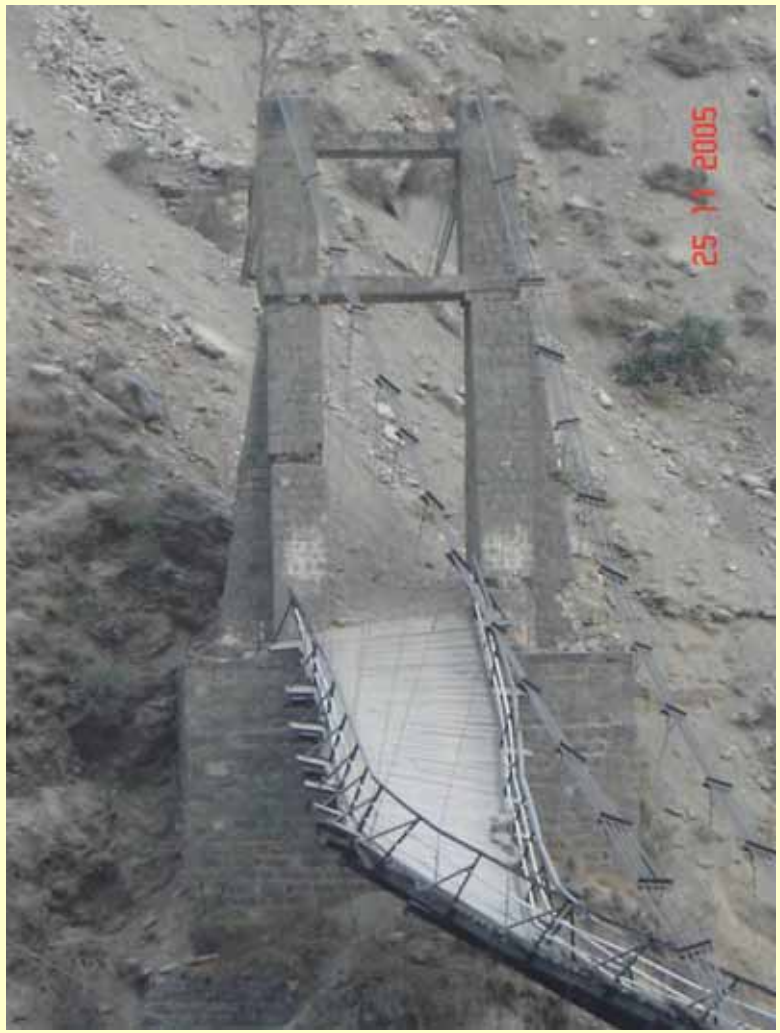
A Damaged Hospital in Pakistan: Hospitals are conspicuously vulnerable in Developing Countries

Damage to Infrastructure



Road Blocked by Debris

Bridges



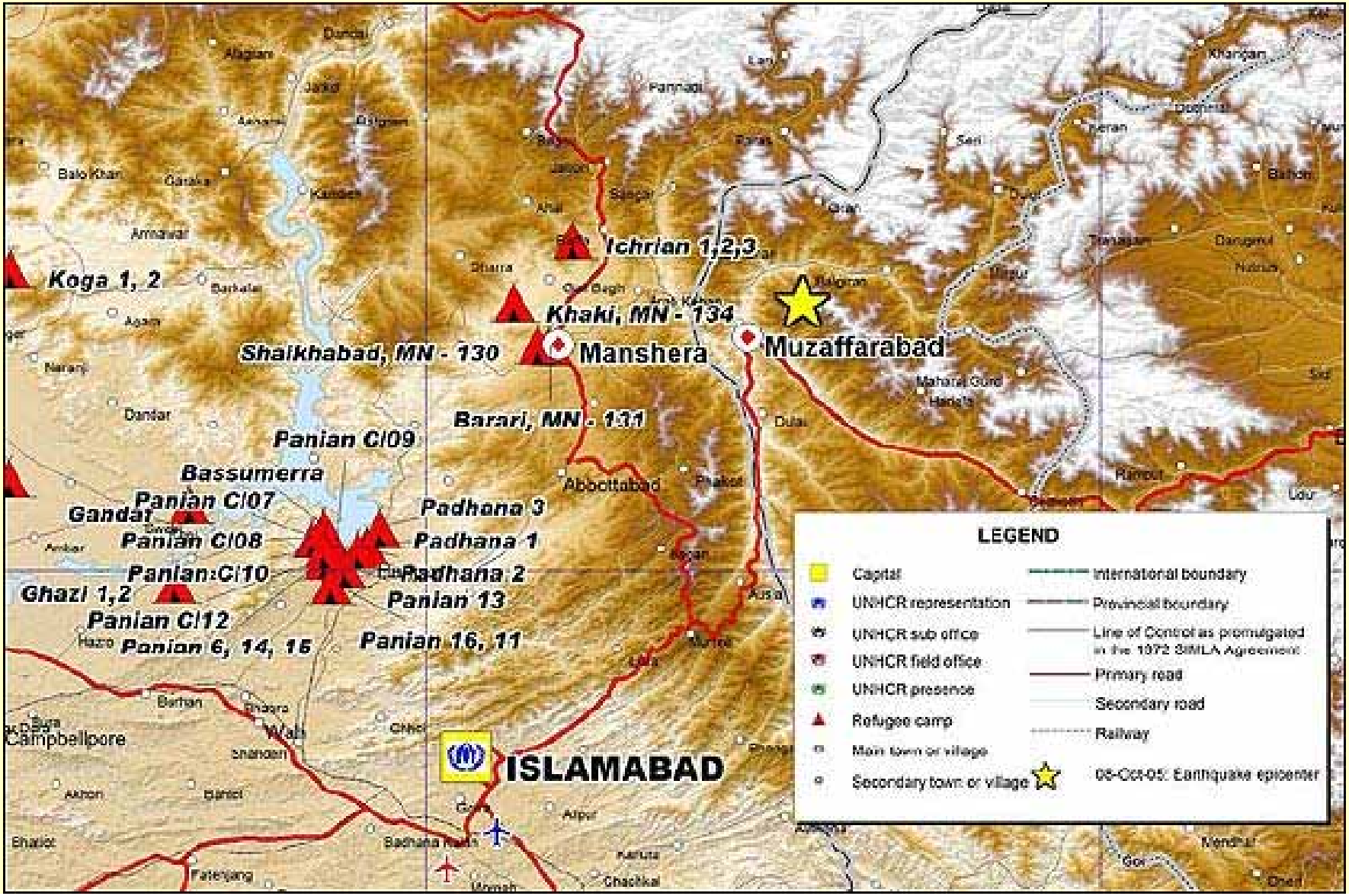
Heavy Destruction / Land Slide Damming

Destruction of whole Settlement

The Painful Demolishing and debris management

- Stones being thrown away in the river banks
- Storage of scrap rebars to reuse

Earthquake Affected Area

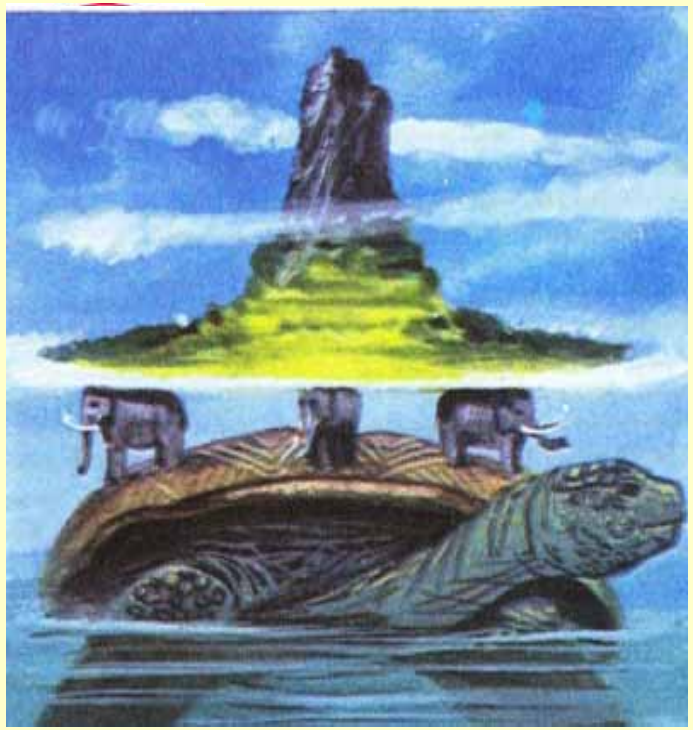


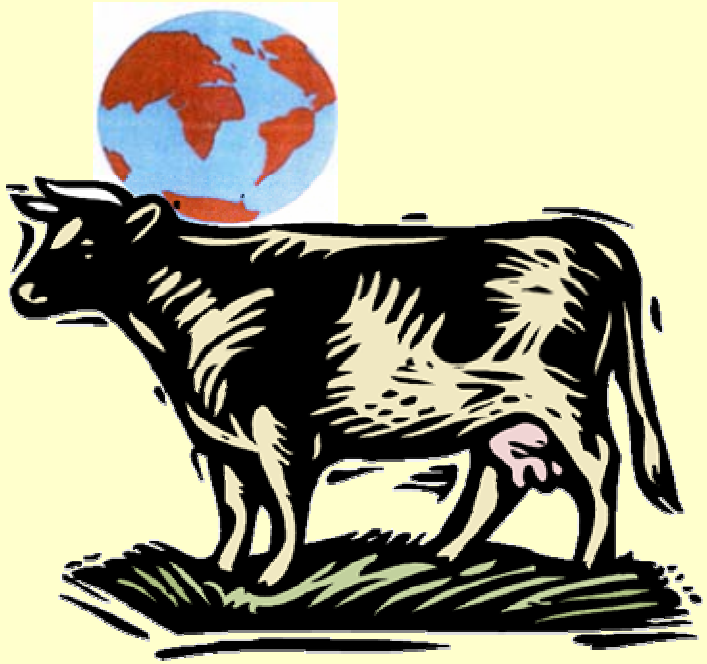
Tent City

Modern Toilets: Culturally not adopted by rural population of Pakistan

WHY

How does it relate to the Situations in Nepal

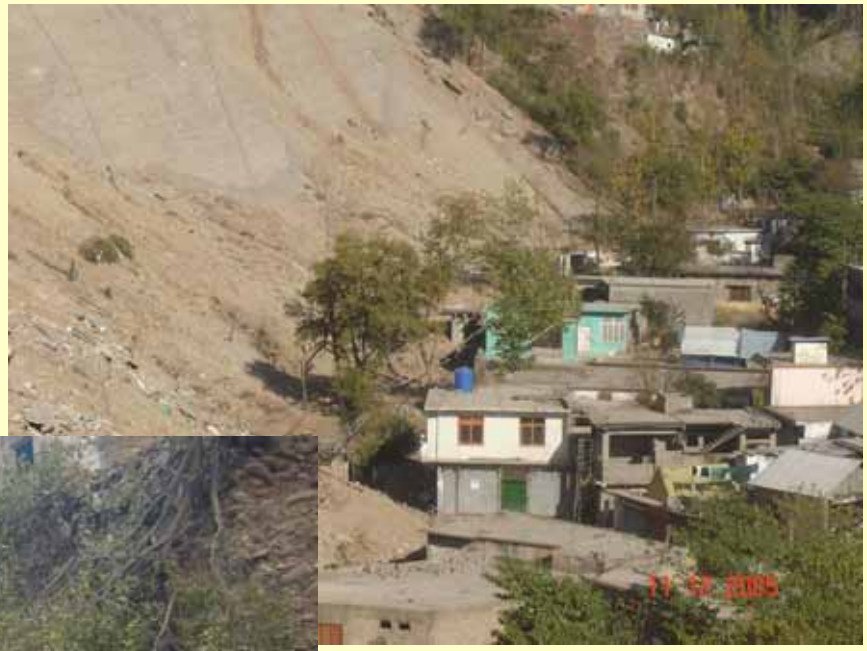


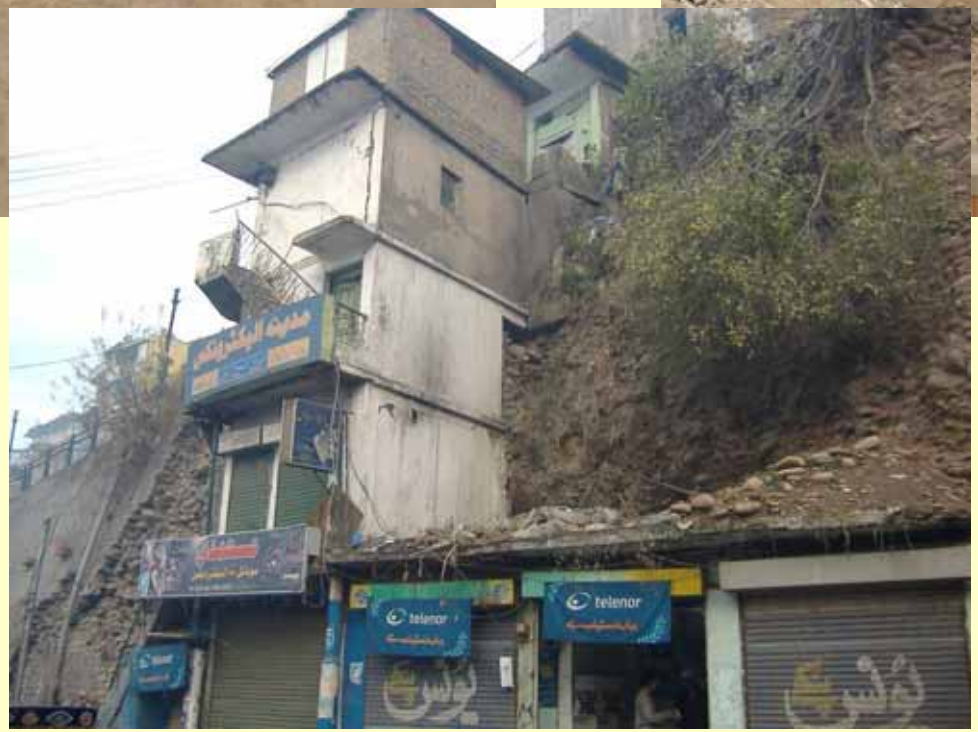


Common features between Nepal and Pakistan

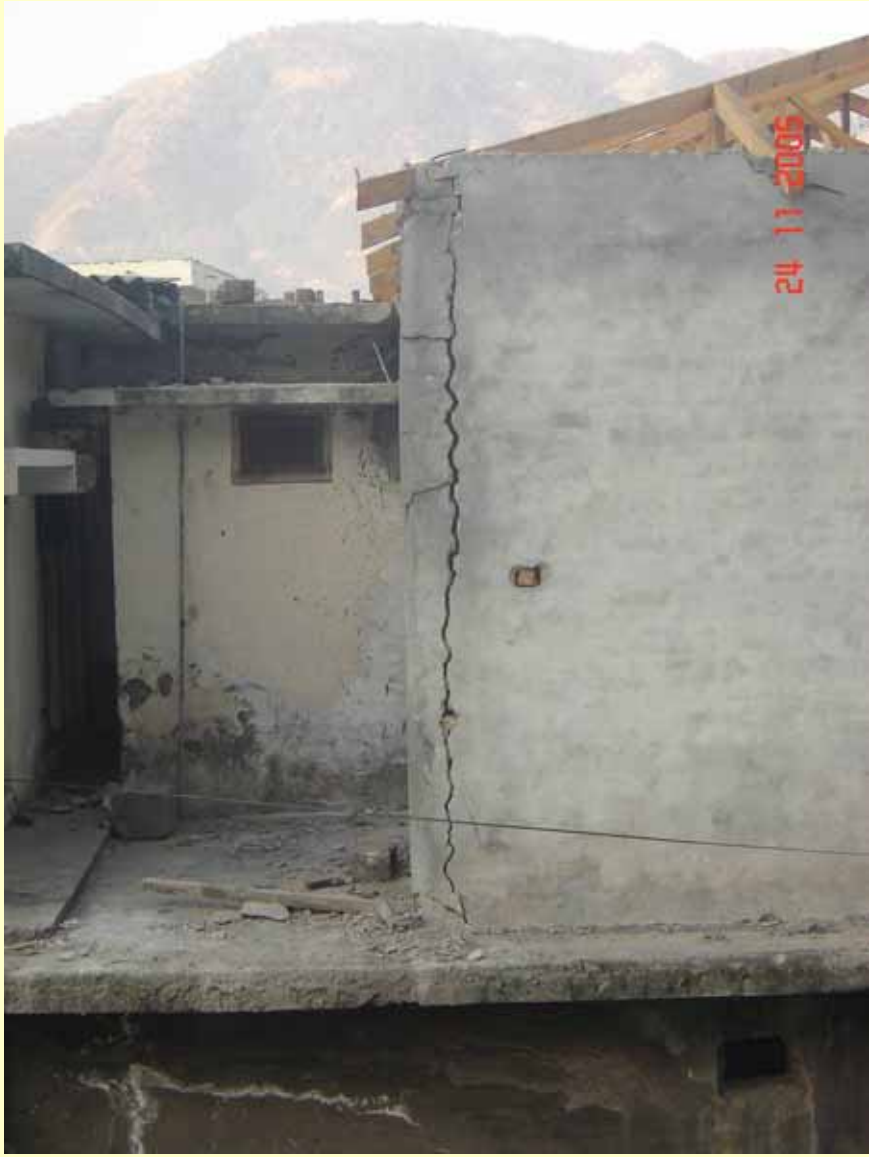
- Location:
  - Same Himalayan Range with similar topography and geography
- Fatalism:
  - Gunah / Paap/ Graha Dasa
- Low / No Awareness:
  - Public
  - Academicians
  - Policy makers
- Construction practice:
  - Similar to Nepal

Settlement on the Slope





Wall separation at joints



Soft Storey

Column Bar Buckling!!

Beam / Column bar anchorage failure

Note beam bar anchorage

Splicing failure

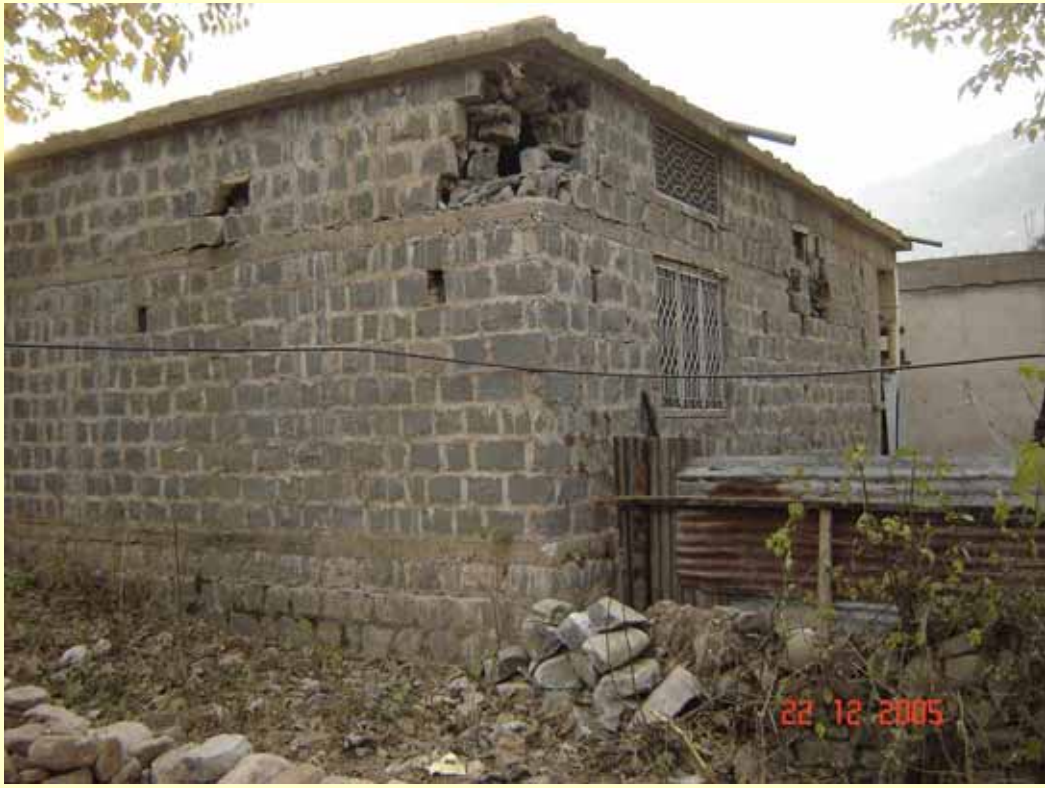
No Plinth Beams

Shear Failure of Joint

Quality of Concrete

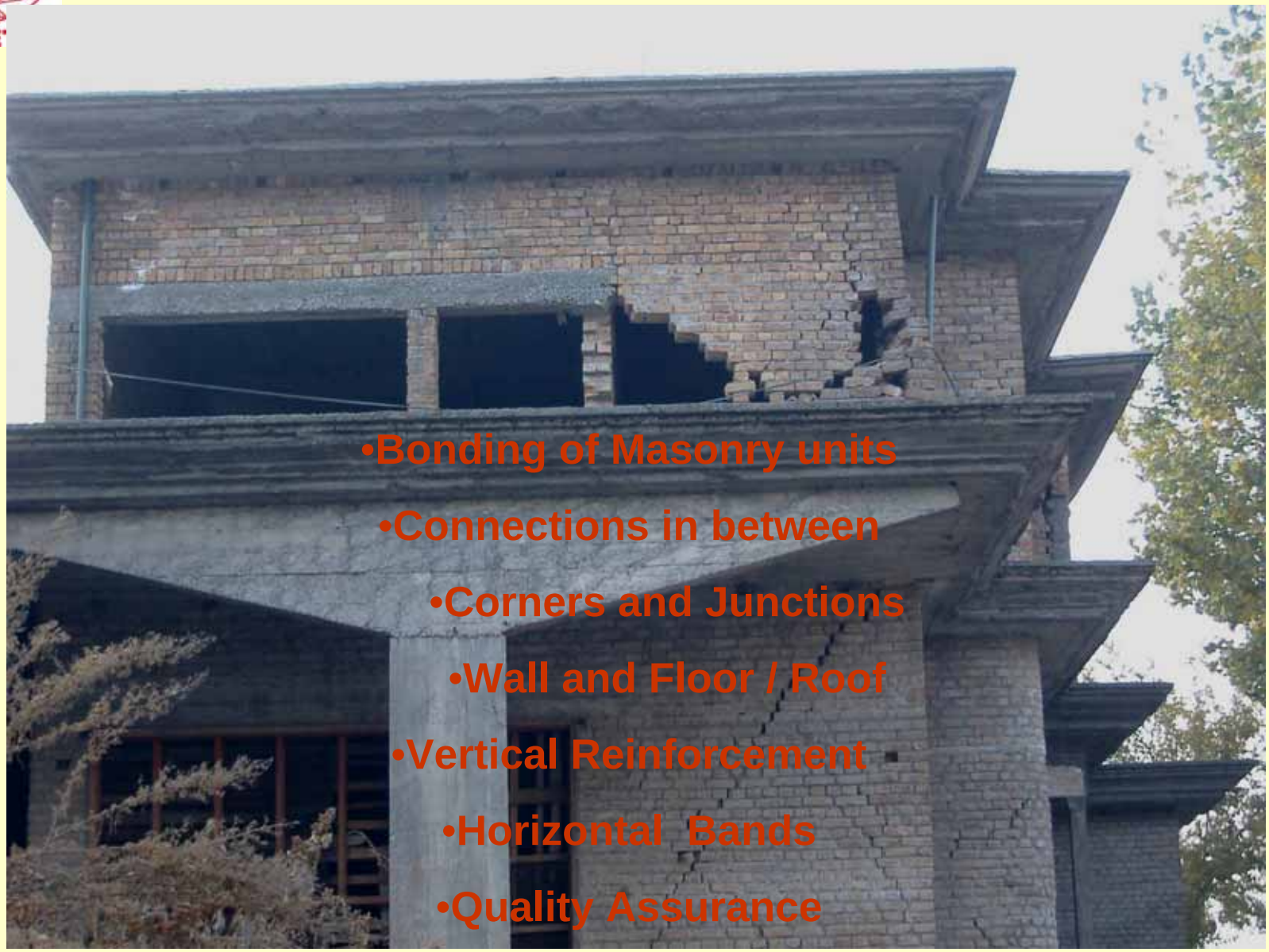
Everything is not that Bad

Good Practice Results in Safety

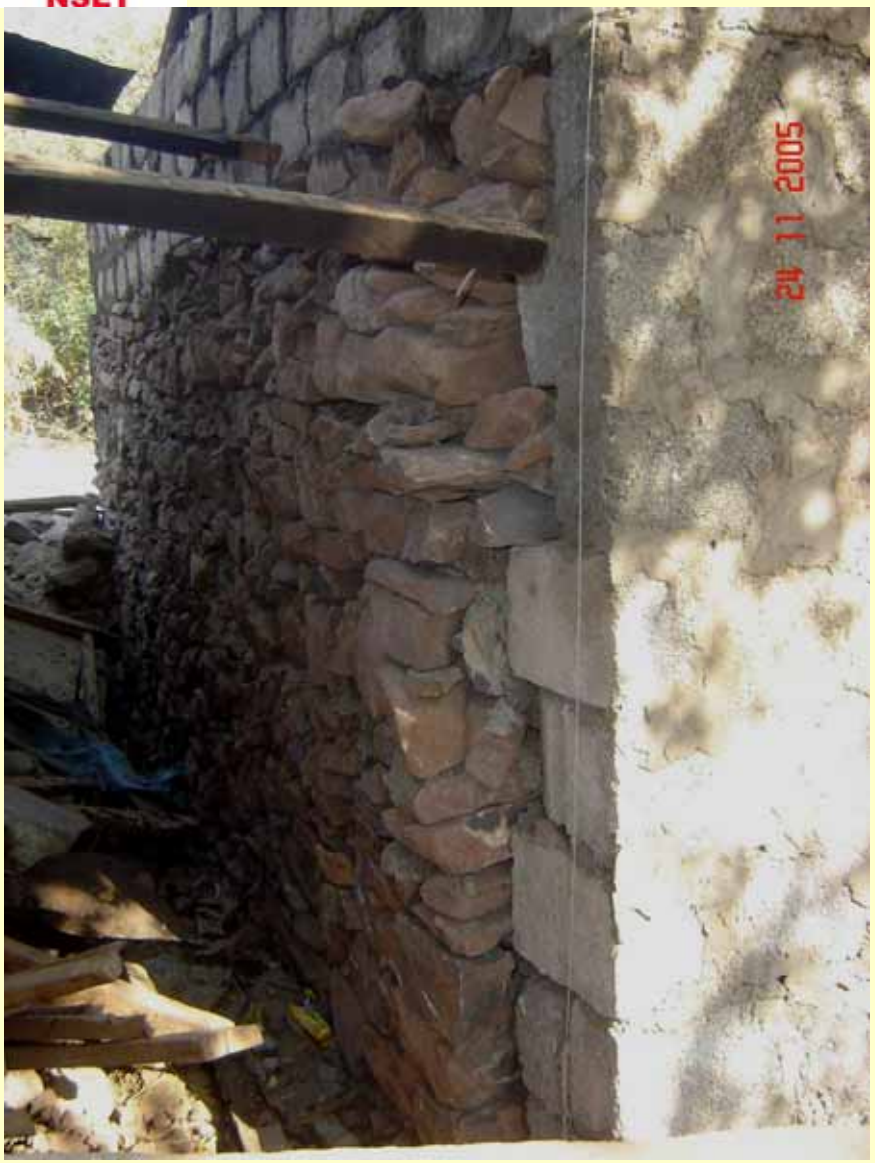


What had been constructed??

What is lacking??



What is being reconstructed?



Again repeating the same mistakes!!

New Construction

Retrofitting An Emerging Hot Cake

Temporary Shelters From UNDP

The Response NSET Received from Pakistan

Overwhelming Response from

- **AJK Government**
- **Institutions (Goal Pakistan, UN Habitat)**
- **Individuals**
  - Masons
  - Sub Engineers
  - Engineers
  - Government Officials

Thank You !!!