

Report On
TVERMP Dissemination Workshop
14th December 2005

Organised by
Standards & Quality Control Authority (SQCA)
Ministry of Works & Human Settlement (MoWHS)

Under
Thimphu Valley Earthquake Risk Management Project

Background

The Standards and Quality Control Authority (SQCA), Ministry of Works and Human Settlement (MoWHS), organized a one day workshop on 14th December 2005 to disseminate the findings of the studies carried out under the UNDP supported “Preparatory Assistance for Thimphu Valley Earthquake Risk Management Project” at SQCA Conference hall, Thimphu. This workshop also coincided with the inauguration of the new SQCA Office building by the His Excellency Hon’ble Zhabtog Lyonpo.

Prior to the workshop, a meeting was conducted on 13.12.2005 with the house owners of the 15 buildings, wherein the JSA team made a detailed presentation of the individual buildings. While there were no major issues related to the findings, cost of retrofitting was a big concern. One of the owners said that the Government should consider softer lending scheme for retrofitting. The house owners were informed that the SQCA will make available the copy of the findings of their building should they be interested.

Objectives of the workshop

The objectives of the workshop was

1. To present the findings of the study conducted by the TVERMP team on:
 - a. Damage estimation for Thimphu Valley for hypothetical earthquake using the RADIUS tool
 - b. Rapid Visual Screening of Buildings for Seismic Safety in Thimphu Valley
2. To share the findings of the detailed vulnerability assessment carried out for 15 buildings by the Nepal based consultancy firmohn Sanday Associates
3. To prioritize the activities identified in the TVERMP Action Plan which was developed by the stakeholders during the “Sensitization Workshop and Building Partnership for Earthquake Risk Reduction – 18th August 2005” for implementation.

Workshop Participants

The overall aim of the workshop was to present the findings of the studies undertaken under the project to the engineers and other stakeholders involved in the field of Disaster Risk Reduction. There were 30 participants representing various departments and Ministries. The workshop was chaired by His Excellency Hon’ble Zhaptog Lyonpo, Royal Government of Bhutan. The list of participants is annexed to this report (*Annexure – B*).

Workshop Program

Aum Dorji Choden, Director, SQCA in her welcome address extended a warm welcome to the Chief Guest Hon'ble Zhabtog Lyonpo and the participants for the inauguration of the new SQCA building and the workshop. She gave a brief background of SQCA its mandates and activities being carried out by the organization. She informed the participants that SQCA is spearheading the Preparatory Assistance for TVERMP since February 2005 and gave a glimpse of the activities which have been carried out and the objectives of the current workshop.

In his inaugural address, Hon'ble Zhabtog Lyonpo commended the activities being carried out by SQCA in the specialized area of Material testing, Setting standards, Bhutan Schedule of Rates, TBT – WTO in a shorter span and called for a greater role in nation building process. He expressed the concerns of His Majesty the King and the subsequent directions to the Ministry which lead to the initiation of TVERMP. He thanked UNDP for supporting the project both technically and financially. He also thanked John Sanday Associates and JICA for extending its technical support for vulnerability assessment of buildings. Hon'ble Lyonpo called for a concerted action of all the stakeholders in reducing the vulnerabilities of the communities to natural hazards in order to achieve the overarching development philosophy of Gross National Happiness.

Presentations:

Overview of Thimphu Valley Earthquake Risk Management Project

Tshewang Nidup, Assistant Engineer, SQCA

Mr. Tshewang Nidup made a brief presentation on the over all project and the activities envisaged under TVERMP. He presented the areas identified & recommended to be carried out to reduce the prevailing and future risk in the valley. This was the outcome of the earlier "Sensitization Workshop and Building Partnerships for Earthquake Risk Reduction" under the TVERMP. He highlighted the activities that are required to be taken up immediately (*Annexure -A*).

Presentation on the findings from RADIUS and Rapid Visual Screening of Buildings

Jaiganesh, UNV Disaster Management Technical Officer, SQCA

Mr. Jaiganesh in his presentation briefly explained about the tectonic setting of Bhutan and the past Himalayan earthquakes. He made a detailed presentation on the process involved in earthquake damage estimation using RADIUS (**R**isk **A**ssessment Tool for **D**iagnosis of **U**rban Areas against **S**eismic Disasters) tool and presented the damage scenarios (building damages, loss of lives and injury during day and night) for various hypothetical earthquakes. He stated that results from the RADIUS damage estimation are useful for Mitigation, Prevention, Response planning and Recovery. However in Bhutan's context it is mainly useful to create awareness among the general public. He also presented the findings of Rapid Visual Screening of Buildings for seismic safety, in which different damage grades have been assigned to individual buildings in Thimphu Valley. Rapid Visual Screening of buildings is the first step in the seismic assessment procedure, after which need for detailed assessment is determined. According to the assessment a large number of buildings in Thimphu need to undergo next level of detailed assessment.

Presentation on the findings of the Detailed Vulnerability Assessment of 15 Buildings

John Sanday Associates Team, Nepal

Mr. James Goodman gave a brief overview of the organization and their expertise in the area of Earthquake Engineering. Mr. Prabin of JSA outlined the process involved in carrying out detailed vulnerability assessment. He also highlighted the common construction practices observed in Thimphu valley which can make buildings more vulnerable to earthquakes. He concluded by presenting the general findings of the Detailed Vulnerability Assessment of 15 Buildings.

Mr. Laxman presented the technical findings of 15 buildings, which were based on the detailed vulnerability assessment. He said that, out of the 15 buildings which have undergone detailed evaluation, only one building had a good level of seismic resistance. While all the buildings can withstand the serviceable load there is a need to strengthen those buildings for making them safe against earthquakes. He also presented two options on the retrofitting options which can be used to strengthen the buildings.

Summary and Highlights of Q & A Session

The overall reaction to the workshop findings were taken up positively by the participants.

- It was generally agreed that the entire risk assessment studies carried out under the project has brought better insights for creating awareness and planning on Earthquake Safety of Buildings.
- It was also widely recognized that there is a need for better understanding of hazard level to which the country is exposed, since it has a direct implications on the country's economy and public safety. Hon'ble Zhabtog Lyonpo expressed the need to come up with a joint proposal among the Department of Geology and Mines, Ministry of Works & Human Settlement and Department of Local Governance for the development of Seismic Hazard mapping for the country which will be submitted to the Government.
- It was also expressed that the quality of construction was not to the mark and there is enough room for improving the quality and workmanship in construction activities.
- A need was felt to carryout vulnerability assessment of lifeline structures for seismic safety as a priority activity and there after retrofit where required.
- It was acknowledged that there is a need for greater cooperation between the construction fraternity (Architects, Structural Engineers, Contractors and Clients) in building safe structures.
- Building owners requested the Government for financial incentives which will encourage them to undertake retrofitting of the buildings.
- Hon'ble Zhabtog Lyonpo mentioned that "as the Preparatory Assistance project comes to end we need to embark upon the next stage, to implement the action plan by prioritizing the needs".

Annexure- (A) Recommendations

The following are the recommendations made during the 2005 August workshop and activities prioritized during the current workshop

Recommendations of August 2005 workshop

A one day “Sensitization workshop and Building Partnership for Earthquake Risk Management” was jointly organized by Standards and Quality Control Authority (SQCA), Ministry of Works and Human Settlement (MoWHS) and the United Nations Development Programme, Bhutan on 19th August 2005 at Thimphu. Areas of intervention to reduce the existing and future risk holistically with appropriate timeframe have been identified based on the group work by the participants and which was facilitated by the resource persons.

The following areas were identified as possible means to reduce the existing and future risk:

1. Awareness generation and public education
2. Preparedness for emergency response
3. Techno-legal regime
4. School earthquake safety programme
5. Strengthening of critical infrastructure such as hospitals, government buildings and school buildings
6. Training and Capacity building of engineers, architects and construction workers/artisans
7. Networking with other cities/ programmes within Bhutan as well as in the region

Note: Please refer to the August 2005 workshop report for detailed recommendations.

Recommendations of Current workshop (14th December 2005)

During the course of the project immediate / short / medium / long term recommendations have been identified based on the earlier workshop that needed to be implemented at the earliest from SQCA’s point of view after the completion of the preparatory assistance project.

Immediate / Short term

1. Awareness generation and public education

- Develop and disseminate Information, Education and Communications (IEC) materials on simple and cost effective earthquake resistant technologies on safe construction and retrofitting practices, based on the experience of TVERMP.
- Replicate the vulnerability assessment using RADIUS methodology and RVS for Phuntsholing City
- Construct Technology Demonstration Unit (TDU) for disseminating cost effective disaster resistant technologies
- Demonstrate shake table test to the public

2. Training and Capacity Building

- Seek TA to train local engineers on detailed structural analysis for the government type design houses assessed under the TVERMP and develop implementation plan for retrofitting.
- Provide training to the local engineers and the technicians in carrying out the retrofitting works
- Develop retrofitting strategies

3. Strengthening / upgrading critical facilities

- Prepare time-bound action plans to strengthen the critical facilities such as hospitals, schools and other important infrastructures to certain minimum safety standards

4. Techno- legal regime

- Study the existing structural codes for possible revision, adoption and enforcement

Medium & long term recommendations:

- Establish network of seismological station and upgrade existing station to monitor seismic activity in the region
- Include modules on earthquake engineering design in Diploma and Engineering curriculum
- Integrate disaster risk reduction activities including allocation of funds to undertake mitigation activities in the ongoing and future development projects
- Protect and strengthen critical infrastructure such as hospitals and schools in order to ensure that emergency response activities can be carried out as smoothly as possible and also other lifeline structures such as
 - Water supply and drainage
 - Electric substations
 - Telecommunications and Communications towers

Bridges

Fire services

Airport

- Establish networks with the other cities across the world where there has been / ongoing earthquake risk reduction programmes to learn and share the experiences

Other overall disaster risk management programme such as **Awareness generation & public education, capacity building on preparedness, response & recovery; school earthquake safety programme, establish network with other programme / cities** and other specific areas not included here.

Annexure – (B) List of Participants

SL.NO.	NAME	ORGANIZATION
1	Jigme Dorji	Thimphu City Corporation
2	Karchung	NHDC
3	Churamani	NHDC
4	P. Wangdi	NPPF
5	Wangchuk	NPPF
6	Sangay	NPPF
7	KinzangThinley	DUDES
8	Tshering Gyeltshen	NPPF
9	Rinchen	NHDC
10	Karma Tshering	Phuentsholing City Corporation
11	Karma Chogyal	UNDP
12	Seeta Giri	UNDP
13	Bhanu Bhakta	WFP
14	Jaiganesh	UNV –SQCA
15	Laxman Sthipit	JSA, Nepal
16	Prabin Bajracharya	JSA, Nepal
17	James Goodman	JSA, Nepal
18	Rinzin Namgyel	SQCA
19	Karma Jamtsho	DUDES
20	Dr. Yamamoto	Sr. JICA Volunteer, SQCA
21	Y. Kimura	Sr. JICA Volunteer, SQCA
22	Reezang Wangdi	DUDES
23	Chenzom	SQCA
24	Karma Wangdi	SQCA
25	Tshewang Nidup	SQCA
26	Tashi Wangchuk	SQCA
27	Chewang Rinzin	SQCA
28	Kin Dorji	SQCA
29	Kunzang Dorji	DLG, MoHCA
30	Emily Doyle	JICA