

The Community Based Program of NSET for Earthquake Disaster Mitigation”

Mr. Amod Mani Dixit

Executive Director

National Society for Earthquake Technology (NSET), Nepal.

Introduction

We interpret Disaster Risk Communication as a process that includes the three main activities, notably, a) Transfer of Knowledge to those who need it, b) Use of Knowledge by them, and c) Ownership of Knowledge by the user.

These processes could be run in series or in parallel. We believe that it is better to run all the three activities in parallel. In order to make things happen simultaneously, we need to employ the Total Disaster Risk Management (TDRM) approach using a comprehensive program with good understanding and analysis of the local conditions.

TDRM requires that Risk Communication should go together with the Solution Communication

Why CBDM is necessary?

In developing countries, the level of existing vulnerability is very high largely due to the fact that the vulnerable elements are yet outside the formal sector or program that are supposed to control the increase of vulnerabilities. For example, more than 95% of the buildings, existing as well as new constructions in Nepal, including those in the urban areas, are built by owners using petty contractors who do not have any knowledge on earthquake-resistance construction. The building permit process is there in municipal areas, but there is no way it could control the actual building production mechanism because of the lack of necessary resources such as well-trained building inspectors. Actually, most of the resources are used for the more formal sector, such as the teaching of structural engineering which however, does not study or analyze in details the structure of the small residential masonry buildings so prevalent in the country.

Estimated loss due to the scenario earthquake producing IX MMI intensities of shaking in Kathmandu is given by the following table.

Table 1: Potential Impact due to scenario EQ in Kathmandu Valley (NSET estimates)

Impact	Extent
Death	>40,000
Injuries	>95,000
Buildings destroyed/collapsed	>60%
Homeless population	>700,000
Bridges impassable	>50%
Road length damaged	>10%
Water supply pipes damaged	>95%
Telephone Exchange Buildings	most
Telephone lines	>60%
Electric substations	most
Electric lines	40%

Actually, in developing countries, the formal process of disaster risk reduction, unfortunately, is very slow, and many times the influence does not trickle down to the community levels. Therefore, considering the urgency of the need to put efforts at the most vulnerable points, it is necessary to augment the formal process of control and command with top-down approach with that of a bottom-up approach. The bottom up approach is achieved by the community-based disaster management initiatives.

Community-based programs of NSET

Almost all programs of earthquake risk management implemented by NSET are community-based. These are:

1. Kathmandu Valley Earthquake Risk Management Project (KVERMP), 1997-2001
 - Scenario, Action Planning
 - School Earthquake Safety Program (SESP)
 - Awareness
 - Institutional Development
2. Action Plan Implementation Project (APIP), 2001 – today
 - Non-structural Vulnerability reduction
 - Awareness Raising Program, and
3. School Earthquake Safety Program
4. Municipal Earthquake Risk Management Program (MERMP), 2002
5. Pre-positioned Emergency Response Stores (PPERS)
6. Municipal Ward Level Disaster Management Program (WLDMP)

All these programs gradually grew into initiatives with ever-increasing participation by the communities involved.

Earthquake damage scenario and action planning for risk management as disaster risk communication

During the implementation of KVERMP and MERMP, we found that the earthquake damage scenario served as a very powerful tool for raising awareness and also to get community involvement in the process of earthquake disaster risk reduction. It is a very effective communication tool for conveying the message to the stakeholders. For example, all 32 institutions pertaining to emergency response system and managing the critical facilities participated in the scenario development process as well as for action planning for the risk reduction. During the process of developing the Action Plan for the Kathmandu Valley Earthquake Risk Management, more than 85 institutions were involved consistently. They analyzed the potential damage scenario against the existing capabilities, the availability of resources and created the Action Plan for managing the risks considering the priorities and the urgency.

School earthquake safety program as disaster risk communication

A very wide participation by multiple stakeholders could be achieved during the implementation of the School Earthquake Safety Program by NSET under KVERMP, APIP and MERMP projects. We learned during the process of implementation that the success of the program is directed related to the involvement and participation, and thus assuming the ownership of the program by the stakeholders. A series of committees were created for the implementation of SESP (Figure 1). All problems were discussed wide in the committees. This provided the transparency of activities, which in turn drew more and more buy-in from all quarters resulting in the success of the program and greatly raised awareness among the stakeholders.

Figure 1: Stakeholders of SESP

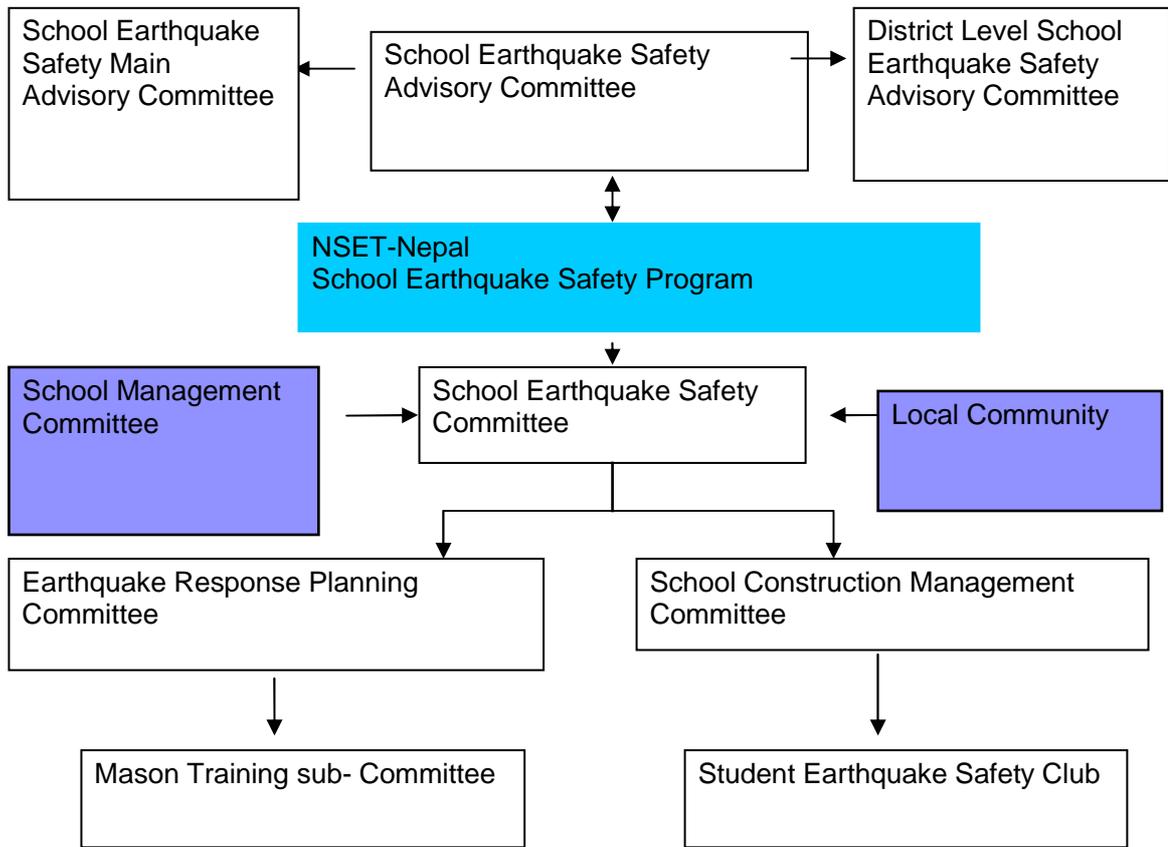


Table 1: Target Groups of SESP Processes

TARGETS	PROGRAMS
Community	School selection process School Construction/retrofit process
Teachers	School Safety Planning Process School curricula Teachers Kit, Teachers Training
Students	Extracurricular activity e.g. Kobe-Kathmandu School Exchange Earthquake Club Earthquake Safety / Evacuation Drill
Masons	Mason Training

Thus everybody is fully involved in SESP: Central Government, Local Government, Community, Parents, Teachers, and Students

Financial transparency also helps in creating the large scale buy-in. Benefits from the School Earthquake Safety Program are manifold:

- One more safe school Building in which more than 300 lives secured against possible earthquakes during school times
- The program encourages many new buildings in the vicinity to become safer structurally or otherwise
- Teachers, students, and parents get educated on aspects of earthquake safety. They motivate others
- A minimum of six masons are trained in each school site the know how on seismic construction and retrofitting. It is generally found that one mason influences 15 new constructions every year.

In fact, transparency and full involvement of community in SESP bring in more benefits in terms of enhanced trust and confidence, reduced costs because of financial transparency. The latter was visible in case of the school construction at Dhapakhel, where the building was constructed earthquake-resistant at 4.8 million rupees as against the estimated cost of 6 million rupees. This was largely because there was no possibility of any “extravagant” spending which was monitored openly by the stakeholders.

In case of the school programs, we find time and again, that strengthening the school was important and attractive. But more attractive outcome was

- retrofitting the school building, and
- training the masons, and
- raising awareness of villagers, and
- teaching the children and teachers

Earthquake safety day as the tool for disaster risk communication

Although declared as a “Day”, a typical program of the Earthquake Safety Day extends usually for a week. The activities a wide variety of target groups

Target	Program
Policy Makers	National Meeting
Professionals	Symposium
Community	Earthquake Safety Exhibition, Rally
Students	Art/Easy/Poem competition

Publications as tools for disaster risk communication

Awareness-raising publications such as manuals, manuals, calendar, posters, books on FAQ, Comic books, fliers etc are very effective in raising public awareness if the knowledge to be transmitted is appropriately articulated.

FM Radio Programs are found very effective in Kathmandu and Pokhara cities. Television programs are expensive to conduct. However, the operators can be convinced to air clips, special programs and interviews on special days such as the Earthquake Safety Day. Interviews after any felt earthquake are great chances to propagate earthquake safety message to the community.

Municipal earthquake risk management program: a community-based disaster risk reduction initiative

The Municipal Earthquake Risk Management Program (MERMP) is more of a methodology that evolved in the past four years in Kathmandu when NSET was implementing the Kathmandu Valley

Earthquake Risk Management Project (KVERMP). MERMP includes all lessons learned from KVERMP, and simplifies the existing methodologies. MERMP components include:

- A) Earthquake Damage Scenario of the municipality (using the RADIUS Tools)
- B) Earthquake Risk Management Action Plan for the Municipality (involving all stakeholders such as the emergency response system and the critical facility operators, elected representatives at district and municipal & municipal ward level, businesses, schools, religious organizations etc)
- C) School Earthquake Safety Program as a demonstration mitigation project for earthquake mitigation
- D) private sector, Components
- E) Awareness, education & training
- F) Mason Training program
- G) Technical assistance to municipality in improving Building Permit Process
- H) Pre-positioning of rescue/Relief Materials, Pre-positioning of Water
- I) Municipality & District level Risk Management and Emergency Response Planning
- J) Assist District Government in Strategic Planning
- K) Wherever felt possible, MERMP also includes
- L) Ward Level Disaster Management: This we find as the best means of disaster risk communication. The methods are formation of advisory committees at ward level, community-watching or vulnerability tour (conduction of walk-over survey of existing vulnerabilities, available resources, and good practices, along the streets by representatives of the community). Such survey may end in a risk reduction planning meeting, or an informal meeting for identifying and training volunteers, or creation of a ward-level disaster management committee.

Pre-positioned emergency response stores (PPERS)

Following the discussion on the earthquake damage scenarios in one of the wards of Kathmandu, participants came to a logical conclusion – it was necessary to store essentials including water at household level, and also a minimum cache of rescue and relief equipment at the ward level for use by the community. This was the start of the project on Pre-positioned emergency response stores (PPERS) which has been implemented in eight localities in Kathmandu Valley. The contents of PPERS are reserves of tools and equipment which can be used by the local responders at the neighborhood level. It is obvious that they would be the first to arrive at the scene of disaster, and the availability of tools and equipment at easily accessible place make them able to conduct the quick rescue. The contents of PPERS are depicted in the following figure- the container usually has ten number of every piece of equipment. PPERS is operated by the local municipal ward or an institution trusted by the ward. Technical assistance was provided by NSET. Subsequently, technical responsibilities will be handed over to the local volunteers.



Figure 2: Typical Contents of PERS items. There are ten numbers of each item.

Lecture/orientation program on earthquake risk

Devastating earthquakes are not frequent, and their memory fades over time. After a few years, the society usually forgets the earthquake event and the impact. Therefore, communicating earthquake risk to the masses is rather a difficult task.

At NSET we quickly learned that talking to the community should be done repeatedly. Therefore the concept of regular lecture/orientation programs came up. We get ourselves invited into the meetings of social clubs and other community-based organizations and offer them free orientation programs of earthquake risk. Such orientation invariably end up with the community people first asking for the do's and don'ts during , before and after an earthquake, and a request to come again. Another form of community teaching done by NSET is the weekly free consultation of house-owners. Usually they are invited to come with their engineer/architects and masons and detailed discussions are held by NSET engineers on aspects of the design and construction.

There are plans to run Free Earthquake Clinics at ward level.

NSET engineers make regular lectures and orientation programs also with the high ranking government officials, planners, municipal and other authorities. Such programs are very effective in communicating the earthquake risk, and also to convince on the need of mitigating the risks.

Achievements

Experiences of earthquake risk reduction and preparedness in Nepal in the past few years have demonstrated the usefulness of community-based approach. There is a marked enhancement of earthquake awareness which in turn has resulted in a visible change in aspects of building construction and demands for preparedness.

Because of the involvement of the community in risk assessment process and also in the planning for action, there is usually no panic due to the disclosure of the high level of earthquake risk. At the same time, involvement of the community in risk reduction projects makes the initiative cost-effective with very high demonstration value. The latter enhances the replication potential of the initial project.

The School Earthquake Safety Program is found to be very useful for earthquake awareness. Its impact-area grows progressively – from the teachers to the children and through them to the parents, community, and the village. WE strongly believe that SESP should be one of the very first interventions in any seismic country of the developing world. The program very quickly can achieve sustainability; it encourages people towards self-help, and instills a sense of confidence in the

community. The mason training element of SESP offers unique opportunity to sustain earthquake risk reduction initiative in the community. In Kathmandu, it was found that a mason trained in elements of earthquake-safe construction usually influences the construction of about ten to fifteen new buildings every year. Since there still will be prevalence of informal construction in the foreseeable future in the developing countries, the emphasis put by the Nepal experience on training masons is self-explanatory.

NSET's experiences of the past few years have dispelled the myth, usually harbored by government bureaucrats and donor agencies, that a country with weak economy, such as Nepal, can not do much in earthquake risk management. The more pressing needs of basic education, health and other services are regarded as the high priority agenda and the disaster risk reduction efforts are looked upon separately as important but low priority agendas. Nepal's experiences of community-based earthquake risk management project has shown that earthquake risks management initiatives can very effectively interwoven into the overall development challenges of the community level. The experiences of MERMP are evidence to this.

As a result of the community-focused nature of its activities, NSET is now requested by government and non-government agencies for assistance, whereas earlier, our words were usually taken with skepticism and disbelieve. This change in attitude is perhaps the biggest evidence of the value of the community-based agenda of NSET.