



Chapter 11

NSET involvement in National, Regional and Global Initiatives

NSET participates in third
UN WCDRR, hosts three
side events

In order to achieve goal of earthquake safe communities, collaboration and networking with related organizations and disaster management practitioners around the world is an important step. It simply helps to share the best practice, innovative solutions and common experiences of the other organizations involved in the field of Earthquake Risk Management around the world. NSET is also committed to sharing knowledge with and learning from various DR stakeholders around the world as it immensely benefits the organizational as well as the community as whole.

Ever since the establishment of NSET has been establishing and maintaining the collaboration and networking with many global and regional and national level organizations including Asian Disaster Reduction and Response Network (ADRRN), Disaster Preparedness Network (DPNet-Nepal), Coalition for Global School Safety (COGSS), International Live Lessons Transfer Network (TeLLNet), International Association for Earthquake Engineering (IAEE), World Seismic Safety Initiative (WSSI).

With view to share experiences from Nepal on risk reduction and preparedness efforts, NSET participated in the third World Conference on Disaster Risk Reduction (WCDRR) held in Sendai, Japan during 14-18 March 2015.

16 NSET coordinated participants that include 8 from government departments and municipalities and 8 from NSET participated the global event which also adopted Sendai Framework for Disaster Risk Reduction 2015-2030, the successor to the Hyogo Framework for Action 2005-2015. During the conference, NSET hosted three side events, namely, on Building Code Enforcement in Developing Countries and Promote Mutual Experiential Learning, School Earthquake Safety and Public Private Partnership in Disaster Risk Management.

One of the side events that NSET hosted was a symposium on “Experiences and Lessons of Building Code Enforcement”.

Rapid population growth especially in urban areas leading to the earthquake risk. In the context of growing tendency of construction of vulnerable buildings every year due to not following the Building Codes in developing countries and increased earthquake risk in terms of human casualties from possible collapse of buildings during earthquakes, the session provided as an opportunity to discuss the issues of building code enforcement in developing countries and promote mutual experiential learning.

During the session, the issue of building code enforcement in developing countries was extensively discussed. It also debated various concerns including why are buildings continually to be constructed badly despite countries having have good building codes?, what should be the strategy: "Build Back Better" or "Build Better Now"?, what could work in developing countries: Building Code Enforcement or Building Code Compliance?, what should be the objective of Building Code implementation - revenue generation or safety assurance, or

both?, who is responsible and who is accountable for building code implementation?, how to ensure code compliance of non-engineered buildings, especially in developing countries?, how to make the knowledge effectively trickle down to ensure skills of safer construction at the grass roots?, how to secure investments on housing/building?, how to increase involvement of banking / insurance sector to promote safer building construction?

The session, moderated by NSET's Deputy Executive Director Mr. Surya Narayan Shrestha, was participated by various national and international panelists including Mr. Shiva Hari Sharma, Deputy Director General, Department of Urban Development and Building Construction (DUDBC), Government of Nepal, Mr. Michael Ernst, Regional Advisor, U.S. Office of Foreign Disaster Assistance (USAID/OFDA) Regional Office for Asia-Pacific, Bangkok, Thailand, Dr. Carlos Villacis, Regional Project Manager and Strategy Coordinator, Global Earthquake Model (GEM) Foundation, Professor Soichi Ando (Dr., Engineer, Architect), Director, Disaster Management (DM/DMP) Program, National Graduate Institute for Policy Studies (GRIPS), Tokyo, Japan, Dr. Fouad Bendimerad, President, Earthquakes and Megacities Initiative (EMI), Mr. Narayan Prasad Sapkota, Mayor and Executive Officer, Bharatpur Sub-Metropolitan City, Nepal.

Another side event hosted by NSET at the conference was a panel discussion on School Earthquake Safety. In the context of low level awareness among teachers, students, parents and other stakeholders about the vulnerable conditions schools in developing countries due to numerous natural hazards, this session provided an opportunity to bring multiple ideas on and discuss the issues of School Safety and mutually learn from the similar initiatives in the developing countries.

As many countries have put the school disaster safety issues in high priority, Nepal has also made great strides in developing concepts and methodologies on School Earthquake Safety by combining physical vulnerability reducing and enhancing school disaster risk management planning. Such efforts of structural, non-structural, and functional vulnerability reduction have, either comprehensively or at least in one of the three components, been successfully implemented in about 500 public schools in Nepal. The session, moderated by NSET's Deputy Executive Director Dr. Ramesh Guragain, was participated by various panelists including Mr. Jhapper Singh Vishokarma, Senior Divisional Engineer, Department of Education,

Nepal, Mr. Iwan Gunawan, World Bank, Indonesia, Mr. Hari Kumar, Geo Hazards International, Mr. Nick Ireland, Save the Children and Professor Kimiro Meguro, The University of Tokyo.

Another side event at WCDRR that hosted by NSET was a panel discussion on Public Private Partnership for Disaster Risk Management (DRM). Private sector is the largest contributor to the national economy of any country, it also can play a major role in disaster preparedness, planning, recovery, and post disaster reconstruction and rehabilitation. The session extensively discussed on various aspects of PPP on DRM such as How do businesses perceive Business Continuity Planning in developing countries?, How can a business plan to successfully bounce-back after a disaster?, How can PPP be incorporated within a sustainable business model in developing countries?, How to accelerate involvement of private sector on DRM?, What are the other measures of success for a business besides profit?, Is it a cost or a value in term of investment on DRR?, is it just a social responsibility or is it a business opportunity in terms of DRM for private sector?, How can we successfully tie-up the strategic DRM needs and sustainable CSR values of a company?, Is PPP for DRM a charity or can it be a profitable business? Can disaster risk management prove to be a creative business opportunity for companies?

In the session, various panelists including Mr. William S. Berger, Principal Regional Advisor, U.S. Office of Foreign Disaster Assistance (USAID/OFDA), Regional Office for Asia-Pacific, Bangkok, Thailand, Mr. Loy Rego, Advisor, Global Disaster Preparedness Center, American Red Cross, Washington, D.C., U.S., Professor Kimiro Meguro, The University of Tokyo, Japan, and Mr. Iwan Gunawan, The World Bank participated. The session was moderated by Dr. Amod Mani Dixit, Executive Director, and NSET.

With the objective to update the Hyogo Framework for Action, approximately 6,500 delegates including 187 states, 25 Heads of States and Governments and 100 ministerial-level delegates and other senior leaders representing governments, NGOs and private sector attended the conference. Foreign Minister Mr. Mahendra Bahadur Pandey headed the Nepali delegation at the conference. Nepal stressed to focus on building resilience through enhanced level of resources and technology from the international community at the conference. Addressing the WCDRR, Minister Pandey affirmed commitments of Nepal Government to the principles, goals and priorities of the Hyogo Framework for Action (HFA).

Specifically, the conference was aimed at carrying out assessment and review of the implementation of the Hyogo Framework for Action; reflecting the experience gained through the regional and national strategies/institutions and plans for disaster risk reduction and their recommendations as well as relevant regional agreements within the implementation of the Hyogo Framework for Action; adopting a post-2015 framework for disaster risk reduction; identifying modalities of cooperation based on commitments to implement a post-2015 framework for disaster risk reduction; and determining modalities to periodically review the implementation of a post-2015 framework for disaster risk reduction. In addition to intergovernmental negotiations on the details of the successor agreement, the conference included ministerial roundtables, high-level multi-stakeholder partnership dialogues, working sessions and many other events organized in and around the conference venue at the Sendai International Centre. Intense discussions ended in the adoption of the Sendai Framework for Disaster Risk Reduction 2015-2030 in a closing plenary.

The World Conference on Disaster Risk Reduction is a series of United Nations conferences focusing on disaster and climate risk management in the context of sustainable development. The UNISDR has been coordinating the last two out of three UN World Conference on Disaster Reduction. The conferences bring together government officials and other stakeholders, such as NGOs, civil society organizations, and local government and private sector representatives from around the world to discuss how to strengthen the sustainability of development by managing disaster and climate risks.

NSET jointly
organizes 14th
international
symposium on new
technologies for
Urban Safety of
Mega Cities in Asia
(USMCA2015)

With the overall objective of sharing experiences on urban disaster safety and environmental management among the researchers, academics, scientists, and other stakeholders, National Society for Earthquake Technology-Nepal (NSET) jointly organized the 14th "International Symposium on New Technologies for Urban Safety of Mega Cities in Asia" (USMCA2015) in Kathmandu. The internationally acclaimed symposium was observed thru 29 – 31 October, 2015 at Radisson Hotel in Kathmandu. The co-organizer of the event were International Centre for Urban Safety Engineering (ICUS), Institute of Industrial Science (IIS), the University of Tokyo (UTokyo), Japan.

Considering the high risk of different disasters in Nepal as well as continuous efforts of different organizations to reduce the risk, this symposium was proposed to be organized in Nepal during the 13th USMCA organized in Myanmar. After the Gorkha Earthquake in Nepal, relevance of this symposium has increased further. The USMCA is a regular yearly event being organized in Asia seeking to bring together expertise in urban infrastructure design, construction and urban maintenance, with researchers and practitioners engaged in the development of new environmental management technologies. This symposium provides a forum for decision makers and researchers to share expertise on urban infrastructure and new technologies for environmental management and disaster reduction and recovery.

The conference had an extensive participation of around 250 scientists, researchers, practitioners, professionals and other DRR (Disaster Risk Reduction) stakeholders from 8 different countries within the continent. The symposium has focused on various themes. It was focused on various facets of urban disaster safety including Disaster Risk Management, Urban Planning, Environmental Safety as well as lessons learnt from the recent Gorkha Earthquake 2015. Under Urban Safety and Disaster Mitigation, various issues including Risk assessment, Disaster mitigation and urban planning, Early warning, Emergency response, Disaster management, Recovery and rehabilitation planning, School disaster safety and Building code implementation were discussed. Likewise, under the Infrastructure Management theme, the issues of life cycle and stock management, construction materials and technology and maintenance and sustainability were discussed while issues of climate change, water resources, biodiversity, transportation and GIS and remote sensing covered under the Environment Informatics theme. In the symposium, a special session was also held on Gorkha Earthquake theme.

A total of seven keynote presentations and 80 scientifically researched papers were presented during the parallel sessions tightly scheduled within the 3 days long intensive discourse. In addition, three nationals and one international young scientists were awarded 'Excellent Young Researcher Award' for their papers presented in USMCA 2015.

The symposium was inaugurated by Ministry of Industry Mr. Som Prasad Pandey. The program was organized aftermath of devastating Gorkha Earthquake which claimed nearly 9000 people and injured nearly 23,000 people. The relevance of this symposium was highly felt after the Gorkha earthquake 2015. Remembering 9,000 lost lives and nearly 800,000 homeless families to the Gorkha Earthquake 2015, Mr. Pandey reinforced the safer reconstruction commitments of the government to build back better during his inaugural remarks.

Various personalities including Mr. Gangalal Tuladhar, Member of Parliament and former

Education Minister, Mr. Masashi Ogawa, Ambassador of Japan to Nepal, Mr. Hiroyasu Tonokawa, Senior Representative, JICA Nepal, Prof. Kimiro Meguro - Director of ICUS, IIS, The University of Tokyo, Japan and Dr. Amod Mani Dixit, Executive Director of NSET, Nepal addressed the inaugural session of the event.

Over half of the world's population is concentrated in urban areas. Over the last 50 years, Asia has become home to more megacities than any other continent in the world. A megacity refers to a metropolitan area with a total population in excess of ten million people and are characterized by a high population density, an increasing susceptibility to lack of safe drinking water and adequate sanitation. Urban safety and environmental management are challenges for any country in the world today. In this context, the USMCA is an international event where scientists, researchers, academics and politicians from governments, universities, institutions and societies are engaging together to find new solutions to face these challenging global issues.



16th World Conference on Earthquake Engineering (WCEE) features three papers presentations from NSET

NSET attended and made three separate paper presentations at the 16th World Conference on Earthquake Engineering (16WCEE) held in Santiago, Chile during January 9-13, 2017. The conference was a mega event encompassing all about the newest developments in Earthquake Engineering.

Dr. Amod Mani Dixit, Executive Director of NSET attended the General Assembly of IAEE as a National Delegate including along with NSET's two Deputy Executive Directors Mr. Surya Narayan Shrestha and Dr. Ramesh Guragain at the even where they made presentations. Dr. Amod Mani Dixit, made an oral presentation on the special session on the Future Risk of Cities of the paper titled, " Changing Risk Perception of People: A Key for Enhancing Building Code Compliance" while Mr. Surya Narayan Shrestha made a presentation, the title of the presentation was "Lessons from Response Activities during April 25, 2015 Gorkha earthquake, Nepal." Similarly, Dr. Ramesh Guragain also made a presentation under the title, " Building Damage Patterns of Non-engineered Masonry and Reinforced Concrete Buildings during April 25 2015 Gorkha Earthquake in Nepal."

The program was organized with the objective of bringing together researchers, civil engineers, structural engineers, seismologists and geotechnical engineers, both from the academic world and from the professional practices around the world; who are interested in exploring all the topics related to Earthquake Engineering and more. NSET has been participating in the World Conference on Earthquake Engineering since WCEE Acapulco, Mexico in 1996.

In addition to the three papers, one paper on Building Code Enforcement was submitted under the Building Code Implementation Program in Nepal (BCIPN) Project of NSET which was jointly written by Dharan Sub-Metropolitan City, Vyas Municipality, Bharatpur Sub-Metropolitan City, Dhangadhi Sub-Metropolitan City and NSET. This paper was submitted under the name of the main author - Mr. Suraj Shrestha, Senior Engineer/ Urban Planner of Dharan Metropolitan City.

All the papers and presentations reflected the unique work done by NSET professionals. The conference which hosted more than 3000 attendees, was featured thousands of papers from around the globe, both in oral and poster presentations, keynote lectures, invited lectures and debates. NSET has been participating in the World Conference on Earthquake Engineering since WCEE Acapulco, Mexico in 1996.

NSET, GNDR join hands for strengthening local capacities for building community resilience

The Journey from Views
from the Frontline to the
Frontline

The 'Views from the Frontline' (VFL) project, initiated in 2009, has been highly effective at the international level, where the presentation of views from respondents from 69 countries in 2011 made a major impact at the UN 'Global Platform for Disaster Risk Reduction', and at the local level, where dialogue, collaboration and action have been promoted. VFL 2013 aimed to prepare the way for a HFA Post -2015 discussion.

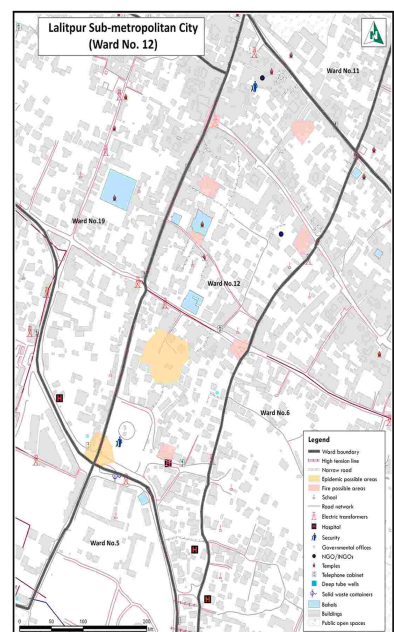
VFL 2009 and 2011 highlighted the role of local action and learning as being at the heart of community resilience, and members have called for VFL to support implementation based on this. As a result VFL 2013 focused on Action and Learning. It was the cycle of reflection, learning and action which enabled communities to become active participants in building community resilience. VFL 2013 had two stages, Survey and Consultation activities like those which have been conducted in VFL 2009 and 2011 and a new Action and Learning stage which builds on the local level information gathered in the survey and consultation stage and supports practical implementation at the local level. Action at the Frontline (AFL, 2014) was designed to strengthen local capacities for learning and action in the face of everyday disasters; building community resilience. And in 2015, Frontline was launched as the successor to Views from the Frontline

NSET served as the Regional Coordinating Organization (RCO) for South/South East Asia for the implementation of VFL program during (2009, 2013) and as the National Coordinating Organization (NCO) for Nepal to implement the VFL 2009-2013, AFL 2014 and now the Frontline (2015).

Action at the Frontline

Action at the Frontline (AFL) is an initiative of Global Network for Disaster Reduction (GNDR) aimed to strengthening local capacities for learning and action in the face of everyday disasters; building community resilience. With the support from GNDR, NSET implemented AFL project in Nepal in 2014 in partnership with Ward No. 12 Disaster Risk Management Committee, Lalitpur Sub Metropolitan City.

AFL was built on previous Views from the Frontline (VFL) programs which were a participatory action-research project undertaken by civil society actors in conjunction with government bodies and local communities. VFL was aimed at measuring progress towards the implementation of the Hyogo Framework for Action (HFA) at the local level across developing countries and regions, while AFL focused on facilitating processes where local communities understand risks and root causes and strengthen their ability to address these through regular reflection and by working in partnership with others.



Consultative meetings held

With view to interact and gather ideas for Disaster Management Committee (DMC) to develop plan of action that should fit in Ward level periodic plan and many specific programs such as AFL, a community level consultative meetings held on Nov 14-15, 2014 with community people separately at Chakrabahil, Prayagpokhari, Hakha and Tangal locations of Lalitpur-12.

Community people and representatives of Tole/Lane Organizations, Mothers' Group and also school teachers and students took part in identifying local priorities for resilience.

The meeting identified that Knowledge and skills on fire safety as key elements to integrate in planning focusing to household women and people working in their workshops. Enhancing local capacity on emergency response is another key element highlighted. Community people pointed out to place safety messages in public places and mobilize community volunteers for propagating simple ideas on risk identification and mitigation measures. School in the community also expressed its willingness to work together with community on this cause.

A team of Global Network for Disaster Reduction (GNDR) comprising Operations Director Mr. Terry Gibson and Asia Regional Development Officer Mr. Rouf Mohamed Abdur visited the Ward No. 12 of Lalitpur Sub-Metropolitan City (LSMC) and met with Disaster Management Committee (CDMC) Members. The GNDR team also observed vulnerability and high earthquake risk of Kathmandu valley as part of Earthquake Vulnerability Tour program which was facilitated by NSET.

Frontliners review Disaster Risk Management Plan and Program

Community frontliners from Ward No.12 of Lalitpur Sub Metropolitan City intensively worked on finding ways to identify and tackle local risks. The participants from the Community, Local Government, Red Cross, NSET and other partners reviewed existing Disaster Risk Management Plan and Programs and also brainstormed on how they can revitalize the community level efforts in more organized ways. Nearly 40 participants executed group works in a half day workshop on "Community Level Disaster Risk Management" organized by Disaster Risk Management Committee (DMC) of LSMC-12 with the support from NSET under GNDR Action at the Frontline (AFL). The participants included the DMC members, team leaders of different sub committees namely First Aid, Search and Rescue, Fire Fighting, Mason, Vulnerability Assessment teams and also representatives from Municipality, Nepal Red Cross Society, NSET and other partners. Program outcomes were shared with the community frontliners for further consultations and feedback.



Fire Response Training To Reduce Fire Risk

With view to provide basics of fire safety and also acquired hands-on skills on responding to fire disasters, namely how to use bucket brigade method at the locality and also operating fire extinguishers., 'Community Fire Response Training' was conducted in Patan on April 13, 2015 for the community participants from Tangal and Prayag Pokhari areas of Lalitpur-12.

There were 28 people took part in the training among them 16 female and 12 male.

A half day program was jointly organized by Disaster Risk Management Committee (DRMC) of Lalitpur-12 and National Society for Earthquake Technology-Nepal (NSET) with the support of Global Network of Civil Society Organization for Disaster Reduction (GNDR) under the "Action at the Frontline (AFL)" process.

Major tasks accomplished

- Focused Group Meetings with DMC and Community frontliners
- Workshop on "Community Level Disaster Risk Management"
- Risk profiling
 - Earthquakes, Fire, Epidemics are major threats
- Fire Response Training focusing to housewives
- IEC materials produced and disseminated



Major challenges

- Revitalising community level volunteerism in sustained ways is critical
- Local activities are more influenced with local dynamics rather than program schedules

Key lessons

- Community resilience is only possible through community involvement.
- Listen community people, they will listen you.
- Addressing everyday disasters is important entry point to building community resilience.
- DRR should be included in the menu of various social discourses and lives.

Frontline

The Frontline program builds on the findings from VFL and analyses in more detail the Threats, Consequences, Actions and Barriers of disasters and in particular everyday disasters and resilience. Local impact is a critical measure of progress in the frameworks being established in 2015 and beyond. A vital component of assessing this is Local knowledge of the many threats that affect communities. Frontline will establish baselines during 2015-2017 as a basis for ongoing monitoring during the currency of these frameworks.

Frontline is a global initiative, working at a local level to collect community perceptions of disasters and risk, to measure threats, local capacities and underlying development factors, bringing local knowledge to national, regional and global actors. This three year research based advocacy program is implemented by NSET for Nepal.

Frontline in Nepal

Frontline is based on local risk profiling which identifies the range, impact and frequency of risks faced by local groups. Profiling takes account of the perspectives of different stakeholders including old/young, female/male and particular indigenous groups. Frontline strengthens local engagement by placing an emphasis on communicating with local groups to explain the relevance of the program.

Frontline identifies risks, its magnitude, impact, and frequency through local risk profiling done in qualitative surveys. The survey is simple and is designed to support local action and learning by allowing people in the community to describe their realities in their own terms. It looks at the point-of-views of different stakeholders regardless of age, gender, and ethnic background.

The main objectives of the Frontline program are as follows:

- Enable Civil Society Organizations (CSOs) and local communities to work together on strengthening local capacity and leadership to build resilience.
- Enable CSO and local communities to learn and share with each other on actions, strategies and innovations to strengthen local capacity to address threats and to build resilience.
- Enable CSOs and local communities to create political space to inform and influence local, national, and global institutions on policies and practices that affect stakeholders' resilience, security, wellbeing, and dignity

Frontline: The Process

- Country Categorization and Selection of POs
- Orientation/Training to the POs
- Focus Group Discussion
- Coding Conversations
- Survey/Data Collection
- Data Analysis and Visualisation
- Using the Findings for Advocacy
- Local Actions

Risk Zones and Participating Organizations (POs)

In Nepal the Frontline process covered six different Risk Zones geographically distributed across the country viz, Kalikot & Kailali districts in the Western Region of Nepal, Saptari & Udayapur district in the Eastern Region and Dolakha & Kathmandu district in the Central Region of Nepal. The risk zones were selected based on the different types of risks faced, geographic location, accessibility, exposure to risk, urban vs. rural realities. 6 different Participating Organizations (POs) actively working in the selected communities were identified and partnered with to implement the Frontline activities.

A total of 892 surveys were administered across the 6 Risk zones in Nepal. The survey respondents indicated that the key local actions for reducing the risks has to be Awareness Raising on DRR, Construction of Earthquake Resistant Buildings, Reforestation and Poverty Reduction, Poverty and Lack of Access to Technology was identified as the major barrier to implement the above mentioned actions by majority of the respondents.



Participating Organizations

- Forum for Awareness and Youth Activity (FAYA), Dhangadi municipality, Kailali
- Karnali Integrated Rural Development and Research Centre (KIRDARC), Kalikot
- Human Rights Awareness and Development Center (HURADEC), Dolakha
- Nava Prabhat Nepal, Triyuga Municipality, Udayapur
- Koshi Victim's Society (KVS), Saptari
- Thankot Mahila Bachat Tatha Rin Sahakari Sanstha Limited, Chandragiri Municipality, Kathmandu



Enhancing Resilience of Communities: An Action by Women's Group in Nepal

Women group of Chandragiri Municipality in Kathmandu, Nepal implemented their learning to their own houses to reduce non-structural vulnerability. They started the non-structural mitigation with their own Kitchen and Bedroom by fastening their Cupboard, Photo frames, Refrigerator, Gas cylinders etc. Prior to this implementation, they had gone through a hands-on training session on Non-Structural Mitigation conducted by NSET in 2012. President of Thankot Mahila Jagaran, Mrs. Bindu Shrestha, elicit the identified four risk in the communities of Thankot. She said, we implemented NSM in 9 schools of our municipality. We were trained on NSM through NSET, and Lumanti supported us to link with the school. She remembered those days; we had skills, we had contacts but we didn't have adequate equipment for carrying out NSM. Meanwhile, frontline program support us by giving drill machine and we had started the mitigation measures in the schools. Now, the process and activities is going on in various parts of the Kathmandu Valley to mitigate the risk.



National Advocacy Workshop for Disaster Risk Reduction in Nepal

The National Advocacy Workshop for DRR at local level was organized in Nepal on May 11, 2017 by National Society for Earthquake Technology-Nepal (NSET) with support from Global Network of Civil Society Organization for Disaster Risk Reduction (GNDR). Total 30 participants from community based organizations and various stakeholders shared and discussed on lessons and experiences of DRR actions at community level and also worked on Draft Advocacy Initiative Plan for 6 communities based on findings of surveys conducted in those areas under Frontline program. In the program, Dr. Amod Mani Dixit from NSET stated that, all these global strategies and their transformations are spearheading towards building community resilience as to fit in broader frame of DRR" Mr. Rouf Mohammad Abdur, GNDR Regional Development Coordinator for Asia & Pacific explained briefly on GNDR current efforts and also on roles and contributions local and national organizations are to take and make in strengthening global CSOs initiatives.



Earthquake Resistant Elements identified in Nepali Vernacular Buildings

The Nepali vernacular buildings made of clay, brick, timber and stone are found earthquake resistant in general with the incorporation of various earthquake resistant elements and technologies as they have withstood the past earthquakes. However, not all the buildings, elements and technologies are equally earthquake resistant. Study by NSET in association with ADRRN has captured and analyzed the integration of earthquake safety concepts and considerations in traditional construction practices in Nepal. Study has shown that some practices are good enough to be adopted and some require adaptation by strengthening and some have to be eliminated as they are no more earthquake resistant.

Traditional knowledge and skills are built to cope and withstand the vagaries of nature over the years and have evolved with time. These are valuable assets which contains deep insights. However, much of this traditional wisdom is gradually fading out due to various reasons. One of the major reasons is that its existence is largely in tacit form and not properly documented. The advancement of science and modern technology has also overshadowed it. With the pace of time people failed to understand the logic behind it. So most of the indigenous knowledge and wisdom has remained either as rituals or confined in a small area. Those ideas are still valid today in building the disaster resilient communities. Hence, there is a need to explore and recognize the importance of local innovative practices in disaster risk reduction and validate this through modern scientific knowledge.

Realizing this need, Asian Disaster Risk Reduction Network (ADRRN), a network of organizations in Asia is promoting grassroots innovations by combining knowledge and local wisdom of different countries under its strategic objective to reduce the gap between knowledge and practice by demystifying scientific approaches as well as identifying and promoting traditional knowledge with the following specific objectives to promote and create awareness about traditional and cost effective practices for disaster risk reduction and climate change adaptations, to facilitate maximum outreach and policy interventions, Reduce vulnerability and building resilience at the local level and Detailed documentation of traditional practices for future reference on research and development.

NSET carried out this study called ‘Traditional Wisdom of Earthquake Resistant Building Construction in Nepal’ under the campaign “Promoting Grassroots Innovations by combining scientific knowledge and local wisdom” conducted by ADRRN. The year 2015 was focused on the traditional practices of Nepal and Sri Lanka.

The overall goal and objective of the study was to trace and share traditional wisdom and indigenous practice of Nepal in natural disaster preparedness sector particularly Earthquake Resistant Building Construction Practices for wider dissemination in making resilient community.

Identification of indigenous knowledge and wisdom in an earthquake resistant building practices is basically exploring the old settlements and old buildings which are believed to have experienced the earthquake of 1934 or approximately 100 years old. In addition to old settlement and occurrence of earthquakes, different building typology such as stone masonry, brick masonry, timber frame structure and geographical coverage from east to west and from Himal to Terai were the guiding principles for the identification.

A series of consultation and interactions with various people organized to explore the earthquake resistant building practices across the country. These were the people who have travelled a lot in various parts of the country during different field visits and noted such practices. Literature describing such old settlements were also reviewed. The whole of Eastern Terai belt was not advisable for survey as the settlement was new, not more than 40 years.

Altogether 49 household were surveyed covering 8 districts including 3 of Kathmandu Valley, namely Kathmandu, Lalitpur and Bhaktapur. Among them, 3 were the temples, 2 Buddhist Monasteries and the rest were the residential buildings.

S. No	District	Areas	Total	Remarks
1	Solukhumbu	Salleri, Junbeshi	8	
2	Sankhuwashava	Khandbari, Chainpur	4	
3	Kathmandu Valley	Kathmandu, Lalitpur, Bhaktapur	21	
4	Kavrepalanchowk	Panauli	4	
5	Makawanpur	Chitang, Palung, Bhimphedi	8	
6	Humla	Rodikot, Simikot	4	
Total			49	

The architecture and planning of the Kathmandu Valley, popularly known as the traditional architecture has evolved over the years to suit the various local conditions of the valley. Development of building technologies in the valley was guided not only by a coping strategy for disaster and socio-cultural beliefs and values, but also influenced by climatic condition, availability of the local materials and skills. Slope roofs with large overhangs were mainly to protect the wall and mud mortar from the heavy rain. Similarly, an extensive use of mud in various forms of the building materials such as roofing tile, flooring tile, brick for wall and timber in flooring and roofing structure reveals the fact of abundance of these local materials. Hence all the elements and technology incorporated in the building was a result of combination of all these realities.

The various factors including the structural condition of the buildings call for a comprehensive revision in traditional buildings from earthquake point of view. In order to use the traditional methods keeping earthquake resistant aspect intact, certain innovations would have to be introduced. Emphasis would therefore be laid on a whole range of measures which will keep future maintenance down to the minimum and at the same time ensure that the buildings last for a considerable period. These innovations include better roofing, stronger foundations; moisture barriers and efficient timber treatment against rot, fungi and insects.

It is clear that there are certain technologies in traditional buildings which can be adopted and replicated, some needs adaptation by strengthening and those which has remained just as rituals can be discarded as they have no relevancy from earthquake resistant perspective. Since technological practices and aspects have always been associated with economic and socio-cultural practices and very crucial for recovery, the earthquake resistant cultural beliefs and practices as well as the technological practices in the traditional buildings need to be viewed together.

NSET, ETH and IIT to jointly work for the resilience of Civil Infrastructures in Nepal

The Swiss Federal Institute of Technology (ETH) Zurich, the Indian Institute of Technology (IIT) Bombay, National Society for Earthquake Technology-Nepal (NSET) and the Institute for Social and Environmental Transition-Nepal (ISET-N) have agreed to continue the collective efforts on disaster relief, recovery, planning and preparing for future events. After a scientific conference 'Safe Infrastructures for Resilient Communities in Nepal', the partnering institutes have committed to intensify coordination so that the civil infrastructure systems of Kathmandu and Nepal will be more resilient to future earthquakes.

Mr. Sushil Gyawali, Chief Executive Officer of National Reconstruction Authority (NRA) opined in his inaugural remarks that the country is leading towards rebuilding safer and better settlements as guided by Recovery Framework that well covers housing as well as infrastructures. Mr. Gyawali emphasized on the need to translate the learning of last earthquake to better tackle future shocks.

The conference was jointly organized by ETH Zurich, IIT, NSET and ISET-N with funding support from CODEV on 23rd and 24th Oct, 2016 to present the findings of an 18-month long project

conducted to gather the data on and quantify the resilience of civil infrastructure systems in Kathmandu during and after the 2015 Gorkha earthquake. The conference has emphasized, 'Civil Infrastructure systems are the backbones of modern societies and their resilience is key for safe communities. Participating professionals, scientists and experts from different domains, covering a large expertise in the functioning of multiple civil infrastructure systems intensively engaged in this scientific discourse.

The project were focused on the electrical power supply, water distribution and telecommunication infrastructure systems as well as on residential building inventory where the newly developed Re-CoDes framework was used to model the evolution of the supply and demand in those systems. Dr. Ramesh Guragain from NSET, Jayendra Rimal from ISET-N presented and shared their experiences and international guest speakers, Dr. Bijay Mishra and Dr. Svetlana Brzev gave their remarkable speeches.

ADRRN Innovation Workshop held at NSET

With view to document the innovations made by NSET and to discuss the prevailing issues that need innovative approach to address and their solutions, Asian Disaster Reduction and Response Network (ADRRN) in association with National Society for Earthquake Technology- Nepal (NSET) organized the workshop on March 24, 2017 at NSET central office, tailored to the ADRRN executive committee meeting in Nepal. One-Day Workshop set to explore and understand the ideas and ways for building in innovation in plan, program and practices of disaster risk reduction.

A total of 30 participants from Nepal, India and Japan participated in the process. Ms. Ikue Uchida, Mr. Jun Matsumoto and Mr. Takeshi Komino served as resource persons from ADRRN and other participants from SEEDS-India and NSET's key staff from each divisions and programs as well as team of communication contributed to the workshop.

On the occasion, Mr. Takeshi Komino of ADRRN Tokyo Innovation Hub (ATIH) opined NSET is where science meets practice and, hence, serves as the best place to apply innovative approaches through its program. In the day-long workshop meeting participants raised several issues such as the requirement of appropriate technology required to preserve the traditional heritage, a need of good network of professional responders as well as implementation of effective awareness in the context of aftermath of Gorkha Earthquake 2015.

In the closing remarks, Dr. Amod Mani Dixit, Executive Director of NSET emphasized that innovation is not new to Nepal and to the people in this region. Actually, the culture of innovation is in-built in our civilization. However, we should be always guided by the principle that innovation should be needful and be relevant in regards to serving the people at large.