World Conference on Disaster Reduction
Proceedings of the Thematic Session on

EDUCATION FOR SUSTAINABLE DEVELOPMENT

Towards Effective Disaster Reduction and Enhancing Human Security

Cluster 3: Knowledge, innovation and education to build a culture of safety and resilience

With Translation of the Executive Summary in:

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GOLFRE

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EDUCATION FOR SUSTAINABLE DEVELOPMENT:

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Cluster 3: Knowledge, innovation and education to build a culture of safety and resilience

Organized by
United Nations Educational, Scientific and Cultural Organization (UNESCO)
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Global Alliance for Disaster Reduction (GADR)
Global Open Learning Forum on Risk Education (GOLFRE)
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With French, Spanish and Japanese Translation of the Executive Summary

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DISCLAIMER

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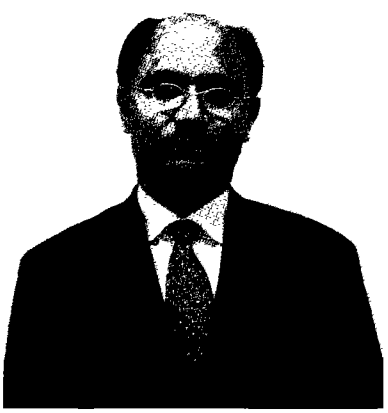
Executive Summary

Education for Sustainable Development: Towards Effective Disaster Reduction and Enhancing Human Security

Rajib Shaw and Badaoui Rouhban

Dr. Rajib Shaw is currently an Associate Professor in the Graduate School of Global Environmental Studies in the Kyoto University, and is engaged in the international research on disaster and environmental management. Dr. Shaw comes with an extensive knowledge and experiences in the field of disaster management, with specific focus on the developing countries. During his tenure in the United Nations Centre for Regional Development (UNCRD), he led many projects on community based disaster management in the Asian region. Dr. Shaw has experiences in working in India, Indonesia, Nepal, Bangladesh, Afghanistan, Philippines, Cambodia, Vietnam, and Central Asian nations, where he worked closely with the NGOs and country governments to influence local actions, education and policies on disaster management.

Dr. Badaoui Rouhban is the Chief of the Section for Disaster Reduction in the Natural Sciences Sector of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris. He works on UNESCO's programmes related to the study of natural hazards and to the disaster risk mitigation measures. He has managed, and participated in, several international projects related to disaster studies and prevention. He represents UNESCO as a member of the United Nations Inter-Agency Task Force on Disaster Reduction which oversees the International Strategy for Disaster Reduction. He holds a degree of Doctor of Engineering from the University 'Pierre et Marie Curie' in Paris. Dr Rouhban joined UNESCO in 1983.



EXECUTIVE SUMMARY

Rajib Shaw and Badaoui Rouhban

1. INTRODUCTION

Ten years ago, the city of Kobe and its adjoining areas in Hyogo prefecture of Japan were hit by a strong earthquake, leaving behind a trail of death and destruction. This earthquake was a turning point in disaster reduction initiatives in Japan, resulting in two prominent changes: 1) a blending of technological and social issues in the field of research and application, and 2) an enhanced participation of civil society in disaster reduction initiatives. Since Japan had long been one of the most developed countries in the field of earthquake engineering, the tragedy in Kobe posed a daunting question: *'how to fill the gap between knowledge and practice?'* This question is not only for Japan, but is pertinent to many other countries. With the advancement of technology, the knowledge base is growing, and it is now time to tackle this question in order to save lives and properties from natural disasters.

The World Conference on Disaster Reduction (WCDR), at the 10th anniversary of the Kobe earthquake, is therefore of *special significance, providing an excellent platform to share experiences, expertise, and lessons from different parts of* the world. The year 2005 is also the beginning of the United Nations Decade of Education for Sustainable Development (DESD: 2005-2014) which is led by UNESCO. It is thus time for taking action.

2. SUSTAINABLE DEVELOPMENT AND DISASTER REDUCTION

One important aspect of sustainable development is the mitigation of the destructive effects of natural disasters on societies through a focus on reduction of vulnerability of people, buildings, and infrastructure, achieved by implementing measures based on scientific, engineering, and social knowledge within national and regional economic and cultural frameworks. Education has been recognized as an essential element in sustainable development and disaster risk reduction strategies since it accelerates the progress of societies toward disaster resilience. Furthermore, safe schools and other educational buildings, well known as potential "safe havens" against natural hazards, have proven effective for saving lives; they must therefore be emphasized in disaster risk management. Developmental models need to incorporate disaster risk reduction in order to be sustainable. Given this essential link between disaster risk reduction and *sustainable development, the ESD Decade will be an important opportunity to promote education on risk reduction for* disaster free and sustainable societies.

3. HUMAN SECURITY AND SUSTAINABLE DEVELOPMENT

Human Security is concerned with reducing and - when possible - removing the insecurities that plague human lives. The human development approach, pioneered by visionary economist Mahbub ul Haq (under the broad umbrella of United Nations Development Programme), has done much to enrich and broaden the literature on development. Human development is concerned with removing the various hindrances that restrain and restrict human lives and prevent its blossoming. The idea of Human security, in this context, fruitfully supplements such an expansionist perspective by directing attention to what are sometimes called "downside risks".

> "At the center of sustainable development is the delicate balance between human security and the environmentCritical to this is the need to explicitly link plans for improved environmental management and sustainable development to disaster prevention and preparedness."
> *Sadako Ogata and Amartya Sen* in "Human Security Now", 2003

The relationship between *human security, environment and sustainable development* is the most pronounced in areas of human dependence on access to natural resources. Environmental resources are a critical part of the livelihoods of many people, and when these resources are threatened because of environmental changes, people's human security is also threatened. People move from rural areas to marginal lands, and household income falls. This relationship is captured in the promotion of sustainable development.

Disaster management is directly connected with human security. Many natural disasters like floods or droughts are directly related to environmental degradation and climate change. Such events affect people's lives, properties and livelihoods, and affect the poorest most. The creation of disaster resilient community is therefore an important step towards enhancing human security.

4. IMPORTANCE OF EDUCATION

Education is the key element for attaining disaster reduction and achieving human security in the pursuit of sustainable development. Education can be characterized in various ways, depending on the target and purpose. Formal education is important and essential, and provides basic knowledge to people. Informal education (including training, awareness raising, community and family education) applies this knowledge to practice. Thus, the synergy of formal and informal education is of utmost importance.

In the area of natural disasters, knowledge and expertise are available in different countries in different forms. However, based on the local needs, the application of knowledge and its form are different. In some countries, there is a need to focus on technological development for disaster reduction; in others, the challenge is how to apply it, and how to incorporate traditional knowledge and wisdom.

Past experience, projects, and programmes have revealed the enormously positive effects of education for vulnerability reduction and disaster risk management. Children and adults who know how to react in case of an earthquake or a severe windstorm, community leaders who have learned to warn their people in time, and whole social layers who have been taught how to prepare themselves for natural hazards have contributed to better mitigation strategies and

dissemination of information on the dangers of hazards. Education and knowledge have provided people with tools for vulnerability reduction and life-improving self-help strategies. Furthermore, more stable and disaster resilient education facilities, such as school buildings, provide a shelter in case of hazards and must be strengthened and improved through better engineering and technical knowledge.
Education also plays a substantial role in improving risk assessment procedures in nearby communities, in encouraging people to engage in building up resiliency and to generally reduce risk elements in communities. For education on risk reduction to have its desired impact on communities, it needs to reach out to the remotest development worker in the field. Such education needs to be made accessible and affordable for frontline practitioners who operate at community level and are often far removed from conventional knowledge centers such as universities.
It is also important to transfer the live lessons of catastrophic disasters so that the future generations are aware of disaster impacts. *"Transferring live lessons of catastrophic disasters from generations to generations in various ways"* is an essential element of minimizing the future victims and mitigating vulnerability of local societies.

5. PURPOSE OF THE SESSION

UNESCO Natural Science Sector, together with other partners including the Kyoto University Graduate School of Global Environmental Studies (KU GSGES), the Global Alliance for Disaster Reduction (GADR), the Global Open Learning Forum on Risk Education (GOLFRE), the Disaster Reduction Alliance (DRA) and the International Institute of Earthquake Engineering and Seismology (IIEES) proposes the thematic session *"Education for Sustainable Development: Towards disaster reduction and enhancing human security"*. The purpose is to review the experiences in the past decade in the field of education, sustainable development, disaster reduction and human security, and suggest future strategies for the next decade. The session is designed to allow for an exchange of experiences and good practices in order to enhance the implementation of education for disaster reduction. It will identify the key issues and analyze the success factors of different initiatives from different parts of the world. Based on these experiences, the session would try to propose an action plan for the next decade on the role of education in disaster reduction, sustainable development and human security.
The session will try to achieve the following:
- Identification of good practices for the integration of education for disaster reduction and human security into school programmes
- Guidelines on practical methods and techniques for improving the safety of school buildings
- Enhancement of transferring live lessons activities of catastrophic disasters
- Partnerships to implement education for disaster reduction
- Proposals for commitments and a corresponding calendar of implementation, as a possible contribution to a general plan of action of the conference

6. SESSION DELIBERATIONS

The session will begin with opening remarks from high-level policy makers of UNESCO and Kyoto University. A case study compilation *"Disaster reduction and human security: Case studies and best practices"* will be presented. It was compiled by the UNESCO Natural Science Sector and the Kyoto University Graduate School of Global Environmental Studies. The session will have nine presentations. At first, three specific country studies are presented from 1) Nepal, 2) Iran and 3) Japan. Nepal experiences are presented as the key-note speech, followed by Iran and Japan. These are followed by three innovative global and regional initiatives: 1) Learning forum for practitioners, 2) Alliance for professionals, and 3) Network for transferring live lessons of disasters. The last part of the interventions includes the experiences of international organizations: 1) Development Learning Network of the World Bank, 2) School Earthquake Safety Initiative of the OECD, and 3) Hazard and Education Initiatives of the Council of Europe.
The **Nepal** experience describes the challenges and opportunities of disaster education in the country. Nepal, due to its critical topographical, geological and geopolitical context, is vulnerable to natural disasters like earthquake, flood and landslides. Traditionally, there was extensive focus on scientific knowledge generation in early 1980s, as opposed to bringing the knowledge to people and communities. Emphasis was more on the formal education, with limited outreach programmes. During the UN International Decade for Natural Disaster Reduction (IDNDR: 1990-1999), both the government and the non-government sectors started implementing several initiatives in disaster risk management successfully. The country responded positively to the Yokohama Strategy and Plan of Action, and in the last Decade initiated several strategies and initiatives. The Ministry of Education and Sports (MOES) of His Majesty's Government of Nepal (HMGN), has implemented disaster risk reduction programs through its Department of Education (DOE) and the District Education Offices (DEO). The programs pertain to: i) improving school infrastructure by constructing earthquake-resistant school buildings, ii) increasing disaster awareness, and iii) facilitating and guiding the disaster mitigation programs of non-government organizations and local governments. In addition to government efforts, the National Society of Earthquake Technology (NSET)-Nepal took the leading and pioneering role in bringing the knowledge to action. Nepal is proud to have taken successful strides in disaster risk education and developing a wider outlook and successful methodologies for disaster risk management including risk identification and reduction to disaster preparedness. Several of the methodologies and programs are regarded as showcases, and replicated in other countries. The remaining challenges are implementation of risk education measures, and mobilization of additional resources. In this regard, the Decade of Education for Sustainable Development (DESD) can play a crucial role. Some of the urgent emphasis areas are: up-scaling and replication of good practices, building legal instruments, implementing policy actions, and building broader partnership.
Iran being located in high seismic hazard regions of the world, with frequent occurrence of devastating earthquakes, has experienced severe human and property losses. The human toll includes the loss of more than 10,000 school children during the Bam earthquake of 26 December 2003. The world was reminded that children are the most

vulnerable group in society.
Creating an earthquake safety culture in Iran is a major challenge. A high percentage of Iran's population is under 18 years old and there are more than 16 million students in the country. IIEES, emphasizing the importance of the children's safety, has developed a comprehensive earthquake education and preparedness plan for all school levels using direct and indirect methods. The theoretical part of the program consists of educational material in the 15 different school textbooks used in the country. The content promotes the understanding of earthquake phenomena as well as providing information on earthquake preparedness, response and recovery; and effective risk reduction methods. The practical components range from different class and school activities to an "Annual National Earthquake Preparedness Drill". The program has made a major contribution in increasing the public knowledge, awareness and preparedness. However there is long way to go in order to fulfill the program's objectives.
In the **Japan** experience, brief background of the Environment and Disaster Mitigation Course at Maiko High School of Kobe is mentioned, referring to the Great Hanshin-Awaji Earthquake. The purpose of the disaster mitigation education program is to link specialist knowledge to the citizens. Traditionally in Japan, disaster education provides instructions on how to react during the disaster. However, the new course in Maiko High School focuses on disaster management, with more emphasis on preparedness issues, roles of students in their houses, communities and schools. It stresses that both natural and social environments are important factors in disaster mitigation education. The purpose of the education is to raise the capacity of citizens to cope with disasters, emphasizing the important factors of fundamental knowledge, fundamental skills and strong will. To develop these factors in the students, many activities are conducted at Maiko High School, e.g., speeches by those who have experienced earthquakes, lessons at disaster museums, the making of concept maps, safety maps, exercises in disaster simulation, disaster imagination games, town watching, and memorial events. The replication of these activities is encouraged in other schools. Finally, three important lessons are cited: utilizing human resources, having students learn by experiences, and encouraging the dual network of teachers and students to grapple with the tough issues of disaster management.
The presentation on **GOLFRE** (Global Open Learning Forum on Risk Education) states that a prerequisite for inculcating a culture of disaster prevention in communities is to start considering risk reduction as a developmental issue. Extensive awareness and education efforts will be required for this, engaging field practitioners who can act as intermediaries for influencing the way people prepare for, and react to, disasters. This is hard to achieve in the present situation since education on disaster management is neither accessible nor affordable for people in the field, particularly in developing societies. There is an unquestionable need to establish a new paradigm in disaster education – a model that will take this knowledge to the remotest of frontline workers who can make use of it, and in a manner that is easy to understand and imbibe. Appropriateness of content will have to be ensured through inclusion of knowledge from the field, local context, traditional wisdom, appropriate technologies, documentation, and case teaching methods. Experiences suggest that this can be best achieved through proactive measures for taking risk education to field practitioners rather than waiting for the practitioners to come to learning centers. Universities and NGOs have a key role to play in this initiative.
The **GADR** (Global Alliance for Disaster Reduction) states that the entire framework of higher education and formal and informal educational programmes from K to post-graduate to practice will be marshaled during the period 2005-2014, and beyond, to equip and engage professionals of every country in ongoing endeavors to build a culture of disaster resilience on a community scale. The long-term goal is to transform the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will in over 1 million communities into enlightenment and empowerment of professionals and organizations, enrichment of networks, and enable of political will. This transformation will require the innovative integration of knowledge with human, fiscal resources, and political capital, and the sustained management of change for the greater good in a global perspective. To change professionals from uninformed to well informed; educational programmes from fragmented to integrated, and organizations from bounded and self-looking to seamless networks that are community focused, will require unprecedented cooperation, communication, coordination, collaboration, and creativity. These changes will not be easy or immediate, but they will happen as the "World's Mutual Fund for Education" is concentrated on the institutionalization of educational programmes that capture windows of opportunity to improve and accelerate every process within the educational framework.
DRA (Disaster Reduction Alliance) was formed by Disaster Reduction and Human Renovation Institution (DRI) in October 2002 for sharing the lessons of the Great Hanshin-Awaji Earthquake and other disasters worldwide. Since the 1995 Earthquake significant improvements in many areas have been made to disaster reduction systems in Japan, from the community level to the top policy level. It is indeed their strong feelings that greatly motivated people to take concrete steps forward. The disaster had a major impact in stimulating the growth of the volunteer movement and the establishment of the non-governmental organization (NGO) sector throughout Japan. If live experiences and lessons of severe disasters are appropriately demonstrated and transferred, these lessons can be a very effective learning and educational tools, by which individuals, communities, and other stakeholders can be personally motivated to take concrete actions in implementing disaster prevention and reduction policies. Therefore, DRA proposes to transfer live lessons to future generations by forming a network of museums and similar organizations.
The **TDLC** (Tokyo Development Learning Center), as a part of the World Bank Global Development Learning Network (GDLN), has been mandated to promote development education for people and communities in wider regions. TDLC will support the work of a range of partners within Japan and the region in developing and delivering GDLN content. It is clear that distance learning methods are not yet familiar to most potential project partners and they will have differing technical and financial resources. The goal of the TDLC is to build capacities within partners to utilize GDLN in an autonomous and efficient manner. As a concrete initiative, the TDLC is cooperating with the Kyoto University Graduate School of Global Environmental Studies to develop distance-learning programmes on community based disaster management (CBDM), with specific targeting of Vietnam and other Asian countries. The purpose is to exchange knowledge and expertise on CBDM with the practitioners and community leaders, and to learn from the field experiences. **TDLC** is committed to promoting and developing distance-learning modules on CBDM, targeted at various local needs and priorities.

OECD, from its recent experiences through expert group meetings and workshops, focuses on the need of promotion of school earthquake safety through implementing programmes in its member states. The expert group meeting, organized by OECD, in cooperation with GeoHazards International (GHI), proposes: 1) to establish a measurable goal on seismic safety, 2) to define the level of earthquake hazard of the country, 3) to set forth desired ability of school buildings to resist earthquake, and 4) to adopt multi-hazard approach, among other proposals. The elements of OECD programmes are as follows: 1) incorporate seismic safety in policy issues, 2) measure accountability, 3) enforce building codes and building code elements, 4) develop and implement training elements, 5) develop and implement preparedness and planning element, 6) community awareness and participation elements, and 7) risk reduction elements for new facilities, risk reduction elements for existing facilities. OECD is promoting to adopt a set of recommendations among its member countries for seismic safety of educational facilities, and implementing the risk reduction measures in community levels.

The **COE** (Council of Europe) is committed to developing integrated policies for inter-generational equity in access to economic, social, cultural and natural resources under the principle of sustainable development. COE is therefore developing programmes which emphasize the essential role of formal and non-formal education for sustainable development. In March 1987, in its Resolution (87) 2, the Committee of Ministers of the Council of Europe established an intergovernmental Open Partial Agreement called the EUR-OPA Major Hazards Agreement, which has 25 member states in Europe and Mediterranean region. The main objective is to reinforce and promote co-operation between member States in a multi-disciplinary context to ensure better prevention, protection and organization of relief in the event of major natural or technological disasters by calling upon present day resources and knowledge to ensure efficient and interdependent management of major disasters. The EUR-OPA Major Hazards Agreement has always given absolute priority to initiatives for the development of education, training and information programmes, which represent the "cornerstone" of the risk culture and the very foundation of an enlightened risk prevention policy, at school, university, vocational training, and information.

In summary, the session covers a wide range of education and learning processes, from knowing, realizing-deepening, sharing to implementing. Knowing is the base of education, which is done in primary and secondary schools (as exemplified by Nepal, Iran, Japan case studies). Realizing-Deepening refers to higher education in university and in professional fields (exemplified by GADR). Implementing refers to risk reduction actions, and transforming knowledge into practice (exemplified by GOLFRE, OECD, COE). Disseminating refers to sharing lessons, expertise and experiences among different stakeholders (exemplified by TDLC and DRA). It is hoped that the combination of all these will lead to a sustainable disaster resilient future, and a successful ESD Decade under the coordination of UNESCO.

7. SESSION OUTCOMES AND PARTNERSHIPS

The session aims to establish, under the aegis of UNESCO, an international initiative, in partnership with Kyoto University, GADR, GOLFRE, and other organizations for promoting education for disaster reduction, sustainable development and human security. This initiative will encourage an alliance which will identify and disseminate good practices for the integration of education for disaster reduction and human security into school programmes and will provide further guidelines on practical methods and techniques for improving the safety of school buildings.

Two specific partnerships will be launched at this session:

1) Global Open Learning Forum for Risk Education: This is a forum of NGOs, universities and international organizations to bring the professional knowledge to the field practitioners in remote areas. A pre-meeting of the forum was held in Delhi in March 2004, and a general scheme of cooperation has been formulated. Universities and focal NGOs have been identified from three regions: Asia, Africa and Latin America. The forum will be up-scaled through conducting training programs, certified courses in the open-university model, and conducting regular meetings and workshops in different regions.

2) Establishment of Transfer Live Lessons Network: This will be a network to share the lessons from past disasters from different parts of the world. Several counterparts and institutes have been identified from the recent disaster-hit areas. This partnership is regarded as the educational opportunity to raise awareness among people and communities. A pre-event was held in February 2004 in Kobe. Up-scaling activities will include: a web-page, web-based newsletter, meetings and workshops.

RESUME ANALYTIQUE

1. INTRODUCTION

Voici dix ans, la ville de Kobe et les régions avoisinantes de la Préfecture de Hyogo, au Japon, ont été frappées par un fort tremblement de terre, laissant derrière lui une traînée de mort et de destruction. Ce séisme a constitué un tournant décisif dans les initiatives de réduction des catastrophes au Japon, et s'est soldé par deux changements notables : 1) le rapprochement des questions technologiques et sociétales dans le domaine de la recherche et de ses applications, et 2) une participation accrue de la société civile aux initiatives de prévention des catastrophes naturelles. Le Japon étant de longue date l'un des pays ayant le plus d'expérience en matière de génie parasismique, la tragédie de Kobe a été l'occasion de se poser cette question capitale: « comment combler le fossé entre savoir et mise en pratique ? » Cette question ne concerne pas seulement le Japon, mais de nombreux autres pays. Les avancées technologiques aidant, le socle des connaissances s'est étoffé, et le moment est venu de se pencher sur cette question si nous souhaitons mettre vies et biens matériels à l'abri des catastrophes naturelles.

La Conférence mondiale sur la prévention des catastrophes, 10 ans après le tremblement de terre de Kobe, revêt donc une importance particulière, offrant une excellente plate-forme pour le partage des expériences, de l'expertise, et des leçons tirées par les diverses régions du monde. L'année 2005 marque aussi le début de la Décennie des Nations Unies pour l'éducation au service du développement durable (2005-2014) pilotée par l'UNESCO. Le moment d'agir est arrivé.

2. DÉVELOPPEMENT DURABLE ET PRÉVENTION DES CATASTROPHES

Un volet important du développement durable est l'atténuation des effets destructeurs des catastrophes naturelles sur les sociétés par l'accent porté à la minimisation de la vulnérabilité des personnes, des bâtiments et des infrastructures, réalisée grâce à la mise en œuvre de mesures s'appuyant sur des connaissances scientifiques, sociales et d'ingénierie dans des cadres économico-culturels nationaux ou régionaux. L'enseignement est reconnu comme étant un élément essentiel du développement durable et des stratégies de prévention des risques de catastrophes dans la mesure où il facilite une meilleure capacité de résistance des sociétés face aux catastrophes. En outre, les écoles et autres bâtiments scolaires sûrs, ayant la réputation d'être des refuges potentiels face aux aléas naturels, ont apporté la preuve de leur efficacité à sauver des vies ; toute gestion de risques naturels doit donc leur accorder une large place. Les modèles de développement, s'ils veulent viser le long terme, doivent intégrer la réduction des risques de catastrophes. Compte tenu de ce lien capital entre la prévention des risques de catastrophes et le développement durable, la Décennie de l'éducation au service du développement durable sera un temps fort dans la promotion de l'éducation en matière de prévention des risques en faveur de sociétés pérennes sans catastrophe.

3. SÉCURITÉ HUMAINE ET DÉVELOPPEMENT DURABLE

La sécurité humaine consiste à réduire et, lorsque c'est possible, à supprimer les dangers qui mettent l'existence en péril. L'approche du développement humain, dont le précurseur fut Mahbub ul Haq, économiste visionnaire, sous l'égide du Programme des Nations Unis pour le Développement, a largement contribué à étoffer et élargir la documentation sur le développement. Le développement humain se préoccupe de lever les nombreux obstacles à l'épanouissement de la vie. Le concept de sécurité humaine, dans ce contexte, apporte un éclairage judicieux à ce point de vue expansionniste, en attirant l'attention sur ce que l'on appelle parfois « le revers de la médaille ».

> « Au cœur du développement durable, sécurité humaine et environnement se trouvent en état d'équilibre précaire. Cruciale en la matière est la nécessité de planifier, de manière explicite, une meilleure gestion de l'environnement et du développement durable en vue de la prévention et de la réaction face aux catastrophes. »
> *Sadako Ogata et Amartya Sen*, dans « Human Security Now », 2003

Le lien entre *sécurité humaine, environnement et développement durable* est particulièrement flagrant dans les domaines de dépendance en matière d'accès aux ressources naturelles. Les ressources écologiques sont un élément essentiel des moyens de subsistance de nombreuses populations, et toute menace pesant sur ces ressources, suite à des changements environnementaux, se répercute aussi sur la sécurité de ces populations, du fait de leur migration des zones rurales vers des terres de faible rendement et la chute subséquente des revenus des ménages. La promotion du développement durable en tient compte.

La gestion des catastrophes est en corrélation directe avec la sécurité humaine. De nombreuses catastrophes, telles que les inondations ou la sécheresse sont directement fonction des dégradations causées à l'environnement et du changement climatique. De tels phénomènes affectent les vies humaines, les biens et les moyens d'existence, et plus particulièrement les pauvres. L'édification d'une communauté résiliente aux catastrophes constitue donc une étape importante vers une sécurité humaine accrue.

4. IMPORTANCE DE L'ÉDUCATION

L'éducation est l'élément clé pour parvenir à une réduction des catastrophes et réaliser la sécurité humaine dans la poursuite du développement durable. L'éducation peut se définir de plusieurs façons, compte tenu des cibles et objectifs : l'enseignement traditionnel a son importance et est essentiel en ce qu'il dispense des connaissances générales ; l'enseignement non scolaire (formation, sensibilisation, éducation des familles et des communautés) met en pratique les connaissances. La synergie entre enseignement formel et non formel apparaît donc de la plus haute importance.

Dans le domaine des catastrophes naturelles, les connaissances et l'expertise sont accessibles sous diverses formes dans différents pays. Toutefois, selon les besoins locaux, l'application des connaissances et la forme qu'elle revêt, peuvent varier. Dans certains pays, la nécessité se fait sentir de privilégier le développement technologique au service de la

prévention des catastrophes ; dans d'autres, le défi est de savoir le mettre en pratique, tout en intégrant savoir traditionnel et vision éclairée.

L'expérience, les projets et les programmes ont mis en lumière les répercussions extrêmement positives de l'éducation sur la minimisation de la vulnérabilité et sur la gestion des risques de catastrophes. Les enfants et les adultes qui savent quoi faire lorsqu'ils se trouvent confrontés à un séisme ou à des vents extrêmement violents, les animateurs de collectivités qui ont appris à alerter en temps voulu les populations, et des couches sociales entières qui ont appris à se préparer aux aléas naturels, ont compté pour beaucoup dans l'amélioration des stratégies d'atténuation des effets des catastrophes et dans la diffusion de l'information sur les dangers des aléas. L'éducation et les connaissances sont les outils offerts aux populations pour atténuer la vulnérabilité et sont à la base des stratégies d'auto-assistance permettant d'améliorer les conditions de vie. En outre, des structures éducatives plus stables et résilientes aux catastrophes naturelles, telles que les bâtiments scolaires, offrent un abri lorsqu'un aléa se produit et doivent être consolidées et améliorées grâce à de meilleures connaissances techniques et de génie civil.

L'éducation a également un rôle substantiel à jouer dans l'amélioration des procédures d'évaluation des aléas dans les collectivités de proximité, en incitant les populations à se consacrer à développer leur résilience et, de manière générale, à minimiser les éléments de risques au sein des collectivités. Pour obtenir le résultat escompté au niveau des collectivités, l'éducation en matière de minimisation des risques doit s'efforcer de toucher, sur le terrain, les agents de développement communautaire les plus reculés. Une telle éducation doit être abordable et accessible aux professionnels opérant au niveau communautaire les plus en vue car, le plus souvent, ils se trouvent excentrés par rapport aux centres traditionnels de connaissances, comme les universités.

Il est également important de transmettre les leçons tirées en direct des catastrophes naturelles afin que les jeunes générations soient conscientes des conséquences des catastrophes. « *Transmettre de génération en génération les leçons tirées en direct des catastrophes de diverses manières* » est un volet essentiel permettant de réduire le nombre des futures victimes et d'atténuer la vulnérabilité des sociétés.

5. OBJET DE LA SESSION

Le Secteur des sciences exactes et naturelles de l'UNESCO, de concert avec d'autres partenaires, parmi lesquels la Graduate School of Golbal Environmental Studies auprès de l'Université de Kyoto, la Global Alliance for Disaster Reduction (GADR), le Global Open Learning Forum on Risk Education (GOLFRE), la Disaster Reduction Alliance (DRA), l'Institut international de génie parasismique et de sismologie (IIEES) proposent une conférence sur le thème « *L'éducation au service du développement durable : vers une prévention des catastrophes et un renforcement de la sécurité humaine* » dont l'objet est de faire le bilan des expériences des dix dernières années en matière de stratégies en vue de la prochaine décennie. Cette réunion, théâtre d'un échange d'expériences et de bonnes pratiques, servira à consolider la mise en œuvre de l'éducation au service de la prévention des catastrophes, à définir les problématiques essentielles et à analyser les facteurs ayant contribué à la réussite des initiatives menées dans diverses régions du monde. S'appuyant sur ces expériences, la conférence tentera de proposer pour la prochaine décennie un plan d'action relatif au rôle de l'éducation dans la prévention des catastrophes, du développement durable et de la sécurité humaine, ayant à l'esprit de :

. recenser les bonnes pratiques d'insertion de l'éducation au service de la prévention des catastrophes et de la sécurité humaine dans les programmes scolaires ;
. recommander des techniques et méthodes pratiques destinées à améliorer la sécurité des bâtiments scolaires ;
. développer des activités de transmission des leçons tirées en direct des catastrophes ;
. mettre en place des partenariats pour la mise en œuvre d'une éducation au service de la prévention des catastrophes ;
. soumettre, comme contribution éventuelle au plan d'action général de la conférence, des propositions témoignant de la volonté de mettre en œuvre ces diverses activités, accompagnées d'un ordre du jour.

6. TRAVAUX DE LA SESSION

La conférence démarrera par les observations liminaires de responsables de premier rang de l'UNESCO et de l'Université de Kyoto. Un recueil d'études de cas, intitulé « *Prévention des catastrophes et sécurité humaine : Etudes de cas et meilleures pratiques* », établi par le Secteur des sciences exactes et naturelles, en association avec la Graduate School of Global Environmental Studies de l'Université de Kyoto, sera présenté. La session comptera neuf contributions : tout d'abord, trois études de cas pour l'Iran, le Japon, et le Népal, les expériences de ce dernier pays constituant la contribution phare, devant l'Iran, puis le Japon. Ensuite, trois initiatives novatrices, au niveau mondial et régional seront présentées : 1) Un forum d'apprentissage pour spécialistes, 2) Une alliance de spécialistes, et 3) Un réseau de transmission des leçons tirées en direct des catastrophes, ce dernier point reprenant les expériences d'organisations internationales : a) le Réseau mondial d'apprentissage au service du développement, de la Banque mondiale ; b) l'Initiative de sûreté sismique dans les écoles, de l'OCDE, et c) Education et aléas : initiatives du Conseil de l'Europe.

L'expérience du **Népal** retrace les défis et les perspectives d'éducation relative aux catastrophes dans ce pays. Le Népal, compte tenu de son environnement topographique, géologique et géopolitique précaire, est mal armé pour résister aux catastrophes naturelles, telles que séismes, inondations et glissements de terrain. Au début des années 1980, il était d'usage de privilégier au maximum la production du savoir scientifique, plutôt que de véhiculer ce savoir aux populations et collectivités. L'accent portait davantage sur l'enseignement formel, et sur un nombre restreint de programmes de vulgarisation. Lors de la Décennie internationale de la prévention des catastrophes naturelles (1990-1999), les secteurs tant public que non-gouvernementaux ont mis en œuvre, avec succès, plusieurs initiatives de gestion des risques de catastrophes. Le pays a accueilli favorablement la Stratégie et le Plan d'Action de Yokohama et a lancé plusieurs stratégies et diverses initiatives au cours de la décennie précédente. Le Ministère de l'Education et des Sports du gouvernement de Sa Majesté du Népal a mis en œuvre des programmes de prévention des catastrophes grâce à

son Département de l'Education et à ses bureaux de circonscription administrative de l'éducation. Ces programmes concernent : i) l'amélioration des infrastructures scolaires par la construction de bâtiments scolaires parasismiques ; ii) une meilleure sensibilisation aux catastrophes, et iii) une assistance et une orientation apportées aux ONG et aux collectivités locales pour leurs programmes d'atténuation des catastrophes. Indépendamment des efforts du gouvernement, la Société nationale de technologie parasismique du Népal a assumé le rôle de chef de file dans cette transformation novatrice du savoir en actions concrètes. Le Népal est fier de ses avancées réussies dans le domaine de l'éducation en matière de catastrophes et d'avoir élaboré une vision élargie et des méthodologies réussies de gestion des catastrophes, parmi lesquelles figurent la définition des aléas et la préparation à la prévention des catastrophes. Plusieurs méthodologies et programmes servent d'illustration et sont reproduits dans d'autres pays. Les défis qui restent à relever sont la mise en oeuvre de mesures éducatives de sensibilisation aux aléas et la mobilisation de ressources complémentaires.

L'**Iran**, situé dans une région parmi les plus exposées aux séismes dans le monde, et souvent frappé de tremblements de terre dévastateurs, a enregistré de rudes pertes en vies humaines et de nombreux dégâts matériels. Le tribut payé inclut la perte de plus de 10 000 écoliers lors du tremblement de terre de Bam, survenu le 26 décembre 2003. Le monde s'est vu rappeler que les enfants sont le groupe le plus exposé d'une société.

Edifier une culture de sûreté sismique en Iran constitue un défi majeur. Une partie importante de la population iranienne a moins de 18 ans et le pays compte plus de 16 millions d'étudiants. L'IIEES, accordant la plus grande importance à la sécurité des enfants, a mis en place une éducation intégrée de sensibilisation aux séismes et un plan de préparation, destiné à tous les niveaux scolaires, et faisant appel à des méthodes directes et indirectes. Le volet théorique du programme comporte du matériel didactique présenté dans les 15 manuels scolaires utilisés dans le pays qui, en substance, facilite la compréhension des phénomènes sismiques, tout en offrant une information sur la préparation, les mesures prises et la réhabilitation, ainsi que des méthodes efficaces d'atténuation des aléas. Les volets pratiques vont de diverses activités scolaires à un exercice national annuel de préparation aux séismes. Le programme a largement contribué à sensibiliser davantage le public, tout en enrichissant ses connaissances et en améliorant sa préparation. Toutefois, il reste encore beaucoup à accomplir pour que les objectifs du programme soient atteints.

En ce qui concerne l'expérience du **Japon**, il est brièvement fait mention du « Cours d'atténuation des catastrophes et sur l'environnement », dispensé au Lycée Maiko de Kobe, avec une référence particulière au tremblement de terre ayant frappé le Hanshin-Awaji. Le programme éducatif d'atténuation des catastrophes a pour objet d'assurer l'interface entre les connaissances des spécialistes et les citoyens. Au Japon, l'éducation en matière de tremblements de terre prévoit habituellement des formations sur les mesures à prendre au moment de la catastrophe. Toutefois, le nouveau cours du Lycée Maiko est axé sur la gestion des catastrophes, avec un accent porté sur la problématique de la préparation, le rôle des étudiants chez eux, dans leurs communautés et dans leurs lycées. Il souligne l'importance de l'environnement, tant naturel que social, comme facteurs à prendre en compte dans l'éducation relative à l'atténuation des catastrophes. L'objet de l'éducation est d'accroître le potentiel de réaction des citoyens face aux catastrophes, en insistant sur des éléments importants des connaissances et compétences de base, ainsi que sur la nécessité de faire preuve d'une détermination à toute épreuve. Pour que ces éléments puissent mûrir chez les étudiants, de nombreuses activités ont été menées au Lycée Maiko, comme par exemple des exposés de personnes ayant été confrontées à des tremblements de terre, des cours dispensés dans des musées spécialisés dans les catastrophes, la réalisation de cartes conceptuelles ou de sécurité, des exercices de simulation de catastrophes, des jeux ayant trait aux catastrophes faisant appel à l'imagination, une surveillance de la ville, et des manifestations commémoratives. La répétition de ces activités dans d'autres écoles est encouragée. En dernier lieu, trois leçons importantes sont retenues : la nécessité d'utiliser les ressources humaines, de favoriser les expériences pratiques chez les étudiants, et d'encourager la mise en place d'un réseau enseignants-étudiants permettant de mieux affronter les rudes problèmes liés à la gestion des catastrophes.

La communication sur le Forum mondial d'apprentissage ouvert de l'éducation en matière de risques (Global Open Learning Forum on Risk Education - **GOLFRE**) précise que la condition préalable à tout effort pour inculquer une culture de prévention des catastrophes au sein d'une communauté est d'envisager tout d'abord la prévention des risques sous l'angle d'une problématique écologique. A cette fin, une sensibilisation accrue et des efforts dans le domaine éducatif seront nécessaires, ainsi que la mobilisation des spécialistes sur le terrain servant d'interface avec la population pour l'influencer quant à la façon de se préparer et de réagir aux catastrophes. Cet objectif est difficile à atteindre dans les circonstances actuelles car l'éducation relative à la gestion des catastrophes n'est accessible, ni matériellement, ni financièrement, à la population sur le terrain, notamment dans les sociétés en développement. Le besoin de mettre au point un nouveau modèle d'éducation relative aux catastrophes devient particulièrement pressant. Ce modèle véhiculera ces connaissances, d'une manière qui les rende facilement compréhensibles, aux travailleurs en première ligne susceptibles de les utiliser. Il faudra s'assurer que le contenu soit adapté, à savoir qu'il intègre les connaissances acquises sur le terrain, qu'il prenne en compte la situation locale, l'opinion courante, les technologies appropriées, la documentation sur le sujet et les méthodes pédagogiques s'appuyant sur des exemples. L'expérience a montré que les mesures dynamiques, qui consistent à véhiculer l'éducation relative aux aléas aux spécialistes sur le terrain, donnent de bien meilleurs résultats que l'expectative de leur visite aux centres d'apprentissage. Les universités et les ONG ont un rôle capital à jouer en la matière.

L'Alliance mondiale pour la réduction des catastrophes (Global Alliance for Disaster Reduction - **GADR**) déclare que tout le système de programmes d'enseignement supérieur et d'enseignement formel et non-formel, de la maternelle au 3e cycle, ainsi que les stages, se verra agencé au cours de la période 2005-2014, et même au-delà, de façon à ce que les spécialistes de tous les pays puissent participer activement aux efforts déployés en vue de l'édification d'une culture de résilience aux catastrophes, à l'échelle de leur communauté. L'objectif à long-terme est de faire évoluer, dans un peu plus d'un million de communautés, les obstacles universels que sont l'ignorance, l'apathie, les restrictions disciplinaires et l'absence de volonté politique vers une vision éclairée et l'autonomisation des spécialistes et des

organisations, l'élargissement des réseaux et une volonté politique indispensable. Cette évolution passera inéluctablement par l'application innovante des connaissances aux ressources humaines et budgétaires, à l'investissement politique, et à la gestion durable d'une mutation pour le plus grand bien de l'humanité. Cette réorientation mobilisera une coopération, des échanges, une coordination, une collaboration et une créativité sans précédent ; elle visera tant les spécialistes qui, de non informés, deviendront bien informés, que les programmes d'enseignement qui, de fragmentés, deviendront intégrés, et les organisations qui, de limitées et auto-centrées, céderont la place à des réseaux intégrés, axés sur la communauté. Ces changements ne seront ni faciles, ni immédiats, mais ils se produiront au moment où le « Fonds mondial commun pour l'éducation » privilégiera l'institutionnalisation des programmes d'enseignement mettant en évidence les perspectives d'amélioration et d'accélération de chaque disposition du cadre éducatif.

L'Alliance pour la réduction des catastrophes (Disaster Reduction Alliance - **DRA**) a été constituée en octobre 2002 par la Disaster Reduction and Human Renovation Institution (DRI). Elle a pour objet de partager les leçons tirées du tremblement de terre du Hanshin-Awaji, ainsi que d'autres à travers le monde. Depuis ce tremblement de terre de 1995, d'importantes améliorations ont été apportées au Japon dans de nombreux domaines des dispositifs de réduction des catastrophes, que ce soit au niveau communautaire ou à celui de la plus haute sphère politique, car la croyance y est très forte qu'une grande mobilisation de la population permet d'obtenir des résultats sensibles. Le séisme a eu pour conséquence principale l'essor d'un mouvement de volontaires et la création du secteur des ONG à travers tout le Japon. Si les expériences en direct et les leçons tirées de graves catastrophes font bien passer le message, elles peuvent également s'avérer être des outils pédagogiques et d'apprentissage très efficaces grâce auxquels les personnes, les collectivités et autres acteurs peuvent être incités à prendre des mesures concrètes pour la mise en œuvre des politiques de prévention et de réduction des catastrophes. En conséquence, la DRA propose de transmettre les leçons en direct aux générations à venir grâce à un réseau de musées et organisations apparentées.

Le Centre d'enseignement à distance de Tokyo (**TDLC**), faisant partie du Réseau mondial pour l'enseignement à distance (RMED), a pour mandat de promouvoir, à plus grande échelle, l'éducation des populations et des communautés au développement. Le TDLC étaiera les travaux de développement et de diffusion des composants de la RMED réalisés par une gamme de partenaires au sein du Japon et de la région. Il apparaît clairement que les méthodes d'enseignement à distance ne sont pas encore familières à la plupart des partenaires potentiels associés aux projets et que les ressources techniques et financières dont ils disposent sont variables. L'objet du TDLC est de renforcer les capacités parmi les partenaires, grâce à l'utilisation autonome et efficace du RMED. Le TDLC, initiative pragmatique, coopère avec la Graduate School of Global Environment Studies de l'Université de Kyoto afin de développer des programmes d'enseignement à distance de gestion des catastrophes, axés sur la communauté, et destinés plus particulièrement au Vietnam et à d'autres pays d'Asie. L'objectif est d'échanger, avec des professionnels et des animateurs de collectivités, connaissances et expertise en matière de programmes de gestion des catastrophes, axés sur la communauté et de tirer les leçons des expériences sur le terrain. Le TDLC souscrit à la promotion et au développement de modules d'enseignement à distance sur la gestion des catastrophes axés sur la communauté, ciblant divers besoins et priorités locaux.

L'**OCDE,** en raison de ses récents ateliers et réunions d'experts, privilégie la nécessité de promouvoir la sécurité sismique dans les écoles par la mise en œuvre de programmes au sein de ses Etats membres. La réunion d'experts, orchestrée par l'OCDE, de concert avec l'ONG américaine GeoHazards International (GHI), propose de : 1) fixer un objectif quantifiable de sécurité sismique, 2) déterminer la probabilité de risque de tremblement de terre dans le pays, 3) de stipuler la capacité souhaitable de résistance des bâtiments scolaires aux séismes, et 4) d'adopter, parmi d'autres propositions, une approche qui soit adaptée à de multiples aléas. Les volets des programmes de l'OCDE comprennent : 1) l'intégration de la sécurité sismique dans les politiques, 2) l'évaluation des responsabilités, 3) la garantie du respect des normes de construction et de leurs diverses composantes, 4) l'élaboration et la mise en œuvre de volets de formation, 5) le développement et la mise en œuvre de volets de préparation et de planification, 6) la sensibilisation de la communauté et sa participation, et 7) la réduction des risques pour les nouvelles infrastructures et celles déjà implantées. L'OCDE favorise l'adoption, au sein de ses Etats membres, d'une série de recommandations visant la sécurité sismique des bâtiments scolaires et la mise en œuvre de mesures de réduction des risques, au niveau communautaire.

Le **Conseil de l'Europe** s'emploie à développer des politiques intégrées d'accès aux ressources naturelles, économiques, sociales et culturelles fondées sur l'équité intergénérationnelle, dans l'optique d'un développement durable. Le Conseil de l'Europe développe donc des programmes qui mettent l'accent sur le rôle essentiel que l'éducation formelle et non-formelle jouent dans le développement durable. En mars 1987, le Comité des Ministres du Conseil de l'Europe a prévu, par sa Résolution (87) 2, un Accord partiel ouvert en matière de prévention, de protection et d'organisation des secours contre les risques naturels et technologiques majeurs (EUR-OPA), constitué de 25 Etats membres en Europe et dans la région Méditerranéenne. Cet Accord a pour objet de renforcer et promouvoir, dans un cadre pluridisciplinaire, la coopération entre ses Etats membres en vue de garantir une meilleure prévention, protection et organisation des secours, dans l'éventualité de catastrophes naturelles ou technologiques majeures. A cette fin, il sera fait appel à l'ensemble des ressources et connaissances actuellement disponibles, afin de garantir une gestion efficace et solidaire des catastrophes de grande ampleur. L'Accord sur les risques naturels et technologiques majeurs EUR-OPA a toujours accordé la priorité absolue aux programmes de revalorisation de l'éducation, de formation et d'information, constituant la clé de voûte de la culture des risques, et le fondement même d'une politique de prévention des risques éclairée destinée aux écoles, aux universités, à la formation professionnelle, et à l'information.

En résumé, la session couvre un large éventail des processus éducatifs et d'apprentissage, allant de l'acquisition des savoirs à leur mise en pratique, en passant par la compréhension, l'approfondissement, et l'échange. L'acquisition des connaissances, telle qu'elles sont dispensées dans le 1er et 2e cycles (dont l'exemple le plus caractéristique est donné par les études de cas portant sur l'Iran, le Japon, et le Népal) est le fondement de l'éducation. La compréhension et

l'approfondissement, qui visent plus spécifiquement l'enseignement supérieur dispensé à l'université et dans les métiers (selon l'exemple de la GADR). La mise en pratique s'adresse aux activités de réduction des risques et à la transformation de ces connaissances en expériences pratiques (comme en font la preuve le GOLFRE, l'OCDE et le Conseil de l'Europe). La diffusion implique l'échange des leçons, de l'expertise et des diverses expériences parmi les acteurs concernés (selon l'exemple du TDLC et de la DRA). On peut espérer que l'association de tous leurs efforts aboutira à un avenir qui soit durablement résilient aux catastrophes, et qu'elle sera le témoin de la réussite de la Décennie de l'éducation au service du développement durable, pilotée sous l'égide de l'UNESCO.

7. RÉSULTATS ATTENDUS DE LA SESSION ET PARTENARIATS

La session vise à mettre sur pied, sous l'égide de l'UNESCO, et en association avec l'Université de Kyoto, le GADR, le GOLFRE, et d'autres organisations, une initiative internationale de promotion de l'éducation au service de la réduction des catastrophes, du développement durable et de la sécurité humaine. Cette initiative appellera de ses vœux une alliance qui définisse et diffuse les bonnes pratiques en vue d'intégrer l'éducation au service de la réduction des catastrophes et de la sécurité humaine dans les programmes scolaires ; cette alliance servira aussi de plate-forme pour une meilleure orientation en matière de techniques et de méthodes pratiques destinées à accroître la sécurité dans les bâtiments scolaires.

Deux partenariats seront rendus publics lors de cette conférence :

1) Le Forum mondial d'apprentissage ouvert de l'éducation en matière de risques : réunissant ONG, universités et organisations internationales en vue de véhiculer les connaissances des spécialistes au personnel sur le terrain dans des régions isolées. Une pré-réunion au forum s'est tenue en mars 2004 à Delhi et un plan général de coopération a été élaboré. Des universités et des ONG ont été retenues dans trois régions : l'Afrique, l'Asie et l'Amérique latine. Le forum sera élargi grâce à des programmes de formation, des cours homologués auprès d'universités ouvertes, et la tenue régulière de réunions et ateliers dans différentes régions.

2) La création d'un réseau de transmission des leçons tirées en direct des catastrophes : ce réseau sera un lieu de partage des leçons tirées de catastrophes passées, dans diverses régions du monde. Plusieurs partenaires et instituts ont été retenus parmi les régions récemment touchées par les catastrophes. Ce partenariat est envisagé sous l'angle d'une possibilité offerte par l'éducation de sensibiliser populations et collectivités. Une pré-manifestation s'est tenue en février 2004 à Kobe. Parmi les activités de développement, on peut citer : une page web, un bulletin d'information, des réunions et des ateliers.

SUMARIO EJECUTIVO

1. INTRODUCCIÓN

Hace diez años la ciudad de Kobe y sus zonas aledañas en el distrito de Hyogo de Japón fueron sacudidas por un fuerte terremoto, dejando atrás un sendero de muerte y destrucción. Este terremoto fue un momento crucial en las iniciativas de reducción de catástrofes en Japón, dando por resultado dos cambios muy importantes: 1) la combinación de temas tecnológicos y sociales en el área de investigación y aplicación, y 2) una fuerte participación de la sociedad civil en la iniciativa de reducir catástrofes. Como Japón fue por mucho tiempo uno de los países mas desarrollados en el área de ingeniería en terremotos, la tragedia de Kobe lo puso frente a una pregunta crucial: "*como se llena la brecha entre la ciencia y la practica*". Esta pregunta no solo es por Japón, sino que es muy importante para muchos otros países. Con el avance de la tecnología, la base de conocimientos esta creciendo, y ahora es tiempo de resolver esta cuestión para salvar vidas y propiedades de catástrofes naturales.

La Conferencia Mundial sobre Reducción de Catástrofes (CMRC[1]), en el 10° aniversario del terremoto de Kobe, tiene entonces una significancia especial, proveyendo una excelente plataforma para intercambiar experiencias, pericias, y vivencias de diferentes partes del mundo. El año 2005 es también el principio de la Década de Educación para el Desarrollo Sostenible (DEDS[2]) de las Naciones Unidas dirigida por la UNESCO. Por ello, este es justo el momento para empezar a actuar.

2. DESARROLLO SOSTENIBLE Y REDUCCIÓN DE CATÁSTROFES

Un aspecto importante del desarrollo sostenible es la mitigación de los efectos destructivos de las catástrofes naturales sobre la sociedad poniendo énfasis en la reducción de la vulnerabilidad de personas, edificios, e infraestructura, por medio de la implementación de medidas basadas en conocimientos científicos, de ingeniería, y conocimiento social dentro del marco de lo nacional y regional, lo económico y lo cultural. La educación ha sido reconocida como un elemento esencial en estrategias de desarrollo sostenible y reducción de riesgos de catástrofes ya que esta acelera el progreso respecto de resistencia a catástrofes. Además, las escuelas seguras y otros edificios educacionales, bien conocidos como potenciales "cielos seguros" contra riesgos naturales, ya han demostrado su efectividad para salvar vidas; por ello debe hacerse énfasis en el manejo de riesgos de catástrofes. Los modelos de desarrollo deben incorporar reducción de riesgos de catástrofes para ser sostenibles. Logrando este vinculo esencial entre reducción de riesgos de catástrofes y desarrollo sostenible, la DEDS será una oportunidad importante para promover la educación sobre reducción de riesgos para sociedades sostenibles y libres de catástrofes.

3. SEGURIDAD HUMANA Y DESARROLLO SOSTENIBLE

"En el centro del desarrollo sostenible está el delicado equilibrio entre seguridad humana y el medioambiente. La necesidad de planear explícitamente para mejorar el manejo del medioambiente y del desarrollo sostenible para estar preparado y prevenir catástrofes es crucial.
Sadako Ogata y Amartya Sen en "Human Security Now", 2003

La Seguridad Humana se preocupa por reducir y - en lo posible - eliminar los riesgos que plagan las vidas humanas. La idea de desarrollo humano, que comenzó el visionario economista Mahbub ul Haq (con el auspicio del Programa de Desarrollo de las Naciones Unidas), fue un gran aporte para enriquecer y ampliar la literatura sobre el desarrollo. El enfoque del desarrollo humano se preocupa por eliminar varios obstáculos que dominan y limitan la vida humana y no le permiten alcanzar su plenitud. La idea de seguridad humana, en ese contexto, suplementa ese tipo de perspectivas expansionistas dirigiendo la atención a los a veces llamados "riesgos de inconvenientes", y es fructífera.

La relación entre *seguridad humana, medioambiente y desarrollo sostenible* es lo más nombrado en áreas en que los humanos dependen del acceso a los recursos naturales. Los recursos del medioambiente son parte crucial de vidas de mucha gente, y cuando estos recursos se ven amenazados por causas de cambios en el medioambiente, la seguridad humana de la gente también es amenazada. La gente migra de zonas rurales a zonas marginales, y el ingreso per capita cae. Esta relación se consigue con la promoción del desarrollo sostenible.

El manejo de Catástrofes esta directamente conectado con la seguridad humana. Muchas catástrofes naturales como inundaciones y sequías están directamente relacionadas con la degradación del medioambiente y cambios climáticos. Estos sucesos afectan la vida y propiedades de la gente, y afectan más que nada a los pobres. La creación de una comunidad resistente a las catástrofes es entonces un paso importante hacia la mejora de la seguridad humana.

4. LA IMPORTANCIA DE LA EDUCACIÓN

La educación es el elemento clave para mejorar la reducción de catástrofes y lograr la seguridad humana en la búsqueda del desarrollo sostenible. La educación puede ser caracterizada de muchas maneras, La educación es el elemento clave para mejorar la reducción de catástrofes y lograr la seguridad humana en la búsqueda del desarrollo sostenible. La educación puede ser caracterizada de muchas maneras, dependiendo del objetivo y la causa. La educación formal es importante y esencial y brinda un conocimiento básico a la gente. La educación informal (que incluye el entrenamiento, la aplicación del conocimiento, la educación de la comunidad y de la familia) aplica el conocimiento en la practica. Por lo tanto, la sinergia de educación formal e informal es de suma importancia.

En el área de catástrofes naturales, el conocimiento y la pericia están disponibles en varios países y en diferentes formas. Sin embargo, basado en las necesidades locales, la aplicación de conocimientos y sus formas son distintos. En algunos países, existe la necesidad de concentrarse en el desarrollo técnico para reducir catástrofes; en otros, el

1: The World Conference on Disaster Reduction
2: Decade of Education for Sustainable Development

desafío es como se lo aplica, y como se incorpora el conocimiento tradicional y la sabiduría popular.
Las experiencias anteriores, los proyectos, y los programas han revelado los efectos enormemente positivos de educación para la reducción de la vulnerabilidad y7 manejo de riesgos de catástrofes. Niños y adultos que saben como reaccionar en caso de terremotos o fuertes temporales, lideres de comunidades que han aprendido a alertar a su gente a tiempo, y toda clase social que se le haya enseñado como prepararse ante riesgos naturales habrán de contribuir mejor en las estrategias de mitigación y diseminación de la información sobre los riesgos. La educación y el conocimiento proveen a la gente de herramientas para la reducción de la vulnerabilidad y de estrategias de mejorar la calidad de vida y de autoayuda. Además, las instalaciones educativas más estables y resistentes a catástrofes, como los edificios escolares, están dando refugio en caso de riesgos y tiene que ser reforzados y mejorados a través de una mejor ingeniería y conocimiento técnico.
La educación juega un rol substancial en procedimientos de evaluación de riesgos en comunidades cercanas, incentivando a la gente a dedicarse a reforzar la resistencia y en general reducir elementos de riesgo en sus comunidades. Para que la educación en la reducción de riesgos tenga su impacto deseado en las comunidades, es necesario que alcance a aquellos que trabajan en el desarrollo en cada región. Este tipo de educación debe hacerse accesible para aquellos que operan en la primera línea en el nivel comunitario y a menudo están separados de centros de conocimientos convencionales como ser las universidades.
También es importante transferir las experiencias vividas en catástrofes para que las futuras generaciones sean conscientes de los impactos de las catástrofes. *"Transmitir las experiencias vividas en catástrofes de generación en generación de varias maneras"* es un elemento esencial para minimizar las futuras y mitigas la vulnerabilidad de las sociedades locales.

5. PROPÓSITO DE LA SESIÓN

El Sector de Ciencia Natural de UNESCO, junto con otros asociados incluyendo la Escuela de Graduados de Estudios del Medioambiente Global de la Universidad de Kioto (EGEMG UK[3]), la Alianza Mundial para la Reducción de Catástrofes (AGRC[4]), el Foro Abierto Global de Aprendizaje en Educación sobre Riesgos (FAGAER[5]), la Alianza para la Reducción de Catástrofes (ARC[6]) y el Instituto Internacional de Ingeniería y Sismología de Terremotos (IIIST[7]) están proponiendo la sesión temática *"Educación para el desarrollo sostenible: Hacia la reducción de catástrofes y aumento de la seguridad humana"*. El propósito es repasar las experiencias de la década anterior en las áreas de educación, desarrollo sostenible, reducción de riesgos y seguridad humana, y sugerir las estrategias futuras para la próxima década. La sesión esta diseñada para permitir el intercambio de experiencias y buenas practicas para aumentar la implantación de la educación para la reducción de riesgos. Esto identificará los temas claves y analizara los factores de éxito de las diferentes iniciativas de cada parte del mundo. Basado en estas experiencias la sesión va a intentar proponer un plan de acción para la próxima década sobre el rol de la educación para la reducción de riesgos, desarrollo sostenible y seguridad humana.
La sesión tratara de lograr lo siguiente:
- Identificación de buenas practicas para la integración de la educación en reducción de riesgos y seguridad humana en los programas escolares.
- Pautas para métodos prácticos y técnicos para mejorar la seguridad de edificios escolares.
- Mejora en las actividades de transferencia de experiencias vividas en catástrofes.
- Asociación para implementar la educación para la reducción de catástrofes.
- Propuestas para compromisos y el correspondiente calendario de implementaron, como una contribución posible para el plan general de acción de la conferencia.

6. DELIBERACIÓN DE LA SESIÓN

La sesión comenzara con los comentarios de los creadores de las políticas de alto nivel de UNESCO y de la Universidad de Kioto. La compilación del caso de estudio: *"Reducción de catástrofes y la seguridad humana: casos de estudios y las mejores practicas"* será presentado. Este fue recopilado por el Sector de Ciencia Natural de UNESCO y la Escuela de Graduados de Estudios del Medioambiente Global de la Universidad de Kioto. La sesión constara de nueve presentaciones. Al principio, tres estudios específicos de países presentados por 1)Nepal, 2) Irán y 3)Japón. Las experiencias de Nepal serán presentadas para establecer la tónica de la sesión, seguidas por Irán y Japón. Estos serán precedidos por tres innovadoras iniciativas globales y regionales. 1)Foro de aprendizaje para expertos, 2) Alianza para profesionales y 3) Red para transferir experiencias vividas en catástrofes. La ultima parte de intervenciones incluye las experiencias de organizaciones internacionales: 1) Desarrollo de Red de Aprendizaje del Banco Mundial[8], 2) Iniciativa de Escuelas Aseguradas contra Terremotos de la OECD[9], y 3) Iniciativa de Riesgo y Educación del Consejo de Europa[10].
La experiencia de **Nepal** describe el desafío y oportunidades en educación sobre catástrofes en el país. Nepal, debido a su critico contexto topográfico, geológico y geopolítico es vulnerable a catástrofes naturales como terremotos, inundaciones y desprendimientos de tierra. Tradicionalmente, hubo una concentración en la generación de conocimientos científicos a principios de los 80's, como oponiéndose a brindar conocimiento a la gente y las comunidades. Existió mayor énfasis en la educación formal, con algunos programas para la gente pero limitados. Durante la Década Internacional de Naciones Unidas para la Reducción de Catástrofes Naturales (DINURCN: 1990-

3: Kyoto University Graduate School of Global Environmental Studies (KU GSGES)
4: Global Alliance for Disaster Reduction (GADR)
5: Global Open Learning Forum on Risk Education (GOLFRE)
6: Disaster Reduction Alliance (DRA)
7: International Institute of Earthquake Engineering and Seismology (IIEES)
8: Development Learning Network of the World Bank
9: School Earthquake Safety Initiative of the OECD
10: Hazard and Education Initiatives of the Council of Europe

1999[11]), ambos sectores el gubernamental y el no-gubernamental empezaron a implementar varias iniciativas en manejo de riegos de catástrofes con éxito. El país respondió positivamente a la estrategia de Yokohama y el Plan de Acción, y durante la ultima década comenzaron varias estrategias e iniciativas. El Ministerio de Educación y Deportes del Gobierno de su Majestad de Nepal, había implementado programas de reducción de riesgos de catástrofes a través del su Departamento de Educación y Oficinas Regionales de Educación. Los programas apuntaron a: i) mejorar la infraestructura escolar para construir edificios escolares resistentes a terremotos, ii) aumentar la conciencia sobre catástrofes, i iii) facilitar y guiar programas de mitigación de catástrofes de organizaciones no-gubernamentales y gobiernos locales. Además de los esfuerzos del gobierno, la Sociedad Nacional de Tecnología de Terremotos - Nepal[12] asumió el rol de líder y comenzó a llevar el conocimiento a la acción. Nepal esta orgulloso de los grandes progresos alcanzados en la educación para la reducción de riesgos de catástrofes y del desarrollo de un amplio espectro y de las exitosas metodologías para el manejo de riesgos de catástrofes incluyendo identificación del riesgo y reducción del riesgo por estar preparados para la catástrofe. Algunas metodologías y programas están preparados como casos demostrativos y son recreados en distintos países. Los desafíos restantes son la implementaron de medidas de educación sobre riesgos, la movilización de recursos adicionales. En este caso, la Década de la Educación para el Desarrollo Sostenible puede jugar un rol crucial, algunas de las áreas de énfasis urgentes son: ampliación y recreación de buenas practicas, creación de instrumentos legales, implementaron de acciones de políticas, y creación de una mayor asociación.

Irán estando localizado en la región de mayor riesgo sísmico del mundo, donde terremotos devastadores ocurren frecuentemente, ha experimentado fuertes perdidas humanas y materiales. Las víctimas humanas incluyen la perdida de mas de 10000 niños en edad escolar durante el terremoto en Bam el 26 de diciembre de 2003. El mundo entero estará recordando que los niños son a parte más vulnerable de la sociedad.

Creando una cultura de seguridad de terremotos en Irán es un desafío mayor. Un alto porcentaje de la población no tiene aun 18 años y hay mas de 16 millones de estudiantes en el país. El IIIST, enfatiza la importancia de la seguridad de los niños, ha desarrollado un completo plan de educación y preparación para terremotos para todos los niveles escolares usando métodos directos e indirectos. La parte teórica del programa consiste en material educativo utilizado en 15 libros de texto escolar en el país. El contenido promueve el entendimiento del fenómeno del terremoto y da información sobre la preparación para terremotos, respuesta y recuperación; y métodos efectivos de reducción de riesgos. Los componentes prácticos van desde varias clases y actividades escolares, hasta el "Simulacro Anual Nacional de Preparación para Terremotos". El programa ha hecho una contribución muy importante aumentando el conocimiento del publico, reconocimiento y preparación. Sin embargo todavía queda un largo camino por recorrer para cumplir con los objetivos del programa.

En la experiencia de **Japón**, se menciona una breve reseña del desarrollo Del Curso de Medioambiente y Mitigación de Catástrofes del Maiko High School de Kobe, refiriéndose al Gran Terremoto de Hanshin-Awaji. El propósito del programa de educación en mitigación de Catástrofes es vincular el conocimiento de los especialistas y los ciudadanos. Tradicionalmente en Japón, la educación sobre catástrofes provee instrucciones sobre como reaccionar durante un catástrofe. Sin embargo el curso nuevo en Maiko High School se enfoca en el manejo de catástrofes con mas énfasis en el tema de la preparación , roles de los estudiantes en sus casas, comunidades y escuelas. Esto enfatiza en que ambos ambientes el social y el natural son factores importantes en la educación sobre la mitigación de catástrofes. El propósito de la educación es elevar la capacidad de los ciudadanos para sobrellevar desastres enfatizando los factores importantes de conocimiento y habilidades fundamentales y una fuerte voluntad. Para desarrollar estos factores en los estudiantes muchas actividades son realizadas en Maiko High School, por ej., discursos dados por aquellos que hayan experimentado terremotos, clases en museos de catástrofes, creación de mapas de conceptos, mapas de seguridad, ejercicios de simulación de catástrofes, juegos de imaginación de catástrofes, observación de la ciudad y eventos conmemorativos. La repetición de estas actividades es fomentada en otras escuelas. Finalmente, tres lecciones importantes fueron citadas : Utilización de recursos humanos, hacer que los estudiantes aprendan de la experiencia, fomentar el vinculo dual de profesores y estudiantes para luchar contra temas difíciles sobre el manejo de catástrofes.

La presentación del **FAGAER** (Foro Abierto Global de Aprendizaje en Educación sobre Riesgos) dice que un requisito esencial para inculcar una cultura sobre prevención de catástrofes en la comunidad es empezar por considerar la reducción de riesgos como un tema para el desarrollo. Un vasto reconocimiento y el esfuerzo educativo serán necesarios para ello, captar el interés de aquellos que ejercen en este área, y que puede actuar de intermediarios para influenciar la manera en que la gente se prepara y reacciona ante las catástrofes. Es muy difícil de alcanzar en la situación actual ya que la educación de manejos de catástrofes no es accesible a la gente en el área particularmente en sociedades en vías de desarrollo. Es una necesidad incuestionable el establecer un nuevo paradigma en educación de catástrofes - un modelo que tome este conocimiento a las remotas personas que trabajan en la primera línea y de modo que puedan hacer uso de ello y llevarlo a la practica. El contenido apropiado debe asegurarse a través de la inclusión del conocimiento del área, contexto local, sabiduría popular, tecnologías y documentación apropiadas, y métodos de enseñanza sobre casos. Las experiencias sugieren que el mejor método para alcanzarlo son medidas proactivas para levar a educación sobre riesgos a los que trabajan en esas regiones mas que quedarse esperando que estas personas vengan a aprender en los centros de educación. Universidades y organizaciones no-gubernamentales tiene un rol clave para actuar en esta iniciativa.

La **AGRC** (Alianza Mundial para la Reducción de Catástrofes) afirma que todo el marco de la alta educación y programas informales de educación desde K hasta postgraduados para ejercer estarán preparados durante el 2005-2014, y mas allá, para equipar y captar los profesionales de cada país para continuar esforzándose en construir una cultura de resistencia a catástrofes a nivel comunidad. El objetivo a largo plazo es transformar las barreras universales

11: UN International Decade for Natural Disaster Reduction (IDNDR: 1990-1999)
12: National Society of Earthquake Technology (NSET)-Nepal

de ignorancia, apatía, y limites disciplinarios, y la falta de voluntad política de mas de un millón comunidades por aclarar y fortalecer a los profesionales y las organizaciones, para mejorar los vínculos entre ellos, y que se posibilite desde la voluntad política. Esta transformación necesitara de la integración de los nuevos conocimientos con recursos humanos y fiscales, y del capital político y del manejo sostenible del cambio para obtener un gran beneficio en una perspectiva global. Para cambiar de profesionales desinformados a profesionales bien informados; los programas educativos de fragmentados a integrados, y las organizaciones de limitadas y concentradas en si mismas a redes abiertas concentradas en la comunidad, se necesitara una cooperación sin precedentes, comunicación, coordinación, colaboración, creatividad. Estos cambios no van a ser ni fáciles ni inmediatos pero van a ocurrir como una " Fundación Mutual Mundial para la Educación" concentrada en institucionalización de programas educacionales que aprovechen las oportunidades para mejorar y acelerar cada proceso en el marco de la educación.

La **ARC** (Alianza para la Reducción de Catástrofes) fue formada por la Institución de Reducción de Catástrofes y Renovación Humana (IRCRH[13]) en Octubre de 2002 para compartir las lecciones del Gran Terremoto de Hanshin-Awaji y *otras catástrofes mundiales*. Desde el Terremoto de 1995 hubieron mejoras significativas en varias áreas del sistema de reducción de catástrofes en Japón, desde el nivel de la comunidad, hasta el mas alto nivel en *política*. *Realmente* fueron dichos sentimientos tan fuertes que motivaron a la gente a dar un paso adelante. La catástrofe tuvo un impacto aun mayor en el crecimiento del movimiento de voluntarios y en el establecimiento del sector de organizaciones no-gubernamentales en Japón. Si las experiencias y lecciones de los grandes catástrofes fueran mostradas y transmitidas apropiadamente, estas lecciones podrían ser muy efectivas herramientas de enseñanza y educación, con las cuales los individuos, comunidades y otros participantes pueden ser motivados personalmente a tomar acciones concretas en la implementaron de políticas de prevención y reducción de catástrofes. Entonces, ARC propone transferir las experiencias a las futuras generaciones formando una red de museos y otras organizaciones de este tipo.

El Centro de Desarrollo del Aprendizaje de Tokio (**CDAT**[14]), como parte de la Red Global de Aprendizaje sobre el Desarrollo de Banco Mundial (RGADBM[15]), se le otorgo el mandato de promover la educación sobre el desarrollo para la gente y comunidades en regiones mas grandes. El CDAT va a sostener el trabajo al nivel de los socios de Japón y la región desarrollando y difundiendo el contenido de la RGADBM. Esta claro que los métodos de aprendizaje a distancia no están reconocidos aun por la mayoría de los socios potenciales del proyecto y que estos tienen diferentes recursos técnicos y financieros. El objetivo del CDAT es construir las capacidades entre los socios para utilizar RGADBM de una manera autónoma y eficiente. Como una iniciativa concreta, el CDAT esta cooperando con la *Escuela de Graduados* de Estudios del Medioambiente Global de la Universidad de Kioto para desarrollar los programas de aprendizaje a distancia del Manejo de Catástrofes Basado en las Comunidades (MCBC[16]), con el objetivo especifico en Vietnam y otros países de Asia. El propósito es intercambiar conocimientos y pericia sobre MCBC con los expertos y lideres de las comunidades, y para aprender las experiencias de las regiones. CDAT se dedica a promover y desarrollar los módulos de aprendizaje a distancia sobre MCBC, enfocado en varias necesidades y prioridades locales.

OECD, a partir de experiencias recientes obtenidas a partir de encuentros y seminarios de grupos de expertos, se enfoco en la necesidad de promover la seguridad para terremotos en escuelas implementando programas en su estados miembros. El encuentro del grupo de expertos, organizado por OECD, en cooperación con GeoHazards Intertnational (GHI), propone: 1) Establecer un objetivo mensurable en seguridad sísmica, 2) definir el nivel de riesgo de terremotos del país, 3) contar con la capacidad de construir escuelas contra terremotos, 4) adoptar una actitud multi-riesgo, entre otros propósitos. Los elementos de los programas de OECD son los siguientes: 1) incorporar seguridad sísmica en temas de política, 2) mesurar la contabilidad, 3) poner en practica un código de construcción y los elementos del código de construcción, 4) desarrollar e implementar los elementos de entrenamiento, 5) desarrollar e implementar los elementos de preparación y planeamiento, 6) elementos de *concientización y participación de la* comunidad, 7) elementos de reducción de riesgos para nuevas instalaciones, 8) elementos de reducción de riesgos para instalaciones existentes. OECD promueve la adopción del juego de recomendaciones para sus países miembros para seguridad sísmica de instalaciones educativas, e implementar las medidas de reducción de riesgos en el nivel de comunidad.

El **CDE** (Consejo De Europa[17]) se dedica a desarrollar políticas integradas de equidad intergeneracional en el acceso a los recursos económicos, sociales, culturales y naturales bajo el principio del desarrollo sostenible. Por lo tanto el CDE desarrolla programas que enfatizan el rol esencial de educación formal e informal para el desarrollo sostenible. En marzo de 1987, en su Resolución (87) 2, el Comité de Ministros del Consejo de Europa[18] estableció un contrato parcial abierto intergubernamental llamado EUR-OPA Acuerdo de Grandes Riesgos[19] ,que cuenta con 25 estados miembros en Europa y en la Región Mediterránea. El objetivo principal es reforzar y promover la cooperación entre los estados miembros en un contexto multidisciplinario para asegurar una mejor prevención, protección y organización para dar auxilio en caso de un gran desastre natural o tecnológico aprovechando los recursos y conocimientos existentes hoy día para asegurar el manejo eficiente e interdependiente en catástrofes mayores. El EUR-OPA Acuerdo de Grandes Riesgos siempre le dio prioridad absoluta a las iniciativas para el desarrollo de los programas de educación, entrenamiento e información que representan la piedra fundamental de la cultura de riesgo y la base de una clara política de prevención de riesgos, en las escuelas, universidades, formación profesional, e información.

En definitiva, la sesión cubre un amplio espectro en los procesos de educación y aprendizaje, desde saber, comprender-profundizar, compartir, hasta implementar. Conocer es la base de la educación, y se lleva a cabo en las escuelas primarias y secundarias (como en los ejemplos de los casos de estudio de Nepal, Irán, Japón). Comprender-profundizar se refiere una educación mas elevada en universidades y en el campo profesional

13: Disaster Reduction and Human Renovation Institution (DRI)
14: TDLC (Tokyo Development Learning Center)
15: World Bank Global Development Learning Network (GDLN)
16: Community Based Disaster Management (CBDM)
17: COE (Council of Europe)
18: Committee of Ministers of the Council of Europe
19: EUR-OPA Major Hazards Agreement

(como en el ejemplo de AGRC). Implementar se refiere a acciones de reducción de riesgo, y llevar el conocimiento a la practica (como el ejemplo de FAGAER, OECD, CDE). Diseminarlo se refiere a compartir vivencias, pericias y experiencias entre varias personas interesadas (como en el ejemplo de TDLC y ARC). Es de esperar que la combinación de todo esto nos conduzca a un futuro sostenible resistente a los desastes., y a una exitosa década de Educación para el Desarrollo Sostenible bajo la coordinación de UNESCO.

7. EFECTOS DE LA SESIÓN Y ASOCIACIONES

El objeto de la sesión es establecer, bajo el auspicio de UNESCO, una iniciativa internacional, en asociación con la Universidad de Kioto, AGRC, FAGAER, y otras organizaciones para promover la educación para reducción de catástrofes, desarrollo sostenible y seguridad humana. Esta iniciativa alentará una alianza que identifique y disemine buenas practicas para la integración de la educación para reducción de catástrofes y seguridad humana en los programas escolares y va a dar futuras pautas sobre métodos prácticos y técnicos para mejorar la seguridad de edificios escolares.
Dos asociaciones especificas serán lanzadas en esta sesión:
1) Foro Abierto Global para Aprendizaje de la Educación sobre Riesgo[20]: Este es un foro de ONGs, universidades y organizaciones internacionales para llevar el conocimiento profesional al área de los expertos en zonas remotas. El pre-encuentro del foro fue en Delhi en Marzo de 2004, y allí se formuló un esquema general de cooperación. Universidades y ONGs fueron seleccionadas de tres regiones: Asia, Africa, y América Latina. El foro va a funcionar conduciendo programas de entrenamiento, certificación de los cursos del modelo de universidad-abierta, y conduciendo encuentros regulares y seminarios en diferentes regiones.
2) Establecimiento de la Red de Transferencias de Experiencias[21]: Esta será una red para compartir experiencias de las diferentes catástrofes pasadas de distintas partes del mundo. Redes similares e institutos fueron seleccionados de las zonas que sufrieron catástrofes últimamente. Esta asociación es considerada como una oportunidad educacional para aumentar la conciencia de la gente y las comunidades. Un pre-encuentro fue realizado en Febrero 2004 en Kobe. Entre las mejoras se incluyen: Pagina Web, boletines informativos electrónicos, encuentros y seminarios.

20: Global Open Learning Forum for Risk Education
21: Transfer Live Lessons Network

概要

1. はじめに

１０年前の１９９５年１月１７日、日本の兵庫県神戸市とその周辺地域に激震が襲い、甚大な被害とその傷跡を残した。この大地震は日本における災害対策の転機となった。その顕著な変化として、１）防災研究とその適応における技術面と社会問題の融合、２）防災活動へ市民社会の参加が促進されたこと、があげられる。耐震技術の分野において世界でも最先端の国の一つである日本は、この神戸に起った悲劇により「知識と実用のギャップをいかに埋めるか」という問題に向き合うこととなった。この問題はなにも日本のみに問いかけられているのではなく、多くの国々にも共通している。技術の進化にともない知識面は十分蓄えられつつあるが、自然災害から人命と資産を守るためこの問題をいかに具体的に解決していくかという時期にさしかかっている。
この観点からも、大震災から１０年目を迎えた神戸でこの国連防災世界会議が開催されることは意義深く、世界各地で得られた経験や教訓を共有する貴重な場が提供された。２００５年はユネスコがすすめる「国連持続可能な開発のための教育の１０年（２００５年―２０１４年）」初年度という年でもある。まさに今、行動する時期であるといえよう。

2. 持続可能な開発と防災

持続可能な開発を考える上で重要な点の一つに、その国や地方の経済と文化的枠組のなかで、科学技術と社会的知識を取り入れた対策をこうじることにより、自然災害の壊滅的な影響を軽減することがあげられる。なかでも教育は持続可能な開発と防災計画において必要不可欠な要素として認識されているが、なぜならそれは災害につよい社会の発展をすすめることにつながるからである。さらに、自然災害に対して「最も安全な場所」になりうる安全な学校や教育関連の建物は、人命を守るために効果的であるとすでに証明されており、防災を考える際、重用視されるべきである。開発モデルは持続性を念頭に、災害リスクの軽減を考慮する必要がある。災害リスクの軽減と持続可能な開発の重要な関連というテーマを与えられた「国連持続可能な開発のための教育の１０年」は、自然災害につよい社会を構築するための教育を推進する重要な機会になるであろう。

3. 人間の安全保障と持続可能な開発

人間の安全保障は、人命を脅かす不安定な要素を軽減する、可能であればその要素を取り除くことと深い関連がある。経済学者であるMahbub ul Haq氏が、（国連開発計画の関連事業において）先駆けた人間開発のアプローチは、開発の認識を広め深めるに大きな役割を果たしている。人間開発も、人命を抑圧しその発展を妨げる様々な障害を取り除くことにつながる。人間の安全保障という観念は、ここでは、時には「ダウンサイドリスク」と呼ばれるものに注意を向けることによって、そのような拡張論者の考えを効果的に補完する。
「人間の安全保障」、「環境」、そして「持続可能な開発」の関係は、人間の天然資源への依存という状況下では、最も明白なものである。環境資源は多くの人々の生活の重要な部分であり、それら資源は環境の変化により危機にさらされており、人々の安全も脅かされている。人々は地方から周辺的な地域へと移動し、収入も減少している。この関係は、持続可能な開発を推進するうえでよく取り上げられている。
防災は直接的に人間の安全保障と深くかかわっている。洪水や干ばつのような多くの自然災害は環境の変質や気候変動と密接な関係がある。このような出来事が人々の生命や資産、生活に影響し、また最も貧しい人々に最も悪影響を及ぼす。したがって、災害につよいコミュニティを構築することは、人間の安全保障を高める重要なステップである。

4. 教育の重要性

> 「持続可能な開発の中心には人間の安全保障と環境の微妙なバランスがある。ここで重要なことは、改善された環境対策と災害予防をふまえた持続可能な開発のための明白な計画の必要性である。」（緒方貞子、アマルティア・セン；『Human Security Now』 2003）

教育は災害の軽減と、持続可能な開発を追求し、人間の安全保障を達成するための重要な要素である。教育は時折、その対象と目的により様々な形でとらえられる。従来の一般教育は重要で不可欠なものであり、人々に基本的な知識を与えるものである。それに対して、トレーニングや意識改革、コミュニティや家庭教育などの「インフォーマルエジュケイション」と呼ばれる課外教育は、知識を実用化するものである。こういった観点から、従来の教育とインフォーマルエジュケイションの共働は非常に重要である。
自然災害の分野において、その知識と専門的技術はそれぞれの国によって様々な様式で利用されている。しかし、各地域の必要性によってその知識と様式の適用方法は異なってくる。ある国では災害軽減のための技術的な開発が必要であったり、ある国ではその技術の適応方法、さらには固有の伝統的な知識と知恵にその技術をいかに融合させるかが課題となっている。
過去の経験やプロジェクトからみても、脆弱性の軽減と災害リスク対策のための教育は非常に大きな効果をあげている。大人であれ子供であれ、地震や激しい暴風にどう対応するかという知識のある人、災害時に住民にどう警告するか学んだ地域の指導者、また自然災害に対する備えを教わった人々は、より良い方策と危機情報の普及に貢献することができる。教育と知識は、人々に脆弱性の軽減とより良い暮らしを自らの力で勝ち取る術を与えてくれる。さらには、校舎のような安全で災害につよい教育施設は危機の際避難所としての役割を果たすことができ、より良い技術と知識をもって強化し改善させる必要がある。
また教育は、近隣のコミュニティのリスク査定手順を改善するためや、コミュニティが抱えるリスク要因を軽減し、また弾力性を養うよう人々を奮い立たせるための二次的な役割も果たすことができる。それぞれのコミュニティにあった影響力のある防災教育のためには、遠隔の現地で活動する人々と関わる必要がある。このような教育はコミュニティレベルで活動することができる前線にいる人々、多くは大学のような形式的な知識からかけ離れたところで活動する人々と協同することが必要である。
また、大災害の活きた教訓を伝えることは、次世代にそのインパクトを伝えるうえで重要である。「大災害の教訓をあらゆる手段で次の世代へ引き継ぐこと」は次の犠牲者を最小限にするため、また地域社会の脆弱性を軽減するためにも必要不可欠である。

5. セッションのねらい

ユネスコの自然科学セクターは、京都大学大学院地球環境学堂（KU GSGES）、GADR（Global Alliance for Disaster Reduction）、GOLFRE（Global Open Learning Forum on Risk Education）、国際防災・人道支援協議会（DRA: Disaster Reduction Alliance）及びIIEES（International Institute of Earthquake Engineering and Seismology）を含むパートナーと共同で、「持続可能な開発のための教育：効果的な防災と人間の安全保障の向上に向けて」というテーマのセッションを提案している。そのねらいは、教育、持続可能な開発、防災、そして人間の安全保障の分野における過去１０年の経験を見つめなおし、来

る１０年へ向けての方策を提案することである。このセッションは、防災教育の実施を推進するため、過去の経験と成功事例を参加者が交換し合えるようデザインされている。ここでは重要な問題点が明確にされ、世界各地の様々な経験から得られた成功の秘訣が分析される。それらの経験にもとづき、このセッションでは、防災と持続可能な開発、そして人間の安全保障における教育の役割について、次の１０年にむけた行動計画が提案される予定である。
このセッションは次にあげる点を達成する予定である。
・ 防災と人間の安全保障に向けた教育が学校プログラムに組み込まれるような成功事例の明確化
・ 学校建物の安全性を改善する実施方法と技術のためのガイドライン
・ 大災害の活きた教訓伝承の推進
・ 防災教育実施に向けたパートナーシップ
・ コンファレンスの総合行動計画へ貢献できる公約と実施計画の提案

6. セッション審議

このセッションはユネスコと京都大学の上層政策決定者によるオープニング講演から開始される。ここでは、「防災と人間の安全保障：事例研究と成功事例」という事例研究の編集物が紹介される。これはユネスコの自然科学セクターと京都大学大学院地球環境学堂がとりまとめたものである。また、このセッションは９つのプレゼンテーションが準備されている。はじめに、ネパール、イラン、日本の３か国から具体的な研究がそれぞれ紹介される。基調講演としてネパールの経験が紹介され、イラン、日本の事例へとつづく。ひきつづき、世界的に、また地域における革新的な３つの活動；１）実施者のための学習フォーラム、２）専門家協議会、３）災害の活きた経験を伝えるネットワーク、が紹介される。最後に、１）世界銀行の開発学習ネットワーク、２）OECDによる学校防災プログラム、３）Council of Europeによる危機と教育活動、として国際機関の経験がとりあげられる。
ネパールの経験として、国の防災教育における課題とその機会について説明される。ネパールはその地形、地質学、かつ地政学の点かみて、地震や洪水、地滑りのような自然災害の被害を受けやすい。慣例上、１９８０年初期の科学的知識が広く取り入れられていたため、人々やコミュニティもそれ従った理解をしていた。一般教育が重視され、それ以上のプログラムは限られていた。国連国際防災の１０年（IDNDR:1990-1999）の間、政府とNGOはともに数々の防災活動を開始した。ネパールはこの１０年間、横浜戦略とその行動計画を積極的に取り入れ、多くの政策と活動を始めたのである。ネパール政府の教育スポーツ省は、教育部門（DOE）と地域教育室（DEO）をとおして、防災プログラムを実施している。このプログラムは、１）耐震校舎を建築することにより学校インフラ改善すること、２）防災意識を高めること、３）NGOと地方政府の防災プログラムを助長すること、をねらいとしている。ネパール政府の取り組みに加え、NGOのエヌセット（NSET-Nepal）は、知識を実用化させるための草分け的役割をになっていた。ネパールは、防災教育と幅広い見地を発展させたこと、そして予防防災のためのリスク認識と軽減を含めた災害リスク対策の効果的な手法の入手に大きな成功を収めたことを自負している。その多くの手法は、手本として他の国々にも取り入れられている。残された課題は、危機教育対策の実施と次なる方策の導入である。この点に関して、持続的可能な開発のための教育の１０年（DESD）は重要な役割を果たすであろう。早急を要する点として、成功例の質を高めることと模倣すること、法的な協定を定めること、政策行動を実施すること、そして、幅広いパートナーシップを構築することが挙げられる。
イランは世界でも地震リスクの高い地域に位置することから、しばしば破壊的な地震にみまわれており、多くの被害を経験している。２００３年１２月２６日のバム地震の犠牲者には１万人以上の学校児童が含まれている。これにより、社会の中で子供が最も危険にさらされていると世界中が認識した。
イランにおいて地震安全のための文化を創造することは大きな課題である。イランでは１８歳以下の人口が多くの割合を占めており、１６００万人以上の学生がいる。IIEESは、子供の安全がいかに大切であるかを強調し、直接または間接的な手法を用いて各学級レベルに合わせた包括的な地震教育を開発してきた。その内容は、地震現象に対する理解と地震への備え、対応と復旧、そして効果的なリスク軽減方法についての情報提供を促進するものである。実践的なものとしては、様々な学校での活動から、「全国地震予防訓練」にまで及んである。このプログラムは、一般の地震に対する知識を深めることと予防意識を高めることにおいて大きな成果を挙げている。しかし、プログラムの目的を達成するに至までは更なる長い道のりが待ち受けている。
日本の経験は、阪神大震災に言及しながら、兵庫県立舞子高等学校の環境防災科設立の背景をとおして紹介される。この防災教育プログラムの目的は、専門的知識と一般市民との架け渡しである。日本では従来、防災教育は災害時にどう対応するかという指示を与えるだけのものであった。しかし、舞子高校に新設された環境防災科は、防災のなかでも予防防災、家庭、コミュニティそして学校での生徒の役割に焦点をあてている。ここでは、自然と社会環境のいずれもが防災教育において重要な要素であると強調している。この教育の目的は、基本的な知識と技術、そして強い意志という重要な要素に重きを置きながら、市民が災害とともに生きるすべを身につけることである。生徒は、地震経験者によるスピーチや災害記念館での学習、概要マップや安全マップの作成、災害シミュレーション訓練、災害想像ゲーム、タウンウォッチング、記念イベントなど様々な活動を通して、重要な知識を学んでいくことができる。これらの活動は他の学校でも模倣されるよう推奨されている。ここで重要な点は、１）人材を活用すること、２）生徒に経験させること、そして、３）防災という困難に取り組むため教師と生徒双方のネットワークを推奨すること、が挙げられる。
GOLFREは、コミュニティに災害予防文化を根付かせるための必要条件は、リスク軽減を開発問題として考え始めることである、と説明する。幅広い意思開発と教育努力にはこの点と、現地で活動する人々は市民が災害に備え対応する方法を誘導する仲介者として従事することが要求される。これは、防災教育は特に開発途上社会において現地の人々にとって入手困難なことから、現状況で達成することは難しい。防災教育の新しい模範ー遠く離れた現地の一線で活動する人々へ届くような分かりやすい知識を取り入れたモデルーを構築することは必要不可欠である。その内容の適正は、現地の状況と伝統的既知、適切な技術と記録、そして状況教育の手法を含めた知識を取り入れることで保つべきである。過去の経験から、現地で活動する人々が学習センターに足を運ぶことを期待するよりも、彼らへリスク教育を届けるような方法を見出すことが良策である。大学とNGOはこの活動をすすめるにあたり重要な役割を担っている。
GADRは、高等教育、一般教育と課外教育プログラム全体の枠組みを２００５年から２０１４年の期間に整えると述べている。さらに、コミュニティ単位で災害に対する弾性ある文化構築のため進行中の活動に各国の専門家を配置するとしている。長期的なゴールは、１００万を超えるコミュニティの無知、無関心、規律上の境界、そして政治的無関心という普遍的な障壁を変革し、専門家や組織が能力を蓄え、ネットワークを深め、そして政治的関心を高めることである。その変革には、人間、物理的な資源、政治的資産などの知識の革新的な統合が求められる。専門家を無知から知識を備えるように、教育プログラムを断片的なものから統合されたものに、そして、閉塞的な組織をコミュニティに焦点をあてたシームレスなネットワークに変換するためには、新奇な共同、コミュニケーション、コーディネーション、協力、そして創造性が求められる。これらの変革は容易かつ早急にできるものでないが、「世界教育相互基金」が教育的枠組み内ですべてのプロセスを改善し加速するための教育プログラムの組織化に関心を寄せ

ているので、可能である。
国際防災・人道支援協議会（DRA）は、阪神淡路大震災や世界で起きた災害の教訓を共有するというねらいのもと、２００２年１０月、阪神・淡路大震災記念 人と防災未来センター（DRI）により結成された。１９９５年の大地震以来、日本の防災軽減システムは、コミュニティレベルから政治的トップレベルに至まで、多くの地域で飛躍的に改善された。それはまさに、確実に前進するのだという人々の強い意志から達成されたものである。この災害により、日本各地でボランティア活動の発達やNGOの設立が促されるようになった。大災害の生きた経験や教訓が的確に伝えられたなら、これらの教訓は効果的な学習教育ツールになり、個人やコミュニティ、そのた関係機関はそれぞれ、災害予防や軽減政策を実施するための具体的な活動を行うよう促される。そこで、DRAは生きた教訓を次の世代へ伝えるため、記念館や関係機関のネットワークを構築することを提案している。
東京開発ラーニングセンター（TDLC）は、グローバル・デベロップメント・ラーニング・ネットワーク（GDLN: Global Development Learning Network）の一つとして、幅広い地域で人々とコミュニティへの開発教育を促すことを担っている。TDLCはGDLNの趣意を広めるよう、日本国内でパートナー達の活動を支援していく。ディスタンスラーニングの手法は殆どのプロジェクトパートナーにはまだ親しみがなく、彼らは異なる技術と資産をもつことになる。TDLCのゴールは、パートナー達が自主的かつ効果的なやり方でGDLNを利用できるようにすることである。具体的な活動として、TDLCは京都大学大学院地球環境学堂と協力し、ベトナムとアジア各国を対象としたコミュニティベースの防災（CBDM）のディスタンスラーニングプログラムを開発している。その目的は、現地で活動する人々やコミュニティリーダーがCBDMの知識と経験を交換すること、そして現地の経験を学ぶことである。TDLCは様々な現地の要求と優先すべきものを対象としたCBDMのディスタンスラーニングモジュールを促進開発することを担っている。
OECDは専門家グループ会議とワークショップをとおした近年の経験から、メンバー国で学校防災プログラムの実施促進の必要性に焦点をあてている。ジオハザードインターナショナル（GHI）と共同でOECDが実施したその専門家グループ会議の目的は、１）地震安全のための計り得るゴールを設定すること、２）国の地震危機レベルを明確にすること、３）地震に耐えうる学校建物の強度を設定すること、そして、４）他の提案のなかでマルチハザードアプローチを採択すること、であった。OECDプログラムの要素は、１）地震安全を政策問題に取り入れること、２）手法の信頼性、３）建築法の施行、４）トレーニングの開発と実施、５）予防と計画の開発と実施、６）コミュニティの啓発と参加、そして、７）新規建物と既存建物両方のリスク軽減、である。OECDは、メンバー国の教育施設の地震安全と、各国レベルでリスク軽減対策を実施するよう促している。
COE（Council of Europe）は、持続可能な開発の原則のもと、経済的、社会的、及び自然資源の利用の世代間公平にむけた統合政策開発を担っている。そこでCOEは、持続可能な開発のための一般及び課外教育の重要性を強調するプログラムをすすめている。１９８７年３月、COEの閣僚委員会は、その決議（８７）２のなかで、ヨーロッパ災害協定(EUR-OPA Major Hazard Agreement)という政府間の部分合意がなされた。それは、ヨーロッパと地中海地域の２５のメンバー国が参加している。その主な目的は、主要災害時の効果的かつ相互依存対策を明確にし、現在ある資源と知識を集結することにより、大自然災害や技術的災害時における素早い回避や保護または救助組織を確保するため、メンバー国間の強化と協力を推進することである。ヨーロッパ災害協定は、教育、トレーニング、そして情報プログラム開発のための活動を最重要課題に挙げている。それは、学校、大学、職業上の訓練と情報における危機文化とリスク回避政策啓発の最も基本的なの理念を表している。
このセッションは、「知ること」「気づき、理解すること」から「実際の活動」「普及活動」に至まで、教育と学習プロセスの幅広い分野を取り扱っている。「知ること」は教育の基本であり、ネパールやイラン、日本の事例研究からもわかるように、初等及び中級教育で行われているものである。「気づき、理解すること」は、GADRの例からみても、大学や専門分野での高等教育で触れられる。そして、「実際の活動」は、GOLFRE, OECD, COEの事例にあるように、リスク軽減活動と知識移譲を実施することである。「普及活動」は、TDLCやDRAの説明から、教訓、専門知識、そして経験を様々な組織間で共有することである。これらすべての結合が持続可能な災害に強い未来を、そしてUNESCO主導のもと「国連持続可能な開発のための教育の１０年」の成功が導かれることを期待する。

7. セッションの成果とパートナーシップ

このセッションの目的は、UNESCO賛助のもと、京都大学、GADR、GOLFRE及びその他組織と共同で、防災と持続可能な開発、そして人間の安全保障を促進するための国際的なプロジェクトを立ち上げることである。このプロジェクトは、学校プログラムに防災と人間の安全保障のための統合教育の成功事例を明らかにし普及するための同盟を助長し、また、安全な学校建物へ改善する具体的な手法と技術についての将来的なガイドラインを提供するであろう。
このセッションでは次の２つのパートナーシップが立ち上げられる。
１） 危機教育のための世界オープン学習フォーラム（Global Open Learning Forum for Risk Education）：これは、NGO、大学、そして国際機関からなるフォーラムである、遠くは慣れた現地で活動する人々へ専門的知識をとどけるためのものである。このフォーラムの事前会議が２００４年３月、インドのデリーで開催され、協力の全体的な事業計画がまとめられた。大学と主要NGOが、アジア、アフリカ、ラテンアメリカの３つの地域から選出された。このフォーラムは、トレーニングプログラムやオープンユニバーシティモデルなどの決められたコースを実施したり、また様々な地域で定期会議やワークショップを開催することにより、拡大されるであろう。
２） 災害語り継ぎネットワーク（Transfer Live Lessons Network）の設立：これは、世界各地域で起きた過去の災害から学んだ教訓を共有するためのネットワークである。いくつかの協力関係機関が、近年災害に見舞われた地域から選出されている。このパートナーシップは、人々とコミュニティのあいだで、防災にたいする意識向上の教育的機会ととらえられている。２００４年２月には神戸でプレイベントが開催された。この活動はさらに、ウェブページの立ち上げや、ウェブニュースレター、会議やワークショップなどをとおして拡大されていく。

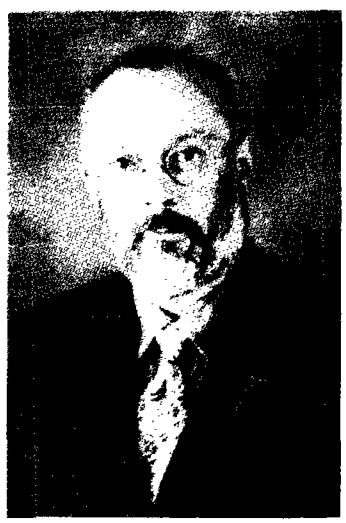
Opening Remarks

by

Walter Erdelen

Assistand Director-General
for Natural Sciences, UNESCO

Walter R. Erdelen is, since 2001, the UNESCO Assistant Director-General for Natural Sciences. Born in Ausbach, in Germany, Walter Erdelen graduated from University of Munich, and then joined as a faculty. For several years, he served different academic and research institutions in Germany in different capacities in the fields of environmental sciences, conservation biology, ecology, systematic and evolutionary biology. In 1997 he left Germany for invaluable experience in Asia to become a visiting Professor at the Dept. of Biology, Institute of Technology, Bandung, Indonesia, a post he occupied until his nomination as Assistant Director-General for National Sciences, UNESCO, in 2001. Author of over 60 scientific papers and reviews published in international journals, Water Erdelen is also the editor of three books, among others, on tropical ecosystems, landscape management in Sri Lanka, and sustainable use of reptiles in Indonesia. He is attached to several professional societies and associations.



Excellencies, Ladies and Gentlemen,

On behalf of the Director-General of UNESCO, I would like to wish you a warm welcome to the Thematic session *"Education for Sustainable Development: Towards Effective Disaster Reduction and Enhancing Human Security"*. I would also like to extend my sincere thanks to UNESCO's partners in the organization of this session: the Kyoto University Graduate School of Global Environmental Studies; the Global Alliance for Disaster Reduction; the Global Open Learning Forum on Risk Education; the Disaster Reduction Alliance; and the International Institute of Earthquake Engineering and Seismology. UNESCO is immensely grateful for the partnership we share with the dedicated people of these institutions. Let me also greet Dr Rajib Shaw who has been devoting continuous effort for the preparation of this session.

Director-General Matsuura has called this World Conference on Disaster Reduction in Kobe an occasion for remembrance and renewal. We remember the tragedies and achievements of the recent past and, at the same time, we renew our commitment to building a safer world in the immediate future. We can now look back on the International Decade for Natural Disaster Reduction and reflect upon the goals, accomplishments and unfinished issues of that ambitious project. And we can look ahead to the Decade for Education on Sustainable Development which has only just begun.

Our goal here today and in the years to come is to make sure that effective disaster reduction and the enhancement of human security are inextricable parts of education for sustainable development everywhere. In their seminal paper, Human Security Now, Sadako Ogata and Amartya Sen wrote : « At the center of sustainable development is the delicate balance between human security and the environment. Critical to this is the need to explicitly link plans for improved environmental management and sustainable development to disaster prevention and preparedness. »

Education accelerates the progress of societies toward disaster resilience. Past experience, projects and programmes have revealed the enormously positive effects of education for vulnerability reduction and disaster risk management. Children and adults who know how to react in case of an earthquake or a severe windstorm, community leaders who have learned to warn their people in time, and whole social layers who have been taught how to prepare themselves for natural hazards have contributed to better mitigation strategies and dissemination of information on the dangers of hazards.

Education and knowledge have provided people with tools for vulnerability reduction and life-improving self-help strategies. But for education on risk reduction to have its desired impact on communities, it needs to reach out to the most remote development worker in the field. Such education needs to be made accessible and affordable for frontline practitioners who operate at community level and are often far removed from conventional knowledge centers such as universities. Furthermore, education facilities, such as school buildings, often provide a shelter or « safe haven » in case of hazards and must be strengthened and improved through better engineering and technical knowledge.

This session today is designed to allow for an exchange of experiences and good practices in order to enhance the implementation of education for disaster reduction. I am glad that UNESCO and Kyoto University have jointly succeeded in producing a compilation of case studies and best practices in this domain.

I am happy that this session represents a mix of diverse presentations. A number of national experiences will be presented together with three innovative global and regional initiatives. Lessons drawn in Nepal, the Islamic Republic of Iran and Japan will be shared with efforts having a wider scope.

Finally it is with great pride and hope that I look forward to see the emergence of an international initiative for promoting education for disaster reduction, sustainable development and human security. This initiative will encourage an alliance which will identify and disseminate good practices for the integration of education for disaster reduction and human security into school programmes and will provide further guidelines on practical methods and techniques for improving the safety of school buildings.

Thank you.

Opening Remarks

by

Kojiro Irikura

Executive Vice President
of Kyoto University

Professor Kojiro Irikura is currently the Executive Vice President of the Kyoto University, in charge of international cooperation. Graduating from Kyoto University in early 1960s, he was attached to the same university for last 40 years in different positions in the field of geophysics and seismology. He was the director of the Disaster Prevention Research Institute (DPRI) of the Kyoto University from 2001 to 2003. One of the leading figures in the field of seismology, Professor Irikura was also visiting faculties in many overseas universities in USA, Mexico and Italy. Recipient of several prestigious awards in Japan and abroad, Professor Irikura wrote several books and scientific papers and articles. In his current position, Professor Irikura is actively involved in international cooperation in the field of education and research.

Your Excellency, dignitaries, ladies and gentlemen,

On behalf of Kyoto University, it is my great pleasure to welcome you all to this very important thematic session on *"Education for Sustainable Development: towards effective disaster reduction and enhancing human security"*, organized jointly by UNESCO, Kyoto University Graduate School of Global Environmental Studies, GADR, GOLFRE, DRA and IIEES.

Kyoto University, one of the oldest universities of Japan, was established in 1897, having a history of 107 years. Through its long history, the university has gained a lot of experiences in the field of education, research and training, and from time to time, the university has taken different innovative and key initiatives to meet the needs of the changing world.

Among five clusters of the WCDR, Cluster 3 (Knowledge, Innovation and Education to build a culture of safety and resilience) focuses on four important elements: 1) Education, 2) Increased knowledge base, 3) Information and public awareness, and 4) Community empowerment. This thematic session will provide unique examples of all these four elements from the perspective of government, non-government, academics and international organizations.

Being a seismologist by profession, the Great Hanshin-Awaji Earthquake of 1995 is of special significance to me. The Kobe earthquake taught us many important lessons. Among them three points should be emphasized, the fist one is basic research on disaster mechanisms, in particular, field research in verification process, the second is preparedness to reduce disasters through the research results and the third, the most important point, is the need of pro-active education. The earthquake taught us the importance of multi-disciplinary research, and pointed out that the research should be directly linked to application and practice. Last year, we experienced a large earthquake in Niigata, in the western part of Japan, and many of the lessons learned from the Kobe earthquake were used appropriately in the post-disaster response, and reconstruction planning. The experiences of the temporary shelters of Kobe earthquake, coordination of different volunteer groups, partnerships of government-non-government sectors were fruitfully reflected in the post-earthquake scenario in Niigata. All these are learning experiences, and are parts of education. These learning experiences are also reflected in post-disaster reconstruction programs in other parts of the world, including Turkey, Taiwan, Gujarat, and recently Bam of Iran. I believe that sharing of these lessons and experiences will enrich each other.

The key issue is to develop the link of knowledge and practice. The World Conference on Disaster Reduction (WCDR)'s target is precisely to develop and strengthen this link, through long-term partnership among different stakeholders. This link cannot be developed by a single group. We need synergies, partnerships, networks, and commitments of different organizations, institutions, professionals and communities. The presence of different institutes as the key organizers of this session, esteemed presence of His Excellency Purna Bahadur Khadka, Minister of Home Affairs of His Majesty's Government of Nepal, and excellent group of panelists strongly indicate this commitment of co-learning.
University, being the key player in the society to promote education and research is the place to develop future professionals. At this critical interface, it is our duty to ensure that learning from different context are incorporated in the educational process properly, and students get appropriate chances to be exposed to the field experiences. To promote this actively, the Graduate School of Global Environmental Studies adopts compulsory internship program, which is designed to gain practical experiences working with different stakeholders at different situations. Students try to find their research topics from their internship program, and thus, try to link the practice with their research (knowledge). I believe this a unique system of pro-active education, and especially suitable to the field of environment, disaster management, and sustainable development.

Today, we are in the 21st Century, and at the dawn of the International Decade of Education for Sustainable Development, which is starting this year. I believe that this is a great opportunity to all of us to work together in the field of education, disaster and environment, to achieve sustainable development and thereby enhance human security. Kyoto University, together with other universities in Japan and abroad, and in partnership with different other stakeholders, is committed to work pro-actively for our safer future. I am very much looking forward for the important deliberations, which are going to take place here today. I am confident that working together, we will be able to achieve a sustainable future.

Thank you.

Education for Sustainable Development: Challenges and Opportunities for Nepal

Honorable Purna Bahadur Khadka

Minister of Home Affairs,
His Majesty's Government of Nepal

Honorable Purna Bahadur Khadka is currently the Minister of Home Affairs of His Majesty's Government (HMG) of Nepal. Minister Khadka has an esteemed family background. Graduated from Tribhuvan University of Nepal with economics background, Minister Khadka has a high-profile political career, right from his young days. He is the member of Central Committee of Nepali Congress (Democratic). He served as cabinet ministers in different ministries several time, before his current position as the Minister of Home Affairs. Under his leadership, HMG of Nepal is committed to undertake innovative approaches in disaster reduction.

1. THE PROBLEM

1.1. Topographic Extremes

Nepal is located in between India and the People's Republic of China, along the mountainous chain known as the Himalayas. A third of the country's territory is located in the flat plains along the foothills in the south, and two-thirds is located on hills and mountains of the Nepal Himalayas, which occupy about a third of the entire length of the Himalayas and contain nine of the world's 15 highest peaks including Mount Everest (8848m above mean sea level). The rise of the land surface from the plains of the Terai to the Himalayan heights is dramatic – 8.8 km within a span of about 150-200 km, with three intervening ranges, which trend northwest-southeast, parallel to the High Himalayan Range, and divide the country into three physiographic regions: the Terai (Plains), the middle Mountains, and the High Himalayas. Numerous rivers, 66,000 of them including four very large river system, rush down from the snow-melts of the glaciers southward to the plains, cutting across the mountain ranges, and creating several waterfalls and rapids along their courses. Such topographic mosaic, created by the mountain ranges and the rivers, and the unique climatic condition, creates a wide variation in fauna, flora, rocks and minerals, ethnicity and lingua. Nepal is very vibrant!

1.2. Geological Extremes

And so is the underlying landmass. The entire Himalayas is dynamic. According to geodesists, so huge is the Himalayan Mountain that it causes a deflection in the rotation of the earth along its axis! Further, the Himalayan range is the product of the continental collision and continuous attrition of the Eurasian and Indian plates; Nepal is located along the boundary of the two active plates along which a relative movement of about 3 cm per year has been estimated. This process is responsible for the rise of the Himalayas, for the creation of the wonderful physical and bio-diversity. But the same process is also responsible for the numerous earthquakes and active faults, for the active tectonics due to which there are landslides, debris flow, avalanches, floods, and several other forms of geologic, hydrologic, and even human-induced hazards including glacier lakes outburst flood (GLOF), drought, hailstorms, cloudbursts, fire etc. Nepal is one of the most disaster-prone countries in the world.

1.3. Geopolitical Realities

Such physical extremes, combined with the adverse geopolitical situation of land-lockedness, have resulted in further social and economic constraints. Nepal is among the poorest and least developed countries in the world. It has a per capita GDP of US$ 240 making it one of Asia's poorest countries. Approximately 14% of the GDP are derived from foreign development aid. A weak economy and abundant poverty affect disaster risk management in many ways: a lack of government funds to support hazard mitigation programs, a tendency in the general population to ignore the natural hazard due to more immediate needs, and a lack of awareness about hazards, risks, and mitigation.

The result is ever increasing very high levels of disaster risk my country is facing. No wonder that recent studies place Nepal in 11th position with respect to the relative vulnerability to earthquakes, and at 31st position with respect to the risks of floods. The capital Kathmandu is regarded as the most at-risk cities in the world with respect to the risk of death due to earthquakes.

1.4. Lack of Access to Scientific Knowledge

Another problem is that Nepal was historically late in recognizing the disaster risks the country was subjected to. While the social memories of disasters, for example that due to the 1934 earthquake, fade fast, especially because people have to address on a priority basis day-to-day problems of satisfying basic needs, our administrative system or our educational system could not benefit from the tremendous development in the natural sciences and also in the science of disaster risk management in the world in recent decades. Management of the knowledge on disaster reduction and management in Nepal were characterized by the following three major problems:

1. The scientific and engineering knowledge available in academia and professional institutions pertained exclusively to basic natural sciences and engineering, and did not consider disaster risk reduction. Hence, scientists and engineers were providing knowledge and services, which could not be used by the people for disaster reduction and preparedness. At the same time, people did not know what to demand from the community of scientists and engineers because of a lack of awareness. Scientists and technologists were not confronting the problem of disaster risk reduction let alone educating people on the same. The result was pervasive fatalism, and a sense of pessimism even in the government so far as confronting disasters was concerned. Our education system hitherto emphasized learning the nature, but never how to live with nature, learning about hazards, but not how to live with hazards, learning on the physics of earthquakes, but not on earthquake risk management!
2. Heavy emphasis was placed on formal education, while informal education was not considered necessary. Disaster management was considered an area to be addressed only by scientists and not by the community, or the common man. That not only limited the outreach of education to the wider community, but also missed the opportunity to identify champions who could articulate the real situation of the hazards faces at the particular locality, which could significantly improve the quality of any centrally controlled initiatives for disaster reduction.
3. No mechanism existed for recognizing, recording and documenting, or promoting indigenous knowledge and age old practices in disaster reduction and preparedness.

2. MOVEMENTS FOR CHANGE

2.1. General

The scenario described in the previous section prevailed pathetically until the late eighties when a series of hazardous events (earthquakes of 1981 and 1988, floods of 1985-87, etc.) forced the people and authorities to start thinking in a more organized way and address the problems of disaster management seriously. In 1982, the Natural Calamity (Relief) Act was enunciated. Subsequently, with UN assistance, the country initiated several programs for enhancing the national capability in disaster management. They were largely awareness-raising and institution-building programs and they did not cover education.

A real impetus to disaster management was received by the concept of the International Decade for Natural Disaster

Reduction (IDNDR), which the United Nations declared for the decade of 1990-1999. Since 1991, both the government and the non-government sectors stared implementing several initiatives in disaster risk management successfully. The country responded positively to the Yokohama Strategy and Plan of Action, and in the last Decade initiated several strategies and initiatives, at Government or non-government sectors. In the government sector, such works belonged to the areas of emergency response and policy improvement, while the initiatives implemented jointly by the NGOs and local authorities with assistance from bi-lateral agencies pertained to a wide variety of initiatives ranging from risk assessment and generating earthquake damage scenarios, action planning and implementation of school earthquake risk management program and community-based disaster planning and preparedness at district levels. All these works are inspirational, and have created tremendous sense of confidence in the heart and mind of Nepalese disaster managers.

Mostly, these were demonstration projects that showed social, technical, and financial feasibility of disaster risk management programs even in small, land-locked, and weak-economy country like Nepal. Soon it became very clear that disaster awareness and education should be the centre point of all disaster-related programs, and that both the "givers" and the "recipients" of disaster-education should be educated to create the real demand for disaster risk reduction and preparedness.

Another clear consensus that emerged was the recognition of the role of non-government organizations and that of community-based initiatives in disaster risk management.

Given the magnitude of the problem faced, it is but natural to accept that there are areas as requiring improvements, and also areas where additional efforts are necessary.

2.2. Improved Realization or Lesson Learned

In Nepal, people and institutions related with disaster risk management know well the problems of knowledge management, and the associated paradox:

a) Knowledge required for saving lives and protecting properties are available in the world since long, but the same knowledge is not available in Nepal, especially to those who are the most vulnerable. Availability of risk reduction methods is inversely proportionate to the level of vulnerability

b) Disaster awareness is at unacceptably low level. Such lack of awareness is at all levels: from the decision-makers to the common person

c) Formal education is not only difficult to achieve and relatively expensive, but the coverage of the formal education is restricted to the less vulnerable groups of the society and the most vulnerable are left unattended. Hence, there should be an emphasis on non-formal mode of education, awareness raising, and knowledge transmission

d) Transmission of knowledge is done best by demonstration, which enhances the use of the transmitted knowledge and consequently increases its ownership by the common person. "Knowledge which is not used to reduce disaster risk and enhancing preparedness is no disaster knowledge", therefore there should be an effort to make sure that the knowledge transmitted is palatable to the target group, understood and implemented by it. What is accepted by the community is much more important than what should they know and what should be given to them!

e) There is a need for multi-pronged comprehensive strategy to widen the definition of education to incorporate recent concepts, for example the *16 principles of environmental education* adopted by the Rio Summit in 1992

2.3. Successful Risk Reduction Programs Implemented by the Ministry of Education & Sports

The Ministry of Education and Sports (MOES) of His Majesty's Government of Nepal (HMGN), has implemented disaster risk reduction programs through its Department of Education (DOE) and the District Education Offices (DEO). The programs pertain to i) improving school infrastructure by constructing earthquake-resistant school buildings, ii) increasing disaster awareness, and iii) facilitating and guiding the disaster mitigation programs of non-government organizations and local governments.

Disaster-resistant School Infrastructure Construction

So far a total of 25,000 classrooms have been constructed since the devastating earthquake of 1988, and a wealth of experiences has been generated. These include:

a) 15,000 earthquake-resistant classrooms constructed as a part of the Earthquake-Affected Areas Rehabilitation and Reconstruction Project, implemented after the 1988 Earthquake with assistance from the World Bank, UNDP, and UN Habitat.

b) 5,400 earthquake-resistant class rooms constructed as a part of the second phase of the Basic and Primary Education Project (BPEP), implemented with assistance from a host of bi-lateral and multi-lateral donor agencies

c) 5,000 earthquake-resistant class room constructed in the past couple of years as part of a cooperative arrangement with the Japan International Cooperation Agency (JICA).

Advisory Role in Community-Based School Earthquake Safety Programs

Ministry of Education, through its Regional and District Offices, facilitated implementation of the School Earthquake Safety Program in Kathmandu Valley and Other districts of Nepal by establishing District Level Advisory Committees and providing assistance in conducting vulnerability assessment of school buildings, organizing seminars and training programs. District level offices (DEO) were involved in the programs for seismic retrofitting school buildings.

Awareness and training programs

DOE provided guidance and facilitated awareness-raising programs for disaster awareness, and also in the organization of training programs for masons, technicians, and petty contractors for building construction.

2.3.1. *Programs Implemented by the Nepal Red Cross Society (NRCS)*

NRCS has a long tradition of conducting training programs for its volunteers on aspects of disaster relief including First Aid and warehouse management. It operates a training centre that organizes programs and develops curricula for the different training programs. In recent years, NRCS has been emphasizing on Vulnerability & Capacity Assessment, Community-Based Disaster Risk Management, and accordingly, NRCS has been developing its capacity in such training. NRCS is one of the focal points of MFR and CSSR. It is expected that after institutionalisation of MFR and CSSR, it will put its efforts in developing these training programs further for use at the community level.

2.3.2. *Programs Implemented by the National Society for Earthquake Technology-Nepal(NSET)*

NSET is a professional NGO focussed in earthquake risk management (ERM). Since 1997, it has been implementing ERM programs in cooperation with central and local governments, communities and academia.

The Kathmandu Valley Earthquake Risk Management Project (KVERMP) was implemented during 1997-2001. It was a new experiment that resulted in several innovative programs and methodologies of nation-wide and regional importance. These works of awareness raising, and community education are recognized internationally. Most of KVERMP program components emphasize on disaster awareness.

School Earthquake Safety Program (SESP): SESP was developed as a component of KVERMP, but now it has become a stand-alone program in Nepal. SESP includes a) seismic vulnerability assessment and retrofitting of school buildings, b) disaster preparedness planning for schools, and c) training of teachers, students and parents on disaster risk reduction and preparedness. SESP has influenced all other disaster risk management programs of Nepal as it offered several lessons that are of crosscutting importance, and currently found applicable in many developing countries such as Afghanistan, Indonesia, Tajikistan, India, Bangladesh and Iran.

Public Awareness Programs

NSET's awareness raising programs include i) weekly radio program, regular television appearances, ii) a variety of publications for distribution in communities such as posters, fliers, calendars, earthquake FAQ & preparedness handbooks, manuals etc, iii) earthquake awareness exhibitions including the award-winning[1] shake-table demonstration iv) free earthquake clinic on Fridays organized for home-owners in Kathmandu Valley in cooperation with municipalities, v) mobile earthquake clinic under which NSET technicians visit construction site to preach earthquake-resistant methods of construction. NSET, in cooperation with Vyas Municipality, used even the popular folklore called Dohori (Musical competitive duet) for earthquake awareness by organizing a successful event.

Municipal Earthquake Risk Management Program (MERMP)

MERMP is an adapted version of KVERMP with significant improvement of the methodology to make it simple for enhanced participation and ownership by the local residents. In MERMP, earthquake damage scenario is prepared by RADIUS tool; the earthquake risk management action planning is integrated with the municipal or district-level development planning. The program scope is sufficiently flexible for allowing local realities to be incorporated into the program, at the same time, it is seen that the resulting action planning is implementable and allows mobilisation of local resources with maximum participation by the local residents and communities.

3. CURRENT STATUS OF DISASTER KNOWLEDGE MANAGEMENT

Nepal is implementing several initiatives of disaster risk management that include significant components on capacity development, awareness raising, and public education. While both formal and non-formal forms of education are in practice, there is an emphasis on non-formal education because of the ever-increasing efforts on community-based initiatives.

The following sections describe these efforts of knowledge management both in the formal government and academic sector as well as in the informal and NGO sector.

3.1. Initiatives of DOE, Ministry of Education and Sports, for promoting safer construction through its school projects/programs

3.1.1. *Approach and Background Concept*

These following define the approaches adopted by the Ministry of Education and the Department of Education for addressing issues of knowledge management on disaster and environment

a) The process of school building construction offers tremendous opportunity for raising awareness of the communities in earthquake safe construction and promoting the culture of safe building construction through demonstration as well as training
b) It is necessary to provide equal attention to achieving disaster and other safety and child-friendliness of school buildings
c) It is necessary to develop models of safe building construction with maximum use of local building construction materials and technologies
d) The process should provide special focus on rural communities that have traditionally been deprived of the knowledge of safety from disasters
e) "Safe residences through school construction" should be the campaign at the government level throughout the country

3.1.2. *DOE's Primary School Physical Facility Improvement Program*

This program is being implemented with support from a host of donor agencies including DANIDA, NORAD, Government of Finland, DFID and the World Bank. The project components are:

a) Study of existing materials and technologies of building construction in different regions of Nepal and assess the positive and negative aspects for earthquake safety
b)Development/recommendation of appropriate materials and technologies for different areas
c) Development of alternative designs of school buildings for different regions
d) Development of suitable implementation mechanism for construction of schools buildings so that local masons are trained in the technology and people are made aware.
e) Implementation of designs and working models throughout the country for making the following number of new school buildings:
    1. 500 number new temporary classrooms to fulfil the current urgent need in insurgency affected areas. This entails

1: NSET was the Laureate of the Microsoft Education Award 2004 of the prestigious Tech Museum Award, San Jose, California.

use of low-cost and locally available materials like bamboo. Knowledge of traditional skills in earthquake-resistant construction is important here.

2. 11,000 number of permanent new classrooms in about 5,000 schools, rehabilitation of 10,000 classrooms, and provision of water supply and sanitation facilities or their improvement in 6,000 schools.

The following approaches are considered important for the Implementation of this program

- Collaborative effort of government with leading institutions working in the field for creating something appropriate, effective and useful
- Action research as a collective effort of university (Institute of Engineering), technology experts, environment specialists, education specialists, community motivators, earthquake experts
- Incorporation and adaptation of developed implementation models as DOE's regular work

3.1.3. *Primary School Improvement Project (PSIP)*

PSIP is being implemented with support from UNICEF. The following are the program components:

Components

a) Assessment of existing schools buildings for their structural strength as well the requirements for good educational environment. This entails:
   i. Development of suitable methodology for the structural vulnerability assessment as well as potential intervention methods for improving the safety
   ii. Training of local professionals (engineers, overseers) of DEOs and the District Development Committees (DDCs) in assessing the school buildings
   iii. Implementation of vulnerability assessment of existing schools buildings and deciding on the criteria for making decisions for separating schools buildings to be demolished or reconstructed, and among the latter, those to be seismically retrofitted

b) Development of appropriate designs of retrofit or new school buildings to suit the local needs

c) Improvement of school environment including the building structure through community participation

d) Training of local masons and technicians in construction of safe buildings

The following has been adopted as approach for implementing this program.

i. Usually different institutions or donor agencies work in different models and build buildings with varying standards, there is no tradition of making the school buildings of the same standard as developed by DOE. However, this initiative is trying to work closely with the DOE and make the school buildings as per the standards of DOE. DOE is playing supporting and facilitating role.

ii. Equal importance to education friendly as well as the earthquake and other disaster safe school buildings

iii. Collaborative work among government agencies, local authorities, leading engineering consultancies, earthquake experts (NSET), environment experts, education experts and local community

3.2. Successful Risk Reduction Programs Implemented by Academic Institutions and NGOs

Several universities, academic institutions, both public as well as private, and NGOs have assisted communities in implementing disaster risk mitigation, preparedness and awareness programs in schools, and also in organizing training programs for disaster risk-reduction.

3.2.1. *Programs Implemented by the Academic Sector*

Different universities and their affiliate institutions have been engaged in implementing aspect of disaster education in Nepal. These pertain to establishing post-graduate, graduate, or undergraduate level studies in aspects of disaster risk management in implementing disaster education as a project. Description follows.

Kathmandu University (KU): The Department of Environmental Studies of KU is developing the curricula for implementing an academic program of integrated disaster management at Undergraduate and Graduate levels. Cooperative arrangements have been made with the University of Northumbria at New Castle upon Tyne, UK. A separate Memorandum of Understanding has been signed with NSET for assistance in the process as well as in conducting joint researches in urban vulnerability assessment and aspects of disaster risk management.

Tribhuwan University (TU): The Institute of Engineering (IOE) has established a **Centre Disaster Studies (CDS)** with a host of activities including training students of different faculties to field map vulnerabilities of rural and urban settlements and work with the local communities in identifying vulnerability reduction and preparedness options. IOE is also contemplating establishing graduate programs in disaster management.

Nepal Engineering College (nec): Nepal Engineering College, affiliated to Pokhara University, is about to start a graduate program in integrated disaster management. The curriculum is being finalized. NEC organizes annual International Workshop on Disaster Management in cooperation with the Japanese University.

3.2.2. *Programs Implemented by the Nepal Red Cross Society (NRCS)*

NRCS is implementing a community-based disaster preparedness program in Kathmandu Valley, the Kathmandu Valley Earthquake Initiative (KVEPI), in close collaboration with NSET and the American Red Cross. The program is funded by the US Office of Foreign Disaster Assistance (OFDA). KVEPI has a significant emphasis on capacity building of NRCS volunteers and local elected representatives and local leaders in disaster preparedness. There is a visible component of Training of Instructors for achieving sustainability of the effort with the Nepal Red Cross. NSET is providing all technical assistance in developing the training curricula, in implementing the training of trainers as well as some initial end-users.

3.2.3. *Programs Implemented by the National Society for Earthquake Technology-Nepal (NSET)*

NSET is currently implementing the following capacity building and educational programs in aspects of disaster risk management. It is working with several other institutions, both regional and local, to develop and implement curricula on disaster risk management. DEO and district level offices of Education provide necessary direction, and also encourage participation, and assist in the organization of the training programs. A listing of such training programs appears below:

a. **Urban Disaster Mitigation (UDM):** Targeted for professionals and administrators including municipal mayors. The curriculum of UDM is adapted from a similar regional program developed by the Asian Disaster Preparedness Centre (ADPC), Bangkok.

b. **Earthquake Vulnerability Reduction (EVR):** Again targeted for professionals and administrators including municipal mayors; the curriculum of EVR is adapted from a similar regional program called Earthquake Vulnerability Reduction for Cities (EVRC) developed by the Asian Disaster Preparedness Centre (ADPC), Bangkok.

c. **Earthquake Safe Design:** This training program is targeted to professional engineers and architects, and it focuses on explaining the Nepal National Building Code and various aspects of earthquake-resistant design and detailing during construction and quality control.

d. **Earthquake Safe Construction:** This training program is targeted to Diploma Engineers who are field oriented and involved in construction supervision. In many cases of non-engineered constructions, the Diploma Engineers are responsible for the entire process of building construction at public or private levels. The training program is usually implemented in Nepal in cooperation with the Diploma Engineers' Association of Nepal (DEAN) and the Department of Urban Development and Building Construction (DUDBC).

e. **Earthquake-Resistant Technology:** This training program is directed towards the petty contractors and Mason leaders who in fact make significant decision in the building construction process, especially in the non-engineered building construction.

f. **Training of Masons in Earthquake-Resistant Construction:** This training program is being imparted to the masons as a component of the school earthquake safety program (SESP) or as a stand-alone activity. This is a very successful program that has become popular in different parts of Nepal and abroad. NSET's experience of Mason training has now been consolidated in the form of a curriculum for **Mason Training in Earthquake-resistant Construction**, published jointly by NSET and ADPC.

g. **Program for Enhancement of Emergency Response (PEER):** NSET is implementing the regional PEER program in five countries of Asia including Nepal. The project consists in development of a system of training programs on a) Medical First Response (MFR), b) Collapsed Structure Search and Rescue (CSSR), and c) Hospital Preparedness for Emergencies (HOPE), and institutionalisation of the training programs in national institutions with the objective of enhancing national capabilities in effectively responding to disasters and reducing mortalities from the mass casualty events. The program focuses on developing sufficient numbers of Master Instructors (who can independently organize and supervise respective training programs for Instructors training) and Instructors (who can train the end-user emergency responders) in each field (MFR, CSSR, or HOPE) in each country.

h. **Disaster Information Management System (DIMS):** NSET is implementing a program for the establishment and institutionalisation of disaster information management system in Nepal with the objective of developing a vulnerability profile for better planning disaster mitigation and preparedness works. A system of such information management system, successfully developed and currently practiced in several countries of South America, was installed in Nepal by collecting disaster data for the past 33 years and inputting the parameters into the software called DesInventar. The program is being supported by the UN-Bureau of Crisis Prevention and Recovery (BCPR) and UNDP Nepal. NSET will continue the effort in institutionalisation of the system by shifting the focus from centre to the district by piloting the program of data collection and analysis at the district level.

i. **Piloting Disaster Reduction in School Curricula:** NSET is working closely with the Maiko High School of Kobe and the Department of Education for possible adaptation of the Japanese High School's experience of disaster education to senior level classes. A series of interaction, including visits by Japanese teachers and students to Kathmandu, and reciprocation by Nepalese Headmaster to the Maiko High School has already been taken place. NSET hopes to continue this effort leading to piloting the teaching of disaster risk management at High School level in Nepal.

3.2.4. *Programs Implemented by Other INGO/NGO*

Past decade has witnessed a growth in the number of Nepalese NGOs devoted to aspects of disaster risk management. While several international NGOs were involved in relief and partly rehabilitation and reconstruction in the past, more and more INGOs and NGOs are incorporating disaster risk reduction into their agenda, and are assisting the local NGOs and government agencies to conduct educational and awareness programs. Noted among such NGOs are Action Aid Nepal, Lutheran World Federation, and United Mission to Nepal, who also are involved in disaster mitigation programs. The NGOs, both national and international, working in areas of disaster risk management and preparedness, have been collected in Nepal in a network called Disaster Preparedness Network (DPNet). It's a loose federation of institution and individuals working in areas of disaster risk reduction in Nepal.

3.2.5. *Programs Implemented by Professional Societies*

A host of professional societies are involved in disaster mitigation programs, which include public awareness and education as important activities. Noted among these are the Society of Consulting Architectural and Engineering Firms (SCAEF), Nepal Engineers Association (NEA), Society of Nepalese Architects (SONA), Nepal Geological Society (NGS), Nepal Landslide Society (NELS), Nepal Centre for Disaster Management (NCDM).

These institutions actively take part in or organize several educational programs including those during the Earthquake Safety Day and the International Day for Disaster Reduction.

4. ISSUES AND CHALLENGES

Nepal is proud to have taken successful stride in disaster risk education and developing a wider outlook and successful methodologies for disaster risk management including risk identification and reduction to disaster preparedness. Several of the methodologies and programs are regarded as showcases, and replicated in other countries.

However, these successes are mere demonstration projects with limited outreach. One can easily gauge the scale of the impact of our efforts so far by recognizing the fact that there are more than 30,000 public primary schools in the country, and almost all are vulnerable to this or that form of natural hazards. So, it is necessary to scale up the actions for increasing the coverage massively.

Lack of awareness and lack of access to disaster knowledge continues to be a significant impediment.

Another problem is that of implementation. We agreed that necessary knowledge exists in the country. However,

transmission of this knowledge to the whole of the country and its translation into practical implementation is a serious issue. The difficulty of implementation is not only because of the lack of resources, which is generally stated, but is also due to the lack of proper mechanism and system. Institutionalisation is what is required for shifting the focus on effective implementation. Institutionalisation requires creation of suitable number of adequately trained human resources. Huge investment in capacity development is required.

Disaster Risk management and environmental preservation many times don't receive any priority as compared to the programs for fulfilling the basic needs such as food and shelter. While nobody denies the importance of food and shelter, it is not necessary to juxtapose disaster safety against food and make the two essentials compete with one another. In fact, the two, as well as other poverty alleviation and development efforts should be seen as inter-dependent parts of the same problem, and need to be tackled together. Integrating disaster risk reduction into development efforts is what is necessary. Unfortunately, this has become a big challenge largely because of the lack of awareness as well as the failure of the disaster managers to come up with convincing arguments. Our projects should address this issue in detail.

One of the greatest challenges is mobilization of resources for disaster risk management programs. Unfortunately, the weak economy of the country is becoming less and less capable to invest in disaster risk management in the public domain. The political instability and the insurgency has placed additional burden on the economy, whereas the same reason is responsible for rapid increase in the level of vulnerability and risks. The country is sinking into poverty. The private sector is also affected very badly, and is less and less capable of supporting disaster mitigation.

On the other hand, the lethality of hazard events is increasing. Nepal lost about 0.08 % of its GDP in "normal " years (say annual floods), while the loss was more than 5% of GDP in "abnormal" years (difficult floods), and in the years with occurrences of large events (1993 floods, 1988 earthquake), the loss was approximately 15-25% of GDP. These fact demand urgent attention from all concerned with the well being of Nepal.

It is to be noted that statistics show a very high level of relative vulnerability of Nepal to disasters (Recent UNDP/BCPR publication puts Nepal in the 11th place with respect to Earthquake and in 31st place with respect to floods in terms of relative vulnerability) while the investment in disaster risk mitigation, including those by the donors, in the past decade is dismal low in comparison to other countries of South Asia! This needs to be changed.

All the above-mentioned issues and challenges portray a mixed picture: while there are ample chances of achieving success in disaster risk reduction in Nepal, it is necessary to redouble our efforts in disaster risk management including disaster education in order to achieve the scaling up and also proliferating the success to all parts of Nepal. We look at the UN Declaration of the Decade for Education for Sustainable Development (ESD) as an opportunity to work with the global community in sharing the concerns as well as in partnering with international initiatives towards integrating environmental and disaster concerns into the development paradigm for making Nepal and the world a safer place to live within a decade.

5. ROLE OF ESD DECADE IN NEPAL

We have come to this conference to learn more about the proposed Decade for Education for Sustainable Development, and to work with you to better define the concepts in more practical terms. We definitely want to enrich ourselves from your knowledge, experiences, and wisdom. In the mean time, we think you will agree that the ESD should emphasize on action and implementation. It should emphasize on wider coverage and proliferation of disaster risk management and environmental preservation as an effective tool for sustainable development, as a tool for effective poverty alleviation, and as a tool for betterment of the quality of life of the poor and the vulnerable.

I also firmly believe that the ESD should adequately emphasize the need to provide special attention to the communities and countries, which somehow did not get appropriate attention during the Decade for Natural Disaster Reduction. Furthermore, it is my humble request that the ESD Decade agenda should put special focus on land-locked countries, small countries, and countries engulfed in civil strife.

The world body should be requested to encourage donor agencies to provide greater support to such countries in their quest for achieving sustainable development, in their quest for implementing the principle of environmental education adopted by the Earth Summit and the Johannesburg Plan of Action.

We see the role of ESD as an opportunity for transgressing from planning to implementation, from the involvement of individual institutions and individuals to that of a stream of institutions and individuals, if necessary in the form of regional and sub-regional programs, for widening the scope of education from merely imparting the knowledge to developing ownership of the knowledge for practical use in poverty reduction and environmental enhancement. Education has a vital and determinant role in preparing people to live within the means of nature and help to build lasting economic prosperity, environmental health and social justice for all and for all time to come. We look at ESD as an opportunity to better integrate disaster reduction, environmental preservation and development.

6. PROPOSED ACTIVITIES

We consider the following approaches and programs as necessary for achieving greater progress for safety of Nepalese against disasters by using the opportunity created by the declaration of the Decade for Education for Sustainable Development.

6.1. Approaches

- Build upon the successes achieved in disaster risk management and education such as the school earthquake safety program
- Replicate the successful programs and program components. Strive for implementation of all principles and agreements arrived at in international fora.
- Continue the process of adapting and nationalizing methodologies for disaster risk management that have been found successful in other developing countries; learn from similar countries, similar societies.
- Strive for total disaster risk management. It implies putting the efforts to cover all stages of disaster management

from emergency response to mitigation, rehabilitation and reconstruction. It also implies multi-sectoral approach: risk cannot be reduced for one sector! Security of building, food supply, and livelihood should go together.

6.2. Proposed Activities

The activities related to disaster education proposed for the Decade can be grouped into the following:

a. Scale up efforts in disaster risk education and environmental preservation both in formal education system and more importantly, in informal education. Emphasize community-based initiative and incorporate strong education component in it.

b. Implement disaster risk reduction actions. Many of these have been demonstrated to be feasible on technical, economic, social and cultural grounds. Seed more investments. Rely on local expertise to the extent possible while remembering that such expertise is available in government, or non-government and private sectors.

c. Implement strong policy action for facilitating: i) study and researches in existing modalities of development, existing pattern of use of natural resources, and the availability of their sustainable options, ii) establishment of Development Learning Centres in each school in villages to serve as a knowledge and training centre for the people of all ages and occupation

d. Build legal instruments to a) introduce national legislation on proper management and appropriate use f natural resources, b) promote integrated community-based ecosystem management program for enhancing linkages between environmental management, disaster risk reduction and development;

e. Build broader partnership at each level in promoting a) social alliances for environmental protection, disaster management and sustainable development, ensuring participation and ownership of all stakeholders, b) capacity development of local champions and leaderships, c) strengthening the local voices,

f. Achieve practical policy solutions to a) increase national commitments, b) enhance identification and implementation of local solutions by the involvement of local people and leadership.

Educational Aspects of Disaster Management: Post-Earthquake Experiences Iran Public Education and Awareness Program and its Achievements

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1. INTRODUCTION

Iran being located in high seismic hazard regions of the world, with frequent occurrence of devastating earthquakes has experienced high human, social and property losses which definitely can be improved by more efficient disaster management system and better trained, prepared and educated search, rescue and relief teams. There are several strategies for earthquake risk reduction ranging from policy change, increasing the know-how, improving the management quality, using the advance technology and code enforcement to public awareness and increasing the public preparedness for performing correct response during and after earthquake. Achieving the final objective of reducing the risk to an acceptable and affordable level with good response team, requires a long term education and building a collective culture of safety in the society. Safety culture can be achieved through the long-term process of education for raising the public awareness, to create sensitiveness and belief on the "fact of earthquakes" in order to make an effective action. Thus, the well thought and planned risk management education program, not only create a safety culture, it also creates strong public will and incentive for an effective implementation of risk reduction actions in a country.

Considering that among the human losses, the loss and injury of children, as a binding factor of a family, can create long-term psycho-social disorder in the society; saving their lives should have the highest priority in the any risk reduction program. Experience of the loss of more than 10,000 school children during Bam earthquake of 26 December 2003, once more had shown that they are the most vulnerable groups of the society. And also it has shown that the effectiveness of earthquake education, when many have saved their lives by taking proper measure during the Bam earthquake.

With the view to the above fact, International Institute of Earthquake Engineering and Seismology (IIEES) for the implementation the "Increasing public awareness and promoting a collective prevention and safety culture" component of the "Iran's Strategy of Risk Reduction" has developed a comprehensive public education program. This paper will provide an overview to the program with the special emphasis on the children's earthquake safety education in schools. This priority could be better highlighted by looking at the wide coverage of schools as well as the young age structure of Iran. Ministry of Education as the largest educational organizations in Iran with its agencies and schools covers the all part of the country even in the most remote villages and using the unified methods and curriculums for education, can provide the widest media and network of operation. Creating earthquake safety culture among the youth in Iran with the more than 25% of population under 18 years old (6-10 years:14.6%, 11-14 years:11.99% and 15-18 years:11%) and with more than 16 million students, can act as a key factor in earthquake risk activities. Not only, it would help their safety, but they can play an effective role in the dissemination of knowledge and preparedness among the society. Adding the 655,690 teachers and more than 1 million schools staff to the number of students, will become more than 1/3 of the Iran's 65 million population.

Thus IIEES with the objectives of creating a deeper understanding of the culture of earthquake and safety at schools have developed a comprehensive earthquake education and preparedness plan for all school levels using direct and indirect methods, with the consideration of that the schools are the most important and fundamental community centers of a country, which built the bases for sustainable development in all the aspects including technical, industrial, economic and social development. The theoretical and practical program has been developed with the curriculum framework of the three different educational levels in Iran: 5 years of primary schools, 3 years of secondary schools, and 4 years of high schools. In primary school students learn about the event of earthquake and the proper decisions and activities, which should be taken during an earthquake to ensure their safety. In secondary school and high school, the students learn about the emergency response activities, which ensure their safety and well being before, during and after an earthquake. In fact they are taught about the emergency first aid procedures, which would help them and their class mates survive until the rescue and relief team arrives. The program composes of the formal and informal part which will be covered in the next section. Also the effectiveness of the earthquake education in schools on saving children's life in past earthquakes, especially during Bam earthquake will be presented.

2. DISASTER MANAGEMENT EDUCATION FOR THE MANAGERS

With the objective of raising the awareness and concern of the city managers on important factors (seismic hazard,vulnerability, management, etc.) contributing to the earthquake risk as well as the effective methods for its

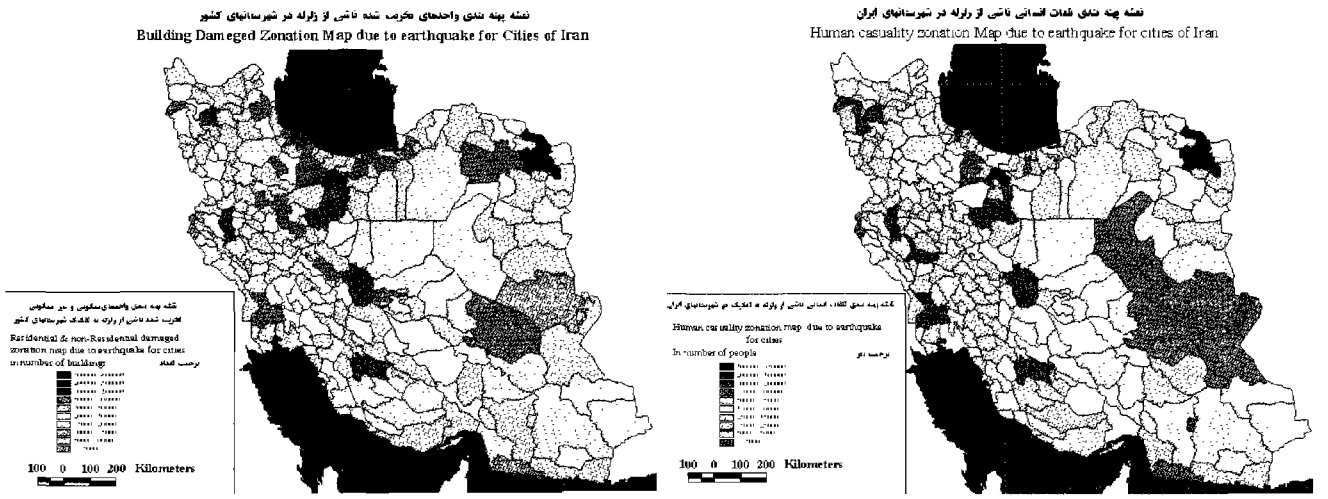


Figure 1: Risk maps showing the expected human and economic losses due to probable earthquake

reduction and control, special training program has been developed and it has been implemented almost in all of provinces. The program contains information on the active faults, seismicity and seismic hazard of each province as well as the related physical, human and economic risk in the map forms. This program has shown very effective on changing the city officials and managers view to earthquake and it risk. Figure 1 shows a sample of risk map.

3. GENERAL PUBLIC EDUCATION

To achieve an acceptable level of preparedness for an earthquake, the public should first know the facts of earthquake and its consequences in order to become sensitive and interested in learning about the prevention measures. Thus the public education with the consideration of the socio-economic consideration of the target audience through scientific and reliable sources should focus on: risk communication, showing the benefits of prevention and risk reduction, creating incentives, how to be prepared, what is needed to prepared, what to do during and after earthquake, first aids, and finally how to help the family and neighbors. In the entire program, it has been emphasized that the key factor in being prepared is prevention and living in a safe building, which without it none actions can be effective and useful. The result of the program can be easily seen in the Iranian society. Today people are much more aware, a success in the first step of the preparedness; but there is still a long way to become a prepared society. Following sections presents some of the actions that have been taken.

3.1. Audio-Visual

Television and radio programs are focused on communicating the risk and continuous reminding of the public on the experience of the past earthquakes. The regular 15-minute weekly TV, 5 to 10-minute weekly radio and special programs touches on various safety issues is a useful media for opening a dialogue with the people and answers their questions. The programs have resulted in decreasing the fear and rumors and created a channel of communication with people since it is continuous and permanent. Also broadcasting short films and TV programs such as: *"Earthquake and Rumor"* addressing the effects of unreliable rumors on the social disruption; *"Paper House"* showing the effects of code violation and economic losses; *"Build Light structures"* and *"strengthening guidelines for buildings against earthquake"* teaching the key points that should be considered for the safe design and construction , are examples of communication and teaching the people, specially in rural area, without causing any fear and have sense of humor. Also short clips have been made and broadcasted in national TV, touching on various issues related to safety before on what to do during earthquake.

3.2. Publication: Booklets, Pamphlets, Posters

Printed materials such as booklet, pamphlets, posters and articles in the newspapers have been used to show the facts on earthquakes and how to be prepared.

For home and family *"Let's Reduce Earthquake Hazards"* and *"Earthquake Preparedness"* booklets; many pamphlets and posters such as *"Make Your House Safer against Earthquake"*, each designed for different communities have been distributed, see Figures 2 and 3. They all uses simple language and attractive graphics and pictures to teach the precaution measures, how to become prepared, how to improve the safety of home interior, as well as what to do during and after earthquake. *"Earthquake: Looking Deep Inside the Earth"* booklet provides simple scientific information on earthquake phenomenon for educated general public. It covers information on earth structure, faults, Seismotectonic, seismicity, seismic hazard and risk map of Iran as well as facts on earthquake predictions. For safety in offices and at work, *"Educational Guidelines for Earthquake Reduction in Office Buildings"* brochure along with posters and audio tapes with short message have been prepared and distributed. Similar publications have been designed for hospitals, hotels, markets, metro, etc.

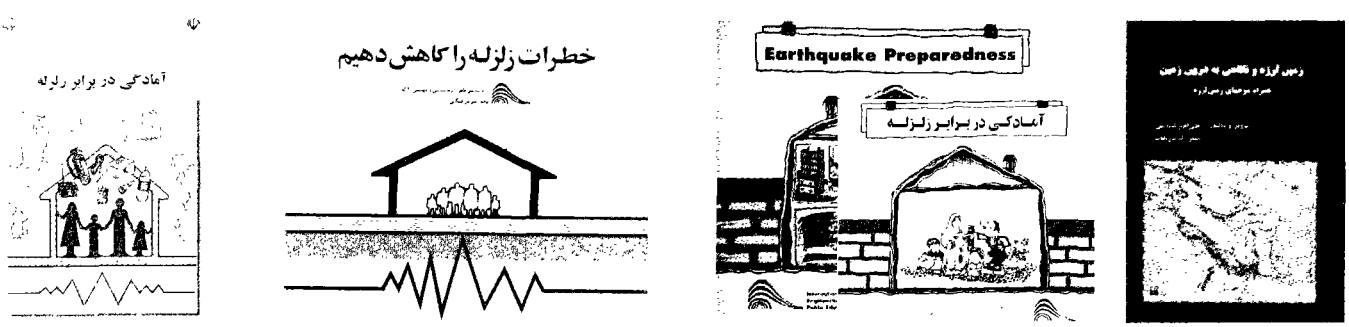


Figure 2: Education booklets on earthquake phenomenon and preparedness

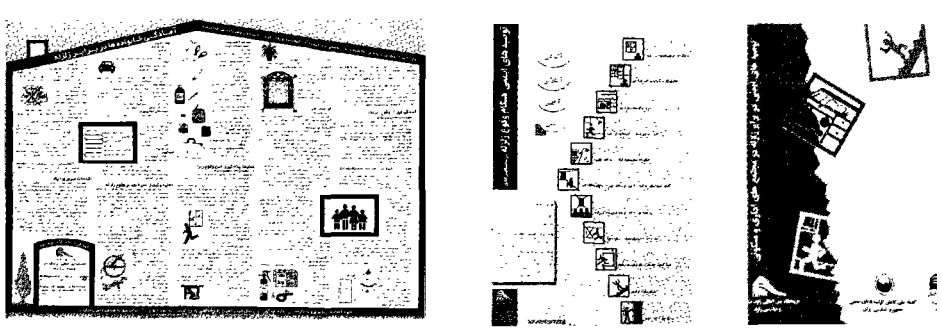


Figure 3: Educational Posters for homes, family, offices,

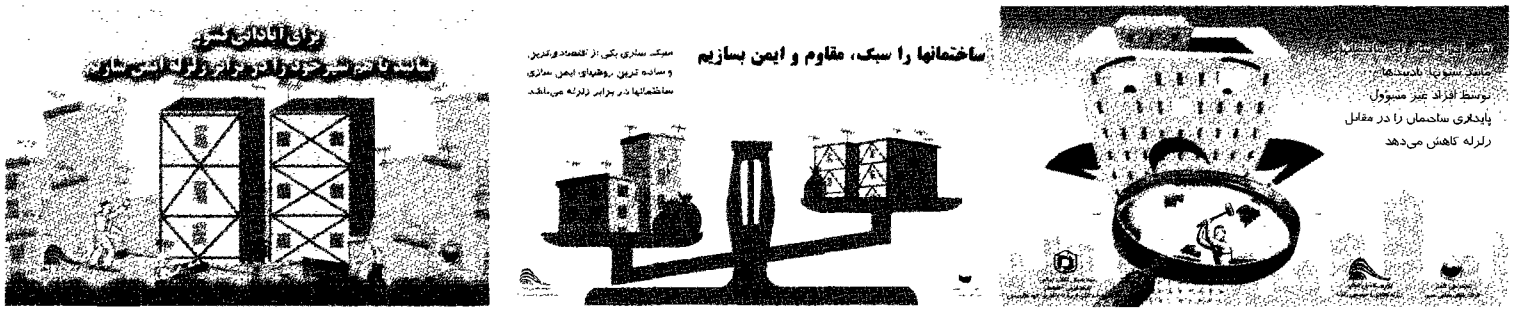


Figure 4: Posters on street billboards describing the safety issues for the safe buildings.

Considering the popularity of the Iranian newspaper, writing articles and organizing press interviews on special occasions has been an effective tool in public awareness, teaching the public
as well as touching on the various issues related to the earthquake safety and risk reductions and creating public will for safety.
Street billboards and public exhibition stands are being to delivering series of message on awareness, safety message and prevention measures as shown in Figure 3.
It can be seen that all type of published media, all possible location and all occasions have been employed for delivering the safety message, raising the awareness and teaching the public.

4. SCHOOL'S EARTHQUAKE EDUCATION

Considering the young age structure of Iran (more than 16 million school students) with strong social and financial attachment to the family, require great attention to their safety. Moreover their key role in the family can make them the earthquake safety messenger in the society. For this purpose, a comprehensive program has been developed and is getting implemented since 1992 in all of the schools through formal and informal education program.
It should be noted along with this education a promotional campaign has been launched for the aseismic design and construction of the new school buildings. Office of the school construction of the Ministry of Education which has established for supervision of the school design and construction, have become responsible for strengthening of existing school buildings. It has been clearly stated in the entire school education program that the key point in school safety, is in the hand of safely built schools.

4.1. FORMAL OR THEORETICAL EDUCATION

The formal training materials have been integrated in the school textbooks of the three different school level with the objective of creating, expand and consolidate the "Culture of Safety" in the society; as well as reducing the human casualties and losses due to earthquake and enhancing knowledge of the students about earthquake. These have been carried out taken into account two factors of being relevant to the subject of the course as well as age and physical capacity and socio-economic condition of the students.
It has been a decade that the students are learning about earthquake safety and preparedness. The results and its effectiveness have been seen from the first year of the program implementation when only a chapter on earthquake preparedness was inserted in the 8th grade geography book. The 8th grade students of the Sefidabeh village in a most remote part of Iran, near Afghanistan, have saved their life during earthquake by taking the proper shelter during the 1993 earthquake. And most recently during Bam earthquake, many school children saved their lives based on their learning in schools.
The textbooks material in various level of the schools can be classified into the three categories as follows:

a. **Scientific subjects on earth and earthquake:**
   Science books of 4th, 5th, 8th and 12th grade and Geography books of 8th and 10th grade cover scientific materials on the earth structure, continental movements, earthquake phenomenon, faults, seismicity, and seismic hazard. Considering that the geography books are regionally prepared, provides earthquake information related to the related province.
b. **Earthquake preparedness, response and recovery:**
   "Earthquake Preparedness" book for 8th and 9th grades, and "Technology and Careers" book for the 8th grade covers materials on the most appropriate activities to be preformed before, during and after a damaging earthquake; as well as guideline for school preparedness and the first aids.
c. **Technical and engineering aspects of safe building:**
   How to build a safe and earthquake resistant building is being though in the construction major of the technical high schools. The curriculum and text book of this major has been modifeied in order to train construction technician aware and knowledgeable on building standards and criteria of a safe building.
d. **Social and cultural aspects of earthquake:**
   "Social Science" books of 3rd and 7th grades and "Persian Literature" book of the 8th grade look at earthquake from social and literature point of views with the aim of creating self confidence and proper social behavior at the time ofearthquake.

Figure 5 show some of the textbooks. To train the teachers of these courses, "Teachers Guidebook" has been published for the use of teachers as well as special training program are being operated annually in each regional education offices.
This nationwide program has been achieved with the close cooperation of the Ministry of Education, which set an example for other agencies that their cooperation will add awareness and safety.

Figure 5: Various example of high school textbook and teacher's guide

4.2. Informal Education

To complement the formal education, several activities have been designed and being implemented for the students within the schools and outside in the form of publication, drawing exhibition, writing competition, children safety campaign, safety drill, etc. It should be noted that the program has been benefited from the maximum participation of the educational, social, cultural, media and NGO's for the successful implementation of the activities. Following section provides some of the work that has been achieved.

4.2.1. *Publications*

Beside the textbook material which is accessible to all of the schools children, other educational publications on understanding earthquake phenomenon using simple science, preparedness have been published for various age and class in the forms of workbooks, booklets, brochures, and education-aid materials. Some of them are: *"E for Earthquake"* designed for the k-3 level with painting and puzzles; *"Earthquakes: Understanding the Earthquake phenomenon"* designed for the secondary school level, introduces simple experimental work and games for understanding the earthquake science; *"What to do during earthquake in School"* describes simple guidelines for what to do and not to do during earthquake; *"Earthquake Hazards Reduction at Educational Institutions"*; etc. Some of these publications have been translated into English and shown in Figure 6.

Figure 6: Informal Educational Publications

4.2.2. *Drawing Competition and Exhibitions*

To promote and encourage awareness among children and youth, drawing exhibitions and competitions with the following objectives has proven to be an effective media:

- Investigating the ideas and conceptions of the students about the earthquake phenomenon;
- Considering the effectiveness of previous educations; and
- Creating incentive for understanding of earthquake and its effects.

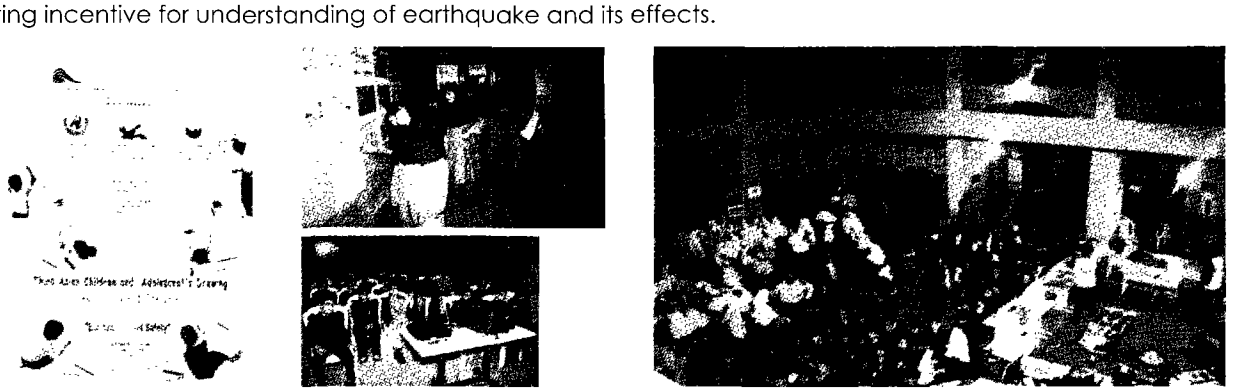


Figure 7: Picture showing the student participation in the Exhibition

Since 1992, bi-annual contest entitled: *"Earthquake and Safety"* are being held. The one week exhibition of the selected drawing along with side activities (games, play, science, etc.) designed for different age group (will provide an exciting and attractive occasion for raising the children awareness and preparedness level. The assessment study on the children knowledge and awareness level before and after the program shows the effectiveness of these kinds of activities. With the objective of showing to the children that the earthquake safety is an international issue and it is not because they live in Iran, the drawing competition and exhibitions are held in the Asian level with the cooperation of local organizations as well as by UNESCO, UNICEF, IDNDR, UN/ISDR, etc.

4.2.3. *Writing Competition*

To enhance safety culture among adolescent, bi-annual writing competition with different theme such as *"Earthquake Reduction", "Earthquake and Safety", "Earthquake Preparedness"* with the following topics have been held since 1998:

- Describe earthquake in the form of a fictitious story.
- If you were the mayor of city, how would you make your city safe against earthquakes?
- What is if there is no access to mass media in the case of an earthquake? Write a story about the effects it may cause on people.
- The cooperation of young adults in earthquake hazard mitigation.
- What is the role of hospitals, fire stations and Red Crescent Society of Islamic Republic of Iran in disaster management after an earthquake?
- Suppose you are the principal of a school, how would you attract the attention of the students for cooperating in earthquake programs?
- What is the role of safety earthquake drills?
- What do you expect as a citizen from the responsible authorities for hazard mitigation plans?
- What would you do in the case of a major earthquake?
- What is your idea about earthquake prediction?

Many useful ideas were drawn from these writing which some of them were used for improving the public awareness program, opening dialog with people and understanding their view. The articles are getting published in the proceeding and best papers get awarded in a ceremony which encourage the children for better understanding and learning.

4.2.4. *Earthquake and Safety Workshops*

Every year, on the occasion of the National week of natural disaster reduction in Iran (week of October 11), Earthquake and Safety workshops are being held with the following goals:

- ncreasing students, and teachers, awareness about earthquake.
- Teaching the proper reactions and sheltering in the time of earthquake.
- Knowing the scientific principles about the earth and earthquake.

The education process in the workshop is direct and face to face, using the medium and materials such as computer seawares, video clips, audio cassettes, poems, drawings, games and etc. had been welcomed by the students, family and teachers, since it provide an attractive atmosphere for learning. Figure 8 shows some of the scene from the workshop in 2003.

Figure 8: Scene from the children earthquake safety workshop in Tehran

4.2.5. *Posters*

Posters in schools and homes with the objective of delivering the short and continuous message are an effective media to relay the quick safety message. Posters such as: *"What to do During an Earthquake"* for K-6; *"Earthquake Safety Provisions in Schools"*; *"Safety and Earthquake"* for the 6 to 12 grade with the wide coverage have been distributed. See Figure 9.

4.2.6. *School's Earthquake Safety Councils*

To benefit the maximum participation and cooperation of the students and their parents toward the improvement of the school safety, the "School Earthquake Safety Council" based on the guideline given the 8th grade "Earthquake Preparedness" book with the following teams are being formed in schools: Nonstructural element safety team; Search and rescue team; First Aid team; and Fire Safety team. This council with the help of "Teachers and Parents Councils" and using the volunteer parent's expertise aims to improve the school preparedness level. This project has been started optionally in a few schools in each city and it is expected to be expanded throughout the country.

Figure 9: Educational Poster for Children

4.2.7 *Earthquake Safety Drills*

To transfer the theoretical or textbooks learning into practice and prepare them for the appropriate and quick responses during and after earthquake. The annual "Safety Drill" program in school has been designed by IIEES with the main objectives of: improving and increasing the children's skills, response and preparedness as well as becoming a safety messengers in their homes and family.

The idea was first tested in 1997 in 3 high schools in Tehran; followed by the second drill in 1059 high schools in Tehran. After the comprehensive evaluation of the first two drills and revision of the program, the third drill was carried in 15,499 Tehran's high schools simultaneously in 1999. Table (1) illustrates the expansion process of the safety drill in schools. Learning from every year experience, the quality of drills and the effective participation of the schools and students have been improved.

Considering that the drills are carried out simultaneously throughout the country, for coordination, cooperation and participation purposes, the "School Safety Drill" council consisting of the representative of Ministry of Education, Ministry of Science, Research and Technology, Ministry of Interior, Iran's Broadcasting organization, Iran's Red Crescent organization and IIEES have been formed for successful implementation of the drills. The process of the preparation and holding drill are as follows:

- Preparing the earthquake drill guidelines for all schools, see Figure 10.
- Producing the educational posters and sending to the schools, see Figure 10.
- Broadcasting different scientific and educational programs about earthquake and safety in radio and TV channels from one week before the drill.
- Delivering the "Earthquake and Safety" message by the students in each school.
- Broadcasting special program about the drill on November 29 from national and regional radio.
- Broadcasting the "Earthquake & Safety" alarm from the national and regional radio for 30 seconds to start the national drill in all schools.
- Performing the correct sheltering "Drop, Cover and Hold" by the students in 30 seconds and evacuation after the drill.

Figure 10: Posters and drill operation guideline for the various annual Earthquake Safety drill

The drills are being implemented with the full cooperation of all organizations and schools on the morning of 28th of November of each year. The 6th safety drill was held with the participation of around 16 million students from 120,000 schools in the presence of the Ministers of Education, Science-research and Technology in Tehran and local officials in every single town and villages in Iran. Figure 10 show some of the scene of the drill. Section 4 describes the effectiveness of the drill.

Figure 11: Various scene of the "Earthquake Safety Drill"

4.2.8 *Continuous Education Courses*

Another effective direct method of education is offering continual education courses for all the employees of the Ministry of Education. The main purposes of these courses could be defined as enhancing the knowledge of teachers and their ability to transfer this knowledge to others. Special books and video tape have been produced especially for the teachers. IIEES had organized various training program for the head teachers.

Table 1. Development process of the School Earthquake Safety Drill

	Year	Shool Level	No of schools	Overall No of students	No of boys	No of girls	Location
First trial Drill	1996	Primary school	5	1,000	600	400	Tehran
Second trial Drill	1997	High school	3	-	-	-	Tehran
Tehran Training Drill	1998	High school	1,059	527,237	266,890	260,480	Tehran
First National Drill	1999	High school	15,499	4,580,688	2,324,907	2,255,781	National
Second National Drill	2000	Secondary & High school	45,000	11,000,000	5,776,000	5,224,000	National
Third National Drill	2001	Secondary & High school	48,000	11,800,000	6,176,000	5,624,000	National
Fourth National Drill	2002	Secondary & High school	50,000	12,000,000	6,500,000	5,500,000	National
Fifth National Drill	2003	All levels	110,000	16,027,000	8,297,000	7,730,000	National
Special Post Bam Earthquake	Feb. 2004	All levels	110,000	16,000,000	8,300,000	7,700,000	National
Sixth National Drill	2004	All levels	120,000	15,700,000	8,100,000	7,600,000	National

Note: The Number of schools and students has been rounded up

5. POST EARTHQUAKE EXPERIENCE

To assess the level of preparedness and effectiveness of the public education program, several studies has been performed. Table 2 shows the status of the children knowledge on what is earthquake. When this is compared with the past, it is a great change. Table 3 and 4 show how the education affected the people of the two small towns during Ardekul and Ardebil earthquake of 1999. Also the post Bam earthquake assessment shows that more than 250 children could save their lives by taking the appropriate measures which have learned in schools.

Table 2: Children Understanding on Earthquake Phenomenon

What is Earthquake	Aged 6-8	Aged 9-12	**Aged 13-15**
I don't know	14.8	8.6	**5.9**
Destroys the Buildings	24.9	22.4	**16.7**
Ground ruptures	6.9	8.6	**12.1**
Ground motion	32.1	38.6	**39.5**
People die or get injured	6.8	9.5	**8.3**
It is terrifying and dangerous	1.7	1.7	**3.6**
It is natural phenomenon	5.9	7.2	**11.6**
It is because of volcano	-	2.1	**1.8**
Irrelevant answers	**6.9**	**1.3**	**0.5**

Table 3: The relation between sex and the first action taken at the time of the earthquake in Ardekul

Sex	Going out doors	Running away	Helping children	Taking shelter	I do not know	None	Total
Male	57	102	66	21	15	14	275
Row percentage	20.7	37.1	24	7.6	5.5	5.1	50.1
Column percent	51.8	56.7	44	51.7	57.7	33.3	
Female	53	78	84	20	11	28	274
Row percentage	19.3	28.5	30.7	7.3	4	10.2	49.9
Column percent	48.2	43.4	56	48.8	42.3	66.7	
Total number	110	180	150	41	26	42	549
percentage	20	32.8	27.3	7.5	4.7	7.7	100

Table 4: The relation between sex and the first action taken at the time of the earthquake in Ardebil

Sex	Going out doors	Running away	Praying	Taking out the animals	Helping others	Others	Taking shelter in safe places of house	Total
Male	223	33	4	5	90	164	6	525
Row percentage	42.5	6.3	0.8	1	17.1	31.2	1.1	
Column percent	76.6	58.9	80	100	87.4	81.2	75	78.4
Female	68	23	1		13	38	2	145
Row percentage	46.9	15.97	7		9	26.2	1.4	
Column percent	23.4	41.1	20		12.6	18.8	25	21.6
Total number	291	56	5	5	103	302	8	670
percentage	43.4	8.4	0.7	0.7	15.4	30.1	1.2	100

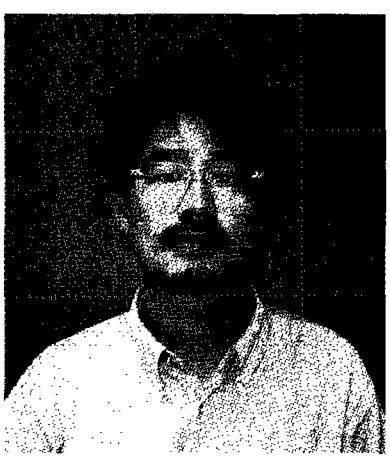
6. CONCLUSION

Development, construction, building or "Abadani in Persian" are popular and attractive word among public, decision-makers and specially politicians since it shows life and moving to the future. Thus it has been envisaged that the promotion of knowledge and awareness to be compatible and along with hope, life, development and financial benefit, instead of creating fear, death, disaster, disappointment, etc. With this objective and strategy, it has been tried to increase the knowledge of the general public, specially the children toward the acceptance and understanding of the earthquake facts and believing on the safety and move toward preparedness and risk reduction. Overall assessment, without any doubt, shows that people of Iran are much more aware and concern than in the past.
If there is a success in risk mitigation program, it is definitely due to the consideration of this fact and believing on the important effect on safety on their lives

Activities to Create the New Trend of the Disaster Mitigation Education by the Students of the Environment and Disaster Mitigation Course of Maiko High School

Seiji Suwa
Environment and Disaster Mitigation Course
Maiko High School, Kobe, Japan

Seiji Suwa is currently the teacher of the Maiko High School of Kobe, Japan. Born in Akashi, near Kobe, he graduated from the Okayama University, and became a teacher in the Kobe Commercial High School in 1982, and then joined Maiko High School in 1994. After the Great Hanshin Awaji Earthquake of 1995 of Kobe, Seiji Suwa was deeply involved in the reconstruction process, along with his students. This leads to the establishment of the Environment and Disaster Mitigation Course in 2002, which is the first of its kind in Japan. Seiji Suwa's innovative approach of teaching through participatory process made him popular among the students. His active involvement and contribution in the field of disaster education has been recognized by Japan and different other countries in Asia.



ABSTRACT

Brief background of the Environment and Disaster Mitigation Course at Maiko High School is mentioned, referring to the Great Hanshin-Awaji Disaster. The purpose of the disaster mitigation education is explained. It is emphasized that two environment, natural environment and social environment, are the important factors of the disaster mitigation education. The purpose of the education is concluded to raise the citizens with the capacity to cope with the disasters. The important factors of the citizens' capacity are the fundamental knowledge, the fundamental skills and the strong will. To raise these factors in the students, many activities are done at Maiko High School. Some examples of the educational activities are introduced and the imitation of these activities is encouraged in other schools. At the end, we point out three important lessons we learned during the course of the disaster mitigation education; to utilize the human resources, to have the students learn by experiences, and to make the dual network, the network of the teachers and the students and that of those who have something to do with disaster management.

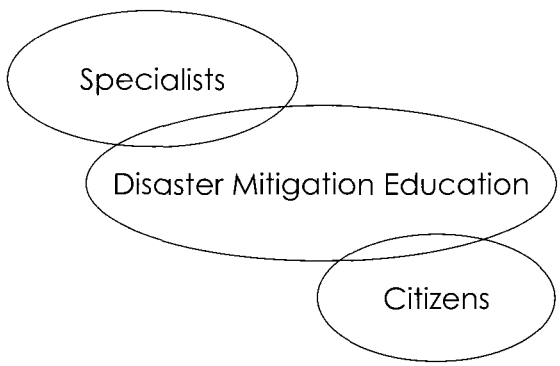
1. BACKGROUND

Kobe and the surrounding cities and towns were struck by a strong earthquake in the early morning on 17 January 1995. It is said that more than 90% of the people killed by the Hanshin-Awaji Disaster lost their lives within 30 minutes just after the earthquake took place. It is also said that more than 80% of the saved people were rescued by the neighboring citizens, not by the soldiers of Japan Self-Defense Force or the rescue teams of fire bureau. Fire fighters could not extinguish all the fires that morning because the city caught fires in too many places at the same time, which was beyond the capacity of the fire fighters. The stop of the water supply also made it impossible to put out the fires. I believe from these facts that the most important lesson of the Great Hanshin-Awaji Disaster is that the citizens noticed for the first time that the lives of the citizens should be protected by the citizens themselves. For the citizens who had thought that the soldiers of the Japan Self-Defense Force or the rescue teams of the fire stations would manage to rescue them, the Great Hanshin-Awaji Disaster was the crucial event that made them realize how little they were aware and prepared.

The disaster imposed a lot of lessons to tackle on the national and local governments, the fire bureau and rescue sections, the Japan Self Defense Force, the specialists at universities and even the ordinary citizens. The necessity and importance of the education was pointed out and the new trend of the disaster mitigation education started in Hyogo Prefecture. In April 2002 Maiko High School started a special course where the students major in the disaster mitigation, utilizing the lessons of the Great Hanshin-Awaji Disaster. The half of this paper is about the examples of the educational activities we have done so far.

2. THE POINTS OF THE DISASTER MITIGATION EDUCATION

We think of two environments; natural environment and social environment. The disasters are caused by the combination of these environments. If we learn the mechanism of the earthquake, or know the direction of the typhoon, for example, we will be more aware of the disaster and well prepared for it. Nobody will die by the earthquake of the Japanese seismic scale 5 in Japan, but many people may lose their lives in the developing countries by the earthquake of the same scale. It is easy to find the influence of the social factors there. The students will notice that learning the social factors is related to learning disaster mitigation. It seems to be impossible to let 100 specialists live in one town with the population of 10,000 in order to make the city strong enough to cope with the disaster more functionally. But if every citizen advances a little in the disaster mitigation, the capacity of the city to cope with the disaster increases drastically. What takes an important role to advance the citizens' ability, skills and will to cope with the disaster is "the disaster mitigation education."



The disaster mitigation education is the citizens' education. I have mentioned that the most important lesson of the Great Hanshin-Awaji Disaster is that the citizens noticed for the first time that the lives of the citizens should be protected by the citizens themselves. Then, how the citizens protect themselves? This is the point that the disaster mitigation education takes an important role. It is reported that the specialists had indicated the possibility of the strong earthquake in Kobe area. Most of the citizens, however, didn't know the fact. The fact was only known to the specialists and the insurance companies. Some say that the old houses must be replaced with the newly built houses but ordinary people don't have enough money. Others say that the retrofit of the fragile houses is urgent but the language of the specialists is too difficult for the ordinary citizens to understand. There was the distance between the specialists and the citizens before the great Hanshin-Awaji Disaster. There was a missing ring between the specialists and the citizens as shown in the chart. And I believe that it is the disaster mitigation education that can connect the two rings.

3. GOAL AND OBJECTIVES OF THE PROGRAM

The disaster mitigation education in Japan so far only focused on how to escape from the disaster just after the disaster takes place. Evacuation drill at school is a good example. Now the focus of the disaster mitigation, however, is sifting from "emergency management" to "preparation." The focus of the education also needs to shift in this direction of

preparedness. The simple but ultimate goal of the course is to raise the citizens with the capacity to cope with the disasters not only during the disaster but also after and before the disaster. The important factors are mentioned before as the fundamental knowledge, the fundamental skills and the strong will. To make the students acquire the three factors we set the objectives as following.

A) The education of disaster mitigation is based on the lessons of the Great Hanshin-Awaji Disaster. It makes the students think of the importance of life, cultivates the students' power against disasters, and brings up the human beings who can contribute to our society.

B) The students are expected to understand deeply about the two environments (the natural environment and the social environment) by learning the mechanism of the natural phenomenon and the relationship between disasters and human society.

C) We cooperate with universities, research institutes and related organizations. Students' understanding of the environment and disaster mitigation is deepened through the experience learning. To raise the students' attitude to "Think Globally, Act Locally" is one of the main goals to attain. We aim to bring up the individuals who can take actions independently.

4. ENCOURAGEMENT OF THE IMITATION OF THE EDUCATIONAL ACTIVITIES DONE AT MAIKO HIGH SCHOOL

The Environment and Disaster Mitigation Course at Maiko High School is the course to study the disasters and how to cope with the disasters. Many other schools have to learn disaster mitigation in a very limited time. It seems hard for the other general courses to do everything we do at Maiko High School. At the special course of Maiko High School, on the other hand, we can use about 1/3 of the lessons to the disaster mitigation education. That's why we can try as various activities as possible. It seems possible, however, for the other schools to choose one or two activities done at Maiko High School and arrange them by adding the disasters and the culture of the area. This enables any school to implement the disaster mitigation education. This passage is written with such purpose. In this passage the topics such as the mechanism of the earthquake, volcanoes, weather, and so on (they are all related to the natural environment) are omitted because there are a lot of textbooks to teach these topics. What is written here is something to do with the social environment.

5. EXAMPLES OF THE EDUCATIONAL ACTIVITIES

The disaster mitigation education at Maiko High School is not a temporary trial but expected to continue and spread to the local, national and international level as the model for the new challengers in this field. We have implemented many activities during the 2 1/2 years after the start of the course and we hope to produce more and more examples of the activities of the disaster mitigation education. The education can be categorized into two fields; the social environment and the natural environment. The education of the natural environment is done a lot in Japan in such subjects as geology, geography and environment; the mechanism of the earthquake, the inside of the Earth, the volcanoes, and so on. On the other hand, the education of the social environment concerning the disasters can not be seen in most classrooms. That is why the activities concerning the social environment are mainly listed below.

All the examples of the educational activities were really offered to the high school students but it is possible to practice the same activities to the pupils of elementary schools and the students of junior high schools by arranging the degree of the contents. All the activities here are the materials or the ingredients. How to cook them depends on the teachers. It is recommended to arrange them according to the ages of the students and the actual conditions of the school and the area.

- The Memorial Event of the Great Hanshin-Awaji Disaster
- International Exchange Program with NSET-Nepal and the Students in Nepal (Kobe-Katmandu Exchange Program with the Help of UNCRD and NSET-Nepal)
- Speeches by those who Experienced the Great Hanshin-Awaji Disaster
- Learning at Disaster Museums
- Simulation to Cope with the Disaster
- Making of "Safety Map" of the Area
- Simulation Using the Map
- Disaster Management of my House
- Making of "Wall Newspaper
- Town Walking in the Disaster Area
- Field Work at Mt. Rokko
- Writing the Experiences of the Earthquake
- Making of "Concept Map"
- Making of "Related Map of the Disaster"
- Disaster Imagination Game
- Simulation by Role Playing
- Disaster Management of a Fictitious Town
- Making of "World Hazard Map"
- Ten Ideas to Make Community Safer
- Teaching the Pupils at an Elementary School

5.1. Speeches by those who Experienced the Great Hanshin-Awaji Disaster

Educational Purpose

To have the students realize the importance of human lives, the splendidness of helping each others, and the human wisdom during the recovery from the disaster.

Procedure

Many guests are invited to school to talk what they experienced during the disaster and what they are now doing to cope with the next disaster.

Results

* The students realize the importance of human lives and the splendidness of helping each others by hearing the stories by the guests. Teachers don't need to emphasize them by the superficial moral education.
* The students learn the importance of the preparedness by the stories of real experiences, such as the insufficient preparedness, the terrible damages and the fearful feeling of the disaster, and so on.
* The students learn the human wisdom and ability by the real stories.

5.2. Learning at Disaster Museums

Educational Purpose

To have the students learn the real situations of the disasters by the exhibitions. They will be interested in the disaster mitigation through the special lessons done by the specialists there.

Procedure

The students visit the disaster museums. They see the exhibitions, hear the stories, and make a report about what they learn at the museum.

Results

* The students will be more interested in the disaster mitigation.
* They can feel the dreadfulness of the disasters.
* They come to know the regional disaster and learn the splendidness of human beings to cope with the disaster.

5.3. Making of "Concept Map"

Educational Purpose

To have the students learn that the natural environment and the social environment are closely related to each other when the disasters take place.

Procedure

First, write "EARTHQUAKE" in the middle of a large paper. Then write as many topics as possible around "EARTHQUAKE, such as "fire", "life line", "collapse of the building", "volunteers", and so on. Connect the topics to each other and add your comments on the tasks, problems, how to improve them, and so on.

Results

* Making this map enables the students to make their vague image of the disaster into concrete one.
* It is possible to compare the map drawn at the beginning of the lesson with the one at the end of the lesson. The students, who hardly draw the map before a certain period of learning start, can draw much more complicated map at the end of the lesson.

5.4. Simulation to Cope with the Disaster

Educational Purpose

To have the students think how they act at the time of the disaster. It raises the students' awareness toward the preparedness.

Procedure

The time is set horizontally from "the taking place of the earthquake", "ten minutes after the earthquake", "30 minutes", "1 hour", "2 hours",...,"1 day", "2 days", ..., "1 week", "1 month"...

24 hours of the day is set vertically.

The students are requested to fill in the blanks by writing where they are and what they will be doing at the certain time of the day.

Results

* The students realize that they spend most of the time of a day at home. They will be aware that the disaster management at home is necessary.
* The students come to know the wisdom of the human beings and the necessity of helping each other during the process of the emergent management and the recovery.
* It is possible to confirm the results of the study when this is done twice, before the certain periods of the learning and after the learning.

5.5. Making of "Related Map of the Disaster"

Educational Purpose

To have the students realize that the degree of the disaster are strongly influenced both by the natural phenomenon and by the social environment (vulnerability).

Procedure

Use a wide paper. Write "the Great Hanshin-Awaji Disaster" at the 1/3 from the top of the paper. Upper side of the "the Great Hanshin-Awaji Disaster" is the social environment before the disaster takes place. The lower side is the society after the earthquake. Write and draw as many social factors as possible in the "before the disaster" part (traffic, buildings, population, fire bureau, life line, and so on) in the flow chart. In the "after the earthquake" part, write and draw the damages and the problems during the process of the emergency management and the recovery.

Results

* The students learn the complexity of the society and the difficulty of the disaster mitigation.
* The students think what they can do in the complex society.

5.6. Making of "Safety Map" of the Region

Educational Purpose

To have the students know the community they live in. To have them think what they can do in the community.

Procedure

The students are divided into small groups and walk around the community, finding the dangerous places, the evacuation places, the fire extinguishers, and so on. The places they can boast are also checked. It is important for the people in the community to know that their community has not only dangerous places but also good places. They take the pictures. After the walking they put the pictures on the map, write some comments, and draw some illustrated pictures.

Results

* The students come to know the community better.
* Walking with the people in the same community will facilitate the communication among the neighbors.
* This will facilitate people to take part in the disaster drills, enable the school to invite the regional people to school, and to run the shelter at school more smoothly at the time of the disaster.

5.7. Disaster Imagination Game

Educational Purpose

To have the students simulate the disaster and find the problems their community have, what they can do at the time of the disaster.

Procedure

(A) Simulation using the map

Use the "Safety Map" the students made. Cover the map with the transparent vinyl for the repeated writing and erasing. The teacher is the coordinator. First set the situation like "A strong earthquake took place in this area." The teacher gives the information such as "Fire took place at 3 houses in the town", "300 people are evacuating at school", and so on. Each piece of information is given according to the time table. The students discuss how to cope with the situation. The process of the discussion is recorded and the tasks will be discussed at the end of the simulation. After the discussion the students are requested to make the presentation.

(B) Simulation by the role playing

The students are divided into some groups, taking the role of the fire station, police station, the school running the shelter, NPO, the city office, the educational board, and so on. The teacher is the coordinator. First set the situation like "A strong earthquake took place in this area." The teacher gives the information such as "Fire took place at 3 houses in the town", "300 people are evacuating at school", and so on. Each piece of information is given according to the time table. Some information is given to a group but not given to another groups. The communication among the groups is permitted. The students discuss how to cope with the situation. The process of the discussion is recorded and the tasks will be discussed at the end of the simulation. After the discussion the students are requested to make the presentation

Results

* The students learn that it is important to help each other.
* They learn that each organization is strongly connected to each other at the time of disaster.
* They think of the weak points of the community.
* It is impossible and not recommended for all the citizens to experience the real disaster. This kind of the virtual experience is necessary to know how to act at the time of the disaster.

5.8. Disaster Management of my House

Educational Purpose

To have the students realize that it is most important to protect their own lives by themselves. The students will know that it is necessary to build the earthquake-proof houses and to fix the furniture to the wall.

Procedure

First the students learn that more than 90% of the victims of the Great Hanshin-Awaji Disaster were pressed dead under the collapsed houses 15-30minutes just after the earthquake took place. Then they draw the map of their house and diagnose their house. After that they draw the blueprint of the earthquake-proof house by modifying their own house. They make the document of the disaster management of their home, such as the root and the place to evacuate, the emergency bag, and so on.

Results

* The students learn that the construction of the earthquake-proof houses and the fixing of the furniture to the wall is the first step to protect them from the earthquake.
* The disaster management becomes the topic of the family.

5.9. Disaster Management of a Fictitious Town

Educational Purpose

To consolidate the knowledge of geography, geology and disasters.

Procedure

The students make a fictitious town by themselves. The necessary factors are the natural environment, population, industry, infrastructures, and so on. They think of the disaster management manual of the town to cope with the disasters.

Results

* The students need the integrated knowledge of geography, geology, and social studies. Thus they can relate these subjects to each other.
* They love the town they made themselves. The important factor of the citizens is this attitude to love their own town.
* The students think of the disaster management totally.
* The university students who majors in the disaster management will be able to make a quite complicated manual while the elementary school children can draw the map of the area and write their opinion on the map. This activity can be used to every age according to their degree of the study. The younger the students are, the more focused on the motivation, while the older the students grow, the more complicated the contents will be.

5.10. Making of "Wall Newspaper"

Educational Purpose

To have the students consolidate what they have learned by making the wall newspaper. Presentation using the wall newspaper will cultivate their positive and active attitude towards the presentation.

Procedure

First, set the tasks. For example, divide the students into some groups and give them the tasks to tackle with, such as "fire bureau", "life line", "school shelters", "volunteer", and so on. Each group make a wall newspaper and present what they have learned using the wall newspaper. The presentation will be evaluated by the students themselves.

Results

* The contents they have learned will be consolidated.
* The ability to present will be raised.

* The mutual evaluation will help the students find what they have to learn more. They can set the tasks again and keep on studying to solve the problems.

5.11. Making of the "World Hazard Map"

Educational Purpose

To have the students know that there are many kinds of disasters all over the world.

Procedure

The students study the disasters all over the world by the internet or the books. They draw a world map and write down what they learned on the map.

Results

The students learn that besides the earthquake and the volcanoes which are characteristic of Japanese disasters there a lot of other disasters all over the world.

The students realize that most of the disasters take place in the developing countries, especially in Asia. They think what the international contribution should be.

5.12. Town Walking in the Disaster Area

Educational Purpose

To have the students feel the atmosphere of the disaster area, which seems impossible to feel by the internet or the books. The students are requested to talk with the citizens there and come to know the problems that the citizens still have, even some years after the disaster.

Procedure

Before the students start walking, they learn the history and the degree of the damage by the internet and the books. The make a group of 4-5 students and discuss what they want to ask to the citizens of the target town. Then they walk around the target area and ask questions to the people. After the walking the students make a report.

Results

* The students know the way of thinking which is impossible to know by the internet, the books, and the mass media.
* The study of the history and the degree of the damage of the town before walking help the students watch the community in a different way.
* Through the interview to the adults in the target area the students learn the manner to come in contact with others and cultivate the attitude to listen carefully to the others.

5.13. Ten Ideas to Make Community Safer

Educational Purpose

To have the students think of the collaboration of the citizens, NGOs and NPOs, public administrations, and the specialists.

Procedure

After learning about "community" by the articles of the newspaper or the books, the students think of the 10 important factors to make the community safer. They present their 10 ideas by the PowerPoint.

Results

* The students think of the citizen-centered community making.
* The students get the attitude to present properly.

5.14. Field Work at Mt. Rokko

Educational Purpose

To help the students connect the knowledge they have learned with the experience by visiting Mt. Rokko, which is located in Kobe and famous for its beautiful greens, its active faults, its steep peaks, its rapid streams which sometimes causes floods.

Procedure

The students learn Mt. Rokko from the point of both natural environment and social environment. They especially focus on the Great Hanshin-Awaji Disaster and the Great Hanshin Flood. After this successive study of Mt. Rokko and the two disasters, the students visit the mountain area to observe the active faults, rapid streams, and so on. The students make a report after the observation.

Results

The students can connect the natural environment (by the study of the subject "Environment and Science") with the social environment (by the study of the subject "Disasters and Human Beings").

5.15. Learning with the Different Ages

Educational Purpose

In order to record the experiences of the Great Hanshin-Awaji Disaster the high school students talk their experiences to the pupils of an elementary school nearby.

The high school students teach the children what they learned at high school. Teaching small children is very difficult but helpful for the high school students to deepen their knowledge and work out the device for the children's better understanding.

Grade	2002	2003
3rd	Safety Map Making	Safety Map Making
4th	Story telling: Experiences of the Great Hanshin-Awaji Disaster How to Prepare for the coming earthquake	Story telling: Experiences of the Great Hanshin-Awaji Disaster How to Prepare for the coming earthquake
5th	The great Hanshin Flood	
6th	Story telling: Experiences of the Great Hanshin-Awaji Disaster How to Prepare for the coming earthquake	Earthquake and Volcano

5.16. The Memorial Event of the Great Hanshin-Awaji Disaster

Educational Purpose

To convey the experiences of the Great Hanshin-Awaji Disaster.

To show to the society that young people are sincerely tackling the disaster management. This will help the development of the young people-centered, the citizens-centered disaster mitigation.

Procedure

Pupils and the students are invited to Maiko High School from the elementary school and the junior high school nearby. More than 1,000 people take part in this event. Memorial speech is given to all of the audience. About 20 workshops are held and the participants visit the room to listen to the experiences of the earthquake by the specialists, official administrators, volunteers, doctors, fire fighters, policemen, students, and so on. The high school students of the Environment and Disaster Mitigation Course are the staffs to run the workshop, to teach the children through the quizzes, or to give presentations. The demonstration of the emergency cooking for 1,000 people is done at the school yard by the students, teachers, and parents with the help on Japanese Self-Defense Force. The recording booklet is made by the teachers and students. The contents are also published on the Home Page.

Results

* The students learn the importance of lives and the splendidness of helping each others.
* The place is given to those who want to talk about their experiences. This is very important to keep conveying the lessons of the disaster.
* The booklet and Home Page can be used as the teaching materials of the disaster mitigation education.

5.17. Writing the Experiences of the Earthquake

Educational Purpose

It is always pointed out that it is very important and necessary to talk the experiences of the disaster to the people outside of the area, to the nation wide, to the world wide, and to the next generation. One of the purposes of this activity is to convey the experiences of the children those days to the world. If this kind of activities were not done, the experiences of the children would never be conveyed to the world. To protect the children from the disasters we must know what the children saw, thought and did those days.

Procedure

The students remind the experiences by talking with the parents, the neighbors, the teachers and write them in an essay.

Results

* The booklet let the grown-ups learn what the children those days were thinking. This would facilitate the disaster management to protect the children.
* This is a very rare record. Many organizations and the individuals pay high attention to this booklet. That means the attention to the disaster management rises.

The outcomes of those education mentioned above are sometimes presented at the workshops and seminars held by the administrations, NGOs and NPOs. Presentation itself is a good stimulus both to improve and deepen their students' studies and to make people more aware of the disaster mitigation.

6. MAJOR ACHIEVEMENTS

The goal and objectives of this course is to raise the students who have the capacity to cope with the disaster and the attitude to contribute to the society. We can safely say that this goal is well attained by the most of the students. Many of them are more interested in the disaster management and participate in the volunteer activities, the seminars and workshops of the disaster mitigation, and the evacuation drills done in the small communities nearby.

To expand the disaster mitigation education is another goal and this goal is partly attained by being noticed by the disaster section of the local and national governments, the specialist of the disaster management, the fire fighters, the mass media, the NGOs and NPOs, and the ordinary citizens.

7. LESSONS LEARNED AND CHALLENGES

From our activities we learned that there are a lot of people who want to change the situation by teaching the children but they are not given the opportunities to do so. This made us realize that one of the teachers' important roles is to connect these people with the daily activities of school. Once they are given the chance, they are sure to tell meaningful stories and the stories surely change the students a lot.

Another lesson is that experiences take a very important role in the education. We let the students learn by experiences; listening to the stories by the guest teachers, visiting the relevant places, making interviews in the streets, presenting their opinions to the public, making the wall newspapers, walking around the town to make the "Safety Map", and so on.

Most teachers still think that the disaster mitigation education is something special, something that bothers the teachers, and something that has nothing to do with the daily curriculum. We need to change these teachers and make them realize that the disaster mitigation education is deeply related to the daily life.

Maiko High School are now trying to make a dual network; a network of the teachers and schools to facilitate the disaster mitigation education, and a network of the local and national governments, specialists, the corporations, NGOs, NPOs to get more information and opportunities and utilize the human resources.

8. SUGGESTION FOR FUTURE ACTIONS

To extend the disaster mitigation education, a strong and wide network needs to be made not only by the teachers but also by the students, regional citizens, specialists, administrators, NGOs and NPOs and so on. Schools must open the school gate to welcome these people to let them give lessons of the disasters. School is an epitome of the society. People of many sections must be involved in the school activities. To implement this activity the teachers should make a drastic change in their attitude.

Pro-Active Risk Education Targeting Field Practitioners

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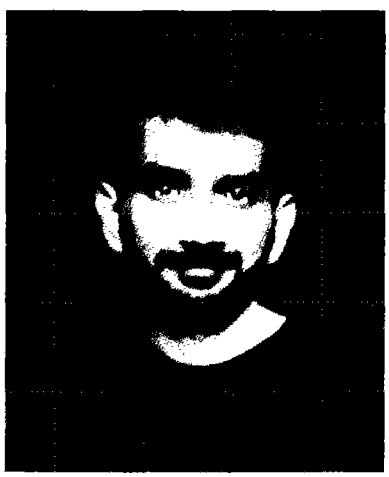
Anshu Sharma is trained as an urban planner and is presently holding the position of Programme Director in the Sustainable Environment and Ecological Development Society (SEEDS), a professional voluntary organization working in the area of community based disaster management in South Asia. The SEEDS team comprises a group of young professionals drawn from development related fields. SEEDS is currently working on community based disaster management programmes in India and Afghanistan. Interventions include risk mitigation planning, mason training, community leader training, school safety programmes, technology research and demonstrations, and knowledge resource generation. Anshu Sharma is involved in disaster management research and innovations in community based disaster mitigation programmes, including an initiative on linking universities and NGOs for extending education programmes to field practitioners.



ABSTRACT

A prerequisite for inculcating a culture of disaster prevention in communities is to start considering risk reduction as a developmental issue. Extensive awareness and education efforts will be required for this, engaging field practitioners who can act as intermediaries for influencing the way people prepare for, and react to, disasters. This is hard to achieve in the present situation since education on disaster management is neither accessible nor affordable for people in the field, particularly in developing societies.

There is therefore an unquestionable need to establish a new paradigm in disaster education – a model that will take this knowledge to the remotest of frontline workers who can make use of it, and in a manner that is easy to understand and imbibe. Appropriateness of content will have to be ensured through inclusion of knowledge from the field, local context, traditional wisdom, appropriate technologies, documentation, and case teaching methods.

The paper suggests that this can be best achieved through proactive measures for taking risk education to field practitioners rather than waiting for the practitioners to come to learning centres. Universities and NGOs have a key role to play in this initiative.

KEYWORDS

Community Based Disaster Management, Mainstreaming Risk Reduction, Culture of Disaster Prevention, Frontline Workers, Accessible and Affordable Disaster Education.

1. EDUCATING FOR COMMUNITY RISK REDUCTION

Mainstreaming of risk reduction, particularly in populous developing nations, can be achieved only by building community level human resource capacity in sustainable development and disaster management sectors. For this reason Risk Education is a critical theme that needs priority attention of the world development and disaster management community.

The world community took a first big step towards a safer world when they agreed upon the Yokohama strategy for disaster reduction in 1994. The strategy, which is one of the guiding principles for recent practice in disaster management planning, centres on the objective of saving human lives and protecting property. It calls for an accelerated implementation of a Plan of Action to be based on certain variables such as development of a culture of prevention as an essential component of an integrated approach to disaster reduction, adoption of a policy of self-reliance in each vulnerable country and community comprising capacity building as well as allocation and efficient use of resources, community participation in the disaster reduction process, improved risk assessment, broader monitoring and communication of forecasts and early warnings. It calls upon all countries to unequivocally give political commitment to reduce their vulnerability through appropriate means. Disaster prevention, mitigation and preparedness form the backbone for this.

However, the general approach in practice, particularly in the developing world, thus far has remained one of crisis management and fire-fighting, which stays primarily focused on post disaster action rather than pre-disaster preparedness. The expenditure on calamity relief and rehabilitation is high and mounting. And yet it is not enough to address even a fraction of the losses incurred. The Yokohama Strategy and other recent realizations indicate the need for a move towards risk reduction through mitigation and preparedness as a preferred line of action rather than continued focus on relief and rehabilitation. This approach will need much groundwork to be able to make a change in operational systems at field level. Prime amongst the needs is that of human resource development.

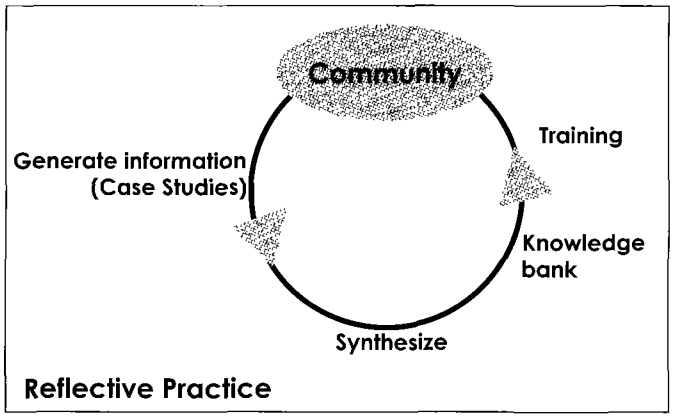
Though existing initiatives are commendable in terms of getting the disaster management training agenda visible, much remains to be done for ensuring field level impact of a scale that does justice to the dimensions of the problem. One critical view on many of the disaster education programmes currently available in the developing world has been that they are loosely organised and lack concise, comprehensive, locally appropriate and well structured content. Their scale is also too inadequate to have a significant impact at the field level. The programmes available through acclaimed international institutions are too expensive and logistically difficult to form the backbone of the field disaster management training structure of developing societies.

Other than this, lessons learnt thus far, and resultant human resource development initiatives taken up, have focused more on formal education in a top-down fashion. The tacit knowledge used, and useful, in frontline situations remains un-researched and unutilized at a wider scale for human resource development.

Risk reduction is a subject that needs to be mainstreamed in conventional and non-conventional education at all levels and in all streams. School education and higher education need to include disaster management as an integral part of their social studies and science curricula, and not merely as an add-on subject. In addition, training programmes need to be organised for specific inputs, and also for reaching out to the audiences not covered by formal education programmes. Much of this will take a long time to implement and to have an impact. The most urgent and quick impact solution is to educate field practitioners. They will use the education to improve their own performance in community work, and will sensitise communities to risk issues. Education of field practitioners can be achieved by transferring existing academic knowledge to them.

2. PRIME TARGET: FIELD PRACTITIONERS

The approach proposed is one of bridging the existing gap between knowledge and practice – knowledge as it exists in universities and research centres, and practices as is carried out in the field by community volunteers, NGO workers, and government field staff. The process needs to be one of learning from field practices, and feeding the lessons back to field practice in a reflective manner.



3. BASIC PRINCIPLES OF EDUCATING FIELD PRACTITIONERS

The process of educating field practitioners by linking knowledge and practice will need to adopt a multi-pronged strategy to address the various issues and their dimensions involved. Some basic steps are discussed below.

Include risk reduction in developmental planning

The approach should be one of mainstreaming risk reduction in currently prevalent developmental or even relief and rehabilitation programmes. Risk reduction calls for a change to safer development. As such, it forms part of the developmental domain, and has chances of much wider and sustained impact through it. For this, it is important to understand local needs of working professionals/NGOs for translating them into specific training curriculum.

Learn from experiences

Small initiatives in remote places, whether taken by governments, developmental agencies, voluntary groups, or communities themselves, provide the most practical inputs for any lesson learning exercise. Risk education thus needs to be based on case teaching methodologies, the content for which will come from a repository of case studies, focusing on good practices, collected from the field. Case studies may be documented in any medium suitable to field level learning – these may include radio programmes, street theatre, stories, photographs, songs and chants.

Innovate, adapt and transfer technology

Effective risk reduction finds its roots in simplification of complex issues and taking the science and technology of safe habitat planning to the people. Research on existing technology models, innovations and improvements, adaptation to local conditions and needs, and locally appropriate dissemination packaging are essential to make use of research and experience existing in the sector and transferring their benefits to communities who need them most.

Train through interaction and hands-on work

Training, particularly of field practitioners and community groups, is found to be most effective when carried out in an interactive and hands-on manner with live cases. A series of training packages can be designed accordingly (e.g. a three-day field-based workshop, a two-week in-house programme, use of the internet, audio-visual resources, radio and TV, or indeed 'on-the-job' training packs).

Motivate through certification, prestige and employment opportunities

The training programmes can be made very attractive if they carry certification from credible agencies such as UN bodies and appropriate centres of excellence with whose partnership the programme is being formulated and implemented. The certification will bring in credibility and motivational factors for encouraging participants. Appropriate certification and prestige building among communities will encourage community level entrepreneurs to enroll. Individuals once trained may be encouraged to become trainers, and also to increase their livelihood options due to upgraded skills.

Up-scale to global level through networking with international knowledge partners

Sustainability and up-scaling are key issues for risk reduction interventions. International centres of excellence can be instrumental in up-scaling the programme to a global level for delivery of trainings at any location and to any target audience through suitable networking with the closest knowledge centre, NGO and UN body. They may also offer credits for the certificate courses that may assist trainees in pursuing higher education at these centres.

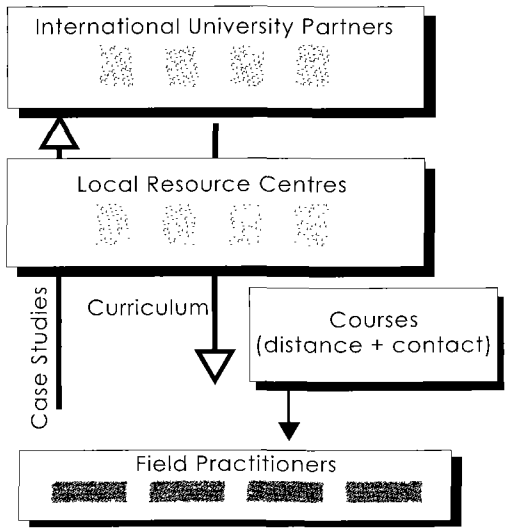
4. KNOWLEDGE BANKING AND THE OPEN LEARNING MODEL

The concept of `knowledge for all' is a starting point for this thought sequence. Knowledge is abundant in explicit forms such as books, but tacit knowledge such as that lying with frontline field practitioners and local communities does not get explained, documented or disseminated. The best method for tapping this tacit knowledge is through compilation of case studies of frontline situations and experiences. Knowledge banking and knowledge mapping are the means considered most appropriate for this purpose. A starting point for this will have to be to first map existing knowledge and conduct an audit of who is doing what and where.

The education initiative itself themselves may start with a foundation course for field workers. There may be focal points in partner organisations for their respective geographical areas. A university-NGO partnership may be founded to implement such courses. In the longer term, the courses can be best run through an active enterprise between all partners - local NGOs, UN agencies, universities, specialised units, media and government institutions.

The international university partners may interact at the highest level to ensure state-of-the-art content and a comprehensive coverage of thematic issues. The second level will be one of local resource centres that will act as ntermediaries for delivering educational programmes that have been isuitably adapted to local needs. The resource

centres will also run contact programmes in the field where live and hands-on learning will take place. This way the global as well as the local material will reach out to the field practitioners targeted under the initiative. As part of the course work, the participants will prepare and upload case studies from their local areas. This inflow of information will help resource centres and the international university partners to enrich their own knowledge base and also help create better and more suitable course content.



5. LEARNING TO PRACTICE

Besides enabling a user friendly process, practice can also provide best content that can then be used to design and implement educational programmes as illustrated in the open learning model. Content can be fitted into a logical tree or web, so designed as to accommodate new material in appropriate slots, and facilitate retrieval of material through a logical link management system. Course content can comprise a generic core explaining key concepts, selected fundamentals with general development themes illustrating vulnerability and capacity concepts, and a bank of electives in the form of case studies. According to this menu a course may be extracted from the bank using the core, selected appropriate fundamental modules, and a range of thematically and locally appropriate case studies.

Case study structure may be made consistent by treating the community action planning and rights based planning processes as guiding principles. It may follow the sequence of problem identification, possible solutions, prioritization, constraints, tradeoffs, anticipation of harm, livelihoods, obligations etc. This approach will ensure a learning process that stays firmly rooted to the ground.

6. INSTITUTIONALISING RISK EDUCATION

Though the education initiative is ground based, its establishment and delivery involves an intricate stakeholder web. The complexity brought about by the multi-level, multi-sectoral, multi-stakeholder approach makes it necessary to establish a stable institutional system for launching and operating such programmes. To begin with, developing societies with high vulnerability can initiate field based activities and northern knowledge centres can aid with programming support. The upcoming UN Decade for Education and Sustainable Development (2005-2014) will form an ideal platform for the launch of such activities. The first round of activities can be a linking of universities working in the field of disaster management with NGOs working in vulnerable communities. This partnership, further strengthened with the presence of UN agencies, can take risk education to frontline workers and communities. A recent pilot test of distance learning methodology under a partnership programme of the UN, World Bank and Asian universities and NGOs was a successful step in putting such an institutional system in place.

7. CREATING CONTENT AND REACHING BENEFICIARIES

With the system in place, the start-up task will be to create content and reach out to the beneficiaries. Intensive efforts are needed to be able to achieve this. It needs to be clearly appreciated that education combines formal and non-formal learning. A related issue is of appropriate adaptation of educational material to suit local needs. Mostly we are trying to cut and paste educational material prepared in developed countries with cosmetic changes. Case teaching method makes it amply clear that this approach is not sound and more work needs to be done to develop customised educational material for developing societies. Efforts have to be made for documentation of case studies, analysis of their learning value, and packaging of material in deliverable course modules.

Thereafter, widest possible outreach of the courses should be our highest priority. Ways need to be found to improve access and reduce the cost of education. This may be through improved targeting, with relevant incentives or through distance learning using internet sources via intermediaries. A combination of distance learning methods and contact programmes in the field will provide a balanced delivery mechanism to reach out to field practitioners. It will also ensure a mass scale yet maintain a personalised customisation that is based on local needs.

8. CONCLUSION

Education, training and public awareness are the foundation block of any sustainable disaster management strategy relevant to communities. All policies to reduce risk depend on the initiation and active support of trained and well informed individuals.

Recent efforts to move towards a regime of preparedness and mitigation have mostly focused on personnel at decision making levels, leaving a gap at the level of field practice. The task of educating field practitioners is a very difficult one given the problems of accessibility, affordability and appropriate medium.

There is a need to educate field operators on risk reduction issues through an experiential learning methodology. The content should be a mix of state-of-the-art global knowledge and tacit knowledge that resides in local traditional wisdom.

A partnership system linking international universities to NGOs with field presence can create an open learning model for delivering such education to field practitioners. The delivery will happen through a mix of distance learning and contact programmes. The system can also serve as a forum that will provide spontaneous communication as a medium to educate communities and community workers.

Higher Education and Education for Professionals

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ABSTRACT

The entire framework of higher education and formal and informal educational programmes from K to post-graduate to practice will be marshaled during the period 2005-2014, and beyond, to equip and engage professionals of every country in ongoing endeavors to build a culture of disaster resilience on a community scale. The long-term goal is to transform the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will in over 1 million communities into enlightenment and empowerment of professionals and organizations, enrichment of networks, and enablement of political will. This transformation will require the innovative integration of knowledge with human, fiscal resources, and political capital, and the sustained management of change for the greater good in a global perspective. To change professionals from uninformed to well informed; educational programmes from fragmented to integrated, and organizations from bounded and self-looking to seamless networks that are community focused, will require unprecedented cooperation, communication, coordination, collaboration, and creativity. These changes will not be easy or immediate, but they will happen as the "World's Mutual Fund for Education" is concentrated on the institutionalization of educational programmes that capture windows of opportunity to improve and accelerate every process within the educational framework. By 2014, professionals in every community will have had many opportunities to contribute to building a culture of resilience in their community to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

KEYWORDS

education, community disaster resilience, integrating knowledge, managing change, ignorance, apathy, disciplinary boundaries, lack of political will, enlightenment, empowerment, enrichment, enablement, Blueprints for Change, networks for community disaster resilience, World's Mutual Fund for Education.

1. INTRODUCTION

Education is an interactive process of mutual learning among the people and institutions involved in it for the purpose of using the infusion of knowledge for the greater good. Everyone benefits when the purpose is building professional capacity for community disaster resilience. All professionals, organizations, and institutions are especially challenged by the changes during the 21st century, a unique time in human history characterized by the paradox of increasing societal impacts from natural and related hazards and a simultaneous explosion in knowledge and information technology. This paradox indicates that the entire framework of education must be expanded to integrate educational processes into all facets of life and institutionalized to sustain education for the greater good in a global perspective.

2. COMMUNITY PROFESSIONALS NEED A DIFFERENT EDUCATIONAL FRAMEWORK IN THE 21ST CENTURY

Every country, from the poorest to the richest, has committed resources to ongoing educational programmes to educate their professionals. In the 21st century, as never before, the paradox of increasing societal impacts from natural and related hazards and the explosion in knowledge and technology have exacerbated the challenge of equipping and engaging the world's professionals in ongoing endeavors to make their communities resilient to natural disasters. Both the curricula and the delivery mechanisms underpinning the framework for higher education and formal and informal educational programmes need to be updated and integrated. Higher education and formal and informal educational programmes ranging from K, to post-graduate, to practitioners must be tailored to meet the needs of legions of new professionals while simultaneously revitalizing, energizing, and equipping a legion of mature professionals. After education and training, both legions of professionals should be linked and engaged in regional networks committed to building community disaster resilience and managing change in a global perspective. (Note: "Networks for Sustainable Development and Disaster Reduction," will be created during the Decade on Education for Sustainable Development (2005-2914). Every professional in these networks will become owners of integrated, up-to-date knowledge on the occurrence, characteristics, and consequences of natural hazards and the options and benefit/cost ratios for disaster risk management.

Engaging the new legions of professionals in the new networks represents the best way forward for institutionalizing the ongoing process of using education to build a culture of disaster resilience on community scales during the 21st century. Professionals who know what to do and how to do it are important assets when building a culture of community disaster resilience, but they are not as effective as a regional network, which can foster cooperation, communication, coordination, collaboration, and creativity to overcome the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will, while promoting the common pursuit of the greater good in global perspective.

3. THE WAYS FORWARD

The barriers of ignorance, apathy, disciplinary boundaries, and lack of political will exist in every community (Figure 1). Each barrier is especially effective in thwarting scientists, engineers, community stake holders and community policy makers as they seek the most effective ways to create, implement, and sustain programmes for building a culture of resilience to rapid- and slow-onset natural hazards such as droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

Through implementation of higher education and formal and informal programmes of professional education, the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will can be overcome and transformed into enlightenment, empowerment, enrichment, and enablement. Ignorance, apathy, disciplinary boundaries, and lack of political will always be barriers to building a culture of community disaster resilience .

a) **Enlightenment**--Hearing and understanding the nature of the physical and societal threats associated with each hazard is essential for transforming ignorance into enlightenment in ongoing educational processes for building aculture of disaster resilience to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change. Whilst abundant knowledge about risk and vulnerability to natural and related disasters exists now, its widespread availability and usage at community, national, and regional levels to protect people, habitat, infrastructure, livelihoods, and cultural heritage, is yet to reach its full potential.

The legions of mature and emerging professionals will have the privilege and responsibility for integrating knowledge on all natural hazards. Knowledge should include indigenous knowledge and public information unique to each community. At present, knowledge is not only fragmented and variable in quality and quantity; it is also exploding as a result of extensive research and improved post-disaster studies.

Figure 1: Higher education and ongoing formal and informal educational programs will equip professionals for actions to transform ignorance, apathy, disciplinary boundaries, and lack of political will into enlightenment, empowerment, enrichment, and political enablement. Ignorance, apathy, disciplinary boundaries, and lack of political will constrain communities into sub-optimal reactive strategies and neutralize proactive efforts to create anticipatory risk management strategies and build a culture of community disaster resilience.

b) **Empowerment**--Identification with the community's physical, enterprise, and social vulnerabilities, and using the framework of higher education and formal and informal educational for fixing them are essential actions for transforming apathy into empowerment of professionals and organizations. Empowerment facilitates endeavors for building a culture of disaster resilience to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

The new legions of mature and emerging professionals will have the privilege and responsibility for improving delivery mechanisms (such as training) and use of modern information technology (such as the web sites, e-mail, and Geographic Information Systems) and partnerships (such as with the electronic and print media, or the International Federation of Red Cross and Red Crescent Societies) to transfer ownership of knowledge and technology and to build capacity of citizens, professionals, organizations, community stake holders, and community policymakers.

c) **Enrichment**-- Personalization of the community's social, technical, administrative, political, legal, and economic (STAPLE) factors in conjunction with the educational process is essential for eliminating disciplinary boundaries of professionals and internal boundaries of organizations. Once transformation into enriched professionals and organizations is complete, they can be engaged in a seamless network committed to building a culture of community disaster resilience to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

The legions of mature and emerging professionals will have the privilege and responsibility for developing and assisting in the implementation of Blueprints for Change, authoritative documents that integrate community-specific STAPLE factors with community-specific knowledge on droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change. (Note: During the Decade on Education for Sustainable Development, these will be known as "Blueprints for Change on Knowledge Management and Education")

The concept of each Blueprints for Change as a "work in progress" is ideal for ongoing development of integrated curricula for use in the educational framework. At present, over 100 Blueprint are underway for the following themes: 1) Living with the risk from potential disaster agents, 2) Building to withstand the impacts of potential disaster agents, 3) Learning from disasters, 4) Implementation, 5) Education for disaster reduction, and 6) Technology for disaster reduction. More than 1 million Blueprints for Change are needed to facilitate building a global culture of community disaster resilience.

The Blueprints are designed to facilitate improvements in community-based activities such as analysis of disaster threats, analysis of community vulnerabilities, disaster scenarios, response planning, recovery planning, environmental impact management, and risk management. They provide a balanced STAPLE basis for programmes to change policies and professional practices at the community scale. They call for application of both low- and high-tech techniques, which must be tailored for specific community applications, keeping in mind that application in the developing world demand simpler and less complicated technical approaches than those for the developed world

d) **Enablement**-- Educational programmes to build technical and political capacity are most effective when they are balanced on community, national, and regional scales. Balance is essential for transforming lack of political will into enablement of political will for building a culture of disaster resilience to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

Communities in less developed regions such as Sub-Saharan Africa, Latin America, parts of Asia, some Eastern European countries, and some island nations in the Caribbean and Pacific, are the highest priority for concentrating the "World's Mutual Fund for Education" and other resources to accelerate higher education and formal and informal educational programmes. The purpose is to transform the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will in these communities with urgent needs into enlightenment and empowerment of professionals and organizations, enrichment of networks, and enablement of political will for building a culture of disaster resilience.

Every educational process requires cooperation, communication, coordination, collaboration, and creativity. The legions of mature and emerging professionals engaged in networks and using new and improved curricula such as Blueprints for Change that integrate knowledge with the STAPLE factors, will have the privilege and responsibility for improving the Blueprints as they contribute to ongoing educational programmes to make their community disaster resilient.

4. TURNING POINTS

In areas of strategic and tactical collaboration to achieve community goals through diffusion of knowledge and best

practices, community organizations are the foundation of the social, technical, educational, economic, and political groups that set the local spirit and tone needed for building a culture of disaster resilience. Community policymakers, who typically make decisions on the principle of "least regrets," are strongly motivated by their constituencies and influenced by knowledgeable, well educated professionals who are stake holders.

Many different institutions and networks are available as resources to each community engaged in promoting and implementing higher education and formal and informal educational programmes. Each organization has implicit responsibility to the others for being good examples of cooperation, communication, coordination, collaboration, and creativity among themselves and for making the network seamless without boundaries (Figure 2). Examples of these resources include:

- UN-ISDR
- International Federation of Red Cross & Red Crescent Societies
- UNICEF
- UNESCO
- International Committee of the Blue Shield (ICBS), an equivalent of the Red Cross in the field of cultural heritage preservation during times of human-made and natural disasters.
- Professional-based networks such as the Global Alliance for Disaster Reduction
- University-based networks, and regional and country-specific centres
- Professional organizations (e.g. Earthquake Engineering Research Institute, American Society of Civil Engineers, etc)
- GROOTS community network

Intellectual resources are typically available in the largest communities of every nation to develop new integrated educational curricula. Other resources are available to promote implementation.

Education creates understanding and training develops capabilities to apply that knowledge in a wide range of specific tasks such as analysis of disaster threats and vulnerabilities, planning and management for disaster reduction and environmental management. Both low- and high-tech techniques must be integrated and tailored for specific community applications, keeping in mind that application in the developing world demand much simpler, and much less technical approaches. All applications should facilitate

connecting "Top down" and "Bottom up" initiatives, that range from one-on-one mentoring and skill enrichment endeavors on the ground (e.g., E-training) to specific community initiatives ranging from organization-to-organization and public-private partnerships (e.g. vulnerability reduction programmes). The range of possibilities is infinite, including joint initiatives with the electronic and print media, community staff training, workshops for community policy makers and stakeholders, community exercises, creation of web sites, development of distance learning systems, and ongoing programs of public awareness and professional enlightenment. Post-disaster audits made in the highly charged, political environment following a disaster will help identify targets of opportunity for educational programmes to overcome ignorance, apathy, disciplinary boundaries, and lack of political will. These targets can lead to major turning points for making changes in the framework of higher education and formal and informal educational programmes as well as for proposing changes in community policies and professional practices. Global experience has shown that the post-disaster environment provides the best opportunities to gain political support for initiating comprehensive educational programmes that are designed to enlighten and empower people, professionals, and organizations, while developing more focused programs that call for seamless networks to improve the safety of community safe havens (e.g., schools and hospitals) and to increase the reliability of community infrastructure (e.g., utilities, transportation, communication).

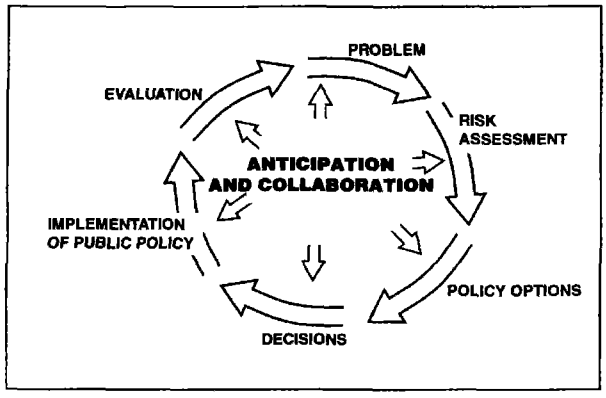

Figure 2: Community interaction encompasses strategic and tactical cooperation, communication, coordination, and collaboration in endeavors by seamless networks to transfer ownership of knowledge, best practices, and technology in a step-by-step process to build the political and technical capacity needed for building a culture for disaster resilience to droughts, floods, severe windstorms, earthquakes, volcanic eruptions, landslides, wildfires, tsunamis, and global change.

Although the context is a disaster, the entire framework for higher education and formal and informal education is often a major beneficiary of a disaster. New community and regional centers for long-term disaster research and applications are often created and given a mandate to use the lessons learned from the disaster to educate and engage professionals in closing perceived gaps in knowledge and implementation.

5. CONCLUSIONS

The Decade on Education for Sustainable Development (2005-2014, and beyond) provides a unique window of opportunity and a potential turning point at this time in human history for improving the framework for higher education and formal and informal education for building a global culture of disaster resilience in every community. Without the focus of the Decade, by the time we reach 2015, the world will have likely experienced several thousand potential disasters causing an economic toll that could reach $1 trillion USD. In 2015, because of the Decade, we expect professionals, organizations, and nations throughout the world to be able to make the following kinds of assertions on the basis of their experiences:

- The "World's Mutual Fund for Education" is being concentrated successfully on the institutionalization of educational programmes for community disaster resilience in less developed regions such as Sub-Saharan Africa, Latin America,

parts of Asia, some Eastern European countries, and some island nations in the Caribbean and Pacific. However, much work will remain to be done after 2015.

- Many professionals have been transformed from uninformed to well informed with fewer disciplinary boundaries.
- Professionals in every country have had new opportunities to expand their knowledge and increase expertise on all aspects of natural and related disasters, and to contribute through "Networks for Sustainable Development and Disaster Reduction," to the institutionalization of endeavors for building a culture of disaster resilience in their community and elsewhere.
- The entire framework of higher education and formal and informal education, ranging from K to post-graduate to practitioners, has been improved with regard to the goal of equipping professionals to contribute to community disaster resilience.
- Legions of emerging and mature professionals of every country have been marshaled, equipped through education and new curricula such as "Blueprints for Change on Knowledge Management and Education," and provided with opportunities to become engaged in seamless "Networks for Sustainable Development and Disaster Reduction," committed to building a global culture of disaster resilience on a community scale.
- Significant progress has been made in many communities in developing and developed countries towards the long term goal of transforming the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will into enlightenment and empowerment of professionals and organizations, enrichment of networks, and enablement of political will. However, the same goal will still be highly appropriate and a challenge for professional to achieve during the next decade.
- Many professionals and organizations have been transformed from bounded and self-looking to seamless, enriched members of "Networks for Sustainable Development and Disaster Reduction," that are community focused and working together for the greater good in global perspective.
- The high level of cooperation, communication, coordination, collaboration, and creativity on a community scale in many communities in developing and developed nations around the world will be unprecedented and serve as a model for other communities to emulate during the next decade.

Transfer Live Lessons of Catastrophic Disasters

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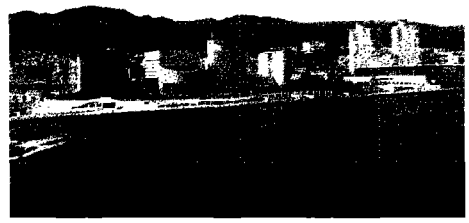
1. BACKGROUND

Since the 1960's, Japan has made remarkable progress in disaster prevention. As the nation's scientific and technological achievements advanced during this time period, disaster prevention saw significant improvements, particularly for meteorological disasters, based on the thinking that science and technology can overcome nature's challenges. However, the Great Hanshin-Awaji Earthquake of January the 17th, 1995, revealed harsh realities: the limited capacity of the governmental sector, damage to building structures far beyond anticipation, and divergence between academic research and the real world. Conversely, citizen initiatives came to be realized as an important factor in disaster reduction. A spirit of mutual aid and nationwide expansion of volunteerism emerged, which was a rare concept for Japan's traditional disaster prevention approach. With the Hanshin-Awaji Great Earthquake as a turning point, the paradigm of disaster reduction in Japan has shifted to one of building a society to coexist with nature while reducing losses.



Against this background, the Disaster Reduction and Human Renovation Institution (DRI) was founded in April 2002 (http://www.dri.ne.jp). DRI aims at cultivating a disaster reduction culture, mitigating vulnerability of local societies, and developing policies for disaster reduction; thereby contributing to realizing a safer and more secure civil society through transferring the experiences of the Great Hanshin-Awaji Earthquake and applying lessons learned from the earthquake.

Through its museum exhibits, to which more than 1 million people visited from its opening, DRI demonstrates to the public the importance of disaster reduction and the mutual dependence of all citizens, which turned out to be a very effective educational facility. DRI also undertakes action research, develops human resources to lead disaster reduction in the future, assists managers in disaster response, and promotes cooperation by strengthening various networks. Ensuring that these are conducted in an integrated way, DRI strives to effectively create, systematize, and share such wisdom and information.

Parallel with its basic mission, in October 2002, DRI organized the Disaster Reduction Alliance (DRA:http://www.dra.ne.jp), and now it consists of 13 organizations active internationally on disaster reduction issues and situated in HAT Kobe (New Eastern City Center). DRA held the Disaster Reduction Forum 2004 as a pre-event of the WCDR, with the theme of "Transfer Live Lessons of Catastrophic Disasters," on February 8 in Kobe together with the Hyogo Prefectural Government. This forum reaffirmed the various activities after the "Yokohama Strategy", and discussed the effectiveness and importance of "Transfer Live Lessons of Catastrophic Disasters".

<DRA member organizations>
- Asia-Pacific Network for Global Change Research (APN)
- Asian Disaster Reduction Center (ADRC)
- International EMECS Center (EMECS)
- Japan International Cooperation Agency (JICA) Hyogo International Center
- United Nations Office for the Coordination of Humanitarian Affairs (OCHA) Kobe
- United Nations Centre for Regional Development (UNCRD)
- Earthquake Disaster Mitigation Research Center (EDM)
- World Health Organization (WHO) Centre for Health Development
- Institute of Global Environmental Strategies (IGES) Kansai Research Center
- Japanese Red Cross Society Hyogo Prefectural Chapter
- Disaster Reduction and Human Renovation Institution (DRI)
- Hyogo Emergency Medical Center
- Hyogo Institute for Traumatic Stress

2. WHY "TRANSFER LIVE LESSONS"?

In the Great Hanshin-Awaji Earthquake of 1995, the people in the affected areas went through a tremendous amount of very strong feelings of anger, fear, sadness, pain, and guilt -- not to mention the acute final suffering of those who died, which cannot be known even to the survivors. In the process of response, relief, recovery and reconstruction the people had many deep regrets about the lack of preparedness, lack of mitigation, and wrong choices that they had to make in unclear situations. And yet, the people were unexpectedly introduced to the human warmth of their communal living, the goodness in people, and a renewed appreciation for the value of life.

Since the 1995 Earthquake significant improvements in many areas have been made to disaster reduction systems in Japan, from the community level to the top policy level. It is indeed their strong feelings that made people feel greatly motivated and highly responsible for taking concrete steps forward. Even policy makers in the capital shared the passion. The disaster had a major impact in stimulating the growth of the volunteer movement and the establishment of the non-governmental organization (NGO) sector throughout Japan.

In implementing risk management and disaster reduction policies and activities, it is extremely important and effective to maintain such strong feelings. If live experiences and lessons of severe disasters are appropriately demonstrated and transferred, these lessons can be a very effective way by which individuals, communities, and other stakeholders can be personally motivated to take concrete actions in implementing disaster prevention and reduction policies. These passionate feelings can actively fuel disaster reduction.

On the other hand, such feelings tend to fade rapidly. It is natural that many ordinary citizens wish to forget their harsh

experiences and feelings so their lives can return to normal. Thus, special efforts are needed to preserve the strong feelings after mega-size disasters to continue disaster reduction progress, individually as well as collectively. It is in this context that the importance and effectiveness of "Transfer Live Lessons" was discussed in the Disaster Reduction Forum 2004.

3. EFFECTIVENESS OF "TRANSFER LIVE LESSONS"

"Transfer Live Lessons" is a powerful tool for evoking sympathy for those who have experience and motivating people to act for the vulnerability of the society against disasters. The affected areas can tell their own unique stories and lessons to future generations. The transfer of these lessons should be considered as vital for future disaster mitigation and prevention, which is one of the most important elements in managing risk. The world is interdependency of economics, politics, and culture. Regional and international cooperation enhance the ability to achieve four elements, disaster prevention, mitigation, preparedness and relief in response with the implementation of sustainable development.

Society has a responsibility for developing a culture of safety, especially within governments, institutions, and communities. Such a culture of safety within society will motivate people to avoid human error and negligence and promote progressive improvement of the safety level of buildings. The culture of safety should also include preparedness measures such as broad-based public education, household non-structural safety measures, and insurance.

Community involvement and their active participation are key elements to build the capacity of individuals and organizations within local communities to exercise collective responsibility by working together, from the individual up to the decision-maker, to save lives, reduce injuries, and minimize losses. Government must initiate, promote, and support such community activities. Moreover, it is important to examine disasters of the past to understand more clearly the lessons that are still relevant today so that knowledge can be transferred accurately to effectively meet current needs.

The reality of disasters is in each individual life lost, not in the statistics. Establishing a system for identifying, capturing, transferring and using live lessons from catastrophic disasters is important to promote within communities, regions, and nations, as well as on an international level, using appropriate methodologies and technologies. It is important to use communications which emphasize more commonly understood ideas such as "safety" and "security" through accessible media such as films, cartoons, cultural events, and multi-media informational Web sites.

Monuments and commemorative places can be useful but are insufficient in them. The message must also be actively transferred and disseminated. One of the least costly ways is to reach school children by finding ways to draw them in through cartoons, videos, music, pictures, photos and stories. In this way they may actively influence family members and the community.

In Japan many citizens of Kobe and neighboring communities have conducted various kinds of initiatives for transferring live lessons. One such initiative is the establishment of the Disaster Reduction and Human Renovation Institution (DRI) by the Hyogo Prefectural Government. An audio-visual presentation of what really happened in the 1995 Earthquake is provided as well as photos, video clips, remains of debris, writings and memorabilia of individuals are displayed. Storyteller is invited to speak and to share their experiences directly and personally with visitors. The DRI facility is of a commemorative nature but also functions as a very effective means to help disaster victims remember and non-victims share the very strong feelings at the onset of the 1995 Earthquake so that people are motivated to make the living environment and society more disaster-resilient for a better future.

4. RECOMMENDATION TO THE INTERNATIONAL COMMUNITY

By "transferring live lessons of catastrophic disasters" we will help to ensure that future victim numbers are minimized. Through such transfer activities we hope that many people around the world will be spared the tragedy of catastrophic disasters.

Governments and the people of each disaster stricken area should begin to organize in their respective ways to "transfer live lessons of catastrophic disasters," in particular to their citizens and communities. Through such activities, the same level of tragedy may be prevented.

There are many ways and many methods for transferring these lessons such as museum facilities, story telling in systematic ways, films, cartoons, music, cultural events and many other educational activities. Major benefits can be gained without incurring a great deal of cost. Each government and supporting organization should recognize the importance of transferring live lessons and start supporting such activities.

5. PROPOSAL OF ESTABLISHMENT OF "TRANSFER LIVE LESSONS NETWORK"

As an actual step of above activities, DRA proposes the establishment of "Transfer Live Lessons Network". This is to facilitate sharing and transferring live experiences and lessons learnt from past disasters on a citizen-to-citizen basis worldwide.

Distance Learning on Disaster and Environmental Management

Plan for Training Programme in Collaboration with Tokyo Development Learning Center of the World Bank and Graduate School of Global Environmental Studies, Kyoto University, Japan

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1. BACKGROUND OF TOKYO DEVELOPMENT LEARNING CENTER (TDLC)

The Global Development Learning Network (GDLN), a World Bank initiative launched in June 2000, aims to improve development effectiveness by enhancing the capacity of development practitioners through the use of Information and Communications Technologies (ICTs) and distance learning methodologies to support knowledge sharing and learning activities between and within countries. The GDLN offers a new way of doing business to the development community and has been an important component of the development agenda of the World Bank over the past four years, exemplifying its commitment to the notion that improved access to knowledge is critically important to development.

The Tokyo Development Learning Center (TDLC) is part of the Global Development Learning Network (GDLN) and it is expected to provide real time service as well as core support structure for development content to GDLN regional clients and partners by facilitating programs and events based on the GDLN.

The Center's business plan proposes to develop distance learning capacity both in partner organizations in Japan and the region and Distance Learning Centers (DLCs) across the region through a planned set of activities aimed at developing sustainable product lines and business models, supported by a coordination and technical support structure for the region. The products are seminars, trainings, events, and meetings using the full range of learning tools and technologies to connect country clients with their counterparts around the world through videoconference, high-speed internet and group interactions. It is meant to be a powerful development tool for public and private organizations with development mandate in delivering their programs in line with their agenda.

2. TDLC APPROACH

The TDLC business plan has set out an approach to utilize the available funds to develop partnership with such organizations as follows:

The Tokyo project will support the work of a range of partners within Japan and the region in developing and delivering GDLN content. It is clear that distance learning methods are not yet familiar to most potential project partners and they will have differing technical and financial resources. The goal of the Tokyo project is to build capacities within partners to exploit the GDLN in an autonomous and efficient manner. For this reason whilst all partnership agreements should adhere to guidelines, some flexibility is needed to take account of the differing skill sets and financial resources.

The Tokyo project is undertaking extensive marketing and is inviting interested institutions to approach the project The criteria used in selecting project partners are:

- *Technical resources relevant to the capacity building needs of developing countries*
- *Demonstrated commitment to international development and poverty reduction.*
- *Willingness to make a significant contribution (either financial and/or in kind) to develop and deliver GDLN content.*
- *Ability to fully fund their participation in the GDLN after receiving TDLC supports.*

Once partners have been identified the details of the partnership arrangements will be determined. In every case the partnership will require a contribution from the partner based on an understanding that over time they will assume the full cost of GDLN content preparation and delivery, and become long term users of the GDLN.

- Depending on the partnership agreement the project may assist the partner with technical assistance, training and in meeting GDLN broadcast costs.

3. GDLN VISION IN EAST ASIA AND PACIFIC REGION (EAP)

The business plan is based on a new vision for the GDLN in the EAP Region:

"By the conclusion of TDLC project the EAP GDLN will be a dynamic, sustainable network: delivering a service that is widely acknowledged as increasing development impact by integrating knowledge sharing into the full range of development activities in the region, characterized by strong productive partnerships with local, regional and international organizations that have a commitment to the distance learning paradigm and the skills and capacity to support it, generating a steady stream of high value GDLN content, DLCs recognized in their host countries as important national resources, with substantial skills and capacity in the distance learning paradigm, providing a channel for interaction with global sources of expertise, and a well-established, sustainable, regional co-ordination structure with efficient processes for content development, quality assurance, evaluation and management, recognized as a leader in distance learning"

3.1. Lines of Business

The EAP GDLN will concentrate on four business lines:

Operations of development agencies.

- Training of operational staff of the Bank and other donor agencies and their client PMUs, dialogs associated with CAS, PRSP, ESW, AAA and other research.
- The capacity building components as part of or linked to lending and other development projects of the Bank and other donor agencies to enhance the quality of their operations, as a vehicle to support the process of discussion, preparation, appraisal, implementation, dissemination and evaluation.

Communications.

- The GDLN will be promoted as a channel for conferences and formal events, and for use in crisis management such the recent SARS and Avian Flu epidemics when travel is not an option.
- The convening power of the Bank at a central and country level combined with the reach of the GDLN across the world are the key competitive strengths.

Networks and Communities of practice.

- The GDLN will be used to conduct policy dialogs, to disseminate findings and best practices among peer groups.

o This presents an effective and novel way of building capacity before or during development projects.
- The Bank has many ongoing initiatives that support communities of practice the GDLN has an opportunity to work with these initiatives to develop business and build a unique set of specialized skills and methodologies.

Structured courses and training programs.
- The GDLN will deliver new or strengthen existing courses through the GDLN.
- Institutions such as government development agencies, universities and professional organizations are the target content suppliers, who will benefit from greatly increased reach and penetration of markets that would otherwise be inaccessible due to costs, staff availability and time constraints.

In the areas of operations, networks and communication of practice and structured courses and training programs, the TDLC will assist the Graduate School of Global Environmental Studies at Kyoto University to develop a long-term distance learning program on Disaster and Environmental Management.

3.2. Context of the Project

Disaster management has its direct connotation to environmental management. Many of the natural disasters like flood, drought etc., are found to be directly related to the environmental degradation, and climate change. These disaster events affect the poor people the most by affecting their lives, properties and livelihoods. Therefore, by creating disaster resilient communities, it is possible to enhance human security.

Distance learning is important, specifically for the developing nations, to reach the maximum mass, to fill the gap between knowledge and practice. The World Bank has taken strong initiatives in Distance Learning (DL), and has promoted the establishment of DL centers in different parts of the world, as a part of its Global Development Learning Network (GDLN). Recently, Tokyo Development Learning Center (TDLC) was added to GDLN and Vietnam has been one of these centers among others for the East Asia, and has been successfully engaged in running different courses on development issues. With the above context, therefore, there is a strong need to start the distance learning programme on International Disaster and Environmental Management, KGES is proposing this programme in partnership with TDLC.

Implementing Modalities

The project initially focuses on the development of the training modules and initiation of the first pilot training programme through linking Vietnam with the newly established center in Tokyo, Japan. The Graduate School of Global Environmental Studies of Kyoto University will be the lead implementing agency for the project. Within the School, Masami Kobayashi and Rajib Shaw will be the responsible persons for the overall coordination and management. They will work closely with GDLN Centers of Tokyo and Hanoi. Quality control of the course modules and coordination with other related partners and counterparts will also be done by them. For TDLC, it is expected to provide advice and to coordinate the process of contents conversion and development by providing their specialists. After successful implementation of the initial program for Vietnam, the project will expand the program customized for other countries in the Asia region.

4. GOAL AND OBJECTIVES

The overall goal is to mainstream risk reduction by building field level human resource capacity in international disaster and environmental management sectors. The objectives are:
- To build and enhance capacities of the practitioners and local government mangers
- To mainstream risk reduction activities,
- To enhance the sustainability of the initiative, and
- To upscale the initiative with international knowledge partners.

To accomplish the above-mentioned goal, and objectives, the project carries out the following long-term tasks :
- To develop knowledge resources for training in risk reduction
- To develop and test pilot training packages for local disaster managers, community leaders, masons, schools, CBOs and NGOs
- To establish linkages for up-scaling and widening the initiative by means of virtual and field based training programmes
- To enable the Distance Learning (DL) centers in different part of the world to link with each other for effective and practical training programmes.

5. SCOPE OF TASKS

The project will be phased in two stages, a pilot project stage and an implementing project stage.

The pilot project stage is intended to prepare and test a set of pilot modules on distance learning for disaster and environmental management with specific focus on Vietnam. The tasks and activities described below are referred to the context of this preparatory process.

Task 1: *To develop knowledge resources for training in risk reduction with specific focus on Vietnam*

Activity 1.1 Identify key focus areas, themes, and core partners

Activity 1.2 Organize a preliminary meetings of interested stakeholders and core partners[1] , and strategic planning for the course modules

Activity 1.3 Development of course modules

Task 2: *To test pilot training packages for disaster managers and community leaders*

Activity 2.1 Test pilot training programme through test run between Vietnam and Japan, through involvement of a

1: United Nations Centre for Regional Development (UNCRD) of Kobe, Japan, Kyoto University, and SEEDS (a non-profit organization, based in Delhi) organized a Partnership Workshop on Community Based Disaster Management (CBDM) in Delhi on 24-26 August 2004. This meeting was used to make strategic planning, since many of the related organizations/ institutes will be present there.

wider stakeholders: government, non-government, international agencies including the Bank's task team on natural disaster mitigation project and academic organization.

Task 3: *Document the process, and analyze it for future scaling-up*

Activity 3.1 Document and analyze the success of the test run

Activity 3.2 Planning for future activities and up-scaling

Activity 3.3 Prepare the final report (with CD-ROM) and publish it in the World Conference of Disaster Reduction in 2005 in Kobe[2]

Among these, Task 1 and 2 were completed, and Task 3 is currently on-going in cooperation with TDLC and Kyoto University. The implementing project stage will be designed later based on the results of evaluation of the pilot project and be to implement the training program on a cost-recovery basis.

6. PARTNERS, PARTICIPANTS AND BENEFICIARIES

The project will be implemented in close cooperation with the MARD (Ministry of Agriculture and Rural Development) and Ministry of Natural Resource and Environment (MONRE) of Socialist Republic of Vietnam, in association with the National Disaster Management (NDM) Partnership of UNDP, and selected non-government organizations. Resource persons from selected organizations of the region (e.g., SEEDS: Sustainable Environmental and Ecological Development Society, India, ADPC: Asian Disaster Preparedness Center and IFRC: International Federation of Red Cross and Red Crescent Society, Bangkok), having experiences of on-site training in the relevant field will be invited to Hanoi, Vietnam for specific modules.

In Tokyo, several Japanese NGOs, selected government departments, and international organizations like Asian Disaster Reduction Center (ADRC), and United Nations (UN) organizations like UNEP (United Nations Environment Programme) and UNU (United Nations University) will be invited as resource persons.

Expected participants of the training program and direct beneficiaries will include government officials of the ministry and selected non-government organizations, and community leaders.

7. EXPECTED OUTPUTS

Following are the expected outputs of the pilot test

- Modules developed for the pilot distance learning program on Disaster and Environmental Management
- Trained practitioners
- Raised awareness on the need and effectiveness of distance learning
- Final report

8. PROJECTION OF UTILIZATION OF TDLC FACILITY AND OTHERS

Based on an assumption of planed training program over the next 3 years, the utilization rate of GDLN is envisaged to reach 90 hours per year in 2005 and 2006. From the mid-year of 2005, the training program on a cost recovery basis is planned to start. This program is expected to bring a total through put of 131 hours a year to DLC.

2: On December 23, 2003, the United Nations General Assembly adopted resolution A/RES/58/214 announcing the convening of a World Conference on Disaster Reduction, to be organized by United Nations International Strategy for Disaster Reduction (UN ISDR) and hosted by the Government of Japan at Kobe, from 18 to 22 January 2005.

APPENDIX

1. About the Graduate School of Global Environmental Studies in Kyoto University

The Graduate School of Global Environmental Studies at Kyoto University was established with the objective of constructing a new civilization concept and scientific knowledge that contribute to both a stable environment as well as the human activities that support a stable environment, and of training human resources capable of adapting this concept and knowledge to the real world, in order to clarify and solve global environmental problems.

The study of the global environment is still in the formative stage. Strategic foresight, interdisciplinary collaboration, and flexibility are vital to achieving dynamic development in the research of this field. The educational side of this field also requires sound educational content of depth that encompasses related scholastic fields as well as steady research guidance that is both socially conscious and at the forefront of its field. In order to fulfill the requirements of these mutually opposing areas of research and education, the Graduate School of Global Environmental Studies at Kyoto University has constructed a unique system by which research and education are separated, with the research organization headquartered at the Hall of Global Environmental Research, and the educational organization at the School of Global Environmental Studies. The Graduate School has also established the Grove of Universal Learning as a research and education support organization, creating a system under which the activities taking place at the Hall of Global Environmental Research and the School of Global Environmental Studies can develop in a balanced and harmonious manner, without focusing too much on specialized fields.

In order to pioneer the field of global environmental studies based on a broad range of fields that encompasses every thing from the concept of a global civilization to leading scientific technologies, the Graduate School of Global Environmental Studies at Kyoto University has assembled a faculty of permanent professors, "mobile instructors" (instructors that can change from their existing graduate course or institute for limited period of time), collaborating instructors" (instructors that participate in the education and research at this graduate school while maintaining their positions in their existing graduate course or institute), and visiting instructors, and has also formed the following three departments.

The graduate school has unique internship program for the students to enhance pro-active field research. Master students in Environmental Management course need to complete a compulsory internship of 5 months, and Doctor students for 9-12 months in abroad.

2. Project Timetable

The project for the pilot training program will continue for 10 months, starting from December 2004 to September 2005. The activities will be performed as per the following schedule.

Activities	04	05								
	12	1	2	3	4	5	6	7	8	9
1.1 Identify key focus areas, themes, and core partners	X	X								
1.2 Organize a preliminary meeting and strategic planning			X							
1.3 Prepare course modules				X	X	X				
2.1 Test Pilot Training Programme							X			
3.1 Document and analyze							X	X		
3.2 Planning for future activities and up-scaling									X	X
3.3 Prepare final report									X	X

Keeping Schools Safe in Earthquakes
An initiative of the OECD Programme on Educational Building, Supported by GeoHazards International

Richard Yelland
OECD Directorate for Education

Richard Yelland is Head of the Education Management and Infrastructure Division in the OECD Directorate for Education. This Division is responsible for the work of the Programme on Institutional Management in Higher Education (IMHE) and the Programme on Educational Building (PEB). Richard Yelland joined OECD in 1986 from the then Department of Education and Science in the United Kingdom where he had held a range of posts in educational policy and administration since 1974. He has led PEB since 1989. Following a secondment to the University of Adelaide, South Australia, he was given the additional responsibility for IMHE in 1998. He is a member of the Advisory Board of the UNESCO Centre for European Higher Education (CEPES). Richard Yelland was born and educated in England, and studied Mathematics and Religious Studies at Cambridge University.

1. THE PROBLEM

"... schools built worldwide routinely collapse in earthquakes due to avoidable errors in design and construction ... because existing technology is not applied and existing laws and regulations are not sufficiently enforced ... Unless action is taken immediately to address this problem, much greater loss of life and property will occur."
This quote comes from the report of a unique meeting of experts held at the Organisation for Economic Co-operation and Development in Paris just under a year ago. The group were concerned that there are scores of millions of children in compulsory education in countries of high seismic risk, and that this number is growing all the time.
Children are not only the most valuable segment of any culture or society – because the future is in their hands – but they are also among the most vulnerable. Moreover they generally have no choice when they are exposed to unacceptably high levels of risk.
Society therefore has not only a strong vested interest, but also a moral responsibility, to provide them with a safe learning environment.

2. A PROPOSED SOLUTION

Fortunately there is something that can be done. Methods are available for assessing the seismic risk of school buildings; and cost-effective approaches exist for reducing it within a reasonable time frame. This presents us with a clear opportunity to make a significant difference to the safety of school children in many parts of the world.
Among the group of 30 experts that the OECD brought together, with technical advice from GeoHazards International, a non-profit organisation active in this field, were many of the world's leading authorities on seismic safety. The group covered a breadth of perspective including academia, business, government, international organisations and NGOs. They drew up a set of recommendations which represent a call to action to Governments.

3. GUIDING PRINCIPLES

The centrepiece is the recommendation that all at-risk countries should implement country-wide school safety programmes based on eight guiding principles. Those principles are:

i) Establish clear and measurable objectives for school seismic safety, based on the level of risk, that can be implemented and supported by the affected residents of communities and agencies at the local government level, and provide adequate resources and realistic timelines to achieve these objectives.

ii) Define the level of the earthquake hazard for the country in order to facilitate the development and application of construction codes and standards. At a minimum, natural hazard zones should be established and, where possible, seismic hazard maps should be based on probabilistic analysis.

iii) Set forth expectations or objectives that define the desired ability of school buildings to resist earthquakes. All school buildings should be designed and constructed, or retrofitted, to prevent collapse, partial collapse or other failure that would endanger human life when subjected to specified levels of ground shaking and/or collateral seismic hazards such as surface fault rupture, landslide or inundation from tsunami waves or dam failure. However, some countries may desire that school buildings have additional seismic resistance to the extent that damage is limited and the buildings can be occupied immediately after earthquakes and used for shelter or emergency operations.

iv) Address all schools regardless of ownership, as preservation of the educational system is vital to the continuity of society, and as the functioning of schools as emergency shelters and cultural centres provides an important point of community convergence.

v) Give initial priority to making new schools safe. Efforts to identify vulnerable existing schools; to establish standards for retrofitting or replacing dangerous buildings; and to develop a list of priority actions can be made over a short period of time. A longer timeframe will likely be needed to correct seismic weaknesses of existing school buildings.

vi) Be established as long-term undertakings with a strong commitment to sustained effort rather than one-time action.

vii) Adopt a multi-hazard approach to school safety, with earthquake mitigation strategies that complement disaster countermeasures for other hazards.

viii) Employ advisory committees as needed to assure that policy and technical decisions are consistent, and to provide long-term independent support and evaluation for the seismic safety effort.

These principles are intended to be comprehensive, so that they cover all aspects of the problem, and sufficiently flexible to allow for different levels of seismic hazard, and the availability of expertise, technology and material resources.

4. THE ELEMENTS OF NATIONAL PROGRAMMES

Effective national school seismic safety programmes will include the major elements described below:

Seismic safety policy element

A national policy should be established by law with well-defined and measurable objectives. Priorities and strategies for satisfying the objectives should be established by the appropriate authorities. The policy must be clear and should have adequate governmental authority to enforce its scope and objectives and to carry out the plan over a specified number of years. The policy should:

- Recognise the safety of school children as a basic human right.
- Recognise the need for the safety of school buildings.
- Establish minimum standards for protection of human life.
- Adopt sustainable standards to guide design for new and existing school infrastructure based on prescribed performance objectives, knowledge of the ground shaking severity in different regions, quantification of site specific hazards, and the ability of the community to educate, train and license its members to effectively achieve established

objectives.

- Establish programmes for seismic risk reduction of school buildings and their components.
- Provide adequate funding and human resources for the protracted duration of the programme.
- Be supported by committed and competent leaders with sufficient legal and moral authority to ensure the effectiveness, sustainability and continuity of the programmes that derive from the policy.

Accountability element

There should be a legal basis for action with clear lines of accountability of the different members of society who are given responsibility for implementing earthquake safety programmes. To achieve the objectives of these programmes there should be:

- A clear definition of the roles and responsibilities of the various individuals, agencies and organisations involved in school seismic safety.
- A process for making all planning, design, regulation and enforcement decisions transparent.
- Qualification requirements for professionals engaged in the design of school facilities.
- A responsible enforcement agency – independent of the organisations responsible for designing, constructing and financing school facilities – charged with overseeing and approving proper design, construction and maintenance of school facilities including.
  - Conducting assessments of existing school facilities.
  - Reviewing and approving construction documents prepared for new structures and the retrofit of existing structures.
  - Inspecting and approving construction.
  - Qualifying personnel for design, plan review and inspection, materials testing and support functions.
- A clearly identified jurisdiction in terms of the area and the type of school systems and buildings affected.

Building codes and code enforcement element

The primary objective of school building codes and regulations should be to protect the life of occupants of a school building. Other objectives could include minimising damage to allow rapid occupancy of buildings after earthquakes. Building codes should govern the design of new and retrofitted school buildings. Design earthquake ground motions may be based on a probabilistic approach, a deterministic approach, or on a map of seismic zones. Individual nations should determine the most appropriate design criteria, based on a review of their country's seismic hazard and other pertinent factors.

An effective school building code and enforcement element should establish:

- Clear building performance objectives based on:
  - Ground motion characteristics and geology of the region.
  - Collapse prevention and structural damage control criteria.
  - Secondary effects such as tsunamis, landslides and surface rupture.
  - Socio-economic impacts to the community.
- A process for periodic review and revision of codes and guidelines by knowledgeable individuals to reflect current understanding of good earthquake engineering practice.
- Enforcement procedures for school building code and construction regulations that take into account community needs but provide clear provision for:
  - Checking of design plans for school buildings by qualified reviewers.
  - Review and certification of constructed school facilities.
- A regulatory body with a responsible official who is independent of those who finance, design and construct the buildings to assure that enforcement activities are not compromised by overt or subtle pressures due to project-specific cost, deadlines or other financial considerations.

The mere existence of a building code in a community can give the false impression that buildings are being constructed safely and that their seismic performance will be satisfactory. While extremely important, the writing and adoption of building codes and regulations can be an incomplete strategy if they are not enforced at every step of the design and construction process. Steps should be taken to ensure that proper implementation and enforcement of code regulations is done in a consistent manner and has equal priority to code development.

Training and qualification element

Building safety relies on regulations and laws that require proper training and qualification of professionals, builders and technicians involved in the different aspects of the design and construction process. Building safety training programmes should be carried out within the context of each individual country. Training programmes must accommodate governmental structure and division of responsibilities, perception of risk to the institution and its stakeholders, community values and economic conditions. Training and licensing should be required for design professionals, code enforcement officials, plan checkers, inspectors and contractors.

- ***Engineers and architects*** should be properly trained on current practices of seismic design and should pass rigorous tests to obtain a license to design and prepare school construction documents.
- ***Qualifications of contractors*** should be considered in awarding construction projects. For instance, contractors could be tested and licensed to assure minimum levels of competence. This would require the establishment of training programmes on best constructions practices for contractors and trades.
- ***Building officials, plan-check professionals and inspectors*** should be certified through a process of adequate training and experience.

Preparedness and planning element

Effective national programmes should require each school organisation and every individual school to take measures to reduce risks and to prepare employees and students to react in safe ways during emergencies. These school safety elements should include the following:

- ***Education:*** Develop and teach curricula for primary and secondary school students on earthquakes, societal issues

relating to earthquakes and preparedness actions. Use the school curricula to promote a culture of prevention in future generations of the community.

- ***Risk reduction measures:*** Undertake measures to improve the safety of the physical environment by bracing and anchoring furnishings, bookcases, and equipment and building components such as lights, heaters and water heaters.
- ***Emergency plan:*** Prepare and maintain plans that identify the actions, decisions and responsibilities needed before, during and following an earthquake; the organisation and responsibilities to carry out these plans, including determining whether to shelter or release students or to use school facilities as community shelters; and the equipment and supplies needed to carry out these decisions.
- ***Safety assessments:*** Establish standards, line of responsibility and procedures to assess the safety of buildings following earthquakes, and decide on evacuation, repair and re-occupancy procedures.
- ***Training:*** Provide training and materials for employees and students on earthquake hazards and actions to take to improve personal safety.
- ***Drills:*** Hold periodic drills simulating realistic conditions of earthquake events to reinforce training and to test the adequacy of plans and safety assessments.

Community awareness and participation element

Paramount to the success of a programme to improve the seismic safety of schools is the understanding and involvement of the community. All members of the community should understand the seismic hazard of the region, the vulnerability of existing school buildings, the consequences of not properly constructing new school buildings or improving the resistance of existing buildings, and the feasibility of improving seismic safety. In particular, those members of the community who are involved in the construction of school buildings need to understand why they are required to follow prescribed practices, and the consequences of their failing to do so. An effective community awareness effort will include:

- Programmes to raise public awareness and knowledge of the risk from earthquakes and other natural hazards.
- Educational programmes to transfer and disseminate technical knowledge and to explain risk in terms understandable to community stakeholders.
- Activities to empower the community to be part of, and contribute to, the reduction of seismic risk of schools.
- Use of school curricula to promote a culture of prevention in the future generations of community members.

Risk reduction element for new facilities

Verified procedures currently exist to ensure good seismic performance of school buildings and their contents, and the implementation of such procedures is feasible. The following components are needed in a risk reduction element for new facilities:

- Determination of seismic hazard in the region and development of seismic hazard maps.
- Development of performance criteria and codes suitable to the culture and economic conditions of the region with recognition of the fundamental societal importance of schools and the shelter function of school structures in post-disaster emergencies.
- Development of simple regulations, or best construction practices, for regions where such an approach may have an immediate impact on seismic safety (e.g. simple, low-cost education facilities in rural regions of developing countries).
- Training and education of professionals, technicians and the construction workforce.
- Target dates for implementation of construction standards recognising the different levels of current practice in different countries.
- Effective building codes and regulations, and rigorous enforcement of these regulations.

Risk reduction element for existing facilities

To reduce the seismic risk of existing school buildings, it is important to understand why this risk exists and what actions can be taken by the community to eventually reduce the risk. Community values, economic conditions, financial possibilities and the type of building materials available in the region should be considered when developing and implementing a risk reduction plan.

Key ingredients for an effective risk reduction element for existing facilities include:

- Determination of the seismic hazard and preparation of hazard maps.
- Assessment of risk to existing schools and their contents.
- Evaluation of the consequences of not taking corrective action.
- Development and implementation of technical guidelines to improve performance of existing facilities during earthquakes (e.g. methods and procedures to estimate forces and displacements of the structure and predict damage, acceptable margins of safety or confidence, proper use of building materials, and monitoring of the construction processes).
- Formulation of an action programme based on availability of funding, human resources and their qualifications, existing infrastructure and the operational structure of the community.
- Prioritisation and risk reduction plan implementation, considering financial and human resources and the role of school buildings in post-disaster emergency management.
- Monitoring of effectiveness of plan implementation.

Given the magnitude of the retrofitting task in many countries, responsible officials should establish time schedules and priorities to retrofit at least those facilities deemed to be at the highest risk. While several decades may be needed to complete implementation of a school seismic retrofit programme, work on the facilities at greatest risk can be undertaken on a priority basis over a much shorter period.

5. THE ROLE OF THE OECD

The experts' group proposed that the OECD should consider adopting a Recommendation which would incorporate the guiding principles and the programme elements described above. At the time of writing (November 2004) that proposal

had been approved by the Governing Board of the OECD Programme on Educational Building, and by the OECD Education Committee, and was being prepared for consideration by the OECD Council.
There are several reasons for proposing an OECD Recommendation and not just a simple report. The standing of an OECD Recommendation is higher, and will help countries ensure that the action which is required is indeed taken. *Earthquakes are not constrained by national borders and may have cross-border effects. The cost of reconstruction falls* not only on the affected country but spill over to neighbouring countries and to the international community at large. There is therefore an interest in having OECD countries applying similar standards.
Several OECD countries are seismically active and implementation of the recommendations will have an impact on the safety of children in those countries. But the majority of children at risk are in the developing world. By taking the lead in implementing school seismic safety programmes OECD countries can demonstrate the feasibility and utility of the approach. OECD countries can also offer technical advice based on their experience.

6. NEXT STEPS

In the event that the Recommendation is approved by OECD Council, the Programme on Educational Building will be responsible for designing and implementing a three-year international activity on earthquake safety in schools which is expected to involve ten countries. The activity's broad purpose is to provide policy-makers with information and analysis to assist them in formulating and implementing policies leading to improved earthquake safety in schools. Its three principal objectives are to:

- Assess national school seismic safety programmes using the guiding principles established in the OECD Recommendation.
- Review the extent to which countries have implemented the elements of an effective national school seismic safety programme established in the OECD Recommendation.
- Analyse and present options for countries to improve their school seismic safety programmes

Funding for this activity will be obtained through grants and voluntary contributions. Non-OECD countries will also be encouraged to participate in this activity.

7. DISSEMINATION OF THE PROPOSAL

A report of the experts' meeting, including the papers presented and the group's recommendations, has been published by OECD under the title "Keeping Schools Safe in Earthquakes". Further information about this activity and other work by PEB on school safety can be found at www.oecd.org/edu/schoolsafety

The Council of Europe's Contribution to Education for Sustainable Development

Towards Effective Disaster Reduction and Enhancing Human Security

Gabriella Battaini-Dragoni
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1. INTRODUCTION

Responding to the aspirations of citizens for a higher quality of life, now and for the future, the Council of Europe is committed to developing integrated policies for inter-generational equity in access to economic, social, cultural and natural resources under the principle of sustainable development. Policies for the sensitive management of these resources will enhance their contribution to wider economic opportunity, to personal and community development and to the expression of cultural identity and diversity. The Council of Europe, will therefore, develop programmes of activities which demonstrate and emphasise:

- The need for an integrated policies approach and strategy;
- the links between conservation and sustainability of the natural and cultural aspects of landscapes and the environment;
- the role of risk prevention and management of natural or technological disasters in sustainable development policies;
- the essential role of formal and non-formal education for sustainable development.

We fully realise that the Council of Europe has a role to play in the United Nations Decade of Education for Sustainable Development beginning on 1 January 2005, in particular through the educational activities of the Council of Europe's EUR-OPA Major Hazards Agreement.

2. OBJECTIVES OF THE COUNCIL OF EUROPE'S EUR-OPA MAJOR HAZARDS AGREEMENT

In March 1987, in its Resolution (87) 2, the Committee of Ministers of the Council of Europe established an intergovernmental Open Partial Agreement called the EUR-OPA Major Hazards Agreement. It is named "Partial" because only interested Council of Europe member States accede to it, while on the other hand it is "open" because non-member States may also join.

The Agreement has 25 member States to date: Albania, Algeria, Armenia, Azerbaijan, Belgium, Bulgaria, Cyprus, Croatia, France, Georgia, Greece, Lebanon, Luxembourg, Malta, Moldova, Monaco, Morocco, Portugal, San Marino, Romania, Russia, Spain, "the former Yugoslav Republic of Macedonia", Turkey, Ukraine. Japan has observer status, while Austria, Germany and Switzerland are regularly invited to attend the meetings of the Agreement.

The European Commission, UNESCO, The World Health Organisation (WHO), the Office for Co-ordination of Humanitarian Affairs of the United Nations (OCHA), the International Civil Defence Organisation (ICDO) and the International Strategy for Disaster Reduction (ISDR) participate in the Agreement. The International Federation of Red Cross and Red Crescent Societies also participates in its work.

The main objective of the EUR-OPA Major Hazards Agreement is set out in Resolution (87) 2 : to reinforce and promote co-operation between member States in a multi-disciplinary context to ensure better prevention, protection and organisation of relief in the event of major natural or technological disasters by calling upon present day resources and knowledge to ensure efficient and interdependent management of major disasters.

On the basis of the analyses and recommendations of the Committee of Permanent Correspondents, the ministerial meetings of the Agreement, which are held at least every two years, adopt the main themes and priorities to be addressed by the Agreement through the activities of the network of Specialised Euro-Mediterranean Centres and specific programmes run by the Executive Secretariat.

At the eighth ministerial meeting, held in Athens-Vouliagmeni (Greece) on 21 and 22 February 2000, the ministers adopted a Declaration asserting the right of populations to be informed and trained in the field of risk management and how to react in the face of an emergency, and undertaking to give priority to promoting children's awareness of risk prevention, particularly through educational programmes at school.

In Athens, the ministers adopted the Declaration on "Risk Culture", in which they considered that: the establishment of a real "risk culture" in our societies is the condition "sine qua non" for setting up an efficient policy for risk prevention and risk management in general and that the fundamental "pillars" of this "risk culture" are formed by information and education processes.

During the ninth ministerial meeting held on the Isle of Bendor, Bandol (France) on 3 and 4 October 2002, the ministers attached great importance to the search for synergy between the different initiatives of international organisations and European institutions. They supported the implementation of the IRIS project (International Risk Information System) on the combined use of radio and Internet to better inform the public about risk prevention. The ministers stressed the importance of the risk prevention policy set out in the International Strategy for Disaster Reduction (ISDR). They stated: "Societies are increasingly vulnerable to natural and other related technological and environmental hazards, whose impact is made more acute by the consequences of demographic, economic and social changes including urbanisation and development processes, as recently recognised by the World Summit on Sustainable Development."

The Euro-Mediterranean region is not exempt from the adverse consequences of this trend, which is also a trans-boundary problem, such as in the case of the recent catastrophic floods in Western and Central Europe. The tens of thousands of victims of the two most recent earthquakes in Turkey, the 800 or more victims caused by the disastrous floods and mudslides in Algeria in 2001, and the devastation brought about by floods in the Gard region in France in the summer of 2004 are but a few reminders of this dramatic situation. Disaster reduction is a key part of sustainable development and the associated risk management is a primary responsibility of governments. Such risk management should be based on an integrated decision-making process linking scientific knowledge, vulnerability assessment and authority structures at all levels. Civil society, the private sector, including insurance companies, experts and academia must be fully involved.

At the tenth ministerial meeting, held in Valdragone (Republic of San Marino), on 12 December 2003, the ministers welcomed the content of the Declaration of Madrid, adopted at the Euro-Mediterranean Forum on Disaster Reduction, organised with the co-operation of the Secretariat of the International Strategy for Disaster Reduction (ISDR) and the Executive Secretariat of the Agreement, which stressed that: "Disaster reduction is one central element of sustainable

development and the associated integrated disaster risk management is a primary responsibility of governments. Such risk management should be based on a holistic approach to risk prevention and reduction combining scientific knowledge, vulnerability assessment and the competencies of disaster managers".
They called for:

- reinforcement in member States of the interdepartmental approach to implementing risk reduction policies;
- *widespread implementation of programmes for alerting children to risk reduction by introducing compulsory civic education classes in schools incorporating the principles of education in citizenship, human rights, solidarity, sustainable development, risk reduction;*
- *the development of programmes to ensure safety in schools;*
- *encouragement for the setting up of school and university safety observatories in member States;*
- *reinforcement of the network of universities participating in the masters programmes on "risk sciences", leading to the Euro-Mediterranean doctorate in risk sciences;*
- promotion of the implementation of research and development programmes on decision-making assistance mechanisms in the field of risk management.

The ministers of this Agreement adopted in October 2003 the Declaration of Madrid which stressed that *"disaster reduction is one central element of sustainable development and the associated integrated disaster risk management is a primary responsibility of governments."* Such risk management should be based on a holistic approach to risk prevention and reduction combining scientific knowledge, vulnerability assessment and the competencies of disaster managers. They considered that the fundamental *"pillars of risk culture"* are formed by information and education processes.
As a complement to the ministerial initiatives and the working programme resulting from their priorities, one of the main strengths of the Agreement is its attempt to ensure the interest and direct participation of its member States through the establishment of Specialised Euro-Mediterranean Centres. These structures facilitate practical contributions from the different partners to the common objectives, through the implementation of European and Euro-Mediterranean information, training, research and expertise activities (see appendix).

3. EDUCATION INITIATIVES

The EUR-OPA Major Hazards Agreement has always given absolute priority to initiatives for the development of education, training and information programmes, which represent the "cornerstone" of the risk culture and the very foundation of an enlightened risk prevention policy. Initiatives are under way at four different levels:

1. school;
2. universities;
3. vocational training;
4. information.

1. Concerning the **school level**, two types of activity have been given priority: educating schoolchildren about risk prevention; ensuring the safety of school buildings. Such a priority has been adopted for the following reasons:

- Children represent the society of tomorrow;
- Children, who are keener to learn and less conditioned than adults, are more receptive to ideas about risk prevention;
- Children are the best "transmitters" of information to their families and therefore help to disseminate risk prevention ideas;
- On the other hand, children are the most vulnerable to risks.

In short, children are the best vehicles for establishing a risk culture. It should be pointed out that the risks facing schoolchildren go far beyond the traditional problems posed by natural and technological hazards. Problems linked to social exclusion, delinquency, drugs and violence are becoming a priority where risk prevention activities are concerned. It is against this background that activities have been launched in Casablanca (Morocco) and Algeria to create tools designed to combat violence, such as the "Street Net" project, which combines radio and the Internet.
During the International Seminar on Schools and Risk Prevention held at the University Centre for Cultural Heritage in Ravello, Italy on 8 and 9 June 2001, a Euro-Mediterranean Schools Network was set up with a view to analysing the different types of risks intrinsic to schools, linked to their structures, vulnerability and environment, lying at the heart of the local risk culture. Of course, risk analysis should be validated in accordance with the relevant national regulations. Thus the aim was to prepare, on this basis, specific initiatives for each school, including plans to convert the school's structures in order to address the risks and an educational project for pupils, families, administrative and technical staff. Such a plan has been adopted, for example, by the French Lycée in Istanbul.
In this context particular attention should be paid to groups with special physical, sensory, mental, psychological or social needs. It was also stressed during this meeting that in order to ensure the safety of schools, the network members should work closely together to compare and share experiences using the different models available.
2. At university level, as part of the FORM-OSE programme (West European, Southern Mediterranean, East European training) , the Agreement launched a survey in 1993 to analyse employment needs in our societies for risk managers in the private and public sectors. The survey highlighted the need for university-level training of professionals able to evaluate the technical, economic, social, psychological, cultural and legal impact of a crisis, and analyse and quantify the effects of emergency situations on people, goods and the environment. Such professionals should be expected to prepare and present suitable solutions for these situations, from a sustainable development perspective.
The qualification chosen was the European or Euro-Mediterranean Masters which could subsequently lead on to a European doctorate. A whole series of university masters courses has been launched:

- **Disaster medicine**, at the initiative of the CEMEC (European Centre for Disaster Medicine, San Marino). This masters course was set up in 1998 to provide participants with a clear picture of current concepts and developments in the medical management of disasters and will be based on : self study, the writing and defense of a dissertation or a

research project paper, interactive lectures and debates, practical and simulation exercises, written and oral evaluation followed by interactive assessment through internet. At the end of the course, participants are expected to be able to evaluate risks, to participate in the planning for disaster preparedness, to direct the medical response team in case of disasters, to organise and manage evaluation and debriefing sessions, to provide introduction and awareness to disaster management for medical response teams. The course is of interest to all those involved in the medical planning and response in disaster situations at local, national and international levels. The number of participants is limited to 30 and the duration of the master is one academic year, divided as follows:

- four months of self study including the first draft of the dissertation or the research project;
- three consecutive weeks of an interactive live-in course at CEMEC in San Marino concluded by the multiple choice questions and oral evaluation;
- four months for the drafting of the research project's final version and preparation for the interactive internet assessment.

As an example, the structure of such a course covered the following sectors: introduction to disaster medicine; disaster management; disaster mental health; specific multiple casualty treatment; complex humanitarian emergencies; ethical and forensic aspects of disaster medicine; education and training in disaster medicine.

• **Risk science**, as part of a multidisciplinary approach involving three Montpellier universities : Montpellier I (Law, Economics, Medicine and Pharmacy); Montpellier II (Natural Sciences); Montpellier III (Human and Social Sciences) and the network of engineering schools. The master was launched in October 2001. The objective of such a master, in response to a request from high level national authorities, is to promote "risk culture". The idea was to set up a new European transnational and interdisciplinary cursus in risk management.

A range of other masters courses are foreseen for the future : Seismic vulnerability of buildings, Skopje; Legal aspects of risk management, University of Ghent (Belgium); Local authorities and risk management, Cergy engineering school: EISTI (Ecole Internationale des Sciences du traitement de l'Information), France; Medicine in emergency situations, Algiers, Algeria.

3. When it comes to **vocational training**, the Agreement supported the training of "Environmental Safety Inspectors". At the request of the Moroccan Minister for Regional Development, Water and the Environment, the first training course for Moroccan environmental inspectors was held from 6 to 28 July 2004. This initiative was co-ordinated in co-operation with the Environment Department of the Moroccan Ministry of Regional Development, Water and the Environment and implemented with the support and co-operation of the INESC (National Institute for Civil Security Training) in France and the REMIFOR European Centre, which organised the whole interactive e-learning programme via satellite between Draguignan and Rabat. The role of "environmental safety inspectors" was defined on the basis of the description set out in Recommendation 2001/331/EC of the European Parliament and of the Council of 4 April 2001 providing for minimum criteria for environmental inspections in the member States. Environmental inspections should involve two types of tasks. On the one hand, checking and promoting the compliance of controlled installations with relevant environmental requirements set out in Community legislation and on the other hand, monitoring the impact of controlled installations on the environment to determine whether further inspection or enforcement action (including issuing, modification or revocation of any authorisation, permit or licence) is required to secure compliance with EC legal requirements.

The Agreement also organised a training session in Morocco for psychologists in emergency situations

4. With regard to **information** initiatives, a number of initiatives are promoted by the Agreement: : the use of films to the benefit of risk prevention; radio stations for broadcasting information to the public on risk prevention;.a website "BE SAFE NET", aiming to provide information and knowledge on risk management to young people. These initiatives could be considered as a preliminary contribution to the 2005 Council of Europe "European Year of Citizenship through Education".

The programme experimented by the EUR-OPA Major Hazards Agreement should of course be strengthened and developed in the future according to the priorities which will be identified by the national permanent correspondents of the member States. This input from the EUR-OPA Major Hazards Agreement will constitute, at the European regional level, one of the contributions of the Council of Europe to the United Nations Decade for Education for Sustainable Development. Simultaneously other initiatives will be developed. For example, raising the awareness of the young generation to the respect of the natural and built environment. In this context, the considerable potential of ten years of the heritage education programme initiated by the Council of Europe should be borne in mind. Further initiatives should also be taken concerning vocational and in-service training on the ways and means of developing a sustainable use of regional and local cultural assets.

APPENDIX: NETWORK OF SPECIALISED EURO-MEDITERRANEAN CENTRES OF THE EUR-OPA MAJOR HAZARDS AGREEMENT

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Algeria	Euro-Mediterranean Centre for Scientific and Technical Research on Arid Zones, CRSTRA, (Alger)	Farida KHAMMAR	crstra_biskra@yahoo.fr t/fax: 213 33 73 42 14
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