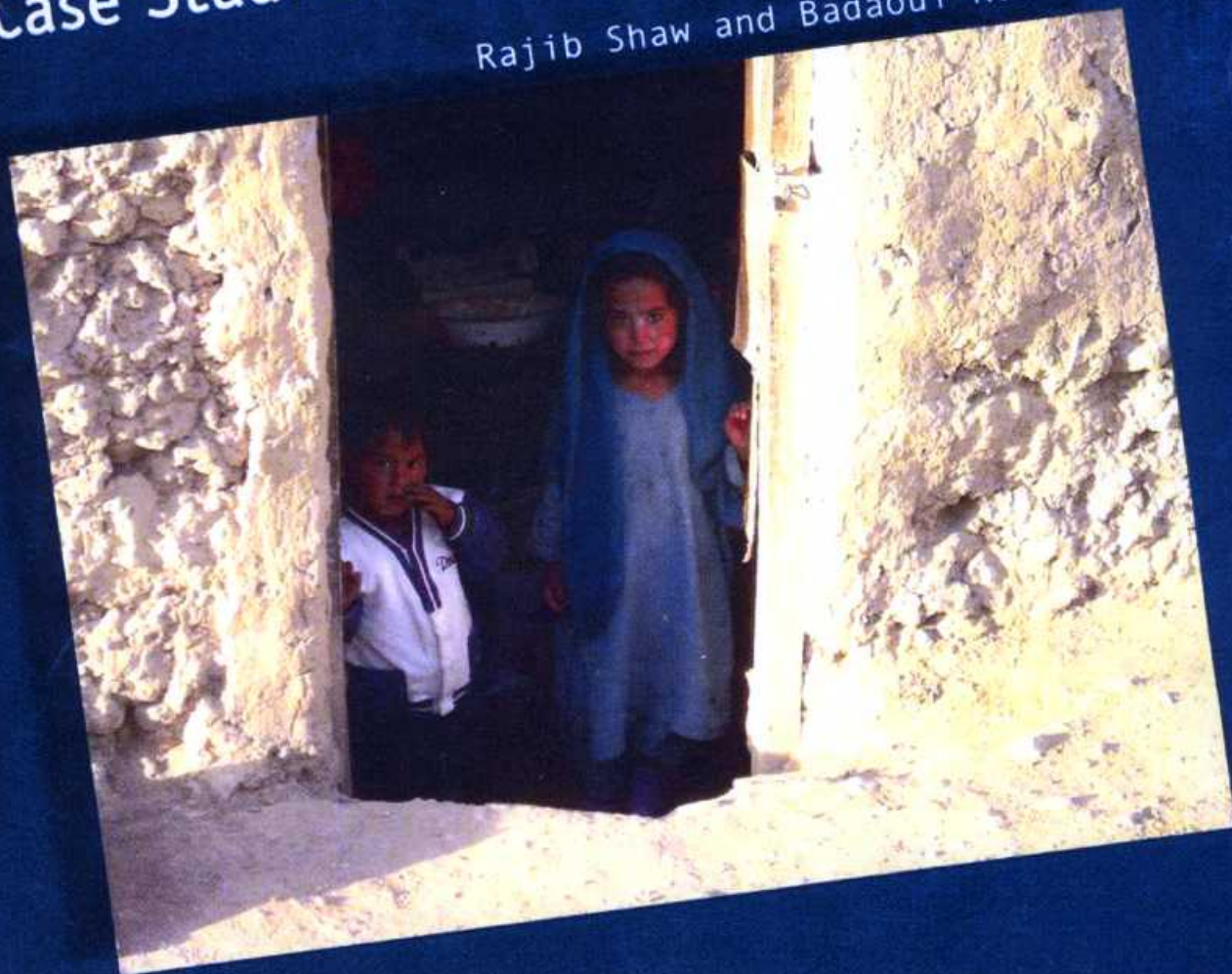




DISASTER REDUCTION and HUMAN SECURITY

Education for Sustainable Development
Case Studies and Best Practices

Rajib Shaw and Badaoui Rouhban
Editors



DISASTER REDUCTION and HUMAN SECURITY

Education for Sustainable Development **Case Studies and Best Practices**

*A Contribution to the
United Nations World Conference on Disaster Reduction (WCDR), Kobe, Hyogo, 2005*

*Editors
Rajib Shaw and Badaoui Rouhban*

Compiled by:
UNESCO (United Nations Educational, Scientific and Cultural Organization) Natural Sciences Sector
Kyoto University Graduate School of Global Environmental Studies (KU GSGES)

January 2005, Kobe

Editors

Rajib Shaw
Associate Professor
Graduate School of Global Environmental Studies
KYOTO UNIVERSITY
Yoshida Honmachi, Sakyo-ku, Kyoto 606-8501, JAPAN
Tel/Fax: +81-75-753-5708
E-mail: shaw@global.mbox.media.kyoto-u.ac.jp

AND

Badaoui Rouhban
Chief
Section for Disaster Reduction
UNESCO
1, rue Miollis
75015 Paris, France
Tel: +33-1-45684120
Fax: +33-1-45685820
E-mail: b.rouhban@unesco.org

Support

Koichi Shiwaku
Graduate School of Global Environmental Studies
KYOTO UNIVERSITY

Design and Layout

Kanae Aoki

DISCLAIMER

Opinions expressed in signed contributions are those of the author(s) and do not necessarily reflect those of the United Nations Secretariat or of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Kyoto University Graduate School of Global Environmental Studies (KU GSGES).

Designations employed and presentations of material in this compilation do not imply the expression of any opinion whatever on the part of the United Nations Secretariat, the UNESCO and the KUGSGES concerning the legal status of any country or territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

FOREWORD

The Director General

United Nations Educational Scientific and Cultural Organization (UNESCO)

At the dawn of the United Nations Decade of Education for Sustainable Development (2005-2014), it is widely agreed that disaster reduction must be an integral part of any strategy aimed at creating thriving and sustainable societies. Beyond this acknowledgement of the importance of disaster reduction, however, we are beset by many questions, most of which revolve around the issue of translating theory into practice. For example, having designed appropriate disaster reduction initiatives, how can they be implemented effectively in actual communities? How, in practice, are people on the ground finding viable solutions to problems arising from natural hazards? Is a culture of risk prevention being fostered in the world's danger spots? What are the best methods for merging disaster management education into the broader agenda of education for sustainable development?

This report, a compilation of case studies sponsored by UNESCO and Kyoto University (Japan), grapples with these crucial questions and many others too. It shows how communities, scientists, activists, non-governmental organizations, teachers, students and policy makers have sought to protect against the ravages of nature and against the harmful impact of reckless and inconsiderate human action upon the environment.

The report contains 93 case studies from 41 countries and regions in different parts of the developing and developed world. These case studies represent an impressive accumulation of first-hand knowledge which, by taking disasters and disaster preparedness seriously, can contribute to building societies that are both safe and sustainable. I am pleased to note that, in all the case studies, a cross-disciplinary, multi-stakeholder and implementation-oriented approach is adopted, focusing on the basic needs of communities.

The year 2005 marks the 10th anniversary of the Great Hanshin Awaji Earthquake of Kobe (Hyogo) in Japan. The United Nations World Conference on Disaster Reduction (WCDR) will be held in Kobe on 18-22 January 2005 and this report is being released as a contribution to the World Conference. I believe that the participants in the WCDR will find this report useful and informative.

I would like to take this opportunity to thank all the contributors to this collection. These case studies should be used as source material for the further elaboration of what 'education for sustainable development' means in the twenty-first century.



A handwritten signature in black ink, which appears to read "K. Matsuura". The signature is written in a cursive style.

Koichiro Matsuura

17th January, 2005

PREFACE

The Dean

Graduate School of Global Environmental Studies, Kyoto University

Kyoto University, one of oldest university of Japan has been actively involved in the field of education for last 107 years. Over last so many years of experiences, the university felt the need of pro-active and implementation oriented studies and research, and consequently established the Graduate School of Global Environmental Studies in the year 2002. The faculty members of the Graduate School have a wide background, from natural science, to social science, economics, engineering, architecture, agriculture, humanities and law. With this unique composition of different specialization, the School targets to address environment and disaster related problems in Japan and abroad. The purpose of the Graduate School is to blend theory and practice, with specific emphasis on field experiences. To facilitate the process, the School is engaged in pro-active win-win collaboration with national and local governments, non-government organizations, international organizations, and United Nations organizations. The unique Internship program of the School engages the students to learn from the field experiences, working closely with the actual problems. This is a very special medium of learning, which the text-books or university lectures can not provide.

The World Conference on Disaster Reduction (WCDR) is a special event to the Graduate School. 10 years before, the neighbouring Hyogo prefecture was affected by the major earthquake, known as the Great Hanshin-Awaji Earthquake, which took more than 6,400 valuable lives. This year, 2005 marks the 10th anniversary of that earthquake. Being the leading academic institution, it is our natural responsibility to accumulate and disseminate the knowledge of last 10 year of post-earthquake reconstruction programme, as well as to learn the valuable experiences and expertise from other parts of the world. Keeping this in mind, Kyoto University, along with the UNESCO Natural Science Sector has decided to bring this compilation of learning on Disaster Reduction and Human Security. These case studies and best practices are related to Education for Sustainable Development, and exemplify how the disaster reduction initiatives become part of development process. Mainly providing examples from the developing countries, this compilation points out that the learning process is universal, and does not have any border.

With 93 case studies from 41 countries, I am confident that this compilation will serve as a reference volume for future work on education for sustainable development, related to disaster reduction and human security. I am grateful to all the case study presenters for their valuable inputs.



A handwritten signature in black ink, which appears to read 'Hiroyuki Nakahara'. The signature is fluid and cursive, written in a professional style.

Hiroyuki Nakahara

17th January, 2005

EDITORIAL NOTES

17th January 1995, 5:46: an earthquake of Magnitude 7.9 shook the city of Kobe and adjoining areas in Hyogo prefectures of Japan. It took more than 6,400 lives, destroyed thousands of houses and left millions of people homeless. The social, economic and psychological damages were also profound. The earthquake shook Japan's educational, academic and engineering communities. It also served as a wake-up call to the entire international disaster reduction community, revealing that despite major advances in earthquake engineering, including in most developed countries, much work remained to be done. The devastation of Kobe pointed out that high tech knowledge must be implemented at the level of ordinary people and communities.

In the ten years that have passed since the Kobe earthquake, Japan has learned tremendous lessons. Significant changes have been noted in disaster related research and education policies. Roles of civil societies have been acknowledged in implementing risk reduction initiatives, as well as training and capacity building process. Blending of social and technological issues in the research projects has been prominent. The impact of these lessons was visible in last year's Niigata Earthquake. With a 6.8 magnitude, this earthquake generated similar intensity as that of the Kobe earthquake. But while damages to buildings in Niigata were high, the human toll—35 lives lost—was far less severe.

At the 10th anniversary of the Kobe earthquake, the World Conference on Disaster Reduction (WCDR) offers a great opportunity, an occasion for the professionals, practitioners, and policy makers of the world to gather to discuss the issues and practices to reduce the impact of disasters. The effort will be: 1) to assess and identify good practices, 2) to define the remaining challenge, 3) to develop a set of objectives and areas of action. The conference expects: 1) voluntary target set for 2005-2015, and 2) formulate partnership mechanism to implement the actions.

Taking this opportunity, the UNESCO Natural Science Sector and the Graduate School of Global Environmental Studies have decided to bring this compilation to showcase best practices and case studies from different parts of world. This volume compiles 93 case studies from 41 countries in different parts of the world. The case studies are grouped into following regions: **Africa**: 12, **Americas** (including north, south Americas and Caribbean): 18, **Asia** (including the Middle East, Arab and Turkey): 44, **Europe**: 7, **Oceania**: 3, and **Global** (with global focus): 9. In each region, the regional studies are listed first, followed by country experiences in alphabetical order. These case studies were all voluntary contributions, and we are deeply thankful to all the esteemed authors for sharing their valuable expertise and experiences. The case studies were edited to limit them to two pages.

Disaster reduction, human security, education and sustainable development are the four key issues, which are considered in the current compilation. Human Security is directly related to disaster reduction, and enhancing human security secures the path towards sustainable development. When we talk about disaster reduction, we focus on reducing risk and vulnerabilities of disasters, which are complex functions of human, social, economic, environmental, religious, and political issues. Thus, reduction of root causes of vulnerability is extremely important. Trying to find the root causes leads us to explore the factors, which are related to human insecurities, problems related to lives and livelihood, education, health and environment. Therefore, in the Millennium Development Goals plea "To intensify our collective efforts to reduce the number and effects of natural and man-made disaster." In "Human Security Now", Amratya Sen and Sadako Ogata state: "At the center of sustainable development is the delicate balance between human security and the environment. Critical to this, is the need to explicitly plan for improved environmental management and sustainable development to disaster prevention and preparedness." Thus, at the political level there exists a recognition to and

commitment to link the issues of disaster, environment and sustainable development to achieve human security. Education is the key tool for this, with common connotation to all these different issues. Education is not necessarily limited to formal education in school, colleges, or universities. Education is a process, which incorporates individuals, families, and communities. The interaction among different groups is essential for this purpose.

A quick glance of the case studies will tell us the varieties of focus areas. WCDR Thematic Cluster 3 (Knowledge, Innovation and Education: To Build a Culture of Safety and Resilience) identifies four themes under the cluster: Education, Research, Public Awareness and Community Empowerment. A majority of case studies focus on community activities, especially on how the communities were able to cope with different types of disasters in different socio-economic context. These are all learning processes for the community, especially to enhance the resilience among its members. A number of these studies include public awareness, training and capacity building programmes. Quite a number of case studies focus on professional expertise, like microzonation, mapping, planning, hazard assessment, and development of risk reduction tools. These are all related to education and research. There are some case studies, which focus on formal education at school and colleges, but are linked to practical learning exercise. Distance learning has appeared as one of the possible media to reach the global mass, and to reach the farthest and the most needy group. The link between on-site testing and on-line learning has been emphasized by several case studies.

If we look at the authors of the case studies, we see an impressive diversity: from academics, to civil societies, practitioners, policy makers, and representatives of international and UN organizations. Many of the case studies demonstrate unique ways of multi-stakeholder, cross-disciplinary cooperation, and verify “Education for All”, and “Efforts by All”.

The challenge before us is ACTION. We know what to do, we know how to do it, and we also know with whom to do it. We have the resources, expertise, know-how. We just need the environment and the will to implement actions, and share the good practices with other parts of the world. The case studies compiled here offer answers to many critical questions. They demonstrate unique know-how and expertise.

The United Nations Decade on Education for Sustainable Development (2005-2014) provides us a special environment to work together pro-actively and effectively to reduce the risk of natural disaster, and enhance human security, thereby promoting sustainable development. The Decade will provide us policy environment, and political support from national governments and international organizations. At the dawn of this decade, the WCDR in Kobe, and the compilation of this document has a special significance. We are confident that this document will be a good reference material, where wealth of knowledge is accumulated. The main purpose of this document is sharing of knowledge, and therefore we will be extremely happy, if practitioners, policy makers, professionals, community leaders, and all other stakeholders find this document useful and share it with their colleagues. We are hopeful for a successful WCDR, a fruitful and active Decade, and a safer future.

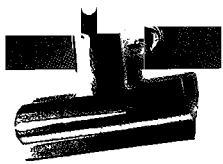
Rajib Shaw
Badaoui Rouhban
Editors

17th January 2005

ACKNOWLEDGEMENTS

This volume was made possible due to voluntary contribution from the case study authors. Their kind efforts are highly acknowledged. We are also thankful to United Nations International Strategy for Disaster Reduction (UN ISDR) for their cooperation in sharing the case study information through its homepage. Our special thanks are due to Dr. Walter Hays of Global Alliance for Disaster Reduction (GADR) for his sincere efforts and call to the GADR members to submit their case studies.

We are thankful to the administrative support of the Kyoto University Graduate School of Global Environmental Studies. Special thanks go to Koichi Shiwaku for logistic support and Kanae Aoki for the design and layout.



CONTENTS

13
14
15

24
25
26
27
28
29

16

23 20

19

18

30

17

21

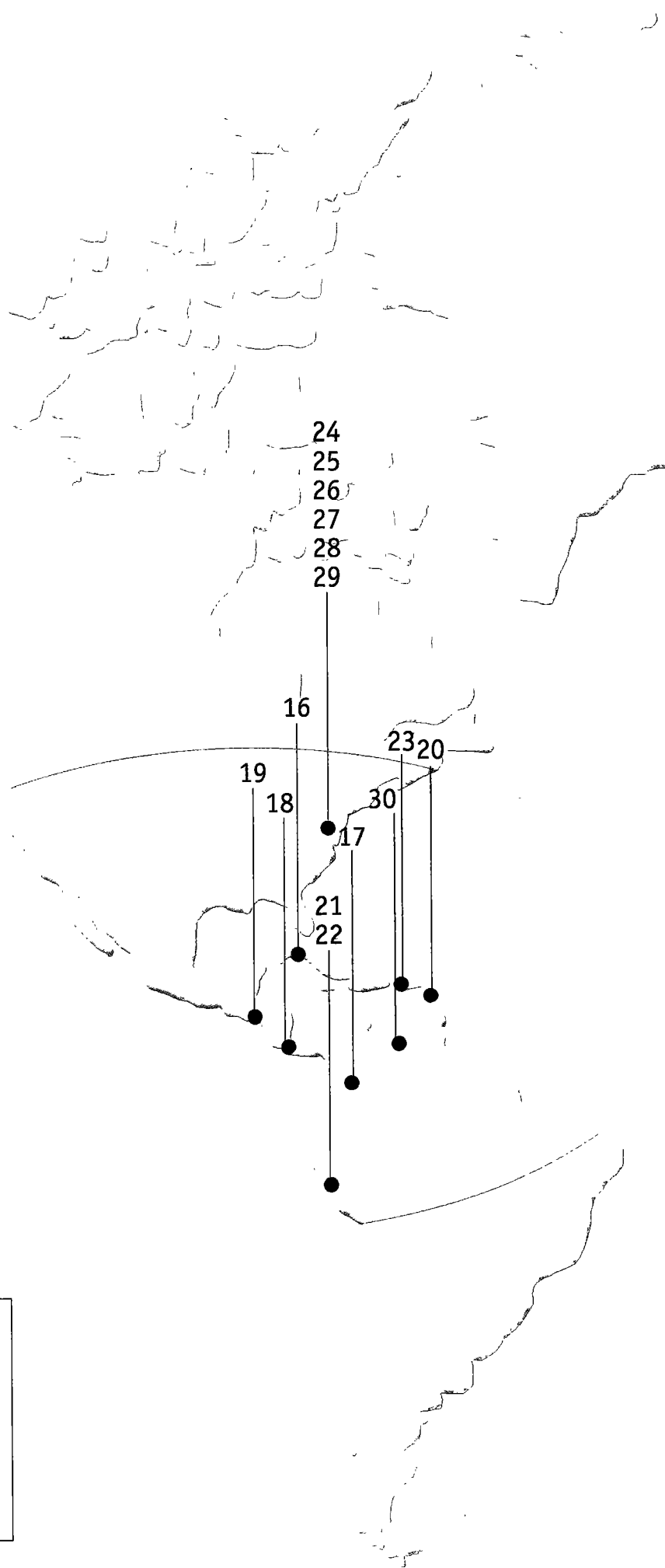
22

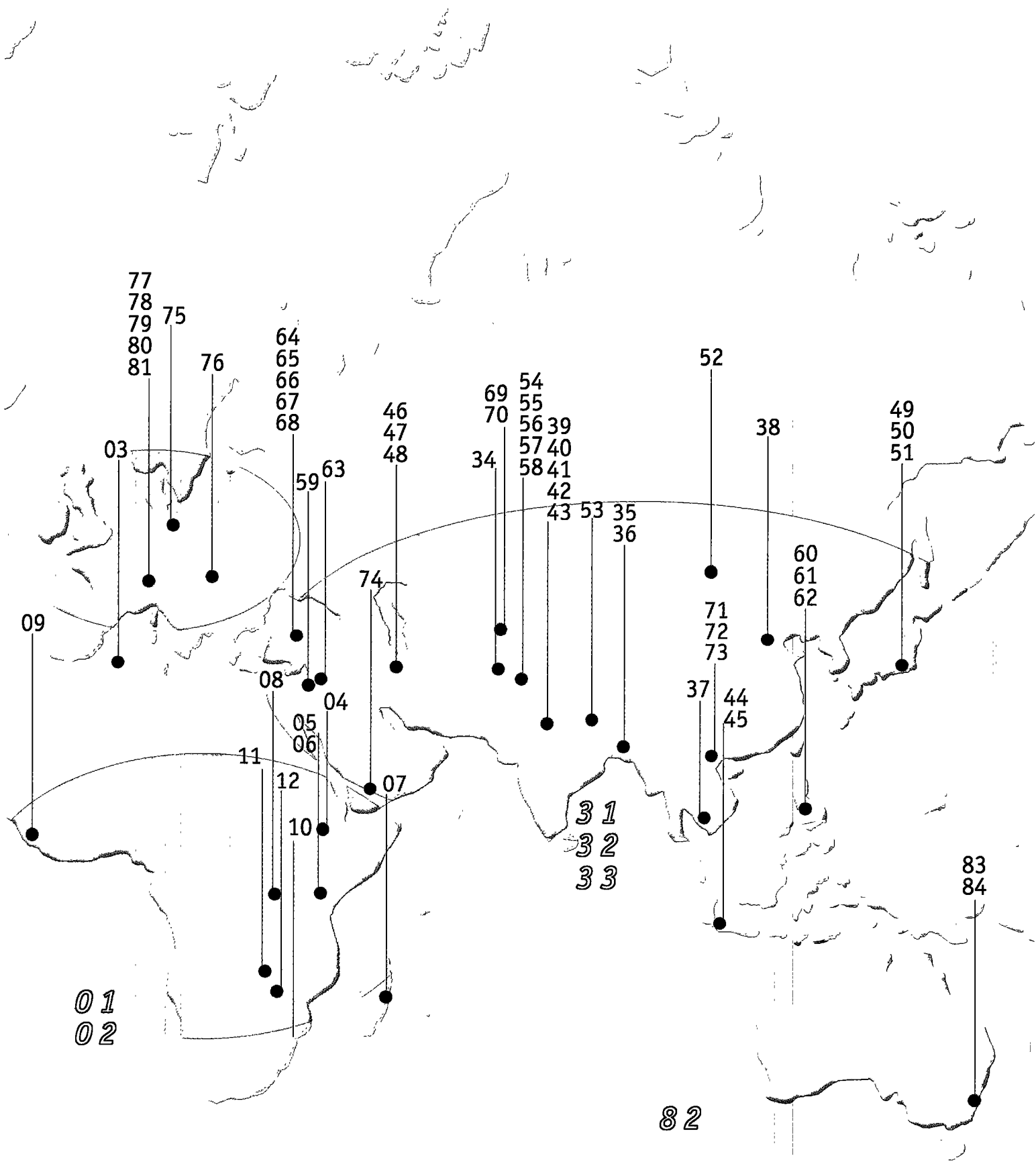
+ GLOBAL

85 88 91

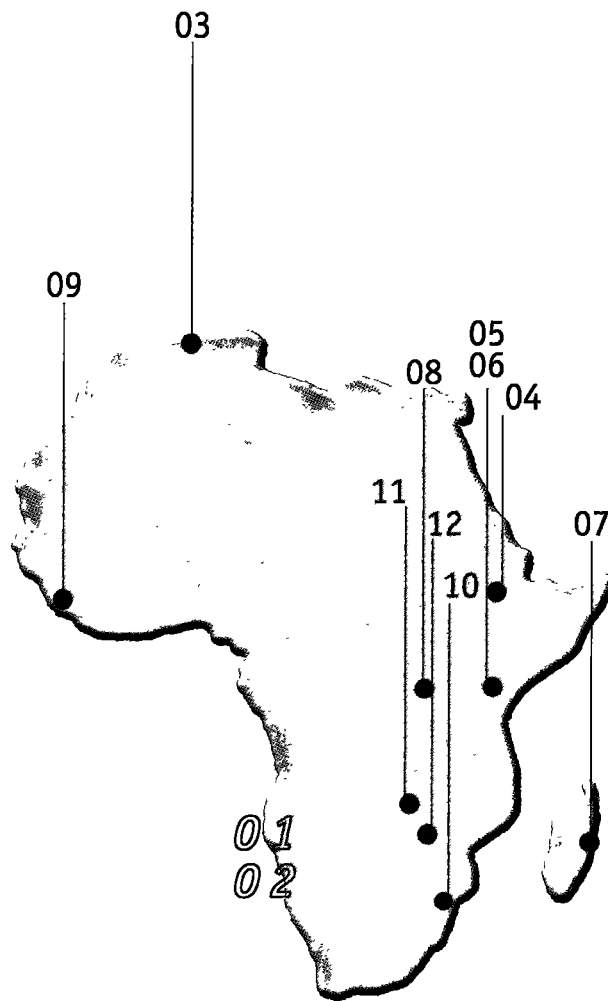
86 89 92

87 90 93





Africa



01 Developing Regional Food Security Capacity: The East Africa Regional Food Security Working Group

BACKGROUND

The 5th Pan African Conference in Ouagadougou, Burkina Faso (Ouagadougou declaration, 2000) committed National Societies to address food insecurity throughout Africa. Supported by the International Federation of Red Cross and Red Crescent Societies and the Rcnct (East Africa Regional Red Cross and Red Crescent Network) National Societies developed a regional food security working group (RFSWG) in 2002. Although the original group is no longer in operation, its members had been deployed on a number of occasions and their work was considered useful. As a result, a follow-up workshop was planned to re-enforce the existing RFSWG.

OBJECTIVES

The objectives of the food security working group are to:

- help National Societies to translate the East Africa food security strategy and Ouagadougou declaration into programmes and plan of actions;
- design and establish pilot food security projects with National Societies annually as per annual plans and budgets; and
- take the lead in training National Society staff and volunteers on food security issues in areas of awareness-raising, skills training and advocacy. Eight National Societies participated in the workshop. Participants came from diverse backgrounds and included health, disaster relief and preparedness, and organizational development officers as well as branch secretaries and program coordinators. The workshop was supported through annual appeal funds and direct funding by the British Red Cross.



ACTIVITIES

The workshop's aim was to reinforce the East and Horn of Africa working group on food security by expanding its membership and enhancing training on operational, food security issues. In addition to building a team spirit through sharing experiences, the specific objectives of the workshop were to gain an understanding of:

- the work and origin of the food security working group;
- food security in general, and its relationship to other sectors such as health;
- different organizational food security approaches;
- existing tools such as policies, strategies and the Ouagadougou declaration; and
- vulnerability and capacity assessment tools, in order to select and use a number of them in relation to food security assessments;

Workshop participants were also able to gain experience in food security information analysis and program design, and aimed to develop country-specific action plans on food security, as well as a regional action plan. The workshop, which included work in the field, was held from 4-11 August 2003 in Sinkat, Sudan. The location, which is repeatedly affected by acute food insecurity as a result of droughts, was chosen specifically in order to place participants in a chronically food insecure environment. Participants endured harsh climatic and living conditions, but which reflected the sort of conditions they would probably face in the areas they were sent to. Theoretical work took up the first four days of the workshop. Participants were introduced to different learning methods, such as presentations, group work, plenary discussion and role-plays. These sessions were followed by field work to enable participants to practise what they had learned. An important aspect of the workshop was the emphasis on sharing information and experience with the whole group.

Work in the field enabled participants to gather information using techniques such as:

- secondary data collection;
- key informant interviews;
- seasonal calendars;
- focus group discussions; and
- direct observation.

After their field work, participants analyzed the information collected and developed program and country and regional action plans.



ACHIEVEMENTS

- Participants discussed the linkages between food security and HIV/AIDS.
- They were able to gain an understanding of vulnerability and capacity assessments and how to use participatory tools in assessing food security.
- They acquired practical experience of using participatory tools with communities.
- They gained practical experience of an area (Sudan's Red Sea state) that suffers from chronic food insecurity, which is exacerbated by recurrent droughts.
- The food security working group was revitalized through new membership and can be used by National Societies in the region as a technical resource.
- The workshop allowed an exchange of experiences in food security and led to the development of country level action plans.

LESSONS

- Maintaining a regional food security working group requires continued support of the RCnet in order to permit the deployment of staff.
- Trained National Society staff need to be deployed in order to maintain motivation once training has ended.
- Training in food security vulnerability and capacity assessments should include analytical and planning skills.
- Carrying out the training session in Sudan's Red Sea state enabled participants to experience a new environment whose conditions are closer to those they would experience when deployed.
- The development of action plans needs to be followed up to ensure implementation of plans.



CONCLUSION

The regional food security working group is an important resource for the East Africa region. It will be important to ensure that working group members are used in deployments in order to put into practice the new skills developed. This relies on the RCnet in the region enabling the deployment of group members. It will also be important to continue to organize refresher courses as well as training to maintain a certain number of group members over time in order to keep the food security working group functioning.



CONTACT DETAILS

**East Africa Regional Delegation
Nairobi**
Woodlands Road P.O. Box 41275
Nairobi-Kenya
ifrcke01@ifrc.org

**International Federation of
Red Cross and Red Crescent Societies**
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org

02 An Outreach Program Of The GFMC And The ISDR Global Wildland Fire Network: Regional Subsahara Wildland Fire Network

BACKGROUND

Fire is a widespread seasonal phenomenon in Africa. In south of the equator, approximately 150 to 170 million hectares burn annually. Savanna burning accounts for 50% of this total, with the remainder caused by the burning of fuel-wood, agricultural residues, and slash from land clearing. Fires are started both by lightning and humans, but the relative share of fires caused by human intervention is rapidly increasing. Pastoralists use fire to stimulate grass growth for livestock, while subsistence agriculturalists use fire to remove unwanted biomass while clearing agricultural lands, and to eliminate unused agricultural residues after harvest. In addition, fires fuel by wood, charcoal or agricultural residues are the main source of domestic energy for cooking and heating.

In most African ecosystems fire is a natural and beneficial disturbance of vegetation structure and composition, and in nutrient recycling and distribution. Nevertheless, substantial unwarranted and uncontrolled burning does occur across Africa, and effective actions to limit this are necessary to protect life, property, and fire-sensitive natural resources, and to reduce the current burden of emissions on the atmosphere with subsequent adverse effects on the global climate system and human health. Major problems arise at the interface between fire savannas, residential areas, agricultural systems, and those forests which are not adapted to fire. Although estimates of the total economic damage of African fires are not available, ecologically and economically important resources are being increasingly destroyed by fires crossing borders from fire-adapted to a fire-sensitive environment. Fire is also contributing to widespread deforestation in many southern African countries.

Most southern African countries have regulations governing the use and control of fire, although these are seldom enforced because of difficulties in punishing those responsible. Some forestry and wildlife management agencies within the region have the basic infrastructure to detect, prevent and suppress fires, but this capability is rapidly breaking down and becoming obsolete. Traditional controls on burning in customary lands are now largely ineffective. Fire control is

also greatly complicated by the fact that fires in Africa occur as hundreds of thousands of widely dispersed small events. With continuing population growth and a lack of economic development and alternative employment opportunities to subsistence agriculture, human pressure on the land is increasing, and widespread land transformation is occurring.

The prevailing lack of financial, infrastructure and equipment resources for fire management in Subsahara Africa goes along with a lack of human resources adequately trained in fire management. The gap between the decreasing fire management resources and the increasing fire problems in Subsahara Africa requires immediate response through capacity building.

OBJECTIVES

Considering the recent progresses made by cooperation in wild-land fire science and management, including wild-land fire disaster mitigation and response, it is necessary to provide individuals as well as officials from SADC countries with an updated and comprehensive advanced fire management training / capacity-building package. The Training Centre activities cover (a) introduction to African fire ecology, (b) fuel and fire management, (c) fire prevention, (d) fire-use, (e) fire fighting, (f) fire behaviour prediction, (g) fire monitoring using remote sensing tools, (h) fire early warning systems and application, and (i) international cooperation in wild-land fire management. A strong focus lies on sustainable fire education in and for the rural communities and the communities living in the urban-wildland interface (Community-based Fire Management - CBFiM).

ACTIVITIES

The programme was initiated in 2002. Since then the Training Center conducted a number of short and long term training programmes in cooperation with local and international role players (GFMC: Global Fire Monitoring Center) UN-ISDR, FAO, UNU-EHS, NDMC, NEPAD, WoF, ARB Botswana, USFS, DNRC Montana), most importantly the *Advanced Wildland Fire*

Management Course, A Joint UN Inter-Agency Training Course for the SADC Region (sponsored by the German Foreign Office, Office for the Coordination of Humanitarian Assistance, and jointly conducted with the United Nations University, Institute for Environment and Human Security - UNU-EHS) and the *FAO / GFMC / UNU Training Course for Instructors in Community Based Forest Fire Management (CBFiM)*, both held in 2004.

ACHIEVEMENTS

The Training Center managed to start with a regional outreach in most of the SADC countries. Especially when operating in long term projects the change of community behaviour towards fire is significant. The empowerment and upliftment of people who felt helpless and overwhelmed by wildfires previously is an encouraging achievement.

LESSONS

The Training Center found a huge number of highly motivated people in all affected societies of the SADC region. The future challenge is to identify these individuals and organisations and to create with these persons a common spirit to deal with wildfires in a regional coordinated strategy

FUTURE

The main challenge for the coming years is to secure funding to enable the knowledge and technology transfer into the communities, organisations and governments of the SADC region, with main emphasis on (a) establishment and implementation of a regional strategy, (b) dealing with the problem of cross border fires, (c) exchange of resources in bilateral assistance and exchange programs for the SADC countries.



CONTACT DETAILS

The Global Fire Monitoring Center (GFMC)

Georges-Koehler-Allee 75
D - 79110 Freiburg, GERMANY
Tel: +49-761-808011
Fax: +49-761-808012

info@gfmc.org

GFMC website:

<http://www.fire.uni-freiburg.de>

Regional Subsahara Wildland Fire Network and

WFTCA Websites:

[http://www.fire.uni-](http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/WFTCA.htm)

[freiburg.de/GlobalNetworks/Africa/WFTCA.htm](http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/WFTCA.htm)

[http://www.fire.uni-](http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/Afrifirenet.html)

[freiburg.de/GlobalNetworks/Africa/Afrifirenet.html](http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/Afrifirenet.html)

03

Governmental Learning Activities To Mitigate Earthquake Impacts In Algeria During The Period 1980-2004

BACKGROUND

This paper presents the case study of the different earthquake disaster prevention and post-disaster measures taken by the government of Algeria between 1980 and 2004. It details the measures learning activities taken at the country level as well as those involving the co-operation of international organizations

In Algeria, as amazing as it may appear, before the last earthquake disaster of El-Asnam (actually Cheliff) in the twentieth century, which occurred on the 10th of October 1980, the government and the population both alike did not consider earthquakes as a threat. The destructive El-Asnam earthquake, of magnitude Ms7.3, of 10 October 1980 occurred in the Central Cheliff Valley affecting a rather densely populated region where about 900,000 people living within 8,000 square km. It caused 3,000 deaths, injuring more than 8,500 persons and they made about 400,000 homeless people; by destroying or seriously damaging at least 60,000 housing units in 24 towns and villages. This earthquake seriously affected all levels of the regional economic development. Also, the social and economic impacts were felt throughout the entire country. One important conclusion that can be drawn from this event is poor earthquake-resistance performance of the Algerian buildings and other facilities. Whether modern construction or traditional gourbis (local house), buildings are potentially vulnerable to the recurrence of destructive earthquakes. Then, On Wednesday, May 21st, 2003, at 18 hours 44 minutes UTC (19:44 local time), a destructive earthquake, of magnitude Ms6.6, occurred in the provinces (wilaya) of Algiers and Boumerdes affecting a rather densely populated region of about 3,000,000 people within 1,000 km². The main shock caused the loss of 2,278 lives, injuring more than 11,450 others, making about 200,000 homeless and 45 people missing; it destroyed or seriously damaged at least 128,000 housing units. These last two destructive events have shown that large earthquakes, particularly in northern part of the country could be very destructive and also they have proved that additional loss-reduction measures are needed to potential earthquake-induced losses. These are not the first catastrophes of its kind to have struck Algeria and there is no knowledge of when and where a similar disaster may strike again? Thus, there should be implementation of effective disaster risk reduction measures and sound disaster management to cope with such emergencies.

OBJECTIVES

The goal of the whole training program is to reach an acceptable disaster risk reduction level for the country. The main objective is to educate and train people for a better a disaster risk reduction.

ACTIVITIES

Activities undertaken during the last two decades are to raise awareness of the civil society, reduce disaster risk and to manage disaster effectively. Also, these learning actions or "training on job" are meant to train decision makers, professionals and also civil society on disaster risk reduction and disaster management.

ACHIEVEMENTS

- **1980:** New mission is given to the Centre of Research in Astronomy, Astrophysics and Geophysics (CRAAG), by the decree 2 February 1981; the CRAAG became responsible for the management of the entire Algerian seismological network.
- **1981:** Appearance of the first Algerian seismic design code (RPA 81).
- **1982:** Meeting of Arab Ministers of Construction in June 1982 in Algiers where a program for the management of the seismic risk the Arab World (PAMERAR) was recommended, with the co-operation of the UN specialized agencies.
- **1982 – 1984:** Realization of a seismic micro-zoning study in the El-Asnam region.
- **1983:** Appearance of a new version of the seismic design code (RPA 1983).
- **1985:** The Algerian Parliament adopted a law 85-231 of August 25, 1985, which establishes disaster relief and civil defense organizations.
- **1985:** Appearance of the recommendations from strengthening, reinforcement and repair of damaged earthquake constructions.
- **1985:** With the co-operation of UNESCO, UNDRO, UNDP and AFESD, the National Centre for Applied Research in Earthquake Engineering (CGS) was created and located at Algiers.
- **1985:** The Ministry of Construction has appointed a special governmental permanent commission to update the regulations for earthquake resistant design and construction.
- **1988:** Appearance of a new seismic design code (RPA 88)
- **1988:** Participation of Algeria to the program

for seismic risk reduction in the Mediterranean region (SEISMED).

■1990: New mission to CRAAG to seismically monitor the whole Algerian territory and to pass under the authority of the Ministry of the Interior by the decree of 17 April 1990.

■1990 – 1993: Revision and analysis of the seismicity of Algeria and adjacent regions during the twentieth century by Benouar in 1993. This has led to a complete, homogeneous and as accurate as possible earthquake catalogue for the Maghreb region.

■1994: Publication of the earthquake Maghreb catalogue during the period 1900-1990 (Benouar).

■1995: Earthquake hazard mapping of the Maghreb region (Algeria, Morocco, Tunisia).

■1981 –2000: Numerous learning activities as seminars, symposia, conferences, training courses and workshops have been taking place in Algeria in order to update the knowledge of Algerian scientists and engineers engaged in earthquake engineering.

■2003: Algeria proposes to the League of Arab States the creation of an Arab Observatory for earthquake Prevention and disaster management. It was accepted by the all the Arab States and is to be located at Boumerdes (Algeria).

■2004: Revision of the Algerian seismic design code (RPA 99) and added some recommendations and changes in zones with higher design accelerations.

■2004: National Assembly passed the bill for Disaster Risk Reduction and Disaster Management. This law will allow the creation of an integrated agency in the government structure for disaster management in Algeria; it will be under the authority of the head of the government (To be established in 2005).

■2004: Creation of a National Agency for earth Sciences under the authority of the head of the government. This agency is responsible for the whole national program for establishing all the tools (as maps) for disaster risk reduction.

■2004: Establishment of a natural disaster insurance fund compulsory for all the owners of buildings, industrial plants, houses, etc. for the whole country.

■2004: Introduction in the cursus of the primary, middle and secondary school levels of natural disaster prevention measures.

■2004: Preparation of a University Cursus for the Sciences of Risk to be taught at the Algerian Universities from 2006 and will lead to Master of Science (2 years) and a Professional Master (3 years).

■2004: The Centre for Earthquake Engineering (CGS), a governmental organisation, has conducted a training program for professionals, decision makers and civil society for the new earthquake design code (RPA99 revised) in the whole provinces of the northern Algeria, during

about eight months.

■2004: The Centre for the Control of Constructions (CTC), a governmental organization, has also conducted for professionals, decision makers and civil society across northern Algeria, a training program on best practices in earthquake design and construction.

■2004: The Algerian Red Crescent (ARC) has also conducted a wide training program in disaster management across northern Algeria for the civil society.

LESSONS

Many difficulties were faced to implement seriously the seismic code particularly for private owners. Also, training the decision makers was not an easy task since these people were used to take decisions and calling them to be trained was, at the beginning of the program, for them like just a break from their duties. It was with time and perseverance of the trainers and educators that the interaction with all the trainees became serious and productive. It is important that these activities be permanent to have a sustainable disaster risk reduction and disaster management strategies.

FUTURE

Focusing on educating and training the civil society in terms of disaster risk reduction.



CONTACT DETAILS

DJILLALI BENOUAR

Vice-President GADE

USTHB, Faculty of Civil Engineering

BP 32 El-Alia, Bab Ezzouar, Alger16111,
ALGERIA.

Tel: +213 71 842 428

Fax: +213 21 247 911.

dbenouar@yahoo.com

04 Ethiopian Droughts: Reducing The Risk To Livelihoods Through Cash Transfers

BACKGROUND

Ethiopia suffers from recurrent drought and famine. In 1984-85, war and drought caused a food crisis during which around one million people died - a disaster from which Ethiopia never fully recovered. In 1999-2000, rains failed again, affecting eight million people. By mid-2003, an insidious combination of sporadic seasonal rains, poverty and HIV/AIDS has conspired to leave over 12 million Ethiopians dependent on relief.

The majority of Ethiopia's people are agriculturalists, dependent on rain-fed crops or pastoralists, earning a living through livestock. However, recurrent droughts have eroded their assets: crops have failed and farmers, too desperate to leave land fallow and let it recover, are forced to keep degrading their soils. In the mountainous north, soil erosion is a serious problem. Falling crop yields and shortage of water mean livestock are dying in droves - or being sold off in a last-ditch attempt to survive.

OBJECTIVES

But over the past year, grain prices have doubled and livestock prices have halved, driving the already destitute further into debt. Humanitarian organizations have realized that simply providing millions of tons of food aid every few years - while life-saving in the short term - is doing nothing to address the deeper causes of this chronic disaster.

They have experimented successfully with distributing cash for work instead of food aid. This has several effects: it provides the most vulnerable with desperately needed money, reducing the need to sell off precious assets such as livestock or tools; it enables the poorest to buy food, stimulating the local economy and encouraging farmers to produce more; and the work for which they are paid is focused on measures which reduce disaster risk.

ACTIVITIES

South Wollo, in northern Ethiopia, is one of the zones hit by food insecurity. The population

depends on agriculture and livestock for its livelihood. But recurrent drought has forced them to sell many assets and plunged them into destitution. As mountainous soils erode, the increasing pressure on available land makes matters worse.

In October 2000, the Ethiopian Red Cross Society (ERCS) initiated a program to reduce vulnerability to drought. They distributed cash totaling US\$ 760,000 to 62,000 people in Ambassel and Kutaber districts of South Wollo. In return, recipients had to work on 'employment generation schemes' (EGS), which focused on road construction and environmental protection (e.g. terracing fields, building check-dams, protecting springs). Food distributions continued to those unable to take part in EGS.

ACHIEVEMENTS

■ **Improved access to food:** Providing cash rather than food aid enabled households to choose which food to purchase, when and how much.

■ **Better long-term food security:** Building 143 ha of terraces and 50 check-dams reduced soil erosion and increased soil depth, moisture and fertility, which in turn increased crop yields.

■ **Stronger livelihoods:** Constructing 96 km of roads improved the access of farmers and pastoralists to local markets, enabling them to buy and sell their produce.

■ **Healthier lives:** Better roads mean quicker journey times to health centres in district capitals. Cleaner springs ensure a healthier drinking water supply, reducing disease.

■ **Healthier livestock:** Better crop yields and water quality ensure healthier animals. Beneficiaries were also able to use the cash they earned to purchase goats.

■ **Preventing sale of assets:** The intervention has prevented target households from selling any more vital assets - such as tools or livestock.

LESSONS

■ The ERCS has a strong, community-based network of volunteers who can mobilize and monitor the activities of vulnerable people in often-inaccessible communities. This complemented the role of the Ethiopian government, which provided technical expertise but lacked access at community level.

■ The presence of Red Cross volunteers among communities means that they are well placed to understand the risks facing vulnerable communities. Volunteers used this knowledge to help villagers design appropriate risk reduction measures.

■ Distributing money rather than food enabled households to choose how to spend the cash – whether on food or on longer-term food security strategies (e.g. investing in tools or livestock). Nearly 100 per cent of households said they preferred cash to food aid.

■ Concerns that distributing cash could lead to higher food prices proved unfounded. However, weekly market price monitoring is needed to check on inflation. If inflation occurs, the program should be converted into food for work.

■ However, the average cash distribution of US\$ 12 per beneficiary was not sufficient for most people to invest in buying new assets – it simply prevented them from selling any more assets. Future programs should therefore increase the wage rate.

■ Program participants were not provided with enough tools or cement to complete construction projects to a high standard. Future employment generation schemes should include such 'non-wage costs' in their calculations.

■ While cash is easier and quicker to distribute than food, there were concerns over handling of cash because of security implications. However, there were no reports of cash being misused for unintended purposes (e.g. alcohol).

■ Cash-based employment generation schemes are best implemented when the main constraint to food security is access to food, not availability of food.

CONCLUSION

Distributing cash instead of food allowed the ERCS to help those affected by drought to protect their livelihoods. Households could choose what they invested their money on in order to cope with the disaster. Their participation in community work helped to prevent long-term threats to their livelihoods

posed by soil erosion and future droughts. The ERCS is now implementing a similar program in response to the 2003 food crisis, which incorporates lessons learned from 2000.



CONTACT DETAILS

Ethiopian Red Cross Society
P.O. Box 195 Addis Ababa Ethiopia
Tel: +251 (1) 159 074
Fax: +251 (1) 512 643
ercs@telecom.net.et

**International Federation of
Red Cross and Red Crescent Societies**
P.O. Box 372 CH-1211 Geneva 19
Switzerland
Tel: +41 22 730 4442
hisham.khogali@ifrc.org
www.ifrc.org

05

Modelling And Deciding With Stakeholders: Lessons On How Project Success And Sustainability May Improve

BACKGROUND

The decision-making process of NGO project development in Kenya has shifted from 'being delivered' by NGOs to participatory development. Previously NGO staff and/or Northern donors identified a project and area and went ahead to implement the project. However, since the 1980s NGO staff and donors involve potential beneficiaries and other experts in the development of projects. They achieve this through the use of participatory methodologies like Participatory Rural Appraisal (PRA). As a result, project performance improved.

Nonetheless, the involvement has been limited by variations of perceptions, particularly of the concept of participation by the NGOs, and shortcomings in the methodologies in use. The approaches are said not to have fully assisted participants and NGOs in unearthing the real causes of poverty. Together with these, they lack the rigour and dynamism that may lead to integrated analyses and shared understanding of the complexities, dynamics and interrelationships involved in development issues. Consequently project success and sustainability has been affected. Together with these, the author's observations say that though NGOs are doing a good job in Kenya, their projects are not as effective as expected.

OBJECTIVES

It is the above background that inspired the action-research (investigated and the investigator influence each other in a study). The aim of the study was to come up with an approach that would improve project development by NGOs in Kenya. Specifically the purpose was to develop and apply a new systematic decision-making process, enhanced by real-time modelling and facilitation. Such a process was expected to improve the impact of NGO projects.

ACTIVITIES

A combination is made from bits of PRA, decision conferencing, requisite decision modelling and new concepts guided by decision theory, multi-criteria decision analysis and local values. The concepts are on participation, modelling, facilitation, use of local tools and values, and their systematic application in all stages of project development. This new systematic process is termed as *Kushauriana*.

The author worked with NGOs in Kenya and later applied a similar process with NGOs in Eastern

Africa. *Kushauriana* involves the following stages:

(i) Identification of an NGO's primary stakeholders and other key players. Each category of primary stakeholders then chose/elected people to represent them whenever the whole group was not allowed to attend;

(ii) Each category of primary stakeholders was requested to go through a self-understanding session. They thought through their lives and expectations along with and about their beliefs and values. The aim was to unearth their issues of concern, beyond the symptomatic ones;

(iii) Strategic thinking and planning by a group of representatives of primary stakeholders plus all NGO staff and members of the NGO's governing body. The fundamental objective was to identify purposes that overlapped, to be pursued instead of an NGO pursuing its own purposes.

(iv) Feedback and accountability - again this was participative.

At the end of the exercise each group came up with a shared vision, mission and strategies for achieving them (this is where broad issues relating to projects were identified) and implementation strategy. The last item usually included the organisational issues requiring strengthening by the lead NGO and its primary partners. The process was facilitated by a person sensitive to the participants' values but without stakes in the outcome of the process. A content catalyst was also part of the group of participants. His/her role was to introduce new ideas or awaken the participants to ideas. Choices were made by the group of participants on a consensus (not a give-and-take tactic) basis, (iii) Project development - projects developed were on the basis of the strategic issues identified above, as opposed to what a certain group wants.

It involves four stages:

■ **Preparations** - the process is similar to (i) above except that the participants are limited to the project,

■ **Project design** - participants went through a process similar to (ii) above. In addition, during the exercise, extensive on-the-spot modelling and sensitivity, resource-flow analyses were carried out by the group. Since in a majority of cases both literate and non-literate people participated, we utilized written and visual modelling through the use of local tools and items. In all cases a group of projects was chosen for implementation. Therefore, project portfolio analyses were carried out,

■ **Implementation of the chosen projects** - all primary stakeholders and key players played roles identified during the planning exercise and modified as new issues emerged, and

■ **Participatory monitoring, mentoring and evaluation.**



ACHIEVEMENTS

The process brought a new lease of life to the NGO concerned, the project and primary stakeholders. Additionally, participants' wealth of ideas increased and so they pursued issues they would ordinarily not have. It also increased their independence. With an informed community, project performance improved. Therefore, projects developed were consistently better and more acceptable compared to those developed through the use of other approaches. Going by the results of the two years we worked with each organisation, then the projects' success will be sustained into the long-term.

Kushauriana, had impact on outputs and outcomes, including behavioural ones. It increased participants' confidences, vigilance, awareness, sense of ownership and control, patience, maturity and exposure. As a result, relationships of those involved improved, networking and understanding increased, and conflicts reduced. Consequently, it helped to increase their abilities as individuals and as groups. These were the foundation for courage to changing attitudes, beliefs, values, aspirations and expectations.

LESSONS

■ The importance of genuine involvement of all primary stakeholders and other key players in setting project boundaries plus in all other stages of project development.

■ Peace at home and in the community was considered a pre-requisite to developing successful and sustainable projects - even where a locality was not in conflict. This means that development endeavours can become conflict early-warning platforms

■ Project portfolios - whether in conflict or at peace, issues in developing countries come in groups and therefore need to be solved in groups

■ NGOs may want to always start helping the poor of the poor first. These are mostly affiliated to religious and/or traditional African groups. If these are assisted first, the rest of the community will almost automatically improve their own material status.

■ Training alone does not work in building capacities. To help the poor out of their poverty there is need to provide them with the space for self-understanding, cushioning and mentoring so that they think about themselves and their states.

■ The need for appropriate support from (i) Relevant and functioning organisational systems of the lead NGO or agency and its primary

partners, (ii) Institutions of importance to the success of new projects, (iii) The larger local community, and (iv) General environment.

■ Use of a hybrid of approaches and interventions. A blend of recognised and respected African traditional systems with modern ones.

While developing projects, the following questions may need to be on one's finger tips:

■ Do I make beneficiaries feel like they need aid forever?

■ Do I assist them while changing their world views, and belief-systems about their states - to those possible, for they themselves to change things for the better?

■ Do I ever pursue the institutionalisation of the successful processes?

■ Is my work a passion or just a job like any other?

Above all, the NGOs/agencies and the supporting institutions should first and foremost have the will towards such ends, including the will to appropriately apply such promising and liberating processes like *Kushauriana*.

FUTURE

It may be useful to identify people (call them *philanthropic entrepreneurs*) who are patient and consistent, ready to learn from the locals and whose primary motivating factor is to develop ideas with the people and then leave the people to go on with their long-term implementation while the entrepreneurs move on. They are to play a helping role and not become directors of the process. These are people who derive satisfaction from creativity, innovation and helping others with ideas 'for free'.



CONTACT DETAILS

Florence Omosa

(Current Contact)

Operational Research Department
London School of Economics and Political
Science

Houghton Street, London WC2A 2AE, UK

Tel: 44-20-7955 7653/6621

f.y.omosa@lse.ac.uk

(Permanent Address)

PO Box 53626, Code C0200 Nairobi, Kenya

Tel: 254-20-219951 or 722 8373 18

fomosa2001@yahoo.co.uk

06 Kenyan Droughts: A Community Based Approach

BACKGROUND

Kenya suffers from regular extreme weather events, which exacerbate rural poverty, with devastating impact on pastoralists and subsistence farmers in the arid and semi arid regions of the country. In the last decade alone, drought periods in 91/92, 95/96, and 98/2000, and devastating floods in 1997/98 and again in 2002 in different parts of the country have been recorded. These phenomena have had the cumulative effect of reducing household food availability, purchasing power, and coping capacity, impoverishing the rural population.

In the year 2000 Kenya suffered its worst drought in 37 years. By June, an estimated 1.7 million people were in need of food assistance. By December 2000 this figure reached 4 million, and the Government of Kenya launched an urgent food appeal to feed 4 million Kenyans affected by famine. The Kenya Red Cross Society (KRCS) participated actively in the response to the famine in 2000 and the authorities appointed the KRCS as lead agency in Machakos district to distribute relief food on behalf of the GOK and the WFP, in partnership with the International Federation. The relief operation lasted for nine months with 260,497 beneficiaries, and gave the KRCS Machakos branch the opportunity to work closely with rural communities of Machakos. The KRCS Machakos Branch, together with the International Federation undertook an assessment at the end of the operation in order to review whether there was a need to continue the operation, as well as the underlying causes of the food crisis.

Machakos district has an estimated population of 906,644 people and the majority of the population (85 per cent) derive their livelihood through farming. More than 50 per cent of these people are categorized as the absolute poor (i.e. those who cannot afford to meet the basic minimum food requirement even after spending all their total incomes on food only).

OBJECTIVES

The objective is to build assets to be able to cope with regular droughts, rather than only acting when the emergency has already struck. The project is structured into four major focal sectors, that incorporate different activities, and a cross-cutting issue that embraces different capacity building activities, advocacy and awareness campaigns that are directly or indirectly linked to drought consequences

(Hygiene and Nutrition, HIV/AIDS and First Aid). The focal sectors are intended to encompass different types of actions related to drought, namely preventive (prior to drought), coping (during drought) and recovery (basically post-drought rehabilitation).

ACTIVITIES

In 2001 the Spanish Red Cross (SRC) initiated a bilateral cooperation with the KRCS on a long-term basis. After the first consultations, the Kenya Red Cross Society showed interest in implementing a Drought Preparedness programme in Machakos District. This program focuses on developing branch capacities through training to enable the Machakos branch to mobilize volunteers, and through training to work closely with and "from within" rural communities. The three-year project, implemented by the KRCS-Machakos branch with technical support from the SRC, aims at strengthening the local and district capacities, through local and innovative mechanisms, to predict, cope with and recover from recurrent drought impacts (there is a drought episode every three-four years).

Beneficiaries were selected amongst the poorest sectors of the poorest divisions in the district. Masinga and Katangi divisions harbour a great percentage of food aid beneficiaries from the former food relief operation (2000-2001).

The project concentrates the efforts on the most vulnerable women in rural communities, supporting local associations and giving priority to women-headed households with children. A second target group is the whole population, with the aim to promote, at communal level, simple water storing and irrigation systems, drought resistant crop farming and grain storage. Health education focusing on the most common diseases, normally related with safe water and environmental sanitation, and HIV/AIDS is also a component of the program.

A participatory approach, based on



Participatory Hygiene and Sanitation Transformation (PHAST) methodology, was used to identify the perceived needs of each community on health, water and sanitation. This mobilized the community to:

- take part in the solution of their problems through setting up steering committees;
- work through local associations to share the responsibility between individuals, and strengthen the social tissue and the associative structures;
- mobilize and train volunteers at community level to take part and responsibility in the implementation of the project;
- involve the local authorities in the project implementation, getting their support from the technical point of view, and their involvement on the management structures at the lowest possible level.

The activities were funded through a revolving fund to create ownership and solidarity between all the vulnerable women and included:

- selection and training of Red Cross field officers at district level. Train them on the aims of the project and PHAST methodology, as well as revolving funds;
- identify in each community the health, water and sanitation status, needs and perception, through a methodology based on PHAST;
- put in place in each location a focal point for the development of the community based organization with 30 members elected through baraza system;
- setting up of Red Cross sub-branches or reorganizing the existing ones;
- mobilization of local communities, together with water department officials, to work on the construction of small-scale water systems with the participation of the community;
- setting up of and training for water committees in order to ensure the management of the water systems;
- community health education and sensitization on basic environmental health, sanitation and HIV/AIDS through public sessions conducted by Red Cross volunteers;
- specific intervention in HIV/AIDS prevention, focused on training for youth in community-based first aid, training in counseling for peer educators and support to the establishment of Red Cross youth clubs;
- malaria prevention activities in collaboration with the Ministry of Health, mainly related with the utilization of mosquito nets;
- agriculture components with the aim of promoting the farming of drought resistant crops and advocacy in storing as well as setting up seed banks at communal level;
- provide local associations with funds and technical training to promote off-farm economic activities through revolving funds.

Specific training and support to Kenya Red Cross Society at district level and local level in order to improve their capacity to manage and monitor

the activities and to ensure their future sustainability.



LESSONS

The “food gap” in the district, that affects the majority of the population every year, forces them to look for other sources of income to buy 1/3 of their food needs from the market.

■ Promoting economic activities among the most vulnerable women helped them to “fill the gap”.

■ Promoting micro irrigation schemes will help the small farmers to grow more food, and with an increased security and independence from climatic variability.

■ Increasing access to water sources accompanied with health education and community first aid training have a direct impact in the health status of the population at large, preventing common diseases, such as diarrhea and malaria making their life more productive.

■ Finally, there is a poor knowledge of the HIV/AIDS impact in rural areas of Kenya, and information is the best way of preventing the spread of the pandemic.

■ Working with communities is the key to success in this type of programme.



CONTACT DETAILS

Kenya Red Cross Society
PO Box 40712 Nairobi-Kenya
info@kenyaredcross.org
www.kenyaredcross.org/index.php

**International Federation of
Red Cross and Red Crescent Societies**
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org

07 Empowering Communities To Monitor Vulnerability Via Communal Information Systems (CIS)

BACKGROUND

Madagascar is home to an annual onslaught of shocks ranging from cyclones, floods, drought, and locusts to cattle theft, economic instability, and epidemics, and many others in between. On one of the poorest and most malnourished countries in the world, such pressure results in chronic vulnerability and in volatile high-risk livelihoods. The only sustainable way of reducing risk in Madagascar is by building awareness among communities, and helping them to monitor and manage the evolving livelihood conditions using simple low technology tools.

A knowledge management system was conceived by CARE International that was adapted to a commune's capacity to monitor vulnerability. This system is simple, user-friendly and inexpensive; it demands little effort by, and is of proven utility for the community. The system has been implemented around the nation during the past 4 years of project implementation.

OBJECTIVES

The goal of this project is to reduce risks to livelihood security. The objective is to enable communities to take the monitoring of vulnerability into their own hands by transferring capacity to set up a Communal Information System (CIS) and to monitor very simple indicators linked to mitigation actions.

ACTIVITIES

What is a CIS?: *the most sustainable tool to monitor vulnerability in a commune. An information system is proposed in high-risk communes in order to equip decision makers with adequate skills to monitor vulnerability. This system is simple, inexpensive, demands little effort, is user friendly and of great utility as it must be implemented by the community and for the community.*

The perfect marriage of needs, resources and commune capacity. To manage the commune, the decision makers need regular information regarding the well-being of their populations.

They are conscious that resources and the capacities at their disposal are neither generous nor omnipresent.

■ *A revolutionary way to apply minimum statistical rigor to concepts difficult to harness and express.*

■ *The adequate monitoring of vulnerability in the simplest possible form but which lends itself to concrete and fast mitigation action.*

The CIS project has been successfully implemented to date in six high risk zones: Mahanoro, Morondava, Toliara, Mananjary, Fenerive and Soanierana Ivongo Districts (3-4 communes within each). A CIS is developed by the community and for the community.

■ **By the community:** participative workshops on the selection of the indicators are organized in each CIS District. They aim:

- To systematically familiarize all participants to the local notions of hazard, vulnerability, and risk.
- To identify the indicators that make it possible for local authorities to monitor vulnerability.
- To support a commune as it sets up a sustainable CIS and develops appropriate mitigation action plans linked directly to CIS results.

CISs are not imposed on the communes, but are proposed and molded with the communes. CARE staffs are used as technical support in the communes during the implementation phase of CIS; they do not aspire to a permanent presence which will endanger the sustainability of the CIS.

■ **For the community:** A CIS conceived with the commune, must initially be used by the commune. A CIS respects the unique profile of each commune and offers autonomy for decision-making. A CIS reinforces national structures and ensures sustainability by helping the communes take their development in their own hands. To achieve this objective, the CIS agents train local authorities to take responsibility for information collection, to follow the evolution of the data and the indicators, and to inform and to catalyze mitigation action in the event that the data show negative trends.

■ **For the nation:** Once a commune takes full charge of its personalized CIS, the commune is equipped to rapidly report a disaster that exceeds their management capacity. The

mandate of CNS (the National Risk and Disaster Management Council) is to monitor the vulnerability of high-risk zones throughout the nation. CNS is designing a National Early Warning System (SNAP) which will capitalize on CIS information emanating from the communes. CIS information will feed into the periodic vulnerability bulletins produced by future SNAP agents. The CIS will be used as CNS antennas to monitor vulnerability and to sound alarms for imminent disaster.

An example: *the manioc in commune X is a substitute product - not a product of choice. When rice is in short supply, and/or its price exceeds the purchasing power of the population, the sale of the manioc increases at the market. Once the manioc is sold the salesmen leave the market. When the number of salesmen between 11h and noon falls, the vulnerability of the zone is heightened.*

The monitoring of this indicator requires the tax collector (that passes in the market everyday) 3 more minutes to note the number of salesmen on a simple card. Little effort in time and resources, a figure with a trend that is simple to monitor, to use, and to understand. When this figure remains below a threshold for a predetermined period, the decision maker consults his action plan and catalyzes the Mini Mitigation Action to avoid a catastrophe.

ACHIEVEMENTS

The first 10 CIS communes identified a total of 27 indicators, (1-4 per commune). Here are some examples:

- The number of manioc salesmen
- The quantity of drinks consumed in the local bars
- The number of school children who miss class during the school year.

These indicators and the 24 others were the subject of lengthy and animated discussions before being retained. Each represents one reflection of vulnerability specific to the commune that proposed it.

Once the chosen indicators are validated and reinforced, large public signs are produced to record and display the monthly values. This public display brings attention to the periodic evolution of the set of indicators and encourages discussion and use of the monitoring. Thresholds are set for the set of indicators and when a certain number of the indicators simultaneously take a turn for the worse, an alarm is sounded -catalyzing a Mini-

Mitigation Action (MMA). MMAs draw on predefined local resources (private, NGO or government) to implement a small scale mitigation activity that serves as a revenue-buffer for the neediest households at a critical time while reducing risk to a pertinent hazard (example: dredging a canal to avoid flooding).

LESSONS

The wide recognition of the CIS as a tool for the general management of the commune has demonstrated that the inclusion of the CIS in the Plan Communal de Development (PDC) will ascertain that a certain level of monitoring will continue long after the CIS project ends. The project has also learned that promoting knowledge management systems without having MMA resources propositioned to allow authorities to act on the information is setting oneself up for defeat.

FUTURE

The main suggestions would be to integrate CIS to mitigation resources in a more systematic way among the same communities and to replicate the CIS in different settings.



CONTACT DETAILS

Lezlie Caro Moriniere

tarisk@wanadoo.fr
6 impasse Touraine 97118
Plaine des Cafres
Reunion Island
Tel: 262 0262 598505

08 Community-Based Food Security Work In Rwanda: A Rwandan Red Cross Experience

BACKGROUND

Rwanda is one of Africa's most densely populated countries. Its total population is 8.1 million with 305 inhabitants occupying each square kilometer. It is a small country, with undulating hills home to thousands of small household farms which consume much of the produce they grow. The population density has always put tremendous economic and political pressure on the country and, historically, it can be considered one of many complex root factors that led to the genocide in 1994. Today in Rwanda, people are trying to rebuild all parts of their lives. Over the last ten years many important measures have been taken. Since 1994, the economy has grown on average 8 per cent per year. However, in spite of this progress, the country still faces enormous challenges, most of which are inherently linked to poverty. Many communities in Rwanda live with chronic food insecurity and, at times, famine. With such widespread problems and so many places in need, how can the choice of just one province for support be justified? For the Rwandan Red Cross (RRC), the starting point was severe food insecurity experienced in Bugesara and Umutara provinces in 1999. Subsequently, the RRC launched a national-level vulnerability and capacity assessment (VCA) to identify the main types and areas of vulnerability throughout the country. This information was intended to help the RRC to begin to better understand and anticipate problems of chronic food insecurity and other disasters. In conjunction with the government, 62 of Rwanda's 92 districts were involved in collecting information through the national VCA. Soon after, this information helped the Red Cross and the government to launch targeted and appropriate relief operations in Gisenyi and Goma provinces when they were affected by, respectively, torrential rainfall and volcanic eruptions.

The VCA information was also used to identify which parts of the country could benefit from community-level disaster mitigation work. The district of Karaba was chosen as a starting point for a local-level VCA because of the chronic food insecurity problems in the area. However, it also had dynamic local committees and the potential for community involvement, both of which would help to facilitate the work.



OBJECTIVES

In Karaba district, the Rwandan Red Cross worked in a participatory manner, designed to engage the local community and the local authorities as much as possible in the project. The first step was to raise awareness and understanding of the VCA's purpose throughout the district. To do this, Red Cross volunteers and the project coordinator traveled throughout Karaba, talking to people and informing them about the work that the Red Cross was planning to undertake.

ACTIVITIES

For reasons of time and funding, only 13 of the district's 26 sectors would benefit from the project but the selection was made on the basis of objective criteria such as geographical and social representation as well as people's availability to participate in the project. The next step was to engage local people in an exercise to identify what the main vulnerabilities were in the area, what resources or capacities they had and what strategies they had used to overcome problems in the past. In order to get a wide range of perspectives that could be considered representative of the 13 sectors, interviews were conducted with 60 people over a period of two weeks throughout Karaba. Communities themselves elected the individuals to be their representatives, who were divided into three groups: elderly people, women and young people. The group of elderly people were questioned about the area's history and traditional practices; the opinions of the women were sought on the seasonal agricultural calendar; while the group of young people concentrated on a map of the area. A number of different local priorities and emphases could then be deduced, which gave a picture of not only the contemporary situation in the area but also its history, customs and future prospects. Each session of group work involved a transect walk and participatory mapping exercises, and was followed up by a report on the proceedings by the volunteers. Data was collected and triangulated to end up with a list of main vulnerabilities in the area, primary resources, untapped potential and, finally, recommendations for future disaster mitigation work.

On the basis of the VCA, the following disaster mitigation activities were then designed and carried out with the community:

■ A rotating credit scheme was established for small livestock.

- Livestock, animal medicines and pesticides were distributed.
- A field of ten hectares was cultivated and agricultural terraces were built.
- Seedlings were planted for plant diversification.

ACHIEVEMENTS

At an organizational level, the VCA had at least two positive results for the RRC: its volunteers in the area gained valuable experience and the Red Cross and the district's communities, authorities and agriculturalists worked together in a close and constructive partnership. In terms of sustainability, this type of project obviously needs material inputs and funding, and therefore is not in itself self-sustaining. However, the process of VCA led by the Rwandan Red Cross is now being improved and replicated in other areas of the country. In this sense, it can be considered that a sustainable model has been set up which will help reduce vulnerability in other locations. At the same time, many of the inputs that were provided through this project, namely livestock and seeds, have led to the sustainable improvement of the lives of many people in economic and social terms.

As regards the sharing of information, the Rwandan Red Cross feels strongly that the results of the VCA should be made available to everyone including government and other organizations so that they may also use the information and the model as a basis for planning future activities.

LESSONS

In order to manage the projects locally, there needed to be well-defined roles involving beneficiaries, local authorities and volunteers. For this purpose, four local committees were established: a livestock credit scheme committee; a piloting committee; a purchasing committee; and a managing committee. The role of these committees was to ensure the smooth and accountable implementation of project activities.

The project faced several difficulties, some natural and some man-made. Among the natural difficulties was the lack of sufficient rain during the rainy season and the fact that some livestock died unexpectedly and the seeds supplied were inappropriate for local use. Although none of these problems disrupted the project on a large scale, they did mean that while many families benefited, some lost out. The biggest man-made challenge to the project was the need to adhere to strict donor time frames, which proved to be particularly challenging given that this was a pilot project. As a result, some activities such as

seed planting had to be undertaken at an inappropriate time in order to stick to the external calendar of events. However, once again, these pressures did not adversely affect the project on a large scale. Instead, they served as a lesson for all actors who will hopefully be able in future to factor such considerations into planned activities.

CONCLUSION

The community-based approach with extensive vulnerability and capacity assessment ensured that communities considered that they 'owned' the project and participated in its management. While the pilot project raised several issues of timing of inputs, these are being carefully addressed in the development of further programming in new areas of Rwanda, demonstrating the importance of learning from experience.



CONTACT DETAILS

Rwandan Red Cross
 P.O. Box 425
 Kacyiru-Kigali
 Rwanda
rrc@rwandate1.rwanda1.com

**International Federation of
 Red Cross and Red Crescent Societies**
 P.O. Box 372
 CH-1211 Geneva 19 - Switzerland
secretariat@ifrc.org
www.ifrc.org

09

School-Based Peace Building In Sierra Leone

BACKGROUND

Situated in Western Africa, Sierra Leone is rated as the most disadvantaged of nations in the UNDP Human Development Report. A population tired of poverty, autocratic government and corruption might have been ready to support rebellion in 1990, but the ruthless methods of the Revolutionary United Front (RUF) soon alienated moderate supporters. The war only ceased in 2000, thanks to UN intervention.

Post conflict Sierra Leone is characterized by loss of life, displacement, trauma and severely damaged government infrastructure. Some of the main education issues were the destruction of the school system, the trauma suffered by children and the wider community, the need to re-integrate former combatants, and the challenge of understanding the past and rebuilding a secure society. Young people played an important role, both as combatants and as victims in the civil conflict in Sierra Leone. At the end of the war, approximately 50% of the children in Sierra Leone were not attending school, 50% of teachers were not trained or qualified and there was also a serious shortage of current curriculum materials.

OBJECTIVES

In 2001 the World Bank engaged the ICRC and Curriculum Corporation to develop an education Toolkit for schools in Sierra Leone. The goal of the project was to promote peace building and develop peace pedagogy.

ACTIVITIES

■ Peace Building

The UN promotes a holistic view of peace as more than simply an absence of war. However, to simply rebuild a war-torn society is not sufficient in the long term. A commitment to laying down the foundations for a more peaceful society is known as peace building, and it is within this framework that this Toolkit was conceived. Peace education can be defined as "the process of promoting the knowledge, skills attitudes and values needed to bring about

behavior changes that will enable children, youth and adults to prevent conflict and violence, both overt and structural; to resolve conflict peacefully; and to create the conditions conducive to peace whether at an intra-personal, interpersonal, inter-group, national or international level". (Fountain, S. Peace Education in UNICEF, 1999, p.6)

■ Developing Peace Pedagogy

Peace pedagogy emphasizes the role of the peace educator as one who works with students to develop a more positive and elaborated concept of peace, leading them from the most obvious manifestation - the absence of war - through an appreciation of less visible forms of violence such as structural inequalities, towards an understanding of the conditions which build positive peace. Our aim was to move the educational approach from what Paulo Freire (The pedagogy of the oppressed, 1993) called the "banking" theory of education (in which deposits of knowledge were placed in learners' heads) to a more dynamic education that raises critical consciousness.

ACHIEVEMENTS

■ Education Toolkit

The toolkit promotes a variety of learner-centered activities that teach alternatives to the use of violence in resolving conflict. The toolkit consists of four main sections.

- An introduction sets out the philosophy of peace education.
- A set of cross-curriculum units cover various issues to strengthen peace in Sierra Leone.
- Curriculum units divided according to year levels and different subject areas- (English and Social Studies, Health and Physical Education and the Arts).
- Whole-school and community activities designed to build a more peaceful school and community in general.

The toolkit has flexible content, and can be adapted thematically across the existing Sierra Leone curriculum. The kit places strong emphasis on the use of child-centered pedagogy, and offers teachers fresh insights into participative methodologies. Importantly, the Toolkit combines pedagogy with curriculum content, thereby creating a teacher resource that is easy to use and written in plain language.

■ Acceptance by Schools

The toolkit was developed through a three-point process of gathering data from local educational stakeholders, developing curriculum and incorporating feedback from teacher-training institutions. The consultative process employed ensured that the materials conformed with the Sierra Leone curriculum and were culturally sensitive and appropriate. The Toolkit was used by teachers in three districts in Sierra Leone — Moyamba, Kailahun and Bombali — involving a total of 90 schools.

LESSONS

The toolkit faced a number of challenges. There was a wide range of education and community issues pertinent to the development of the peace education materials. Broadly, these issues included poverty, trauma, fear, dislocation, and ex-combatants and victims (sometimes amputees) returning to communities. The toolkit materials had to be inclusive of local input and cultural content. They had to be able to stand alone and also able to be integrated into the Sierra Leone syllabus. The materials also needed to be flexible and suitable for use in non-formal as well as school settings, be sensitive to Krio and indigenous languages, be written for community workers as well as teachers, have student activities integrated into teacher training modules and be owned by the stakeholders. The stakeholders were clear in their advice that any names and traditions which were to be included needed to be drawn from Sierra Leone and not other countries or regions.

An important lesson learned was the need to talk about the past, even where it is a traumatic one. In a situation where all the children are victims of the poverty, educational chaos and lack of security caused by the war, and many bear terrible physical scars, such as stump where their hands have been cut off, it seemed to us to be unrealistic to pretend nothing is the matter.

FUTURE

Peace education interventions should be designed to work with the people and systems in place, enhancing their capacity to shape their own lives and environment within the framework provided by the values of a culture of peace.



CONTACT DETAILS

International Conflict Resolution Centre

Psychology Department
The University of Melbourne
Parkville, 3010, Australia
Telephone: + 61 3 8344 4912
Fax: + 61 3 9347 6618
<http://www.psych.unimelb.edu.au/icrc/>

Curriculum Corporation

PO Box 177, Carlton Sth, VIC 3053
<http://www.curriculum.edu.au>
jane.weston@curriculum.edu.au

10

HIV/AIDS, Disasters And Food Security: The Baphalali Swaziland Red Cross Society Pilot Project

BACKGROUND

Swaziland is a small, southern African kingdom, which shares borders with Mozambique and South Africa. Most of its population relies on subsistence farming. Since 2002, Swaziland has been affected by recurring droughts. The country also suffers from one of the highest rates of HIV/AIDS infection, estimated at 33 per cent. Almost half the population lives below the poverty line of US\$ 2 a day. All these factors contribute to households being vulnerable to food insecurity. Recurrent droughts mean that people are forced to sell valuable assets in order to cope.

However, poverty levels are such that selling possessions, particularly tools such as farming implements, can result in destitution. The interaction between HIV/AIDS and food security is complex and, for the poor, can mean:

- poor access to HIV/AIDS information;
- households having a higher dependency ratio, with a lower number of healthy adults. An ailing individual is less productive. For example, if farmers are ill, they cannot work on their fields and therefore produce less. At the same time, they are a greater burden on their families, who have to spend more money on medicine and care for them. When a person contracts HIV/AIDS, the process of depletion of household assets takes place over an extended period of time and increases the families' vulnerability to problems and misfortunes;
- resorting to risky practices in order to secure access to food, such as prostitution, thus running the risk of contracting HIV/AIDS;
- less access to relatives living in urban areas and abroad, who help poorer members of their family with gifts in cash or in kind. The poor in rural areas tend to receive smaller gifts less frequently than better-off households;
- less access to regular employment, pensions, property and medical services;
- less access to nutritious food than better-off households - a key factor in prolonging the lives of infected individuals; and
- having a poorer health and nutrition status.

OBJECTIVES

As a result of commitments made by African National Societies at the 2000 Pan African

Conference, the Baphalali Swaziland Red Cross Society (BSRCS) decided to implement a food security pilot project. This project is implemented through a tripartite agreement between the Finnish Red Cross, the BSRCS and the International Federation of the Red Cross and Red Crescent Societies. The pilot project has a four-year time frame.

ACTIVITIES

The project's main aim is to link food security with disaster mitigation and HIV/AIDS prevention and management. The project was implemented in three areas of Swaziland: Sigombeni, Mahhashinni and Maphungwane. A number of expected outputs were elaborated at the start of the project. These included:

- improving farming methods for households in the Sigombeni clinic catchments area;
- establishing income-generating activities for HIV/AIDS-affected households in Sigombeni;
- establishing communal poultry and cotton growing gardening projects in Mahhashinni; and
- establishing communal fishery and garden projects in Maphungwane.

The project targets 430 vulnerable households (approximately 3,440 people). The target population is responsible for managing the activities. Groups from the various communities have agreed on constitutions and have set up committees which meet to discuss any issues that may arise. Technical support to the project is provided through a food security specialist recruited by the BSRCS and the Ministry of Agriculture.

ACHIEVEMENTS

A mid-term evaluation stated that it was too early to determine major impact. However, based on feedback from the communities and key personnel, there is evidence of impact on the target population's ability to:

- produce food for their own consumption;
- donate food to other vulnerable people in the community; and
- raise income for other basic necessities such as school fees. Some projects are more advanced than others. For example, members of the poultry project are able to stock chicks

themselves, share dividends and save reserves for expansion. But none of the projects are as yet sustainable, although the evaluation team noted that this was to be expected at this stage of the projects.



LESSONS

■ There is a need to facilitate integrated programming. For example, in order to ensure sustainability, many of the projects require reliable access to sufficient water. A study of how best to provide such access should be undertaken and technical support by the water and sanitation professionals should be provided.

■ Although training of communities has taken place, the mid-term evaluation highlights the importance of continuing to build the capacity of participating communities and beneficiaries by providing relevant and tailor-made training in both professional and management skills.

■ The mid-term evaluation also recommends increasing the professional and management capacity of the BSRCs site officers in agriculture, agro-forestry, fish farming, project management, planning and reporting.

■ One of the major issues faced by the project has been the targeting of beneficiaries. The mid-term evaluation stresses the need to revisit this and suggests that the BSRCs develop and introduce clear and transparent selection criteria.

■ Other aspects identified as important in order to improve technical support to the project are further developing the partnership with the Ministry of Agriculture and continuing to work with the University of Swaziland.

■ It is essential to maintain the support of local leaders in the communities by keeping them regularly informed of the project's progress.

■ Finally, the mid-term evaluation emphasizes the need to strengthen the current analysis and recording procedures in order to ensure the utilization and replication of best practices.

CONCLUSION

The BSRCs food security pilot project has already demonstrated a positive impact on targeted communities through improving production, consumption and income levels. It is, however, important that the recommendations of the mid-term evaluation are implemented in order to develop further the project's sustainability.

The project can help other southern African Red Cross Societies by acting as a learning ground. However, to achieve this, better use of the BSRCs's experience must be made by National Societies in the region.



CONTACT DETAILS

Baphalali Swaziland Red Cross Society
National Headquarters
P.O. Box 377 Mbabane-Swaziland
bsrcs@redcross.sz

International Federation of
Red Cross and Red Crescent Societies
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org

11 Monitoring Food Distributions: A Zambia Red Cross Society Experience

BACKGROUND

The countries of southern Africa were severely affected by drought in 2002 and 2003. In addition, the high prevalence of HIV/AIDS in the region, including Zambia, meant the drought had a greater than normal impact. The Zambia Red Cross Society (ZRCS) undertook extensive food distributions in response to the drought. This is a traditional National Society activity, but monitoring impact at the household level has been undertaken less frequently. The International Federation recruited a food security delegate to help National Societies in the region to increase their capacity to monitor the impact of food distributions. With the delegate's help, the ZRCS was able to develop such a system, which meant it could better demonstrate the impact of its work and would be able to refine distributions to improve the quality of programming.

ACTIVITIES

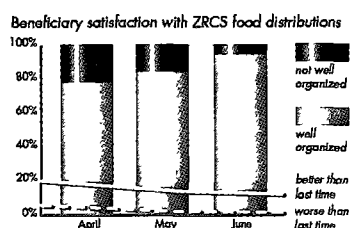
The food distribution monitoring system was developed to:

- ensure that those registered for food distributions receive the correct amount of food;
- record the impact of the food distributions at household level;
- monitor the accuracy of targeting based on the agreed criteria; and
- enable the improvement of the food distribution system.

Two monitoring forms were developed. One was used for monitoring at the distribution point, with 10 per cent of beneficiaries being selected at random by monitors to fill in the questionnaire. The other was used for control at the household level, with monitors interviewing ten households chosen at random every month.

Information collected covered:

- who received the ration;
- the benefits of the ration;
- organization of the distribution; and
- targeting.



ACHIEVEMENTS

In general, the monitoring system enabled a better understanding of the impact of food distributions. More specifically, the results indicated that 57 per cent of men and 43 per cent of women were interviewed by the monitors at the distribution point. As the sample was selected at random, this percentage provides an indication of the proportion of women who are responsible for collecting food rations. This sort of information helps to devise food distributions that better fit the needs of the majority of the recipients – in this case, with women's roles and responsibilities.

The organization of distributions is important in order to reduce the time it takes for people to receive their ration entitlement and prevent disorder. To assess this, beneficiaries were asked at the distribution points about the way food distributions were organized. The graph demonstrates that beneficiaries felt that the distributions were well organized.

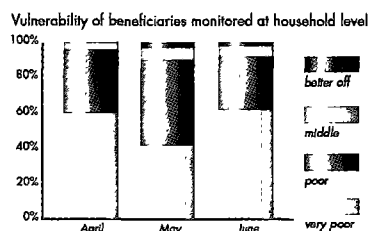
The reasons some beneficiaries gave as to why they were not satisfied with the way food distributions were organized included:

- family size was not well registered;
- distribution took too long;
- crowd control was bad;
- queues were not respected; and
- trucks with food were not on time.

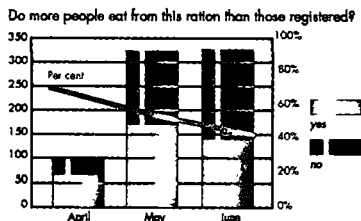
With such a high satisfaction rate, perhaps the most crucial criticism of the distributions was that family size was not well registered. Cross-checking against data collected at the household level revealed that family size was not incorrectly registered, leading to the conclusion that beneficiaries were feeding more people than their actual family.

Only 2 per cent of those interviewed at household level reported that they received assistance from other organizations. This indicates that the ZRCS was not duplicating its assistance with other organizations.

The following graph provides an analysis of the targeting. Households were targeted on the basis of socio-economic criteria. That the targeting of beneficiaries by the Zambia Red Cross Society is efficient is demonstrated by the fact that it was consistently able to target poor and very poor households in the communities in which it works.



The majority of households reported using the food in a number of ways: 99 per cent of households reported that they consumed the food distributed, while 64 per cent of those interviewed said that the food distributions enabled them to save money, which could be used for other food and household costs. The food distributed was also given to others as a gift, sold or fed to livestock. Thus, the food was used to support both the households' nutrition and their food security. It was also possible to determine whether the ration was shared with more people than those registered for food distribution.



Statistics indicate that beneficiaries were sharing their food with more people than those registered as being in the family unit. On average, half of the respondents stated that the food was shared with people other than those registered. However, the proportion of those reporting sharing of food with additional people fell in June, most likely as a result of the harvest. When undertaking food distributions it is important to realize that households may have other sources of food that they access during times of hardship. The ZRCS food distribution was not a full ration designed to fulfill the total requirements of households. Some households were able to supplement their rations by purchasing food, eating the produce from their gardens and/or consuming wild foods. However, the monitoring system identified an average of 18 per cent of respondents who claimed they could not supplement the ration with other sources of food. This finding is important as it may suggest that these households need further support or, at the very least, that their situation needed to be reviewed.

trained. Mistakes, therefore, were kept to a minimum. Further training is, however, recommended for future monitoring in order to improve the quality of data collected by volunteers.

■ The forms used could be modified to check the amount of food received per beneficiary. This would help to monitor the accuracy of “scooping” of food portions.

■ It is vital that ZRCS headquarters oversee implementation of the monitoring system in the field and analyze results on a monthly basis. This will ensure that forms are being completed in a uniform and correct fashion.

■ Setting up a monitoring system and analyzing data collected requires time and personnel. The data analysis function was neglected until July when the backlog was quickly addressed.

CONCLUSION

Monitoring of programs is crucial to improve program quality and accountability. Monitoring highlights the impact that programs are having and can also help project managers to adjust the programs in order to improve quality. It is important to consider monitoring as part of normal program activities rather than as a separate activity. Monitoring requires financial and personnel resources.

LESSONS

■ The development of the monitoring system enabled the Zambia Red Cross Society to determine the impact of its food distributions.

■ The monitoring system enabled the ZRCS to determine the quality of the service it was providing to its beneficiaries and make alterations to the distribution as necessary.

■ Monitoring enabled better reporting to donors on the impact of their donations on the situation.

■ The forms were relatively simple to use: they were not too long (one side of the paper used in length) and volunteer data collectors were

CONTACT DETAILS

Zambia Red Cross Society
 P.O. Box 5000 (Ridgeway 15101)
 Lusaka-Zambia
 zrcs@zamnet.zm

International Federation of
 Red Cross and Red Crescent Societies
 P.O. Box 372 CH-1211 Geneva 19
 Switzerland
 secretariat@ifrc.org
 www.ifrc.org

12 Community And Home-Based Care For People Living With HIV/AIDS In Zimbabwe

BACKGROUND

Across Zimbabwe the level of infections and illness associated with HIV/AIDS is dramatically increasing poverty levels. A recent assessment of people living with and households affected by HIV/AIDS shows an increase in the number of widows, widowers and orphans. It also indicates that households spend more time on caring for the sick; that their medical costs are greater; and that their expenditure on inputs was reduced.

Migration is also increasing: some people are moving from the rural to urban areas in search of treatment, while others, seeking a cheaper life-style, are moving back from the towns to rural districts. At the same time households have a deteriorating dependency ratio with a low number of healthy adults to people living with HIV/AIDS (PLWHA), children and elderly people.



OBJECTIVES

The Zimbabwe Red Cross Society (ZRCS) recognized the increasing vulnerability of households to HIV/AIDS as early as 1988, when it set up the Integrated AIDS Project (IAP). This document describes its home-based care (HBC) program and recent developments resulting from the 2002-2003 drought. It also highlights constraints and areas for further development.

ACTIVITIES

The Integrated AIDS Project started in 1988 with a focus on prevention. As it became evident that the number of HIV-affected households was growing, the ZRCS established a home-based care program in 1992. The IAP now focuses on three main areas:

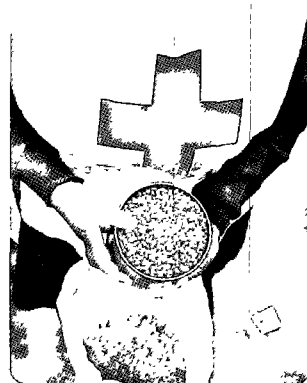
- Prevention of transmission of sexually-transmitted infections (STIs) and HIV/AIDS
- Care and support for PLWHA and their families

■ Advocacy

The goal of IAP is to “reduce the incidence of HIV/AIDS and its consequences among vulnerable groups in Zimbabwe through information dissemination, access to care and support”.

There are currently 22 HBC projects in Zimbabwe’s eight provinces. The Zimbabwe Red Cross Society trains volunteers recruited from the community, often themselves infected with HIV, to become care facilitators. These volunteer care facilitators then support households with PLWHA in various ways, such as providing hygiene training for infection management and disseminating key health and nutrition messages. They also work to reduce the stigma associated with HIV/AIDS. A key weakness of the program, which was identified prior to the current crisis, was that the clients of HBC often lack basic needs such as food, shelter and clothing. In order to meet these needs the ZRCS started to distribute food to the HBC clients. However, due to funding constraints, distribution was erratic and was frequently unable to meet the ever-growing needs.

The ZRCS recently appealed for food to be distributed to HBC clients and their household members in order to reduce the impact of the drought and the country’s political crisis on these particularly vulnerable people. The program reaches some 10,000 chronically sick clients in their homes and has registered over 35,000 orphans and vulnerable children (OVC).



ACHIEVEMENTS

- PLWHA receive appropriate care while remaining in their own homes with their family members.

■ Food has provided a useful nutritional input to households, increasing the health and well-being of beneficiaries.

■ Food has also acted as an economic transfer, reducing the economic burden on households caused by increasing expenditure on medical care and the loss of an income-earner.

■ Social networks for psychological support have been set up since many of the care facilitators themselves are people living with HIV and AIDS.



LESSONS

■ The HBC project aims at reaching the most vulnerable people, i.e., the poorest households with PLWHA. Although this has proved difficult, it has been more effective in urban areas where HIV testing is available and needs assessments are carried out by social welfare departments. In rural areas, however, testing was not available. Selection was based on clinical symptoms, even though this had to be done in the absence of a clinical case definition in Zimbabwe.

■ The home care program has focused on addressing the immediate needs of PLWHA. However, the Red Cross is aware that it needs to identify strategies that target the medium- to long-term food security of other household members. For example, OVC are often left without the knowledge and skills base to work the land in order to grow food and crops at a time when labor is in increasingly short supply for such work.

■ Less time is available for agricultural production, including animal husbandry, due to the time spent on caring for the ill. Production methods, which are less labor intensive but which produce food that is just as nutritious, therefore need to be developed.

■ Poor households are very often unable to find paid employment, which would enable them to purchase the food they need. In fact, they often deplete their assets in attempting to buy medicines and services to help PLWHA. Increasing access to income could play a key role in improving food security.

■ Although food provision remains an important part of the HBC, the ZRCS are faced with a fundamental challenge: the capacity of the existing volunteer base.

Growing needs and an increasingly diverse set of priorities within the HBC mean that volunteers are stretched to their limits.

CONCLUSION

Home-based care for people living with HIV/AIDS provides a unique opportunity for the ZRCS to access vulnerable households. The vulnerability of these households is, however, both short and long term. Although current efforts focus on addressing the acute food emergency, which is a result of the drought and political crisis in the country, it will be important to pilot and support the development of programs that address longer-term vulnerability.

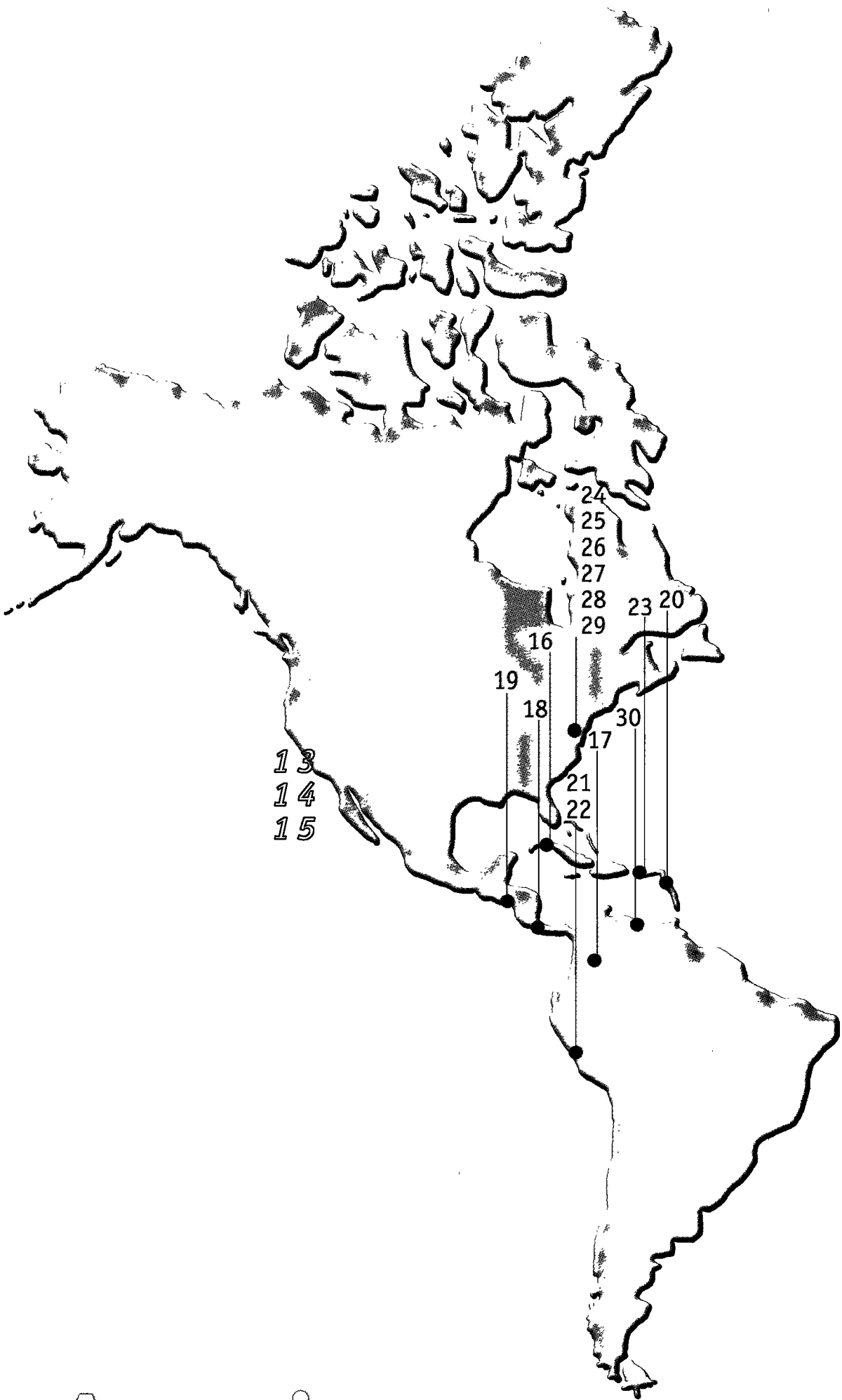
The increasing workload of volunteers, coupled with the growing needs of PLWHA and their households, is a fundamental concern. The HBC program will therefore need to consider the possibility of increasing its volunteer base through a recruitment drive or of developing food security programming in an independent, but integrated, way to address the needs of PLWHA and their household members including orphans and vulnerable children.



CONTACT DETAILS

Zimbabwe Red Cross Society
P.O. Box 1406 Harare-Zimbabwe
zrcs@ecoweb.co.zw

International Federation of
Red Cross and Red Crescent Societies
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org



Americas

13

Enhancing Regional And Local Capacities Through The Development Of A Central American Network For Disaster And Health Information (CANDHI)

BACKGROUND

In 2001, CRID launched a project to improve access to disaster and health information in Central America, with the financial and technical support of the U.S. National Library of Medicine (NLM), the Pan American Health Organization (PAHO/WHO) and the United Nations International Strategy for Disaster Reduction (UN/ISDR). In the aftermath of hurricane Mitch and the devastating earthquakes in El Salvador, it was apparent that radical changes were needed to improve national capacities in disaster preparedness, mitigation and response. Access to relevant and reliable (technical) information was a must for any and all of these activities.

One of the results after three years of work is that the project has made it possible to create a growing network of disaster information centers in several Central American countries. In the longer term, the establishment of disaster information centers will facilitate the development of improved disaster prevention and mitigation policy and planning in both countries. In short, the project has played an essential role as the main facilitator of the Central American Network for Disaster and Health Information (CANDHI), which at the time of writing consists of 9 information centers in Costa Rica, Honduras, Nicaragua, El Salvador and Guatemala.

This project is executed by NGO FundaCRID, based in Costa Rica that has the expertise, experience and institutional network that is required for the successful implementation of this complex endeavor. FundaCRID carries out its activities through the Regional Disaster Information Center (CRID). CRID's main mission is to contribute to reducing the impact of disasters in Latin America and the Caribbean by gathering and disseminating disaster-related information. However, CRID goes far beyond simply compiling and supplying technical information; it promotes collective efforts among information centers, fosters alliances and champions the use of information technologies and networks to enhance best practices in disaster reduction.

OBJECTIVES

Main objective is to contribute to disaster reduction in the region, particularly in Central America, through capacity building activities in the area of disaster and health-related information management. Strategy is to provide selected information centers with the required knowledge, training and technology resources in order to have sufficient capacities to act as reliable information providers to a host of other users in these countries.

The project also promotes the use of (new) technological tools for the development of information services and products, and builds institutional capacities as a way to guarantee a satisfactory response to the demand for disaster related information. Training is a part of this process and centers its focus on acquiring additional capacities in the development of information products and services.

Project target groups include all those people and organizations that can benefit from disaster-related information such as community leaders, health workers, educators, scientists, politicians, NGOs, government organizations and UN agencies, and others. The project has been extended twice and has a duration of five years.

ACTIVITIES

The project has engaged in providing the necessary technical infrastructure to the participating centers in order to start providing information services to their local and regional information clients. The setup of technological infrastructure includes the implementation of physical networks, servers, connectivity and internet access. Monitoring and assessment are also part of the technical assistance scheme.

Furthermore, the formation of competent and motivated human resources is an essential part of the CANDHI project as the project supports national and local disaster information centers with training. The following areas are covered: Information management, website development, creation, maintenance and (internet) publication of databases, digitization of documents and training for trainers in order to create a self-sustaining training effort in the region.

FUTURE

The development of a regional disaster information network is a formidable task that is expected to take many years. However, with above-mentioned training efforts and other activities, we are already witnessing the emergence of a real network of disaster information centers that is well on its way to improving access to and availability of disaster information sources in Central America. Furthermore, in some south American countries, conditions are now good to start work in building, piece by piece, a regional information network

ACHIEVEMENTS

■Centers are acting as reliable information providers:A variety of regional and local training activities implemented

■Centers are training other actors locally: Useful training materials developed and on the internet for free

■Thousands of digitized documents on the internet at no cost: Sustainable working methods developed

■A great variety of information products being developed: Indirect benefits go beyond initially planned effects (multiplier effect)

LESSONS

■Information management is vital to disaster prevention and mitigation.

■Increased (institutional) capacities in the area of disaster information management and in the promotion of a disaster prevention culture may help to reduce the negative effects of disasters.

■Knowledge engineering, training, and the use of current and emerging technological resources are important factors in making information more meaningful for different kinds of users and sectors.

■Information management is an important ingredient in the sustainable development process in the region.

■Regional coordination can be of great help in the disaster prevention and mitigation planning process. It can also be an instrument to improve policymaking and facilitate decision procedures.



CONTACT DETAILS

Dave Paul Zervaas

General Coordinator,
Regional Disaster Information Center for
Latin America and the Caribbean (CRID)
Costa Rica

dave.zervaas@crid.or.cr

Tel: (+506) 296 3952

Fax: (+506) 231 5973

<http://www.crid.or.cr>

14 Educational Kit "Riskland": Let's Learn To Prevent Disasters, An Innovative Learning Tool For Children

BACKGROUND

The educational kit, "Riskland" is the result of a joint initiative of the Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN / ISDR) for Latin American, and the United Nations Children's Fund (UNICEF-TACRO). It was developed at the end of 2002, and it is mainly aimed to the countries of Latin America and the Caribbean; however, due to its success it has been spread throughout the world and exist currently in the following 6 languages: Spanish, English, Portuguese, Creole, Mayan languages, and Nepalese. The Riskland game is currently being translated into more than 30 languages worldwide, including Chinese, Farsi, French, Swahili, Afrikaans, Japanese, Ketchua, and many others.

This game is intended for children between 8 and 12 years of age as a complement to other materials that schools may already have. It is an innovative and didactic tool, easy-to-use for teachers and students. It consists of a brochure named, "Let's learn to prevent disasters", with basic information related to natural hazards and risk reduction, as well as the Riskland game on disaster prevention which through a number of instructive messages help children to understand which practices may be effective for reducing the impact of disasters and which are not appropriate, and as a result, may lead to an increase in vulnerability.

Its content is useful for social studies, natural sciences, studies related to human groups or foreign countries, and the interaction between people and their environment. Riskland game and other activities have been also included in order for children to learn about disasters in a dynamic and enjoyable manner.

OBJECTIVES

The main objective is to provide Latin American and the Caribbean children as well as the school community with innovative, fun and interactive tools to understand risk management and disaster risk reduction as part of sustainable development. Riskland game's main characteristics are as follows:

■ It is an innovative tool essential to reach a culture of prevention and people's participation in disaster prevention activities. The text and game is very user friendly and didactic and they provide key information on natural hazards and how to prevent disasters. It really reaches the target population.

■ When the goal is to educate children through a

didactic and lucid program, their response is more participative and leads them to become involved in an interesting debate that makes them more critical and conscious about the hazards that could affect them. This is an informative, simple, and fun kit.

■ It stimulates children's interest to better understand the risks that they and their families are exposed to, and to have a better knowledge of the surrounding environment and how people can live in harmony with it. Similarly, when they participate directly and suggest preventive actions, they feel happy and enthusiastic for having contributed to reduce disaster risks.

ACTIVITIES

All material included in this kit was produced by UNICEF-TACRO and the Secretariat for the International Strategy for Disaster Reduction (ISDR), in collaboration with experts on education and risk management issues. Besides, well-known professionals on art and design contributed to the production.

7,000 examples in Spanish (distributed in Latin America), 5,000 in English (for the English Speaking Caribbean) and 3,000 in Portuguese (distributed in Brasil and Angola) and 1,500 in Creole (Haiti) have been printed.

The success of this initiative is due to its flexibility and adaptability to local and specific problems of the communities; therefore, many institutions in many countries throughout the world are constantly asking for permission to reproduce and to adapt it to their own environment.

ACHIEVEMENTS

As of 2002, several institutions, regional organizations and non-governmental organizations, among others, have requested authorization to reproduce the kit in a massive way, that is the case of the International Federation of the Red Cross and the Red Crescent Societies.

Riskland has been used extensively in Chile, Argentina, Guatemala, Cuba and other countries.

The English-spoken Caribbean countries (Jamaica, St. Kitts, Barbados, Trinidad and Tobago, and Santa Lucia) are actively promoting the use of the kit at schools in order to reach that education on disasters become mandatory for the 125,000 Caribbean students as of September 2004. Financial support has been obtained from private

companies to re-print 200,000 copies.

Costa Rica, CNE, National Commission for Emergencies has carried out various activities in relation to the Riskland game, including, the plans with the Instituto Nacional de Seguros (Insurance National Institute) to

- reproduce the kit as a giant electronic game for the Children's Museum,

- to make a re-edition of the kit in order to provide every school with at least two units, which will mean a re-edition of 14,000 copies.

Furthermore, it is important to highlight that the kit dissemination and the training workshops carried out by the Red Cross Department of Prevention and Preparedness for Disasters, has had a very positive feedback from various regions of the country (Orosi, Limón) as a pilot program in a school in San José and other schools in Guacimo and Siquirres in Limón.

México, the NGO, Redescubre, A.C., is using the kit as part of the children's workshops and keep conversations with the School Emergency Direction (Dirección de Emergencia Escolar) to monitor its application as part of the study program of 15 local schools as of September. Tijuana, Ensenada and Querétaro have proposed the inclusion of the kit within the school study program.

already disaster prevention programs in both primary and high schools. Riskland kit is a tool that promotes sustainable development, so the partnerships with the private sector are essential to obtain sponsorship by taking advantage of the growing importance of the policies of Social, Environmental and Corporate Responsibility.



LESSONS

- The partnership with other organizations and institutions has produced a positive effect on the promotion and dissemination of the educational kit.

- This kit, due to its low cost of production and great repercussion is an innovative solution for low-income communities at risk.

- Learning through play has proved to be more effective than learning through formal methods and programs.

- The dissemination of the game should be aimed not only to children but also to their parents. Adults' interest must be positively exploited.

- The kit can be adapted to the specific realities of each community.

- Prevention and risk management should be a cross-cutting topic of school programs.

FUTURE

A continued effort to promote the kit among education ministries to integrate it into the school programs should be done taking into consideration the fact that some of them have



CONTACT DETAILS

Elina Palm

ISDR/LAC

Elina.palm@eird.org

Nidya Quiroz

UNICEF-TACRO

nquiroz@unicef.org

15

Production And Dissemination Of The “Times Of Hurricanes” And “Tremors In My Heart” Radio Serials Related To Disaster Risk Reduction

BACKGROUND

With the objective to raise awareness on disaster risk reduction, in particular in relation to hurricanes and floods, among the Central American population, the International Strategy for Disaster Prevention, UN/ISDR; the Pan-American Health Organization/World Health Organization (PAHO/WHO); the International Organization for Migrations (IOM); and CEPREDENAC, produced and launched the radio serial (soap opera) called: “Times of Hurricanes” in 2002.

In 2002, 46 community radio stations in Central America broadcast the above radio serial; and in 2003, during a new campaign, 86 radio stations broadcast it free of cost in all the 6 Central American countries. In addition, several NGOs such as Red Cross and IFRC, used it as an innovative training tool. It is currently being transmitted by a number of broadcasting stations in Central America and in other countries in Latin America and the Caribbean, such as Cuba, Mexico, the Dominican Republic and Venezuela.

The “Tremors in My Heart” radio serial was produced in 2003 after the great success of the first radio serial, and at the request of the public and radio stations to produce more similar kind of educational radio soap operas. The following organizations participated in this effort: UN/ISDR, PAHO/WHO; UNDP; and CEPREDENAC. This innovative training and public information material presents experiences and stories related to earthquakes, landslides and volcanic eruptions, with emphasis on risk management, public health and migration issues.

Both of the above productions reinforce the notion of risk management in an organizational setting and encourage broad social participation for disaster risk reduction in the context of sustainable development.

The radio serial format was selected taking into account that:

■ Radio is the most important and popular mass medium in Latin America and is appropriate for communication with a diverse public and can reach large numbers of people who, for the most part, live in remote rural areas and use the radio as their only means of communication.

Both radio serials were designed for use as

awareness raising tools via radio broadcasts by local, regional, nationwide radio stations or through the Internet. They have also been used as an innovative tool for risk management training workshops as well as an instrument for the educational system.

OBJECTIVES

The objectives were:

■ To produce alternative and innovative tools to support the development of educational processes for the disaster prevention and preparedness, in particular related to hurricanes, floods, earthquakes, landslides and volcanic eruptions.

■ To plan and develop a strategy for the use and dissemination of the radio serials, with the involvement of public and private institutions, local governments and organizations and entities that work with or interested in disaster reduction.

■ To reinforce the notion of risk management in an organizational setting and to encourage broad social participation and policy stances for sustainable development.

In a crosscutting way, awareness was also created regarding the dangers of irregular migration in the aftermath of natural disasters (hurricane Mitch) as well as on gender equality and the role of women in disaster situations in rural areas. In addition, the stories include a set of key recommendations and advise on public health issues, with the objective of improving the disaster preparedness and response in health sector.

ACTIVITIES

The activities include:

■ Production of radio serials under the technical guidance of professionals of UN-ISDR, PAHO-WHO, UNDP, IOM and CEPREDENAC. The executive production of the radio serials relied on the expertise of renowned professionals in the areas of communication and artistic execution.

■ A testing workshop was organized in disaster prone communities, to incorporate the comments of the community people as well.

■ Preparation of guidelines for the use of “Times of Hurricanes” and “Tremors in My Heart” radio serials, with the participation of the Latin American Catholic Communication Organization, OCLACC.; the Latin American Radio-Phonic Education Association, ALER; the United Nations Development Programme, UNDP; the International Strategy for Disaster Reduction, UN/ISDR; and the Pan-American Health Organization/World Health Organization.

■ Planning and development of a dissemination and outreach strategy with the involvement of public institutions, local governments, radio broadcasting organizations, community, local and nationwide radio stations, etc.

ACHIEVEMENTS

■ Inter-agency participation both in the production and in the planning and development of the dissemination and use of the radio serials.

■ It is an instrument providing support for training processes that can be adapted to the diversity of countries in the region.

■ Excellent response to and ownership of the radio serials by organizations and institutions in the Latin American countries.

■ The radio serials have been broadcast in a number of countries in Latin America including Costa Rica, El Salvador, Nicaragua, Guatemala, Panama, Mexico, Ecuador, Venezuela, the Dominican Republic, Cuba and Argentina, among others. They have also been used for training purposes and in workshops held in different countries via NGOs, institutions and organizations.

■ The Times of Hurricanes was also translated into local languages on Mozambique, Africa, by GTZ.

■ Based on the success in Central America, several institutions in the English Speaking Caribbean are producing a similar radio program in English to be used in the Caribbean islands.

LESSONS

■ Radio broadcasting is a broad spectrum and highly accessible medium because it allows communication with a diverse public and reaches remote rural areas whose only means of communication is radio

■ The radio serial format is interesting and easy to understand; it can be disseminated through

radio broadcasts and used as a supplementary tool in workshops focussing on disaster issues and in the formal education system.

■ The radio serial dissemination campaigns have shown that it is possible to ensure the cooperation of radio stations at the regional level.

■ Inter-institutional collaboration has maximized and multiplied the impact of the radio serial production, dissemination and distribution.

FUTURE

■ To carry out a broader strategy for the dissemination and use of radio serials and the user's guide in the Latin American countries, taking into account the major risk factors in each country and locality.

■ To make greater efforts to promote the radio series among the ministries of education of the different countries so that the series may become part of their educational programs, and also among public and private radio stations, NGOs, collective groups and women's organizations, churches, etc.



CONTACT DETAILS

Elina Palm
ISDR/UN
Elina.palm@eird.org

Ricardo Pérez
PAHO/WHO
rperez@ecu.ops-oms.org

16

Being Prepared, Listening To Earth: An Educational Program By Save The Children In Cuba

BACKGROUND

Save the Children UK has just completed a series of child-focused disaster preparedness projects in Eastern Cuba stretching back over 3 years and co-funded by the Disaster Preparedness section of the European Community Humanitarian Office (ECHO). The eastern provinces of Cuba are the least developed area of the country, as measured by health, environmental, food security and migration indices. The area is highly vulnerable to hurricanes and heavy rainfall that often produces flooding and is prone to repeated and prolonged drought, earthquakes and forest fires. The target population of children and young people are one of the most vulnerable sectors of the population in terms of the impact of natural disasters caused by such natural disasters. The aim was to first introduce the topic of risk in the school curriculum, and secondly to bring about the active participation of children and adolescents in local flood risk management. Save the Children disseminated a community based multi-risk management model for mitigation and preparation in relation to flooding, earthquakes and forest fires, based on the active participation of children and young people through peer education methodologies in the Eastern provinces of Holguin and Guantanamo.

OBJECTIVES

The goal of the Program was to reduce the vulnerability of the target communities to the most prevalent risks in the zone, strengthening the efficiency of the Cuban national protection system with sustainable local strategies lead by young people, and the validation and dissemination of methodological tools and educational materials. To contribute to the reduction of the number of natural disaster victims, through an educational campaign led by young people together with practical activities (community risk maps, school emergency preparedness plans, early warning systems, reforestation and psychosocial support), which will have a long-term impact.

ACTIVITIES

■ Creation of a natural barrier through forestation of riverbanks using bamboo, to mitigate against river overflow, followed up and maintained by the young people and local organizations in both provinces.

■ Community motivated to adopt best practice in relation to risks of flooding, earthquakes and forest fires through an educational campaign designed, implemented and evaluated young people, sustained through peer education.

■ School emergency preparedness plans reviewed and strengthened through the formulation of local multi-risk maps undertaken by girls, boys and young people.

■ Early warning system strengthened through effective communication of rainfall and hydrological level at different highland locations to the low-lying town of Mayari in Holguin province towards flooding and forest fires.

■ Response capacity of local health system strengthened to support persons affected by flooding, earthquakes and forest fires through provision of first aid and entertainment brigades made up of children and young people

■ Project experience evaluated, systematised, and disseminated, with the participation of young people, focusing on peer education and gender perspective assessment tools. Educational material will be produced and designed by young people in co-ordination with local and national authorities and organisations.



ACHIEVEMENTS

The project directly benefited 10,753 children and young people in 47 schools. Indirect beneficiaries are the total population of the area: 12,373 inhabitants in the Toa river basin area in Guantamo province; 58,722 in the municipality of Sagua de Tánamo and 109,623 in the municipality of Mayar in Holguín province. Local authorities and leaders, teachers and the overall population in the region have benefited through training and education sessions. Thanks to the high motivation and commitment of some 3,000 participants in the project, including students, promoters, management teams, coordinators and organizations and institutions involved, "Let's be prepared - Listening to the Waters" and its follow-up project "Being Prepared: Listening the Earth" has been able to contribute to the invigoration of the system of local flood, earthquake and forest fire risk management in a short period of time in the provinces of Holguín and Guantánamo, in the rest of Cuba, and in the Central American and Caribbean region.

LESSONS

■ Peer Education - children learning from and motivating each other - has been a key component of this project and has been taken up with a high level of enthusiasm and involvement by the students and promoters.

■ Children involved in the project have also been able to reach a high proportion of adults in their immediate families in the highest risk groups (including young men in their twenties and thirties) - older brothers and uncles were self selected targets for the project's messages regarding personal security in risk situations put forward by the children involved in the project.

■ An integrated approach to disaster preparedness and local multi-risk management through the involvement of a wide range of stakeholders such as students, promoters, and local and provincial organizations, through a series of workshops in which the students took leading roles, helped to guarantee the success of the project during its implementation phase and was an important aspect in providing for future sustainability.

■ The gender training approach and methodology used throughout the project immeasurably strengthened the project's overall impact.

SUGGESTIONS

"Being Prepared: Listening to the Earth" formed part of the high-priority emergency program of Save the Children UK in Cuba. This project blended emergency response to a development edge that promotes the effective participation of children and adolescents in efficient local systems of risk management in Cuba. By means of this work, Save the Children seeks to contribute to exercising the rights of children to be part of the decision-making process that affects them, and at the same time carry out work that is sustainable, that integrates relief action, and prepares and encourages a culture of prevention.



CONTACT DETAILS

Ana Maria Bejar

Programme Co-ordinator
Save the Children UK
La Habana Cuba

Tel: 00 537 204 6478
scfcuba@enet.cu

17 Education Management For Risk Reduction And Emergency Response In Bogotá: A Sustainable Development View

BACKGROUND

Education Management for risk reduction in Bogotá is linked to the city's development plans and it has been developed in a continuous inter-agency way since 1998. Education on Risk Management and Emergency Response in Bogotá comprehends formal education levels (pre-school, primary school, secondary school and university), and non-formal education (community and business).

As an instrument for Risk Reduction Education Management, the city counts with an Inter-Agency Education Committee for the Prevention and Attention of Emergencies. The Committee is conformed by the Education Secretary's Office - SED, Community-based Organizations Administrative Department - DAACD, the District's Tourism and Culture Institute - IDCT, the District's University Francisco José de Caldas - UDFJC and the Risk Reduction and Emergency Response Directorate - DPAE. The Committee's purpose is to incorporate the topic in the inhabitant culture through the development of policies, strategies, plans, projects and methodologies in accordance to the population to which each agency is focused.

OBJECTIVES

■ To train teachers, and education institutions, in the use of theoretical and practical tools for the incorporation of risk management in the scholar academic programs, and the implementation of Risk Management Scholar Plans.

■ To design instruments and methodologies in order to incorporate risk management in universities' programs.

■ To train organized communities in the use of theoretical and practical tools for risk reduction and emergency response actions in the city.

ACTIVITIES

In pre-school, primary and secondary school, the city has been working on two training lines directed towards teachers. The first one relates to the elaboration of Risk Management Scholar

Plans. These plans look to increase risk knowledge among the education community, in order to generate a broader consciousness around the risks that this particular community is exposed, to and originate processes that can reduce them or to guarantee the capacity to response to a given emergency in the school. This program is based on the diagnosis and analysis of risks at education institutions, the identification of intervention actions in the short, medium and long terms and the identification of response actions based on the risk scenario found.

■ **Support Material:** Teachers Guide I: conceptual aspects, Teachers Guide II: Instruments and Methodological tools, vests, book-markers, flyers and booklets on seismic risk, floods, landslides and large number of people inflow to events.

The second line is the incorporation of risk management on the scholar program. It is based on the promotion of knowledge, attitudes and values in relation to the topic and in accordance the student's age and grade. The workshops are based on a diagnosis of the risk perception, the links between risk management, disasters and sustainable development, and a recreational approach to natural phenomena in their relation to risks and disasters. They also consider the connections between the natural and social environment, the urban space and the transformations that generate unbalances in the relation between human beings and the environment.

■ **Support Material:** Guide I: Pre-school to third grade, Guide II: Fourth Grade to Sixth Grade, Guide III: Seventh Grade to Ninth Grade. In addition the city counts with a short-tales collection to work in a recreational way topics like earthquakes, fires, floods and landslides. Bogotá also has social risk perception diagnosis instruments, to better-established pedagogical objectives.

ACHIEVEMENTS

8,528 teachers were trained on Risk Management Scholar Plan, 6,942 teachers trained on the incorporation of the topic on scholar programs, 1,200 plans elaborated by teachers, 100 experiences on risk management

incorporation on the scholar programs, 100,000 students with 6 of the 10 self-protection processes identified, two seminars with schools that have pedagogical experiences in the topic with the participation of 370 teachers and the event "Prevenir es mi cuento" (To prevent is my story) with 3200 boys between the ages of five and eight. IN the near future the city has programmed a massive campaign on self-protection actions for children, and the structural reinforcement of 220 schools.

Regarding university education, the following activities have been developed: 1) Design of the postgraduate programs on Educational Management for Disaster Prevention and Risk Analysis and Disaster Attention, 2) Creation of research lines on the topic 3) Creation of two undergraduate subjects. At the moment is being promoted the conformation of a thematic node on the topic, in order to feed the National Strategy for the Strengthening of Science, Education and Technology for Risk Management.

On the community level the efforts have been directed towards the promotion of a risk consciousness and training on seismic risk and emergency preparedness. Different hazards are treated in accordance to the community needs. The city's organized communities are trained on the elaboration of Community Risks Maps and Family Emergency Plans. To 2004, the Risk Reduction and Emergency Response Directorate has worked with 25.000 people, number that does not include massive campaigns through radio and television.

LESSONS

There are three tendencies that affect dissemination processes and the success of the campaigns on the topic:

- A severe separation between scientific knowledge and the common knowledge,
- Practices centered on operative processes like evacuation and simulations lead by external actors and
- Disaster and risk interpretations unconnected to personal and collective responsibility

In order to include this topic in the scholar program, it is necessary to turn it into an object of knowledge with concrete references for the educational subject that influences risk generation, or that can be affected by a particular risk condition. The main difficulty resides in the fact that given that risks are potential events, it is difficult to mentally apprehend them because they are abstract

anticipations, in which not always is clear the teacher's interventions. This is why education and the transformation of the community in a fundamental actor for risk management through it cannot be postponed.

It is important to consider that there are no societies without risks. Risks are generated socially and historically. To constitute risk as an object of knowledge is not an easy task, especially if you take into account that in cognitive processes, one of the elemental aspects has to do with sensations that contain some level of interpretation conforming individual perceptions, which not always coincide with the technical-scientific approach. Social representations are essential in any educative process, in the sense that as cognitive images allows us to perceive and interpret reality. They constitute a form of knowledge that translate into behavioral and communication processes amongst individuals that give meaning and sense to a particular subject and can vary broadly from others. Regarding to risk and disasters, we can observe a big difference between the scientific knowledge available and common knowledge because of the fear and resistance that scientific knowledge can generate, which can be explained as an emotional protection to what this knowledge has to say. Scientific knowledge finds a broad perspective of beliefs, representations and interests that make the transformation of certain behaviors, a difficult task.



CONTACT DETAILS

Claudia Patricia Coca
Jefe de Educación
Dirección de Prevención y Atención de
Emergencias
Secretaría de Gobierno
Alcaldía Mayor de Bogotá
Ccoca@fopae.gov.co

Diana Lucía González
Encargada Cooperación Nacional e
Internacional
dgonzalez@fopae.gov.co

18 Early Warning For Landslide Risk Mitigation In Costa Rica

BACKGROUND

Three days of torrential tropical rains during late August 2002 swelled Costa Rica's rivers to bursting point. Landslides swept through the communities of Orosi de Cartago, killing at least seven people, destroying 17 houses and damaging aqueducts, telephone lines and power lines. Hundreds had to be evacuated. The Costa Rican Red Cross deployed 120 people in the search and rescue operation, which was made extremely dangerous because of constant, ongoing landslides in the zone affected.

OBJECTIVES

Following the disaster, the International Federation, supported by the Regional Delegation in Central America, obtained funding from the British government to implement an early warning system in the event of future landslides. The overall objective was to 'promote the development of community organizational and planning processes for the identification of risks and resources, in order to prepare for and respond to emergency situations'.



ACTIVITIES

The Costa Rican Red Cross initiated community-training programme in disaster preparedness and prevention, community first aid and psychological support. The idea of the early warning system was put to the community on the understanding that the community itself would operate and follow through with this

system. Building materials were distributed to support structures such as retaining walls and for repairing drinking-water pipes damaged in the landslide.

Meanwhile, the local authorities established an emergency committee to coordinate disaster response and rehabilitation activities. This committee convened coordination meetings and followed up on activities in the affected communities. Radio equipment was installed in four centers: the Orosi local emergency committee, a nearby Red Cross base, the national meteorological institute office and the Rio Macho drinking water river authority. A warning siren was installed atop the Costa Rican electricity institute's communications tower.

Activities were coordinated with the local institutions such as the Catholic church, the Costa Rican institute of electricity, the community development association, the chamber of tourism and regional private and state schools, in order to disseminate information about the risk reduction measures being undertaken. The Red Cross committees within the area provided monitoring and follow-up during the implementation of the early warning system. Their unique access to affected communities and institutions involved in the early warning system made this possible.

The willingness of the communities to participate in training sessions was very positive. Many female heads of households, men and children took part. Disaster awareness materials were circulated to teachers in the local schools. A training process in the communities was begun and continues. Results to date are outlined below.



ACHIEVEMENTS

■ 200 people have been trained in disaster preparedness, 100 people have been trained in community first aid and 30 community members have received basic training as radio operators.

■ Nine months after the disaster, there was another landslide with the same characteristics as that of August 2002. The change in the communities' ability to respond was very clear from the way people reacted, their readiness to follow the directions of Red Cross staff and other institutions on site, and the greater unity and desire to work as a single team.

Institutional coordination was much more effective, since all the participants in the control room knew one another, helping decision-making.

■ One year on from the start of the intervention, the community has shown greater unity and desire to work for the integral development of the region.

■ The project led to a change in the National Society's response to emergencies, whereby traditional relief transforms into mitigation activities as part of the rehabilitation phase.

■ Follow-up activities during the implementation of the early warning system allowed local Red Cross branches to develop a closer relationship with target communities.

This project has succeeded in giving greater support and credibility to the institutional policies on disaster prevention and preparedness, contained in the 2002-2006 Strategic Development Plan.

LESSONS

■ The auxiliary Red Cross committees of the relevant sector, as well local institutions, should be involved in all aspects of implementing, monitoring and follow-up of community projects.

■ The community must operate the early warning system as part of its everyday life, implementing changes and activating other control mechanisms that are considered necessary for the integral development of the area.

■ An inventory should be drawn up of the resources and capacities available.

■ For an early warning system to be sustainable, it is essential for government, communities, Red Cross and other actors to collaborate and forge working partnerships.



CONTACT DETAILS

Costa Rican Red Cross

Jose Bonilla

Head, Disaster Preparedness Department
Apartado 1025 1000 San José Costa Rica
Tel: +506 221 55 42

prevdesastres@cruzroja.or.cr
www.cruzrojahumanidad.org/costarica

International Federation of Red Cross and Red Crescent Societies

P.O. Box 372 CH-1211 Geneva 19
Switzerland

secretariat@ifrc.org
www.ifrc.org

19 Drought In El Salvador: Response And Mitigation

BACKGROUND

Irregular rains from 1998 until winter 2001 - particularly in the east of El Salvador - seriously damaged the crops of families on subsistence incomes. Earthquakes in early 2001 further reduced the amount of available arable land. And the onset of 'red tide', the harmful algae, which contaminates seafood, hit fishermen's incomes. According to the World Food Programme (WFP), the drought affected maize, bean, rice, sorghum and watermelon crops in 62 municipalities. In the most seriously affected areas, 80 per cent of crops were lost, while small and medium-sized farmers lost 38 per cent of their average annual income. Meanwhile, according to the UN Development Program, three quarters of the land in departments with the highest poverty indices was being used in an unsustainable way.

This situation was further aggravated by the economic crisis triggered by falling world coffee prices (one of El Salvador's main export crops), leading to widespread unemployment among plantation workers. In August 2001, the government declared a "State of National Emergency for Drought" across the east, centre and north of the country. This emergency decree allowed for adjustments to be made to the budget, the administration of international loans and the suspension of seizures from farmers.



OBJECTIVES

In mid-September, the International Federation launched an appeal, which emphasized the need to develop short, medium and long-term strategies to reverse the effects of the drought. The Spanish Red Cross, the Salvadorean Red Cross Society and the Regional Delegation discussed various forms of action, resulting in a single Drought Response and Mitigation Project

with one overall objective: "To increase the capacity of subsistence farmers in the east of the country to better respond to and recuperate from future unfavorable climatic conditions". Specific objectives included:

- Contribute to reducing the effects of drought during the 2001 rainy season.
- Provide technical assistance to diversify and market crops, to improve income and daily diet.
- Improve environmental conditions through reforestation using fruit trees, integrated management of plagues and soil conservation measures.

ACTIVITIES

From the outset, coordination with other actors was seen to be vital. Cooperation agreements were signed with the Inter-American Institute for Cooperation in Agriculture and the El Salvador Post-Harvest Coordinating Unit. The Inter-American Institute for Cooperation in Agriculture provided technical assistance, certification of plants and support with planting of fruit trees.

First of all, affected farmers and their families were given food aid for three months, in cooperation with WFP. Next came agricultural recovery, crucial to break the cycle of failed crops. Two agronomists and an agricultural engineer were hired to support this phase, which started in January 2002 and continued for 12 months.

Targeting Moraz, one of the most affected departments, the project benefited 200 families (around 1,200 people). Priority was given to: small producers; owners of one or two lots of land; those for whom agriculture is their only source of income and who lack other goods.

Those farmers selected received tool kits (one shovel, two pickaxes and two sowing tools) to help them prepare their land for sowing. Seeds from the first harvest of maize and beans were used to plant the next crop. Specific activities included soil conservation, stubble treatment, use of sustainable agricultural techniques for basic cereals and vegetables, crop diversification, reforestation with fruit trees (7,000 were planted, with an average of 35 per family), use of organic fertilizers and small-scale irrigation systems. This greatly reduced the operational cost of farming crops, in a way,

which enabled beneficiaries to use locally-available resources.

Throughout the process, project technicians provided training and constant technical assistance to guarantee and improve production. Support was also given in post-harvest management and the marketing of vegetables produced. Metal silos with a capacity of 18 quarts were distributed to beneficiaries, to store food reserves, which could be used or sold later as necessary.



ACHIEVEMENTS

■ Owing to savings made during project implementation, the number of beneficiaries was increased to 300 families (approx. 1,500 persons). The total cost of the project was US\$ 258,000.

■ Women have been given a leading role, comprising around 75 per cent of those involved in the project. Many of the area's men had either migrated to the US in search of work or died in the war of the 1990s. In some communities, the project was led by women, changing the attitude of men towards women's ability to take decisions on behalf of the whole community.

■ 1,200 children benefited from the earnings of their parents who sold agricultural produce. Young people saw the project as an alternative form of development, which could help reduce migration away from home communities.

■ The project led to the cultivation of crops in the summer – not possible previously, because of insufficient irrigation.

■ The National Society benefited from a new approach to disaster response, which involved not only food aid but longer-term efforts to reduce vulnerability to future droughts.

■ The project has continued, despite the end of funding. One technical expert from the National Society continues to provide follow-up in the communities. The beneficiaries have continued to plant more fruit trees, and to sow more vegetables. In some instances, they have discontinued their traditional production, as the crops, which were introduced during the project have proved to be more economically viable.

LESSONS

■ The participation of local women in all the project's development activities was fundamental, since it is the women who best know the basic needs of the home and the community.

■ Maximizing the use of water resources by implementing practical, low cost irrigation systems in the communities resulted in local people readily adopting this method to improve the productivity of their plots.

■ The concentration of technical assistance on beneficiary families contributed to the successful development of the project, since on this depended the acceptance of the recommendations made by the technical personnel, thereby guaranteeing the sustainability of the action taken.



CONTACT DETAILS

Salvadorean Red Cross Society

Miguel Vega

Disaster Relief Director

Apartado Postal 2672 San Salvador

E-mail: socorrocruzroja@navegante.com.sv

International Federation of
Red Cross and Red Crescent Societies

P.O. Box 372 CH-1211 Geneva 19

Switzerland

E-mail: secretariat@ifrc.org

www.ifrc.org

20 An Example Of Earthquake Crisis Management In a Day-Care Center Or Child Care Center Of Guadeloupe (F.W.I)

BACKGROUND

Guadeloupe is a small island (1,704 km²) located on the Caribbean Plate, which is the place of a subduction zone between the North American Plate (with the Atlantic crust) and the South American Plate, since approximately 55 millions of years, with an important volcanic and seismic activity. This French department, located at 8,000 km far from France is vulnerable to most of the natural hazards. The main and not foreseeable hazard is the earthquake and unfortunately most people of this island are not aware that they can have a chance to stay alive during and after a big earthquake. There is a strong need to inform, educate and train people of the country on sustainable development towards effective disaster mitigation in order to enhance their security. The author, a native of Guadeloupe, is convinced by the idea that the best policy in this field begins with children and even with babies aged between 3 months and 3 years.

OBJECTIVES

The main goal and objectives the program are to achieve preventive and effective actions in order to assure the security of everyone working in a day-care or child center and also save the lives of the children during an earthquake. For example, prevention with babies and children who do not walk alone and do not talk correctly and do not read yet, is specific because it depends on:

- how the training was performed for the adults
- the morality of these adults in case of emergency such as will they really assure the babies security or leave them alone

ACTIVITIES

First of all, the program concerns the adults to whom theoretical lessons were provided on:

What is a great or major natural risk, what does the term "preventive actions" means, the geological presentation of Earth and Plate tectonics, the Caribbean Arc and its

geodynamics, what is an earthquake, how to recognize a big earthquake, the historical earthquake occurrences in Guadeloupe and in the other islands, how to be ready to face with a "big one".

After this first theoretical part for four hours practical training was provided. The adults were trained on "How to prepare or Preparedness". They have to recognize the safety places where they can be safe, both inside and out of the building. Discussions were made with the adults on the best way to reach such security places with the babies and the other children.

ACHIEVEMENTS

In the best day nurseries or day-care centers or child-care centers of Guadeloupe, one adult have three or four babies in charge. So it is often worked on how to evacuate accurately and quickly all the babies; and to do it, their small beds on casters are usually used. Each adult puts three or four babies in such a bed and makes it roll to the security zone.

Among the children some of them can walk, so the adults made them learn a simple song used only in case of emergency. After an alarm, as soon as the adult starts the song you can see the children falling into line, singing and making their way towards the security area. Thus, the effectiveness of this approach has been proved.



LESSONS

Unfortunately some of the children are afraid by the alarm and cry. Of course, it is required to inform the adults they will have to manage all the crying babies and how to do it during the real earthquake.

FUTURE

One of the first actions will to implement systematically one unexpected exercise per month at different moment of the day in order to analyze and correct as quick as possible their behavior even when the children are sleeping or have lunch. The second action will to prepare a special cartoon for these children in order to awesome natural disasters.

MIRAI Sustainable Development Consultancy is specialized in education, training, audit, consulting, expertise and management of all natural, technological and professional linked risks, in order to help people (politicians, economic and industrial managers, employees, children, aged people, and all the other population of a region or a country) in living with risks and practicing a sustainable development for their country. Figures relate to the second phase of this Save the Children Project.



CONTACT DETAILS

Dr. Myriam LUBINO-BISSAINTE

Director of M.I.R.A.I. Sustainable
Development Consultancy

Habitation BISSAINTE

Jabrun - Face Lycée Agricole

97122 Baie-Mahault Guadeloupe (FWD)

Tel/Fax: 05.90.20.08.49

Mobile: 06.90.56.29.09

myriam.lubino@wanadoo.fr

mirai.sustainabledevelopment@wanadoo.fr

www.miraisustainabledevelopment.org

21 Books On Disaster Reduction For Sustainable Development And Peru's Sustainable Cities Programme

BACKGROUND

After returning from his participation in the World Conference on Disaster Reduction, Yokoyama, 1994, the author made an evaluation of the advances in knowledge that had been made and of the challenges remaining to be tackled in Peru during the second half of the IDNDR 1990-99. Two priority problems were identified which needed immediate attention.

■ Large and medium Peruvian cities were increasingly occupying very hazardous sectors, resulting in high risk to their residents.

■ No adequate bibliographic material existed for the effective and systematic dissemination of knowledge and experience on disaster reduction for professions other than earthquake engineering and architectural specialisations. For school teachers and social communicators, for example, there was nothing, and yet these are people who can accomplish much within the informal education structure, and who can also educate the general public, especially the most socially vulnerable population, on disaster prevention and education.

OBJECTIVES

The main objective was to reduce loss of lives and properties caused by natural and man-made disasters in order to reduce poverty and contribute toward the nation's sustainable development by undertaking the two tasks included in the next point.

ACTIVITIES

■ Formulate, develop and implement a Sustainable Cities Programme (SCP) in Peru. The flood maps of Peru's north-western cities affected by El Niño 1995-97 were practically a carbon copy of those generated by the El Niño 1982-83. Those cases were investigated by the author's former students for their civil engineering professional thesis under the auspices of JICA. This argument was strong enough for the then Primer Minister of Peru, and at the same time Head of the El Niño Reconstruction Committee, to accept the author's proposal to provide advice to the SCP,

and for the affected cities' mayors to have strong commitment, participating proactively in the program. Thanks to the political decision taken at Peru's highest level, and the leadership and funds provided by Peru's Civil Defence, the SCP has been executed uninterruptedly over the past six years.

■ Thanks to the generosity of several institutions, mainly UN agencies, the Government of Japan, USNSF and Caltech, the author was educated and trained in disaster reduction, and provided with abundant bibliographic material by Japanese and American professors, which was used in writing the book. When the first draft of the book was ready, it was found to be too lengthy and incomplete. So the book's contents were reviewed by an international panel headed by Prof. George W. Housner, who made very valuable recommendations. The Spanish version of the book addressed to Latin American countries was prepared from 1998 to 2001 and the English version from 2001 to 2004 with the idea that it would be used as a university text book in a new course: DISASTER REDUCTION.

ACHIEVEMENTS

From 1998 to 2004 the SCP 1st Stage (Safety is the first attribute of a sustainable city) was carried out. 50 Peruvian cities and towns have unanimously approved land-use ordinances stipulating that the population may grow more dense and the town may expand in areas where earth science investigations have indicated that the natural hazard is low or medium.

The World Bank has invited the author to give lectures in Lima, Peru; Panama and Guatemala over the past two years to disseminate the Peruvian Method on SCP for South and Central American countries. Prof. Toshio Kumagai of the University of Tsukuba, Japan, says that the contents of Chapter 2 of the book "Sustainable Cities: Agenda for the 21st Century", are the main reason that the book is being translated into Japanese in Tsukuba. The book's proof copy has been handed to American, Japanese and Indian professors, and they have said that they would use the book as the text book for a new university course. Copies have also been handed to UNESCO in Paris and to the UN/ISDR in

Geneva. The UNISDR web site of September 2004 included a comment on Peru's SCP and the book.

LESSONS

A team consisting of a number of professors, practising engineers and urban planners, economists and social scientists developed the SCP. For the programme to be a success it was necessary to obtain very strong political support and necessary funds, which were thankfully provided by the window of opportunity of El Niño 1997-98.

Writing a book is time-consuming. In fact, it is very difficult to produce a book for a global audience. It is hard for editors of advanced countries to accept that a book may be produced in a developing country like Peru to be of global interest. The expenses are being covered by the author in full, including the printing to get it ready for Kobe, January 2005.

FUTURE

The author requests world Acadèmia to review the book and comment whether it will be useful as a text book in a new university course. The author has also requested for financial support from international agencies to publish and distribute the book.

CONTACT DETAILS

Julio Kuroiwa
Professor emeritus National University of
Engineering, Lima, Peru
CIA Peru INDECI/UNDP Sustainable Cities
Programme
Av. Del Parque Sur N° 442, Lima 27 - PERU

jkuroiwh@infonegocio.net.pe
Tel: 511 222-4252
Fax: 511 440-7197
www.disastersreductionjk.com

22 Capacity Building Using Information And Communication Technologies

BACKGROUND

Electronic Communication & Information Exchange ECIE is a NGO founded by QUIPUNET members who co-organized with United Nations - International Decade for Natural Disaster Reduction Secretariat (UN-IDNDR) Internet Conferences from 1996 to 1999. The expertise which ECIE/QUIPUNET acquired running other Internet Conferences, like the 1996 Internet Conference on the Kobe Earthquake in Japan, proved to be an essential building stone and success factor for those Virtual Conferences.

On January 17th, 1995, one of the worst catastrophic earthquakes in the modern history of Japan destroyed a great portion of the city of Kobe. After a year of this terrible disaster, and in the spirit of sharing experiences to gain valuable knowledge that the Virtual Conference "Kobe, Japan; The Earthquake of 1995 and its lessons" was organized and held from January 17 to March 22, 1996. This was the first Internet Conference ever organized on Earthquake Engineering. The conferences had 120 participants from 15 countries. It was held using web pages and a mailing list.

OBJECTIVES

The Goal of the Virtual Conferences was to discuss experiences and to share information on natural disaster management. Specific objectives were: 1) Exchange practical information among participants, 2) Facilitate networking among professionals of different fields and countries and 3) Create new partnerships and exchanges between participants and/or organizations concerned.

ACTIVITIES

Four Global Virtual Conferences were co-organized by UN/IDNDR en ECIE/QUIPUNET as follows:

■ First Virtual Conference: 1996

Title: Solutions for Cities at Risk

Number of Participants: 500 persons from 60 countries

(Note: The first virtual conference was qualified as "a landmark event" for the United Nations - IDNDR activities)

■ Second Virtual Conference: 1997

Title: Floods, Droughts, Issues for the 21st Century

Number of Participants: 700 persons from around 60 countries

■ Third Virtual Conference: 1998

Title: Prevention Begins with Information

Number of Participants: 700 persons from around 100 countries

■ Fourth Virtual Conference: 1999

Title: The International Program Forum: The concluding phase of the United Nations International Decade for Natural Disaster Reduction

Number of Participants: 900 persons from around 110 countries.

ACHIEVEMENTS

Based on the above experiences, later, in Peru, ECIE continued with capacity building activities using Virtual Conferences. In 2001, the Virtual Conference "Arequipa - Peru Earthquake" was held. This conference had around 400 participants from all Latin American countries. During the conference, presenters from Peru and other Latin American countries distributed their research work in relation with the damages caused by the Arequipa-Peru Earthquake. This Conference was co-organized by National University of Engineering - Japan-Peru Center for Seismic Research and Disaster Mitigation (CISMID) at Lima, Peru. CISMID also has a Distance Education Program on Earthquake Engineering Design with a duration of one year.

Recently, United Nations / International Strategy for Disaster Reduction (UN/ISDR) organized an On-line Conference from 15 June to 15 July 2004 titled "Priority areas for further action to implement disaster risk reduction 2005-2015". As ISDR mentions "The purpose of the dialogue was to provide space for a global discussion between representatives, experts and interested stakeholders on reducing vulnerability to natural hazards". There were 730 participants from 107 countries.

LESSONS

■ Through virtual conferences, information exchange and discussions are enabled at all levels, whether local, national, regional or international at very little cost.

■ Provided participants have the necessary equipment for access to electronic mail or to the internet, many of the reasons that often prevent people from traveling to a given meeting, are brushed aside.

■ Expertise and opinions are focused and may therefore be shared with the broadest audience. This allows for maximized networking opportunities and for information to be circulated where it would not necessarily go otherwise.

■ These virtual conferences require minimum investment for participants, the cost is reduced and they have to pay only connections fees. However, they requires a high number of working hours from the organizing entities.

FUTURE

The virtual conferences proved to be an excellent tool to promote networking among participants working for disaster prevention. Therefore the next step is to analyze and create networks of experts in each of the fields of disaster prevention. The recent development of theory of real and social networks showed that once established the network they will grow and will have a subtle preference to link to the individuals known as connectors or "the hubs". The use of Information and Communication Technologies for the promotion of networks will have impact in capacity building activities.



CONTACT DETAILS

Alberto Delgado, Ph.D.

President

Electronic Communications & Information
Exchange ECIE

Lima, Peru - Tacoma, Washington, USA

<http://www.ecie.org/>

Email: adelgado@ecie.org

Tel: +51-1-441-9704

Fax: +51-1-440-5391

23 The Puerto Rico Tsunami Warning And Mitigation Program

BACKGROUND

Although the Caribbean region is well known for the hurricane threat, a "forgotten hazard" lurks in the background: tsunamis. Recently, Lander et al. (A brief history of tsunamis in the Caribbean Sea, *Science of Tsunami Hazards*, 20, 57-94, 2002) published a brief history of tsunami in the region in which they found 91 events that might have been tsunamis within the region. Of these, 27 are judged by the authors to be true, verified tsunamis and an additional nine are considered to be very likely true tsunamis. In the region near the island of Puerto Rico three big earthquakes, accompanied by catastrophic tsunamis, have occurred in 1867, 1918, and 1946. Due to concern raised by the Intergovernmental Oceanographic Commission of UNESCO, the USA Federal Emergency Management Agency, and the Sea Grant Program of the University of Puerto Rico, a series of workshops and research projects have led to the establishment of the Puerto Rico Tsunami Warning and Mitigation Program, started in 2003.

OBJECTIVES

The main goal of this initiative is to raise the level of awareness in the local population about this "forgotten hazard" and, thus, through a series of tasks, educate the public and the government. Since historically Caribbean tsunamis are local events in which no practical warning system can do much, it is felt that the best way to mitigate its impact will be through education (in form of training, capacity building, awareness raising) and the preparation of tsunami flood maps.

ACTIVITIES

Six major tasks were undertaken for this purpose: (1) Preparation of tsunami flood maps; (2) Raising awareness of potentially affected population through education and outreach; (3) Local and regional seismic waveform analysis with the goal of rapid identification of regional and local tsunamigenic earthquakes; (4) Development of warning messages and a protocol for rapid and clear dissemination of tsunami warnings in the case that a

tsunamigenic event is detected; (5) Development of a PC-based Caribbean Historical Tsunami Database for instructional and scientific uses; and (6) Promote and seek support and partnerships at the state, national, and international level for long-term tsunami hazard mitigation in the island and region.

ACHIEVEMENTS

Tsunami flood maps for the entire island have been prepared and are made available through the Internet, hardcopy, and CD's. This was followed by the installation island-wide of tsunami warning signs in the potentially floodable coastal areas, signs which have contributed a lot to raising the awareness of this latent threat. Workshops have been given all around the island illustrating the basics of tsunamis, their potential impact, and what can be done in case one is detected. Many newspapers, radio and television interviews have followed. Earthquake and tsunami drills have been given at selected schools located in the potentially floodable areas. A Spanish version tsunami video has been prepared and freely distributed to schools, government agencies, private companies, TV stations, and the general public. Conferences have been given at the halls of the two biggest shopping centers in the island. An Internet site has been established where the maps can be downloaded, including all of the reports generated by this program. A protocol for a tsunami warning message has been created to be used by the two agencies in charge of warning dissemination: the Puerto Rico State Emergency Management Agency and the USA National Weather Service. A software package has been developed and installed at the Puerto Rico Seismic Network for early detection and characterization of tsunamigenic events in the region. A series of training workshops are being given in which emergency response personnel have been trained on the use of the flood maps and on the protocol to be followed following a tsunami advice. A Caribbean and Atlantic Historical Tsunami Database has been developed which runs under MS-Windows. And representatives from the island have been invited to participate in the meetings of the USA National Tsunami Hazard Mitigation Program

and other forums, like the International Tsunami Commission of the IUGG and international meetings and workshops. And in March of 2004 the USA National Science Foundation sponsored a Caribbean Tsunami Workshop.

LESSONS

One thing learned is how in just three years of concerted effort we can raise the awareness and educate the public in an island of 4 million inhabitants about a natural hazard that was basically forgotten. We have found how useful the Internet can be in places where it is available to the general public. The installation of warning signs at selected places along the coast in an island where going to the beach is the favorite pastime has proven to be a powerful instrument to take the message to the masses. This is particularly applicable to the new generations, which had never heard of the past tsunamis that have affected the island. The drills at the grade schools have been very useful in teaching the very young about this threat, and they themselves have taken the concern to their homes, picking the curiosity of their parents, and so on.

Among the remaining challenges is the preparation of more accurate flood maps using what is called the "third branch" of science, numerical simulations. The physics of the inland tsunami penetration remains a very complex and complicated topic, especially the modeling of the inundation of a developed area with all types of infrastructure. How to alert the population at risk in a region where tsunamis tend to be local, in which flooding starts just a few minutes after the earthquake occurs, remains a challenge. We are working on the possibility of installing sirens. How to make the information about the potentially floodable areas available to the general public is still of concern, and the Hawaiian Islands option of publishing it in the local telephone books seems as the best option.

FUTURE

The effort described above will continue with more workshops, meetings, and the use of the radio, newspapers, TV programs, and the Internet. The flood maps should be revised with more up-to-date topography and bathymetry, with higher resolution and better software in order to more realistically model the inundation

phase of the tsunami life. And all of these efforts being carried out in the island of Puerto Rico should be exported to the other island/nations in the Caribbean region under the leadership of the Intergovernmental Oceanographic Commission of UNESCO and other relevant programs.



CONTACT DETAILS

Prof. Aurelio Mercado
Department of Marine Sciences
University of Puerto Rico
P.O. Box 9013
Mayagüez, P.R. 00683-9013

E-mail: amercado@cima.uprm.edu
Tel /Fax: 1-787-265-5461
<http://poseidon.uprm.edu>

24 The United States Web-Based Disaster Education Program: An Independent Assessment

BACKGROUND

The United States Federal Emergency Management Agency, hereafter referred to as FEMA, has undertaken a major measure to provide American citizens with disaster education at no cost to them. The program is a free set of online courses provided by the FEMA Emergency Management Institute, physically located in Emmitsburg, Maryland. These online independent study courses give an excellent in-depth education about every type of natural and unnatural disaster imaginable in plain English, as very little agency terminology or acronyms are used, and when they are they're explained, so an ordinary person can easily understand it, though there are special courses available for professional Emergency managers. There are also a few specialized courses designed for homeowners, schools, medical professionals, and American Indian tribal governments as well.

OBJECTIVES

The overall goal of the program is to educate the entire willing populace about disasters, their effects, how to prepare and/or mitigate, what response will be like, and how to go about recovery after the disaster has passed, though they do also have courses on different aspects of the emergency management system, like the National Incident Monitoring System for example. In the program's courses, a student typically downloads and prints the coursework itself in Adobe Acrobat pdf format, takes written exams at the end of each chapter as well as knowledge check exercises during the chapter itself, and after all chapters in a course are completed, the student takes a final exam conducted online at the Emergency Management Institute web page. If the student passes the final exam, they are awarded with a certification and college credit if desired. A course itself is completely self-paced and the student is encouraged to re-read and study all of the lessons in a course if a concept is not fully understood.

ACTIVITIES

The courses are freely available and as such, anyone with a computer and an Internet connection can undertake them. People who are educated about the disaster itself, preparedness, mitigation, response and recovery are far less likely to be killed or injured by a disaster, they also tend to heed warnings from government and volunteer organizations more than an average citizen due to their education in the seriousness of the matter. This applies to the author personally, as I withstood three successive hurricanes this past September. I was prepared more than my neighbors and most of the local community due to the fact that I took a course on hurricane preparedness earlier this year and I knew how serious it was as well as what to expect during all phases of the disaster as a result of taking the course. If more people knew about the courses and took the time to take them, the community at large would have been much better prepared for the disasters and their aftermath. Dissemination of information such as this could be wider if there were radio, television, and Internet public service announcements discussing the Independent Study courses. In the US government, education about federal level agencies and their programs is often severely limited to those who seek it out for themselves, which is not good enough in this case. If FEMA made an effort to try to get people involved in education about disaster management through the Independent Study method, many more people would be prepared for disasters as they occur.

FUTURE

In the future, the Agency may also want to create a few specialized courses for different regions of the country due to its wide-ranging natural and manmade environments. What applies in a State like Florida for example won't necessarily apply in Utah and the Agency should most certainly take this into account. FEMA already separates the nation into ten unique

geographical regions, so writing ten new courses that give a general overview of each individual region's hazards should not be a major problem for them. For example in Region IV, a course about the region would cover the Atlanta Federal Response Center, hurricanes, floods and the National Flood Insurance Program, wildfires, nuclear/radiological accidents, terrorism, response on the federal, state and local levels, mitigation, and preparedness measures unique to Region IV in comparison as well as compliance with the general National guidelines for such disasters.

(The courses themselves in their current incarnations are located on the web and open to your review at:
<http://training.fema.gov/emiweb/IS/crslist.asp>)



CONTACT DETAILS

Franklin Adams

3209 Apt. B Formosa Ave.
Orlando, Florida 32804-3911
United States of America

Tel: (407)-496-0566
scuzz138@cfl.rr.com

25 Case Study On Public Private Partnership 2000 (PPP 2000)

BACKGROUND

The concept of Public Private Partnership 2000 (PPP 2000) was born in February 1997 when a senior scientific manager of the U.S. Geological Survey (USGS) and the CEO of the Institute for Business and Home Safety met to consider how government and the private sector, including, but not limited to, property and casualty insurers, might work together to reduce losses attributable to natural disasters. The meeting was triggered by recognition of the great disparity between the amount of technical knowledge available for improving public awareness, education, and disaster reduction, and the rising costs of disasters and the lack of universally accepted solutions for reducing their impacts. They concluded that a single public private partnership was feasible if it was limited in scope and focused on building public-private collaboration that would in turn foster/the generation of other partnerships, the more numerous and diverse, the better. They also concluded that if either the government or the property and casualty insurers attempted this task alone, it would fail, but, by creating and sustaining a joint government-industry venture, the resulting enterprise would be so unusual that it would inspire participation and have credibility. They agreed to seek new ways to build awareness of the national challenge at the highest possible levels of government and within the private sector. The outcome was PPP 2000, a public private partnership created on April 30, 1997 to be co-chaired by the Science and Disaster Reduction agencies comprising the Subcommittee on Natural Disaster Reduction (SNDR) and the Institute for Building and Home Safety. SNDR is a part of the President's Office of Science and Technology's Committee on the Environment and Natural Resources; whereas, IBHS serves national and international property and casualty insurers. Both the public and private sectors had a common interest in the proposed partnership because: 1) economic losses from hurricanes, winter storms, high winds, hail, floods, drought, earthquakes, landslides, and volcanic eruptions, solar storms, and tsunamis, were growing rapidly and

reaching catastrophic levels in some disasters, 2) the magnitude of losses in the United States, which are highly variable from year to year, was beginning to average about one billion dollars a week (a little less than one percent of U.S. GDP), and 3) losses from business disruption was becoming a major fraction of overall economic losses in the nation.

OBJECTIVES

The SNDR and IBHS, and the twenty-five private-sector partners who voluntarily joined PPP 2000, agreed on six broad goals for PPP 2000. They are: 1) first and foremost, to make natural disaster reduction a public value, 2) to emphasize pre-event mitigation, focusing on structural and non-structural, 3) to improve real-time warning systems, 4) to identify means for financing mitigation, 5) to improve information dissemination and access, and 6) to expand and improve international cooperation, communication, coordination, and collaboration. The objective was to bring topical experts as well as high-level policy officials together in PPP 2000 Forums for dialogue on a particular aspect of natural disaster reduction.

ACTIVITIES

The Public-Private-Partnership 2000 Forum, and its dedicated web site, were the basic tools developed by PPP 2000 during the period September 1997 to November 1999. Each Forum was a one-day meeting, organized by private sector members, in cooperation with SNDR and IBHS, and held every other month on the average, in the Washington, D.C. area to bring together topical experts as well as high-level policy officials for dialogue on a particular aspect of natural disaster reduction. Outcomes of each forum were posted on the PPP-2000 web site: <http://www.usgs.gov/ppp2000>. Leadership and support for PPP 2000 was provided by Harvey Ryland, IBHS, and the members of the SNDR.

ACHIEVEMENTS

Twelve forums involving over 1,200 participants were convened in the Washington, D. C. area by SNDR, IBHS and non-government partners. Forum topics included: 1) Natural Disaster Reduction Initiatives of the Insurance Sector, 2) Managing Catastrophic Risks, 3) Cities and Megacities At Risk, 4) Role of International Broadcast Media in Natural Disaster Reduction, 5) Reduction of Earthquake Vulnerability in California: 1998-2003, 6) Assisting Communities Reduce Vulnerabilities, 7) A Global Perspective on Natural Disasters, 8) Disaster Recovery Business Alliance, 9) Real- and Near Real-Time Monitoring and Warning for Natural Hazards, 10) Safety and Reliability of Utility Systems, 11) Grass Roots Education: Building Public-Private Support for Mitigation, and 12) National Risk Assessment. Membership in PPP 2000 included: 1) the Wharton Center at the University of Pennsylvania, 2) Stanford University, 3) American Society of Civil Engineers' Committee on Natural Disaster Reduction, 4) Disaster Recovery Business Alliance, 5) Electric Power Research Institute, 6) Association of Contingency Planners, 7) California Seismic Safety Commission, 8) Pacific Gas & Electric Company, 9) American Red Cross, 10) University of Virginia, 11) UNESCO, 12) World Meteorological Organization (WMO), 13) International Association of Broadcast Meteorologists, 15) Worldwide Seismic Safety Initiative (WSSI), 16) World Bank, and 17) World Federation of Engineering Organizations.

LESSONS

Many stakeholders and some high-level policy officials, whether in federal, state, or local government, or a high level executive in private enterprise, have a blind spot with respect to the realities of natural disasters and effective ways to cope. Many know that disasters are a result of natural extremes, but believe that they cannot be forecast or anticipated, but only endured. Hence, public policies and education tend to emphasize emergency response and recovery to the exclusion of pre-event mitigation. Although natural disaster reduction should be achievable through effective policy formulation, implementation resists simple categorization, and formulae, cookbook approaches, and

compartmentalization. Best practices are rarely at hand; instead, evolutionary, experimental approaches are common. Because the impacts of a disaster are woven throughout the fabric of society, reducing the threat and impacts of disasters requires modifications of just about every aspect of society.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond), provides an unprecedented opportunity to realize the full potential of public private partnerships like PPP 2000. Tools such as the Public-Private-Partnership Forum and a dedicated web site can be linked with projects to continue the processes of enlightenment and empowerment that come from dialogue. They should be considered as basic tools for improving education of professionals and policy makers. Partnerships in educational activities on community, national, and regional scales can accelerate the process of becoming disaster resilient.



CONTACT DETAILS

Dr. Walter Hays

Executive Director, Global Alliance for
Disaster Reduction

238 CARC Building, University of North
Carolina at Charlotte, Charlotte, NC
28223

704 678-3520

walter_hays@msn.com

26 Case Study On Post-Earthquake Investigations

BACKGROUND

A natural disaster provides an unprecedented opportunity for using the disaster itself as a laboratory to learn about the hazard, built, and policy environments of the stricken community and to evaluate vulnerabilities and disaster resilience. New information, data, and lessons acquired from a disaster are a basis for new curricula and provide a window of opportunity for changing public policies and professional practices. Post-earthquake investigations, one of the first post-disaster audits to be organized as a research tool, have served as a model and been on the research agenda of many countries (e.g., USA and Japan), UN agencies (e.g., UNESCO), and property and casualty insurers (e.g., Munich Reinsurance Company) during the 20th century. Although implemented informally in the USA since 1933, they were not institutionalized until 1992 when a program of post-earthquake investigations was enacted into law as part of the National Earthquake Hazards Reduction Act. This legislation provided a mandate for professionals and policymakers to improve national and international cooperation and to build a culture of earthquake resilience. On the basis of this mandate, Earthquake Engineering Research Institute, with support from the National Science Foundation and other federal agencies, developed a long-term program to send scientists, social scientists, and engineers to stricken communities to assist local professionals in performing post-earthquake studies in the USA, and throughout the world, when requested by the government of the stricken nation.

OBJECTIVES

The goal was to capture perishable data in the USA and abroad, to learn, to disseminate the lessons, and to recommend new directions for research, public policies, and professional practices. The objective was to foster implementation of loss reduction measures based on these lessons in earthquake prone communities and nations throughout the world.

ACTIVITIES

Post-earthquake investigations have been organized and implemented in the USA and, in cooperation with other nations (e.g., Japan, France, and Turkey). UNESCO has served as a cooperating and coordinating organization and a catalyst for change for many of them.

ACHIEVEMENTS

Three of the many "earthquake laboratories" of the 20th century illustrate the range and commonality of the lessons learned. They are:

■ **January 17, 1995 Great Hyogo-Ken Nambu, Japan (Kobe) Earthquake (Earthquake Engineering Research Institute, 1995)**: This M 6.9 earthquake, which occurred at 5:46 a. m. 20 km from Kobe on a right-lateral-strike-slip fault is representative of urban earthquake disasters. The lessons included:

- the extent of the damage of the elevated Hanshin expressway,
- the nature and extent of the damage to the port facilities,
- the collapse of many single family dwellings,
- damage to welded steel frame buildings, and
- the long duration acceleration pulse in the ground motion. The economic losses reached \$200 billion; deaths reached 5,600, injuries reached 26, 000; and the homeless toll reached 250,000. The disaster led to a renewed effort by the Japanese Government to implement improved earthquake loss prevention and mitigation measures and to strengthen earthquake preparedness, emergency response, and recovery.

■ **January 17, 1994 Northridge, California Earthquake (State of California, 1995)**: This M 6.7 earthquake, which occurred at 4:31 a. m., illustrates what can happen in the epicentral area of an urban earthquake generated on a "blind" thrust fault. The earthquake, which did not rupture the surface, produced the following lessons:

- verification of the web of "blind thrust faults" beneath Los Angeles,
- the exceptionally strong horizontal and

vertical ground accelerations in a 20 x 20 square kilometer epicentral area, which approached 2 g, a factor of 2 greater than the actual design value prescribed in the building code,

- ground motion characterized by a long duration acceleration pulse (i.e., the "killer" pulse),

- damage to elevated highway systems, and

- damage to welded moment steel frame buildings. Economic losses reached \$ 40 billion with over \$ 12 billion in insured losses; mortality reached 61, injuries reached 15,000, and the homeless toll reached 50,000.

■ **September 19, 1985 Michiocan (Mexico) Earthquake (Earthquake Engineering Research Institute, 1989):** This M 8.1 earthquake, which occurred at 7:18 a. m. in one of the World's most populous urban centers, is representative of great subduction zone earthquakes. The earthquake provided lessons on the well known vulnerability to ground shaking of 5-20 story un-reinforced masonry, non-ductile concrete, and reinforced concrete buildings (including hospitals, schools, and government buildings) located in the old lake bed zone of central Mexico City. An estimated 10,000 people were killed, 25,000 were injured, 200,000 were left homeless, and economic losses reached \$5 billion. Design norms in effect at the time of the earthquake were significantly changed to increase earthquake resilience of new construction.

LESSONS

The lessons learned in terms of the hazard, built, and policy environments of the stricken community and nation are universally relevant. Programs to disseminate these lessons and to integrate them into formal and informal educational programs have benefited many communities throughout the world facing similar threats, but their potential is unfilled.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond) provides an unprecedented opportunity to realize the full potential of post-earthquake investigations and to organize the full spectrum of post-disaster investigations. Post-disaster investigations are the best way to improve curricula for formal and informal education and

training needed to empower communities to move more rapidly towards effective disaster reduction and enhanced human security.



CONTACT DETAILS

Susan Tubbesing

Executive Director, Earthquake Engineering Research Institute, skt@ceri.org

Dr. Walter Hays

Executive Director, Global Alliance for Disaster Reduction
238 CARC Building, University of North Carolina at Charlotte, Charlotte, NC 28223

704 678-3520

walter_hays@msn.com

27 The Disaster Center As A Public Information Source In The USA

BACKGROUND

The Disaster Center web site: www.disastercenter.com was established in 1996 and active until 2001. Its original purpose was to provide links to information useful to the U.S.A. public in a disaster. It became a vehicle through which I would study the use of the Internet in disaster situations, a tool through which I would develop and test theory, and led to a number of diverse efforts to provide information to the public.

OBJECTIVES

In the digital age the communication of the "disaster message" will bring about a reduction in the loss of lives and capital by methods and means that have never existed before in the history of the human race. Disaster messages are communications in which the value of risk/threat reduction can be measured against the costs of the system, while retaining a measure of the residual risk.

ACTIVITIES

The activities included:

- Links to media, emergency management, natural, technical, and man caused disaster related web sites,
- Statistics, and Educational materials,
- A Daily USA Disaster Situation Report
- Message Boards/ Chat room
- Coverage of ongoing disasters

ACHIEVEMENTS

The links to media, emergency management, natural, technical, and man caused disaster related web sites were useful to a large number of people and organizations. Among the greatest users during disasters was FEMA and other emergency management related organizations.

Notable among these efforts was the compilation of disaster events into databases, and links to information sources, through maps that would return statistics and links by clicking

any location on the maps. Another effort involved the analysis of the number of deaths/injuries and cost of tornadoes on a per square mile basis and by population per square mile. The educational materials available at the site were authored by me or available for use without copyright restrictions.

The Daily USA Disaster Situation Report consisted of a set of daily features: active weather warnings, severe weather probability forecasts, and flood, fire, earthquake, and severe weather reports. It included a guest column and links to articles of interest to the emergency management community. The format of the report has been adopted by several emergency management agencies in the United States.

Individuals could post any type of message on the Message Boards. They were used to link people to relevant information before, during, and after disasters. For example, it was possible to collect situation reports issued by multiple jurisdictions related to a single disaster in one location and make them available on the message boards, which offered a search engine function. The Chat Room was useful during disasters for groups of people collecting and comparing reports.

The coverage of ongoing disasters involved the collection of publicly available information from sources not under copyright and processing that information. In some cases satellite images were collected every hour, reduced in size and made available for play in animation. Another effort involved the creation of maps using digital elevation models to display of areas subject to flooding in a storm surge, and the creation of animations showing flooded areas given a projected sea water level.

LESSONS

While the work on the site has been virtually stopped for almost four years, the author has continued to develop theories related to the uses of information to mitigate disasters. The "disaster message" can be proactive and reactive. Reactive systems operate where information can be determined and some unifying structure is in place. Examples of reactive systems are information integration centers and command centers. Proactive

systems operate at the level of the individual. To a great extent the successful operation of proactive systems depends upon information gathered and lessons learned from the operation of reactive systems. To alter the determinant outcome of similar events proactive systems need to be in place, and operate simultaneously at the determinant level.

We are moving towards a point in time in which it will be possible to know the probability of the individuals risks and threats depending upon who and where they are; from this information we may be able to chart the best path for each of us. The way to alter the determinant nature of our lives is for each of us to be able to access information specific to ourselves. One of the founders of the United States put it in words to this effect, the first object of government is to protect the right of the individual to seek and find their own potential.

FUTURE

The author would like to see the creation of a non-profit disaster center. The purpose would be for collecting and distributing disaster related information to and from officials and the public, and would be required to justify its work by being required to demonstrate a level of risk/threat reduction at a factor to its costs, as well as tracking residual risk/threat.



CONTACT DETAILS

Christopher Effgen

The Disaster Center
6921 Weimer Anchorage, AK 99502 USA
Tel: 907-248-8363
Host@disastercenter.com

28 No Adverse Impact Floodplain Management: An Innovative Approach Promoted By The Association Of State Flood Plain Managers

BACKGROUND

Flood losses in the United States continue to escalate. From the early 1900's they have increased six fold, approaching a cost \$6 billion annually. This increase in the level of damage to public and private property, amounts spent on disaster relief, disruption in lives and businesses, and loss of habitat and other water-related resources has occurred in spite of nearly a century of flood control, the implementation of floodplain management standards and the mapping of hundreds of thousands of miles of floodplains. The general trend is for flood losses to increase every decade and it is fairly obvious that the policies of governments at all levels, combined with existing market forces, are leading to more intense uses of flood prone lands throughout. In 2000, the Association of State Flood Plain Managers (ASFPM) recommended a "No Adverse Impact" approach for local government, state, and federal floodplain management. Future land and water use, which will flood new areas, increase flood heights, increase erosion, or otherwise increase flood and erosion damages to public and private property will not be permitted.

OBJECTIVES

The NAI (*No Adverse Impact*) approach is not intended as a rigid rule of conduct. Rather it may be applied as a general guide for a landowner and communities in watersheds and floodplain areas, which may adversely impact other properties or communities. It is a shift from substituting local and individual accountability with federal government programs. At its broadest level, NAI is about local government taking steps to reduce the drain on national resources, as well as local and state resources. NAI empowers the local community and its citizens to build stakeholders at the local level. The statement of the goal is simple, "*where the action of one property owner does not adversely impact the rights of other property owners, as measured by increased flood peaks, flood stage, flood velocity, and erosion and sedimentation*". Furthermore:

- Reduce impact onto other properties by promoting local involvement in developing and implementing a comprehensive strategy for floodplain management;

- Reduce economic drain on local and national resources which can be reallocated to other beneficial mitigation, planning, and other domestic programs;

- Promote individual and local accountability ;

- Understand potential impacts of not embracing a new direction;

- Involves entities at local level to become proactive in promoting a new mindset and build a sense of unity and pride within the locality.

While the NAI approach will result in reduced damages for the 1% chance flood event, its true strength is that it virtually ensures that future development actions which impact the floodplain must be part of a locally adopted plan. This removes the mentality that floodplain management is something imposed by a federal agency. Giving locals the flexibility to adopt comprehensive local management plans, which would be recognized by federal agencies such as the Federal Emergency Management Agency and others as the acceptable management approach in that community, will provide the community with control and support for continued innovative approaches.

ACTIVITIES

The activities include:

- Promote NAI to become the new "default" standard for the vast majority of National Flood Insurance Program communities within the United States.

- Encourage localities to develop comprehensive strategies that can incorporate various community needs through a range of programs and approaches.

- For communities that embrace NAI, provide incentives for state and federal funding of mitigation and other long-term strategies.

- Foster local responsibility and capability for managing floods and floodplain resources.

- Produce publication materials and conduct presentations and outreach sessions to promote NAI on a national level at various key regional and local conferences.

ACHIEVEMENTS

Since 2000, ASFPM has embarked on numerous steps for successes with promoting NAI. Through continued outreach, many communities are now aware of NAI's existence and are eager to participate. Furthermore, through the support of ASFPM the *NAI Toolkit* was produced and made available via multiple avenues to local government officials, elected representatives and citizens in communities of all sizes, especially those which are flood-prone. The NAI Toolkit is a book-type publication featuring 10 varying community-based case studies. ASFPM has continued to spin off additional products from this publication to facilitate ways communities can be successful in helping themselves.

LESSONS

NAI is a managing principle that is easy to communicate and from a policy perspective tough to challenge. However, working with communities to embrace this new approach highlighted the need to ensure that this approach is compatible with federal, state and local laws. ASFPM has worked to produce a document titled "*Government Liability and No Adverse Impact Floodplain Management*" which is based upon review of the legal literature as well as federal and state case law concerning floodplain regulations. This approach will ease the local communities perceptions of the NAI approach not being legally compatible with existing floodplain regulations.

FUTURE

Some key steps include:

- ASFPM and other professional organizations, state, and federal agencies, should form partnerships to compile NAI impact success stories that can be distributed as examples to promote such success and encourage participation.

- State agencies (with federal support as necessary) should begin to assist local governments in the development of NAI strategies.

- FEMA should consider expanding its Cooperative Technical Partner program to include an element of reviewing and adopting locally developed NAI strategies.

- Education and outreach must continue to be a significant component of the federal, state, local, and nongovernmental organization message.

- Developing cost-sharing guidelines for federal grant programs to provide more favorable cost shares for communities and states that adopt a NAI approach.



CONTACT DETAILS

Larry A. Larson
P.E., CFM, ASFPM Executive Director
larry@floods.org

Firas N. Makarem
CFM, ASFPM International Committee
Chair
fmakarem@dewberry.com

For more information or full copies of the ASFPM documents on flood policy, including a published article on No Adverse Impact, the NAI Toolkit and other publications contact asfpm@floods.org or download from www.floods.org

29 Case Study On The Central US Partnership (CUSP)

BACKGROUND

A defining moment for building a culture of disaster resilience in the Central United States happened when the Central US Partnership (CUSP) was formed on May 27, 1999 as a result of a meeting held in St. Louis, Missouri in conjunction with the "Mid America Highway Seismic Conference. CUSP is a public-private partnership comprised of 13 public-private organizations that individually and collectively are committed to making disaster resilience a public value in the Central United States where the annual probability of a damaging earthquake is low, but the probability of a catastrophe is high when an earthquake of M6 to M8 happens at the wrong time and in the worst location. The Central United States faces an unacceptable level of risk. Experts believe that catastrophic earthquakes—earthquakes that will cause unacceptable levels of damage to buildings and infrastructure, economic loss, mortality, morbidity, and adversely affect production facilities, economic markets, and distribution systems—are inevitable in the Central United States. The only unknown is when it will happen. The first of two likely locations is the New Madrid seismic zone where magnitude 6.0-6.5 earthquakes occurred near Memphis in 1843 and near St. Louis in 1895, and three magnitude 8 earthquakes followed by hundreds of magnitude 5, 6, and 7 aftershocks occurred in the winter of 1811-1812. The second location is the Wabash Valley area northeast of the New Madrid seismic zone where magnitude 6-6.5 earthquakes are considered to be likely. When either of these inevitable earthquakes recur, the region faces an unacceptable level of economic loss from damage, business interruption, loss of tax base, loss of jobs, displaced persons, mortality, and morbidity. Because public policies in each state have lagged behind research, the region is unprepared. Most businesses are unprepared. Most insurers are unprepared to indemnify losses expected to reach \$ 200 billion. The existing inventory, valued in the trillions of dollars, is fragile—comprised mainly of unreinforced masonry residential, commercial, and essential buildings and old infrastructure that

are vulnerable because individual elements were not designed and constructed in accordance with modern building codes and lifeline standards.

CUSP is led by the Central United States Earthquake Consortium (CUSEC), which is headquartered in Memphis, TN. CUSP was initially comprised other public-private organizations that will collaborate in implementing loss reduction strategies in advance of a catastrophic earthquake. They are: the Association of Contingency Planners (ACP), American Society of Civil Engineers (ASCE), Disaster Recovery Business Alliance (DRBA), the Institute for Business & Home Safety (IBHS), the Mid America Earthquake Center, the CUSEC State Geologists, the emergency transportation element of the Department of Transportation (DOT), the Federal Highway Administration (FHWA), the United States Geological Survey (USGS), Mid Continent Mapping Center (MCMC), Extreme Information Infrastructure (XII), and Institute of Gas Technology (IGT).

Ongoing administrative leadership was provided by Jim Wilkinson, CUSEC, the CUSEC Board of Directors, and the Central US State Geologists. Each partner in CUSP has provided leadership in collaborative activities.

OBJECTIVES

The partnership will promote the implementation of forty-four loss reduction strategies designed to facilitate:

- living with earthquakes,
- building to withstand earthquakes, and
- learning from earthquakes, using information and from earthquakes anywhere in the world.

When implemented over the next ten years, these strategies will create a nucleus of communities, businesses, insurers, citizens, and government agencies that are prepared in seven states: Tennessee, Missouri, Kentucky, Illinois, Indiana, Arkansas, and Mississippi. The objectives encompass a broad range of formal and informal educational initiatives, which will be used as building blocks for creating a culture of resilience in communities through the Central US.

ACTIVITIES

The activities have focused on public awareness and capacity building for professionals and policy makers of the public and private sectors in the Central United States. The focus in the community has been on protecting homes, schools, businesses, and community infrastructure

ACHIEVEMENTS

Public awareness and technical and political capacity have been significantly increased as a result of ongoing activities. However, the full potential of CUSP has not yet been realized.

LESSONS

Progress is slow and the level and intensity of public-private collaboration waxes and wanes, because the threat seems so far away in time and investments in anticipatory loss reduction measures are difficult to sell. The challenge is sustaining the activity for a decade or longer.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond) provides an new opportunity to invigorate CUSP in order to realize the full potential of continuing collaboration in the central United States. Curricula for building technical and political capacity for disaster resilience need to be improved as the regions awaits the inevitable catastrophe. Public awareness will be an urgent priority after the catastrophe occurs. The experiences to date provide a model for extension to other natural hazards such as floods, severe windstorms, and landslides. Such an extension coupled with international collaboration can help other countries facing a similar "low probability of occurrence-high probability of catastrophic consequences" to move towards effective disaster reduction and enhanced human security.



CONTACT DETAILS

Dr. Walter Hays

Executive Director, Global Alliance for
Disaster Reduction
238 CARC Building, University of North
Carolina at Charlotte, Charlotte, NC
28223

704 678-3520
walter_hays@msn.com

Education And Training Aspects Of The Contingency Plan For Western Venezuela Oilfields

BACKGROUND

Hydrocarbon production has caused as much as 6.3 m of ground subsidence in the eastern coast (Costa Oriental) of Lake Maracaibo (COLM) in western Venezuela. This area contains some of the oldest and most prolific oil fields in the world. As the original terrain consisted mostly of swamps and lagoons barely above lake level, both earthen coastal and inner dikes as well as an elaborate drainage system had to be built in each of the three oilfields of Lagunillas, Tia Juana and Bachaquero. This system, known as the Costal Oriental Protection System protects the lives of more than 60,000 inhabitants, the industrial facilities required to produce and/or handle more than 700,000 barrels of oil per day. The COLM oilfields are located in an area of moderate seismicity but the coastal dikes were designed and built with no consideration for seismic forces. Seismic geology and seismicity studies carried out indicated the probability of dike failure due to the liquefaction in the foundation soils, which led to the implementation of engineering mitigation measures to considerably reduce the probability of a dike failure and the consequent flooding of the areas below Lake level.

In spite of the considerable increase of safety provided by the mitigation measures and, in given the importance that the these oilfields have s for the country, the government, at the request of Petr6leos de Venezuela, decided in 1986 the preparation of a contingency plan. and issued the corresponding presidential decree. A working group of oil company personnel and representatives of the municipal state and central governments was established. to prepare the initial ("conceptual") version of the contingency plan. It was completed in January 1991, but has been continually updated and improved.

OBJECTIVES

The objective of the training activities of the PLAN COLM is to adequately prepare both personnel responsible for the plan and the individuals who will be instrumental in its eventual implementation. To that effect a series of activities were carried out in close

cooperation with CEPET, that training center of the Venezuelan oil and Venezuelan and foreign consultants. The training activities developed and implemented in PLAN COLM were predicated under the concept of "training the trainers" and, to that effect a series of presentations, seminars and workshops were initially implemented, followed by a program of both desks and field exercises

The philosophy behind the Costa Oriental of Lake Maracaibo Contingency Plan (PLAN COLM) has been that contingency plans are not and end in themselves but that they are one of the instruments for disaster risk reduction. In addition concept of "planning" (dynamic) instead of "plan" (static) have always have been the guidelines for those directing and those involved in the preparation of PLAN COLM.

ACTIVITIES

The program had two parts: one educational and the other training part.

As a part of the educational part, a program was prepared for the primary schools (grades 1 to 9) located in the risk area of the Costa Oriental. The cooperation of local, state national educational authorities were requested and enthusiastically given to the extent that state governmental officers were assigned to work in the program in close cooperation with the personnel of the oil companies.

Changes in the educational programs to **include disaster risk reduction concepts** in the regular curricula as agreed with the education authorities. Following the concept of train the trainers the "First Workshop on the Costa Oriental Protection System and PLAN COLM" was given in four overlapping series between July 1991 and September 1992 to cover a total of 713 teachers and administrative personnel from 39 schools with a total student population in excess of 19,000 students.

The workshop series were given by our technical personnel and educational officers and covered the following subjects

- Reservoir compaction and ground subsidence.
- Natural, technological and man made risks
- Seismic geology an seismicity
- Earthquake geotechnical engineering with

emphasis on the soil liquefaction phenomenon

■The coastal Protection System and the Contingency Plan (PLAN COLM)

■Preparation of school curricula and miscellaneous administrative tasks.

■Preparation of extracurricular activities for the students.

As the part of the training part, more than 300 presentations covering the Coastal Protection System and the PLAN COLM have been given to oil industry personnel at all levels; to municipal, state and federal officials, oil industry and municipal firemen; police departments, Armed Forces personnel at the various levels, professional organizations; local and state NGO's and media (radio, TV and print) representatives.

The following activities, among others were carried out between 1991 and 1993:

■Teaching methodology workshop to those involved in making presentations and directing seminars and workshops

■Disaster prevention workshops for oil industry top and middle managers.

■Disaster medicine 10-hour workshops for medical staff (oil industry and municipal, state and federal)

■Workshops for the media (local radio, TV and print as well as correspondents of national media)

In addition the following desktop and field exercised were carried out, among others:

■Evacuation of a 60 bed hospital,

■Evacuation of two grammar schools

■Evacuation of an outpatient clinic.

■An exercise aimed at testing the response of a specific medical facility to a fictitious explosion and fire of a heavy oil heating facility.

■Evacuation of the inhabitants of Lagunillas (ca. 15.000 persons) due to a dike failure

Each of these exercises was properly evaluated by the observers and participants and conclusions and recommendations for improvement for future exercises.

ACHIEVEMENTS

The evaluation and follow up consisted of visits of the PLAN COLM staff to schools to discuss with the teachers the students' reactions to the activities recommended in the workshop and their corresponding evaluation. Some of the extracurricular activities carried out by the students were:

■Preparation of scale models depicting the coastal protection system

■Research projects on the history of the

oilfields and the of the coastal dikes

■Disaster risk reduction-related projects on PC's within an ongoing program on computer training then being implemented in the oil company run schools

■Guided visits to the coastal dikes with the corresponding explanations by our staff.

■Classroom and school evacuation exercises

LESSONS

■The cooperation of the educational authorities was deemed essential for the success of the workshop program and follow up activities.

■Results to date have exceeded our greatest expectations. The follow up showed that the student's parents and relatives took active part in the assigned extracurricular projects.

■It has been shown that one of the most efficient way to reach the public is through the children and, for that purpose, adequate educational programs should be implemented.

FUTURE

Ensure that refresher workshops are scheduled at appropriate intervals.

■Extend this type of workshops to cover both kindergarten and high school students

■Ascertain that proper follow up activities are implemented



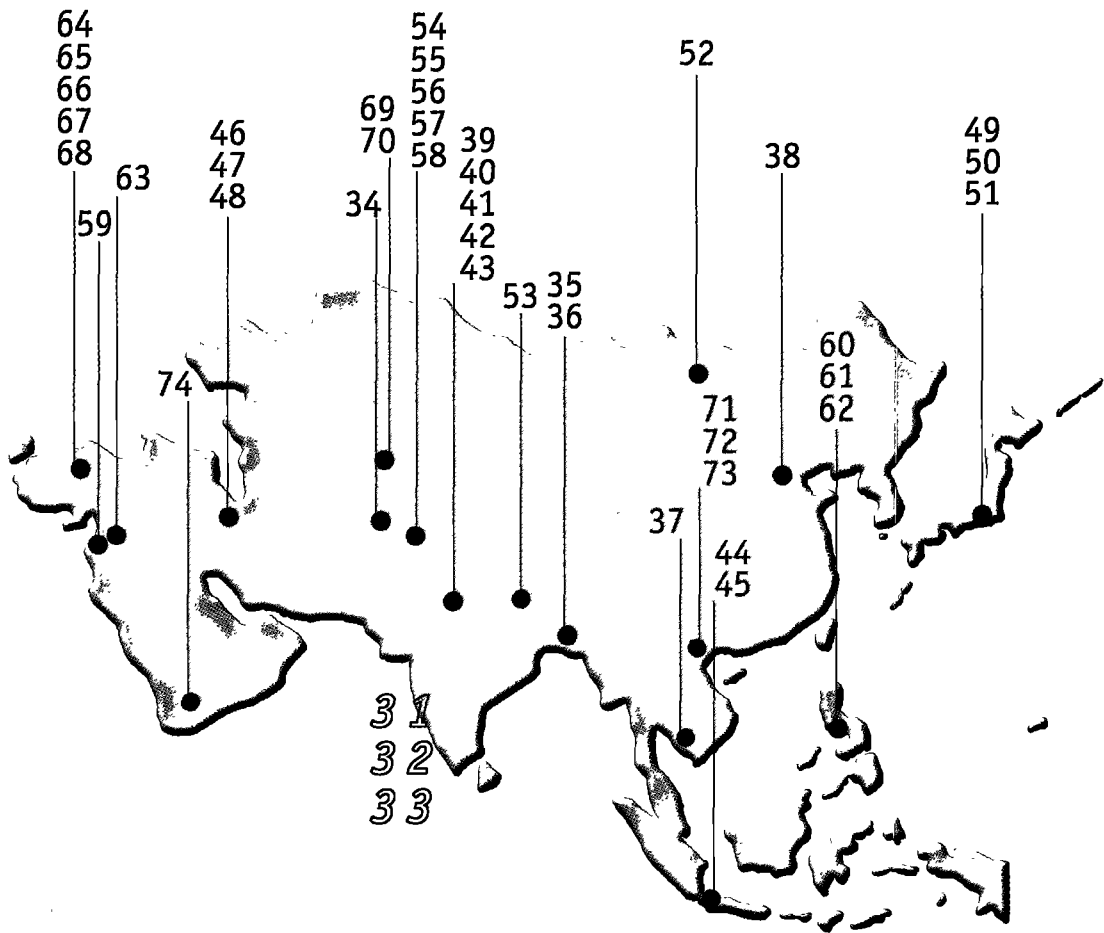
CONTACT DETAILS

Juan Murria

Advisor to the President
Venezuelan Foundation for Seismological
Research (FUNVISIS)

Apartado 74.880 Caracas, Venezuela 1070
murrias@cantv.net

Asia



31

Bringing Community-Based Disaster Management (CBDM) Training To South Asia: Through Local Language Courses

BACKGROUND

Present day disaster planners/ managers and relief workers agree that communities can indeed be empowered to cope with natural hazards in their locality. This is a more positive approach to disaster management, when compared with the traditionally accepted emergency relief handout method. CBDM or community-based disaster management emphasizes that through capacity building, communities can be better prepared to face future disaster situations and manage their risk.

The concept of CBDM recognizes that the commonly applied top-down initiatives fail to address specific local needs of a given community, it fails to heed local knowledge, or take into account available resources and capacities that exist within communities.

When applied, CBDM approach aims to enhance organizational skills of disaster-prone communities, strengthen their livelihoods to withstand the ravage of a prolonged period of disaster, establish early warning systems that could protect lives and possessions, resolve existing conflicts and impart appropriate training and technological knowledge as necessary. However this CBDM approach, as developed by ITDG, does not transfer the entire responsibility of disaster management to the community; it recognizes that the state has a role to play in reducing risk by managing disaster situations and maintaining appropriate structures.

OBJECTIVES

The aim of developing a training curriculum and guidelines for CBDM was primarily encourage the 'paradigm shift'- to change the focus of disaster managers to look at communities as active partners rather than helpless victims; the shift from relief to risk mitigation. Another aim was to make the training available at low cost, in local languages to disaster managers at grassroots level in South Asia.

ACTIVITIES

In 1996, ITDG took a lead in introducing formal CBDM training in South Asia. In partnership with the Asian Disaster Preparedness Center (ADPC) in Bangkok, several workshops were held to develop the initial curriculum. The training manual was produced so that it could be used by different stakeholders- government department officials, NGO staff, field assistants, community-based organizations etc. The training methodology aimed at incorporating aspects of community participation and community capacity-building in to the disaster management process.

In the early years of CBDM training, all courses were conducted at the Bangkok-based ADPC. This was an expensive exercise for many potential participants in South Asia. Therefore, the regional program 'Livelihood Options for Disaster Risk Reduction (LODRR)' coordinated by ITDG South Asia, incorporated plans to bring the CBDM methodology down to local-level training, reaching the grassroots level organizations in South Asia.

In 2000, under the 'Capacity Building towards Localized Approaches' component of the LODRR program, the first batch of trainers was trained; participants were drawn from India and Sri Lanka initially, to begin the localizing process. Thirteen members from eleven selected partner organizations from India and Sri Lanka were given comprehensive guidance on translating the training methodology in their own countries to reach the provincial, district and grassroots levels. Upon return, these trainers worked on adapting the international course syllabus to suit national needs and context. Most importantly these trainers had to translate the course contents to local languages that were understood by a majority of people in each country.

The salient elements of the syllabus developed by ADPC and Duryog Nivaran are listed below.

- Disaster Situation in Asia
- Paradigm shift in addressing disasters
- Importance of community-based approaches
- The Disaster Crunch Model
- Community-based disaster management process
- Community-based risk assessment
- Strengthening local capacities
- Planning at the local level

ACHIEVEMENTS

Since 2000, one local training program had been conducted in India (in Hindi), and two courses in Sri Lanka (in Sinhala and Tamil). Plans to conduct a second course in India are under way. These programs filled a lacuna that had existed in the field for many years, and the demand grew. In Sri Lanka, CBDM is incorporated in to national-level training projects for government officials conducted by the National Disaster Management Centre (NDMC), which is the state's apex body managing disasters. The head of NDMC was a recipient of CBDM training in Bangkok at one of the initial courses.

The local-language courses in Sri Lanka were coordinated and conducted by Centre for Housing, Planning and Building (CHPB) while in India, ITDG worked in partnership with a local organization called Knowledge Links.

Having a large number of NGO staff attending the course also has many benefits; it ensures that the concept will be carried forward in individual projects of these organizations. In India, the Hindi-language course was attended by UNDP local staff, staffs from major NGOs like Oxfam, Care etc. This, and the wide spectrum of stake holders who have benefited through this training also augurs well for replication of the training and the incorporation of its salient components in to other programs.

An important aspect of the curricula is the practical component. Participants are given the opportunity of applying field-based tools by visiting projects which have applied the CBDM approach. In Sri Lanka, course participants visited the arid village of Mahameddawa and in India, the chosen site was Lalwadi in Rajasthan. Both were pilot demonstration sited for LODRR's drought mitigation component.

In Pakistan, an interesting development took place. Although there were no formal plans, a local NGO with the assistance of UNDP and Oxfam adapted the curricula and conducted training programs for organizations in the districts of Badin and Quetta, especially involving the decentralized structures of government in rural Pakistan. Two of the training sessions were aimed at media and their role in facilitating the CBDM approach.

FUTURE

Future plans for CBDM training include curriculum revision, which is underway, in order to make the training more relevant and practical for local-level South Asian organizations.



CONTACT DETAILS

Madhavi Malalgoda Ariyabandu

Programme Team Leader
ITDG South Asia
5, Lionel Edirisinghe Mawatha
Colombo 5
Sri Lanka
Tel: +94 11 2829412
Fax: +94 11 2856188
madhavia@itdg.slt.lk

32 Middle East Seismological Forum (MESF): Its Role In Promoting Research And Cooperation

BACKGROUND

The *MESF* (URL:<http://www.meseisforum.net>) is a projected cyber Forum geared to serve in the capacity of an information conduit for locally initiated and conducted research, data acquisition and publications on the Middle Eastern seismicity, earthquake engineering, seismic hazard and related geophysical studies of the Region.

OBJECTIVES

The purpose of MESF is to provide a one-stop web source for authoritative earthquake information, on the Middle Eastern Region,, covering a wide variety of multidisciplinary earthquake subject areas, such as seismology , earthquake databases, earthquake engineering, , preparedness, images, agencies and associations, and the publishing of abstracts of recent work on the Region , and related topics.

ACTIVITIES

The idea of having a website dedicated to the service of seismologists in the Middle Eastern Region grew actually more than four years ago. It started as an attempt to launch an internet journal, but evolved due to financial, time and logistic limitation to a website, first for Earth Scientists, then for geophysicists, and finally it was focused to seismology; probably as a transitional step to a comprehensive Middle Eastern Geophysical Forum.

The *MESF* idea was emailed to a number of friends and colleagues; but was formally presented during the August 2001 meeting of the Global Alliance on Disaster Reduction in Reston, Virginia, and within the Mediterranean Group.

The Middle East Seismological Forum (MESF) website was launched on March 2002, in an effort to promote seismological research and to create an interaction and integration between seismologists working in the Middle Eastern region, and the international seismological community elsewhere

ACHIEVEMENTS

MESF is a projected cyber forum geared to serve in the capacity of an information conduit for -locally initiated and conducted- research, data acquisition and publications on the Middle Eastern seismicity, earthquake engineering, seismic hazard and related geophysical parameters. Avenues for further development of MESF website would grow through mutual participation of seismologists and geophysicists in an estimated of more than 150 universities and research centers whose academic output is rarely exposed in the international journals and publications. The absence such facility or mechanism at present in the region necessitated this endeavor

MESF is run by the Executive Director and Board Chairman Professor Sahil Alsinawi. The MESF Advisory Board is composed of 26 strong Seismologists from various institutions and research centers in the region. The Board is supported by a 23 member strong Associate Research Corresponding Members Commission (ARCMC) .The names and email address of the 49 MESF Scientific Family is published on the website.

MESF is needed for a better interaction and integration between seismologists working in the region of the Middle East and other International seismological communities. MESF will serve as a Research Center without Walls. Researchers and Scientists can work, cooperate and exchange knowledge without regard to their distant geographic locations or logistical limitations. Seismologists and other Geophysicists can interact, access instrumentation (probably in a later stage), share data and, access digital libraries and other pertinent data.

During various geophysical meetings, the Earth scientists always talked about means and ways to communicate and carry cooperative research projects, which may take relatively longer time, but leads to new information, new experience and may open new avenues to some of the participants. This practice is a natural and routine in many developed countries in their research centers and academic departments; but for Middle Eastern Scientists it is rare. It is a known fact those days that most of the research conducted on the geology and geophysics of

the region is carried out outside the region; even if the data was collected, or a resident of the region scientist originally suggested the problem

FUTURE

Four identified areas, which need future focus are :

■ **Science:** Seismology-Geodynamics-Seismic Hazard - Earthquake Engineering-Remote Sensing and GIS/GPS Applications.

■ **Data Bank:** Seismological Bulletins-Geophysical Data Bibliographies and Human Resources of the Region

■ **Cooperation:** Information-Research -Organization and Meetings

■ **The MESF CYBER JOURNAL OF GEOSCIENCE:** The journal tries to bridge the gap between the production of scientific results and the time of international publishing and academic exposure.

MESF in its three years of work, is still in its initial stages and needs the support to carry its objectives cooperative research, fast publishing and scientific communication are the basic tools.



CONTACT DETAILS

Professor Sahil Alsinawi

MESF Executive Director and Board
Chairman

12190 Abington Hall Place #201

Reston, VA 20190 USA

Tel & Fax: (703) 960547

salsinawi@comcast.net

<http://www.mescisforum.net>

33

Capacity Building In Asia Using Information Technology Applications (CASITA)

BACKGROUND

The outcome of Asia's high rate of urbanization has been the expansion of urban populations into geographic areas, which are frequently affected by disaster events. The result is an increased vulnerability of populations and infrastructure. Reducing urban vulnerability to disaster risks has been a major area of focus of the Asian Disaster Preparedness Center, since the start of its Asian Urban Disaster Mitigation Program (AUDMP) in 1997. Training and education has been adopted as a key strategy to develop the professional capacity of city government officials, staff of NGOs, technical professionals, university faculty and students to promote urban vulnerability reduction. In addition to other training activities on urban disaster risk management, Capacity Building in Asia using Information Technology Applications (CASITA) was a significant initiative in this regard.

OBJECTIVES

CASITA project was jointly implemented by the Asian Disaster Preparedness Center (ADPC), ITC Netherlands, and ENSG France in 2003-2004. The objective of the project was to build knowledge in Asia on modern urban disaster mitigation tools and methods through the inclusion of relevant and up-to-date disaster risk management components in the urban planning curriculum in several Asian universities and training institutions. The strategy of the project was to promote web based teaching and learning technology and use of GIS and remote sensing technologies for urban disaster risk management in the project universities.

ACTIVITIES

Fourteen (14) universities from Bangladesh, India, Indonesia, Lao PDR, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam participated in the project. The three implementing partners, ADPC, ITC and ENSG brought complimentary strengths to the table. Following major activities were implemented under the project.

Inventory of needs and opportunities: A consultation was conducted with the participating universities in order to assess their current capability, the needs and opportunities in the areas of GIS and remote sensing and

module development on urban disaster risk management. The universities differed in the level of their expertise and interest.

Communications strategy: A project website was created to ensure communication amongst the partners. The website was adapted to reflect the latest status and other highlights during the implementation process. Email list serves were also used to communicate with the project partners.

Virtual platform for module development: A virtual platform for the development of modules was the core of the project. This platform was developed using blackboard software. It was divided into two components: one resource area for module developers, and one area for students. The module development area was intended for the staff of the universities and research institutes to obtain information on:

- How to structure a course;
- How to include GIS and Remote sensing exercises;
- How to do quality assurance;
- How to contribute to participatory development of Internet-based platform
- Gathering of study material, research information and other useful data to be put on the E-platform.

Train-the-trainers workshop: University staff responsible for designing and implementing courses on urban disaster risk management was trained on the use of virtual platform for module development. Training was provided in the use of GIS and Remote Sensing, and the use of the distance education software, ILWIS. Existing case studies from ITC, ADPC and ENSG were used in this regard. Lecture materials including the power points and training manuals have been made available on the project website for wider use.

Development of GIS case studies: Each participating university and training institute developed a GIS case study in order to design modules on urban disaster risk management. Case studies covered topics about earthquake, flood, volcanic, landslide and coastal hazard assessment, vulnerability and hazard assessment, hazard assessment and urban development and database management. The use of local case studies proved very effective in the learning process of students. The students were also able to exchange case studies through the virtual platform established under the project.

Development of educational modules: A number of modules about urban disaster risk management were developed on the virtual platform. The university staff can use these

modules to teach about urban disaster risk management. The modules have been made available to the students through the virtual platform. The modules include the following:

- Vulnerability reduction for cities
- Landslide hazard assessment
- Flood hazard assessment
- Seismic hazard assessment
- Coastal hazard assessment
- Technological hazard and risk analysis for cities
- Multimedia and hypermedia information and resources

Internet based distance education: Universities and training institutes required support from disaster risk management experts, since such courses were developed and used for the first time in the participating institutions. Assistance was given both as direct inputs from project implementing institutions in some of the courses, and also via the Internet-based platform. Satellite conferencing, email-list-server and electronic forum were used as some of the tools in order to provide support in teaching various disaster risk management courses.

Please see the following for the details: ADPC/UDRM, 2004, Final Report: Capacity Building in Asia using Information Technology Application (CASITA), Bangkok [Http://www.adpc.net/CASITA/default.html](http://www.adpc.net/CASITA/default.html)

ACHIEVEMENTS

26 faculty from 14 universities in 10 countries have been trained in the use of GIS, Remote Sensing and on module development on urban disaster risk management. A web-based teaching and learning system has been set up. GIS based training materials and case studies on urban disaster risk management are available on the project web site for the use of teachers and students. During the Final workshop of the project, the participating universities indicated that the project acted as a catalyst, instigating them to update their knowledge and learning methods and include new topics in the curricula.

LESSONS

Electronic modes of education have lot of potential and they offer great opportunities for capacity building in the area of disaster risk management. However, the process of change in traditional culture of teaching and learning in Asian universities will require comprehensive and consistent efforts in the areas of training, promotion and accessibility of technology, both to students and teachers.

The training was highly appreciated by the participating university faculty. A lot new

knowledge and information was exchanged between the network of Asian universities and European universities and amongst the Asian universities themselves. The subject of disaster risk management is now more prominently placed in the curriculum of participating universities. An important start has been made with the use of Electronic-Learning tools in the South and Southeast Asian universities. The universities are now equipped with teaching and learning materials to integrate urban disaster risk management in their own academic programs, as well as promote the subject in other universities. Such materials include the power points, training manuals and GIS based case studies on hazard, vulnerability and risk assessment.

FUTURE

The project partners appreciate the need for strengthening the initiatives, undertaken during the first phase of the CASITA project, in order to achieve substantive impact. Therefore, the ADPC, ITC and University of the Bonn are planning to implement the second phase of the CASITA project. The second phase will be implemented in the University of Gadjah Mada (Indonesia), the Indian Institute of Remote Sensing, the University of Moratowa (Sri Lanka) and the Chiang Mai University (Thailand). The project will continue capacity building in the three areas of GIS, Remote Sensing and Urban Disaster Risk Management module development.

CONTACT DETAILS

Zubair Murshed
Project Manager, Asian Disaster
Preparedness Center (ADPC)
mzubair@adpc.net

NMSI Arambepola
Team Leader, Urban Disaster Risk
Management Team, Asian Disaster
Preparedness Center (APDC)
Klong Luang, Pathumthani, 12120,
Thailand
Tel: 66-02-5165900- 10
Fax: 66-02-5245360
arambepola@adpc.net

34 Recovery And Rehabilitation In Shomali Valley, Afghanistan: Miseries Of Ali Ahmad

BACKGROUND

Bagram was established as a district in 1966. The district has 96 villages and 168 sub-villages and is green with abundant agricultural activities. The ethnic composition of the district comprises of 60 percent Tajiks, 25 percent Pushtun, and 5 percent Hazaras. The people of Bagram had experienced the worst situation during the Soviet Union and Taliban time. The large number of displaced people fled to Panjshir, Takhar, Kabul and out of the country (most of them to Pakistan).

The 'House Reconstruction Program in Shomali Valley - Recovery and Rehabilitation, ASAF-31' is developed by Church World Service-Pakistan/Afghanistan (CWS-P/A) in partnership with Norwegian Project Office/ Rural Rehabilitation Association for Afghanistan (NPO/RRAA) to address the basic shelter needs of 1,000 IDPs, returnees and most affected families in the Bagram district. The implementation of this project is made possible through funding from Action by Churches Together (ACT), Geneva.

OBJECTIVES

The main goal of this project is to assist the most vulnerable families, including displaced and returnees, with house reconstruction materials in order to help them resettle in selected areas.

The objectives are:

- To assist resettlement of 1,000 most vulnerable families in Bagram district of Parwan province, Shomali Valley, with house construction materials to build safe and secure homes.

- To provide livelihood kits to 2,500 families for income opportunities.

- To promote the rehabilitation of the centuries old institution of collective decision making i.e Shura.

ACTIVITIES

For smooth and organized implementation, the following initiatives were taken

- A memorandum of understanding (MoU) was signed between CWS-P/A and NPO/RRAA.

- Preparation and signing of different documents and agreements at provincial, district and village levels, regarding formation of Shuras, level of contribution and cooperation by

stakeholders etc.

- Strengthened 4 local Shuras in four different villages namely Qala-e-Nasro, Qala-e-Uzbashi, Qala-e-Golay and Qalandar Khil in Bagram district.

- Preparation and signing of contracts of houses ownerships etc with the selected beneficiaries.

- Construction of 500 houses of most affected families.

- Provision of livelihood kits and digging of well in the selected communities.

ACHIEVEMENTS

In the first and second phases of the project, 500 houses have been reconstructed/repared. The essential shelter material has been provided to each family to reconstruct/repair two rooms, one corridor and one latrine. Wells were drilled and 1,000 livelihood kits have also been distributed to beneficiaries. Along with this, trainings on Sphere and quality shelter were also organized with the members of the community who are directly involved in construction.

LESSONS

Whilst it would not be true to say that the rebuilding of people's homes solves all the social and economic problems faced by these different villages but the implementation of this project is indicative of the fact that provision of houses and reestablishment of the agricultural industry would motivate people to rehabilitate their places of origin with dignity. This would help in reducing out migration as the people had done previously.

FUTURE

At present in Bagram, about 30 percent of the land cultivates as rest is damaged by prevailing drought. A considerable number of villages have no access to potable water and livelihood opportunities. At some places people drink even contaminated water. According to UNHCR, 150,000 refugees and IDPs have returned in Bagram district, while the rest, most of them in Pakistan, are continually coming. Majority of these families have to stay with their relatives or under the tents, distributed by UNHCR and some INGOs. In this scenario, rebuilding of their

homes and provision of livelihood opportunities are the key areas to work upon.

ALI AHMAD NARRATES HIS MYSTERIES OF WAR

During the initial period, NPO/RRAA identified 500 beneficiaries by using following criteria:

■ War and drought affected families who lost their houses and either migrated to neighboring/other countries or became internally displaced.

■ Families originating from the project areas who have lost their homes.

■ Willingness to beneficiaries to contribute labor.

War affected female-headed families. War and drought affected families with disabled male heads.

"This was very good humanitarian assistance, a good contribution," notes Ali Ahmed, one of the project beneficiaries. "But also it mobilized people to come together and come back to their villages, to be repatriated. This was one of the most important parts of this project.

Eventually he takes us to his shelter in a different part of the village. He has spruced it up by painting the window frames bright blue. He is married with three children, all of whom attend the local school. He has always worked here as a farmer. He too had to spend time in Pakistan. When asked him what was the situation when he returned to the village, and he responds bluntly.

"You can see the situation we came back to. Everything was destroyed."

Before his shelter was built last year, he had to share a house with relatives. Having his own living space for him and his family has made a big difference. Although he initially worked as a laborer, he is now back working full time as a farmer.

"It is enough as I'm using my land, but I'm also working for a local landowner. Also, we are using the land of some people who are not here." Even so, he admits it will take a good seven years for the output to return to pre-war levels.

"Nowadays, everything is electric," ponders Ali Ahmed. "It means that slowly working methods will become easier. One day we will be able to have a quicker production and income from agriculture. Right now we have problems of pests, especially with the grapes. We need some pesticide to control that. We are busy with trying and testing growing apples, apricots and almonds. Already we are busy trying to establish new orchards. If there is enough water, we could grow watermelons or other vegetables. It would be possible to plant and cultivate these things."



CONTACT DETAILS

**Church World Service
Pakistan/Afghanistan**

**Regional Office- Pakistan &
Afghanistan**

House # 42-H
Dr.Mahmood Hussain Road,
Pakistan Employees Cooperative Housing
Society (P.E.C.H.S)
Block-6, Karachi
P.O.Box 20048
Tel: 0092-21-4390541-4
Fax: 0092-21-4390922

From Relief To Community Based Disaster Preparedness: Training-Action-Reflection Approach To Capacity Building

BACKGROUND

After the 1992 devastating cyclone, in the year 1995, German Red Cross (GRC) supported Bangladesh Red Crescent Society (BDRCS) to Community Based Disaster Preparedness Program (CBDP) in the Disaster Prone (particularly Cyclone) area of Bangladesh. BDRCS as traditional organization for providing relief and rehabilitation services and which is top-down, had difficulties to conceptualized and apply this approach. I and my colleagues of DASCOH (Swiss Red Cross (SRC) mandated technical support organization) were given the task to build capacity of BDRCS to apply this approach. This case study is developed based on my experience gained through continuous involvement as main facilitator for a period of 1995 to 2000.

OBJECTIVES

The main objectives of this initiative was to build capacity of BDRCS's staff to implement CBDP by shifting their approach from a relief orientation to a community based participatory approach to risk and vulnerability reduction.

ACTIVITIES

There were several mini steps but following were main activities that included in the process.

- Forming a team taking staff from BDRCS head quarters, Field Offices, Unit Representative (periodically the delegates of GRC, SRC, JRC)
- Conducting a participatory assessment (using PRA) to understand the multidimensional character and local conception (both male and female) on the dimensions of disaster, vulnerability and risks management.
- Simultaneous consultation with other relevant stakeholders
- Approach setting workshop for CBDP (participated by community leaders, donors, BDRCS, and other invited stakeholders)
- Capacity needs assessment for enabling BDRCS staff to implement the approach

- Conducting Participatory- Action -Reflection Training on steps (decided for the approach) and other supporting training determined by the capacity needs assessment.

- Piloting the approach, document learning through periodic lessons learnt workshop

- Refine the approach and scaling up operation.

ACHIEVEMENTS

Though this process BDRCS -CBDP program was able to development a complete set of facilitating tools drawn from the field experiences. Local communities' participation and resource mobilization was enhanced. Appropriate local technologies were identified and utilized for family level preparedness. Many Community Disaster Preparedness Committees were formed and participatory planning monitoring evaluation system was introduced. In the year 1999, this program got Guggenheim Award as one of the best programs in disaster preparedness.

LESSONS

- **Risk, vulnerability management as a relevant people's perception:** When we bring forward the perspective of managing risk and vulnerability we talk in line with the heart of poor people the way they view development at the first instance. For conceptualizing development, perception of poor people often refers to the struggle of sustaining with the present position. The challenge is to integrate this perception in development interventions.

- **Fostering human and cooperative values is the central to generate collective action to the preparedness and fighting crisis:** Fostering social capital and traditional social cooperation mechanism allows us to use different stakeholders at community level. In Asia most country has got reach structure of traditional social organization founded on the clan ties or fictive relationship. This structure needs to be instrumental as organization the local level planning and action. The challenge is to link human value orientation in the DP planning and management.

FUTURE

As an effective capacity building approach, instead of one short isolated training organization should employ a systematic training-action -reflection approaches to capacity building.

■ **Integration of interdependent dimensions by decentralized systems is crucial for preparedness:** Community based organization, learning and action through organization is essential. There is no alternative to participatory planning, monitoring and evaluation approach but community organization is vital for running the process. The challenge is to tackle diversified local needs by centralized standard of organization facilities CBDP

■ **Minimizing contradiction between present life struggle and future need:** Poor people's day-to-day relentless struggle to satisfy present survival needs seldom allow them to think about the security for future. Consideration of this reality is crucial to ensure people's participation in disaster preparedness program. The challenge is to link both present and future needs in the CBDP framework.

■ **Learning local conception and dimension involved:** Before developing a program strategy it is crucial to learn from the local community about vulnerability and risk involved caused by disaster to understand its multidimensional character that often varies by type of disaster and local conception on it.

■ **Involvement of key players from the beginning:** Involving key players/ staff rightly from the assessment stage through the strategy development is crucial to build the capacity of the available institutions engaged in Disaster management programs in countries.

■ **Participatory program approach setting:** For developing a road map or program framework and to have a shared understanding on it, it is very effective to organize an approach setting workshop in participation with community representatives, implementing agencies and support providing agencies. For ensuring the program's responsiveness to the wellbeing of primary stakeholders it is crucial that in his approach setting workshop the facilitators channel the learning generated from the participatory consultation process.

■ **Program approach Training-Action -Reflection system of training learning is vital for capacity building:** For building capacity of organizations and its staff accentuated with the past relief-rehabilitation mind-set, it is important to develop training program that absolutely falls under program approach and framework developed jointly and through Participatory Capacity Needs assessment. Further, it is important that the staff of the organization complete a cycle of Training-Action-Reflection on any single stage of the approach/framework.



CONTACT DETAILS

Shayamal K. Saha
Program Specialist, Community Leadership
and Organizational Development
Regional Center for Asia

International Institute of Rural
Reconstruction (IIRR)
Y. C. James Yen Center
Silang, Cavite 4118, Philippines

Tel: +63 46 414 2417
Fax : +63 46 414 2420
Shayamal.Saha@iirr.org

36 Empowerment Of The Coastal Fishing Communities for Livelihood Security: Bangladesh Experience

BACKGROUND

Bangladesh is a disaster-prone country. The geographic location of the country contributes greatly to its proneness to disasters. Being situated on the tropic of cancer, Bangladesh bears a tropical nature with monsoon type of climate. It is particularly affected by cyclonic storms that come from the Bay of Bengal. The average annual frequency of tropical disturbances in the Bay of Bengal ranges between 12 and 13 of which at least 5 attain the cyclonic strength with the wind speed of more than 65 kph. Although they contribute only 5-6% of the global total, some of them turn out to be the deadliest of the world, accounting for about 75% of the global loss in terms of lives and properties.

With such a background of disasters, the coastal fishing communities were identified as being mostly at risk to cyclonic disaster endangering their livelihood security. To address this grave situation, the empowerment of fishing communities project, with disasters preparedness as one of the components has been initiated to promote their livelihood security. Bangladesh Disaster Preparedness Centre (BDPC) as the implementing partner of this component has been working with the poor fishing communities for the last two years at enhancing their capacity to cope with cyclonic and other disasters.

OBJECTIVES

While the goal of the project is to empower the coastal fishing communities to cope with natural and human induced disaster more effectively with confidence, courage and in an organized way, the objectives of the project are as follows.

- To develop a corps of Community Volunteers, and Change Agents professionally expert in disaster preparedness, risk reduction and response operations.
- To improve understanding of the communities about cyclone disasters, warning dissemination and other appropriate actions before, during and after disasters, at family and community levels.
- To develop and enhance the overall capacity of the communities in managing natural disasters effectively which will contribute to their sustainable livelihood development.
- To link the target communities with public, private and local government institutions for improved disaster preparedness.

ACTIVITIES

The BDPC, as the service provider promoted the concept of disaster preparedness at family and community level in enhancing the capacity of the coastal fishing communities to cope with disasters effectively. Specific activities undertaken during the program were:

- Organizing the community and activating the members of Village Disaster Preparedness Committee (VDPC) particularly Volunteers and Change Agents (CAs) like the trusted Imams of the Mosque, School Teachers, and Traditional Birth Attendants (TBAs) through enhancement of their capacity;
 - Raising awareness on Disaster Preparedness and Management (DPM) at the family and community level;
 - Promoting use of local resources and technologies for DPM;
 - Ensuring linkage with GoB and NGOs cyclone preparedness programs.
- BDPC's approach in empowering the fishing community was primarily non-structural which included extensive awareness raising, organizing the fishing communities, initiating use of local resources and integrating the fishing communities with government and non-government cyclone preparedness programs.

ACHIEVEMENTS

The initiatives undertaken and interventions made under the project over the past two years have contributed to the achievement of the following results:

- Formation of 64 Village Disaster Preparedness Committees.
- Selection and training of 387 Change Agents of whom about 50% were women.
- Selection and training of 403 Volunteers of whom about 50% were women.
- Plantation of 35,798 samplings of which 11,882 were fruit bearing, 16,711 timber and 7,205 herbal.
- Establishment of 12 cyclone resistant model houses.
- Sensitization of about 20,000 people through conduction of 21 mock exercises on cyclone preparedness.
- Sensitization of 407 and 1472 persons in cyclone preparedness and risk reduction through conduction of 6 and 16 sensitization meetings at upazila (sub-district) and union parishad (block) levels respectively.
- Sensitization of 3,549 persons of whom 50% were women by holding 129 informal group

discussions at the community level.

The role played by the trained Change Agents and Volunteers as well as the extent of preparedness for coping with cyclonic disaster at the community level were tested with specific reference to an impending cyclone, which formed near Andaman-Nicobar Island on 16 May 2004 and crossed the coastal area of Bay of Bengal between Teknaf, Cox's Bazar (Bangladesh) and Akyab (Myanmar) on 19 May 2004. This was an instant observation during the emergency period focusing on behavioral and community mobilization in response to cyclone preparedness. The observation and assessment revealed that the project initiatives e.g adherence to emergency work-plan by the VDPC, creating of linkage between the local GO and NGO initiatives pertaining to cyclone preparedness, use of local technologies and resources during the cyclone preparedness, behavioral change amongst the key actors such as Change Agents and Volunteers were quite positive and perceptible.

LESSONS

The assessment and validation of the program activities suggest that although an internal mechanism for disaster preparedness at the community level could be established through enhancement of capacity of the Change Agents and Volunteers, the sustainability of the mechanism remains to be the biggest challenge. This is mainly because of the fact that the formal disaster management committees existing at the local levels were not found active to the desired extent. In fact, these committees are supposed to provide leadership and guidance to the volunteers and change agents to make the program sustainable.

FUTURE

The Ministry of Fisheries and Livestock, which is responsible for initiating and implementing the fishing communities livelihood programs should ensure that the existing Disaster Management Committees at the union parishad level play their due role and provide necessary guidance and support to the trained volunteers and change agents at the community levels for the sake of sustainability of the programs.

My name is Nasima Khatun. I am 75 years old now. I can not see and hear properly. On 18 May last, I became extremely worried hearing the sound of whistles and drum beating. I went to the house of the president, voluntary organization to know about the actual situation. As I came near her house, I found that a group of men and women were discussing something very seriously I came to know from them that a cyclone, our worst enemy, is likely to strike at any moment. I also learnt that they were discussing about disseminating the danger signal through the microphone of the local mosque. I have experienced the cyclones of 1960, 1970, 1991 and 1997. The 1991 cyclone took away my dwelling house and other assets. Re-collecting the losses that I suffered the past cyclones, I hurried back home and advised the members of my family to put all our belongings together, particularly the chicken and ducks in a cage so that we could carry them along if emergency arose. We also decided to move to the nearby cyclone shelter if the signal changed into great danger signal. We arranged ropes to secure the roof, windows and doors of our house before leaving for the cyclone shelter. The male members decided to shift the children and women, including myself first. I played the role of an old person in the mock exercise organized in our village by the Change Agents and Volunteers. I learnt about all these cyclone preparedness activities from Razia, Anowara, Bilquis and Kanak the Change Agents and Volunteers during family level discussions held in our village. By the grace of GOD, the cyclone did not finally strike in our area. I am grateful to all those who took initiative in undertaking cyclone preparedness activities at the community and household level in our coastal fishing communities.

Ms. Nasima Khatun, South Kutubdia, Cox's Bazar

CONTACT DETAILS

BMM Mozaharul Huq, ndc
Consultant
Bangladesh Disaster Preparedness Centre
(BDPC)

House # 52, Road # 13/C, Block-E, Banani,
Dhaka-1213, Bangladesh
bdpc@glinktel.com

37 Community-Based Disaster Preparedness (CBDP) Program In Cambodia

BACKGROUND

Based on the serious major flooding disaster events in 1996, 1998 and previous years, the initiation of the CBDP program was made by Cambodian Red Cross (CRC) with financial and technical support from the International Federation of Red Cross and Red Crescent society (the Federation) since late 1998 in Cambodia. Thus far, it becomes the core program of the CRC and forms the basis for CRC preparedness, Response, and recovery activities. The CRC itself defined the CBDP program as the *"initiation of the process of community participation, empowerment and problem solving undertaken by communities to prepare for and respond to natural hazards that affect them"*. It involves *reducing vulnerabilities* (damaged to infrastructure, livelihoods & shelter need etc...) and *increasing capacity* (Knowledge and skills etc...) of the natural hazards prone communities to enable them to deal with the potential natural hazards (Mainly focus on flood and drought).



Flooded 2004, Peaso Mao Cheay Commune
Seomy Peatt Village

OBJECTIVES

The goal was to improve the quality of life and capacity of the most vulnerabilities in Cambodia. The objectives were:

- To enhance capacity to cope with, and to mitigate the effects of natural disaster.
- To develop capacity of Cambodian Red Cross staff to effectively prepare for and response to natural disaster affecting Cambodia.

ACTIVITIES

■ **Capacity Building Training:** The following training components were delivered to the Red Cross Volunteer (the RCVs) and the Commune Council For Disaster Management Committee (the CCDMCs) which known as the local authority: Red Cross movement, Community Based First Aid (CBFA), Disasters and disaster management concept/framework, Community Based Disaster Risk Management concept/framework, Participatory Disaster Risks Assessment and Action (PDRAA), Community Organizing

■ **Community Organizing process:**

• *PDRAA process:* Through the participatory approach, which participated by community-related groups, the trained-RCVs and CCDMCs with technical support from CRC-HQ staffs and Provincial Branch Red Cross, facilitate the PDRAA in order to:

— Identify vulnerabilities, disaster risks resulting from occurrences of natural hazards in the community as well as the capacities/resources available and *potential disaster risk reduction measures (including the small scale mitigation measures namely the Micro-project)* for coping with identified risks.

— Formulate the Community Disaster Management Action Plan (the CDMAP) for long-term activities utilizing the information gathered.

■ **Implementation of the Micro-project:** as a process of testing the CDMAP.

■ **Implementation of the entire CDMAP**

■ **Program monitoring and evaluation**

ACHIEVEMENTS

■ 559 of CCDMC member and 730 RCVs were recruited and trained to be the key people for the program at the community level.

■ The program covers in 23 districts, 94 communes, and 317 villages.

■ A model of the CBDP for Cambodia context/situation was developed and tested.

■ Central to the networking and coordination with other agencies, CRC-CBDP team had provided CBDRM training to other DM bodies in Cambodia.

■ CBDRM training material for Cambodia context is finalized, and distributed to other agencies in Cambodia who engaged in CBDRM intervention.

■ One MoU on coordination and cooperation between the National Committee for Disaster Management (the NCDM) and CRC is developed.

LESSONS

■ Community organizing is very complicate process for Cambodia situation/context.

■ Mobilization of the Most Vulnerable group in the program is long-term process. To deal with this, direct support/assistance to them at the starting point of the program is a critical key to built trust and confident with such group as well as to involve them and community as a whole in the program process.

■ Mainstreaming of the CDMAP into the Commune Council's long-term development plan is a key toward sustainability of the CBDRM program at the community level. This needs strong support from the government.

■ CBDRM program needs more coordination with the Royal Government of Cambodia (the RGC) and other relevant NGOs toward sustainability (Clear roles and responsibilities of local authority and DM bodies, resources allocation from RGC to support DM activities).

■ Ownership on the Micro-mitigation project needs to be built.

■ The other key issues which can lead to the sustainability of this program are:

- Structure need to be set up especially at the community level.
- Leadership and management need to be reinforced and committed.
- Funding/Fundraising issue
- Trust and ownership of the project
- Transparency on the financial management
- Public awareness

- Education
- Monitoring of every activity, which related to the program implementation should be considered
- Evaluation system must be set up and used it as the key tool



FUTURE

■ Improving implementation procedures in Disaster Preparedness

■ Unify all DM Organizations to define a unique strategy Disaster Management and join implementation.

CONTACT DETAILS

Dr. Uy Sam Ath

Director of Disaster Management
Department,
Cambodian Red Cross, Building # 17,
Street # 180, Phnom Penh, Cambodia

samath_uy@yahoo.com

H.P: (855) 966 886

Staff Training As An Element Of Post-flood Disaster Recovery And Future Disaster Reduction In China

BACKGROUND

The case study attached is derived from a detailed report to the Government of PRC concerning the development of the China National Disaster Plan and a subsequent report "A Capacity Building Program mounted for Government Staff at Provincial, Prefecture and County levels in ANHUI and JIANGSU Provinces under Project CPR/91/712". The work was carried out by UNDP appointed consultants, Colonel G.N. Ritchie, retired director of the Cranfield Disaster Preparedness Centre and Dr Liu Yanhua, a senior faculty member of the Chinese Academy of Sciences, Beijing.

ACTIVITIES

The case study describes a unique "action learning" training methodology and the thorough training needs analysis upon which it was based, developed in close collaboration with the responsible Chinese authorities and implemented along lines which were discussed with them and met their full agreement. Besides identifying the nature of the training required at the various echelons of the provincial governments, the training needs analysis also identified those who would best benefit from the program. These were all to be experienced managers and administrators for whom a program of lectures was deemed, from the experience of Colonel Ritchie of similar work over many years to be inappropriate and ineffective.

The training materials used were drawn from the training materials bank of the Cranfield Disaster Preparedness Centre (CDPC) and which had been used and developed over the previous ten years in a range of courses throughout the world mounted by CDPC and the Asian Disaster Preparedness Centre (ADPC) with which CDPC had co-operated closely over many years. These training materials were almost exclusively "action learning" material in which course participants engaged in simulation exercises, individual and group projects in which they employed their existing knowledge and experience in addressing new problems relevant to their disaster reduction, preparedness and management responsibilities.

Lectures were kept to a minimum and used to impart new knowledge only, e.g. organization and responsibilities of UN agencies, international organizations and NGOs, MIS, analytical techniques, etc.

In preparation for mounting the training program, which was to be delivered in Chinese, the materials were translated into Chinese in Beijing under the supervision of Dr Liu Yanhua. Additionally a team of English speaking Chinese tutors were assembled to support the training program. It had already been agreed that the training program would be delivered to small working groups each with a Chinese tutor. These Chinese tutors prepared themselves for the program by reading the training material in its English version and then in its Chinese translations when these were ready. In the two weeks prior to commencement of the course the British consultant, who was well acquainted with the training material having developed much of it himself, ran a familiarization course in close collaboration with Dr Liu Yanhua, in the use of the material in the Tutorial Groups in which the courses were to be delivered.

ACHIEVEMENTS

The program was delivered separately to officials at the Provincial echelon of government and to the Prefecture/County echelons in each of the two Provinces, Anhui and Jiangsu under arrangements made by the Provincial Governments. In both Provinces the programs were actively endorsed and supported by one of the Province's Vice-Governors. This was seen as a most important aspect of the programs.

The program began with the disaster management simulation exercise "Atlantis" in which the participants manned a range of functional cells at the national level (Disaster Coordinator, Internal Affairs, Public Works, Transport, Medical, Defense Forces, Social Affairs) After this exercise the participants worked in their functional departmental groups (Civil Affairs, Technical departments (Meteorology, Construction, Seismology, GIS) Agriculture and Water Conservancy, Health and Defense). In these groups they were then required to analyse the consequences of flood,

drought, and insect pest and of environmental degradation to their Province and the actions in prevention, preparedness, rehabilitation and recovery that were possible and necessary.

After each exercise and project, action was taken to ensure that all were followed by a very full and comprehensive plenary de-briefing. This was to ensure that the lessons, relevant to the development of the participants' disaster reduction responsibilities were drawn from the experience, and recorded for future use in development of the Provincial Disaster Reduction Plans.

The very great support of the following was fundamental to the successful implementation and completion of the project: Ministry of Civil Affairs P.R.C., China International Centre for Economic and Technical Exchanges, Provincial Government Anhui Province, Provincial Government Jiangsu Province, and UNDP China.

LESSONS

■ The concept of running the training programs as an "active learning" activity, without the constant use of interpreters, proved totally successful.

■ The training materials used, although not "China Specific, proved to be appropriate, flexible and capable of easy adoption to reflect Chinese conditions and problems. Copies of all the material translated and used are now held by UNDP Beijing. These should be reviewed, modified as necessary and up-dated to ensure their continuing usefulness.

FUTURE

■ The PRC should mount disaster awareness seminars for senior officials at national and provincial levels concerning the nature and value of disaster reduction and environmental management and of the importance of these to development strategies.

The objective being to stress the inter-ministerial, inter-departmental and inter-sectoral importance of disaster reduction planning and its relationships with economic development.

■ Use the courses run in Anhui and Jiangsu Provinces as models for the development of similar multi-sectoral training programs in other disaster threatened Provinces.

■ Make Disaster Reduction staff training a Priority Project for implementation of the National Disaster Reduction Plan.

■ Develop public information and awareness programs with the objective of developing community commitment and capacities for self-help and self-reliance in disaster preparedness.



CONTACT DETAILS

Col. G.N. Ritchie
Disaster Preparedness Centre, Royal
Military College of Science, Cranfield
University, England

Dr. Liu Yanhua
Deputy Director, Commission for Science
and Technology, People's Republic of
China.

39 A Situational Analysis Of Drought Hit Villages Of Bhilwara, India

BACKGROUND

On the basis of rainfall received in the year 2002-2003, and the extent of destruction of crops, only two blocks of the Bhilwara district of Rajasthan in Western part of India have been declared drought hit in the year 2004. These blocks are Aasind and Raipur block. In Aasind block 185 villages out of 205 villages were declared drought hit while in Raipur block 36 villages out of 86 villages were drought affected. The villages have faced crop destruction of 50% and above.

OBJECTIVES

A field visit was undertaken to the drought-hit villages of Bhilwara district. The objectives of the visit was to examine the situation and impact of drought on the village, to assess the status of ongoing relief works and to list out the lacunae as well as suggestive measures for effective management of Drought.

ACTIVITIES

A field visit was made to the drought hit and declared villages of Bhilwara district of Rajasthan. The visit was made with the above-mentioned objectives in mind and the observations are detailed out as follows. An active interaction was also done with the administration dealing with Relief works in drought-hit areas to find out the lacunae and measures to be undertaken for effective drought management. The observations made during the visit are as follows:

■ **Village:** Mor Ka Nimbahera: This village falls in the Aasind block of Bhilwara district. It is a drought-hit village, which is located approximately 35 kilometers from the city. Farmers in this village normally sow their crops after a single spell of shower. However if they don't receive rainfall in the next ten to fifteen days, they start anticipating a drought. Drought period may not be restricted to the summer months only but may be extended thereafter also. Typically, the rainfall may fill the fields with water but it may not fill up the water bodies of

the region. The water in the fields provides water to the Kharif crops. The dry water bodies on the other hand cannot provide water to the Rabi crops, which are sown later in the year. Hence the drought situation may last throughout the year.

■ **Migration:** Drought results in migration of young and able-bodied men to the city to work in Textile and other factories. Men are also picking up dairy as a subsidiary occupation. However, middle aged men as well as old aged people can normally be seen sleeping at their homes or loitering away their time gambling and talking during the day. They do not normally share the burden of household chores either.

Impact on Women: A drought situation resulted in the increased workload of women. Their daily routine involved getting up early in the wee hours for of the morning to perform household chores, reporting for food for work program at 6 o'clock in the morning till 1 pm in the afternoon, getting fodder and taking care of the livestock, going to far off places to arrange for drinking water and performing minor agricultural tasks. The women in this village faced health problems like malnutrition, anemia etc. They tend to eat less food than men and boys of the household. Girl children were given lesser opportunities to receive education than their male counterparts. Migration of men to cities and other places normally did not pose any security problems for women in this village. If there was any untoward incident involving their security, the matter was sorted out by the head and the old people of the village. The villagers inflicted punishments like social boycott and physical beating to the offender. Women felt secure in the village in the absence of their husbands.

■ **Relief work:** There were three food for work programs being organized in the village namely, Jamuna Sagar Project, Dharamsala Project and Dev Sagar Project. The Jamuna Sagar Project involved the digging of a pond for storage of water. A visit to the site of Jamuna Sagar Project revealed that out of 45 persons 42 laborers were women. They were being paid Rs.73 per day on the basis of measurement of work. 75 percent was paid in kind and 25 percent was paid in cash. BPL (Below Poverty Level) families were preferred in enrollment for the work. The medical facilities were provided to the workers

as a nurse visited them regularly and gave free medicines if required.

However certain aberrations were observed in this project. Firstly duplicity of labor was reported for these programs in certain cases. Secondly, certain families were preferred while others were neglected while engaging labor for food for work programs. This may have been due to the biased approach of the Sarpanch (head) of the village, as he wanted to secure his vote bank for the forthcoming elections.

ACHIEVEMENTS

This study provided an overview of the situation of drought-hit village in Rajasthan. It threw light on the impact of drought in the village. It highlighted the status of relief works taken up in these areas. The study also helped to list out the problems faced by the administration in Drought management and the possible suggestive measures.

LESSONS

Some specific problems observed during the field visit and which the officials at the grass root level also highlighted were as follows:

- Lack of trained manpower at the block level. The training imparted was generally theoretical.
- Lack of awareness generation at the community level on how to deal with drought
- People were largely dependent on the government relief. There was a general lack of confidence and will power among the masses on dealing with the situation themselves.
- Local resource mobilization of Scouts, NCC, Youth was very poor.
- Regular updating of village profiles was not being done. The people did not know the contact details of important personnel at the grass root level in the wake of a disaster.
- People were largely dependent on traditional sources of irrigation. Modern means of irrigation needed to be developed to reduce dependence on rainfall.

FUTURE

Some of the suggestive measures that flew unabated from the study are as follows:

- Gender sensitivity needs to be maintained in distribution of relief material. Provisions should be made to take care of the children of women

labor in "Food For Work" Programs. For e.g. Crèches can be opened for children of women who are working as labor in the relief works.

- Timely distribution of seeds should be done to the farmers by the concerned agencies. Farmers are normally forced to buy the costly seeds from the urban areas as seeds are not provided at the time of sowing

- Farmers should be made aware of plants and crops, which are drought resistant and can serve as alternative source of livelihood.

- Awareness needs to be generated about the type of fertilizers and seeds to be used in drought prone years. It was observed that farmers bought high yielding seeds, which were costly and required a lot of water. In drought period the high cost of the seeds and the inability of the seeds to resist drought finally doubled up the loss of the farmer.

- Efforts should be made to encourage farmers to take up alternative sources of livelihood like dairy, goat rearing, poultry, multipurpose farming etc.



CONTACT DETAILS

Dr. Ajinder Walia

Senior Research Officer
National Institute of Disaster Management,
Indian Institute Of Public Administration
campus,
I.P Estate, Ring Road, New Delhi -110002.

Tel: 011-23702432
ajinder@nidm.net
ajjiwalia@rediffmail.com

Education For Sustainable Development And Disaster Management: The Gujarat Experiences Of India

BACKGROUND

The paradigm shift in the disaster management has changed the focus on preparedness and mitigation mode from the response and recovery mode. Measures undertaken for preparedness and mitigation can be broadly categorized under two heads namely structural and non-structural measures. The structural measures include construction of disaster resistant buildings, construction of embankments, etc. The non-structural measures include awareness creation, capacity building of different stakeholders, insurance, etc. The non-structural measures are in other words education of the community and all other stakeholders regarding all aspects of disaster management with a special focus on reduction and preparedness.

The target group covered under non-structural measures can be broadly categorized into two namely General public/Mass and Government/Non-government employees & Volunteers. The former group is being reached through mass media and their capacity building covers awareness, Do's & Don'ts, etc while the capacity building of later group cover specialized training and skill enhancement.

OBJECTIVES

This paper is an attempt to capture some of the major non-structural initiatives undertaken by the Gujarat State Disaster Management Authority [GSDMA] for disaster preparedness and mitigation. The Gujarat State Disaster Management Authority is the apex body of Gujarat State, India for disaster management. Since its inception 8th February 2001, it has won several international awards such as the UN Sasakawa Award, 2003; Green Award of the World Bank; CAPAM Award [Gold Medal] 2004.

ACTIVITIES

■ **Shake-table demonstrations:** In order to imbibe the currency of seismic features, shake-table demonstrations were held at different locations in the earthquake-affected area by UNCRD. In this demonstration, two similar type of houses are constructed of which one had seismic features like lintel band, gable band, etc while in other these are missing. A tractor hits these houses and the house without non-seismic features caves in while other remains intact. These live demonstrations helped in inculcating the importance of seismic features among masses. Videography of these demonstrations was done and the video-film was shown in approximately 3,000 villages.

■ **Community based disaster management program:** Community is the first responder in any disaster hence, GSDMA has initiated a community based disaster management program with UNDP in nearly 4170 villages, which have been identified on the basis of the vulnerability to different types of

disasters. The program focuses on the capacity building of community through awareness, training and institutional arrangements. The program is based on large-scale involvement of village youth. It involves identification of youth volunteers from the village and preparation of different teams for community level disaster response. These teams viz., Early Warning Group, First Aid & Medical Group, Evacuation Group, Rescue Group, Shelter Management Group, shall be responsible for different tasks assigned to them for disaster preparedness. The youth of all the group are imparted with the specific training as required for carrying out the role assigned to their respective groups. They are provided with the necessary material support. The goal of the program is long-term capacity building of the community and reduction of dependence on any external source.

■ **Owner-driven reconstruction- learning by doing:** In order to inculcate the importance of seismic features among people, the housing reconstruction program undertaken in the aftermath of the Kachchh earthquake was mainly owner-driven. Under owner-driven philosophy, onus of reconstruction is on the owner and hence his continuous involvement in the reconstruction process is ensured. Retrofitting, gable band, lintel bar, etc are now part of their day-to-day gossip and discussion in the earthquake affected area and involvement of owner in the process, per se, is the major factor for this awareness.

■ **Special campaigns:** GSDMA carry out a special campaign before Diwali, a major festival of India in which people fire crackers, for reducing accidents. This campaign focuses on Do's & Don'ts pertinent to this festival arespread through mass media like radio, newspaper, etc. During Uttarayan, a festival of Gujarat-India in which people fly kite, a number people gets minor to fatal injury due to various reasons. Just before this festival a massive campaign is being carried to create awareness.

■ **Plain Truth:** GSDMA publishes a monthly newsletter named ' Plain Truth' for information dissemination related to the ongoing rehabilitation and reconstruction program as well as the long term disaster management measures and technological developments in the field of disaster management. This newsletter is circulated free of cost to different stakeholders including government departments, NGOs, etc. These newsletter are also uploaded on the website of GSDMA.

■ **Awareness through Audio-visual Media:** Folk songs, folk dance, street plays, Video-shows, etc are being used for awareness creation. Some of these are: Street-plays titled 'Maro Ghar Panki No Maalo' (means my house is as vulnerable as bird's nest) is being played for awareness creation and opinion building on urban reconstruction process. These plays are based on the themes on the importance of seismic resistant construction, implications of violating the Gujarat Development Control Regulations (GDCR), etc.

A cassette 'Maare Chhhe Imarat' (means 'I own a house') was prepared in association with a local NGO.

The film uses traditional folk music form to communicate the concept in the simplest manner to rural audiences.

A audio/videocassette/CD in the form of jokes, involving the popular regional artist was prepared and widely distributed.

■ **Exhibitions/Fairs:** During exhibitions/fairs, stalls on different themes of disaster management are being put up by GSDMA. Literature such as Do's & Don'ts related to specific disasters, general awareness on disasters, etc is being distributed to visitors.

■ **Home owners' guide for earthquake safety:** This booklet is a handy guide to those who are going to buy a house as it has consolidated checklist of issues pertaining to it.

■ **Disaster Management-an agenda of Gram Sabha:** During gram sabha (meeting) villagers discuss the various facets of disaster management. A Gram Sabha is body of adult members (above 18 years) of village in which different issues are discussed.

■ **Calendar on Disaster:** A calendar depicting different disasters and Do's & Don'ts related to each has been prepared and circulated among different stakeholders.

■ **Children-catch them young:** In order to usher the culture of disaster preparedness and mitigation, special attention has been given to children. Essay writing competition, painting competition on various themes of disaster management has been organized. A painting book on disaster theme has been prepared for children.

■ **Advertisement panels on buses:** Panels on different themes of disaster management were put on the government buses.

INVITATIONS FOR CAPACITY BUILDING OF OTHER STAKEHOLDERS

■ **Masons' Certification Program:** In rural areas of India, masons design and construct houses and they learn this trade from hands-on experience. Most of the masons lack information related to the seismic features. In order to inculcate these skills, GSDMA launched Masons' Certification Program. Masons would have to take a pre-test in which they will be evaluated on ten skills. If a mason passes all the ten skills, he would be certified as trained mason. Rest will be trained on skills in which they were not able to pass the pre-test. Once masons are confident of the clearing test of skills which he was not able to clear during the pre-test, test will be conducted. On successful completion of all ten skills, mason will be awarded certificate. NGOs or any other agency can train the masons in skills which he lacked in the pre-test. GSDMA will make payment to the NGO/agency for training masons.

■ **Continuous training & skill updating program:** To train government officials, NGOs and communities on ongoing basis, an institute named Gujarat Institute of Disaster Management [GIDM] has been established by GSDMA. More than twenty training programs have been organized by GIDM, providing training to over 500 persons including, Collectors/district officials, government and municipal engineers, firemen and fire officers etc in

the areas of Disaster Management, search and rescue, seismic engineering, and other disaster related fields.

■ **Advanced level emergency response and rescue training:** Multi-disciplinary teams of 49 personnel have been given advance training in emergency response at the specialized institutes in Netherlands and Germany. In addition, these people have trained 163 more fire personnel in search & rescue. Training in Flood Rescue was organized by Nauka Talim Kendra (Montors) Vadodara for 90 Firemen /Fire Officers. In addition, 100 employees of a state enterprise (GNFC) have been trained in search and rescue

■ **Masons training:** Training modules and material (which included both theoretical and practical components) were prepared for imparting training to masons. Trainings were arranged at villages and taluka headquarters to facilitate easy access to masons for attending these programs. Considering the loss of income to the masons during the training period, arranged food, travel expenses, and daily per diem allowance to compensate their loss of wages were taken care of. Approximately 29,000 masons have been trained under this program.

■ **Engineers training:** Specialised training was provided to the government engineers, private practitioners, and for engineers working with NGOs. Training programs were conducted at various places involving reputed institutes in the field such as Indian Institute of Technology, Kanpur and Mumbai. Approximately 6,000 engineers have been trained under this program.

■ **Information exchange and sharing programs:** Disaster management is a dynamic field as new technology, best practices, etc are emerging. Hence, to acquaint the different stakeholders with these developments, workshops, seminars, etc are being organised and documented.

■ **Revision in syllabus of civil engineering:** The syllabus of civil engineering has been revised to incorporate seismic engineering.



CONTACT DETAILS

V. Thiruppugazh

Additional Chief Executive Officer, GSDMA,
Gandhinagar, Gujarat, India
vthiruppugazh@hotmail.com

41

Mr. Mason: Transformation Of Informal Construction Workers To Respected Certified Masons

BACKGROUND

The devastating earthquake in Gujarat, India, on 26 January 2001 started it all. As the initial euphoria of extending relief waned, and media attention shifted elsewhere, the survivors were stranded with no homes, dwindling aid flow, and a severe drought. Most families had no capital to reconstruct their homes and restart their lives. Few NGOs had stayed on to assist with rehabilitation, and rehabilitation schemes offered by the government were taking ages to get finalized.

OBJECTIVES

This was when PNY happened. PNY (Patanka Navjivan Yojna), which means new life scheme for the village Patanka, was a collaborative effort of the national NGO SEEDS and a large number of national and international organizations to establish a model of self reliance in an earthquake affected community.

ACTIVITIES

PNY, by the time of its completion, had accomplished the reconstruction and retrofitting of about two hundred houses, community buildings and infrastructure, all carried out by local people. The project merely provided orientation and training support, with limited material inputs to enable the addition of earthquake resistant features. A team of five project personnel worked with two hundred families and their hired masons to recreate the village. Many farmers out of work due to the drought got trained as masons in the process. The masons who were involved picked up special skills of earthquake resistant construction using the same old traditional material and design. The village, which originally had two or three masons, soon had a team of thirty well trained masons. Skills and confidence soared, but construction work in the village soon got over. What next?

■ **Shamta: Moving from response to resilience**

Based on the success of PNY, the initiative

spread out to cover areas on the fringe of the earthquake devastation zone. The team moved to Porbandar, in southern Gujarat, and with active participation of trained masons from Patanka, set up the Shamta (capacity) project in the local community. This was an initiative with wider targeting, covering mitigation and preparedness issues with a range of stakeholders including women, children, fishermen, farmers, and government officials. Mason training of course remained a central theme. The value the Patanka masons could infuse was immense, with people taking the advice of fellow Gujarati masons very seriously, particularly since they came from the heart of the earthquake affected zone. The talk this time was not about reconstruction of houses, but was more focused on making existing houses stronger, and creating water harvesting features to fight the drought.

In Gujarat the focus was shifting from response to mitigation and preparedness. However, other than in Gujarat there were millions of people living in vulnerable areas that had not been hit by an earthquake in recent times. What about them?

■ **Parvat Yatra: Learning from others' experiences**

It was time for the Gujaratis to step out of their state and teach their countrymen living in similar earthquake zones the lessons they had learnt the hard way. The destination was Himachal Pradesh, a Himalayan hill state in the northern part of India. Himachal had been hit by a devastating earthquake way back in 1905. There was no living memory of it. The upcoming centenary of the quake in 2005 presented a window of opportunity to create awareness around the issue. The SEEDS team and the trained masons from Gujarat launched Parvat Yatra (mountain journey), a campaign to demonstrate the importance of earthquake resistant construction in the region. Shake table demonstration, retrofitting activities, training workshops and community forums were organized under the campaign.

The local mason was emerging as the key to the safety of houses, schools and community centers. Yet he was neither educated, nor trained nor recognized. How to change that?

ACHIEVEMENTS

■ Mason Association: Trained, certified, recognized and federated

Thinking started back home in Gujarat. A mason training program had been going on since the very first day of the whole process. Now it was time to add value to it. The state government recognized the need, and supported a mason testing and certification program launched by SEEDS. The local mason now had a chance to appear for a test, get graded, clear an examination and finally be certified as a trained mason and equipped with a very official looking identity card. A mason association was thus formed, with more members joining each day.

The local construction worker had become a respected Mr. Mason.



LESSONS

The biggest lesson learned was that given appropriate education and encouragement, invisible local workers can become the most effective and motivated disaster reduction workforce. This approach is far more cost effective and fruitful than heavily loaded mega projects involving mass construction and mass awareness components. It is definitely challenging as it involves a slow process of one on one interaction, and is difficult and time consuming to upscale. However, its inherent sustainability potential makes the challenges worth taking on.

FUTURE

Stakeholders working in the development sector at field level should be targeted in education and training programs. The most important steps for this are to make such programs accessible and affordable for field workers.



CONTACT DETAILS

Anshu Sharma and Manu Gupta

SEEDS, 315 Tower I, Mount Kailash, New Delhi - 110065, INDIA

Tel: (91-11) 30994155, 26498371

Fax: (91-11) 26498372

info@seedsindia.org

www.seedsindia.org

42 Bihar Floods Of 2004 In India: Insights

BACKGROUND

Bihar is situated in the eastern part of India with Nepal to its north and the states of Orissa, West Bengal, Uttar Pradesh and Madhya Pradesh flanking its sides (Latitude 21 58' 10" to 27 31' 15" North and Longitude 82 19' 50" to 88 17' 40" East). The state is endowed with enviable mineral resources base. The area of the state is 94,163.00 Sq. Km. and the population according to 2001 provisional census is 82.87 million. Historically, Bihar had only four divisions: Patna, Tirhut, Bhagalpur, and Chhotanagpur. This arrangement continued until very recently, when many new divisions were created and the old districts were carved up into new ones.

Bihar has always been affected by flood due to its unique geography and topography. It is landlocked from all sides and there is a network of rivers in Bihar and most of the rivers are snow-fed, as they originate from the Himalayas, therefore, they are perennial sources of water. During monsoon, between July and September, most of the rivers are in spate and the situation worsens, when there is a heavy rainfall in the catchments areas, predominantly located in the Indo-Nepal border region. Northern region of Bihar State was under severe floods in July, 2004. Out of 37 districts in Bihar, 19 districts are flood affected, and the worst hit were Darbhanga, Sitamarhi, Samastipur, Madhubani and Khagaria. Many districts (e.g., Saharsa, Matihari, Araria, Muzaffarpur) were extensively affected by these floods. According to the official estimates submitted to the team by the government of Bihar, nearly 172 blocks, 2,325 panchayats (village governments) and 7,090 villages are inundated. During many aerial surveys, most of the areas inundated had become completely detached from the capital, with roads, railway lines, electricity, telephone lines etc all cut off.

OBJECTIVES

The main goal of the operation was to provide immediate relief to those seriously affected by the calamity. The objective was to have as wide a reach as possible while distributing relief. In India, the responsibility of providing relief in the wake of natural calamities including floods

primarily rests with the concerned state governments. The Government of India supplements the efforts of the state governments where necessary by providing logistic and financial support. For this purpose, the state governments are allocated resources from a Calamity Relief Fund (CRF), which is contributed to by the Government of India and the state governments in the ratio of 3:1. Additional assistance is also provided to the states in the event of an especially severe calamity from the National Calamity Contingency Fund (NCCF).

ACTIVITIES

The relief distribution by air started on 10th July, 2004 and it continued for nearly on month ending on 8th August, 2004. The distribution of relief items by road continued for a longer time, after the roads were cleared.

During the flood relief operation that lasted for 29 days, the items were selected and packed and no set criterion was followed. Each relief packet contained 2 Kg powder, half Kg Salt, 2 Candles and 1 Match box or 2 Kg chaffed rice, half kg jaggery, 2 Candles and 1 Match box. During the operations, 10 helicopters were pressed into action out of which 2 helicopters crashed. 100 cadets from NCC (National Cadet Corps) were involved per day in the packaging of relief material.

ACHIEVEMENTS

The following table sums up the details of the relief that was distributed during the 29 days of operation:

No.	Relief Materials Distributed	Figures
1	Readymade food	34224.67 quintals
2	No. of polythene sheets	617135
3	No. of match boxes	478510
4	No. of candles	519634
5	Quantity of kerosene oil	345634(in liters)
6	Cash doled out	Rs. 259.538 Mln
7	No. of boats deployed	8065

LESSONS

The Government machinery had swung into action and food packets are air dropped by helicopters every morning. But the truth of the matter is that relief was not reaching the families affected by these floods fast enough. The government needed to strengthen its ability to create strategic plans to provide food relief. The state response focused on relief distribution. It was quite evident during the entire operation that though flood is a recurring hazard but still preparedness level were far from adequate. Also the visit to the villages by the authors confirmed the fact that the people affected find the concept of preparedness totally farce. They are not ready to accept the fact that having teams of trained villagers will help them. They say that since floods can not be prevented, they accept them as their fate and are quiet efficient in handling rescue and relief on their own. Their major grievance though was the disparity and delay in the distribution of flood relief.

FUTURE

The officials involved with the relief work should have sufficient knowledge about various aspects of relief distribution. The experienced and trained personnel would be more useful and effective in carrying out various activities related with relief operations and there is urgent need to develop a cadre of trained people for a much-organized response in future.



CONTACT DETAILS

Amit Verma and Shekher Chaturvedi

Research Associate
National Institute of Disaster Management,
IIPA Campus, I.P. Estate, Ring Road
New Delhi-110002

Tel: +91-11-23702432 extension 220/ 221
Fax: +91-11-23702442

43

Capacity Building Program For Long-Term Disaster Preparedness In The Aftermath Of Kutchch Earthquake Of India

BACKGROUND

Natural phenomena like earthquake and cyclones become disaster because people at large are ignorant about the ways to construct affordable disaster resistant houses with local artisans & materials. In India the disaster rehabilitation programs from 1993 to 2000 failed to teach house owners these ways because the rehabilitation programs had many shortcomings including:

- Lack of effective information dissemination to people about the program (entitlement, obligations, time limitations etc.) and appropriate disaster resistant building technologies
- Much confusion prevailed about right technology because of many experts and many myths
- The government engineers posted in the field had little or no knowledge of the disaster resistant technologies in connection with the sustainable vernacular building systems
- Masons had no knowledge of affordable disaster resistant building technologies.
- People listened to masons rather than engineers in the rehabilitation program.
- There were some mason training programs but without any standardization and there was no felt need among masons for training since the training was not mandatory
- Critical materials & equipment were not available in the villages

These problems created hindrances in the disaster rehabilitation program, adversely affecting the schedule as well as the output. In the aftermath of 2001 Kutchch Earthquake in Gujarat State of India a major on-site training program of 1200 government engineers was taken up by NCPDP along with a sensitization program for village level government functionaries. The feedback from the engineers and others at the end of the training program led to a demand for this Capacity Building Program which was taken up for *Gujarat State Disaster Management Authority (GSDMA)* with the World Bank funding.

OBJECTIVES

To facilitate the *effective implementation of government rehabilitation program* in the

selected target villages through...

- Demonstrating affordable and sustainable disaster resistant building construction technology as well as retrofitting
- Increasing effectiveness of government engineers through intensive on-site training
- Sensitizing government personnel for increasing rehabilitation program effectiveness
- Making rehabilitation program a peoples' program through their appropriate education
- Raising awareness of people about the dangers of future disasters and ways to face them
- Taking affordable and sustainable disaster resistant technologies to peoples' doorsteps
- Building capacity of the community through placing responsibility of execution of all construction work on its shoulder.
- Building peoples' confidence to create a *felt-need* for disaster resistant technologies.
- Educating people about the roof rain-water harvesting system
- Helping evolve delivery mechanism through skill up-gradation of local masons and taking necessary equipment to each target village
- Leaving behind a *Disaster Preparedness Brigade that is concerned about preparing for future disasters and Disaster Preparedness Center.*



ACTIVITIES

- Intensive trainer's training for engineers and social scientists of National Centre for Peoples' Action in Disaster Preparedness (NCPDP) project team
- Village Reconstruction Committee (VRC) activated by NCPDP project team in each target village
- VRC carried out under the guidance of NCPDP project team the following...
- Full-scale construction of a demonstration structure following GSDMA disaster resistant building guidelines

■ Repair and retrofitting of an existing public building

■ Installation of Roof Rainwater Harvesting System on a public building

■ NCPDP project team carried out in each target village...

■ Hands-on training of Building Artisans by trained engineers in disaster resistant construction and repair & retrofitting in *multi-day, multi-stage* curriculum.

■ Awareness generation by trained social scientists through

• Group meetings and village meetings (*Graam Sabhaa*),

• Interaction with school children followed by a rally,

• Poster Exhibitions and video shows

■ Formulation of Disaster Brigades from all strata of village community including women through intensive dialogue and training

■ Handing over of Disaster Center to Disaster Brigade through Village Meeting



ACHIEVEMENTS

■ Covering 478 Villages spread over 24,000 sq. km. area of 5 Districts of State of Gujarat

■ Building 478 multi-hazard resistant structures (Disaster Centers) (total 120,000 s.f.) and retrofitting 439 existing public buildings (total 175,000 s.f.) by local artisans for future safety

■ Building 478 roof rain water harvesting systems (total 2,870,000 ltrs) tackling water scarcity

■ On-site training for skill up-gradation of 5690 building artisans

■ Evolved 477 "*Sajjata Sena*" Disaster Brigade in each village for future disaster preparedness activities

■ Trained 176 government rehabilitation program engineers assigned in each village

■ Effective and positive interaction with a wide range of government agencies from GSDMA in State capital to those at District, Block and village levels.

LESSONS

Pre-requisites for an ambitious project like this, are as follow:

■ Full support and commitment of all concerned government agencies

■ Timely transfer of funds to all villages from the central government source

■ Mandatory training and certification for masons before taking up rehabilitation work

FUTURE

■ This path breaking project with appropriate changes should be implemented as the very *first step after a disaster to ensure rehabilitation program success in any part of the world*

■ *Sajjata Senas* (Disaster Brigades) must be made part of an active disaster management network and their capacity should be enhanced regularly to reap long term benefits of program

■ The certified masons should be promoted for all government and non-government projects and continuing education programs should be organized

■ Disaster mitigation awareness programs must continue through various local forums



CONTACT DETAILS

Rajendra Desai & Rupal Desai
Hon. Directors

National Centre for Peoples' Action in
Disaster Preparedness (NCPDP),
103 Antariksh, V.S. Road, Ahmedabad, GUJ,
380015 INDIA

Tel/Fax: 091 79 2630 8843
mitigation@ncpdpindia.org

44

Strengthening Community Resilience In Crisis: Through Network For Early-Warning Assistance And Resilience (NEAR)

BACKGROUND

It takes very little to push a vulnerable community over the edge and one crisis can destroy thousands of lives and livelihoods. Indonesians, like residents of many developing countries, are constantly faced with some crises or other. Existing problems often are exacerbated and already weak systems can collapse completely, leaving people in desperate need of food, health care and other basic services.

Between 1997 and 2003, Indonesia has suffered more than 30 major humanitarian crisis including floods, droughts, earthquakes and conflict. Catholic Relief Services' (CRS) Network for Early-warning Assistance and Resilience (NEAR) program was created to mitigate the effects of these disasters by working with communities to identify vulnerabilities and to develop mitigation and preparedness strategies for future crises.

OBJECTIVES

NEAR stands for networks through community, government, civil and private sectors for early warning thereby to analyze, map, prepare and plan for the disaster event and assistance via relief, response and mobilization, and to build resilience by empowering, securing, creating an ownership leading to sustenance. NEAR's overarching goal thus is to enhance community resilience throughout Indonesia.

ACTIVITIES

Enhancing community resilience is done by reflecting on past trends, patterns, and perceived vulnerabilities, on site appraisals to determine validity of information, cross sharing of lessons through workshops and abating crisis through implementation of community designed small-scale resilience activities. These local community initiatives help minimize loss of life when crises occur, support sustainable recovery and resiliency and serve as model examples for sharing with other vulnerable communities and local government offices.

Because multiple sectors are often affected by a crisis, the strategy of NEAR is gathering experts in a variety of fields: education, health, food security, agriculture, capacity building, and economics to share their knowledge with participants. It encourages community exchange networks, mapping, mitigation planning, integrated human development, associations and links, concept design and proposal development, accountability, awareness raising, and setting up early warning system.

ACHIEVEMENTS

CRS believes that accurate knowledge of community needs and the root causes of crisis will help reduce their impact. Building local capacity is one of CRS' core goals, and NEAR is an important means of achieving this. Local organizations throughout Indonesia have joined with CRS to increase the collective capacity to respond to crises. Through workshops and other activities developed by CRS, these organizations have an opportunity to learn how to identify their communities' unique vulnerabilities and local crises indicators. By analyzing this information, the organizations can develop activities to reduce the impact of crises and effectively respond to them.

At the community level, activities such as awareness campaigns, community meetings, and the distribution of literature on early warning systems are helping to build individual capacity to respond to crises and ensure that safety measures are well understood by everyone. Several community activities under this pilot program have included Environmental Protection; Geographical Information Systems for Vulnerability and poverty mapping, Disease Monitoring; Hygiene Awareness; Flood Proofing; Safety and preparedness programs for schools, religious groups and community groups; Conflict Reduction/Peace Building schemes; Public Safety Information Campaigns; Earthquake Drills and Emergency Response simulations. Through networking and sharing with NGO's and local government systems, local communities are also able to advocate their needs to the appropriate authority and find ways to engage local support services.

Currently, NEAR is working with local

organizations in selected regions of Indonesia to build their capacity to prepare for and respond to emergencies. The program encourages other organizations to link up to this network. In addition to its activities with local organizations, NEAR is also strengthening linkages with local governments, central ministries, local agencies and other networks. Activities are currently being implemented in selected regions of the country - North Maluku, West Kalimantan, Lampung, West and East Nusa Tenggara and Central Java.

LESSONS

While implementing these activities and sharing of experiences it is noted that community groups quickly start to take their own initiatives to find solutions towards their problems by advocating to the local government authorities through the media and open dialogues, designing small-scale activities to abate potential crisis and seek external assistance when local capacity is insufficient.

CRS was founded in 1943 by the Catholic Bishops of the United States, originally to assist the World War II refugees. Today CRS operates in 92 countries around the world and providing assistance without regard to ethnicity, religion and race. CBDRM is part of a Catholic Relief Services Agency wide 'Risk Reduction' framework.



CONTACT DETAILS

Wayne Ulrich

Technical Advisor
Catholic Relief Services
Indonesia

wayne@crs.or.id
Tel: 62-21-7253339
Fax: 62-21-7251566

45 Community-Based Flood Mitigation And Preparedness Project

"During floods in early 2002, at least 30 people were killed and 300,000 were forced to flee their homes. The biggest flood in the city's history hit 168 of 262 sub-districts and paralyzed the capital for days."

The Jakarta Post, 10.09.2003

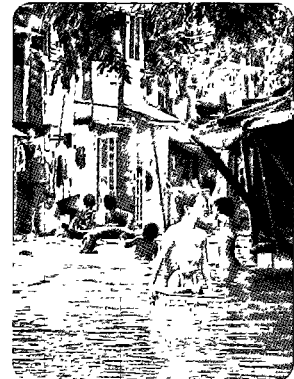
BACKGROUND

With its population exceeding twelve millions, Jakarta is considered as one of the most problematic "mega-cities" in the world for its intricate urban development issues. Being located in a coastal lowland area and cut across by thirteen rivers and many other streams, Indonesia's capital city is affected by recurrent inundations, especially during the high rainy season. In February 2002, disastrous floods affected 24 % of its total area (around 650 km²), claiming at least 30 lives, and paralyzing the city for days. One of the most-severely affected areas was the sub-district of Kelurahan Bidara Cina (East Jakarta), which is inhabited by approximately 44.000 persons. A high-density area (57.000 inhabitants/km²) was selected as pilot site for the implementation of the Community-based flood mitigation and preparedness project (concerning more than 3.000 residents). Located along the Ciliwung River, this area is particularly vulnerable to inundations and was affected by five-year recurrent severe flooding.

Dealing with floods is like putting together the pieces of a puzzle, as understanding the causes of floods involves accurate consideration of a range of environmental and socio-economic aspects. For these reasons, it is generally recognized that there is a need for a coordinated action at all levels, encompassing all society groups. A disaster-reduction program should normally begin with the identification of the specific problems that a community faces and with the assessment of people's perceptions of how to solve them. This approach avoids the constraints, which may arise when the solutions proposed are solely generated from actors such as authorities, institutions or organizations, external to the community, which therefore, may not reflect the local needs. For these reasons, the flood mitigation and preparedness project, which started in July 2003 and ended in October 2004, promoted mitigation measures focused on non-physical as well as non-structural aspects, i.e. public education and trainings, in which active involvement of the community was required.

OBJECTIVES

The Flood Mitigation Project, a collaboration between UNESCO Jakarta and LAPI-ITB (Foundation for Research Affiliation and Industry - Institute of Technology Bandung), is designed to improve the community's understanding and awareness of natural and social components of floods and aims at strengthening the people's preparedness to deal with these dramatic events. The final objective is to improve the community's behavior in order to reduce the vulnerability of the residents and their belongings. Beside the improvement of management and coordination systems, the achievement of such goals requires a full involvement of the community members, who need to be supportive and willing to contribute to the success of the activities proposed.



ACTIVITIES

The project was structured in two phases. The first phase, from July 2003 to January 2004, was characterized by the facilitation process, which included activities aimed at assessing the community's capacity and vulnerability in relation to flood events, and by public education and training courses for the community representatives. The training involved community-based first aid, integrated waste management, flood mitigation, institutional framework and strengthening community capacity. At the end of the first phase, a community forum was established, consisting of twenty representatives who spontaneously participated to both the facilitation process and the training courses. The forum's first responsibility was to develop several proposals about possible activities aimed at improving the assessed capacity and decreasing vulnerability. The second phase consisted in the implementation of the community forum's proposals. From May to August 2004, the community's representatives attended new raining courses, such as search and rescue, post-flood health management, waste management and leadership training. Besides the training courses, waste collection system were

established, promoting also recycling and, later, composting. The implementation phase also included physical efforts to improve flood preparedness, such as the preparedness, such as provision of clean water supply, the procurement of special equipment in case of flooding, the rehabilitation of a storage-site for this equipment, and the rehabilitation of the site drainage system.

ACHIEVEMENTS

The establishment of a trained and prepared community forum can be considered as the major achievement of this project. The forum acquired the knowledge and the capacity to better deal with floods, to be prepared before, during and after disaster occurrence. Most of all, through its visibility within the community and through the daily contacts with the other residents, the forum is an important channel for disseminating the information to the rest of the community and ensuring that the whole community can better react to future floods. In addition to that, the forum will act as contact point for the implementation of future actions, which can be related to disaster reduction, but also to other activities which need the direct involvement of the community. Another major achievement was the establishment of a waste collection system, which has two long-term positive results: the improvement of both the environment and the community's quality of life and the reduction of flood impacts (the river is no longer used as waste disposal, which obstructed dykes and side channels, impeding water to drain and therefore increasing the impact of these events).

LESSONS

The results of the project proved the importance of two simple but fundamental principle when dealing with disaster mitigation and preparedness: community participation and bottom-up approach. The spontaneous participation of the community in all phases of the projects is important to ensure the effectiveness and the efficiency of the results of the mitigation measures. The community participation is especially needed in order to identify the priority actions and the target groups, but also to increase the visibility and the legitimacy of the activities and measures proposed. Thanks to a bottom-up approach, the community itself, through the establishment of a community forum, developed different proposals (waste management, forum strengthening, technical attempts for flood preparedness) to improve its own capacity to cope with floods. This approach allows to better identifying the problems and the possible solutions, to monitor

the activities and to ensure the implementation and follow-up of the flood mitigation measures taken. The main challenge for the future concerns the continuity of what has been implemented. It is important to ensure that the results achieved will remain on the long-term and that the community forum will continue to exist.

FUTURE

There are two main areas of actions, which need to be implemented in the future. First, it is important to promote future activities aimed at ensuring the continuity and strengthening of the community forum. Second, this pilot project is intended to be a first step in establishing a permanent program of flood mitigation involving other areas of the city. Each phase of the project was conceived in a way to be easily replicated at larger scale, with the ultimate goal of improving flood control in Jakarta. Suggestions for future actions encompass therefore activities aimed at implementing the project in other areas of Jakarta.



CONTACT DETAILS

Giuseppe Arduino

Programme Specialist in
Hydrological/Geological Sciences
UNESCO Office Jakarta
Jl. Galuh II, No. 5, Kebayoran Baru, Jakarta
12110

Tel: +62 21 7399818
Fax: +62 21 72796489
g.arduino@unesco.org

BACKGROUND

Iran has been located in one of the most seismic regions of the world, and every now and then we experience one devastating earthquake, which causes human and property losses. On the other hand the recent earthquake experiences have shown that children are the most vulnerable groups of the society. Vulnerability of this group is not just because of high numbers of death or physically injury but also they are the most effected by psycho-social disorders.

Schools are the most important and fundamental community centers of a country, which built the bases for development in all the aspects including technical, industrial, economic and social development. In order to create a deeper understanding of the earthquake culture and safety at schools and national preparedness activities, the Public Education at International Institute of Earthquake Engineering and Seismology (IIEES), has developed a curriculum framework for the three different educational levels in Iran including a 5 years of primary schools, 3 years of secondary schools and 4 years of high schools. The Earthquake and safety awareness training activities are carried out in these different educational levels using direct and indirect methods.

OBJECTIVES

The final objective of public education is to increase public awareness about earthquake and mitigating of its hazards.

ACTIVITIES

■ Formal Education

There are many methods to be employed as the direct education, from which IIEES has applied the following methods:

• **Compiling relevant educational materials for schoolbooks**

— **Scientific Subjects on Earth and Earthquake**

In Science books of grades 5, 8 and 12, Geography books of grades 8, 10 there are

scientific materials on the inner structure of the earth, earthquake, faults and continental movements.

— **Earthquake Preparedness, Response and Recovery**

In the "Defense Preparedness" book of grade 8 (for boys) and "Knowledge of Careers and Arts" book of grade 8 (for girls) there are materials on the most appropriate activities to be preformed before, during and after a damaging earthquake.

— **Other Materials**

In other books such as: grades 3 and 7 "Social Science" books and grade 8 "Persian Literature" book there are lessons, which look at earthquake from Social point of views and mostly aim towards creating self confidence and proper social behavior at the time of earthquake.

• **Earthquake Drill**

Since 1995 public education of IIEES has initiated organizing earthquake drill in schools, and from 1999 this drill has been expanded to cover all the schools of the country which includes 16.5 millions students in 110,000 schools in 2003.

• **Continual Education Courses**

Another effective direct method of education is offering continual education courses for all the teachers of the Ministry of Education.

• **Establishing the Safety Councils for Earthquake at Schools**

This council is consisted of the following four teams:

— **Munitions and Safety Team**

— **Search and Rescue Team**

— **First Aid Team**

— **Fire Safety Team**

■ **Informal Education**

In addition to formal education in schools IIEES has established different activities to increase knowledge of students about earthquake and safety as a following:

• **Earthquake and Safety Educational Posters**

• **Educational Posters of National Earthquake and Safety Drill**

• **Poster for Secondary and High Schools**

• **Educational Brochures**

• **National Earthquake Drill Guidelines for school principals**

• **Educational Books**

The educational books published by IIEES for the students are as follows:

■ **E for Earthquake:** This book has been

prepared for primary school children.

■ **Earthquakes: scientific understanding of the phenomenon for children:** The book has been prepared for the students of primary and secondary schools

■ **Earthquake and a glimpse into the earth:** The book has been prepared for high school students and also it would be helpful for the school teachers.

■ **What you should know about earthquake:** This book has been prepared for school teachers

■ **Earthquake safety council guidebook:** This book has been prepared for school principals

Beside these, following activities were performed:

■ **Earthquake and Safety workshops:** Every year, at the same time of the National week of natural disaster reduction, Earthquake and safety workshops are being held

■ **Educational Competitions:** Organizing educational competitions in the forms of drawings and writing articles

■ **Educational Web Site**

ACHIEVEMENTS

Significant increased knowledge has been observed on safety during earthquake occurrence through students to the society.

SUGGESTIONS

■ **E-learning:** Computer is one of the communicational and educational media that could provide the audience with influential educations in the form of soft wares. For this end, department of public education intends to undertake and concentrate on e-learning as a priority.



CONTACT DETAILS

Farokh Parsizadeh

Research Associate and Director of Public Education
International Institute of Earthquake Engineering and Seismology, IIEES

parsi@iiees.ac.ir

47 Disaster Education: A Right To Generation's Safety

BACKGROUND

Iran, a country located in the Alpine-Himalayan seismic belt, is one of the most active tectonic regions of the world. The country has experienced many devastating earthquakes with a magnitude of 7.0 or more on the Richter scale throughout its history. After the Manjil-Roudbar Earthquake of June 1990 and during the IDNDR, there has been considerable effort in Iran, nationally and internationally to develop effective public awareness and education for different levels of the society. A comprehensive earthquake risk reduction program in Iran was launched in 1991. In parallel with improvement of and new methods for design and construction of structures, earthquake education has developed and grown as another effective initiative.

OBJECTIVES

In this respect, educating children, as the future of any community at risk, can be regarded as an effective strategy to communicate safety messages to the entire community. It is proposed that children can act as a key factor in the promotion of a safety culture, leading to disaster mitigation and risk reduction. In many developing countries, over half the population are of school age. Children can communicate the messages they have learned about public safety to their parents, their relatives, their neighbours and to family friends. Through this "trickle-down" process of dissemination, the wider society may be touched by an effective school safety curriculum. Consequently, schools play a major role in the development of a more disaster-educated population. Therefore, if awareness raising educational programmes in schools are effective, then the message is communicated to a broad spectrum of citizens in many communities.

ACTIVITIES

Education about disasters can be provided for children at various educational levels. One of the key target groups is preschool children. Education of preschool children has been

undertaken in Iranian nursery schools since 1999. The effectiveness of this education has been positively highlighted in recent case studies. One of these recent studies demonstrates that earthquake education of children from an early age in preschool and elementary levels can be an effective vehicle for increasing their knowledge and ability to respond to earthquakes. Furthermore, the transfer of this knowledge to the families and to the wider community seems both feasible and promising in the development of a future "culture of safety" nationally. In the case study (by this author), the process of behaviour assessment was undertaken by placing preschool children in various simulated earthquake situations. The findings of the study also revealed that the group of children who have not been educated in respect of earthquakes, displayed more distress when confronted by a simulated earthquake event. It was also noted that practice, through the use of "drills" and "earthquake simulation exercises", provides a sense of control and confidence in children who have received earthquake education. These results support the contention that earthquake related education programmes appear to enhance the confidence with which preschool children respond to an earthquake. It is felt that this confidence may be applicable in responses to similar hazards.

In Iran, educating children and young people in disaster preparedness at nursery, elementary, secondary and high school levels has been implemented on a national scale covering both urban and rural areas since 1991. This has been achieved through including materials in the textbooks, use of films, conducting "safety drills", holding exhibitions and competitions, displaying paintings and posters in educational environments, and using songs and games (For more details, please see:

http://www.iiees.ac.ir/English/Publicedu/eng_publicedu.html). These activities have been demonstrated to be of great interest to the children, their parents and the teachers. "Safety drills" are among the activities favored by children. The First Nursery schools' drill on the subject of "*Earthquake and Safety*" was held on October 2000 in one of the central parks in the capital city of Tehran. The children had previously received instruction about earthquakes and appropriate responses. The aim

of the drill was the demonstration of the safety procedures taught to the preschool children. The drill has been subsequently performed in June 2002, June 2003, and May 2004, the latter in four parks in the capital city of Tehran.

ACHIEVEMENTS

Nation wide school "Safety drills" commenced in 1999 involving 15,499 high schools. The Second Drill on the subject of "Earthquake and Safety" was held in 2000 involving all of Iran's secondary and high schools - a total of 45,000 schools and 11 million students. Subsequently, the drill has been performed annually. In 2003, the drill was performed at a wider national level covering 18 million children in 110,000 educational institutes in primary, secondary and high schools across the country. The "Safety Drill" program has been developed by IIEES (Ministry of Science, Research and Technology) with the cooperation of Ministry of Education, the National Committee for Natural Disaster Reduction (*Ministry of Interior*), the Iranian Red Crescent Society, and Iran National Television and Radio. The purpose of these drills is to prepare students for the appropriate and timely responses during earthquake. Assessment and evaluation of the most recent drill in 2003, has provided recommendations to achieve more structured and systematic drills in future.

LESSONS

Regular assessment of the effectiveness of all awareness programs is a necessity. This can be achieved through systematic planning by the implementing organizations and related ministries for each of the various disaster awareness programs. When appropriately in practice, the results of the assessments lead to improved implementation of new and updated initiatives. In parallel with the education and awareness programs, retrofitting of school buildings for improved earthquake safety has been recently started in Iran.

FUTURE

In respect of the post-disaster phase, planning of initiatives for "emergency response" and "recovery" has yet to be designed and implemented. However, research has been

started with the objective of proposing a comprehensive "Disaster Management Planning" initiative in schools.



www.iiees.ac.ir/pd/edu

CONTACT DETAILS

Yasamin O. Izadkhah

Disaster Management Expert, International
Institute of Earthquake Engineering and
Seismology (IIEES), Iran
Izad@iiees.ac.ir

Ph.d Candidate, Cranfield Mine Action and
Disaster Management Centre, Cranfield
University, Shrivenham, UK
Y.O.Izadkhah@cranfield.ac.uk

48 Bam Earthquake Of 05:26:26 Of 26 December 2003, Ms 6.5

BACKGROUND

The Magnitude Ms=6.5 earthquake of 26th December 2003 occurred at early morning (05:26:26 local time) along Bam fault with no recorded of any major earthquake, at least, approximately in past 2500 years; and while many residents of the Bam historical city were still sleeping. The traditional mud-brick and clay homes put up little resistance to the violent shaking, and as walls and roofs crumbled and collapsed; more than 100,000 of victims were trapped beneath the rubble and from them around 26,500 lost their lives. Close to 11,000 of the city's students perished, along with one to five of Bam's 5,400 teachers. Tens of thousands were left homeless and up to 6,000 children were orphaned. Arg-e-Bam (Bam Citadel), the largest mud-brick complex in the world and other historical buildings were almost totally destroyed. Bam earthquake not only shook the heart and mind of the Iranian, but the world and created on the biggest human solidarity. This earthquake have created a new initiative in Iran's risk reduction program and consequently provides a unique window of opportunity to raise international awareness of the importance of the effective implementation of a comprehensive earthquake risk reduction program in hazard-prone countries.

OBJECTIVES

The objectives of the case study is to present some preliminary results of investigations on geotechnical and structural aspects, and to understand the damages caused by the event.

ACTIVITIES

The activities described here are the results of the investigation on geotechnical, and structural engineering aspect, and damages on lifelines and special structures. The intensity levels are estimated to be VIII in Baravat, VII in New-Arg (Arg-e Jadid) and the airport area. The intensity level was estimated to be around IV-V in Kerman and Mahan.

■ **Geotechnical Aspects:** There were not any major geotechnical failures observed in the

Bam; However, many land subsidence due to collapse of Qanats (underground irrigation tunnels), local toppling and block slides along riverbanks or man-made channels were observed. For the purpose of geotechnical microzonation of Bam, seismic hazard analysis, geological studies accompanied by geophysical surveys and aftershock and microtremor measurements were carried out to provide preliminary site classification and PGA distribution maps for two return periods of 475 and 2475 years. Reasonable agreements exist between the site classification and 2475 years PGA distribution maps of the city and the damage distribution map of the recent earthquake. Almost all damages of the low rise buildings occurred in sites with stiff shallow and medium depth soils, which possess a considerable amplification potential in the high frequency range. The maximum value of the peak ground acceleration was evaluated in the south-east part of the city, where the highest value of damage percent (80-100) was experienced. The minimum value of the peak ground acceleration was evaluated in the north-west part of the city, where the least value of damage percent (20-50) was experienced. In addition, the 475 years PGA microzonation map could be used as a preliminary useful hint in reconstruction and urban planning of the city.

■ **Structural Engineering Aspects:** Existed buildings in Bam composed of Adobe and Masonry housing units (90%); Steel (8%) and Reinforced Concrete (2%). Based on the statistical evaluation of 550 buildings (74%:1-story, 22% :2-story and 4% :3 story or more) of the partially damaged, it was concluded that 62% could not be used for occupation, 34.8% could be retrofitted and 3.2% were safe.

The main reason for the failure of the adobe and masonry buildings were the heavy roofs and walls as well as the lack of structural integrity, specially in the newly build ones. The good performance of the arch roof of the old adobe buildings was good example of the importance of structural integrity.

Most of the steel building were damaged due to lack of code implementation, poor workmanship, poor connections (specially Khorjinie or satchel connection), weld rupture, buckling (overall, out of plane and lateral-torsional) of the weak columns specially in the batten columns, rupture and plastic shear of the

battens, local buckling and rupture of X bracing and lack of frame in one direction of the buildings. The buildings that had followed the minimum code requirements were not damaged.

Performance of the concrete buildings were poor for the residential cases and good for the essential ones.

Up to 95% of the buildings and walls within the 2500-years-old-ancient-Arg-e-Bam (Bam Citadel), the largest adobe construction in the world, were collapsed. The failure were mainly due to improper and lack of seismic safety consideration in the restoration program.

■ **Lifeline and Special Structures:** The Lifeline systems of Bam were shut down due to various type of equipment failure; However most of the lifeline systems were restored within the first week after the earthquake. The performance of the bridges, roads, railways were good and slight damages did not cause interruption of their services. The failure of the Bam airport tower caused delay in using the airport facilities. However its rapid restoration of the airport played very important role in the rescue and relief operation. Without the airport the human casualty were become much more. Water distribution systems for both drinking water and agricultural water which were done through the traditional irrigation system (Qanats) were seriously damage. Water tower and underground water storage tank and deep well sustained some damage and in general had acceptable performance. Nonstructural damage in the PTT buildings caused the communication interruption. The cell phones started to work within a few hours. There were little damage to high voltage transmission lines and towers and moderate damage to electrical equipment in the Bam substation. Most factories and other industrial facilities were either not damaged or stayed intact. However, they remain dysfunctional due to loss of workers.

LESSONS

The Bam earthquake disaster, despite its high casualties and losses, provides a unique window of opportunity to raise international awareness of the importance of the effective implementation of a comprehensive earthquake risk reduction program in Iran as well as in hazard-prone developing countries. It gives a challenge to the governments to make the highest use of the existing know-how on earthquakes and its integration into

development programs. It also compels the scientific and engineering community to provide more socio-economic-cultural compatible solutions to national needs. Moreover, the public at large should become more concerned about the hazard and increase its own preparedness level. The UN Strategy document, Bam Declaration and Recommendation for Bam citadel, Bam reconstruction paper and formation of the UNESCO-UNDP-UN/ISDR-IIIES Alliance for earthquake risk reduction in developing countries are sample of the initiatives for the better future.



CONTACT DETAILS

Mohsen Ghafory-Ashtiany

Professor and President of International
Institute of Earthquake engineering and
Seismology (IIIES)
ashtiany@iiees.ac.ir

49

Activities To Create The New Trend Of The Disaster Mitigation Education

BACKGROUND

Kobe and the surrounding cities, towns were struck by a strong earthquake in the early morning on 17 January 1995. The disaster imposed a lot of lessons to tackle on the national and local governments, the fire 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 and aiming at becoming the citizens who can contribute to the society.

OBJECTIVES

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 an 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 we believe are the fundamental knowledge, the fundamental skills and the strong will. To make the students acquire the three factors we set the objectives as following.

■ 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.

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

■ We cooperate with universities, research institutes and coherent 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.

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 2-3 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 well done 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. For further information please see the "Education on Disaster Mitigation by Maiko High School-Some Examples of the Educational Activities."

■ 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

■ Making of "Concept Map"

■ Simulation to Cope with the Disaster

■ Making of "Related Map of the Disaster"

■ Making of "Safety Map" of the Area

■ Disaster Imagination Game

■ Simulation Using the Map

■ Simulation by Role Playing

- Disaster Management of My House
- Disaster Management of a Fictitious Town
- Making of "Wall Newspaper"
- Making of "World Hazard Map"
- Town Walking in the Disaster Area
- Ten Ideas to Make Community Safer
- Field Work at Mt. Rokko
- Teaching the Pupils at an Elementary School
- Writing the Experiences of the Earthquake

The outcomes of the education 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.

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.

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.

LESSONS

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 changes the students a lot.

Another lesson is that experience takes 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 with 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 utilize the human resources.

FUTURE

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. Many kinds of people must be involved in the school activities. To implement this activity the teachers should make a drastic change in their attitude.



CONTACT DETAILS

SUWA, Seiji

Maiko High School
3-2 Manabigaoka Tarumi-ku Kobe, Japan

Tel: 81-78-783-5151
Fax: 81-78-783-5152
seijisuwa@yahoo.co.jp
ssuwa@hyogo-c.ed.jp
maiko-hs@hyogo-c.ed.jp

50 Challenge On Learning Activities For Sustainable Society In Nishinomiya, Japan

BACKGROUND

The city of Nishinomiya, with a population of approximately 450,000 and an area of 100.18 sq km, lies between Osaka and Kobe in the southeastern part of Hyogo Prefecture of Japan. This is a city where community and local businesses, especially Sake brewing industries, have once protested against the establishment of petroleum complexes and waterfront land reclamation schemes, because of conserving quality of water.

Influenced by increasing world-wide concern over environmental issues, Nishinomiya city launched a community-based environmental learning project with a focus on activities for children, "Earth Watching Club (EWC)," with civic volunteers by the initiative of Mr. Masayoshi Ogawa who has been a municipal employee of Nishinomiya City since 1992.

After the event of Great Hanshin-Awaji Earthquake in 1995, community-based environmental learning projects are now considered to be the effective tool for tackling not only environmental issues but also various issues such as accident, crime, disaster reduction and generation gap. At the same time, municipal budget for the project decreased, because of the earthquake. Therefore, in order to promote these projects more actively, the concepts of EWC were further reconstructed and saw the birth of a nonprofit membership organization, called "Learning and Ecological Activities Foundation for Children (LEAF)" 1998, which is based on partnership among citizens, businesses and the local government.

OBJECTIVES

LEAF aims to realize sustainable society by 1) cultivating "self-education ability", 2) promoting community-based environmental learning activities in local communities, 3) establishing partnership with various civic groups, private sectors and government agencies, and 4) disseminating its methods to public.

LEAF targets a wide range of citizens. In particular, LEAF tries to establish a system which enables people unconcerned with environmental issues to participate in the projects. It also tries to raise awareness of people in not only environmental issues, but also disaster management and community development through environmental learning activities.

ACTIVITIES

LEAF is conducting various programs with community-based environmental learning activities

in corporation with various stakeholders, including civic groups, schools, Nishinomiya city government, Japanese Ministry of the Environment, and the private sector.

Firstly, LEAF has been conducting a project, called "Eco-Cards" focusing on children. When children take part in any environmental activities, so-called "Eco-Actions," community members (1,500 Eco-Stamp holders) reward them with a special type of stamp, called "Eco-Stamps." Children are registered as Earth Rangers and receive resources for environmental activities when they collect 10 or more Eco-Stamps on the Eco-Cards project.

Secondly, LEAF expanded the Eco-Cards project and published a manual, titled "Safety and Ecological Activities Manual for Nishinomiya". People can learn geography, history, natural environment and lifestyle of Nishinomiya; find various problems through the manual. And then LEAF facilitates people discussing and tackling them. Additionally, in order to increase awareness of the manual, LEAF has held training seminars for teacher to explain children at school how to use the manual and for the elderly, playing an important role as "legacy tellers," to talk about natural environment and lifestyle in their childhood. Moreover, LEAF negotiated with schools in order to start offering special classes where students can learn environmental issues from the views of the "legacy tellers," and also learn the process of production and consumption from private sectors such as those of production companies and recycling manufactures.

Thirdly, LEAF has conducted the municipal Citizens' Nature Survey and the Citizens' Awareness Poll. It was only the city of Nishinomiya that conducted a survey on children's psychology on the Great Hanshin-Awaji Earthquake in 1995 by EWC, predecessor of LEAF. To disseminate the information of these projects, LEAF has been building a world-wide network of environmental learning activities for children, called "Chikyu Kids Environmental Network", and organized the Third Junior Eco-Club Asia-Pacific Conference.

Besides, LEAF has undertaken environmental projects and schemes commissioned by local governments, mainly Nishinomiya city, Ministry of the Environment, other NPOs and private sectors.

ACHIEVEMENTS

■ The number of collective memberships is 90, and individual membership is 181.

■ An average of 2,000 children are newly registered as Earth Rangers each year. In 2001, "Earth Rangers" were found in all schools in the city (42 municipal and 1 private).

■ Through Eco-Cards projects, not only children but also their parents have shown interest in

participation in environmental projects. To further implement this scheme, Eco-Cards for adult will be introduced in 2005.

■EWC in Nishinomiya has become the model of “Junior Eco-Clubs” by the Japanese Ministry of the Environment and has been publicized in a national level in Japan.

■LEAF contributed to the declaration of the City of Nishinomiya as an “Environmental Learning City” in 2003 and has supported promotion of their projects.

■LEAF was awarded the 5th Green Purchasing Award (Civic Group Category) for continuous community approach in promoting eco-friendly merchandise in 2002, and “Environment Grand Prix 2004 for Local Municipalities” by Japan Productivity Center for Socio-Economic Development in 2004 for the outstanding achievements in promoting community-based environmental activities.

LESSONS

LEAF has learned from the experience in EWC that in order to succeed environmental learning projects, it is necessary for various groups to participate in projects and middle organization to bridge each organization is necessary. In the LEAF's projects, LEAF has been playing the important role as a coordinator among various organizations such as schools, board of education, children groups, Parent-Teacher Associations, civic groups, local government, and private sectors and teachers so that they can mutually learn various issues.

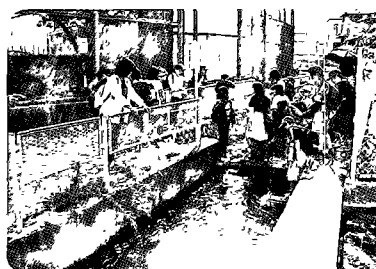
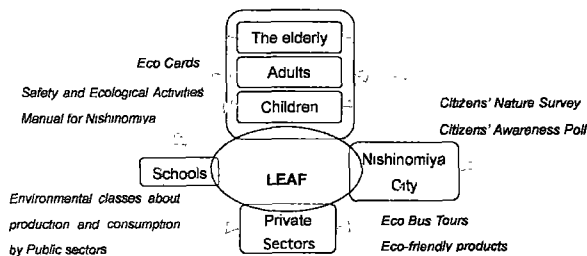
Moreover, in order to continue its implementation, LEAF believes that it is important to establish a sustainable framework where common citizens, especially those who are not particularly environmentally conscious, can participate with ease, and projects can motivate them to take civil movement in the future.

In addition, one of the big challenges in LEAF is how one can effectively manage and sustain such environmental learning activities. Often times, it is difficult to keep implementing NPO's projects, because of limited budget and human resource. In the case of LEAF, the director, Mr. Ogawa, thought that management skill was essential for sustainability of NPO. LEAF could successfully call for enough funds to operate projects through partnering with Nishinomiya city, Ministry of the Environment, private companies and NPOs, and also from membership fee of LEAF.

FUTURE

LEAF tries to incorporate the themes from environmental learning projects into city planning to further degrees. With support of

LEAF, Nishinomiya city plans to establish eco-communities that are organized in each junior high school zone where people discuss and create community plan through environmental learning activities.



CONTACT DETAILS

Learning and Ecological Activities Foundation for Children (LEAF)

3-40 Egami-cho, Nishinomiya City,
662-0855 Hyogo JAPAN

Tel: +81-798-35-3804
Fax +81-798-35-4208
kodomom@leaf.or.jp
<http://leaf.or.jp>

51

Establishment Of The Disaster Reduction And Human Renovation Institution (DRI)

BACKGROUND

Since the 1960s, Japan has made remarkable progress in disaster prevention, thanks mainly to governmental initiatives. Parallel with the contributions made by science and technology to economic growth, significant results were achieved in disaster prevention, in the area of meteorological disasters in particular, based on the thinking that challenges by nature can be overcome with science and technology. However, in the Great Hanshin-Awaji Earthquake of January the 17th, 1995, harsh realities were revealed: the limited capacity of the governmental sector, damage to building structures far beyond anticipation, and divergence between academic research and the real world. On the other hand, 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 had been a rare concept for Japan's traditional disaster prevention approach. With the Great Hanshin-Awaji Earthquake as a turning point, the paradigm of Japan's disaster reduction 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 established in April 2002.

OBJECTIVES

By transferring the experiences of the Great Hanshin-Awaji Earthquake and applying lessons learned from the earthquake, 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 its museum exhibits, DRI demonstrates to the public the importance of disaster reduction and the mutual dependence of all citizens. 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.

ACTIVITIES

■ **Exhibition using primary materials of the disaster:** In collaboration with disaster victims, local citizens, and volunteers, DRI exhibits live experiences and lessons learned from the Earthquake using AV facilities and 160 thousand primary materials provided from the victims. DRI already had 1.2million visitors from around the world, and the 40% are school generation who visit here as school educational programs.

■ **Action Research on Disaster Reduction:** Based on academic research and the experiences and lessons learned from the Earthquake, DRI seeks to understand and communicate important disaster reduction issues. DRI conducts action research that contributes to the formulation and implementation of policies and management actions. DRI is conducting a practical research on the countermeasures for coming mega disasters such as Tohankai-Nankai Earthquake with Tsunami disasters.

■ **Training of Disaster Management Practitioners:** DRI conducts training of local government practitioners who should play central roles in disaster management. DRI thus contributes to upgrading the emergency management capacity of local governments. DRI already finished 6 terms training courses with totally about 600 participants from local governments all around Japan.

■ **Development of Disaster Reduction Professionals:** DRI provides the opportunity for promising disaster reduction professionals to acquire knowledge of the Earthquake, obtain a high-level action research capability, develop a permanent interest in mitigating social vulnerability, and become capable of imagining various phases and dimensions of disasters.

DRI has 9 young professional researchers, who will be future leaders in disaster reduction, in various positions and perspectives.

■ **Headquarters Assistance in Disaster Response:** In the case of mega disasters, DRI dispatches experts with practical and systematic knowledge in disaster response to provide appropriate information and advice to headquarter managers, thereby contributing to damage mitigation and smooth recovery and reconstruction. DRI dispatched its researchers to Algeria (2003), Bam in Iran (2003-4), and recent Niigata Chuetsu Earthquake in Japan to

make proactive and effective advisory support to the head quarters of disaster countermeasure.

■ **Networking:** DRI functions as a crossroad of government practitioners, researchers, citizens and business enterprises that are related to the Earthquake and disaster reduction. It provides a venue for encounters of various disciplines and people, as well as for domestic and international cooperation, so as to promote diverse initiatives for mitigating social vulnerability.

DRI established the Disaster Reduction Alliance (DRA) with 13 international disaster related organizations in Kobe, and DRA co-organizes the WCDR thematic session with UNESCO at the cluster 3.

LESSONS

DRI's museum function for citizens especially for young generation turned out to be very practical and effective educational facility for future disaster reduction, which is essential for sustainable development and human security.

FUTURE

Taking the opportunity of the WCDR, 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



CONTACT DETAILS

Masahiko MURATA
Project Manager
The Great Hanshin-Awaji Earthquake
Memorial
Disaster Reduction and Human
Renovation Institution (DRI)

Tel : +81-78-262-5067
Fax: +81-78-262-5082
muratam@dri.ne.jp
<http://www.dri.ne.jp/>

52

Impact On Household Level Of Cash Distribution To Herders In Zavkhan Aimag, Mongolia

BACKGROUND

In winter 1999-2000 the first of three subsequent severe Dzuds, dry summer followed by snow-rich and harsh winters, hit a large part of Mongolia diminishing the Mongolian livestock by one third over the three years. The Swiss Agency for Development and Cooperation (SDC) started to provide humanitarian assistance in 2000, responding to a UN emergency appeal. In the autumns of 2002 and in 2003, SDC implemented 'cash projects' in Gobi-Altai and Zavkhan aimag (province), respectively.

OBJECTIVES

The objective of the project was to assist those herders, that had lost all or the majority of their animals, with MNT 200,000, so that they could prepare themselves for winter, freely spending the money on the items that they felt most needed. Beneficiary lists were prepared based on the statistical data of the aimag and soum administrations and partly verified with bagh governors. The money was handed out by the Khan Bank branch offices, which exist in all soums (province or aimag is divided into soums) according to the approved and publicized lists of beneficiaries.

ACHIEVEMENTS

In Gobi-Altai 2100, and in Zavkhan, 2400 herders benefited from the project. A year after the distribution of the cash in Zavkhan, an external review of the impact on the households was conducted.

LESSONS

■ **Timing:** The cash distribution of the SDC was implemented in October 2003. Most beneficiaries used the cash to re-stock their

herd flocks. However, they express that spring time was a suitable for them to buy animals when they are less expensive for re-stocking.

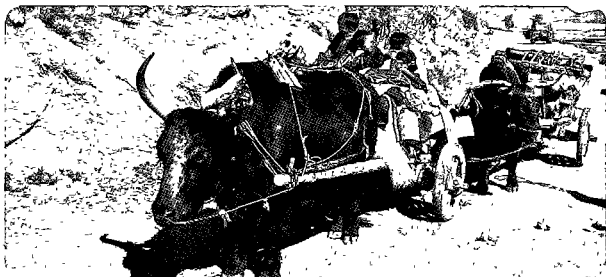
■ **Local capacity building:** Local leaders had the role of helpers, not partners. Local knowledge and experience of the administration might have increased the effectiveness and efficiency of the programme significantly. The bagh leaders for instance acted as advisors to many people as to how to spend the money received. It would have been worthwhile to conduct soum and/ or aimag based workshops with bagh and soum leaders facilitating and exchange among them as to how people can spend the money effectively and to help the local leaders reflecting their own role. If the training was conducted for the local leaders for a day or two to facilitate them for the program implementation, it would have given them a higher sense of ownership of the program rather than seeing help from external organizations. They should have been included in decision making.

■ **Focus on community rather than individual:** The project provided almost exclusive support to individual families and not to herder groups or 'communities'. Mongolian society is strong 'community' orientated and it would have been interesting to see the impact of the project if some funds had been provided to communities for community-run projects. These projects could have been for improving preparedness for dzuds (community fodder preparation, irrigation, etc). A revolving fund managed by a soum was mentioned as another option. Alternatively, the thought was expressed that those families that did benefit from the schemes should have contributed something back to the community.

Some analysts insist that the greater impact of the dzud in 2001-2002 than previous climatic events was directly related to the collapse of prevention and preparedness measures (well repair and maintenance; fodder storage, collective responsibility for winter shelter repair and the organised hunting of wolves) which have all virtually ceased since the dissolution of the negdels (collectives) in the early 1990s.

FUTURE

- It is recommended to select most suitable timeframe for future interventions.
- Local leaders should be included as partners rather than helpers.
- For future actions, it is recommended to focus on community preparedness activities to prevent from future disaster.



CONTACT DETAILS

Ms. Soyolmaa Dolgor

Public Relations Officer, Swiss
Cooperation Office, P.O Box -14
Ulaanbaatar 51 Mongolia
Tel: + 976 11 461664
Fax: + 976 11 461663
soyolmaa@sdc.mn

Participatory Disaster Management Planning As An Educational Process: An Example From Kathmandu, Nepal

BACKGROUND

Kathmandu Valley consists of 5 municipalities (Kathmandu, Lalitpur, Bakhtapur, Madhyapur-Thimi, Kirtipur) and approximately 100 Village District Committees (VDCs), and is the exclusive center of politics, and economy of Nepal. The population of the Valley is more or less 1.4 million in the area of 668km², in some city core area, population density amounts to more than 1,000 persons/ha. The population within the 5 municipalities is 870 thousand and its area is around 100km². On the other hand, for the 100 VDCs, the population is 520 thousand with area of 567km².

Kathmandu Valley has suffered a number of historical earthquakes. In 1934, strong earthquake hit the Valley, causing significant loss to lives and properties. It is said that this earthquake has a recurrent period of seventy years which points that a big earthquake hit the Valley at any time. The Valley was also affected by 1988 earthquake, which suggests that the Valley is a high hazard prone area. In the next 30 years, the population is estimated to become double to 3 million. Unplanned urban growth, along with new building constructions has become prominent recently, and aggravated earthquake vulnerabilities. Thus, earthquake risks of the Valley need urgent attention.

OBJECTIVES

As a part of the JICA (Japan International Cooperation Agency) funded project, the overall goal of the study was to formulate a holistic disaster management plan. In order to achieve this goal, the pilot study was designed aiming to get the feedbacks from the actual community activities. Three pilot areas of different characteristics were selected by examining the results. High vulnerability areas with high injuries and casualties, most of which locates in the city core areas, are regarded to be the most needed for taking prompt actions in this pilot study.

ACTIVITIES

■ **“Learn”**: In the “Learn” process, knowledge of the science and technology, such as earthquake

mechanisms, damage estimation, and building vulnerability is disseminated by the initiatives of municipalities. At the same time indigenous knowledge such as personal earthquake experience of 1934 or/and 1988, past earthquake damages in the area, roles and functions of the local communities, and CBO activities are introduced by the local residents.

■ **“Think & Plan”**: In the second “Think & Plan” process, hazards and resources are visualized and necessary countermeasures are planned. *“Community Watching”*, a walking tour of a community to identify hazards and resources along the designated route in small groups with experts such as a structural engineer, an urban planner etc, is an useful tool to know the earthquake risks of neighborhoods. During the tour, participants check evacuation routes, open space, water resources, public facilities, building vulnerabilities, and hazardous objects, carrying a map and taking photos. Based on this experience, DIG (*Disaster Imagination Game*) workshops were conducted. DIG is a map maneuver exercise on a bigger scale map, (at least 1/10,000 maps are recommended to be used) to mark hazards, resources, roads, bridges, public facilities, and plan countermeasures using the maps, assuming various situations. For more relaxed atmosphere, a *Participatory Learning and Action* (PLA) is useful for children and rural illiterate groups to substitute for DIG.

After the series of workshops and discussion, certain consensus among the community were developed and a disaster management map for the community was produced using local materials, different colors of Tikka stickers, ladies’ cosmetics. The PLA methods are also useful to Disaster Management and the map produced by their own hands and materials creates a sense of pride and ownership of protecting your neighborhood by yourself.



■ **“Action”:** “Action” process is to acquire direct experience and training. Getting a first hand experience is vivid and appealing. During the pilot project, most people were concerned about the two points; one is whether their houses are earthquake-resistant or not, and the other is how to react to earthquakes. These two points are basic questions of how to survive in earthquakes. The *earthquake drill* provides practical experience how to react in the real situation. The drill is to train safe evacuation process and procedures in the earthquakes, and impart *first aid* and rescue knowledge. The earthquake drills were done with collaboration of the police, Nepal Red Cross Society, schools, clinics.

■ **Reinforcing Linkages** between the Community and Public Authorities is essential to enhance communication and understanding on risk and mitigation issues

■ **Key issues** for Community-based Disaster Management activities are the roles of community-based organizations (CBOs) and public administration enforcement

■ **Disaster Management** gives practical survival knowledge

■ **Children** are the most perceptive target groups, and through the educational process, they can create ripple effect to their families

■ **Networks** have been developing through pilot activities. It is important to keep the momentum, and expand it.

ACHIEVEMENTS

Following were the major outcome of the Study:

■ **Local government** is expanding DIG to other wards

■ **Disaster Management Committee** was established in the ward 20 during pilot activities,

■ **CBO initiative** area is continuing disaster mitigation effort and

■ **Municipal level Institutional Framework** is proposed

During the pilot activities, a Municipal Disaster Management Framework was proposed. This framework aims to strengthen the chain of command and communications among local city government, wards, CBOs and citizens. A Disaster Management Committee, directly under the Mayor, manages, leads and authorizes all the disaster management activities.

The pilot study has also encouraged Kathmandu Metropolitan City (KMC) to formulate 4 technical working groups; Awareness Raising, Building Improvement, Rescue Activities, and Information Networking, to assist in the Disaster Management Committee and to suggest and research technical matters. Outside experts are suggested to be included. The KMC is trying to promote the enhancement of its Disaster management section to a department with increased employees.

FUTURE

Based on the current experiences, it can be concluded that to enhance the community initiative in disaster mitigation, following are the major points, which need special attention in future:

■ **Balance Best Mix:** Roles and responsibilities for different stakeholders and sector

■ **Emphasis on Participatory Planning Process:** Through involvement of communities and people

■ **Focus on Total Institutional Mechanism:** To synthesize community based planning processes

■ **Importance of Social Issues:** To develop social index representing social issues in the neighborhoods



CONTACT DETAILS

Tomoko SHAW

Technical Division, OYO International Corporation
6 Rokubancho, Chiyoda-ku, Tokyo 102-0085, Japan
TEL: +81-3-5211-5181
FAX: +81-3-5211-5184
E-mail: shaw@oyointer.com

Fumio KANEKO

Technical Center, OYO Corporation
2-61-5 Torochi, Kita-ku, Saitama-shi, Saitama 331-8688, Japan
TEL: +81-48-667-9141
FAX: +81-48-667-9275
E-mail: kaneko-fumio@oyonet.oyo.co.jp

LESSONS

Mobilizing Community Based Organizations is the key to the success of the participatory planning

54

The Gadap Rain Storm Assistance Project And Gulu : A Disabled Person Struggled For His Family Development

BACKGROUND

A heavy rainstorm on February 18, 2003 stuck Gadap and destroyed the whole area badly. Gadap is 54-kilometer northwest direction from Karachi, Pakistan with the population of 32,000. The people of Gadap are very poor and leading a miserable life. The community consists of daily wage earners; agricultural laborers and poultry farm workers. Women are generally engaged in domestic chores like fetching water, collecting fire wood, and cooking. The heavy rainstorm in 2003 threw Gadap community into a position where they had no shelter, food and medicine. Seven people died at spot and more than hundred were injured badly. Gulu was identified by Church World Service-Pakistan/Afghanistan in Gadap as the most affected person by the rainstorm.

OBJECTIVES

The main goal for the implementation of the Gadap heavy rainstorm assistance project was to provide food and non-food items to the victims of this disaster. The objectives of the project were as follows:

- Assist families in returning to their normal life conditions,
- To assist most vulnerable women and children victims of the rain storm,
- To protect 200 most affected families with food and shelter.

ACTIVITIES

Major activities undertaken after the disaster included situational analysis, identification and listing of the deserving beneficiaries, purchasing and transportation of relief items and coordination with Non-Governmental Organizations (NGOs), Community Based Organizations (CBOs) and Government of Pakistan (GoP) for quick delivery of services and to avoid duplication of relief.

ACHIEVEMENTS

The implementation of the project brought a positive impact on the lives of the Gadap

community. The poor and affected families had received Church World Service-Pakistan/Afghanistan assistance package within twenty-four hours at the time of need. Food and non-food items helped them in their survival. The communities of Gadap in the post disaster phase acted positively in rebuilding their houses and in changing their lives.

LESSONS

Local CBO is very effective in implementation of the project on account of their familiarity with the area. Due to timely response, during an emergency, the communities returned to normal lives. Coordination with all actors during disasters has also good impact of sharing information and services to the communities. Community participation does not merely imply involvement of communities in NGOs activities, rather it means facilitating the local capacity-building process to enhance the ability of communities to take decisions when NGOs left the area. In case of the Gadap relief assistance, the local people participated in the process of house reconstruction. Therefore, community's own initiatives in pre and post disaster crisis could be supported as much as possible by local CBOs.

FUTURE

In any disaster, the first people on the picture are the local communities, possibly as victims, but certainly as energetic participants in pre and post disaster situations. The community of Gadap in post phase disaster immediately took initiatives in utilizing the materials in a proper way. Twenty (20) bags of cement to each family provided by CWS-P/A were effectively used in house reconstruction. The community in Gadap arranged sand, local raw materials and completed their house within three months. Undoubtedly, shelter provision is seen as the primary need for a disaster stricken community and, as such, is one of the major spheres of NGO activity in post-disaster situations. This means that NGOs have to be aware of local skills and capacities and help them to adapt these changing needs, rather than totally opposing them.

Gulu's Life Sketch and Struggle

Gulu, 35 years old disabled person is struggling through his life for earning bread for himself and his blind mother. The 2003 heavy rainstorm destroyed his house. Gulu said, "I have suffered tragically. Disaster and subsequent nights without shelter and food were horrible for us". He continued, "My life is full of tragedies. My mother Zubaida is blind and my father is dead" Gulu's mother said that Gulu was not born paralyzed. He could walk easily in his childhood. In the age of six, he was attacked by a severe fever, which made him disabled. A village doctor (quack) could not diagnose his disease accurately and thus the case went wrong. Later a qualified doctor advised to continue the treatment of Gulu for at least two years. Gulu's father could not afford to continue the treatment after two months because of financial burden. Ultimately he became paralyzed.

Briefing on the rainstorm, he said, "I was not injured, and saved luckily". He mentioned "As a lame man in the community I could do nothing during this disaster. Helping others was not easy for me, even protecting myself and my blind mother was impossible." To him it was a miracle that he and his blind mothers saved in the storm. It was about six years ago Gulu worked as donkey cart driver but that being a hard job, he could not do it properly because of his disability, but he was determined for survival in some way or other. After certain period of time, he managed to find some work in a shop. He was considered and permitted for a sedentary job in the shop. There he was working all day but getting only Rs.20 per day. Gulu said grimly, "This money was not at all enough to meet the cost of our daily food even". It was only three years before that he started a small shop of his own with financial assistance from his brother, relatives and local people of his village. But his luck did not favor him. The rainstorm disaster destroyed his wooden shop and all the materials in the shop were washed away by the rain. He became vulnerable with great risk of survival.

In that difficult situation, CWS-P/A took care of Gulu. He was provided with cement to reconstruct his damaged house. In addition to that, considering his vulnerability and disability CWS-P/A also donated him a cycle wheel chair and a new wooden cabin. According to Gulu he is earning a profit of Rs. 50/60 per day from wooden cabin grocery shop. He works daily from morn till eve, with some break in the afternoon. The wheel chair is very much useful for him since he moves it from one place to another. Gulu now goes to Gadap town, which is 12 km away, three times a week to buy goods for his shop. Gulu is happy with his wheel chair and cabin shop and do feel himself a disabled. Now he is not dependent on others as he can earn his bread.

Gulu's activeness in his survival as a disabled person is much encouraging. No doubt his own confidence and enthusiasm of changing his life condition took him to this stage. Of course CWS-P/A assistance was there in reaching his goal. He is attaining his life's requirement slowly but peacefully. "We hope his dream will come out true", said an elder of the village.



CONTACT DETAILS

**Church World Service
Pakistan/Afghanistan**

**Regional Office- Pakistan &
Afghanistan**

House # 42-H
Dr.Mahmood Hussain Road,
Pakistan Employees Cooperative Housing
Society (P.E.C.H.S)
Block-6, Karachi
P.O.Box 20048
Tel: 0092-21-4390541-4
Fax: 0092-21-4390922

55 The Drought And The Sufferings Of Majnu

BACKGROUND

According to a survey report compiled by various agencies of Sindh government of Pakistan, during the first quarter of 2003 about 1.38 million people, belong to 2,863 villages and 256 Dehs of five districts of Sindh have been badly affected by the prolonged drought. In view of continuing drought and famine for the last four years in Sindh, particularly in the district of Tharparkar and Mirpurkhas, the economic conditions of the majority of the people are totally paralyzed.

Church World Service-Pakistan /Afghanistan implemented a drought assistance project in Mirpurkhas and Tharparkar districts in June 2003. The assistance provided included food for the affected families, fodder for the livestock, and seeds for the farmers.

OBJECTIVES

The main goal of the project was to assist 1,500 drought affected families with food packages and fodder for their livestock and 1,300 families with seed for the production of Guwar and Bajra.

The main objectives of the project included:

- Assist most vulnerable 1, 500 families with food and fodder for their animals.
- Provision of fodder for livestock.
- Assist 1,300 families with seeds.
- Prevent migration to other rural and urban areas.

ACTIVITIES

Primary assessment of the drought affected areas, selection of partners, selection of beneficiaries, identification of the distribution points, arrangements of supplies through quotations, transportation and distribution of relief items and coordination with relevant organization were the main activities during the project implementation.

ACHIEVEMENTS

The conditions of the people changed with the availability of food and fodder for their animals. Children and women benefited more because they were the major victims of the drought. Out of 1,300, 975 farmers produced good quality crops with the provided seeds. This saved them from taking loan. The crops of the remaining farmers were severely affected by the rainfall. The provision of seeds saved the farmers from taking loan.

LESSONS

People generally migrate from the worst drought hit areas to other areas in search of livelihood opportunities and to protect their animals. If food for their families and fodder for their animals are provided in their areas then they would not prefer migration. Migration may takes days and months to reach to other places. After reaching their desired areas they try to find work, in many cases with low wages. Moreover as the work in the agricultural land stop due to drought the labour force faced difficulties in survival. In this case, the creation of some alternative job opportunities would reduce the problems of drought-affected communities.

FUTURE

Livestock are the major earning source of livelihood for the farmers in rural Tharparkar, which is an arid zone. During drought many animals die because of non-availability of fodder. An alternate arrangement for fodder to save animals is very important. Due to drought and no rainfall the crops are dried and the farmers have suffered terribly. Similarly all arid zones suffer from rapid depletion of ground water, so food, fodder and drinking water are the most essential items needed for vulnerable communities.

MAJNU'S LAND AND CROPS

Majnu Panol, lives in a village called Sonalboh in Islamkot of Mithi district. Majnu was a beneficiary in the drought assistance project of Church World Service-Pakistan/ Afghanistan. The impact of drought was worst in Sonalboh and surrounding villages. CWS-P/A provided 20 kg seeds of Guwar and 20 kg seeds of Baira in 46village in Islamkot and Sonalboh under its drought assistance project. Majnu is from a Hindu community and belong to Maghwer cast. All of his children are married but live with their parents in the joint family system. Majnu says, "The drought over the years has made my life miserable." He continued grimly, "In the past, our condition was not like this, we lived a better life. The drought has destroyed our crops and perished livestock. At present we have only four goats and two cows."

According to him during drought food and fodder for animals were the great problems for the community and often people survive with little food and in some cases without food. He continued, "The relief materials containing food package for us and fodder for our animals were very helpful for us in these days of severe crisis. We were able to survive at least for 2 months because of that assistance."

The selection of beneficiary families was made by PVDP, LSRDA and the village organizations based on the criteria prepared by CWS-P/A in consultation with the implementing partners. The list was later checked and verified by the staff of DRP. It was reported that the overall selection was satisfactory. Later the list of beneficiaries who received relief goods was sent to CWS-P/A by PVDP and LSRDA with signature/thumb impression.

He added then "I went to Sonalboh center and received 20 kg seed of Bajra and 20 kg seed of Guwar. I sowed the seeds and after four months the crops were harvested." He has harvested about 10 mound of Guwar and 5 mound of Bajra. At that time the price of Bajra was Rs.280 per mound and price of Guwar is 380 per mound in the local market. Family members used Bajara as food and Gawar was used for animals' fodder. Majnu happily added that now he has enough seeds to be used for next year's production.

Majnu says, "Finding work is a great problem in Sonalboh as there is no rain, there is no work in the agricultural land. "We are suffering."



CONTACT DETAILS

**Church World Service
Pakistan/Afghanistan**

**Regional Office- Pakistan &
Afghanistan**

House # 42-H
Dr.Mahmood Hussain Road,
Pakistan Employees Cooperative Housing
Society (P.E.C.H.S)
Block-6, Karachi
P.O.Box 20048
Tel: 0092-21-4390541-4
Fax: 0092-21-4390922

56 A Widow's Torment For Survival

BACKGROUND

In July 2003, the heavy rain in Sindh province caused floods that destroyed hundred of villages, displaced thousands of people and perished large number of livestock. Taulka Kaloie of Tharparkar district and Taulka Pangrio of district Badin were recorded the most affected areas. Due to this disaster, the local people migrated to the sand dunes of Taulka Kaloie, Tharparkar district and took shelter over there for two months.

Church World Service-Pakistan/Afghanistan (CWS-P/A), with the help of its partner organization Lower Sindh Rural Development Association (LSRDA), provided relief items including food items and temporary shelter (tents) within twenty-four hours of emergency to the most affected families in these districts. Though the assistance was not enough to compensate the loss but it helped in reducing their miseries. After two months of the disaster, the communities returned to their villages, but their mud houses were completely washed away and they had no resources to rebuild them. To realize this need, CWS-P/A implemented a "House Reconstruction Program in districts Badin and Tharparkar" to address the basic shelter needs of the IDPs, returnees and most affected people, who were living in open places and in tents. The implementation of this project was made possible through funding from Action by Churches Together (ACT), Geneva.

OBJECTIVES

The goal of this project is to rehabilitate 100 floods affected families whose houses were completely destroyed.

The objectives were:

- To assist resettlement of 100 most vulnerable families in Badin and Tharparkar districts of Sindh, with housing material in order to build their homes.
- Provide safe and secure shelters.
- Provide protection from the harsh environment to the most effected families.
- Improve the economic situation of beneficiaries.

ACTIVITIES

After conducting a detailed assessment of the area CWS- P/A provided essential shelter materials to the 100 selected families to reconstruct their houses, and lavatories (one lavatory for two families). To complete this project CWS-P/A formed groups of local community members to monitor the construction process. Coordination and networking with other NGOs and local authority were maintained at all stages.

ACHIEVEMENTS

Under this project, 100 houses including foundation and pillar houses and 50 lavatories have been constructed for the most flood-affected families in Tharparkar and Badin districts of Sindh. These 50 lavatories were constructed for hundred families (one lavatory for two families). The boundary walls of these lavatories were made of wood can be easily movable a period of time when pit of lavatories required changes. For proper implementation project is divided into four phases.

LESSONS

The project reveals that the time factor is very important in providing immediate relief services to the affected communities. If your assistance reaches the communities when someone else has already helped them, it will loose its value. Networking and coordination is also very important as you can avoid duplication of work and can divide the whole area for a better coverage to selected communities. The packages can also be made standardized so that the whole community receives the same type of assistance without any discrimination. During relief operations, assessing to the affected population is one of the biggest challenges an aid agency can face due to the damaged infrastructure and security issues in the area.

FUTURE

For future relief assistance, CWS-P/A has pre-positioned relief items, consequently in times of emergency relief assistance will be provided to the affected communities within the first twenty-four hours or even earlier. Disaster Preparedness is completely ignored and missing in disaster management programs, which intensify the impact of disaster. CWS-P/A has taken the initiative to train communities regarding Disaster Preparedness. In this regard, schoolteachers in Mansehra and Battagram Districts of NEFP, Pakistan are being trained in disaster preparedness to communicate this knowledge particularly to children and other members of their communities.

WIDOW'S TORMENT

"Rain and flood made us homeless", said 55 years old widow Raj Baie. Raj Baie's husband died 18 years ago and she lives with her son and daughter in Village Jumo Khaskheli. She took loan from landlord to cultivate their land but the rain and flood destroyed their crop as well. Her son works as a daily wages labor. They belong to the poor segment of their village and do not have enough resources to rehabilitate themselves. She expressed her thanks to CWS-P/A and LSRDA for their help in rebuilding her house.

"We have never seen that type of rain before. Only in two days our mud houses washed away and the whole area came under water. It was very difficult to reach at safer place; roads and streets were under water. Thanks God, Who helped us to reach to sand dunes, where some NGOs helped and provided us tents. After two months, when the water seeped down, we returned to our village, but there was nothing left. Flood has destroyed every thing. I was worried about paying back the loan which I have taken from the landlord of my village to cultivate the crop, but the flood has destroyed every thing including crop" she said.

Raj Bai was assisted through House Reconstruction Project implemented by CWS-P/A and got material for building a new house. Her son and fellow villagers helped her to complete the house. Raj Bai now lives in her own house where she feel secure and confident and pray for those who helped her through this most difficult time of her life.



CONTACT DETAILS

**Church World Service
Pakistan/Afghanistan**

**Regional Office- Pakistan &
Afghanistan**

House # 42-H
Dr.Mahmood Hussain Road,
Pakistan Employees Cooperative Housing
Society (P.E.C.H.S)
Block-6, Karachi
P.O.Box 20048
Tel: 0092-21-4390541-4
Fax: 0092-21-4390922

57

Disaster Preparedness Trainings For School Teachers In Mansehra And Battagram Districts In Pakistan

BACKGROUND

The impacts of disasters in the NWFP (North West Frontier Province) are most severely felt in rural communities, where damage or loss due to natural or human made calamity may have long lasting negative impacts on people's livelihoods. Faced since centuries with re-occurring disasters such as Earthquake, Flash floods, Lightning etc, however, the rural population has developed mechanisms to cope with disasters. Many of these mechanisms are rooted in the local cultures and traditions and are well adapted to the local environment.

In this regard, CWS-P/A with financial help of World Vision International, have started a teachers' training program, which has a target to train 1,000 teachers from government and private schools in Mansehra and Battagram districts of NWFP, Pakistan. The participatory research on indigenous coping mechanism is also being conducted in these two districts.

OBJECTIVES

The goal of the project was to train 1,000 teachers on disaster preparedness and to conduct research on indigenous coping mechanism of the selected communities. The objectives were:

- To create awareness and preparedness among the schoolteachers of different schools in Mansehra and Battagram in NWFP of Pakistan.
- Develop and test an approach to gather information on the local disaster risk situation in rural communities in the Mansehra and Battagram districts and to examine how the rural population copes with these disasters.

ACTIVITIES

These trainings are being conducted to create awareness and preparedness among school teachers about different disasters in this region and how they can prevent themselves by adopting different coping mechanism. These trainings have developed and enhanced knowledge on preventive measures for Earthquake, Heavy Rain, Land Sliding, Flash Floods and Fire. The trainings are also focused

on how these disaster preparedness measures can be included in schools' syllabus. In this regard, along with trainings at different locations, aid kits, booklet on disaster preventive measures, training manual, different gifts including health items and honorarium of 500 Pak rupees are being distributed among participants.

ACHIEVEMENTS

12 disaster preparedness trainings have been conducted so far now in Mansehra and Battagram districts of NWFP, Pakistan in which 552 schoolteachers are trained including 278 males and 274 females teachers. Beside this the following items have also been distributed among participants.

■ 449 aid kits, included stretchers, blankets and first aid boxes and first aid booklets. Beside this the following items have also been distributed among participants

■ 552 booklets of 'Disaster Preventive Measures' prepared and designed by CWS-P/A.

■ 552 teachers training manuals (TOT) prepared and designed by CWS-P/A.

■ Participants have also been given training certificates at the end of each training.

■ Some health items included comb, toothbrushes, nail filers etc were distributed as gifts.

■ Honorarium of 500 Pak rupees to every participant.

The Research on 'Indigenous Coping Mechanism in Mansehra and Battagram Districts, NWFP', under this project is going on and field research has been completed in first three villages, according to the defined plan.

LESSONS

The project reveals that the Disaster Preparedness is completely ignored and missing in disaster management programs, which intensify the impact of disaster. CWS-P/A has taken the initiative to train communities regarding Disaster Preparedness. In this regard, schoolteachers in Mansehra and Battagram Districts of NWFP, Pakistan are being trained in disaster preparedness to communicate this

knowledge particularly to children and other members of their communities. During relief operations, assessing to the affected population is one of the biggest challenges an aid agency can face problems due to the damaged infrastructure and security issues in the area. CWS-P/A believes that if the communities have prior knowledge on disaster they can prevent themselves from maximum damaged.

FUTURE

The project is indicative of the fact that if the communities of the disaster prone areas should trained in disaster preparedness, so the intensity and the damaged caused by these disaster can be reduced. The need is to develop and implement awareness raising and capacity building programs in the disaster affected and disaster prone communities to better combat with natural disasters. The teachers are also of the opinion that these trainings should also be conducted in different other disaster prone areas of Pakistan.

A TEACHER'S VIEW

Ms. Zubaida, a private school teacher, is of the opinion that these types of trainings should be continued especially in the remote and rural areas of disaster-affected areas.

"We were unaware of our problems and thought that these disaster are part of our life, but now our concepts are changed because of these trainings. Now we can reduce the disaster impact by adopting some small and easily manageable techniques in pre and post disaster situations. This information should also be added in the school text.



CONTACT DETAILS

Church World Service
Pakistan/Afghanistan

Regional Office- Pakistan &
Afghanistan

House # 42-H
Dr.Mahmood Hussain Road,
Pakistan Employees Cooperative Housing
Society (P.E.C.H.S)
Block-6, Karachi
P.O.Box: 20048
Tel: 0092-21-4390541-4
Fax: 0092-21-4390922

A Comprehensive Approach For Higher Disaster Coping Capacity: The Case Of Dohli, Punjab, Pakistan

BACKGROUND

The project area, although it is located in arid region, has been prone to flood disasters. Floods taken place in the catchments areas of tributaries seriously erode scarce farmland on the small valley terraces and transport quantity of sediments, which had been rising the riverbed of the Indus and make the riverine areas of the Indus flood-prone.

The major reason of vulnerabilities to flood are, firstly, rainfall with high intensity, secondly, extremely poor vegetation cover due to overgrazing and thirdly poor range management. The root cause of vulnerabilities is deprivation of natural resources due to chronic poverty. Poverty results in further deprivation of land resources and finally gunfights, which require several lives annually. A project must be needed to break the vicious cycle of poverty, environmental degradation and further poverty. Flood disasters accelerate the rotation of vicious cycle.

OBJECTIVES

In order to break the vicious cycle, the people living in the target area are expected to create economic surplus to be used for investments for flood disaster prevention

ACTIVITIES

The project area is located in the tribal area in which sovereignty of the central government is not fully exercised because of historical reason and associated distrust between the tribal community and the central government. The project was therefore implemented taking the following steps:

- Explanation of the project objectives,
- Promotion of mutual trust among the parties concerned,
- Infrastructure building,
- Awareness promotion to the project,
- Group organization,
- Group discussion on the strategy and program, training and field trip,
- Project implementation,

- Accounting and saving, and
- Further implementation.

ACHIEVEMENTS

The project started by providing villagers with a vermifuge to remove round-worms from their cattle, free of charge. Vermifuge has had a dramatic effect in improving health of cattle and resulted in more effective foraging. Cattle prices rose in the village and, as a result, income began to increase.

The project distributed seedlings of cotton and vegetables, young fruit plants, fertilizer, pesticide and many other agriculture resources on a strictly cost sharing basis at fifty-fifty.

Savings, economic surplus in another word, have thereby increased. The villagers decided that a small amount of savings should be spent on an embankment to fight against riverbank erosion.

The villagers grew confident in their capacity and anticipated that the project areas would be expanded and project duration extended. Leaders of neighboring villages organized a meeting with the staff of Japan International Cooperation Agency (JICA) in Dholi and requested the expansion of the project area beyond the boundary of the original villages. Nobody carried gun and bullets on their shoulders and village elders reported that, to the best of their recollection, it was the first time men had crossed the village boundaries without carrying gun.

A range management project aiming at disaster mitigation and preparedness had successfully resulted in disarmament at the grass-root level, but the project was neither extended nor expanded because of nuclear weapons testing and missile tests launched by both Pakistan and India.

LESSONS

The principal policy of the equal sharing of all the costs except infrastructure could successfully promote the sense of ownership, though it required enormous efforts and patience to acquire their agreements.

As soon as people fully understood the project objectives, the sense of ownership was fairly well achieved. The villagers were too busy in planting and harvesting to purchase and carry guns and bullets. They gave up weapons because they had their own properties, which needed protection from disasters.

Peaceful environment is the most essential prerequisite to make a project for income generation and disaster prevention successful.

FUTURE

The objective of the project is not yet fully materialized yet. Although some amount of funds was saved, people do not know how to use them for flood disaster prevention because they do not have any indigenous technology to fight against flood. Transfer of technology and know-how for flood fighting and their institutionalization are the next steps. Know-how to prevent degradation of fertility of the farmland is also essential. The village master remarked at the wrap-up meeting that he realized, while joining the project, the importance of primary education and decided to send his grandsons to a boarding school which is located in the town 30 km away. Primary education and necessary facilities must be a priority project.



CONTACT DETAILS

Mr. Masayuki WATANABE

President, Institute for International
Development
Disaster Prevention and Peace Inc.
305-40, Ichinodai, Tsukuba, Ibaragi, Japan.

Tel/Fax : 029-837-0152
honestw@jt4.so-net.ne.jp

59 Palestine Red Crescent Society: Reducing Risk Through VCA

BACKGROUND

Reducing the impacts of disaster or conflict is impossible without knowing how vulnerable to those risks communities are and what capacities they have to cope. The International Federation has developed a community based tool to help National Societies measure risk, known as Vulnerability and Capacity Assessment (VCA).

In 1999-2000, the Palestine Red Crescent Society (PRCS) embarked on a 6-month VCA, which assessed communities' perceptions of the hazards most likely to occur, their needs and the resources available to prepare for and mitigate the impacts of these hazards - whether major disasters or daily challenges. To ensure broad collaboration, other agencies (ICRC, UNICEF, UNRWA and four Palestinian Authority ministries) were invited to become members of a steering committee, closely monitoring the way the assessment was carried out.

OBJECTIVES

The main objective of the initiative was to reduce the risk through use of VCA and associated tools. PRCS social workers formed 22 focus groups among target communities to draw out local perspectives on disaster. The 429 individuals who took part came from a comprehensive cross-section of Palestinian society, carefully gender-balanced. The assessment asked 113 children to draw their vision of disasters and ways in which they could be mitigated. Assessment highlighted many local capacities (e.g. potential volunteers, equipment, supplies, specialized staff) as well as a need for training in communities. The VCA exposed shortfalls in coordination between institutions and a lack of communication between communities and the authorities concerning hazard risks. Worse still, not a single ministry had put disaster preparedness on its agenda - other than to stockpile supplies in warehouses.

The hazards regarded as most likely to occur were: lack of water, 'events of a political nature', road accidents, open sewers, pollution, fires, earthquakes, poor health and epidemics.

The findings were published in August 2000. One month later, the Palestinian territories erupted into the second Intifada (uprising) against Israel. "Events of a political nature" became the top hazard, escalating into near-war. Since then, thousands have been killed or injured. The life of

Palestinians has been totally disrupted: as well as violence came the 'closure' of residential areas, job losses and a marked deterioration in public services. From the outset, the Palestine Red Crescent Society (PRCS) proved well-prepared - all the better for having just completed a comprehensive VCA.



ACTIVITIES

Inevitably, the Intifada modified the PRCS's priorities as well as accelerating the implementation of some of the VCA's recommendations. Given the major escalation of violence, the PRCS had to respond swiftly to the needs of the injured - who numbered around 20,000 during the first 18 months of the Intifada. Various measures, recommended by the VCA to improve PRCS's capacity to respond to crises, have been taken:

- Drafting of an emergency action plan, defining the respective roles for Red Crescent staff and volunteers, and partner agencies.
- Formation of a disaster management and coordination unit in Ramallah, to coordinate medical and food aid, water and sanitation, transport and fuel. It constantly evaluates capacities and vulnerabilities, manages volunteers and integrates roles within the organization.
- Formation of a new emergency medical system (EMS) - a focal point for health emergencies, covering evacuation, triage, treatment and transportation of the injured. A network of emergency operations centers has been set up in Nablus, Hebron and Gaza - to ensure the effectiveness of the EMS in the field. There are now 250 emergency medical technicians working in the EMS. The PRCS ambulance fleet has doubled to 105 vehicles.
- Opening of 16 new health stations in local communities, complete with staff trained in emergency and primary health care.
- Increasing local capacities to treat injuries on the spot - identified as critical by the VCA, since evacuating the injured during clashes is often frustrated by military roadblocks. This involves

the PRCS supplying medical kits (boxes of emergency supplies, including oxygen), setting up emergency rooms in PRCS health clinics and establishing communication with doctors in isolated communities.

■ Emergency committees have been set up in 21 isolated villages, comprising a teacher, a health professional, a member of the village council and a local Red Crescent employee. They hold the clinic keys and contact details of nearby medical staff. They intervene in emergencies, help assess the situation and inform the PRCS of food and medicine shortages.

■ Establishing a new database of Red Crescent volunteers, listing their skills and availability. This ensures that the right people can be rapidly deployed to deal with emergencies. A new campaign to recruit more volunteers has started.

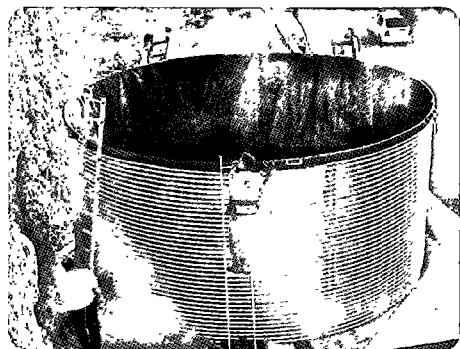
■ Volunteer training has been reorganized and includes six new areas of expertise: rapid damage assessment, emergency response unit backup, emergency medical services backup, camp management, water and sanitation, relief operations and administration backup. Over 400 volunteers have been trained in the past two years.

■ A 24-hour telephone hotline has been activated, acting as medical and psychological support for crisis-affected families, especially mothers and children.

■ A 50-bed field hospital has been created, capable of carrying out surgical operations.

■ Awareness campaigns promoting disaster preparedness and response have been carried out in schools and communities, through newspapers, brochures and TV spots.

■ Piloting of a rapid damage assessment surveillance tool, designed as an early warning system for public health crises in 134 communities where PRCS operates.



LESSONS

■ The VCA process enhanced understanding and cooperation between communities, government agencies and the PRCS. Duplication in crisis management has been reduced.

■ The principles of the VCA - in particular the ongoing need to employ and strengthen the

capacities of vulnerable communities - live on in the minds and decisions of PRCS staff.

■ Conducting a full, 6-month VCA process is expensive in time and money and entails considerable commitment from those involved.

■ The process would not have been possible without financial support from international organizations - including the International Federation, ICRC and UNICEF.

■ The process raised unrealistic expectations among vulnerable communities as to how much the PRCS is capable of achieving.

■ Implementation of the VCA's recommendations could have been better monitored - but the ongoing Intifada made this difficult.

■ Children could have been more involved in follow-up activities.

■ No concrete national disaster plan - a key aim of the VCA - has emerged.

CONCLUSION

Assessing the vulnerabilities and capacities of communities exposed to violence and disaster is a crucial first step in acting to reduce those risks. Partnership with communities, authorities and other organizations is a vital part of the VCA process, as it lays the foundations of trust and cooperation upon which future risk reduction plans and projects can be built. Involving vulnerable people in the VCA process helps to transform their mentality from seeing themselves as victims towards realizing their own potential to protect themselves from the consequences of conflict and disaster.



CONTACT DETAILS

The Palestine Red Crescent Society
Al Bireh
P.O. Box 3637
info@palestinercs.org
www.palestinercs.org

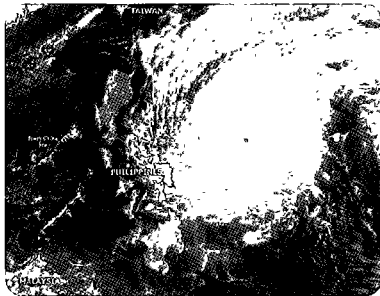
**International Federation of
Red Cross and Red Crescent Societies**
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org

60 Risk Reduction In Practice: A Philippines Case Study

BACKGROUND

In the past 20 years, disasters have killed over 31,000 and affected more than 60 million people in the Philippines. While volcanic eruptions and earthquakes occasionally strike, windstorms are the deadliest hazard.

During the 1980s and 1990s, nine massive typhoons lashed the archipelago, killing 13,000 people, affecting 51 million and costing US\$ 2.8 billion in damage alone. Public and non-governmental agencies, as well as the Philippines National Red Cross (PNRC), have traditionally provided relief to disaster-affected people. But since 1995, the PNRC has broadened its approach towards more proactive risk reduction. With support from the Danish Red Cross (DRC), PNRC initiated community-based disaster preparedness in five mountains, coastal and urban provinces.



OBJECTIVES

The community based disaster management activities were aimed to link to the overall development practices, covering different issues like health, education. The objectives of the initiative were to enhance the community resilience to disaster reduction through appropriate partnership with local government units.

ACTIVITIES

Much can be done - with relatively simple means - at the community level to reduce the impacts of natural disasters. The PNRC encourages people to collaborate in protecting their lives and the resources on which they depend. The approach is called integrated community disaster planning program (ICDPP) and employs six steps:

■ **Partnership with municipal and provincial government units:** This helps to root the preparedness concept in local planning, to gain technical and financial support for mitigation measures, and to ensure the program's long-

term sustainability.

■ **Community disaster action team formation and training:** The core of the program is the group of community volunteers (including fishermen, women, youth and businessmen) who are trained in vulnerability and capacity assessments, disaster management and information dissemination. They work with the community to prepare a disaster action plan.

■ **Risk and resources mapping:** This identifies the most important local hazards, who and what may be at risk, and which mitigation measures are possible. The maps are often employed as land use planning tools by local government units.



■ **Community mitigation measures:** Based on the disaster action plan, the community will initiate mitigation measures, which may be physical structures (e.g. seawalls, evacuation centers), health related measures (e.g. clean water supply) or planning tools (e.g. land use plans, evacuation plans). These measures are undertaken by community volunteers with support from the Red Cross and local government.

■ **Training and education:** This is integral to all steps of the program - both in training the disaster action teams and in disseminating information to the whole community.

■ **Sustainability:** Long-term impact can only be ensured by embedding the concept of community based disaster preparedness within local government units (LGUs). This means incorporating the recommendations of community disaster action plans into LGU land use planning and annual budgeting. Sustainability also implies regular update training of the disaster action teams.

ACHIEVEMENTS

■ The ICDPP project covers 75 rural communities in 16 municipalities across five provinces. A total of 105 mitigation projects have been completed, including seven sea walls in three provinces. From 1995-2000, the project directly benefited 154,700 people.

■ During 2000, a typhoon hit a project area on Limasawa island in Southern Leyte province. The community safely evacuated 300 people without injury or loss of life. Community disaster action teams – a new approach – have proved to be an important core element. Volunteer labor has been invaluable in helping to build mitigation structures.

■ Collaboration with local government units (LGUs) has been a prerequisite for the program's success and long-term viability. Many LGUs have incorporated community disaster action plans into their own development plans – resulting in projects such as: planting trees to prevent landslides, cleaning canals to prevent flooding, constructing flood control dykes.

LGUs have paid up to 75 per cent of the costs of these mitigation measures, as well as providing specialist equipment and technical design input.

■ Red Cross hazard mapping has helped to capture local knowledge of natural hazards and transfer this information to municipal planners for incorporation into land use planning.

■ Community-based disaster preparedness is helping strengthen the public system of disaster coordinating councils at municipal and village levels.

■ The program has given PNRC the evidence needed to lobby the national government to incorporate preparedness activities within their disaster response budget line.

■ Construction of physical mitigation structures by community volunteers has created a sense of solidarity among people that, together, they can reduce vulnerability to disasters.

■ Preparedness and mitigation have gained a higher profile within the PNRC's disaster management services, strengthening the organization's capacity to reduce disaster risk.



LESSONS

■ Mitigation is not just about natural disasters. Some measures are health-related (e.g. tap-stands to provide clean drinking water and reduce the risk of disease).

■ Capacity building of community disaster action teams must not be underestimated. Staff must clearly understand the causes, signs and effects of different risks. They must be trained in hazard mapping and skilled in community work.

Follow-up support is needed to keep disaster action teams busy and interested.

■ Persuading communities to prioritize long term disaster mitigation measures (e.g. dykes, evacuation centers) above more immediate concerns (e.g. upgrading already-safe drinking water supplies) can be difficult.

■ Continuous lobbying of local politicians is needed to ensure that community risk maps and disaster action plans are incorporated into public land use planning.

It is challenging to maintain Red Cross collaboration with local government units without establishing a political dependency that may collapse at the next election.

CONCLUSION

An integrated, community-based approach to disaster preparedness and mitigation has proved very popular and effective in reducing the vulnerability of thousands of Filipinos to both natural hazards and health risks. The success of the Red Cross program depends on collaboration with local government. This in turn helps the PNRC to advocate for stronger preparedness and mitigation measures to be incorporated in local public land use planning. Community-based disaster preparedness is only a supplement to – not a substitute for – regional and national disaster management. ICDPP is best suited for reducing the impact of small-scale local hazards, although elements of the approach can be adapted to alleviate the effects of larger disasters as well.



CONTACT DETAILS

The Philippines National Red Cross

P.O. Box 280 Manila 2803
icdpp@redcross.org.ph
Tel. +63 2 527 6227

Danish Red Cross regional office

danishRC@laopdr.com
Tel: + 856 2121 9559

Danish Red Cross headquarters

knf@drk.dk
Tel: +45 3535 9324

International Federation of Red Cross and Red Crescent Societies

P.O. Box 372 CH-1211 Geneva 19 Switzerland
secretariat@ifrc.org
www.ifrc.org

61 Training: As A Tool For Professional Development

BACKGROUND

Learning is a serious business as it relates to managing knowledge and its application. Each day is a venue for learning. Everyone is engaged in this activity knowingly or unknowingly. Aware of the importance of learning, specifically on disaster risk management, several directors of the Citizen's Disaster Response Center (CDRC), who left it in 1998 formed the Center for Disaster Preparedness (CDP) Philippines in early 1999. *CDRC was established in the Philippines in October 1984 as a response by cause oriented groups to the socio-economic and political crisis in the country and to the occurrence of natural and human sourced hazards. CDP was a brainchild of former members of the Board of CDRC for the purpose of providing consultancy and training services on disaster risk management. While CDRC concentrates on assisting its partner organization in rehabilitation and response, CDP will focus on organizing learning forums, training, conferences, partnership development and providing consultancy to various organizations, mostly outside of CDRC ambit.* The Center, even on its formative stage has been providing consultancy services to NGOs, government and international organizations. This is so because its leaders have a wealth of experience and knowledge gained from its previous organization, that specializes on community based disaster risk management. Meanwhile, the Asian Disaster Preparedness Center (ADPC), a well known resource center in Asia tapped CDP on one of its courses—the Community Based Disaster Management (CBDRM). The case, which will be discussed in this short paper is the blending of the knowledge between an Asia-wide center (ADPC) and a local national-based entity (CDP).

OBJECTIVES

The objective of this informal partnership from CDP's side is to advocate to the region-wide training center the knowledge and expertise developed from a local perspective. On ADPC's side, the objective is to tap people who have the theoretical grounding and practical experience on CBDRM.

ACTIVITIES

Since 1999, CDP has provided the following consultancy services:

- Reviewed CBDRM curriculum, designed and wrote the CBDRM participants workbook and trainers guide.
- Acted as resource persons during CBDRM courses and facilitated curriculum review
- Participated in various ADPC's CBDRM activities in Bangkok and in other Asian countries
- Acted as ADPC's evaluators on specific projects in India and Laos
- Organized and hosted ADPC's CBDRM activities in the Philippines.

ACHIEVEMENTS

The assistance of CDP on curriculum development of the CBDRM course is a major contribution to ADPC. Recognizing that the Philippines is relatively advanced in CBDRM practice, ADPC held its CBDRM-12 in the Philippines, with CDP as the organizer and main partner. More than 300 people from different parts of the world representing various organizations have been trained on CBDRM. Participants come from managerial and practical levels.

There were participants who were able to influence decision and policy makers on the validity and importance of CBDRM approaches. They championed the cause of CBDRM in their respective organizations. For example, Dr. Ian Wilderspin of the International Federation of the Red Cross (IFRC), who was an IFRC delegate stationed in Vietnam when he attended the course. He led in the promotion of CBDRM training and in the implementation of CBDRM projects in Vietnam. To date, through a pool of national Red Cross trainers, over 12,500 school teachers have been trained on disaster risk, who in turn are educating the school children on disaster risk reduction. Another example is Ms. Yuka Makino, who was a JICA expert when she attended the course. She is now promoting CBDRM to her current organization, the World Bank. One more example is Mr. Talmage Payne of Asia World Vision, who embraced the CBDRM approaches wholeheartedly and one of the supporters of CBDRM in his organization. More

and more participants continue to apply the tools learned from the course to their field of assignment.

LESSONS

■ Training is an effective tool for learning. Participants contribute significantly to the course improvement through their critique, feedback and evaluation.

■ Participants vary in experience, educational background and perspective. It is not easy to have a common understanding of concepts and terminology.

■ Sharing among participants is as important as interactive lectures.

■ A variety of techniques in adult education is essential to encourage learning. Field practice is always appreciated by the participants to test theoretical inputs.

■ Creativity and innovation are always to be expected from the participants. Trainers should know how to learn from

■ Communities should be the ultimate beneficiaries of the CBDRM course and therefore trainers and participants should never lose sight of this dictum.

FUTURE

■ Continue to update the course content, incorporating recent practices and innovations. This applies to any training course.

■ Tracing of the “career” development of selected people who attended the course, how they are able to impart the knowledge and skills learned from the course and to what extent they are able to influence policy and decision makers.

■ Documentation of selected cases undertaken as a result of the training.



CONTACT DETAILS

Zenaida G. Delica-Willison

zdelica@robzen.com,
zenaidawillison@yahoo.com

62 Capacity Building In Community Based Disaster Risk Management In The Philippines

BACKGROUND

Capacity building in disaster management is essential to initiate, sustain, mainstream, and replicate community based disaster management/disaster risk management (CBDM/CBDRM). Training and awareness raising activities are key interventions, which enable communities and stakeholders to participate in and sustain the CBDM/CBDRM activities.

Although the Philippines is generally recognized as having a head start in implementing community based disaster management/ community based disaster risk management (CBDM/ CBDRM), the actual reach and coverage of on-the-ground activities are still limited. Highlighting beneficial impacts, the First National Conference in Community Based Disaster Management in January 2003 called for the widespread replication of CBDM in communities in the Philippines. Organized by the National Disaster Coordinating Council-Office of Civil Defense, the National Defense College and the Philippine Disaster Management Forum, the Conference attended by 82 participants from 69 national and local government agencies, NGOs, community organizations and the academe underscored zero casualty due to community preparedness, enhanced community-local government-NGO coordination, efficient disaster response, optimum utilization of resources, and strengthened communities as key benefits of CBDRM.

OBJECTIVES

The objective was to enhance capacity building programs through training and education of vulnerable communities and groups, directly or through the local government units, which is considered as an essential element for the process of implementing CBDRM.

ACTIVITIES

■ Building Capacities of Local Government Units and Communities in Camiguin Province

The Center for Disaster Preparedness

Foundation Inc. (CDP) is a resource center that assists in capacity building in CBDRM. Having more experience in working with communities and NGOs, CDP now sees the need to support local government units in training in community based disaster preparedness and mitigation. Although NGOs are effective in advocating for, initiating and facilitating on-the-ground CBDRM activities, CDP recognizes that it is the role of the government to mainstream CBDRM and integrate disaster risk reduction in the development planning system and process.

The "Enhancing Capacities in Disaster Preparedness, Prevention and Rehabilitation Project" was undertaken by the 5 municipal and the provincial government of Camiguin from April 2002 - May 2003 together with the Canada-Philippine Local Government Support Program and CDP. Camiguin Province in the northern tip of Mindanao was devastated by Typhoon Nanang (international name Lingling) on November 7, 2001 leaving in its aftermath 152 dead (excluding those declared missing) and 146 injured. The associated flashflood, landslide and debris flow affected some 7,000 families and damage to settlements, agriculture and infrastructure was placed at Php 201 million.

To prevent another repeat of the Typhoon Nanang disaster, the project sought to enhance the level of knowledge, skills and attitude of the local government officers on the concept, process and tools of local and community based disaster preparedness and mitigation. The trained municipal and provincial officers (called Municipal Technical Working Group and Provincial Technical Working Group) were expected to assist one pilot barangay (village) in each of the 5 municipalities in CBDRM training.

ACHIEVEMENTS

Capacity building in CBDRM was initiated in at least one barangay per municipality - Barangay Hubangon of Mahinog, Barangay Baylao of Mambajao, Barangay Bonbon of Sagay, Barangay Looc of Catarman, and Barangay North Poblacion of Guinsiliban. Community risk assessment and counter disaster/disaster management planning workshops were undertaken in one pilot barangay in each of the

municipalities through the Technical Working Group supervised by CDP. At the barangay level, barangay officials, community organizations and residents participated in the capacity building activities. The 3-4 days community risk assessment (hazard vulnerability capacity assessment) workshop ended with a community validation, a visioning exercise of a developed community, and recommendations on necessary and do-able disaster preparedness and mitigation measures to undertake. The counter disaster planning workshops resulted in the reactivation and reorganization of the local disaster coordinating council/s and an action plan for flood level monitoring, early warning system, safe evacuation centers, and do-able mitigation measures.

Aside from training workshop, the project included a study tour of the local government officers to Legaspi, Albay and Guagua, Pampanga to share and learn with these local government units which are recognized as best practices in local and community level disaster management.

The Mahinog Municipal Technical Working Group was also able to replicate community disaster preparedness training in 3 other barangays (Barangays Tupsan Pequeno, San Isidro and Poblacion), Catarman in 2 other barangays (Barangays Tangaro and Compol), while Mambajao has assisted all its 14 barangays in emergency preparedness through the local branch of the Philippine National Red Cross in First Aid and Basic Life Support Training.

Among the 5 municipalities of Camiguin, Mahinog suffered the most damages during Typhoon Nanang. The Community Risk Assessment Workshop held in May 2002 in Barangay Hubangon by the Technical Working Group was well attended with 80 participants from the community. During the Disaster Preparedness Training held in July 2002, the barangay officials and community members realized that the flood water level does not rise all at once, and there is opportunity to give an early warning after typhoon and flood monitoring. Their newly designed early warning and evacuation system was put to an initial test during Typhoon Milenyo in August 2002. Continuous ringing of the church bells and sirens was understood by the community that they should evacuate to safety from flood waters in the Chapel and Mahinog National High School premises. The Barangay Hubangon Disaster Coordinating Council has been reconstituted and is composed of 135 members and volunteers.

LESSONS

■ Building the capacity in CBDRM through training of local government units, which are closest to the communities, should be undertaken to have sustainable disaster reduction as well as sustainable and equitable community development. Disaster management, similar to the delivery of basic well-being services, is part of the governance function and the responsibility of local government.

■ Training of trainers from the local government units should include skills and techniques on participatory training methods so that they can effectively build capacity of the community in CBDRM.



CONTACT DETAILS

Lorna P. Victoria

Director, Center for Disaster Preparedness
Foundation, Inc.
oyvictoria@yahoo.com
cdp@info.com.ph

63

Preparedness For Response To Future Disaster Risk Reduction: The Syrian Arab Red Crescent Society Experience

BACKGROUND

Evidence from recent disasters in other locations, shows that initial support, and a very significant portion of the total support provided, comes from the local community. It may take days for outside responders to gain access to affected areas due to the time needed to contact and assemble personnel, transportation limitations, or unfamiliarity to the area. Clearly it is the people in the community who will be the first response on the scene and can play a significant role in community disaster prevention.

With this in mind, in 2001 the Syrian Arab Red Crescent Society (SARCS) began a community based approach with an integrated disaster preparedness and health training program for local volunteers with input and involvement from government agencies such as the Civil Defense and the Ministry of Health.

The National Society was able to test their approach in 2002 during the Zaizon Dam disaster response. After the disaster response phase, a post disaster review and risk reduction meeting was held with the community and volunteers. The learning lead to changes in Disaster Management within the SARCS and community and a decision to hold a community disaster simulation exercise followed. The outcomes helped to inform the National Society about its Disaster Management planning needs in 2003-2004.



OBJECTIVES

The overall objective of the initiative was to develop integrated community based approach with focus on other development needs. The other objectives were to enhance the skills of the staff and volunteers of the SARCS, and to enhance the tie with the community. The objective of the simulation exercise was further cooperation and coordination between SARCS,

government and other organizations. The experience was designed to improve the community, volunteers and staff capacities in camp management through involving them in all stages of the relief and logistic preparedness process. In terms of preparedness, the need to support refugee camps in the future was a reality facing the SARCS in the contingency planning for the Iraq Crisis.

ACTIVITIES

People in Zaizon village observed cracks developing in the dam and responded by gathering neighbors on a high ridge. In the neighbouring villages the flash floods were unexpected and 21 deaths resulted. The infrastructure damage in Zaizon included 251 houses completely destroyed and 129 partly damaged. Within a few hours of the disaster, volunteers from the Hama and Edlib branches were mobilized, food aid was distributed and the first consignment of tents and blankets arrived at Hama Branch from the National Society headquarters.

The SARCS was in a position to provide rapid assistance and assess the needs of victims because of its network of trained volunteers and staff. They were proud of their response actions but the responsibilities and duties were much more than the capacities of the SARCS. Despite this, volunteers used whatever resources were available to help.

They began by assessing the needs of victims whilst distributing initial relief to families in the Zaizon area. An important factor was that villagers wanted to stay with their land and this was respected. Volunteers helped them to establish their first camp to provide shelter for people involved in the disaster. First aid, health education and cleaning of the camp were also part of the response from the first day.

The volunteers erected the Zaizon tent-camp (135 tents) within 48-hours of the disaster and the National Society was responsible for running the camp for the first month. In total 20 full-time staff members and 180 volunteers from all over the country were involved in the assistance. The actions of the volunteers highlighted to the community and government the important role of the SARCS in disaster preparedness and response.

ACHIEVEMENTS

It was clear that local communities and those affected placed great trust in the volunteers. Such trust was helpful in obtaining more accurate assessment of needs because of the direct relationship with communities. The confidence afforded to the SARCS resulted in the SARCS being charged with responsibility for relief distribution (food and non food items) during the operation. Additionally, the National Society played a key role in coordinating and cooperating with governmental and international agencies at the flood locations.

In addition, after the disaster, a community participatory post disaster review and risk reduction meeting was held facilitated by the SARCS and the Federation Regional Delegation in Amman which included those members of the community, staff and volunteers who were involved in the Dam disaster. It was anticipated that small risk reduction projects could be developed to reduce human and material losses in the future.

The review concluded there was a need for:

- staff and volunteer skill development in hands on disaster response experience;
- better coordination between National Society, government, local and international NGOs;
- development of community disaster awareness raising and education material;
- development of a logistics system as part of the National Society development;
- neighborhood disaster risk mapping and awareness.

Recommendations from the post disaster review risk reduction meeting resulted in a simulation exercise relating to camp management. All branches were involved and there were close to 100 volunteers.

CONCLUSION

The contributing factor to the successful response in this disaster was the integrated community based disaster health management approach, which resulted in trained volunteers prepared for disaster response. The Zaizon Dam disaster provided an opportunity to use these volunteers 'in action'. The 'post-disaster review' was an opportunity to learn from those involved in the disaster community and to identify future disaster risk reduction actions. The developing role of the National Society with communities and as auxiliary to government was imperative to SARCS.

In addition, SARCS recognized the importance of working with external partners and having signed agreements in place between the National Society with government, other agencies and vendors to systemize the response and preparedness program. Further, the SARCS is developing a disaster management strategy, which will reflect a development approach to integrated response training and simulation leading to action as highlighted within this case study.



CONTACT DETAILS

Syrian Arab Red Crescent Society

Al Malek Aladel Street Damascus

Tel: (963) (11) 4429662; 4441366

Fax: (963) (11) 4425677

SARC@net.sy

International Federation of Red Cross and Red Crescent Societies

P.O. Box 372

CH-1211 Geneva 19

Switzerland

secretariat@ifrc.org

www.ifrc.org

64 Non-Structural Earthquake Disaster Mitigation In Turkey

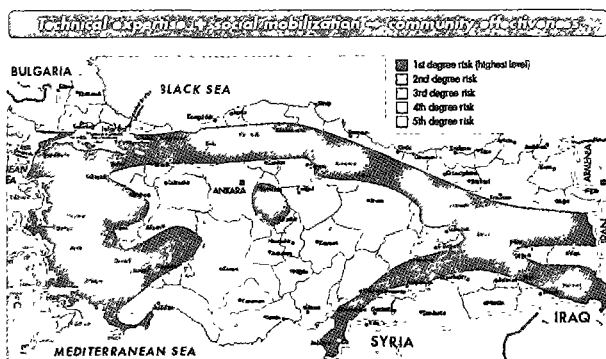
BACKGROUND

Turkey's high vulnerability to earthquakes is significantly compounded by socio-economic factors. Following two devastating earthquakes in 1999, the Turkish Red Crescent Society (TRCS), American Red Cross (ARC) and Bogazici University began a series of collaborative activities aimed at community risk reduction. A Bogazici University study concluded that:

■ Of the 18,000 deaths, more than 95 per cent were a result of building collapse while only 3 per cent were due to nonstructural causes.

■ Of the 50,000 injuries, 50 per cent were a result of non-structural causes.

Therefore, up to 25,000 injuries could have been prevented by taking basic preparedness measures at the household level – such as securing furniture and other heavy, tall objects likely to fall on people. If people employ simple, preventative measures in future, the drain on limited medical resources and associated economic losses would be dramatically reduced.



OBJECTIVES

Based on the results of this study and the low level of risk awareness among people hit by the 1999 quakes, the university developed a non-structural mitigation (NSM) education programme, with support from TRCS and ARC. The programme objectives are to promote a nationwide culture of mitigation, by providing people with basic information on earthquake risk, demonstrating how to secure potentially dangerous objects in homes, schools or workplaces, and outlining key safety actions in the event of disaster.

ACTIVITIES

Key to the programme's success is its collaborative spirit and its basis in sound research and development:

■ The partnership merged the scientific and technical expertise of Bogazici University with the Red Cross Red Crescent network's ability to disseminate critical safety information to exposed communities.

■ To ensure the accuracy of their advice, team members conducted laboratory tests using a 'shake table' to validate both techniques and the quality of materials available commercially across Turkey. Based on the results, the team developed recommendations for how people can most effectively reduce their nonstructural earthquake risk.

■ The university invited Turkish product manufacturers to observe the laboratory tests, to encourage the production of inexpensive and user-friendly devices for NSM (e.g. door latches, L-shaped securing brackets).

■ The university developed, tested and refined a variety of training aids, including CD-ROMs, tabletop models, display cases with sample NSM materials and presentation charts.

With key safety messages identified (see Steps you can take today, below), the university and TRCS produced a training of trainers (ToT) programme to develop a cadre of community instructors across the country. In June 2003, the programme was tested on 26 TRCS staff members in the Marmara region, who were asked to apply NSM measures in their own homes and work places.

Once the ToT programme has been thoroughly tested, TRCS and Bogazici University plans to extend training to 800 trainers who have been working in Community Education Centers of the Ministry of Education – one for every district in Turkey. The eventual aim is to collaborate with the Ministry of Education to introduce the NSM programme into the school system nationwide.



ACHIEVEMENTS

Following the trial training programme,

■ The TRCS has begun to develop a 3-year plan for community-based NSM education programmes.

■ TRCS branch representatives have recommended options to implement and expand the programmes, especially ways to utilize volunteer resources.

■ A web-based tool was created to share experiences among community disaster education trainers and supporters.

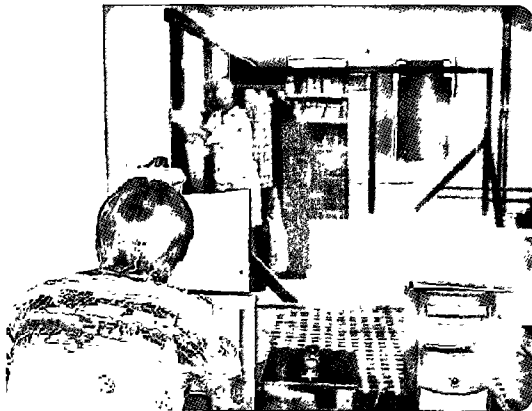
■ TRCS are planning to apply NSM in its headquarters, branches, blood centres, health clinics, retirement homes and warehouses, especially in high-risk areas. This will develop local communities' disaster preparedness capacity, improve technical familiarity among TRCS staff and strengthen TRCS' disaster response capacity.

Issues that still need to be addressed include:

■ Application of NSM in rented houses and offices - a challenge, since owners and renters have different incentives to make NSM changes.

■ Application of NSM in public facilities such as hospitals, health clinics, schools and public offices, and in the homes of vulnerable communities.

■ Reluctance of people to make NSM modifications due to concerns about aesthetics or the ability to move furniture easily for cleaning and maintenance.



LESSONS

■ Various Turkish organizations (some with international support) are implementing disparate types of community-based disaster training. It is vitally important to ensure that risk reduction messages are standardized and consistent. The Red Cross Red Crescent National Societies could seek to promote consensus among different actors on this issue.

■ The Turkish government could provide more resources and technical leadership to ensure that NSM training becomes an obligatory part of the educational syllabus for architects, engineers and builders - as well as for public servants in risk-prone areas. This should be in addition to ongoing efforts to develop and enforce

appropriate building codes.

■ The programme highlights the important role of research and development in validating information resulting from laboratory tests and lessons learned from earthquakes. Turkish universities could play a more proactive role in embracing NSM within their courses and collaborating in the research and development of NSM measures.

FUTURE

■ NSM provides a critical set of first steps towards risk reduction that ordinary people can begin applying today.

■ Governments, universities and Red Cross Red Crescent National Societies need to collaborate and combine their strengths. Each has a unique role to play.

■ In Turkey there is tremendous diversity in types of building and lifestyles, especially between urban and rural areas and between different regions. These factors must be considered when creating targeted training materials for specific audiences and when researching and further refining NSM education programmes.

■ It is critical that universities and related institutions continue to conduct research to strengthen and develop the training and educational aspects of NSM. TRCS, universities and other partners should continue evaluations to ensure that materials are easily understandable and appropriate for dissemination to the general public.



CONTACT DETAILS

Turkish Red Crescent Society

Ataç 1 Sokak No: 32 Yenisehir/Ankara Turkey

Tel: +90 312 430 23 00 Fax: +90 312 430 01 75

E-mail: tkd@kizilay.org.tr Web: www.kizilay.org.tr

Bogazici University

Kandilli Observatory and Earthquake Research Institute Disaster Preparedness Education Project Cengelköy 81220, Istanbul, Turkey

Tel: + 90 216 408 05 11 #345 Fax: + 90 216 332 90 94

E-mail: iahep@boun.edu.tr Web: www.iahep.org

American Red Cross

2025 E Street NW Washington, DC 20006 USA

Tel: +1 202 303 5279 Fax: +1 202 303 0051

E-mail: info@usa.redcross.org Web: www.redcross.org

International Federation of Red Cross and Red Crescent Societies

P.O. Box 372 CH-1211 Geneva 19 Switzerland

E-mail: secretariat@ifrc.org Web: www.ifrc.org

65 New Large 3-D Earthquake Simulator For Training And Awareness Raising Purposes In Turkey

BACKGROUND

A new Large 3-D Earthquake Simulator has been built and put into operation for training and awareness raising purposes, in Ankara, Turkey, in 2004. Earthquake motions up to an intensity **VIII+** in the **MM Scale** can be simulated. Light, sound, smoke and projected video image effects accompany and highly dramatize the vibratory motions. The operation is automated and can be fully remote controlled. The **Simulator** is housed in an independent building, specially constructed and equipped for this purpose. Unique design, construction and software development work has been accomplished locally, except importing certain specialized equipment.

OBJECTIVES

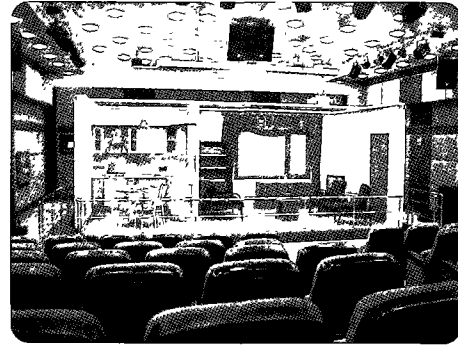
The **Earthquake Simulator** is jointly owned by the Civil Defense College and Ankara Search & Rescue Unit, both connected to the Ministry of the Interior, through the General Directorate of Civil Defense. The main purpose of having such a **Simulator** is to train search & rescue personnel, but it is equally intended to keep it open to visits of students, vocational institutions, governmental / non-governmental organizations, voluntary groups and the general public. Due to the precision of the motion generation mechanism, the **Simulator** can also be used in educational activities and for scientific experiments on people, on models of soils, structures and equipment.

ACTIVITIES

The main activities undertaken during the project can be outlined as follows:

■ **Designing and manufacturing the vibrating platform assembly and the actuation mechanism:** The **vibrating platform** is a precision steel construction assembly with plan dimensions of 7.00 meters by 4.00 meters, and gets its actuation in each of the three (i.e., x, y and z) directions, from an independent ultra-high power servomotor, driven by its own control-amplifier that, in turn, is fed from 380 V three-phase electric lines and

controlled by a PC, dedicated to 3-D motion management. Extent of displacements, velocities and accelerations along each direction are sufficiently large to perform an **VIII+** intensity earthquake motion in the **MM Scale**.



■ **Developing simulation software and 3-D earthquake motion database:** The **simulation** activity is fully automated. In other words, it is possible to call upon one of the several worked out **scenarios** by means of the remote controller. An **earthquake scenario** has a certain 3-D motion in its core either really “recorded” or “synthesized”, stored in digital form, and consists of a series of “pre-recorded human-voice announcements”, “light and sound effects”, supplemented by “smoke generation”, “moving image projection” and specific controls (green/red warning lights, screen rolling etc.) arranged in an orderly sequence. They are controlled by a set of three computers, coupled in a certain fashion, each being dedicated to specific functions. What makes them perform in harmony is the **scenario software**. New **scenarios** can still be tailored and stored, as new strong earthquakes are recorded or new requirements arise.

■ **Constructing the Simulator building and its equipment:** **Simulation** activity takes place in a **building** of monolithic reinforced concrete shear-wall structure, designed and constructed in a mini-theater fashion, equipped with professional quality “surround-stereo audio” and “stage lighting” systems, supplemented by “strokes”, “smoke generators” and “video projectors”. The plan dimensions are 11 meters by 22 meters. The number of observer seats has been limited to 130, not to lose the training-hall character.

■ **Developing the training program:** Generally the attendees sit in their seats and about 8 volunteers are invited to occupy the designated places in the **Simulator**. Having

previously been instructed on how to behave during a destructive earthquake, the volunteers try to put their knowledge into practice. Watchers get their training by criticizing volunteers' behavior. The roles are then interchanged and/or repeated, as many times as necessary. Activities can be monitored and/or documented with the use of a "dome camera". Great interaction and information exchange takes place. Different **training programs** can be developed as needed. Feedback is taken in every opportunity.



ACHIEVEMENTS

From the technical point, the new **Earthquake Simulator** has a number of novel features. Eg. no hydraulics are involved for excitation. At present, this **Earthquake Simulator** is the largest in the world, among those of its kind (ie. with direct electric-servomotor actuation). In addition to the weight of its own and of the mock-up decoration, the **vibrating platform** can perform movements specified above, while carrying a payload of 2,000 kgf. **Scenario software** works properly..

LESSONS

The new **Earthquake Simulator** has proved to be an extremely useful and valuable asset in training and awareness raising activities. Generally the media and the general public have distorted opinions about the character, extent and duration of earthquake motions, e.g. in the movies it is not uncommon to watch unrealistically large-amplitude motions, lasting minutes. The simulator offers excellent opportunities to adjust the internal scale of people to realistic rates and develop reflexes.

FUTURE

■ Turkey is an earthquake country and such **Simulators** should be established in major sites of settlement, for training and awareness raising purposes. **The same is true for other earthquake-prone regions of the world.** For an ordinary person living in such a region, it is very likely to experience a number of minor and moderate tremors within his or her lifetime. Although it may kill thousands when it happens, an encounter with a really intensive one is quite rare in statistical sense.

■ With its controlled environment, the **Simulator** offers repeated training at unusually high intensities without posing any danger. After several years of continued operation, the percentage of the population acquainted with survival technics, having developed seismic-consciousness and an internal scale for proper perception of the pertinent risk, may reach a considerable level.

■ "Demo" motions of unusual extent can be "synthesized" and employed to familiarize persons to violent motions and letting them acquire special skills.

■ New decorations such as a "classroom", a "hospital room" and a "factory hall corner", can be considered, in addition to the currently designed "kitchen and living room".



CONTACT DETAILS

Alkut AYTUN

Department of Geophysical Engineering,
Faculty of Engineering, Ankara University,
Ankara, Turkey

aytun@eng.ankara.edu.tr

66 Columbia University Urban Planning Studio: Disaster Resistant Istanbul

BACKGROUND

In the spring semester of the 2001-2002 academic year, an International Urban Planning Studio was organized with the task of exploring sustainable urban planning and disaster mitigation processes for the earthquake prone metropolitan area of Istanbul.

Following the format established a year earlier for a similar study in Caracas, Venezuela, and preceding another study in Accra, Ghana, the studio was a partnership between the Urban Planning Program of Columbia University's Graduate School of Architecture, Planning and Preservation and the Center for Hazards and Risk Research at Earth Institute's Lamont-Doherty Earth Observatory. Additional collaborations were established with the Center for Disaster Management at Boğaziçi University in Istanbul and Columbia's Center for New Media Teaching and Learning.

The studio was comprised of eight urban planning, two earth sciences and one civil engineering graduate students from Columbia University as well as four graduate students and one instructor from Boğaziçi University. This interdisciplinary team was led by three instructors, two in urban planning and one in earth sciences. Additional assistance was provided from professionals and academicians in Istanbul.

Istanbul is a city with a past unmatched by any other place in the history of civilizations, and it is still today a global center in its part of the world. Regrettably, it is located in a region that is earthquake-prone, and scientists expect another major event in the foreseeable future. Responding to this situation, the International Urban Planning Studio was organized with the task of exploring sustainable urban planning and disaster mitigation processes for the earthquake prone metropolitan area of Istanbul.

OBJECTIVES

In addition to its pedagogic purpose of educating students through an actual multidisciplinary project, the studio's main objectives were to explore processes of planning for the metropolitan region of Istanbul and to develop plans and programs to achieve

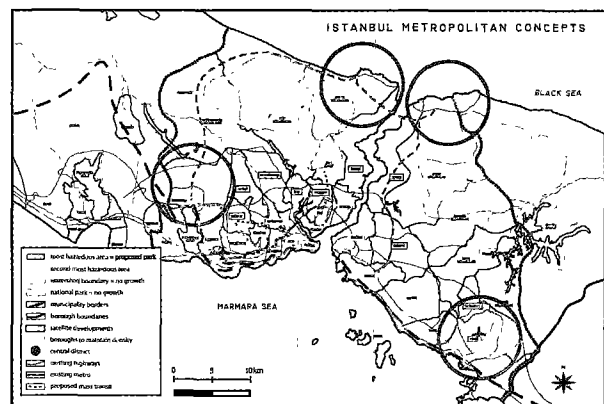
disaster-resistant or resilient urban conditions in the neighborhood level.

ACTIVITIES

In order to achieve these objectives and to prepare for these tasks, the team traveled to Istanbul at the beginning of the semester in order to get acquainted with the study site and acquire necessary information and data. In Istanbul, briefings were provided by faculty members from local universities. Meetings were held with various governmental and non-governmental agencies.

To fulfill the studio's first objective, the first part of the studio addressed Greater Istanbul as an urbanized entity. Planning students explored the conditions above the surface of the earth such as development patterns and trends; transportation networks, demographic characteristics while the scientists investigated the underground conditions as well as the history of earthquake events and issues of overall risk and vulnerability.

In order to develop a framework for the overall planning exercise, the studio team also discussed and identified a vision for the future development of the metropolitan area of Istanbul. On the basis of this vision, studio participants developed three different conceptual plans: centralized growth, satellite cities and conservation and prosperity plans. These were largely exercises to envision what the 21st century metropolis could be and while anticipating earthquake impacts. The studio participants later combined the three conceptual plans to form a more comprehensive plan (see diagram).



With the intention of developing planning approaches that achieve disaster resiliency at the local level, the studio team selected three neighborhoods in Istanbul with different physical and socio-economic conditions. These neighborhoods address such concerns as differences in subsoil conditions, proximity to the primary fault, topography, as well as existing building stock, infrastructure, public services, open space and critical facilities. The three teams analyzed these conditions and identified critical facilities that play an important role during and after a disaster emergency.

ACHIEVEMENTS

As a result of this analytical work that combined the importance of disaster mitigation with the methods and principles of urban planning, actual programs that constitute a set of recommendations were identified and elaborated by the studio participants.

Further studio accomplishments included a project exhibition at the 2002 State of the Planet Conference and Columbia University representation at the American Planning Association's New York Metro Chapter Student Presentations.

LESSONS

There is no pretense that work in an academic setting during a short time period can arrive at fully developed urban risk management programs, but every effort was taken to outline and structure the entire process and identify its components. It is expected that previous and ongoing work by agencies in Istanbul in the same sector will support or complement the work of the Columbia studio, and certainly continue to expand, make more reliable, and implement the findings as they are developed.

FUTURE

The Studio work concluded that programs that progressively upgrade the building stock preclude the most dangerous situations and marshal resources for possibly needed rescue efforts are essential. Much work needs to be done at the local neighborhood level where earthquake impacts will be felt the most and the immediate rescue efforts will have to take place. The Columbia Planning Studio advocated the

importance of establishing and maintaining a multilevel continuous effort that draws upon all resources - ranging from international assistance to principal responsibility by the national government and to efforts at the grass roots level. It also established the foundation for continuing research into the methods and application of risk-conscious urban planning.



CONTACT DETAILS

Ebru Gencer
Studio Coordinator/Co-instructor
eag44@columbia.edu

Art Lerner Lam
Director
Center for Hazards and Risk Research
lerner@ideo.columbia.edu

Grace Han
Assistant Director
Urban Planning Program
urbanplanning@columbia.edu

67 A Cooperative Hazard Impact Reduction Effort Via Education In Turkey

BACKGROUND

The Center of Excellence for Disaster Management, has been established in 2001 at the Istanbul Technical University under a memorandum of understanding with the United States Federal Emergency Agency (FEMA). ITU and FEMA carried out project ACHIEVE (A Cooperative Hazard Impact reduction Effort Via Education), a Disaster Management train-the-trainer educational project implemented according to an agreement signed in 2000 between the Prime Ministry of the Republic of Turkey and Federal Emergency Management Agency (FEMA) of U.S.A..

OBJECTIVES

The aim of the Center of Excellence for Disaster Management is to carry out research and development projects in disaster management, and more importantly to implement educational programs at various levels (certificate, to masters degree) for those involved in all phases of disasters

ACTIVITIES

The center trains local and organizational officials for disaster management, who are employed as public or private officials required to work at disaster sites, officials working in local authorities, and emergency operations centers and architects, engineers, teachers and students. All new techniques and knowledge regarding Disaster Management is conveyed by seminars and courses to the target groups listed above. Currently, over 1100 officials have been trained throughout Turkey.

This center also cooperates with all Disaster Management organizations of the Prime Ministry of the Republic of Turkey. The long and short-term goals of the center are to train officials for disaster prevention and mitigation. Priority is given to emergency managers of relevant institutions and local authorities and secondly, public training programs are being carried out. The center organizes educational seminars on national and international levels

and coordinates and implements research projects.

The Center of Excellence for Disaster Management also initiated a graduate level education program, for professionals who are seeking a Masters Degree in Disaster Management. The graduate program is carried out in cooperation with the Oklahoma State University, and is a one-year degree program. The first classes began in the 2002-2003 academic year. The first graduates include a class of 13 professional disaster managers.

ACHIEVEMENTS

■ Initiation of the first Degree Program in Disaster Management in Turkey

A masters degree program was initiated by the Center at the Istanbul Technical University in 2001, with cooperation of the Oklahoma State University and Texas A & M University. The program is currently the only degree program in Turkey.

■ National Emergency Management, Education and Exercise Implementation Program – Sponsored by the Ministry of Interior, Republic of Turkey

The goal of the project was to update, provide sustainability to the emergency management system of Turkey via the training obtained through the FEMA_TU ACHIEVE Project. The project was initiated in 2001 and completed in 2003.

■ The Restructuring of the Turkish Fire Brigades- Sponsored by the Ministry of Interior, Republic of Turkey

The objective of the project is to increase the efficiency and coordination of the fire services in Turkey by providing an integration of the fire services for disaster management and emergency rescue. The project was initiated in 2001 and completed in 2003.

■ Development of National Emergency Management Model- Sponsored by the Ministry of Interior, Republic of Turkey

The aim of the 'Emergency Management Model Research' is to provide the data that will be used to create an emergency management structure, which is appropriate for the conditions of Turkey. By examining other successful applications worldwide, the model

will be nationally and locally applicable, inclusive and contemporary. The project was initiated in 2001 and completed in 2003.

■ **Development of an earthquake Master Plan for Istanbul- Sponsored by the Greater Municipality of Istanbul**

18 Members of the CEDM took part in this 8 month project. CEDM took the lead role for Disaster Management and Public Education for the Mega-City of Istanbul.

■ **Training for local Governors for disaster Management- Sponsored by the Ministry of Interior, and the Japanese Government (JICA)**

8 members of the CEDM trained all local governors of Turkey in Ankara for a two year project.

The following are the first Turkish books in the field of Disaster Management published by the CEDM at ITU:

- No 1. Emergency Management Principles
- No 2. Emergency Management Planning
- No 3. Emergency Management Tools
- No 4. Emergency Operations Center
- No 5. Incident Command System
- No 6. Handbook for Mitigation Principles
- No 7. Mitigation Methods for Emergency Managers
- No 8. Preparedness for Disaster Exercise Implementations
- No 9. Exercise Development
- No 10. Mobilization for a Disaster Resistant Community
- No 11. Voluntary Resource Development
- No 12. Media and Public Relations Principles for Emergency Situations
- No 13. Community Emergency Response Teams (CERT)
- No 14. Emergency Management Operations
- No 15. Proceedings of the Workshop on The Restructuring of Turkish Fire Brigades under the light of International Experiences
- No 16. National Emergency Management Model
- No 17. Model proposal of the Restructuring of Turkish Fire Brigades
- No 18. Emergency & Disaster planning guide for schools
- No 19. Emergency Management Conference Reports Kocaeli 99, 16-17 January 2003 (CD)
- No 20. Terrorist Attack on 15 and 20 November 2003 in Istanbul

LESSONS

The challenge that we faced as trainers and educators, was difficulty initiating new systems

in disaster management which therefore required support from the local leaders (Mayors and Governors) and the Central government. Upon being able to initiate our efforts with their strong support, we were able to conduct our courses with high levels of attendance. Having leaders with strong disaster management backgrounds will enable sustainable growth, and minimal losses in future disasters. The key is to have a sustainable educational system with certificates that have to be renewed after a period of time.

FUTURE

- Initiating an accreditation system for educational programs in Disaster Management.
- Creating regional Centers of Excellence for Training and Education



CONTACT DETAILS

Derin N. Ural, PhD

Director, Center of Excellence for Disaster Management
Istanbul Technical University
Maslak, Istanbul
Turkey

Phone: +90 (212) 285-3742
Fax: +90 (212) 285-6335
derin@itu.edu.tr
www.aym.itu.edu.tr

68 Organizing For "Transferring Live Lessons" Of Disasters For A Safer Future

BACKGROUND

ADV (ACIL DESTEK VAKFI) is an indigenous, private, non-governmental, non-profit organization that was established at end-2001 by the core crisis management team who carried primary responsibilities in short- and longer term disaster response in Kaynasli, the unfortunate epicenter of 12 November 1999 earthquake in Turkey.

ADV is unique in its organization as some of its founders are public officers (namely, the district governor, the mayor) who are experienced practitioners in disaster management processes and who, at the same time, act as civilian volunteers at ADV; while other ADV supporters include both voluntary field practitioners in Kaynasli, who were victims of the 1999 earthquake and voluntarily joined in response activities, and field experts in Istanbul and Ankara, who voluntarily render their expertise in terms of research, lectures, developing plans and projects for/with ADV.

Starting its activities in 2002, ADV maintains that, while the responsibility for emergency situation (disaster) management (mobilization of all relevant capabilities) ultimately rests with the Government, it must thoroughly be enhanced by emergency (disaster) support management, requiring non-governmental, civilian assistance (The Foundation was named as "Emergency Support" in Turkish, to emphasize this aspect.).

Within this framework, ADV emphasizes the vitality of a non-formal education (awareness raising, training, capacity building) system based on field realities to build/enhance skills at all stakeholders for disaster management, which needs to be integrated with formal education provided by public offices.

OBJECTIVES

The ultimate objective of ADV is to help structure an efficient and effective interaction nationwide between governmental and non-governmental emergency/disaster response to ensure provision of the most accurate immediate relief for disaster-hit communities and promotion of sound, sustainable development afterwards.

Aiming to share the field experience gained in disaster management in Kaynasli after 1999 EQ with all stakeholders, ADV currently prioritizes the following:

■ Activities to develop sensitization and awareness for disaster preparedness and "self-help" at household and community levels,

■ Sharing lessons drawn from the field experience with relevant groups of disaster management professionals and practitioners,

■ Research and practical work to contribute to standardization of disaster management concepts and field operations (better practices).

ACTIVITIES

Following list of activities is illustrative for ADV's approach and scope of work.

■ Awareness Raising/Training for Disaster Preparedness/Risk Reduction

• *In Kaynasli (pilot implementations for community training):*

—Community Volunteers training for disaster preparedness

—Structural Mitigation for EQs program for community leaders

—SPHERE- Minimum Standards in Disaster Response (Turkey Workshop)

—Community firefighting and crash rescue training

• *In general:*

—ADV produced a VCD, based on field lessons and emphasizing importance of preparedness and self-help during the first 72 hours of an EQ, to be released on local and regional TVs and mass transport vehicles.

—ADV took part in preparation of "Learning Safe Life" books for 5th and 6th graders, a pilot project initiated by Turkish Red Crescent, supported by American RC.

• *For professionals/practitioners:*

ADV shared its field experience through:

—Presenting the topic the "Role of NGOs in Disaster Management" at joint seminars held by JICA and Turkish Ministry of Interior for District Governors

—Holding a Conference on "The Natural Disasters of Meteorological Origin and Preventive Measures" for top public and private executives in Rize, located at Black Sea coast, a high risk region for floods (and landslides) in

Turkey.

—Presenting the topic "Disaster Preparedness and Operational Research" in a METU Industrial Engineering seminar for post-graduate students and academicians.

—Maintaining contacts with Interpreters at Disaster, a voluntary initiative of foreign language lecturers and students active since 1999 EQs.

■ Research

ADV's public poll (Computer-Aided Telephone survey) to obtain quantitative data on *Emergency/Disaster Preparedness Knowledge* in Turkey, the first of its kind in the country, was completed in February 2004. The poll covered 875 people in 20 cities which covered first-degree natural disaster (earthquake, flood, landslide, avalanche) risk regions countrywide, resembling the country population.

■ Field study

ADV and Kaynasli Municipality initiated a pilot Seismic Microzonation Study in Kaynasli in May 2004 as a scientific and technical basis for disaster prevention/mitigation planning. The study intends to develop the awareness about the necessity of seismic microzonation study to as scientific and technical basis for disaster prevention/mitigation planning.

FUTURE

■ Manual for Neighborhood and Village Headmen for Disaster Preparedness

■ Notes for practical Emergency Plans to be applied in social gathering places (namely, schools, mosques, coffeehouses where most casualties were reported in '99).

■ Feedback (notes) from field for accountable Disaster Reporting (for media).

■ Suggestions for Linking Pre- and Post-Disaster Efforts with Development (reporting lessons drawn from field practice after 1999 EQs).



CONTACT DETAILS

ACIL DESTEK VAKFI
(Emergency Support Foundation)

Giseler Mevkii, PK 1, Kaynasli, 81900 Düzce
Turkey

acildestek@turk.net

Fax: +90 380 544 22 87

69 Environmental Disaster: Linking Partners To Tuberculosis Prevention Around The Aral Sea

BACKGROUND

The Aral Sea has shrunk to just one third of its original size over the past three decades, creating a humanitarian disaster for millions of people who live around its shores. Soviet-era irrigation canals have siphoned off the waters of the Syr-Darya and Amu-Darya rivers which used to feed the Aral Sea, leaving behind a wasteland of white sand. Salt levels have tripled, devastating the fishing industry and leaving large tracts of farmland unfertile.

Farmers compensated by using more pesticides and fertilizers, but poisoned their soils and left the region's water undrinkable for animals or humans alike. Summers have become hotter and winters colder, since the sea's moderating influence on the regional climate has declined. As ecological and economic stability have crumbled, thirst, malnutrition and disease have followed. More than 20 million people across the Aral region suffer poor health as a result. Female anaemia is as high as 97 per cent. Kidney failure, immunodeficiency and tuberculosis have soared, as well as a host of other diseases attributable to malnutrition. Tuberculosis (TB) infection rates are estimated at between 250-370 cases per 100,000 people - a major epidemic. Hospitals lack the resources to cope. Many of the region's people are resistant to the drugs used to combat TB. Perhaps worst of all, TB sufferers are stigmatized. In Uzbek culture, TB is associated with poverty. TB sufferers are traditionally excluded from employment. Girls from infected families may suffer poor marriage prospects. TB is also known to be a leading killer of those suffering from HIV/AIDS. Hence, many families go to great lengths to hide the fact that family members may suffer from TB.



ACTIVITIES

Drugs are not the only weapons in the war on TB - good nutrition is also essential. Since 1998, the Red Crescent Society of Uzbekistan (RCSU),

supported by the American Red Cross (ARC) and the International Federation of Red Cross and Red Crescent Societies (Federation), has carried out an extensive program of humanitarian food aid in order to reduce the negative impacts of TB among those living in the Aral Sea zone.

■ The programme was based on the findings of detailed sociological research, conducted by the RCSU, in collaboration with the Federation and the Uzbekistan government's Public Centre for Social Ideas in four regions around the Aral Sea (the Autonomous Republic of Karakalpakstan, and the provinces of Khorezm, Navoi and Bukhara). The research analyzed the vulnerability of the populations living around the Aral Sea and recommended a program focused on increasing their capacity to cope with the disaster's consequences. In particular, the study found that nutritional assistance would be the intervention most likely to reduce vulnerability.

■ The ARC, with support from the US government, responded by donating approximately 5,500 tons of basic food aid (oil, rice, beans, high protein corn soy blend, and flour) to the RCSU annually. The RCSU organized around 60 distribution sites and trained their personnel to deliver the relief aid to vulnerable populations both in their homes and in selected institutions.

■ Early 2000, an evaluation indicated that the programme's focus should be sharpened to optimize its effectiveness: TB victims became the principal beneficiaries. To date, 70,000 TB sufferers have benefited from the Red Cross's nutritional assistance.

■ An educational component was introduced in 2002. Knowledge of proper nutrition and hygiene can help prevent people from contracting TB - as well as helping them to recover. Accordingly, the RCSU formed nutrition education teams (NETs), staffed by qualified medical or educational experts and aimed at helping those suffering from TB and their carriers. The NETs have implemented training modules specifically developed for the language and culture of the regions in which they operate. They have also trained community leaders (training of trainers) in order to reach the widest possible audience. To date, nearly 9,000 people have benefited from the Red Crescent's health education.

■ To mark the occasion of World TB Day, over 60 volunteers from Red Crescent youth clubs in the cities of Urgench and Kiva organized a week-long series of theatre productions to promote healthier lifestyles. The actors performed in schools across the country, using popular youth themes to encourage behavioral change - such as

the importance of proper hygiene and nutrition in preventing and curing TB. They were enthusiastically received.

ACHIEVEMENTS

■ According to Uzbek doctors, deaths from TB have fallen in Khorezm province over the past five years, pointing to the program's success in improving recovery rates of TB patients.

■ There has been a considerable increase in the number of newly registered TB patients. This indicates that the program has encouraged individuals to come forward and seek treatment voluntarily. The earlier patients present themselves with the disease, the easier it is to treat.

■ The positive publicity which the program has attracted, along with the program's strong advocacy of the needs of TB victims, has lessened the social stigma associated with the disease.

■ The four successive programs to tackle TB since 1998 have greatly increased the capacity of the RCSU to manage the operational complexities of a large humanitarian relief effort, including the detailed customs clearance, transport, physical accountability and central storage of relief commodities in four regions of the country. This reinforces the RCSU's disaster preparedness to respond to future disasters requiring emergency relief operations.

■ The Uzbek government supported the relief program by providing free transport and storage at distribution sites, and facilitated duty-free customs clearance.

■ The combination of supplemental nutrition and education targeting TB sufferers has complemented drug therapy programs provided by Médecins Sans Frontières and Uzbekistan's TB institutions.

■ Youth volunteers have helped organize communities to fight TB through educating primary school children, producing relevant literature and creating theatre productions focused on building awareness of TB and changing risky behavior.

LESSONS

■ After four years of donating food aid, refining beneficiary lists and eliminating those no longer eligible, there is some evidence of relief dependency.

■ The addition of an educational component to reinforce the impact of free food donations has helped to promote positive behavioral change among many of those affected by TB.

■ Programs of supplemental nutrition and education could also be implemented to reduce the risks posed by other diseases prevalent in

the region (e.g. anaemia, iodine deficiency).

■ Vulnerable people will not retain the educational messages relevant to TB prevention and recovery without ongoing training and outreach by RCSU staff.

■ The costs of the health education component of the program amount to around US\$ 20,000 per year. Ongoing donor funding is needed to sustain this initiative.

CONCLUSION

■ Better nutrition and health education have helped to save lives and improve livelihoods among TB sufferers.

■ Collaboration between the Red Cross Red Crescent, researchers, local government, volunteers, school children and NGOs is crucial to ensure the program is integrated into the lives of ordinary Uzbeks.

■ Extending this two-pronged approach to tackle other diseases in the region would improve lives further.



CONTACT DETAILS

The Red Crescent Society
of Uzbekistan
30, Yusuf Hos Hojib Str. 700031, Tashkent
Republic of Uzbekistan
Tel: 998-712-56-31-50
Fax: 998-712-56-18-01

International Federation of Red Cross
and Red Crescent Societies
P.O. Box 372 CH-1211 Geneva 19
Switzerland
secretariat@ifrc.org
www.ifrc.org

70 Towards Effective Earthquake Disaster Reduction: Uzbekistan Case Study

BACKGROUND

Uzbekistan is located in high-level seismic zone. The Tashkent area experienced devastating earthquake in 1966, Gazli area in 1976 and 1984, Pap area in 1984. Last earthquakes in republic took place in the Kashkadarya oblast in 2000 and 2001, affecting thousands persons.

Earthquakes always struck unexpectedly. They bring many troubles, especially to ordinary peoples, which live in vulnerable individual houses, constructed using adobe and stone materials. Especially suffered may be the children, which are studying in schools, constructed from the same materials. Peoples usually become more attentive after major disasters, but tend to forget as time passes by. So question is - what are the missing and urgent tasks in disaster preparedness?

OBJECTIVES

Individuals and communities in many developing countries in general are not well informed on how to cope with disasters, including in mere attitude and behavior practices towards these threats. Thus there is the need to focus activities on improving skills and knowledge of community members, especially in the following areas: awareness raising on disasters and precaution measures at various levels, as well as mobilization of resources for preparedness and response systems at community level.

The analysis of consequences of Kamashi (Uzbekistan) and Lugovaya (Kazakhstan) earthquakes once again has confirmed a high vulnerability of buildings erected from "pahsa" or adobe or silicate brick even at moderate intensity earthquake. These types of buildings without special measures on their strengthening are unsuitable for implementation on earthquake prone territories with intensity 7 and more units. Recent Bam earthquake in Iran once again dramatically showed probable consequences of earthquake impact to such structures.

It is necessary also to point out, that this kind of building in many countries, such as, Iran, Afghanistan, Turkey, countries of Southern America and Central Asia, India, Pakistan is not

controlled by governments of these countries, less involved in anti-seismic strengthening and is restricted by legislative force of the building codes. Though buildings from local weak materials in countryside of these countries are almost basic type.

ACTIVITIES

It was found that that application of safer building practice, rooted in local culture and tradition and climatic conditions, was the key point of effective risk management process. On the base of compilation of national and international experience in the field of seismic resistant construction from local weak materials, the album with technical decisions for reinforcement of self constructed buildings from adobe and stone materials was developed with support of World Bank ProVention Consortium grant.

In the framework of GHI project "Central Asia Region Earthquake Safety Initiative" were prepared different materials for public disaster awareness education in local languages- "Basic Disaster Awareness Handbook", "Community Disaster Volunteers Training", "How to construct seismic resistant building yourself?"

ACHIEVEMENTS

Post-event programs enjoy more political appeal and financial support, so implementation of recommended simple measures of reinforcement of existing buildings and new construction found great interest in local communities in Kashkadarya oblast. Authors of initiative carried out training seminars with local masons in many villages of region. Local masons had picked up skills in earthquake safe construction technologies with use of local materials, including the retrofitting of existing houses. Due to simple and affordable recommendations to increase earthquake resistance of vulnerable type of construction this practice was replicated in all region. So regulation of safety of such structures by the way of development of new technologies will give possibility for mass scale implementation of local materials without threat to life of

population. Implementation of recommended simple measures of reinforcement of existing buildings and new construction from weak local materials may essentially mitigate risk in earthquake prone areas.

In all developed educational materials we tried to provide that they correspond to the respective knowledge of those for whom the material is designed. The material is based not only on world, but on local experiences so that the users of the information can relate to it effectively.

LESSONS

Mitigating future disaster impacts involves a wide range of interests, broad participation and action. A very important part of action to reduce our vulnerability is a series of small steps by different approaches. The main factors limiting disaster preparedness is un-sufficient awareness among the stakeholders and lack of confidence in disaster resistant practices.

Distribution of educational materials on various disaster related topics among the community should result in increased awareness among the population for their need of engagement in preventing and mitigating the consequences of disasters. The awareness campaign thus will pave the way for the mitigation projects and attract involvement of many stakeholders.



CONTACT DETAILS

Bakhtiar Nurtaev

Deputy director, Institute of Geology and Geophysics, Academy of Sciences of Uzbekistan, Tashkent 700041.
N.Khodjibaeva 49
nurtaev@ingeo.uz

Shamil Khakimov

Head of department, Uzbek scientific-research institute of typical and experimental design of residential and public construction, Tashkent 700095, 17 Niyazova str, Uzbekistan
Fax:(99871)2 676603

Disaster Preparedness Training And Education Programs For The Future Generations In Vietnam

BACKGROUND

The Vietnam Red Cross Society (hereafter called VNRC) is a humanitarian mass organization in Vietnam. The VNRC has a visible paradigm shift in 1998 for a Disaster Preparedness (DP) Programme with support from the International Federation of Red Cross and Red Crescent Societies (hereafter called the Federation). The VNRC carried out one evaluation of human and material resources in DP including training material developed and used in Vietnam by other in-country international and national, governmental and non-governmental organizations. One recommendation from this evaluation shows a need to revise and develop a new training DP material for VNRC and local governmental staff and for children and teachers at schools.

OBJECTIVES

The objectives of the program are: (1) to develop material resources for disaster management; (2) to strengthen human resources; (3) to increase public awareness on disaster management; and (4) to reduce risks and vulnerabilities.

ACTIVITIES

By using inputs from Asian Disaster Preparedness Center (ADPC) and Disaster Management Unit (UNDP project in Vietnam), a set of DP training materials was prepared. It comprises of a training material for trainers, a training material for staffs at province, district and grass-root levels, and materials for teachers at primary school to introduce DP to children at grade 4 and 5. At the same time the VNRC selected 130 competent staffs from disaster prone provinces in Vietnam to train them the adult and active methodology with support from Asian Institute of Technology Center in Vietnam. The trainers discussed and recommended how to adapt and develop above training material through series of training workshops since 2000. And since 2001 they started trained VNRC staff, NGO and local staff, and teachers in Disaster management using those training materials. The DP training for

children at schools are maintained by teachers and VNRC through several activities such as field activities, children competitions and/or continuation of training by using funding from local government, local NGO etc.

ACHIEVEMENTS

Those training material were highly appreciated by organizations working in DM in Vietnam and the Vietnamese government (according external evaluation in 2002 and 2004). Organizations such as UNDP, Dipecho, Japanese Red Cross, Danish Red Cross, World vision, Oxfam UK and Hong Kong and Save children alliance supported these activities. Up to now thousands of people have been trained and 125 Red Cross trainers have become core group in training DM in Vietnam. Over 12,500 teachers at primary school have been trained in DP and they provided training courses for over 550,000 children at grades 4th and 5th in 27 disaster prone provinces of Vietnam.

LESSONS

Lessons learnt recognized in external evaluation include the importance of DP and disaster management plans in all locations. DP plans must be rooted in the community and should mobilize community forces with the aim of protecting the communities and individuals, especially vulnerable groups. Further strengthening and sustainability of the national and provincial trainers network is an essential requirement.

FUTURE

To keep the trainers motivated and ensure regular interactions through workshops, the VNRC would need to mobilize internal resources. Future work on DP in these provinces and other parts of central Vietnam should also incorporate communes where other hazards are pertinent and these hazards should be included in training and teaching, and in materials. The most critical skills and thus training needs at the grass-roots level are more participatory method.



CONTACT DETAILS

Dang Van Tao

DM Programme Officer
International Federation of Red Cross and
Red Crescent Societies
Vietnam Delegation

15 Thien Quang Hanoi
Tel: +84 4 9422983 ext. 212
fax: +84 4 9422987
Mobile: + 84 9133 615 81
ifrcvn12@ifrc.org

72

Enhancing Community Capacity To Reduce Vulnerability To Economic Loss Caused by Storm Damage To Houses In Central Viet Nam

BACKGROUND

Vulnerability of housing and small public buildings in central Viet Nam is a critical and paradoxically growing problem. Families and communities in central Viet Nam are extremely poor, but despite this over the past 20 years they have invested their scarce resources in building better housing with more durable materials. Unfortunately this investment is insecure because storm resistant techniques are not applied.

The result: *unnecessary* damage is caused by annual storms that hit the Vietnamese coast. This can be avoided by applying the ten key but simple points of storm resistant construction to existing homes. Preventive action to strengthen community and domestic buildings is a cost efficient way to reduce economic and material vulnerability. Securing the house effectively reduces family vulnerability and allows them to get on with developing their lives and devote their meagre savings to other pressing needs such as education, income generation and health, which all help reduce poverty.

OBJECTIVES

Since 1999, Development Workshop (DW) has worked Thua Thien Hué province, central Viet Nam to promote and demonstrate such preventive strengthening. DW runs an interactive programme in each village to stimulate short and long term awareness of the need to take preventive strengthening in building and rebuilding. DW works with individual families, women's groups, local communities and schools, and with a strong relationship with local government.

ACTIVITIES

Through animation, training, demonstration, the development of commune level damage prevention institutions, and the introduction of small credit funds for strengthening, the project has been successful in changing grass roots and official attitudes.

■ Animation - getting the message across

Families need to be aware that prevention is essentially easy and affordable, and they need to know that it is much cheaper than rebuilding after a disaster. In each commune DW organises a wide variety of animation awareness raising events. Each activity - a play, a concert, using local actors and singers or school children - deals with the risk of storms, the damage caused and the action one can take to reduce vulnerability. Events encourage the participation of different groups of people (children, youth and families).



■ Developing the institutional environment for preventive strengthening - partnership between family groups and Commune Damage Prevention Committees

Developing a durable programme of preventive action requires the engagement of families in the community and the commune representatives. Each plays a key role in awareness raising, support and implementation. In the villages, families who have made their homes safer share the experience with neighbours, whilst the commune provides the framework to provide guidance, support and organise animation events.

At hamlet level DW encourages the democratic development of family groups, bringing together all the project beneficiaries, who are involved in decisions about priorities for support and credit for house strengthening, and in assessing what work is needed. The project then works with families to strengthen existing buildings simply and efficiently using locally available techniques and materials. Families always contribute both in kind and financially, covering about 58% of strengthening costs at present.

In each commune DW has collaborated with the People's Committees to establish a Commune Damage Prevention Committee (CDPC) who progressively take on responsibility for managing most of the project

activities in their commune and deciding on priorities. The CDPC brings together members of the People's committee, village representatives and local unions. DW develops the capacity of the CDPC with training and work sessions, including skills for managing the credit programme.

Four complementary actions take place in each commune:

■ **Training:**

DW runs training sessions for community representative and construction workers so that they can learn and discuss about the need to strengthen houses and public facilities, and get practical and technical training about the ways that this strengthening is done on different types of building.

■ **Credit for strengthening:**

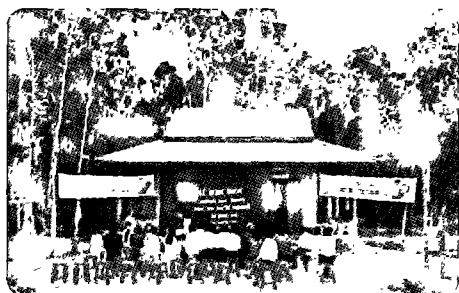
Families can borrow up to 165 US\$ to strengthen their house. Repayment is over 18 months, with a 0,3% monthly interest rate. Families choose whether to repay monthly or irregular lump sums, so that they can reflect they pattern of their income. People take fierce pride in repaying, and the credit has also enhanced the position of women who tend to manage this.

■ **Demonstration:**

As well as strengthening homes DW also collaborates with the commune to strengthen small public buildings, including primary schools, kindergartens and markets, as these buildings provide additional exposure for the same techniques that can be used on homes.

■ **Working with schools:**

DW works with primary level schools and kindergartens, to listen to children's' concerns about disasters and take account of their priorities, and at the same time make children - and their parents, aware of the need for prevention and to see how it can be done. Training is provided to teaching staff as well so that the prevention messages is integrated into school curricula.



ACHIEVEMENTS

The project targets poor and vulnerable families. It has been encouraging to see women in particular participate in the project's activities - 40% of the beneficiary families involved in house strengthening has been headed by women. They participate actively in the animation and communication activities, and are key actors in bringing about change in the attitude of families so that prevention becomes a priority in housing improvement and construction.

LESSONS

Introducing innovative approaches to disaster prevention takes time. Six years ago local authorities were sceptical that one can strengthen existing buildings and that the community can make a major financial and material contribution to prevention. Today there is wide acceptance and enthusiastic at provincial level. The challenge is to achieve similar acceptance at national strategy level, and this is a priority for the future. But the results of the project 'on the ground' acts as a clear example of what can be done, and this is the best way to convince.

Development Workshop France's programme in central Viet Nam has been funded by Canadian International Development Agency (CIDA) and is presently funded by ECHO, the Humanitarian Aid Department of the European Commission. ECHO/ Dipecho. DWF is has a partnership agreement with ECHO.



CONTACT DETAILS

John Norton

Development Workshop France
B.P.13, 82110 Lauzerte, France
Tel+33-563 95 82 34
ohn.norton@dwf.org

Guillaume Chantry

Development Workshop Viet Nam
173/31 Phan Dinh Phung, Hue, Viet Nam
Tel: 054 848231
lwvn@dng.vnn.vn
<http://www.dwf.org/vietnam/preventdamage/index.htm>

Commune Disaster Management Planning As An Educational Process: Oxfam Experiences In Vietnam

BACKGROUND

Flash floods, landslides, slow on set floods and storms are the major disasters in Vietnam. To mitigate the disaster risks and respond to these disasters Oxfam has been facilitating Community Based Disaster Mitigation (CBDM) out activities since 2001, and aims to integrate disaster management with its ongoing development programs through Commune Disaster Management Action Planning and implementation. Problem.

OBJECTIVES

The objective was to ensure that women and men in the communes understand that they play a key role in reducing vulnerabilities to disasters and increasing capacities in their communities and support them to achieve this.

ACTIVITIES

The Commune is the lowest administrative unit of the Vietnam Government administrative structure. Oxfam piloted the Commune Disaster Management Action Plan (CDMAP) formulation and implementation process in 6 communes of Ha Tinh province, which are prone to flash floods and 8 communes of Dong Thap province prone to Mekong slow onset floods. The following steps have been undertaken for developing and implementing the CDMAP since August 2002.

■ **Participatory Tools and techniques:** Participatory tools and techniques for analyzing community vulnerabilities and capacities were developed incorporating experiences from other countries, Vietnam Red Cross (VNRC) and other related actors.

■ **Training of Facilitators (ToF) course on Action Planning:** For improving the skills and capacities of the facilitators, six-day (ToF) courses were organised by Red Cross facilitators and attended by representatives of the Women Unions, Red Cross, govt. departments from province, districts and communes. For ensuring gender equality emphasis was given to bringing equal numbers of male and female participants and equal participation of both women and

men during the process.

■ **CDMAP formulation:** The trained commune facilitators organised 3 days workshops ensuring participation of disaster experienced men and women to analyse vulnerabilities, capacities and measures to be taken to reduce vulnerabilities. After the 3 day exercise the Village Heads compiled the outcomes of the workshop and prepared a draft copy of the CDMAP. Two facilitators who participated in the ToF course organised earlier from the district & province were responsible for providing backup support to the commune facilitators in term of quality of facilitation, participation and information.



■ **Consultation meetings:** Having the draft CDMAP the commune organised consultative meetings to make the CDMAP more realistic and workable. Initial participatory Monitoring & Evaluation indicators and mechanisms were also discussed.

■ **CDMAP sensitization with district and province:** CDMAPs were shared with province and district Authorities to involve them and to get their support while implementing the CDMAPs and to incorporate CDMAP monitoring aspects within district/ provincial existing monitoring mechanisms.

■ **Endorsement of CDMAPs by the District People's Committee:** Having sufficient discussion among the district People's Committee and commune Leaders, the district People's Committee approved the CDMAPs for implementation by the Commune People's Committee.

■ **Implementation of CDMAP:** Oxfam provided necessary funds to the District Authority to implement some priority activities of the CDMAPs including capacity building for commune & village disaster management bodies. District partners are currently implementing the identified activities.

■ **Micro- Macro links of CDMAP experiences:** Oxfam and partners CDMAP experiences are being presented at the province and National levels through workshops and bilateral meetings aiming at changing the policy and practices of the respective departments.

ACHIEVEMENTS

■ More than 100 facilitators have been trained who are qualified to facilitate participatory hazard, vulnerability, and capacity assessment processes, and are able to develop local Action Plans. They are sharing their experiences working with other organisations and government departments.

■ Based on CDMAP, the households, commune and district leaders have started to preparedness and mitigation activities. At the household level the members are taking preparation to respond the floods through the preparedness initiatives.

■ The National and provincial government recognised that the disaster management action planning process was an appropriate strategy and they are planning to replicate the lessons in other communes

LESSONS

Participation: To facilitate the participatory methodologies in action planning is a big challenge. Sometimes the facilitators want to make the process short so that the real needs and appropriate actions are not easily brought out. More attention is needed on how to make the sessions more interesting and participatory. Following two issues are important:

■ Capturing gender desegregated data and needs, and ensuring equal representation and participation of men and women remains a big challenge.

■ Household level preparedness activities are still not sufficient. The district and commune authorities need to pay more attention to engaging and helping households in disaster preparedness and mitigation.

FUTURE

Oxfam is planning to replicate the lesson learnt from the action planning process in other provinces. We are also advocating for the related government departments to have more community capacity building activities in preparation of community plans to make the disaster management process sustainable.



CONTACT DETAILS

Provash Mondal
Humanitarian Programme Coordinator,
Oxfam in Vietnam

pmondal@oxfam.org.uk

74 National Seismological Observatory Center (NSOC), Yemen, 1989-2004

BACKGROUND

During the period (1989-2004), following the December 13 1982 earthquake (M 6.0), different technical and scientific activities were initiated toward the establishment of National Seismological Observatory Center (NSOC). These activities came under a multi-level project. The basic step was the deep concern of the government in resettlement and reconstruction of the damaged areas.

OBJECTIVES

Special committee founded at Geological Survey Board to investigate earthquake-affected area, took the responsibility of installation and operation portable seismic stations and preparing the basic requirements to establish a national seismic network.

The presence of (NSOC) in its current state was only possible due to the concern and support of the most relevant body to earth sciences, supreme council of reconstruction (currently the ministry of public works), Program for Assessment and Mitigation of Earthquake Risks in the Arab Region (PAMERAR) and Reduction of Earthquake Losses in Mediterranean Region (RELEMAR).

ACTIVITIES

Dialoguing with colleagues in different communities is making a positive contribution to the different fields of natural disaster reduction. It seems that we are hoping still for better understanding and the necessary steps to reduce risk through with planning. The mechanisms may still need a lot of time and adaptation to different local levels. Therefore, an example of implementation mechanisms is provided here, based on author's experience of the seismological field as its priority here in Yemen for any future supporting or planning to reduce probable disasters. The National Seismological Observatory Center (NSOC) attended several meetings during the period 1993-2004. These meetings identified and approved our seismic priorities at local, regional and international levels. We hope for more

activity and more responsibility for applying this knowledge. At local level, there is some progress, which is reflected in a recent Sana'a Workshop dealing with disaster management.

LESSONS

■ It is quite important to target the elements most required for reducing seismic risk in development regions by executing flexible and local experimental elements of the seismic code within the main seismic building code, and recording this.

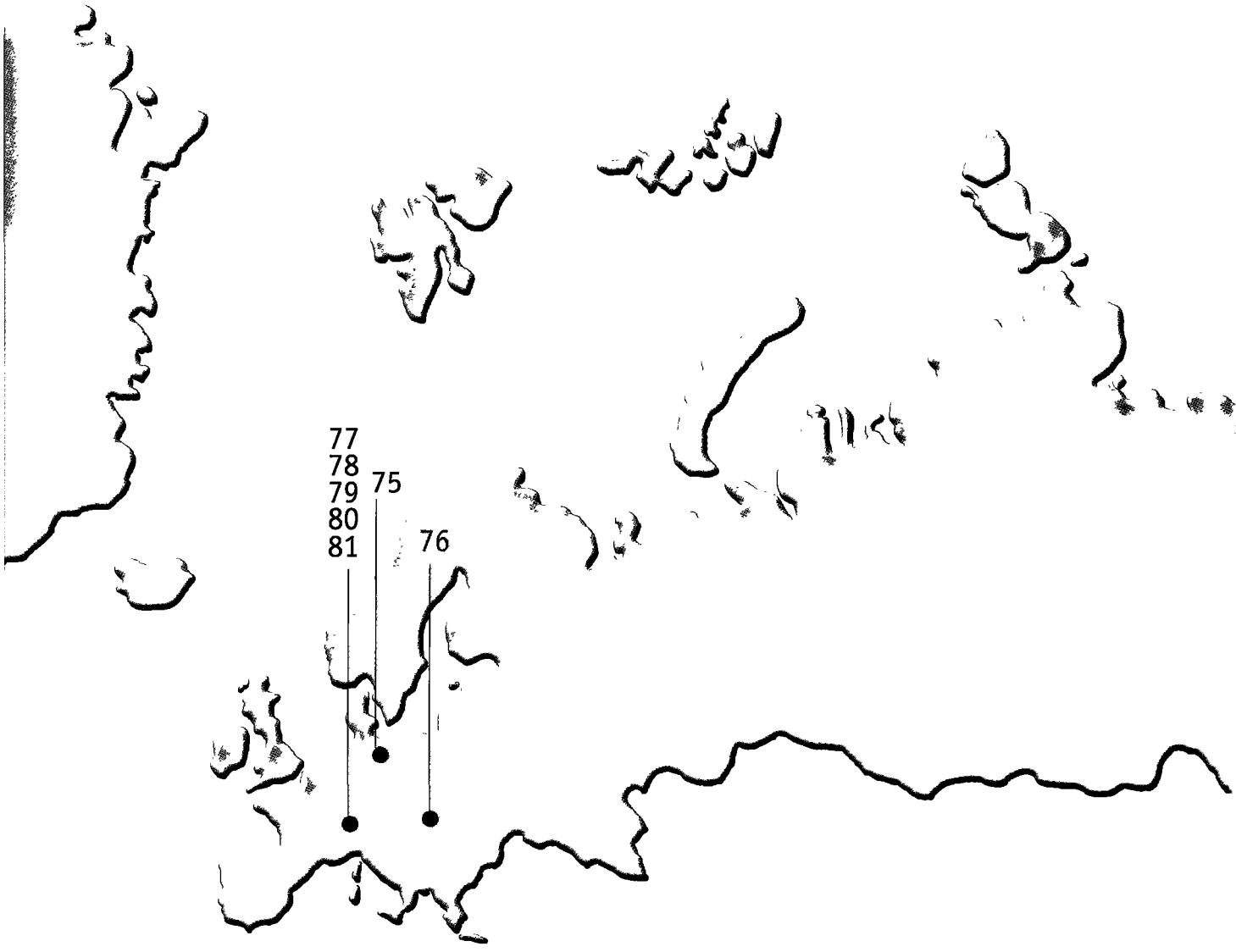
■ All things related to natural disaster mitigation programs should be strengthened and documented to help ministries and governments in making the right decisions and allocating resources to these programs.

3) We need to support local seismic networks and also to support experts in seismological fields.



CONTACT DETAILS

**General Director,
National Seismological Observatory
Center
Dhamar, Yemen
sholan12@y.net.ye
Tel: +967 6 500597/519603**



Europe

Flood Of August 2002 In The Rivers Of The Rastern Erzgebirge In Saxony In Germany: Event Analysis

BACKGROUND

In August 2002 the rivers draining from the eastern Erzgebirge into the Elbe were affected by a severe flood event. Twelve people died and the financial damage summed up to several Mio €. This flood was caused by a widespread rainfall event of extraordinary intensity concerning large parts of Germany, Czech Republic, Austria and Slovakia. During the same time several Asian countries also suffered from severe flooding.

OBJECTIVES

The Swiss government decided to support all affected countries with 50 Mio. CHF. One third of this money was reserved for so called prevention projects. 10 Mio. CHF was dedicated for projects in Germany. As prevention projects the following projects were chosen:

- Analysis of causes and possible consequences of the floods in the rivers draining the Eastern Erzgebirge ("Event Analysis")
- Establishing flood protection concepts for the same region
- Establish flood hazard index map for whole Saxony
- Re-establish parts of the gauging stations destroyed during the flood of August 2002

ACTIVITIES

All four projects have been carried out in a close collaboration between institutions in Saxony being responsible for flood protection Saxon State Agency for Environment and Geology (LfUG), Dam Authority of Saxony and Swiss experts (Federal Office for Water and Geology, Swiss Federal Research Institute WSL and private enterprises) and were financed by the Swiss Agency for Development and Cooperation. Baseline for all projects was the Swiss flood protection policy developed during the last 20 years as a result of four major flood events affecting Switzerland during this time.

The project event analysis was carried out in close collaboration between LfUG and WSL. It was the objective of this project to pin down causes of the floods of August 2002 in Saxony

and to develop strategies for future improvement of flood protection. For this purpose, hydro meteorological causes have been analysed, damaging processes were identified and the efficiency of flood protection measures have been evaluated as well as flood warning procedures were studied. The study showed the importance of hazard maps as a prerequisite for any flood mitigation strategy. They allow an adapted land use management as well as they can be used in operational planning of interventions during a flood event. The results of the study were presented to local authorities and stakeholders and they have been published in German and as a short management report also in English.

The study and the management report can be downloaded from the following web page: http://www.umwelt.sachsen.de/de/wu/umwelt/lfug/lfug-internet/wasser_5581.html

LESSONS

The most sustainable result of the close collaboration between experts in flood protection from Saxony and Switzerland was a new water regulation established for Saxony. Based on the experience in all four projects and the findings of the event analysis a new law was established. This law is based on the Swiss philosophy for flood protection and is adapted to the specific legal and regional settings of Saxony.

Major reasons for the success of the project were the readiness of the responsible persons from Saxony to improve their procedures and the close collaboration between Swiss and German experts in all phases of the project.



CONTACT DETAILS

Dr. Christoph Hegg

Swiss Federal Research Institute WSL,
Zürcherstr. 111, CH-8903 Birmensdorf,
christoph.hegg@wsl.ch

Heinz Gräfe

Landesamt für Umwelt und Geologie
Zur Wetterwarte 11, D-01109 Dresden,
heinz.graefe@lfug.smul.sachsen.de

76

Flood Risk Management In The Upper Tisza Region Of Hungary: A Model-Assisted Stakeholder Approach

BACKGROUND

Because of escalating flood losses, the Hungarian government is concerned about its tradition of taking almost full responsibility for flood risk management, including flood prevention, response, relief and reconstruction. Government authorities would welcome more private responsibility, which economists view as important for providing market incentives that discourage development in high-risk areas. However, Hungarians almost unanimously regard the transfer of full liability for flood losses to citizens, especially those living in very poor areas, as unfair. The attribution of responsibility thus invokes fundamental questions of efficiency, equity and social solidarity in responding to extreme circumstances, especially in poor and vulnerable regions.



How much should people living in non-risk areas contribute to preventing losses and compensating victims in vulnerable

communities, and to what extent should those living or locating in high-risk areas bear the burden? One of the more controversial issues in Hungary, and throughout disaster-prone countries of Europe, Asia and North America, is thus the respective roles of the government and the private market in preventing and pooling disaster losses. Many countries have formally and differentially allocated liability for the financial consequences of extreme events by legislating public-private systems for reducing disaster risks and pooling losses.

OBJECTIVES

With financial assistance from the Swedish FORMAS, a pilot study carried out by IIASA with the Hungarian Academy of Sciences and Stockholm University developed and tested a model-assisted, citizen-participatory procedure for designing a public-private flood insurance system for Hungary with a focus on the economically depressed Upper Tisza river basin. A challenge for this three-year process was to identify the contending perspectives and preferred policy directions for flood risk management held by the stakeholders, and more concretely to identify a consensual policy path for a nation-wide, public-private insurance system.

ACTIVITIES

The project combined interviews with active stakeholders, a public questionnaire to 400 Hungarians and a stakeholder workshop. The stakeholders included government ministries, water authorities, insurance companies, environmental groups, local mayors and residents. A unique feature of this process was a spatially explicit computer model that simulated the economic consequences of different insurance-policy strategies to the government, insurance companies and residents in a pilot area.



ACHIEVEMENTS

The Hungarian stakeholders agreed to a radical change in current practices: Only insured flood victims would be eligible for additional financial assistance in the aftermath of a disaster. They agreed that a public-private flood insurance system should provide support for vulnerable regions, including subsidized premiums for low-income households and nation-wide cross-subsidized premiums.

FUTURE

This pilot study illustrates a new form of policy analysis that makes use of information technology in a participatory, stakeholder setting. As such, this study is relevant beyond Hungary and beyond the flood risk pooling issue. It will be of interest to all countries seeking social consensus for disaster risk management policies.



CONTACT DETAILS

Joanne Linnerooth-Bayer
International Institute of Applied System
Analysis (IIASA), Austria
bayer@iiasa.ac.at

Anna Vári
Hungarian Academy of Sciences

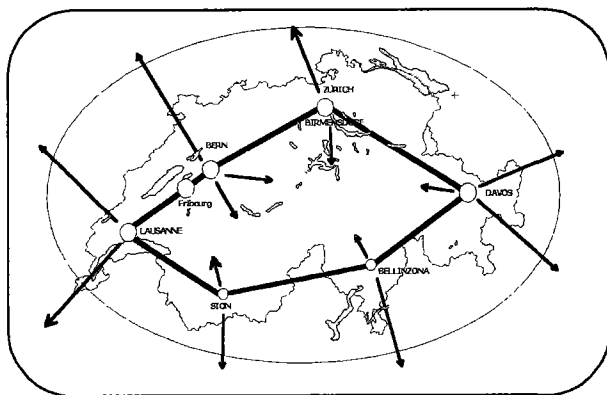
77

Dealing With Natural Hazards And RISks - NAHRIS: A Swiss Virtual Campus Project

BACKGROUND

The Swiss Virtual Campus (SVC) is a programme of the Swiss Confederation to support new information and communication technology in higher education. "Dealing with natural hazards and risks - NAHRIS (NAtural Hazards and RISks)" is one of the 50 e-learning courses offered through SVC. It is a distance e-learning curricula created by the members of the NATural Hazards Competence CENter (CENAT). CENAT is a network of the Swiss Federal Institutes of Technology and several Swiss Universities.

NAHRIS project partners include WSL/SLF Davos, EPF Lausanne, ETH Zürich, University Zürich, University Bern and University Fribourg. Our intensively settled human environment intersects more and more significantly with the world of hazardous natural processes. These processes are complex and their impact can be vast. Hence, dealing with risks demands a broad education in many sub-domains of the earth sciences and the socio-economic field. Inter- and trans-disciplinary training and education of professionals is therefore essential.



OBJECTIVES

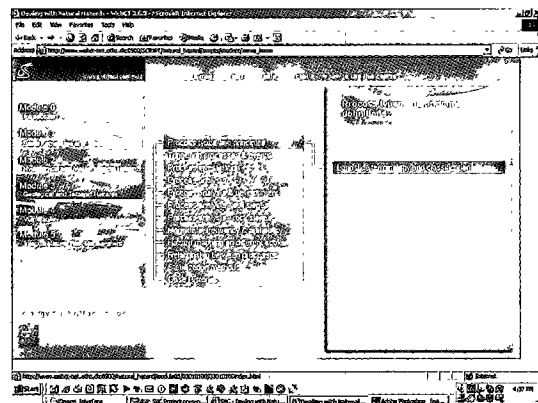
The objective of the NAHRIS is to provide a common educational and cross-disciplinary course program, available to a large number of students (approximately 200 students per semester). These e-learning lessons are prepared for students in higher university semesters, practical engineers and the employees of public services in a broad field of natural hazards and risks management. The modules are integrated into the ECTS credit point system at

Universities. Findings of current research are incorporated directly into the virtual classroom. The course also prepares students for collective tasks in the field.

ACTIVITIES

It consists of 5 modules covering all aspects of the natural hazard and risk domain. Modules are divided into thematic topic groups, where the basic learning object is the learning unit. Learning units are designed to be self-contained modular learning components that can be 'mixed and matched' according to the needs of the course into which they are being incorporated. The course language is English.

■ **Module 1: Basic Knowledge and Tools:** In this module, students learn about methods and tools applied in the field of natural hazards. This knowledge includes land survey, GIS technology, remote sensing etc.



■ **Module 2: Hydrological and Meteorological Hazards:** The target of this learning unit is to briefly present the main types of hydrological hazards: floods, fluid mass movements, snow avalanches, sediment transport and river erosion, glaciers and permafrost related hazards, and other water related hazards such as ice jam, and tsunamis.

■ **Module 3: Geological and Tectonic Hazards:** Geological and tectonic hazards cover landslide and earthquake processes. This module transfers knowledge on process types, triggering mechanics, process investigation and monitoring as well as process analysis, and modeling and the relationship between different processes.

■ **Module 4: Vulnerability:** Vulnerability defined in this module is "the degree of damage or loss, in probability terms, inflicted on a structure or population of structures by a natural phenomenon of a given magnitude". This module covers the following topics: assessment, civil engineering structures, economical aspects, natural environment and risk reduction measures.

■ **Module 5: Integral Natural Risk Management:** Targets of this learning unit are to understand the conflict between man's land use and natural processes, to recognize the importance of debris cones and to see the influence of growing mobility and population pressure on nature. In addition it will be discussed the different reasons for people's need of protective measures and the importance of the cost-benefit approaches for protective measures.

LESSONS

The modular nature of learning units allows a great deal of flexibility in their application. The didactic relevance is dependent upon the lecturers' teaching strategy. The complex and huge structure of NAHRIS provides an excellent basis for learning units being integrated into a university curriculum or even special designed courses in the field of natural hazards and risks.



CONTACT DETAILS

Dr. Stefanie Dannenmann
Coordination CENAT @ SLF Davos
Flüelastrasse 11 CH-7260 Davos Dorf,
Schweiz

Tel: +41 (0)81 417 02 01
cenat@slf.ch
<http://www.cenat.ch>

Development Of A Virtual Learning Unit About The Topic: Cost-Effectiveness Of Measures To Prevent Natural Hazards

BACKGROUND

The learning unit was developed within the context of the project "Swiss Virtual Campus: Dealing with natural hazards". In the past, prevention measures against natural hazards have been applied without that the costs have been seriously taken into account, since the constructions of protection measures was subsidized by the Swiss federal government. Since the financial situation of the federal government is worsen in the last years, all protection measure projects have to be evaluated with regard to their cost-effectiveness. In order to educate the natural hazard experts the basic principles of cost-effectiveness assessment, an internet based learning unit was developed. This learning unit provides the necessary theoretical background and illustrates the application of the cost-effectiveness method with a few case studies.

OBJECTIVES

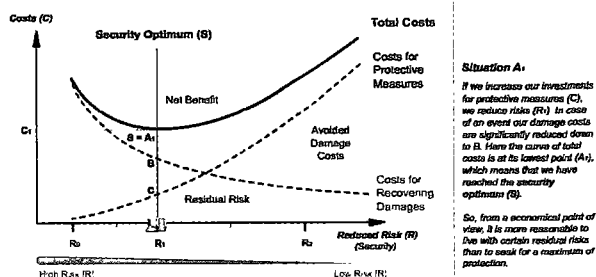
The objectives were:

- To introduce the topic "Cost-effectiveness of measures to prevent natural hazards" with a few practical problem situations.
- To give general information about the effectiveness and efficiency of different measure types in order to be able to assess measures quickly on a rough scale.
- To provide an introduction to different methods to assess and quantify the effectiveness and efficiency of particular singular measures in detail.
- To demonstrate a method to combine different types of measures in order to achieve an optimum security level.
- To present a threefold procedure to evaluate a particular measure project according to its cost-effectiveness.

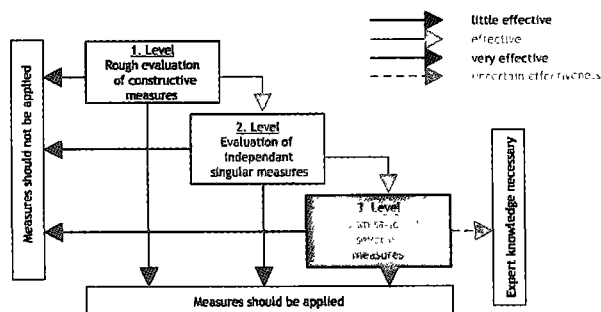
ACTIVITIES

We implemented as much of the cost-effectiveness theory with interactive graphics in order to improve the learning curve of the course participants. An example of such an

interactive graphic is shown, where the participants can drag and drop the slider bar from High Risk to Low Risk and directly see the consequences with respect to costs and effectiveness.



Another important focus was the practical applicability for the end users. Therefore, simplified procedures were presented that allow a stepwise approach to evaluate a particular prevention measure project. A threefold approach is presented in the attached figure. The learning unit will be online starting January 1, 2005.



LESSONS

The resources to develop such virtual learning units that are highly interactive have been underestimated significantly. However, it is hoped, that with this experience, the resources for other learning units will be allocated more appropriately.

FUTURE

Development of a meta-database for internet-based learning units dealing with "Case studies and best practices on education for sustainable development."



CONTACT DETAILS

Urs Gruber

SLE, Flüelastr. 11, CH-7260 Davos Dorf

phone: ++41 81 417 02 62

fax: ++41 81 417 01 10

gruber@slf.ch.

Effects Of Vegetation On Shallow Landslides: A Case Study In Sachseln, Switzerland

BACKGROUND

In areas with steep slopes, hazard events are often accompanied by shallow landslides. Mostly, the slope movements are triggered off by heavy rainfall and cause vast losses in areas with high damage potential. Comprehensive risk management in connection with landslides involves not only the identification of hazard zones and the implementation of technical protection structures but also includes biological measures, both in terms of landslide prevention and regeneration of eroded slopes.

OBJECTIVES

Little is known about the influence of forest conditions on slope stability. In 1997, an extreme thunderstorm triggered off more than 400 shallow landslides within an area of 20 km² in the region of Sachseln, Switzerland (See Rickli, Ch., Zimmerli, P. & Böll, A., 2001: *Effects of Vegetation on Shallow Landslides - an Analysis of the Events of August 1997 in Sachseln, Switzerland*. In: Kühne, M., Einstein, H.H., Krauter, E., Klapperich, H., Pöttler, R. (eds) *Proc. Internat. Conf. on Landslides 2001, Davos: 575-584.*). These events provided a unique opportunity to investigate the effects of different types of forest management and land use on landslide activity.

ACTIVITIES

A study area covering a total of 8.2 km² was defined. Within this zone, all landslides with a volume of at least 20 m³ were investigated. All relevant factors were recorded for a total of 280 slides, 136 in forested areas and 144 in open land. They include the condition and management of the vegetation cover, the characteristics of the soils, loose material and bedrock, slope inclination and certain aspects of the geomorphology.

To examine the question of whether forest conditions affect landslide activity, three categories of forest conditions were defined and plots adjacent to the slides accordingly classified. Further, using the same criteria of

assessment, the forested areas of the entire study area were similarly allotted to one of these three categories on stand by stand basis.

ACHIEVEMENTS

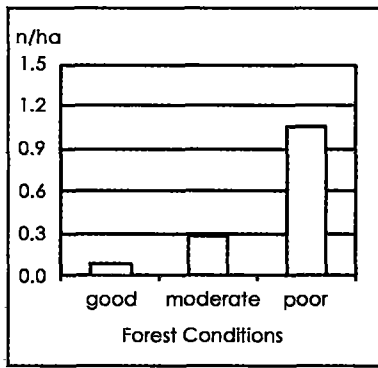
Within the study area, shallow landslides occurred on slopes with inclinations from 28° to 45°. On slopes with an inclination of up to 39° the landslide activity (number of slides per hectare) was noticeably greater on open land than on forested sites. In steeper areas there was no difference. This finding indicates that forest enhanced the stability of moderately steep slopes. However, this effect is not unlimited: in very steep areas the difference in landslide activity between forest and open land diminishes.

In addition, the condition of the forest was found to have affected the landslide activity. Hardly any slides occurred within stands consisting of site adapted tree species, few gaps and a diverse stand structure. Markedly more slides were triggered off within stands in less favourable condition, e.g. with many gaps. Finally, a great number of slides occurred on stands damaged by wind throw or bark beetles.

LESSONS

The results of the case study point to the importance of forest conditions to slope stability during severe rainfall events. Within limits, forest conditions can be controlled by appropriate silvicultural measures. In forest stands with unfavourable conditions, measures that promote a sustainable and stable stand structure, tree species adapted to the site, and sufficient regeneration may help to reduce the activity of shallow landslides. The figure shows number of landslides per hectare (n/ha) in relation to forest conditions. Forest conditions are indicated as follow:

good: species and stand structure suitable for site, few gaps; *moderate*: species and stand structure not suitable for site, many gaps; and *poor*: parts previously damaged (wind throw, bark beetles), loose stands



FUTURE

The findings described above are based on a single case study. They have to be verified by additional investigations, i.e. in different regions with other geology, topography and rainfall intensity.

A major challenge is the environmentally compatible restoration of areas affected by landslides with soil bioengineering methods. They offer the possibility to combine emergency measures with medium- and long-range targets. Measures taken into consideration should aim to a close vegetation cover in due time on the one hand and, on the other hand, to integrate this immediate step vegetation into natural succession processes such that a self-sustaining climax association develops in the long-term.

With these objectives, the careful selection of the "starting ensemble" is of particular concern. To be able to cope with the manifold challenges, it is most important to consider not only the relevant plants but their symbiotic partners (mycorrhizal fungi) too. The species composition of the mycorrhizal fungi community has the potential to determine plant community structure and, therefore, plays a key-role in the development of the plant associations. However, depending on the climax vegetation in mind, and particularly in view of an effective protection against natural hazards, tending will be essential in the one or other phase of development.



CONTACT DETAILS

Christian Rickli
christian.rickli@wsl.ch

Frank Graf
frank.graf@wsl.ch
Swiss Federal Institute WSL, Research
Department Natural Hazards
Zürcherstrasse 111
CH-8903 Birmensdorf Switzerland

80

Awareness Rising For Natural Hazards And The Alpine Environment Through Interactive Nature Trails

BACKGROUND

The Swiss Federal Institute for Snow and Avalanche Research (SLF) primarily conducts research activities in the fields of snow, natural hazards and the alpine environment. All the fields of activity share the central theme of integral risk management. The aim of the institute's work is to develop economically and ecologically viable concepts of protection against natural hazards and to investigate possibilities for the sustainable development of mountain regions. Knowledge transfer within science as well as to the broad public is one of the general duties of SLF. In the International Year of Mountains 2002, that intended to increase global awareness of the importance of mountains, SLF took part in international endeavours and made special efforts to share its research topics with the public with a new approach: Two interactive nature trails were designed, installed in the mountains around Davos, Switzerland, and were both run for 2 seasons. One trail was for winter use and the other for summer use.

OBJECTIVES

Avalanche warning in Switzerland - as in the The main objectives were to educate people about the particularities of mountain regions, especially related to natural hazards and sustainable development and to show the associated role of research. On the one hand we aimed at providing a better understanding of natural phenomena such as avalanches (and including as well protection measures), because these phenomena play an important role in mountain people's lives, but may not be readily understood. On the other hand we aimed at promoting people's understanding of the sensitivity and vulnerability of mountain regions, so that this would eventually effect on their behaviour. Generally we intended to increase public awareness about these topics

ACTIVITIES

The winter trail, named "Winter Experience trail", was installed along a main winter walking trail in the center of Davos. The summer trail, the "Mountain Experience trail", was installed along a more difficult hiking trail. The trails each consisted of 8 to 9 stations. The trail stations were always directly related to something people could see along the trail. Amongst other things the summer trail crossed through one of the most famous study sites for SLF's research on afforestation in an avalanche release zone. The core of the concept was to always offer information combined with activities such as short experiments, observations and measurements. The purpose was to let people discover the fascinating aspects of the natural phenomena in the surroundings and to encourage the individual's perception of natural hazards through the active reflection on research questions, the participation in activities, and through activating all senses. Once the trails were installed, several advertising activities were started, guided tours and school programs were offered and a permanent competition was run on the summer trail combined with a feedback possibility. The feedbacks were evaluated to find out, if and how well the public was captured with our approach.

ACHIEVEMENTS

Based on the number of brochures that were picked up, it is estimated that about 30.000 people visited the winter trail and about 5.000 people visited the summer trail. The 250 feedback postcards that we received had comments on the people's trail experience. Among other things the visitors pointed out that "they can't imagine a better way for an exciting and informative walk" and that they appreciated very much the well-prepared information. In the third year, the local tourism

center and the cable car organization accepted the responsibility for the trails, so that the trails will remain existing even without any further support of the institute. It was resumed that:

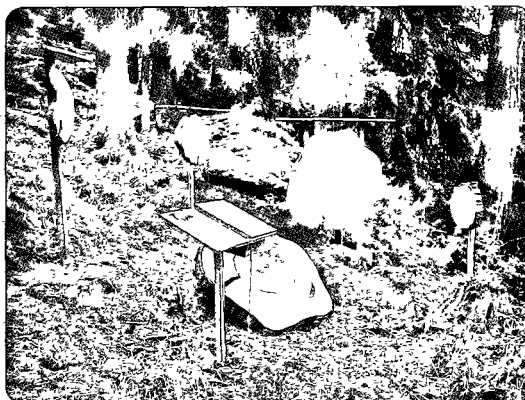
■ Many people could be attracted by the interactive nature trails.

■ The trails appealed to the people with the methodical-didactic concept of information combined with activities and fun.

■ Interactive nature trails are an adequate method to raise people's awareness of sustainable development and natural hazards and to transfer research knowledge.

■ The interactive nature trails were a contribution to the touristic offers in terms of gentle tourism.

■ The trail project strengthened the relationship and cooperation with local organisations.



LESSONS

Following three points are considered as the most important aspects of the nature trail project:

■ It is easy to quicken interest in aspects of nature and mountains when people (children as well as adults) are addressed on an adequate level, and when activities are offered in combination with the information. This is particularly important, if a sustainable learning process is intended.

■ For the sustainability of a nature trail project it is vital to involve local organisations in the design and set-up processes. It is important that they support the general concept and are prepared to take the responsibility when the initial resources are spent.

■ The challenge for an interesting trail on natural hazards is to find a good connection between the visible objects outside and the complex information about the phenomena themselves at a level that is pleasant for the visitors.

FUTURE

It is conceivable to develop an interactive nature trail in a virtual environment and to make it available on the internet, if the local connections and adequate natural settings are not given.



CONTACT DETAILS

Julia Wessels

Swiss Federal Institute for Snow and
Avalanche Research SLF, Flüelastrasse 11,
CH - 7260 Davos, Switzerland
Tel: 0041 (0)81 417 02 86
wessels@slf.ch

BACKGROUND

Since the 1930ies, the Swiss Federal Institute for Snow and Avalanche Research SLF in Davos, Switzerland, has pioneered the development of avalanche forecast and warning systems. The institute is responsible for the development and for the operation of the Swiss national avalanche warning system.

On the average, 24 people per winter die in avalanches in the Swiss Alps. The overwhelming majority of fatalities occurs in the tourist sector (backcountry skiers, snowboarders). No fatalities have occurred on roads and in settlements during the last 5 winters.

OBJECTIVE

Avalanche warning in Switzerland - as in the other Alpine countries - has two main objectives:

- The public safety in settlements and on traffic lines

- The safety in the tourist sector (ski resorts, backcountry skiing, mountaineering)

Although a tourist warning system might seem a matter of the private sector it has been defined as a public service in Switzerland, given the great economic significance of the tourism in the Alpine regions.

The avalanche warning for both sectors relies on the following cornerstones:

- A dense observer and automatic measurement network throughout the alpine space

- Continuous progress in process research for further temporal and spatial refinement of the forecast process

- An efficient communication and information system

- A good education and training of the end users of the warning information and the observers (see point 1).

The success of avalanche warning relies on the parallel and synergetic development of these four components. The experiences in the catastrophic avalanche winter 1998/99 (34 fatalities) have lead to steps for further improvement in all of the four domains. Together they form the so-called Inter-Cantonal Early Warning and Crisis Information System IFKIS.

ACTIVITIES

The education program for the tourist and the public safety sector are characterized by a major difference with respect to the number and the training level of the end users.

■ Tourist sector:

The spectrum of end users of the avalanche information reaches from occasional skiers without avalanche expert knowledge up to professional mountain guides. Due to the large number of addressees, these groups can not be directly approached by the Institute for Snow and Avalanche Research. The education programs therefore follows three lines:

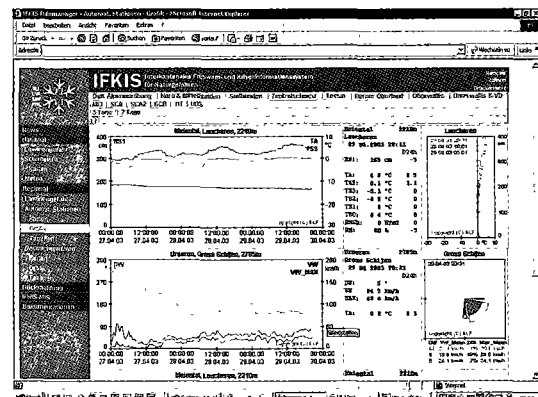
- Distribution of daily information (national and avalanche bulletins and special maps) via all publicly used information channels: internet, phone/SMS/WAP, radio, fax, TV (the latter mostly in critical situations), special information in ski resorts, etc.

- Brochures

- A close collaboration with professional unions and experts, such as mountain guide associations, safety experts in ski resorts, etc.

■ Public safety sector:

In the spirit of an integral risk management, public safety is ensured by a variety of measures, ranging from technical (avalanche defense structures), biological (protection forests), to organizational measures. The responsibility for the latter type of measures is in the hands of specially trained safety services. Besides the public information for the public tourist sector, these organizations have access to a non-public information platform, providing a variety of expert information, such detailed station and observer data, model results, and particularly early warnings.



In contrast to the tourist sector, the responsibilities for the public safety are educated and trained directly in annual courses organized and carried out by the Institute for Snow and Avalanche Research. The courses cover, among others, the following issues: meteorological and avalanche process, observation, communication systems, legal aspects, and media relations. The courses are held annually in German and French.

ACHIEVEMENTS

The education system, on the tourist as well as on the public safety side, is a strong basis for the success of the avalanche warning system. Besides a generally increased knowledge, certain standardization in the management of avalanche situation could be reached.

LESSONS

A warning system is only as good as its users. Permanent feedback on the usability of the information and proposals for further improvements from the user side is a crucial input for the further development of the warning system.

FUTURE

One of the main future objectives is the extension of the experience gained in avalanche warning to the development of warning and information systems for other natural hazards, such as hydrological hazards in the mountains, which due to their generally short forecast times, still pose a considerable challenge to crisis management.



CONTACT DETAILS

Jakob Rhyner

Swiss Federal Institute for Snow and
Avalanche Research SLF
Flüelastrasse 11, CH-7260 Davos Dorf

jrhyner@slf.ch

Oceania



82 Centers For Disease Control (CDC) Of Pacific Emergency Health Initiative (PEHI)

BACKGROUND

Pacific island countries or territories (PICTs) have the largest environmental disaster burden of any region in the world. During 1990-1999, this region lead the world in per capita disaster mortality, cumulative percentage of total population affected, per capita disaster damage costs, and the ten largest earthquakes on the Richter scale. Pacific islands are particularly vulnerable to disaster hazards with limited capacity to respond and recover. Studies identified serious deficiencies among Pacific island nations in healthcare, medical workforce, and health facilities. Organizational and technological solutions to environmental emergencies developed in industrialized nations are not practical for small-island developing states where human and technological resources are scarce and expensive.

OBJECTIVES

The overall objective was to strengthen the capacity for emergency preparedness and response among all PICTs.

Specific objectives were:

- Measure and assess emergency preparedness among developing health and medical systems
- Facilitate the development of emergency operations plans among developing health sectors
- Develop a sustainable indigenous source for emergency health training and education

ACTIVITIES

There were three major activities:

- Vulnerability assessment, which includes:
 - Hospital and public health emergency preparedness
 - Public health and medical infrastructure mitigation
- Education and training, which includes:
 - Emergency care
 - Emergency health planning
 - Public health and medical consequences of disasters
- Technical assistance, which includes:
 - PEHI-NET- an Internet-based information and

communication tool

- PEHI-HELP - onsite emergency consultation
- ADEPT - an Automated Emergency and Disaster Planning Tool for developing hospital and public health disaster plans

ACHIEVEMENTS

■ Founded the Palau Pacific Center for Emergency Health in 2001 to serve as a regional center for training and education in the Pacific region.

■ Performed public health vulnerability assessments in 11 PICTs.

■ Completed all-hazard public health emergency operations plans for three PICTs

■ Completed hospital disaster plans for three PICTs

■ Developed PEHI-NET, an Internet-based information and communication tool available to all PICTs.

■ Trained more than 500 Pacific medical and public health officials in emergency preparedness and response, including 6 Health Ministers and Secretaries of Health.

■ Published a special issue of the regional public health journal, Pacific Health Dialog, on emergency health in the Pacific.

■ Established a fire protection training exchange program between the Republic of Palau and U.S.A. fire departments.

■ Provided emergency technical assistance to the Federated States of Micronesia in response to the 2002 landslide.

■ Hosted four annual international conferences on public health preparedness among the Pacific island nations.

■ Developed and tested the Automated Disaster and Emergency Planning Tool (ADEPT)

■ Organized the two annual regional emergency drills

■ Provided technical assistance involving mass gathering management for the 2004 Pacific Arts Festival

■ Institutionalized medical "First Responder" course within Palau Community College.

■ Developed and coordinated the 2004 Pacific Health Summit for Sustainable Disaster Risk Management, a region-wide strategic planning session involving 18 regional health ministers and secretaries of health.

LESSONS

■ Development of educational training packages must be done with local providers and set within the cultural context of the target population.

■ Disaster education will require, especially in the initial stage, the support and buy-in from a wide spectrum of community agencies and leaders

■ Sustainability can only be achieved if the target population sees a utility in education and participation.

■ External disaster and risk management workshops have limited value. External workshop provide the key learning tools but sustainability can only manifest itself when these tools are used in day-to-day activities or become part of the education system.

■ One of the best ways to ensure long term change within a population is through the education of the youth.

■ Risk reduction programs must and can be economically feasible at community level and easily integrated into daily living patterns.

FUTURE

■ Greater penetration at the community level on awareness raising and disaster management education utilizing accepted community groups such as Boy Scout, Peace Corps, informal leadership.

■ Development of disaster awareness curriculum for schools

■ Representatives from the Pacific Summit for Sustainable Disaster Risk Management will present their declaration at the UN World Conference for Disaster Reduction at Kobe, Japan, January 2005.



CONTACT DETAILS

Mark Keim, MD

Centers for Disease Control and
Prevention
1600 Clifton Road; MS-E-97 Atlanta, GA
30303, USA
mkeim@cdc.gov
Office: 01-404-498-0455

83 Tertiary Disaster Management Education By Distance Learning

BACKGROUND

Charles Sturt University's emergency/ disaster management education programs are the only ones of their type currently on offer around the world. What makes them unique is that both the undergraduate and post-graduate degree programs are studied completely by distance education, with no residential component. Therefore, students around the world can avail themselves of an emergency/ disaster management tertiary degree course from the comfort of their home.

The undergraduate program had its origins in the late 1980s developed initially by emergency/ disaster management professionals as a means to educate and train Australian local government and emergency service managers in the area of emergency/ disaster management planning. In 1999 the undergraduate program was enhanced through the development of a post-graduate Master's degree, at the time, the first of its type in the world.

OBJECTIVES

The goal of the undergraduate program is to provide students with the skills, knowledge and capability to enhance the emergency/ disaster management strategies within their respective communities. The program does this by enabling students to practically apply recognized best practice emergency/ disaster risk management concepts, principles and practices within a chosen community setting. Assessment in the program being related to this application of the skills, knowledge and practices and the outcomes obtained.

The goal of the post-graduate program follows is to enable students to enhance a selected area of emergency/ disaster management and risk management practice through the undertaking of a focused period of study and research relevant to those areas of emergency and risk management. This is achieved through the conduct of a series of work based emergency management and risk management projects.

ACTIVITIES

Within the undergraduate program, students undertake a series of emergency/ disaster risk management activities within the areas of emergency management planning, emergency operations management and emergency recovery management. Within the planning component, students conduct a hazard analysis/ risk assessment, develop an emergency management plan and develop Standard Operating Procedures (SOPs), a Training Needs Analysis (TNA) and an exercise to compliment their emergency management plan. In the operations management component, students analyze the management of a previous emergency/ disaster event during its pre-impact, impact and post-impact phases in order to identify enhancements that can be made to the management of future emergency/ disaster events. Finally in the emergency recovery management component the students conduct a comprehensive community analysis, identifying a selected community's emergency recovery needs, capabilities and shortfalls, culminating in the development of a set of recovery management strategies for that specific community.

Within the post-graduate program, students undertake two projects of their own determination, focused on an area of emergency/ disaster management and an area of risk management. The results of these projects being the development of a series of publishable papers and training/ educational portfolios which will enhance those areas of emergency/ disaster and risk management practices.

ACHIEVEMENTS

In the 15 years that the undergraduate program has been running, students have undertaken literally hundreds of hazard analyses/ risk assessments and have developed associated emergency management plans, SOPs, TNAs, exercises and community recovery plans. These

activities have enhanced the emergency management arrangements within a wide and diverse range of communities including emergency service agencies, local residential communities, essential services/ utilities, schools, private industry and commercial businesses. In addition to the planning activities, students have analyzed hundreds of emergency events, identifying strengths and weaknesses in the management of those events and making recommendations as to how the management of future similar events might be enhanced.

In the five years that the post-graduate program has been running, students from all around the world have undertaken projects to enhance their chosen fields of emergency and risk management. As a result of these projects, we have seen the development of emergency response policies and strategies within the Saudi oil industry, the enhancement of community involvement in recovery management, the enhancement of risk management practices in tertiary education institutions, the development of emergency management education initiatives for Hong Kong and the development of flood mitigation initiatives in Vietnam, to name but a few.

LESSONS

The programs have proven the benefits of mixing the learning of theoretical concepts and principles with practical application and practice based educational activities. The use of work-based projects to support the theoretical concepts and principles enables students to not only complete an academic requirement but also to enhance an actual area of emergency/ disaster management practice.

As with all forms of distance education, the major challenge is enabling students to obtain the personal academic support and collegiate contact with other students and staff that will enable them to make the most of their educational experience whilst based at home. The use of online/ internet-based support facilities compliments this learning. In addition, maintaining a program that incorporates concepts and principles that can be adapted for application within a variety of national and international contexts is an ongoing challenge.

FUTURE

Future actions will include:

- Incorporation of enhanced risk assessment processes, concepts and principles within the programs that will enable students to expand their scope of risk management activities to include critical infrastructure, sustainability of emergency risk management practices and identification and implementation of improved preventative and mitigation strategies, and
- Increased linkage between the educational/ academic aspects of the programs and external research programs related to emergency/ disaster management sustainability, risk reduction and human security and public safety.



CONTACT DETAILS

Ian Manock

Emergency Management Courses
Coordinator

School of Public Health, Charles Sturt
University
Panorama Avenue, Bathurst, NSW, Australia
2795

Email: imanock@csu.edu.au

84 Improving Community Sustainability Through Distance Learning

BACKGROUND

In the late 1980s The Tasmanian State Emergency Service developed a training program for local government and emergency service agencies that was aimed at providing the skills and techniques for developing effective emergency/ disaster management plans at local levels.

This program was enhanced in the early 1990s with the addition of operations management and recovery management components. These enabled the students to practically apply the knowledge, skills and techniques pertinent to those specific areas of emergency/ disaster management in a practical manner. This training program was then formalized during the mid 1990s into a tertiary level education course undertaken completely by distance learning or correspondence offered through Charles Sturt University in Australia. The result of this study is the acquisition of an undergraduate degree in Social Science, majoring in Emergency Management.

OBJECTIVES

The goal of the educational program is twofold. Firstly to enhance and improve the emergency management practices, knowledge and skills of personnel involved in the area of emergency/ disaster management and its allied fields, and secondly to enhance the emergency/ disaster management strategies and sustainability within local communities.

To achieve these goals, the program provides students with an opportunity to practically apply the knowledge, skills, practices and techniques within communities of their choice. The end result being the actual undertaking of an emergency/ disaster management planning project within a community; the critical analysis of the management of a major emergency/ disaster event, and finally the analysis of a community's recovery management needs and capabilities and development of a community recovery strategy.

ACTIVITIES

Those undertaking the study complete the following practical activities over a period of four years:

- Conduct a hazard analysis/ risk assessment within a selected community and from that develop strategies to treat those risks including development or emergency response plans, development of standard operating procedures (SOPs), conduct of training needs analyses (TNA) based on the SOPs and finally development of an exercise to test the plans and procedures (18 months)

- Critically analyze an emergency/ disaster event through its pre-impact, impact and post impact phases, identifying strengths and weaknesses in aspects of its management, draw conclusions from that analysis and make recommendations that will enhance the management of future similar events (18 months); and

- Analyze a selected community and identify and describe the emergency/ disaster recovery needs and capabilities of that community. From this analysis, develop a set of emergency/ disaster recovery strategies for that community that will enable that community to more effectively recover following the impact of an emergency event (12 months).

ACHIEVEMENTS

In the 15 years that the program has been running, students have undertaken literally hundreds of hazard analyses/ risk assessments and have developed associated emergency management plans, SOPs, TNAs, exercises and community recovery plans. These activities have enhanced the emergency management arrangements within a wide and diverse range of communities including emergency service agencies, local residential communities, essential services/ utilities, schools, private industry and commercial businesses. In addition to the planning activities, students have analyzed hundreds of emergency events, identifying

strengths and weaknesses in the management of those events and making recommendations as to how the management of future similar events might be enhanced.

As a result of these practical based learning activities, students have enabled small communities (be they work based communities, residential communities or social communities) to improve their emergency/ disaster management capabilities and strategies and enhance their overall sustainability through the improved management of risks. A majority of these projects would not have occurred had it not been as a result of the study being undertaken and the dedication and diligence of the students in applying the theoretical frameworks within a real context.

LESSONS

The program has proven the benefits of mixing the learning of theoretical concepts and principles with practical application and practice based educational activities. The use of work based projects to support the theoretical concepts and principles enables students to not only complete an academic requirement but also to enhance an actual area of emergency/ disaster management practice and to improve the sustainability of small communities within the emergency management context.

As with all forms of distance education, the major challenge is enabling students to obtain the personal academic support and collegiate contact with other students and staff that will enable them to make the most of their educational experience whilst based at home. The use of online/ internet based support facilities compliments this learning. In addition, maintaining a program that incorporates concepts and principles that can be adapted for application within a variety of national and international contexts is an ongoing challenge. Finally, the requirement for students to establish real life networks within actual communities and undertake their practical applications in real life, enables them to not only grasp more effectively the concepts and principles of emergency management, but to appreciate their application in a real life environment.

FUTURE

Future actions will include:

■ The incorporation of enhanced risk assessment processes, concepts and principles within the program that will enable students to expand their scope of risk management activities to include critical infrastructure, sustainability of emergency risk management practices and identification and implementation of improved preventative and mitigation strategies, and

■ Increased linkage between the educational/ academic aspects of the programs and external research programs related to emergency/ disaster management sustainability, risk reduction and human security and public safety.

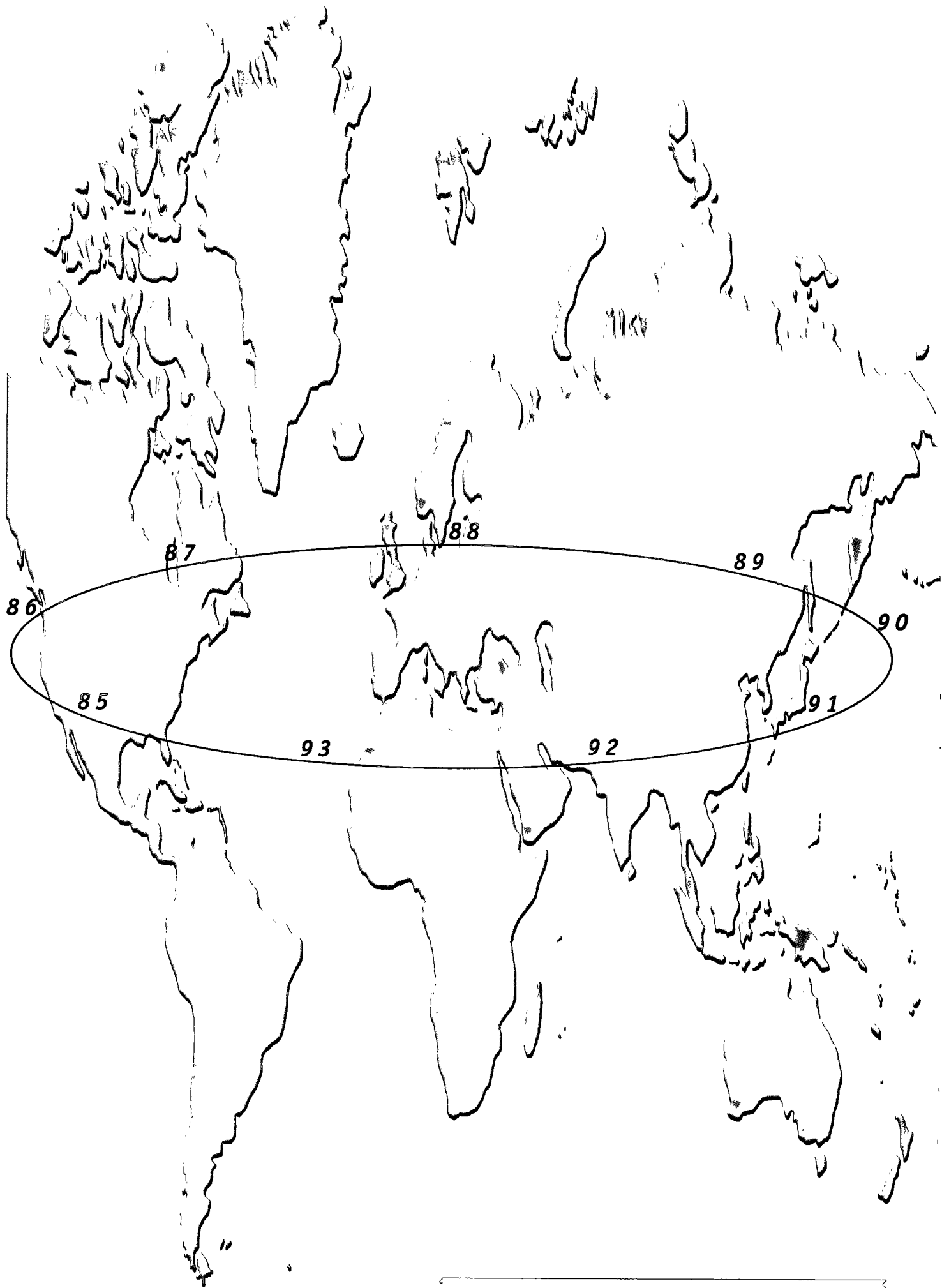


CONTACT DETAILS

Ian Manock

Emergency Management Courses
Coordinator
School of Public Health,
Charles Sturt University

Panorama Avenue, Bathurst, NSW, Australia
2795
imanock@csu.edu.au



Global

Research And Application On Earthquake Prediction And Seismic Risk Mitigation: Study Of Structure And Non-Linear Dynamics Of The Earth

BACKGROUND

The Group "Structure and Non-Linear Dynamics of the Earth" (SAND Group) is based at the Abdus Salam International Centre for Theoretical Physics (the Abdus Salam ICTP) in Trieste, Italy. The SAND Group studies were initiated in 1991 to carry out research and educational activities in Physics of the solid Earth.

OBJECTIVES

The main objectives of the group are: 1) to develop a new theoretical base and computational framework for the study of critical phenomena in the Earth's lithosphere, with special attention to their predictability; 2) to develop a new approach for seismic risk mitigation on the basis of 3-D modeling of Earth structure and earthquake sources, through the study of wave propagation in three-dimensionally heterogeneous, inelastic and anisotropic media; 3) to transfer the developed methodology to scientists of the developing countries, which is achieved through joint research, with special attention to training the potential leaders, and by combining the workshops with subsequent individual projects.

ACTIVITIES

The research activities are divided into two main lines: *Non-Linear Dynamics of the Earth's Lithosphere* (led by Prof. V.I. Keilis-Borok, International Institute of Earthquake Prediction Theory and Mathematical Geophysics, IIEPT, Russian Academy of Sciences, Moscow, Russia) and *Structure of the Earth with Application to Seismic and Volcanic Risk Mitigation* (led by Prof. G.F. Panza, Department of Earth Sciences, University of Trieste, DST-UNITS, Italy).

The activities within the framework of the first line are aimed at development of a theoretical base for the study of critical phenomena in the Earth's lithosphere with special attention to earthquake prediction. They include: *numerical modelling of the lithosphere dynamics* for different time scales: millions of years (solving the inverse problem of mantle convection with

temperature-dependent viscosity) and thousands of years (modelling of block-and-fault dynamics); *study of mathematical models of non-linear systems* and prediction of critical transitions in them; *earthquake prediction studies*: development of new algorithms for short-term earthquake prediction, launching experiments aimed at earthquake prediction for specific regions.

The activities within the framework of the second line are aimed at the development of theoretical grounds for seismic and volcanic risk mitigation on the basis of 3D modelling of Earth structure and earthquake sources through the study of wave propagation in three-dimensionally heterogeneous, inelastic, and anisotropic media. They include: simulation of seismic source radiation and tsunamis induced by inland/coastal earthquakes, and studies of empirical isoseismals; calculation of synthetic seismograms in 3D laterally heterogeneous media with the modal summation technique and numerical modelling of surface wave focusing effects; multiscale tomography of the Earth interior and related volcanism; and multiscale modeling of the dynamics of the continental deformation.

The methodologies are transferred to scientists of the developing countries through training of potential leaders and joint research.

ACHIEVEMENTS

■ The new earthquake prediction methodology named "Reverse Detection of Precursors" (RDP), in which short-term precursors are considered in conjunction with intermediate-term ones (appearing years in advance), in the reverse order of their appearance. Successful advance predictions of the major Hokkaido earthquake (25.09.2003, $M = 8.1$) and the earthquake in Central California (22.12.2003, $M = 6.4$) have been made during the initiated test of RDP for short-term earthquake prediction.

■ The prediction experiment aimed at a real-time intermediate-term middle-range earthquake prediction for the Italian region.

■ Application of the intermediate-term prediction algorithm CN to the zone of Mt. Vesuvius for the prediction of weak earthquakes: all 7 earthquakes with $M \geq 3.2$ are

predicted with 33% of alarm time.

■ A new method for solving the inverse problem of mantle convection with temperature-dependent viscosity. The method has been applied to reconstruct a model of upper mantle plumes.

■ The methodology for modelling of block structure dynamics and seismicity. It has been applied to Vrancea (Romania) and Italian regions.

■ Realistic modelling of the seismic input as a pre-disaster orientation. The methodology has been applied in several countries and principal megacities worldwide.

■ A program code that generates a realistic approximation to a wideband source function of an earthquake and input for subsequent Green's function calculation. It can be used as a component of a package capable for the assessment of ground motion and seismic hazard.

■ The representation (for the tsunami synthesis) theorem for an incompressible liquid layer with a boundary of arbitrary shape and in a homogeneous gravity field. It shows that not only offshore, but also inland earthquakes in the vicinity of the coastline may generate tsunamis.

■ The analysis of macroseismic data with the purpose to explain the shape of empirical isoseismals in terms of the velocity structure and the source geometry of an earthquake.

■ Numerical modelling for surface wave focusing effects using the recent global tomographic maps for the fundamental Rayleigh mode (60 to 150 sec).

■ Set up of a methodology for the retrieval of the 3D structure of the Earth's interior, through multiscale surface wave tomography and non-linear inversion, from the scale of an individual earthquake fault zone or volcano to the scale of the deforming plates. The methodology has been applied to the Mediterranean, Scotia Region (Antarctica) and Caribbean.

■ Dynamic modeling of the deformation either induced by viscoelastic relaxation in the crust, at the scale of the fault zone, or by buoyancy forces, at the scale of the plate boundary.

■ Study of the genesis of the recent volcanism, integrating geophysical, petrological and geochemical data, and investigation of possible interactions between different volcanic edifices and assessment of the volcanic risk.

In 1991-2003 seven workshops on non-linear dynamics and earthquake prediction and six workshops on 3D modeling of seismic waves generation, propagation and their inversion have been organized at the Abdus Salam ICTP. These series of the workshops will be

continued in future as well as the researches listed above.

LESSONS

The major lesson is the realistic modelling of the earthquake hazard as a pre-disaster measure. The main challenge is to bridge physics and statistics of the earthquake prediction to establish reliable scenarios.

FUTURE

- Promote closer interactions between the seismological and the engineering communities,
- Integrate fundamental earthquake research and earth observation technology.



CONTACT DETAILS

Prof. G.F. Panza, SAND Group

The Abdus Salam ICTP,
Strada Costiera 11, 34014 Trieste, Italy

Tel: +39-040-5582117

Fax: +39-040-5582111, +39-040-575519

panza@dst.units.it

86 Experimental Research And Its Field Application: Liquefaction Of Soils With Silt And Clay Particles

BACKGROUND

The liquefaction of soils has resulted in severe damage and disaster during several earthquakes (such as Niigata, Japan). Assessment of liquefaction potential at a site is the first step in adopting appropriate design procedures for preventing liquefaction associated damage. The phenomenon of liquefaction has been extensively studied for the case of cohesion-less soils under seismic loading conditions. The state of the art on liquefaction behavior of cohesion-less soils has progressed to a stage that reasonable estimates of liquefaction potential can be made based on laboratory investigations or on simple in-situ test data such as standard penetration values or cone penetration data and the experience during the past earthquakes. Fine-grained soils such as silts and clays and even sands with fines did not receive the same attention and they were even regarded as not likely to liquefy. The observations following Haicheng (1975) and Tangshan(1976) earthquakes resulted in several investigations on liquefaction of sands with fines, silts and silt-clay mixtures .

OBJECTIVES

The main objective of this program was to make a detailed investigation of the liquefaction behavior of fine-grained soils such as silts and silt clay mixtures under seismic loading. This information is expected to help in creating awareness about realistic behavior of such soils in seismic areas and eventually lead to disaster reduction by including remedial measures at the design stage.

ACTIVITIES

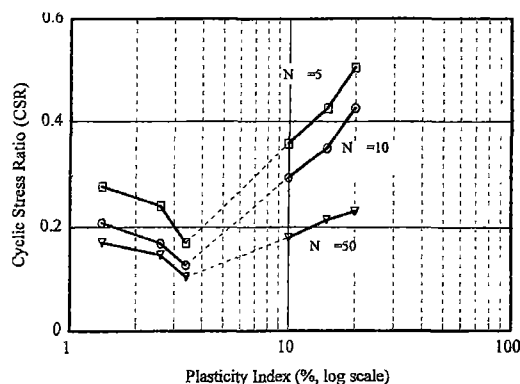
The activities included collecting available information on liquefaction susceptibility of sands, sand-silt mixtures and silt-clay mixtures. Based on this information a laboratory test program was developed. Cyclic tri-axial tests were conducted on samples of silts with clay as fine fraction. Both undisturbed and reconstituted samples were tested. The behavior of samples of silts and silt-clay mixtures

subjected to cyclic loads was compared with that of sands with regard to (i) development of pore water pressures with number of load cycles and (ii) rate of deformation or axial strain with number of number of load cycles. The effect of soil's plasticity on liquefaction susceptibility was also investigated over a wide range PI (plasticity index) values from 1 to 10.

ACHIEVEMENTS

The results of this study made several contributions in understanding the liquefaction behavior of fine-grained soils. Some of the significant findings are given below:

- The test results indicate that the pore water pressure buildup and deformation in silt-clay mixtures under cyclic loading are remarkably different from that for sands.
- The increase of the PI decreases the liquefaction resistance of silt-clay mixtures in the low range of plasticity. In the high plasticity range, the liquefaction resistance increases with an increasing PI.
- The soils with low plasticity ($PI < 7$) may be as prone to liquefaction as sands each situation needs investigation..



LESSONS

One the lessons learnt from this study is that the assumption of fine-grained soils as being non liquefiable may lead to unsafe situations. Also, the usual criteria for liquefaction as used in case of sands may not be applicable to silts and silt - clay mixtures as the behavior of these soils under cyclic loads is different from sands, both with respect to build of pressures and strain development. Also, no acceptable guidelines

are presently available for liquefaction assessment for silts and silt-clay mixtures, each case needs careful evaluation using experimental and analytical techniques.

FUTURE

- There is need developing acceptable criteria for liquefaction of fine-grained soils.
- The effect soil fabric, aging on liquefaction of fine grained soils also needs investigation .
- The nature of pore fluid can also alter the plasticity of clays and its effect on liquefaction of such type of soils should be investigated.



CONTACT DETAILS

Dr Shamsheer Prakash
Professor Emeritus
Dept. Civil Engineering
University of Missouri
Rolla, 65401
praksh@umr.edu

Vijay K. Puri
Professor
Civil and Environmental Engineering
Southern Illinois University
Carbondale, IL 62901
puri@engr.siu.edu

87

Case Study Of Global Blueprints For Change

BACKGROUND

The Global Blueprints for Change are documents produced by teams of world class professionals with a goal of integrating knowledge and best practices into consensus, authoritative "works in progress." Because they are a relatively new to the world's professionals, they have yet to reach their full potential and usage as tools to facilitate education for sustainable development. The ongoing activity to create and implement Blueprints for Change began in 2001 under the leadership of the Global Alliance for Disaster Reduction, a NGO comprised of over 1,000 professionals working in the field of disaster reduction in 70 countries and the seven geographic regions of the world. Thirty-five percent of GADR's members are "Blueprinters." Since 2001, they have produced Blueprints for Change on six themes and forty-two topics on natural and technological hazards. With a balanced consideration of the social, technical, administrative, political, legal, and economic (STAPLE) factors, the root causes of flaws in public policy, the Blueprints have the potential for opening new windows of opportunity for changing the culture of disaster reduction from one of reaction to one of anticipation.

OBJECTIVES

The goal of the Global Blueprints for Change is to facilitate building a culture of disaster resilience through innovative usage of formal and informal educational processes, including training. The objective is to overcome the universal barriers of ignorance, apathy, disciplinary boundaries, and lack of political will in every community and to transform ignorance into enlightenment, apathy into empowerment, disciplinary boundaries into seamless programs that accelerate technical and political capacity building on community, national, and regional scales, and lack of political will into political enablement.

ACTIVITIES

Blueprints for Change, such as those listed below in the next section, have been under

development since 2001 for use by professionals to form a sound technical and political basis for new and expanded programs and thousands of new projects on a community scale. The goal is to equip professionals in every nation and to engage them in disaster reduction programs that will: 1) close gaps in knowledge, understanding, and implementation of best practices, and 2) significantly increase disaster resilience in every community by 2015.

ACHIEVEMENTS

The Blueprints for Change have been developed under six broad themes that address urgent needs of communities in every nation of every geographic region. They are:

■ **Theme A: Living With Natural and Technological Hazards.** These Blueprints provide guidance that will assist communities throughout the world in becoming resilient over time to the threats posed by the disaster agents generated by droughts, floods, severe windstorms, volcanic eruptions, landslides, tsunamis, and wildfires and related technological hazards. The focus is on long-term, coordinated anticipatory planning and collaborative actions by community stakeholders and policy makers.

■ **Theme B: Building to Withstand the Disaster Agents of Natural and Technological Hazards.** These Blueprints provide guidance that will assist communities throughout the world in making their built environments disaster resilient. The focus is on improving hazard assessments and professional practices of sitting, designing, and construction of the built environment so that all elements are resilient to the disaster agents of natural and related hazards.

■ **Theme C: Learning From Natural and Technological Disasters.** These Blueprints provide guidance that will assist communities throughout the world to acquire valuable new knowledge and to take ownership of important lessons from disasters. The focus is on using disasters as a laboratory and applying new insights gained from them in public policies and programs that benefit the community.

■ **Theme D: Implementation.** These Blueprints provide guidance that will assist communities in the implementation of new

and/or improved public policies and professional practices to reduce physical, enterprise, and social vulnerabilities in their community. The focus is on initiating and sustaining ongoing multi-faceted processes of adaptation in the community that will over time make it disaster resilient.

■ **Theme E: Education.** These Blueprints provide guidance for improving knowledge management and education on community, national, and regional scales. The focus is on building a culture of disaster resilience on community, national, and regional scales.

■ **Theme F: Technology.** These Blueprints provide guidance for transferring ownership of new and emerging technologies for disaster reduction to those who need them.

LESSONS

Creating a culture of disaster resilience is urgently needed, because millions of people and their livelihoods and communities are threatened in every geographic region. Natural and related disasters are robbing every nation of scarce resources that could be better used for improving infrastructure, education, and the quality of life. World leaders in every element of disaster reduction (education, science, engineering, medicine, technology, international development and relief agencies, insurers, and policy makers) recognize the need to work together and take coordinated actions as quickly as possible to reduce potential losses on community, national, regional, and global scales. People in many communities (e.g., megacities) have already become trapped into living with overwhelming unacceptable risk to themselves, their livelihood, and their community infrastructure. Without concerted actions to become disaster resilient, they face almost certain death, injuries, economic losses, environmental impacts, and loss of homes, jobs, and community infrastructure.

Blueprints for Change that have been tailored for specific community usages, increase the capacity of professionals to contribute more vigorously and effectively to specific disaster reduction activities. New Blueprints for Change are urgently needed now in communities of developing nations to increase public awareness of hazards, vulnerability, and risk, and to expand technical and political capacity for disaster resilience in every community.

SUGGESTIONS

The Decade on Education for Sustainable Development (2005-2014, and beyond), provides an unprecedented opportunity to realize the full potential of the Blueprints for Change. This decade is the best time ever for enlisting, equipping, and engaging young and emerging professionals and linking them with mature professionals to engage in a concerted and sustained effort in every community to move towards effective disaster reduction and enhanced human security.



CONTACT DETAILS

Dr. Walter Hays

Executive Director, Global Alliance for
Disaster Reduction
238 CARC Building, University of North
Carolina at Charlotte, Charlotte, NC
28223

704 678-3520

walter_hays@msn.com

88

Effective Implementation Of Integrated Disaster Risk Management (IDRM): Toward An Implementation Science

BACKGROUND

Integrated disaster risk management (IDRM) is gaining rapid recognition as the technique of choice for action in the disaster prevention field by virtue of its many tried and tested attributes for bringing science, technology, and policy into a powerful confluence. By IDRM, we mean regional, socio-cultural, context-based synergistic risk management or adaptive risk management based on open channel communication and free-flow of information, ideas, and insights. The integration is voluntary as opposed to an authoritarian or dictatorial regimentation of ideas. The essence of this approach is participatory democracy that allows all stakeholders involved in the disaster process full and free access to every phase of decision-making in the formulation and implementation of disaster management techniques and policies. A careful review of facts and data pertaining to disaster management in different parts of the world, however, provides many examples of repeated failures in implementation of the theory and principles embodied in IDRM. This clearly points to the need for significant additional work in disaster management education focusing on effective implementation.

OBJECTIVES

The purpose of this note is to provide a brief overview of some of the issues that we think are central to effective implementation. We tentatively call this focused effort "implementation science". We define the term "implementation science", in this context, as a collective enterprise to develop a systematic body of knowledge (facts, empirical evidence, intuitions, insights, experiences) on the causes and consequences of natural and human disasters, to analyze them systematically, and to successfully implement the resulting strategies in the prevention or mitigation of losses due to disasters. With this in view, we have identified and discussed below some key elements of implementation science in the context of disaster management, both natural and man-made.

ACTIVITIES

We identify five central elements for the successful implementation of integrated disaster risk management: "collaborative action"; "process sustainability"; "disseminability"; "vitality"; and "viability". By collaborative action, we mean that the proposals for implementation have to be acceptable to the various parties involved through working together. Process sustainability refers to dynamic sustainability with the clear potential to allow for continuing improvements in the state of knowledge. Disseminability, a term we have coined, refers to the ability to successfully disseminate implementation strategies. Vitality refers to a dynamic surge of embedded human energy that can be readily translated into implementation. Viability, another central characteristic, is incorporated in the notion of vitality and makes possible quick and innovative management, as dictated by the changing configuration of events, thereby significantly increasing the effectiveness of implementation.

We briefly discuss here the salient points germane to each of the five elements noted above. The essence of collaborative action is to develop a successful strategy to narrow the divide by working together. This will involve a variety of roles such as catalysts, facilitators, mutual acceptance, synergistic interactions, and partnerships and coalitions, among others. Process sustainability refers to the modalities of keeping the operation, over time, intact. To achieve this, we need a sound mechanism of operations, maintenance and repair, life cycle assessment and management, affordable technologies, and more. Disseminability requires methods and techniques to spread the success to others. This would involve sharing of ideas, knowledge formulation, participatory frameworks, local information sharing and partnerships, cyber communication, etc. Vitality refers to the life-activating and sustaining potential of a positive human force in augmenting implementation. The power of positive thinking, faith healing, community-based action, local lore, and oral traditions are all channels through which we can tap into this powerful life force. Viability, as noted above, is the attribute that makes successful

implementation possible. The key factors that led to viability include adaptability, flexibility, nonlinearity, and innovativeness.

FUTURE

We propose an international conference of all those interested in effective implementation of IDRM strategies, in order to help define future directions and also to develop a common communication platform to pursue the mission articulated here.



CONTACT DETAILS

Professor Chennat Gopalakrishnan
chennat@hawaii.edu

Professor Norio Okada
okada@imdr.dpri.kyoto-u.ac.jp

89 An Educational Component Of The UNESCO Cross-Cutting Theme Initiative

BACKGROUND

UNESCO's Cross-Cutting Theme (CCT) Initiative: Reduction of Natural Disasters in Asia, Latin America, and the Caribbean is an international, multi-disciplinary project that aims to preserve sustainable development and reduce poverty through the reduction of the impact of natural disasters, and it aims to do so by incorporating risk management as an integral part of public policy as well as city development plans. The pilot project was implemented in close collaboration with local authorities and institutions in Tijuana in Mexico, Antofagasta in Chile, Kathmandu in Nepal, and Dehradun in India.

In addition to analyzing and improving development plans in the participant cities to keep the risk associated with fast urban growth under control, the UNESCO CCT Initiative implemented demonstration projects with schools in three of these four cities. Two types of demonstration projects utilizing two different educational tools were implemented. The first utilized the **Riskland** educational board game developed by UNICEF-ISDR and was implemented at the primary school level. The second utilized the **Building for the Big One** curriculum developed by the San Jose Tech Museum of Innovation and was implemented with students at the junior high and high school level.

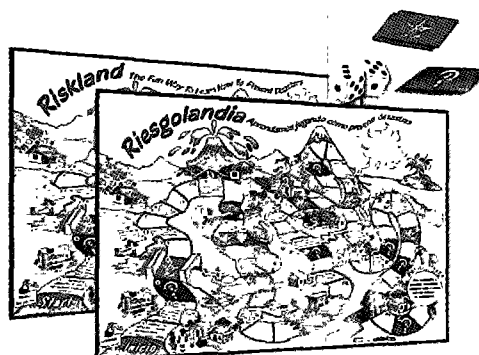
OBJECTIVES

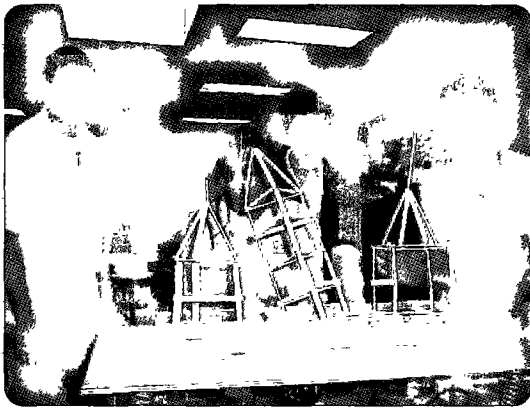
The aim of these demonstration projects was two-fold. In the short-term, the objective was to promote the introduction of risk reduction in the educational system of the participating cities, and, in this way, contribute to the long-term objective of creating of a culture of prevention. Both objectives were set with the necessary consequential goal of ensuring the sustainability of risk reduction programs.

ACTIVITIES

Riskland is an educational board game developed by UNICEF-ISDR that was used in The Schools Project to teach elementary school-aged children how to prepare for and react during and after a disaster. The **Building for The Big One** exercise is part of the Design Challenge Curriculum of The San Jose Tech Museum of Innovation and was used to encourage junior high and high school students to build and test model structures in order to learn about the importance of proper construction, the need to consider characteristics of soils being constructed on, and the value of prevention and preparedness in reducing human and material losses caused by earthquakes.

The project was carried out with the assistance of the local city representatives and school officials, under the guidance of the project coordinators. Besides working in their own schools, students from each of the participating cities communicated and interacted with each other and students of Downtown College Prep of San Jose, California through an internet discussion group that was created exclusively for the project. Through this interaction, students learned not only about the importance of disaster prevention, but also about the culture and way of life of their peers in other cities. Recent earthquakes in California and Iran also motivated discussion and facilitated the understanding of seismic disasters.





ACHIEVEMENTS

In association with the Secretariat of the United Nations International Strategy for Disaster Reduction and the Municipality of Tijuana, B.C., Mexico, UNESCO convened a final symposium to review the results of this initiative in Tijuana, Mexico and San Jose, California on January 19-22, 2004. The purpose of the meeting was to allow city representatives and school children to report on the results of the project and share experiences, and to provide a forum for project participants and the broader international community to draw lessons from the project, generate ideas for potential collaboration opportunities and prepare for a potential longer-term initiative to promote the creation of a culture of prevention.

The Final Symposium event produced specific recommendations on ways to incorporate risk reduction considerations into the city development plans and on necessary actions to establish a culture of prevention and long-term planning, especially in developing countries. Specifically, in order to achieve the vision of a true culture of prevention, the group recommended the implementation of several initiatives in order to build a concept of prevention. Their aim would be to do so in a manner such that, in 20 years, tangible results could begin to be seen, and that, in 10 years, the public's mentality will have changed to reflect a culture of prevention at all levels. Specific recommendations included:

- Creating programs of public awareness directed at public officials and the general public
- Incorporating themes of prevention as an integral part of the official education curriculum
- Designing formal and informal educational programs to teach the topic of prevention
- Training and teaching the media regarding topics of prevention

FUTURE

■ In the project's participating cities, the demonstration projects are being extended to the entire educational system in each city. The goal is to have the disaster mitigation related educational programs as permanent components of the school curricula. International and local support should be given for these efforts to succeed.

■ The experience of this project should be applied to more cities. In collaboration with the Tech Museum of San Jose, UNESCO, and the ISDR, proposals are already being prepared to apply this methodology in several cities of Asia and Latin America. International coordination is required to increase the impact and effectiveness of these efforts.



CONTACT DETAILS

Project Coordinator
UNESCO/ISDR Consultant
Carlos_Villacis@ksg02.harvard.edu

Project Assistant
UNESCO Consultant
cynthia.cardona@stanfordalumni.org

90 Case Study Of International Seismic Zonation

BACKGROUND

The professional practice of seismic zonation has evolved dramatically since 1990 as a result of cooperative international collaboration between scientists, engineers, insurers, and policy makers during the decade of the 1990's. Seismic zonation is now considered as being much more than the former restricted meaning of a map. It is a public policy tool to link earthquake risk assessment and earthquake risk management. As such, it goes beyond earthquake hazard assessment, which is the identification, delineation, and highlighting of geographic areas in a community susceptible to the earthquake hazards of ground shaking, surface faulting, soil failure, and tsunami wave run up. Seismic zonation has the sense of conveying knowledge needed for action by policy makers on community, national, and regional scales. This new definition of seismic zonation represents a paradigm shift as a result of twelve international forums on seismic zonation involving over 150 scientists, engineers, urban planners, and emergency managers and representing over 50 countries. The forums were convened in conjunction with other planned international conferences during the decade of the 1990's as an activity of the International Decade on Natural Disaster Reduction. Leadership for the ten-year, multilateral, international program was provided by UNESCO, the United States Geological Survey (USGS), the French Association of Earthquake Engineering (AFPS), Earthquake Engineering Research Institute (EERI), and California Division of Mines and Geology, in cooperation with local organizations and professionals societies in the cities where the forums were convened.

OBJECTIVES

The ten-year, multilateral, international program was created to build a global framework for linking earthquake risk assessment and earthquake risk management. The goal was to facilitate interactive sharing of scientific, technical, and public policy information as a foundation for building a global framework of common understanding on the professional

practice of seismic zonation. Innovative usage of formal and informal educational processes, such as forums, conferences, workshops, training, and publications, were the catalysts for change. The objective was to facilitate a paradigm shift from reactive earthquake risk management toward earthquake disaster resilience on community, national, and regional scales.

ACTIVITIES

Twelve international forums on seismic zonation were convened at locations in the United States, France, Austria, Spain, Costa Rica, Cyprus, Algeria, Tunisia, Egypt, the Philippines, and Mexico. They provided opportunities for over 150 scientists, engineers, urban planners, and emergency managers and representing over 50 countries to come together for a common purpose. A monograph on seismic zonation was developed at the end of the program by thirty authors having experience with earthquakes in different countries.

ACHIEVEMENTS

The new concept of seismic zonation as a policy tool linking earthquake risk assessment and earthquake risk management emerged as a result of the twelve international forums on seismic zonation. Each one was convened in conjunction with other planned international conferences and as an activity of the International Decade on Natural Disaster Reduction in order to take advantage of the presence of professionals already planning to attend and to conserve scarce resources for travel and meetings... Over 150 scientists, engineers, urban planners, and emergency managers representing 50 countries contributed to the forums. Leadership and support was provided by Dr. Badaoui Rouhban and Dr. Soren Malling, UNESCO, Dr. Bagher Mohannadioun, France, and Dr. James Davis, USA.

A monograph, "Seismic Zonation, A Framework for Linking Earthquake Risk Assessment and Earthquake Risk Management," was published and disseminated in December 1999 to provide a permanent record of the program and to facilitate educational of professionals

throughout the world.

The State of California passed the Earthquake Hazards Mapping Act in 1990, following the Loma Prieta, California earthquake. This legislation is an example of a legal mandate to implement the concepts of seismic zonation as a policy tool to link earthquake risk assessment and earthquake risk management. Legislation calling for seismic zonation has also been enacted in Algeria, Tunisia, and France.

LESSONS

This program showed that professionals in geographically, technically, and culturally diverse communities, nations, and regions can collaborate successfully on complicated subjects such as seismic zonation. The challenge is reaching policy makers at the community level.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond), provides an unprecedented opportunity to realize the full potential of the concept of seismic zonation as a framework for linking earthquake risk assessment and earthquake risk management on community, national, and regional scales. The monograph provides an educational tool for building technical and political capacity for disaster resilience, a challenge that young and emerging professionals can undertake in cooperation with mature professionals. This can be done, not only in earthquake prone countries, but also by extension to other natural hazards such as floods, landslides, volcanic eruptions, and tsunamis. Such an extension appears to be feasible and is needed to help move every community towards effective disaster reduction and enhanced human security.



CONTACT DETAILS

Dr. Walter Hays

Executive Director, Global Alliance for
Disaster Reduction
238 CARC Building, University of North
Carolina at Charlotte, Charlotte, NC
28223

704 678-3520
walter_hays@msn.com

91

Case Study On Building A Culture Of Earthquake Disaster Resilience In The Mediterranean Region

BACKGROUND

Earthquakes in the Mediterranean region have provided a rallying point for professionals and policy makers throughout the region and windows of opportunity since 1988 for multinational collaboration through programs and projects across a geographically, culturally, and technically diverse region.

Four recent programs have served as catalysts for collaboration in the larger Mediterranean region, including: Turkey, Lebanon, Cyprus, Syria, Israel, Jordan, Palestinian Authority, Egypt, Saudi Arabia, Kuwait, Libya, Algeria, Morocco, Tunisia, Portugal, Spain, Greece, Italy, France, Albania, and the former Yugoslavia, along with participating observers from Iran and Russia. They are

■ "Reduction of Earthquake Losses in the Mediterranean Region," administered by UNESCO and the USGS, on behalf of the US Department of State, with support from Council of Europe and the European-Mediterranean Seismological Center (EMSC, during the period 1992 to the present;

■ "Seismic Risk Reduction in the Mediterranean Region," administered by the former UNDRO, UNDP, and the Government of Italy, with support of UNESCO and USGS, during the period 1988-1990;

■ Earthquake Megacities Initiative, initiated in Seeheim, Germany in 1997 and continuing to the present, with sponsorship by UNESCO and leadership by Risk Management Solutions Corp.;

■ "Middle East Regional Cooperation," administered by Jordan and Israel as co-leaders, with sponsorship by US AID and support of USGS during the period 1999 to the present.

OBJECTIVES

The goal and objective was to foster cooperation between professionals and policy makers within each country and to promote multinational collaboration on programs and projects within the region to build a culture of earthquake resilience on community, national, and regional scales.

ACTIVITIES

The activities included: 1) capacity building through training workshops, conferences, and other activities convened by host countries, both within and without the region, 2) enhanced use of in-country resources, focusing especially on integration of seismicity and strong motion monitoring networks, 3) integration of geologic, geophysical, seismological, and geotechnical data to construct probabilistic hazard maps, 4) integration of geologic, seismological, engineering, and urban planning knowledge to improve national building codes and to develop a model regional building code, 5) improve risk assessments, especially for megacities in the region such as Cairo, and Istanbul, and 6) improve implementation of loss reduction measures. All of the activities listed above were undertaken during the period 1998 to the present.

Each country has provided past and present leadership for the program. Administrative leadership was provided by Dr. Badaoui Rouhban, Dr. Soren Malling, and Dr. Fred Simon, UNESCO; Dr. Michael Foose, USGS; Ludovic van Essche and Franco Maranzana, SEISMED; and Dr. Fouad Bendimerad, RMS..

ACHIEVEMENTS

The seismicity networks in each country in the Middle East have been integrated as a "Middle East Network" and data are being shared, analyzed, and used on an ongoing basis. More than 30 training workshops and conferences have been planned and convened at locations both within the region (e.g., Cairo, Nicosia, Amman, Istanbul) and outside the region (e.g., Seeheim, Santa Susanna, Thessalonica, Paris) and have significantly increased technical capacity, enlightening and empowering professionals and policy makers in each country. Three multinational task groups formed during the various meetings have produced plans to be implemented continuously for: 1) compilation

of geologic, geophysical, and seismology data, 2) analysis of regional seismicity catalogs and seismicity parameters, and 3) analysis of strong motion data for integration with geologic, geophysical, and seismology data, 2) analysis of regional seismicity catalogs and seismicity parameters, and 3) analysis of strong motion data for integration with geologic, geophysical, and seismicity data for use in preparing probabilistic ground shaking hazard maps for application in a regional model building code and in seismic zonation applications.

LESSONS

In spite of the significant geographic, cultural, and technical differences, professionals and policy makers in the Mediterranean region are shown that they are very willing to collaborate on a common agenda that includes activities to build earthquake disaster resilience. Recent damaging earthquakes in the region (e.g., in Turkey, Cyprus, Gulf of Aqaba, Egypt, Algeria, Morocco) and outside the region have served to enhance collaboration and public awareness. Many of the professionals in the region are now contributing in a global context to the program administered by the Global Alliance for Disaster Reduction.

FUTURE

The Decade on Education for Sustainable Development (2005-2014, and beyond) provides an unprecedented opportunity to realize the full potential of continuing collaboration in the greater Mediterranean region. Monographs on various aspects of the experience need to be written and adopted as curricula for building technical and political capacity for disaster resilience. The experiences provide a model for extension to other natural hazards such as floods, landslides, volcanic eruptions, and tsunamis. Such an extension will help move every country in the Mediterranean region towards effective disaster reduction and enhanced human security.

CONTACT DETAILS

Dr. Walter Hays

Executive Director, Global Alliance for
Disaster Reduction
238 OARC Building, University of North
Carolina at Charlotte, Charlotte, NC
28223

704-678-3526
walter_hays@uncc.edu

Awareness And Preparedness For Emergencies At Local Level: A Community Based Program For Disaster Preparedness

BACKGROUND

Loss of life and destruction of property from natural and technological disasters has become regular news in the daily press. Disasters do not respect boundaries - the consequences of emergencies are increasingly being felt across national boundaries, among diverse communities, and outside the company fence. Lack of understanding of what to do during a dramatic event frequently exacerbates the losses.

While local communities are in theory able to deal better with disasters than we often believe, they generally lack the awareness and information to take effective action when something happens. If we could reach out to communities before disasters and inform them of what to do 'just in case', then the impacts could be dramatically reduced.

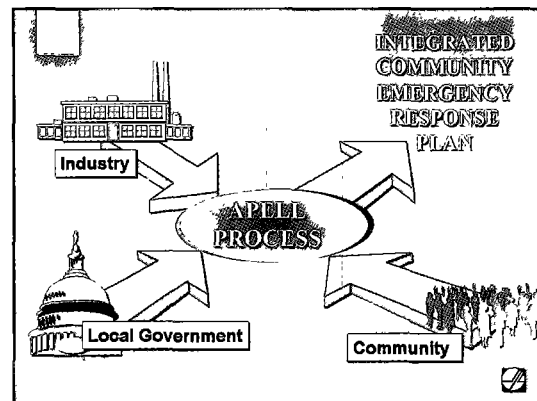
Following some very major accidents in the 1980s, UNEP worked with an international consortium to develop just such a process for local communities. "Awareness and Preparedness for Emergencies at Local Level", generally better known for its acronym "APELL". This has become a global methodology available to communities to minimize the occurrence and harmful effects of emergencies in all countries where natural or industrial hazards may occur. The APELL "Handbook" provides a detailed description of how to develop a coordinated, integrated, and well functioning emergency response plan for local communities.

The strategy of APELL is to identify and create awareness of risks in a community, to initiate measures for risk reduction and mitigation, and to foster preparedness for emergencies in industries, local governments, and the population at large. It is based on open dialogue and cooperation, not on fixed instructions in a rigid master plan.

OBJECTIVES

The name already suggests what the program achieves - community preparedness in case of accident or disaster. These outcomes are achieved through a more structured approach to community participation in emergency planning. It is based on a meaningful two-way dialogue between representatives of the source of the hazard (e.g. a land-owner, or a company), local authorities (usually the emergency service, e.g. fire and /or police) and community leaders (who can inform their constituencies). This

dialogue is achieved through a broad-based "Coordinating Group" that first reviews the hazard situation and then proposes some the measures to address the risks. Any of the above partners could convene such a Group, however it is most common for local government or industry to start the process. The outcome of the process is an emergency plan to which the community has had full input, and which is understood by ordinary citizens. Being aware and prepared naturally also leads to action to prevent accidents from happening in the first place - i.e. risk reduction.



ACTIVITIES

The concept of community involvement in disaster planning has been successfully used in many communities world wide, both in industrialized and in developing countries. Some countries such as France, India and the USA even have regulations to ensure that communities are consulted about disaster risks. Some major companies are also now practicing a more open approach to local communities. But such consultation is not yet universal. Further promotion and implementation is needed in many countries and activity sectors. Some of the situations where the process has been successfully employed are shown in the brochure "APELL Worldwide".

ACHIEVEMENTS

Emergency planning is now following the trend of community involvement that we already see in other areas of governance, and indeed also in corporate affairs. The reason is simple - an informed and educated civil society is better able to deal with the many day to day complexities that modern life brings, including safety. During an emergency there is no time to

educate the community - it is vital that they should already know how to react in situations where they may be at risk, and indeed how to ensure a higher level of primary safety in everyday activities.

Places where communities have been involved in safety and emergency planning have lower levels of accidents and loss. Relatively modest investments in safety and preparedness by governments can avoid the massive costs incurred with disaster response and clean-up - costs for which there are no economic returns. Industry has already learned this lesson - companies with high levels of safety performance also tend to be more profitable because they avoid the high damage costs associated with possible accidents.

LESSONS

Involving the community in emergency prevention, preparedness and response is the central feature of the APELL process. But community involvement can only take place if the right framework is in place.

An important lesson learned from past experience is the need for a neutral facilitator to bring the various social partners together in the Coordinating Group that oversees the preparation of the emergency plan. And it is important that the various partners work in a cooperative and transparent fashion to contribute to such a plan. Since APELL is a voluntary initiative, it will only work if all partners are willing to participate and are eager to see the results.

Transparency in hazard information is another prerequisite, since the emergency plan must be created around the actual risks in a prioritized manner. Every contingency plan must be regularly rehearsed. An important part of the process is therefore community involvement in rescue drills and testing the plan. The experience of such drills is then used to continually improve and evolve the plan as the community grows.

Community participation is difficult in the absence of an appropriate governmental framework. Right to know of risk information, regional mapping of major natural hazards, coordination of civil defense and environmental services, and a legal structure for community participation are among the ingredients that governments can contribute to make the process more successful, and more widespread. For the APELL process to take root at local level on a broad scale, there must be an APELL program to provide the support that local communities and municipalities need. Creating this 'program' is still often a big challenge for the authorities, requiring a high-level endorsement and effective coordination of agencies.

FUTURE

From its genesis in the chemicals industry the APELL process has seen wider application in other technical risk areas such as hazardous materials transport and storage, mining, port areas. Nevertheless the principles are universal and are equally valid when applied to natural disasters, health risks, and even gradual environmental change such as climate variations.

While the principles are well established, much needs to be done still for the various component parts to function better. Various methods of hazard identification and evaluation need to be better adapted at local level. A legislative base for right-to-know of risk information also clears away the ambiguities over information access in public meetings. A formal government structure for coordination of agencies and services concerned with safety and emergency management will ensure higher levels of cooperation on the Coordinating Group. A 'champion' in the government for the APELL process ensures pro-active application in new localities where emergency planning needs to be enhanced.

The capacity of governments and communities for effective emergency planning and preparedness still needs to be enhanced in many places around the world. An effective information and training program - both national and international - will be needed in the years ahead. Information on successful case studies and examples can give confidence to communities and agencies that the APELL process does indeed work, and can deliver the result of an informed and aware community that is less vulnerable to disasters.



CONTACT DETAILS

UNEP - United Nations Environment Programme

Division of Technology, Industry and Economics - DTIE

39-43 quai André Citroën - 75739 Paris Cedex 15, France

Tel: +33 (0) 1 44 37 14 39

Fax: +33 (0) 1 44 37 14 74

apell@unep.fr

<http://www.uneptie.org/apell>

93

Global Open Learning Forum On Risk Education (GOLFRE): A Grass Root Capacity Building Initiative

BACKGROUND

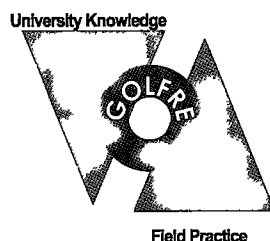
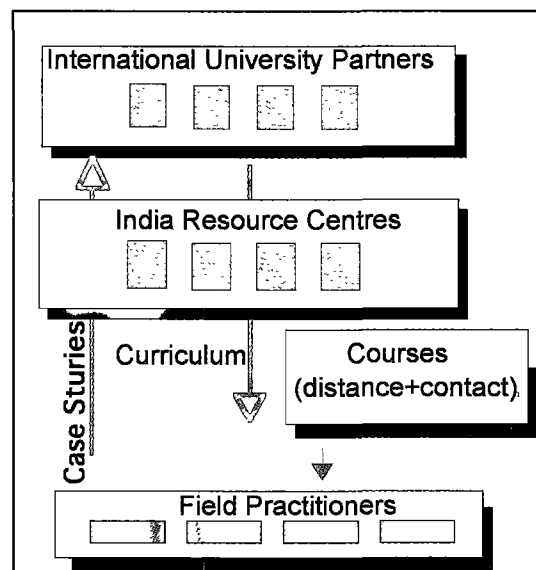
For education on risk reduction to have its desired impact on communities, it needs to reach out to the remotest development worker in the field. Such education needs to be made accessible and affordable for frontline practitioners who operate at community level and are often far removed from conventional knowledge centers such as universities. An open learning model, with distance learning options and contact programs wherever possible, is the most viable means for creating this link between centers of learning and the field worker.

Another advantage that the model offers, when used with a case teaching methodology, is that it constantly renews the knowledge base of universities through addition of analyzed information on field practice. The interaction with field practitioners makes university knowledge more relevant.

The flexible and adaptable nature of the model makes it suitable for the 'new age' student who may be on the job, in the field, and not having prior formal training. The Conference is an opportunity to raise awareness of the urgency to focus on the vulnerable, taking into account community level knowledge needs to address disaster risk.

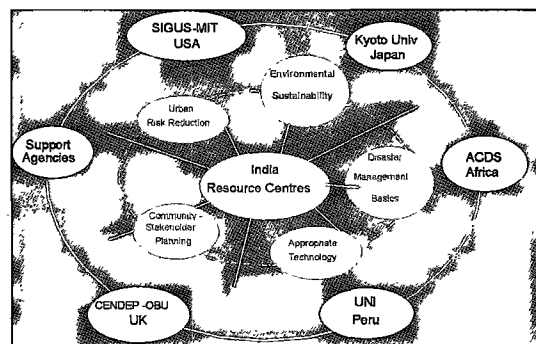
The GOLFRE concept was developed at a meeting of partners organised at Delhi in March 2004 by SEEDS with support from Christian Aid. Participants included the African Centre for Disaster Studies (South Africa), CARE (South Africa), CENDEP-Oxford Brookes University (UK), SIGUS-MIT (USA), School of Planning and Architecture (India), UNCRD (Japan), UNDP (India) and UNI-University of Engineering (Peru). The forum now proposes a formal launch of activities at the WCDR.

Learning Forum on Risk Education (GOLFRE) to bridge the existing gap between knowledge and practice - knowledge as it exists in universities and research centers, and practices as is carried out in the field by NGO workers, community volunteers and government field staff. The forum recognizes the strength of knowledge that exists with practitioners, and the value that academicians can add to it with their interpretations and analysis. Its mandate is to tap the tacit knowledge, practical wisdom and human capital latent in the minds and practices of field workers as the principal resource for training and education. The process will be one of analyzing field practices, and feeding the lessons back to field in a reflective manner. Along with this, it also strives to learn from practice and influence strategic and policy levels towards being more ground-reality oriented. As such it addresses the roles of a range of stakeholders including researchers, teachers, practitioners and policy planners.



OBJECTIVES

A group of internationally based universities and NGOs have come together as the Global Open



ACTIVITIES

In the initial phase GOLFRE activities will focus on India and the Asian region. The first curriculum set will be developed based on a researched repository of case studies. The respective thematic expertise of the partners will be put to use for developing the curriculum. The five university based centers linked to the initiative will contribute course curricula, which will be tested and delivered through five field resource centers in India. The resource centers will leverage on Parvat Yatra (Journey to Mountain: for risk reduction initiatives in the mountain region) and Tat Yatra (Journey to Coastal areas: for risk reduction initiatives in the coastal areas), the ongoing campaigns on risk reduction in India, to gather field information and to deliver courses.

The primary target group for the courses is field practitioners, i.e. field staff of NGOs, local governments and community organizations. Aspiring practitioners such as students of development studies will also form an important segment of the target group.

The activities to be undertaken to implement the program are:

- Research on field practices and documentation of case studies towards creation of a knowledge bank
- Development of teaching curriculum on community based disaster management, using the case studies and special inputs from partner universities.
- Testing of curriculum through pilot training programs in the field and a pilot distance-learning program through the Internet
- Advocacy and dissemination to propagate the program and expand the group of academic and NGO partners

ACHIEVEMENTS

The initiative

- Considers disaster risk reduction as a developmental issue
- Links universities and NGOs for creating a bridge between theoretical knowledge and field practice
- Utilizes local knowledge as the core to its educational programs
- Integrates traditional wisdom and the arts into promoting risk reduction
- Offers an online menu of best practice principles and case studies for training and education

- Targets field workers and development practitioners through affordable and accessible education media

FUTURE

Starting from Indian case study research and delivery of the educational programs to Indian target audiences, the initiative will gradually build up to cover South Asia, Asia and finally will have a global outreach in five years time. The current efforts to attract funding support are to cover the initial four years of activities. These will include tasks of researching appropriate case studies, developing course curriculum, and delivery of courses through the distance learning model as well as pilot contact programs. It is aimed to achieve a considerable amount of self-reliance through fee based revenue streams by the end of the four years period. By that point the initiative will expand its outreach area to African and Latin American regions through nodal partners there.



CONTACT DETAILS

Anshu Sharma

SEEDS, 315 Tower I, Mount Kailash, New Delhi - 110065, INDIA

Tel: (91-11) 30994155, 26498371

Fax: (91-11) 26498372

info@seedsindia.org

www.seedsindia.org