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Humanitarian Aid

International Strategy for Disaster Reduction

Disaster Risk Reduction

20 Examples of Good Practice From Central Asia

"More effective prevention strategies would not only save tens of billions of dollars, but hundreds of thousands of lives as well. Funds currently spent on intervention and relief could be devoted to enhance equitable and sustainable development instead, which would further reduce the risk of wars and disaster. Building a culture of prevention is not easy, however. While the cost of prevention has to be paid in the present, its benefits lie in the distant future. Moreover, the benefits are not tangible; they are wars and disasters that do not happen."

Kofi Annan, *Facing the Humanitarian Challenge: Towards a Culture of Prevention, UNGA, A/54/I*

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1. Introduction: Disaster Impact in Central Asia

According to the ISDR definition, disaster is a serious disruption of a community or a society functioning, causing widespread human, material, economic and/or environmental losses which exceed the ability of the affected community or society to cope using its own resources. Natural hazards may be prevented through application of careful planning, preparedness and mitigation measures.

Numerous economic and financial studies have described the needs and advantages of disaster risk reduction. According to an UNESCO estimate, today only $4 out of every $100 allocated for humanitarian assistance are spent on risk reduction measures despite research illustrating investments in disaster risk reduction saves a significant amount in prevented disaster losses. To reduce negative impacts of human activity on the environment and to build the capacity of vulnerable populations to protect themselves against natural hazards, disaster risk reduction should be an important aspect of global poverty reduction initiatives in the coming years.

Central Asia is a highly disaster prone region that suffers from substantial annual losses caused by disasters. According to the European Comission Humanitarian Aid (ECHO), over the last decade landslides, floods and earthquakes have killed about 2,500 people and affected approximately 5.5 million others (almost 10 percent of the total population in the region). Landslides and floods continuously threaten the population and the region's economy, as does the risk of catastrophic earthquakes. Central Asia is located in a highly seismic area, and according to the NGO Geohazards International there exists an approximate 40% probability that a large earthquake with a magnitude up to 9–10 on MSK 64 scale would hit a major Central Asian city in the coming 20 years. Without adequate preventive measures, an earthquake of this magnitude may kill thousands of people and have catastrophic long-term impacts on the economy.

1. Introduction: Disaster Impact in Central Asia

Tajikistan and Kyrgyzstan are especially vulnerable because both countries are not only disaster prone but also have limited financial resources and physical resilience. Steep valleys with few trees and towering mountains leave towns and villages extremely prone to the effects of gravity, making regular earthquakes more devastating, and propelling constant landslides, mudflows, floods and avalanches.

In Kyrgyzstan between 1992 and 1999, Government Officials report that over 1,210 natural disasters took more than 400 lives and damaged or destroyed over 50,000 houses, 222 schools and 127 clinics. Annual economic losses caused by the impact of natural hazards are estimated at over € 20 million.

Similar conditions are found in Tajikistan, where during the last few years disasters have destroyed and damaged 10 000 houses and affected over half the country's population. Floods alone affected 408,000 persons between 1994 and 2004. More than 30% of the victims were children who lost their families and became orphans, in addition, education was compromised and health risk was increased.

The high number of causalities in Central Asia is not surprising, as statistics show that 90% of global deaths resulting from disasters triggered by natural hazards occur in developing countries. The mortality caused by disasters in developed and developing countries is a consequence of risk management rather than natural hazards. The poor are more vulnerable to disasters as poverty limits their capacity to take preventive measures and to overcome the losses. Research indicates that social, economic, environmental and physical vulnerability are all factors contributing to greater risks in hazard situations.

In a disaster prone region like Central Asia, risk reduction is a crucial factor in sustaining poverty reduction and economic development. Moreover, effective disaster prevention strategies would not only save millions of dollars, but also lives. Funds currently spent on intervention and relief could be used to enhance equitable and sustainable development, which would also further reduce disaster risk.

1. Introduction: Disaster Impact in Central Asia

The integration of disaster risk reduction in official development plans and policies has considerably increased in recent years, however the focus is still on more disaster response then disaster risk reduction. More attention needs to be given to disaster risk reduction as many disasters in the region could be prevented if disaster risk awareness were raised and adequate mitigation measures taken.

Disaster risk reduction which requires long-term planning across sectors must be integrated into general national and regional development strategies. The Hyogo Framework for Action 2005–2015: Building the Resilience of the Nations and Communities to Disasters, from the World Conference on Disaster Reduction held in Hyogo, Japan, provides numerous important guidelines for actions that can lead towards safer nations and communities. It suggests that sharing lessons and best practices can be an important tool for reducing disaster risks, which is also the purpose of this document.

2. Government Practices and Coordination

To the extent disaster risk reduction is identified as a political responsibility, greater sustained commitment to the support of long-term national development objectives can be obtained. Policy direction and operational capabilities must be developed in multiple areas of governance and civil society in order to build a culture of prevention that can be extended to future generations.

Disaster risk reduction as a concept is interpreted differently among the Central Asian countries. However most of governmental institutions concentrate on emergency services associated with post-disaster rescue, relief, reconstruction, and rehabilitation, as well as maintaining public law and order during times of crisis.

Disaster management must be the responsibility of governments. Policies and legal foundations which help assure legitimacy, must be in place in order to root the efficacy of professional and human resources available on the ground. The goal should be to systematically relate local decision-making processes with larger administrative and resource capabilities, such as those devised in provincial or national disaster plans and risk reduction strategies. Capable centralized command can certainly enhance disaster management and response, but effectiveness for both response and risk reduction depends on coordination throughout the governmental hierarchy.

Where the decentralization of power and devolution of governing authority is pursued, risk reduction at the local level also needs to be encouraged and supported. Governments have a vital role to play in disaster risk management, ideally serving as a "central impulse" and coordination body. Government is not only a coordinating body for various governmental institutions; ideally, it should also provide guidelines for international agencies.

The Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters, outcome of the World Conference on Disaster Risk Reduction, suggests that numerous categories of stakeholders participate in the development of any national strategies for disaster risk reduction. This should be the basis of the government's guidelines for donor agencies. A system for reviewing national progress, including monitoring and cost benefit analyses, would then be the responsibility of the national government. National coordination mechanisms for implementation would also facilitate monitoring of the progress made.

2. Government Practices and Coordination

Local Risk Management in Earthquake Zones of Kazakhstan

United Nations Development Program (Kazakhstan)

Ministry of Emergencies, Republic of Kazakhstan

National Red Crescent Society of Kazakhstan

Success Story: The project is a vivid example of a joint initiative implemented by the Ministry of Emergencies of the Republic of Kazakhstan with the support of the United Nations Development Program, National Red Crescent Society, and other agencies, including UNICEF, ADRC, UN OCHA, and GEF. The project is aimed at strengthening the capacity of local communities in disaster preparedness and early warning through the development of knowledge and skills required for effective disaster mitigation.

In one of the biggest cities in Central Asia, Almaty, 200,000 residents, at least, live in buildings that are recognized as vulnerable to seismic hazards, which most probably would be destroyed in an earthquake over 9 in magnitude. Social infrastructure, including schools, hospitals, and other facilities are similarly vulnerable. Considering the scale of the expected seismic danger and the unknown timing, it was logical to focus on building the capacity of local organizations. Schools came first. Therefore, besides the increased awareness of the decision-makers and the general public, the project paid utmost attention to schools and developed specific training materials for school children in several grades. Thus, special brochures were developed for primary, secondary and high school students. These were supplemented by four documentaries in Russian, Kazakh, and English languages devoted to earthquakes, mudflows, and floods. Physical training took place in summer camps, orphanages, and other institutions. Small children could both enjoy and learn from specially developed cartoons based on computer animation, and from posters and coloring books.

Most importantly, these activities were coordinated jointly by the Ministry of Education, which is responsible for approving educational modules for high school students based on an interactive methodology. Pilot training took place in August 2005 in four schools in Almaty and 6 schools in southern areas of Kazakhstan. This proved to be a real commitment on behalf of the Government represented by the Ministry of Education. Everyone knows how difficult it is to find time in a "packed" school curricula. Still, child survival was given priority. This is probably the most precious part of the present success story.

2. Government Practices and Coordination

United Nations Development Program (Tajikistan)

REACT — Rapid Emergency Assessment and Coordination Team (Tajikistan)

Project Goal: Facilitate increased coordination and information sharing between agencies working in the field of disaster risk management.

Success Story: Since 2001, Tajikistan's Ministry of Emergency Situations (MoECD) has chaired the Rapid Emergency Assessment and Coordination Team (REACT), with support from the United Nations Disaster Risk Management Project (UNDRMP). REACT partners, including UN Agencies, donor organizations, and international and national NGOs operating in the area of disaster response, prevention, mitigation, and preparedness. REACT coordinates various organizations that support MoECD in assessing needs for disaster relief, and it facilitates timely and appropriate responses by the numerous assistance organizations.

REACT uses a cluster approach with 5 sector groups (food, shelter and non-food items, water and sanitation, education, health). It also has a network of regional teams. Coordination and information sharing is performed through regular and emergency meetings as well as through the www.untj.org web-site, where relevant information is available.

In addition to assessment and response, REACT has organized a series of training events in disaster management, and search and rescue methods for Government Officials. It has also successfully coordinated efforts in broader areas, including community-based mitigation and hazard mapping. It regularly promotes the participation of 50 agency representatives including donors.

REACT is unique in the Central Asian Region in its ability to rapidly coordinate timely and equitable assistance to disaster-affected communities. Poor coordination in the past had resulted in situations where a few communities received all the humanitarian aid from international agencies, while others were left alone with their problems.

2. Government Practices and Coordination

Lake Sarez Risk Mitigation Project (LSRMP)

The World Bank (Tajikistan)

Ministry of Emergencies and Civil Defense of the Republic of Tajikistan

Success Story: The overall goal of the project is to reduce vulnerability to natural disasters in the valleys of the Bartang and Panj rivers. The dangers include the possibility of an outburst flood from Lake Sarez, which threatens four countries of Central Asia: Tajikistan, Afghanistan, Uzbekistan, and Turkmenistan.

LSRMP is a unique project initiated by the Government of Tajikistan and implemented under the auspices of the World Bank. It aims to address both the high-impact low-probability risk of an outburst from Lake Sarez and the local-impact high-probability risk of earthquakes, debris flows, floods, avalanches, and other hazards in the same mountainous region.

The project has four components:

- Design and installation of a monitoring and warning system
- Social training and safety-related supplies
- Studies to assess possible long-term solutions
- Institutional strengthening

The LSRMP is an excellent example of expertise and ownership within a governmental institution in this case the Ministry of Emergencies and Civil Defense. The project supported extensive capacity building in the Ministry's Usoy Department, which now bears full responsibility for operation and maintenance of a technologically sophisticated Monitoring and Early Warning System (M&EWS). The department is quite capable to take care of the system in the future. Since LSRMP is one of the first projects of this kind, it can serve an example and proof that it is not only possible but also advisable to base donor-funded projects within a government institution on the condition that it really involves its best and most capable personnel.

2. Government Practices and Coordination

Knowledge Network in Central Asia

European Comission Humanitarian Aid (ECHO)

United Nations International Strategy for Disaster Reduction (Central Asia)

Success Story: UN/ISDR Central Asia established a knowledge network between Central Asian countries supported by DIPECHO. During the Soviet times, experts from the different states used to meet on a regular basis. These meetings contributed substantially to the quality of research and development of knowledge. There still exists tremendous knowledge of disaster risk reduction in the region. However, due in part to a limited exchange during the past 15 years, this knowledge is not fully utilized.

The DIPECHO III Program included three workshops on safer building strategies and natural hazards. These workshops in Kazakhstan, Kyrgyzstan and Tajikistan were co-erranged by UN/ISDR Central Asia, the Ministries of Education, and several universities with leading programs on building and construction in the region. The Focal Point of this knowledge network cooperated not only in preparing the workshop contents but also in writing booklets on the workshop topics.

These booklets will be used by architecture and engineering students all over the Central Asian region.

The knowledge network participants have shown great pleasure and a lot of enthusiasm in working together and keeping in touch between workshops. Now, several countries would like to include disaster risk reduction in their formal educational curricula, and to continue working together under the newly established knowledge network. Particular success has been achieved in establishing a new forum which is the basis for the project sustainability and joint efforts toward reducing disaster risk.

Lessons Learned and Practical Advice

Lessons Learned

- Disaster Risk Reduction should become part of all development strategies, including National Development Strategies (NDS) and Poverty Reduction Strategies (PRS).
- Regarding investment projects, sustainability is evidenced by true government ownership and should not depend ultimately on external funding.
- Every partner must have a voice at the negotiation table, especially in partnerships between the government, civil society, and private sector.
- It is important to ensure stakeholders' early involvement in environmental and social assessment prior to launching projects.

Practical Advice / Recommendations

- Government and non-government organizations should cooperate to develop national disaster risk reduction strategies, since the perspectives of the various stakeholders will differ significantly, and those whose perspective is missing may not be able to cooperate in implementation of the strategy.
- Disaster management agencies can enhance cooperation in risk reduction by disseminating basic information about the most likely hazards affecting a district or community.
- Understanding of building standards and codes aimed at protecting important infrastructure and other private and public assets against seismic hazards.

3. Sustainable Development and Poverty Reduction

The goal of sustainable development is to meet the needs of the present generation without reducing the ability of the natural and human systems to meet the needs of future generations. Sustainable development gives highest priority to the needs of the poor. To these ends, it addresses social, economic and ecological systems, which are closely linked.

Disaster risk reduction must be addressed by development and poverty reduction initiatives, because development failures and poverty are often a cause and effect of disasters. For example, failed attempts to develop forests or grazing land for annual crops can cause desertification, landslides, dust storms, drought, leading to greater poverty and vulnerability. But desertification and its consequences are also caused by people who cut vegetation faster than it grows because they are too poor to afford fossil fuels. In Central Asia, mudslides and debris flows become disasters where people are too poor to invest in structures to channel the slides away from their homes or crops. In cities, vulnerability to earthquakes is exacerbated both where poor people live in dangerous houses and where wealthy developers fail to comply with building codes.

Natural hazards present a special risk for the poor and marginalized in Central Asia, who are already the most vulnerable in the society. The destruction of property and livelihoods aggravates their downward cycle of poverty. More governments are recognizing this linkage and are gradually shifting their disaster management emphasis from disaster response only to development of disaster risk reduction strategies. The corollary change incorporating natural hazard management into economic development strategies is still lagging. Examples are inadequate investment in water resource management, environmental protection, land use and planning, and poverty reduction.

Environmental degradation exacerbates the impact of natural hazards, lessens overall resilience and challenges traditional coping strategies. Effective economic development solutions that reduce risk are often overlooked, because of time pressure and other reasons. Land use planning presents a challenge because of conflicting values held about land by different stakeholders. Often the desire for short term gains simply overrides the needs to conserve or restore environmental stability and productivity, particularly since the negative consequences are felt more strongly by poorer people who have less influence in development decisions. The following success stories demonstrate that positive economic development, poverty reduction and disaster risk reduction can all be addressed simultaneously.

3. Sustainable Development and Poverty Reduction

Creation of mini-nurseries in landslide-prone areas of Mountainous Badakhshan

Focus Humanitarian Assistance (Tajikistan)

KUHISTON Foundation (Tajikistan)

Success Story: Badakhshan mountainous territory located east in Tajikistan, that is known for its vulnerability to desertification caused by two sets of hazards: natural and anthropogenic. The natural factors include the harsh climate, altitude, and exaggerated terrain. These are manifest in natural hazards, including avalanches, landslides, debris flows, droughts, and floods, and greatly exacerbated damage from earthquakes. The anthropogenic factors mostly cause or affect poverty including over-grazing, excessive wood cutting, inadequate water management, tilling and watering unstable slopes, neglecting proven mitigation investments, and building homes or other infrastructure in the path of predictable floods, debris flows, and rockfalls. All areas of Badakhshan are suffering from catastrophic destruction of the vegetation, especially bushes and trees. The rural people's poverty is greatly exacerbated by the disasters that destroy their crops in the short term and the productivity of their land in the long run.

The NGO Kuhiston developed a program to motivate and enable villagers to establish mini-nurseries in the Rushan district of Badakhshan. During the last 5 years, seedlings and clones from the nurseries were planted on many of the district's vulnerable slopes, where they help to stabilize the land and slow the soil erosion caused by wind and water. In future years, the trees will provide construction material, fuel, fodder and fruit (it takes 20 poplars to make a house.) Each participating household planted 120 trees, of which 20 fruit trees remain near domestic areas and 100 poplars are planted on the vulnerable slopes. The local office of the UN World Food Program provided food-for-work to the households. Besides this, to encourage people and to reduce the demand for fuel wood, the program provided warm clothing for many families, transparent plastic to cover broken windows in schools, and coal for two schools. Forty-two thousand trees were planted in the Bartang Valley by its communities. "I woke up one night and cried when I thought of the bad things we have done to nature" - said a community member of Dasht village,- "and how simple it actually was to repay the damage and how happy it made us!" Kuhiston needed to buy seedlings from the botanical garden in Khorog to assure that the varieties would be adapted to the climatic conditions. The Director of the botanical garden was impressed by the NGO's commitment and donated fruit trees free of charge. Yet the success of the story is in the commitment of people who provided their best plots of land for the nurseries, built walls against livestock to protect the trees, and showed sincere understanding of the problem. The people committed themselves to continue planting of trees next year, this time on their own.

3. Sustainable Development and Poverty Reduction

Reducing Poverty in High Mountain Environments around Lake Sarez in the Republic of Tajikistan

The World Bank (Tajikistan)

Ministry of Emergencies and Civil Defense of the Republic of Tajikistan

Success Story: Following the successful first stages of the Lake Sarez Risk Mitigation Project, the World Bank supported the request of the Government of Tajikistan to initiate a follow-on project, this time aimed at reducing poverty, associated with natural hazards in high mountainous environment in the area of Lake Sarez . Overall project coordination was carried out by the MoECD and the NGO Focus Humanitarian Assistance.

The several project components, including road rehabilitation and various small mitigation and income generation projects, were designed (a) to alleviate poverty by reducing the people's vulnerability to natural hazards, and (b) to foster sustainable development that will eventually help people to be prepared and to cope with inevitable natural catastrophes.

To achieve this goal, each project included a capacity building component, providing people with new knowledge and skills that are in high demand in other areas of the country. Communities submitted 300 project proposals, among which 31 were selected for implementation. One of the mitigation projects included production of gabions used for the construction of retention walls and river bank strengthening. 18 gabion-production workshops with 60 workers were established in Rushan district of Gorno Badakhshan. Considering the high demand for gabions in similar mitigation activities, these workers can continue their production and sell their services to other communities.

Rehabilitation of 120 km of the Rushan — Barchadiv road required all types of road and bridge construction skills. Now, after two years of project implementation, the working brigades can also work in other areas of the country and use the modern equipment donated by the project.

3. Sustainable Development and Poverty Reduction

Disaster Preparedness Action Plan Tajikistan (DIPECHO)

European Comission Humanitarian Aid (ECHO)

CARE International (Tajikistan)

Success Story: People of Tajikistan have long been using traditional ways to prevent and mitigate natural disasters. However, Community Based Organization(s) (CBOs) can develop disaster response plans that lead to more systematic and effective responses to emergency situations.

"We have been doing many of these activities even before the current project on our own or together with our neighbors," a CBO member said, "but with our disaster preparedness plan our actions have become more systematic, more organized." A woman-member of the CBO in Darai Foni said: "We were certainly aware of hazards that threaten us every year: floods, avalanches, mudslides, rock-falls, soil erosion, and others. But we were not organized to address those threats. We are united now, which means we are stronger." Another woman CBO member in the same village predicted forthcoming floods and mudflows. She based her prediction on dark clouds and heavy rainfall observed around one of the mountain peaks of the Varzob mountain range. She knew that heavy rainfall in that particular part of the mountain range often resulted in floods and mudflows in the past. She warned other local residents involved in a small-scale mitigation project on floods and mudflows, advising them to move to safer areas. After a quick consultation, the CBOs Umed and Najot issued a community warning. Families living in houses located in disaster-prone zones were evacuated to the pre-identified evacuation sites.

Floods and mudflows affect this community every year. Except for those who were evacuated, all the community's men and women, CBO members and non-members, went out of their houses to help dig canals in an effort to re-route floodwaters and mudflows. They tried to protect their unfinished small-scale mitigation project: retaining walls and gabions that considerably reduce bank erosion and protect the only road leading to the community. As a result of the timely warning and an the CBO's organized response to the emergency situation, not a single community member was injured or killed. No property was damaged or lost. The mitigation project, however, sustained some damage. Umed and Najot members immediately started repairing the damage, using their own money to purchase the necessary materials.

Lessons Learned and Practical Advice

Lessons Learned

- One of the sad lessons learned is that the poor not only suffer most from a disaster but will most probably suffer from the next disaster since they cannot afford reliable and costly mitigation measures.

- No labor is to be looked upon as free. It is advisable to find ways to cover the cost of community labor with cash or food or other benefits.

- Use of local knowledge and expertise was found to be a great asset. It has to do not only with the community's "institutional memory" of disasters but also with a high educational level of people in Central Asian countries.

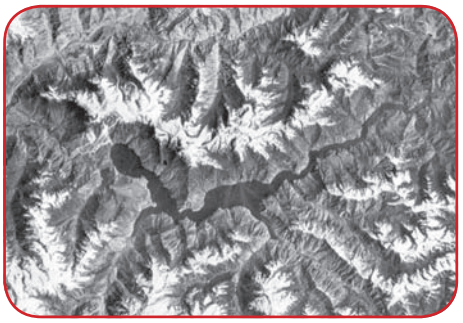
Practical Advice / Recommendations

- No intervention, even when it brings a temporary relief, is a success if it inflicts damage to environment and biodiversity in the area. It is advisable to always address appropriate use of water, soil, and vegetation to prevent droughts and desertification.

- All carefully conceived interventions have a capacity building component. In community training, use scenarios of alternative development and discuss means to achieve the alternative goals.

- Think of the ways to exchange successful community experiences of sustainable development/poverty reduction in disaster-prone areas through joint sessions/workshops or in-country study tours.

4. Risk Assessment



Disaster risk reduction strategies usually begin with plans for assessing (a) the hazards and risks that threaten the target area, (b) the extent of harm that would occur to communities and infrastructure, and (c) the vulnerable people's capacities to cope with and recover from possible disasters. The purpose of the assessments is to identify and compare the relative significance of the various hazards. The likelihood of occurrence and the extent and scope of damage that would occur are estimated for each of the direst hazards. With this information, planners and stakeholders can decide which hazards to prevent, which to mitigate, which to prepare for, which to ignore, and how much of the scarce resources available for disaster management should be used for each of those purposes.

The assessments require detailed understanding of hazards, including their complex causes, history of reoccurrence, probabilities of the events that would trigger them, and vulnerability of the communities exposed to them. For large earthquakes and widespread floods and draughts, probability of a hazard becoming a disaster can be estimated from historic records. However, most disasters are local, and records of mudslides, avalanches, flash floods, epidemics, catastrophic storms, wildfires are scarce in Central Asia. Detailed records of the extent of damage are scarce for all kinds of disasters. Therefore, assessments rely heavily on oral histories collected from long-time residents in the places being assessed.

There are established methods for organizing, processing, analyzing, and displaying assessment data. In recent years, computerized databases and mapping programs (GIS) have proven to be powerful tools. However, the increasing reliance on computers and complex calculations can exacerbate the communication gap between planners and the stakeholders, who must understand and believe in the strategy before they invest the scarce resources, time or political capital needed to implement this.

Therefore, the assessments need to attend adequately to the perceptions of stakeholders whose methods are intuitive, traditional, or presented without tight logic. Ultimately, the implementation or neglect of the strategy will depend on local stakeholders' perceptions of hazards, risks, vulnerabilities, capacities, and opportunities. Thus, communication is a critically important aspect of the assessments that underlie disaster risk reduction strategies.

Reducing risks and vulnerabilities is a government responsibility. Political authorities' decisions are highly influenced by economic considerations. Thus, incorporation of disaster risk reduction into legislative agendas and development planning will be more likely where credible assessments produce quantitative measurements of risks and vulnerabilities.

4. Risk Assessment

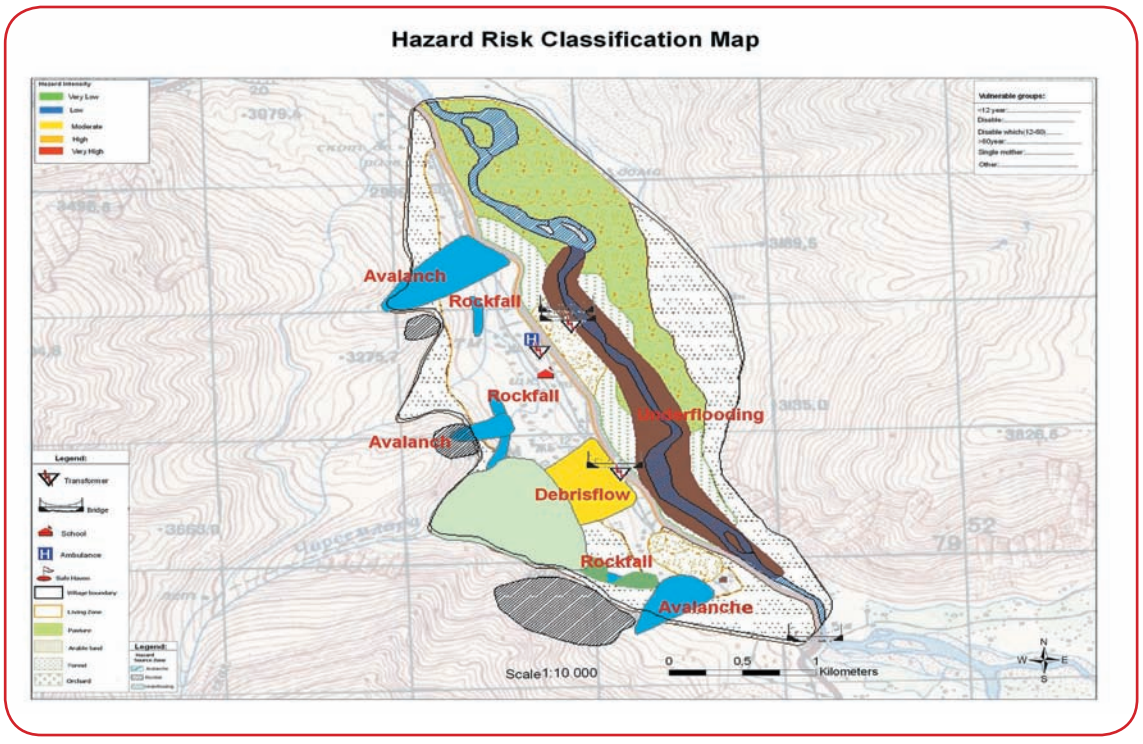
Fostering Disaster Resilient Communities in Isolated Mountain Environments, Phase II, Tajikistan

Focus Humanitarian Assistance (Tajikistan)

Success Story: This project is a vivid example of successful coordination efforts and sharing of best practices between geological engineers, other local experts, local branches of the Ministry of Emergency and Civil Defense, local administrations, and an international NGO Focus Humanitarian Assistance.

The project partners develop risk maps by collecting detailed information through participatory community consultations coupled with field assessments carried out by geologists and engineers. Maps are produced so that they are easy to interpret even by people who lack specific training. Risk zones are physically labeled on the maps to inform people about the type of disasters threatening their communities. A clear color scheme is used to represent risk classification of the hazards affecting the risk zone. Zones colored in red/orange are at much higher risk of severe hazards than those in green/blue colors.

These risk maps are then disseminated to the individual village households. As a result, it is easier now for households to understand the natural threats they face, take preventive measures, and mitigate the harm done when disasters do occur.



4. Risk Assessment

Development and Dissemination of a Community Training Manual for Local Governments

Ministry of Emergencies of Kyrgyzstan

Asian Disaster Reduction Center (Japan)

Success Story: The Kyrgyz Republic, like other Central Asian countries, has considerable experience and expertise in seismologic and geologic surveys. The Government has compiled invaluable scientific materials which, if used in an organized and systematized manner, could serve as the basis for an initiative to update and disseminate risk assessment maps, thus contributing to the safety of people and infrastructure. However, most of these materials were scattered in line ministries and institutions and were literally wasted, despite the urgent need for prevention and mitigation measures against the natural calamities that are so frequent in Kyrgyzstan.

The Crisis Management Center within the Ministry of Emergencies of Kyrgyz Republic conceived an initiative to collect, organize, and adapt these materials to the present situation. With support from the Asian Disaster Reduction Center (ADRC) and an experienced international consultant, the Ministry staff and national scientists, developed a manual for local administration to use in grass-roots level community training in disaster prevention, mitigation, and preparedness. The comprehensive manual contains the available information, including risk maps, for literally every disaster-prone site in Kyrgyzstan.

The 618-page manual provides updated information on each district in the country, including all types of natural hazards characteristic of specific areas, suggestions for prevention and mitigation measures, guidelines for community training in disaster preparedness, and an atlas of all types of practical risk maps. One of its priority values is that it clearly defines responsibilities of local governments and community members. The manual was disseminated all over the country and the Ministry is following up on its practical application, including the establishment of local relief funds to be used in emergencies.

This most positive and low-cost initiative and experience of Kyrgyzstan is worth replicating in other Central Asian countries.

4. Risk Assessment

Rehabilitation of the Seismic Monitoring Network in Tajikistan

Swiss Cooperation Office (Tajikistan)

"Prevention, Mitigation, and Preparedness (PMP) International" NGO (Tajikistan)

Success Story: Until recently, Tajikistan had a seismic network of 49 analogue seismic stations. The civil war of 1992 caused a lot of damage to the seismic network. By the year 2000, the network practically did not function. It could not provide seismic monitoring, and so could not help assess the level of seismic activity in Tajikistan. The overall goal of the project is to strengthen the capacity of the Seismologic Service of the Republic of Tajikistan to carry out its role in disaster risk management, which is to closely monitor seismic events and to provide disaster related information to national and international stakeholders. To this end, the project is installing a network of seven up-to-date digital seismic stations.

Three digital seismic stations have been tested with four to follow by the end of 2006. The collected and processed data are shared with analysts, planners, and other stakeholders via the project website. Both real-time and historic seismic monitoring data are critically important in assessing risks of earthquakes and the local disasters they trigger, such as landslides, debris flows, floods, building collapse, and fires.

The project is implemented by the National NGO Prevention, Mitigation, and Preparedness International (PMP Int.) in close cooperation with the Institute of Earthquake Engineering and Seismology of the Academy of Sciences of the Republic of Tajikistan, and the Ministry of Energy ("Barki Tojik"). Financial and technical support are provided by the Swiss Agency for Development and Cooperation and the Swiss Seismological Survey.

The project initiative is highly appreciated by the Government, which recognizes the vital importance of accurate seismic information both for human and infrastructure safety and for the long-term economic development of the country. The government is considering restoration of the State Geo-Physical Survey of the Republic of Tajikistan on the basis of the newly installed digital seismic network. Another consequence of the project has been that Tajikistan has joined the Federation of Seismic Digital Networks, which opens new perspectives for the young independent state and its science.

Lessons Learned and Practical Advice

Lessons Learned

- Risk assessment brings best results when it combines local knowledge with existing data and higher technology information, such as satellite imagery.

- Risk assessment is not an ultimate objective in itself. Its outcomes should be well communicated and widely shared with all stakeholders through training in disaster risk reduction.

- Effective monitoring and warning systems can be established to save lives and prevent damage to infrastructure, as proved by the unique in Central Asia system now installed and sustained at Lake Sarez in Tajikistan.

- Poor communication in the field leads to unnecessary duplication of risk assessment.

Practical Advice / Recommendations

- Risk assessment, should ideally be carried out nationwide with the risk maps disseminated to all stakeholders, with a special attention to residential areas and social facilities.

- Natural and artificial dams of 15 m and higher should be equipped with monitoring and warning systems.

- Different hazards require different mapping techniques. Composite hazard maps are important tools for hazard assessments. It is very important to use simple classification based on the identification of both high-impact low-frequency and low-impact high-frequency events, with clear indication of high, medium, low risk or no danger.

- Promote cooperative assessments based on multi-sector/inter-agency activities to efficiently provide the baseline data needed by numerous agencies.

5. Capacity Building

Risk is too seldom approached in a systematic way or in a multidisciplinary context. A critical challenge for more effective education and training is to expand the target audience. The subject of disaster risk reduction needs to be integrated into education at all levels, including higher education and vocational training. The key questions to ask would be who should learn what and for which purposes?

Education is an effective and necessary means to achieve the long long-term goals of community-level disaster risk reduction and preparedness. Disaster reduction at the primary and secondary levels fosters awareness and better understanding of the immediate environment in which people and their families live and work. Children are influential and effective communicators, and often lessons learned at school are later transmitted to the home environment. Educational institutions have an important role to play in stimulating and maintaining practices that serve public interests. Teachers are often admired community leaders, whose opinions and dedication are respected in matters of public interest that extend far beyond the classroom. For this reason, the extent to which teachers embrace and communicate the importance of safer school buildings and protection from physical harm can become a strong influence in creating disaster-resilient communities.

Training centers and community training are increasingly used to disseminate information to the public. These initiatives foster growth of smaller informal training sessions adapted to local situations and needs that are often based on local practices. In several Central Asian nations, projects are training trainers for community-level extension of risk reduction practices. This usually entails local development of training materials. Such programs are organized at both national and community levels to impart technical knowledge, and to enhance the trainers' communication and motivational skills. In order to succeed with local capacity building, training is also needed to enhance the organizational skills of the poor populations who are most vulnerable to natural hazards. A holistic approach that promotes increased integration of disaster risk reduction in organizational training and also stresses relationships between disaster risk reduction, sustainable development, and poverty reduction should gain more acceptance from donors and development workers in general.

5. Capacity Building

Community Based Disaster Management in Tajikistan

European Comission Humanitarian Aid (ECHO)

International Federation of Red Cross and Red Crescent Societies

The National Red Crescent Society of Tajikistan (NRCST)

Success Story: The NRCST is one of the oldest national networks in the country. Its field branches and volunteers have provided invaluable assistance to affected populations during not only natural disasters but also during and long after the civil conflict in Tajikistan. The goal of the project is to create and train volunteer disaster response teams aimed to fill a gap in the community to respond to disasters.

Nine disaster response centers were established in different areas all over the country. Each center combines a warehouse for emergency supplies with a trained and equipped disaster response team. The volunteer teams consist of community members — teachers, accountants, Government Officials, farmers, etc. The mechanism for assessment and immediate assistance allows each Red Crescent Society branch to mobilize its volunteers within 2–3 hours after the warning signal. The Red Crescent Society headquarters in Dushanbe coordinates these activities on basis of scenarios designed for each particular type of disaster.

It did not take long for nature to test the teams' efficiency and skills. Two dreadful earthquakes with magnitude of 5.5 on Richter scale struck several villages of Kumsangir and Pyanj districts in Khatlon province of Tajikistan on July 29, 2006, destroying infrastructure in the whole area. Three children were buried under the debris of destroyed houses. A total of 19 injured people were hospitalized. According to a rapid assessment conducted by international relief agencies, more than 16,500 residents were victims of the disaster.

The Red Crescent disaster response team located in the city of Kurgan-Tube was nearby and reached the disaster site within hours. "We were visiting 120–150 houses a day", Yousuf Tuichiev, the Red Crescent field officer says. "We have a network of Red Crescent volunteers in that area. With their help we organized the distribution of 200 tents, 200 self-support construction kits, 100 plastic sheets, potable water, 16,000 chlorinating tablets and leaflets containing primary healthcare information".

In a country with a severe moun-tainous terrain, situated in a highly seismic zone, and prone to almost all kinds of natural hazards, local response teams present a viable and realistic response to natural hazards.

5. Capacity Building

Theatrical Forum

United Nations Development Program (Kazakhstan)

"Leader 21" NGO (Kazakhstan)

Success Story: Theater is becoming a more and more popular form of capacity building initiative used in many sectors from education and health care to human rights and disaster management. It is simple in format, gives a vivid and lively impression and does not require special training of the audience. Besides, things people see and like will most probably be less likely forgotten.

No wonder this format was proposed by the national NGO Leader 21 when it requested UNDP assistance for training rural communities and school children in disaster preparedness. The six-month project cost only $10,000, most of which covered travel expenses and the salary of the invited professional stage director. All NGO members and theatrical students worked as volunteers. Success exceeded expectations. Performances were structured in such a way that they involved the audience who responded enthusiastically and did not want to let the young actors go. Rumors spread immediately and the demand grew each day. This year, UNDP is planning to allocate more funds to a similar capacity building project in rural areas which, the organizers are sure, will have more far-reaching results than even the most sophisticated training.

5. Capacity Building

"Children in Emergencies Training" in Bartang Valley, GBAO, Tajikistan

Focus Humanitarian Assistance (Tajikistan)

"For the Earth" NGO (Tajikistan)

Success Story: The overall project goal was to develop and demonstrate a method to raise primary and secondary school children's awareness of natural hazards, including earthquakes, avalanches, landslides and the potential outburst of Lake Sarez. School education curricula in Tajikistan do not yet include classes in disaster prevention, mitigation, and preparedness. Considering the high risk of natural hazards, this kind of training is especially important in the remote mountain areas that are most vulnerable. Ten thousand residents of the Bartang Valley in mountainous Badakhshan had no opportunities to receive even basic information on disaster preparedness and mitigation. This area was selected not only due to its exposure to regular natural hazards like earthquakes, avalanches and landslides but also because of its vulnerability to the potential outburst of Lake Sarez.

Some 120 children and 12 teachers were selected as direct project beneficiaries of disaster preparedness training conducted by the youth NGO For the Earth, and by the Women's Search & Rescue Team from Khorog the capital city of GBAO (Gorno-Badakhshan Autonomy). The main idea of the project was to help children and their parents understand causes, conditions and consequences of natural disasters and help prepare for and overcome them, and to train teachers in the innovative methods. The use of interactive techniques and audio-visual aids made training interesting and achieved excellent results. Special attention was paid to practical measures, such as the development of household evacuation plans and emergency kits.

Children are known for their quick minds, acute sensitivity, and excellent communication skills. They enjoyed the interactive methodology and role plays. During daytime sessions, secondary students made educational materials to teach primary students. Each evening during training, students were assigned to train their sisters, brothers and even their parents. This way, the number of project beneficiaries increased greatly.

Why is this story a success? Two years later, the project team visited the area and learned that teachers are still using the nicely developed training materials for additional classes in disaster preparedness and mitigation. Thus, the project not only trained teachers, children, and their parents, but also promoted the integration of this most important subject in the school curriculum. In the Tajikistan context, this experience deserves a wider consideration and is advised for replication in other remote areas of the country.

5. Capacity Building

Central Asian Earthquake Safety Initiative in Central Asia

US Agency for International Development (Tajikistan)

Swiss Cooperation Office (Tajikistan)

Target area: Dushanbe, Tajikistan; Almaty, Kazakhstan; and Tashkent, Uzbekistan
Success Story: Earthquakes frequently shook Central Asia during the last several years, and more devastating earthquakes can be expected in the region in the near future. The International Conference "Ways to the Seismic Risk Reduction" that took place in October 1996 in Almaty named all major cities of Central Asia as the most vulnerable areas for the next decade. This judgment is based upon an average earthquake cycle that repeats itself every 80–120 years.

Because the greatest vulnerability to earthquakes exists in the largest cities of Central Asia, the Central Asian Earthquake Safety Initiative (CARESI) was established to reduce vulnerability in Dushanbe, Almaty, and Tashkent. The project aimed to raise awareness about the high earthquakes risk and the options to mitigate that risk; to build earthquake risk mitigation capacities among citizens, NGOs, government agencies, and businesses; and to promote disaster mitigation initiatives.

The project was funded through a cooperative agreement between the United States Agency for International Development (USAID/OFDA), the Swiss Agency for Development and Cooperation (SDC), and the NGO GeoHazards International (GHI). Local implementing partners included the NGOs "Hayat" in Uzbekistan; Man and Element in Kazakhstan; and Focus Humanitarian Assistance in Tajikistan.

CARESI was never concerned about "where to start?" The project selected schools and hospitals as its primary targets. School training initiatives included the development and dissemination of attractive colored booklets, which made a considerable difference in students' attitude in learning about earthquake dangers. In several schools, after the initial training, children started carrying flashlights as suggested by trainers, and families began to mitigate their vulnerability at home by fastening loose household items to the walls. The program reached 50% of the schoolchildren in Almaty and similar numbers in other cities.

The project motivated health officials to prepare handbooks on hospital disaster preparedness and supported training for hospital managers. Supporting initiatives enhanced the sustainability of results. In order to build local capacity, the project conducted leadership training programs for faculty members in environmental and occupational safety, leaders in civil protection, condominium managers, personnel of neighborhood and Red Crescent Society training centers, and staff of numerous NGOs.

5. Capacity Building

Disaster Reduction in Ferghana Valley of Central Asia

European Comission Humanitarian Aid (ECHO)

Mercy Corps International (Tajikistan)

Success Story: Central Asia's densely populated Ferghana Valley has long been considered as a region of high susceptibility to disasters. Ferghana Valley shared by Kyrgyzstan, Tajikistan, and Uzbekistan is highly prone to all types of hazards. The past 15 years have brought many challenges for the three countries, and although their governments clearly understand the needs associated with disaster management, it will take time to build strong government structures for mitigation and response. Meanwhile, "life-saving is in the hands of survivors". It is well known that over 90% of disaster survivors are saved by their immediate family members and neighbours.

The Mercy Corps project team, supported by ECHO's Disaster Preparedness Project (DIPECHO), organized training events for 48 communities with a total population of nearly 115,000 people. As usual, the most sensitive and responsive audience were the children and youth.

Firdaus is a high-school student from the Isfara District of Tajikistan and a member of the Young Rescuers Group (YRG) in his community. "In June 2004", he says, "the DIPECHO project began in our village, and a club of Young Rescuers was created with 24 members. During the school year, experienced trainers worked with us and taught us the right actions to take in the event of a natural disaster. We organized disaster simulation exercises in our school, and then took part in the district simulation competition. We took the first place!"

5. Capacity Building

Disaster Preparedness Training in the Bartang River Valley, Gorno-Badakhshan Autonomy (Tajikistan)

European Comission Humanitarian Aid (ECHO)

Focus Humanitarian Assistance (Tajikistan)

In 1999 disaster preparedness training in the Bartang Valley of Gorno-Badakhshan directly contributed to saving human lives. This training was held in the framework of the "Disaster Preparedness Training Project for Vulnerable Communities of the Bartang Valley" funded by ECHO.

On August 24, 1999, on their way down from the Usoy dam at Lake Sarez, the FOCUS team faced a two kilometer long lake that had risen behind a natural dam caused by a sudden mudslide/debris flow that occurred the night before. The mudslide had gone directly through the village of Razuch, completely destroying three houses and 43 wheat and potato fields. Fortunately, not a single person was injured or killed. This is because the entire village population, immediately, escaped to the evacuation site identified during the disaster preparedness training given by FOCUS just one week earlier.

Upon seeing a FOCUS vehicle approach, the people of the village made their way down from the slope where they had spent the night. The people described the events of the previous evening, when they heard a loud noise and were sure that it was Lake Sarez because, in their opinion, nothing else could create such a rumble. Once they reached the evacuation site, they understood that it was a tremendous mudslide, similar to the one that had affected the same village 80 years before.

The villagers credited the training with saving their lives. As a result of the training the community avoided panic, grabbed already-prepared documents and other important supplies, and helped one another to evacuate swiftly to their agreed-upon safe haven. They practiced the "buddy-system" learned in the training to assure that children, elders, and disabled community members would neither be left behind nor slow the immediate response.

Lessons Learned and Practical Advice

Lessons Learned

- Interactive methods work much better than lectures for community training, especially when combined with practical examples, simulation, and role play — no lecturing!
- Radio and TV Soap Operas are an effective way to change listeners' attitudes and behavior towards disaster risk.
- Start involving little children to encourage their interest in risks and mitigation from early age.
- Involve girls in the Young Rescuer Groups and encourage them to think of disaster preparedness as being as relevant for them as for boys.

Practical Advice / Recommendations

- Involve local communities in the development of emergency preparedness plans and disaster mitigation measures. Engage local people in the operation and maintenance of early warning systems.
- Rely on the community's social memory of local hazards and build on that when promoting attitude changes and disaster mitigation activities.
- Build on local knowledge and traditions, use favored forms of interaction like theater.
- Use existing structures and partnership relations. Rely on informal leaders: establishing relations and understanding with them guarantees success of interventions.

6. Structural and Non-Structural Mitigation

Mitigation relates to concrete actions which are put into practice to reduce the risk of destruction and casualties. Mitigation is generally split into two main types of activities: Structural mitigation refers to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural mitigation refers to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk with related impacts.

Legislation is necessary to promote both structural mitigation, for instance building codes for seismic areas, and non-structural mitigation, such as land-use regulations and authorities.

Structural Mitigation

Structural damage, collapse of buildings or infrastructure are common consequences of disasters, including earthquakes, floods, and landslides. Structural mitigation aims to reduce this damage and eventually save lives. Structural mitigation is a science that requires the expertise of civil engineers. It includes both the design of new buildings, roads, canals, dams, and other infrastructure and the strengthening and retrofitting of old structures. It is most important to ensure good maintenance of structures as poor maintenance is often the cause of indirect damage. An example is seen where riverbeds are not cleaned of trees and logs: during a flood, such debris may pile up against a bridge and consequently break it, thus damaging the neighboring construction which would not normally have been affected by the flood. Poorly maintained dikes break and worsen floods.

Non-Structural Mitigation

Many kinds of non-structural mitigation measures can be very cost-effective in reducing risk. Examples include regulations that dictate which activities can or cannot be undertaken, dependent on certain critical indicators; for example, flood barriers and avalanche warning signs can temporarily restrict people from entering areas when the risk is above an admissible level. Land-use plans define where human settlements and activities can be located. In addition to regulations and planning requirements, non-structural mitigation also refers to training people to reduce hazards, such as the risk of heavy objects falling during an earthquake. Cupboards, shelves, furniture and equipment may fall even during a low intensity earthquake, causing injuries and even deaths. Experts estimate that half of the injuries during earthquakes are caused by falling furniture and other items.

Non-structural seismic mitigation consists of bracing and anchoring items, or re-locating them, to prevent them from falling. It involves tie-downs, anchors, brackets and other support systems. Non-structural mitigation activities are simple and quick to apply, are generally inexpensive, yet can save lives and property from destruction.

6. Structural and Non-Structural Mitigation

Safe Schools for Children

United Nations Development Program (Kazakhstan)

National Red Crescent Society of Kazakhstan

Success Story: The notorious Lugovskoy earthquake occurred on May 23, 2003 in the Ryskulov district of Zambyl Oblast, Kazakhstan. The earthquake intensity at the epicenter reached 7–8 degrees on MSK-64 scale. It was followed by 75 aftershocks within the first seven hours. The most exposed zone covered 18 settlements inhabited by more than 38,000 people. Twenty-one thousand people lost their homes.

In comparison with other earthquakes in Asia, the Lugovskoy earthquake was not considered extremely destructive or devastating. The human toll was not heavy, but the considerable economic damage ($105 million) demanded tremendous efforts and material expenditure from the states. The Government declared the earthquake a regional emergency. It was apparent that the next earthquake might not be so "merciful" to people, and urgent preventive and mitigation measures needed to be taken. Thus, seismic safety became a government priority for the near term.

The pilot project targeted five secondary schools and one college in the district center and included one-week training followed by non-structural mitigation measures carried out by 3 brigades formed of school students. Kids were involved in fastening all potentially dangerous objects like book-shelves, blackboards, lamps and workstations. Moreover, the children did similar things at home and shared their experience with their neighbors. The Government initiative gained support from the United Nations Development Program and the National Red Crescent Society of Kazakhstan. National Society volunteers followed up with similar training in other areas, including Almaty where children not only fastened furniture and equipment but also manufactured all necessary fastening devices at their industrial arts classes in their schools.

6. Structural and Non-Structural Mitigation

Construction of a Mudflow Channel in Rasht Valley, Tajikistan

European Comission Humanitarian Aid (ECHO)

German Agro Action (Tajikistan)

Success Story: The village of Humdon situated 40 km from the district center of Nurobod suffers from annual avalanches and debris flows that regularly damage residential areas and infrastructure, including farm fields and household plots. Traditionally, people in Tajikistan protect themselves from mud and debris flows by widening and deepening the route channels. This however is possible only if they are adequate in size and the people do it regularly. If neglected, a mudflow may spread beyond of the existing channel and become a real disaster sweeping away houses and agricultural fields. The civil war in Tajikistan resulted in the large-scale deterioration of infrastructure, and Humdon is just one of the many villages that suffered from it.

German Agro Action, in cooperation with the Ministry of Emergencies and Civil Defense, provided assistance for the rehabilitation of a mudflow channel of 120 meters. The channel now fully protects the village and its inhabitants. 1,760 people benefited from the project and it is now up to them to maintain the channel to avoid considerable damage in the future.

6. Structural and Non-Structural Mitigation

Construction of an Anti-Mudflow Protective Wall

Mission East (Tajikistan)

Success Story: The village Shing of Penjikent district in the northern part of Tajikistan is among the most disaster-prone locations of the nation. Along with other villages of the picturesque Shing River Valley, it has a long history of overcoming regular natural hazards, such as floods, landslides, avalanches and mudflows. However, a hundred or even fifty years ago the village was much smaller, and people were able to select relatively safe plots of land for new houses. During the past 15–20 years, the village has become especially prone to landslides and mudflows, partly due to illegal construction at dangerous sites and increased precipitation that some people associate with climate change.

In 2005, the international NGO Mission East helped the community develop and implement a small mitigation project. It aimed at protecting residential areas, the village school, and the clinic against disasters that come with predictable frequency yet unpredictable timing. A 200 m wall was built of 2 m height and 60 cm width. As if in response, nature decided to check the construction. Heavy showers followed by a massive mudflow were especially hard this year. If not for the wall, most households and both the school and clinic would have been washed away. The water flow was so strong this time that only 3 m of wall were left of the initial 200 m! However, neither the social facilities nor the residential areas suffered. This was a useful lesson learned by the community that did not suffer damage maybe for the first time in many years.

6. Structural and Non-Structural Mitigation

Disaster Risk Reduction with Earthquake Safe Constructions, DIPECHO II

European Comission Humanitarian Aid (ECHO)

International Organization for Migration (Tajikistan)

Shelter for Life (Tajikistan)

Success Story: The overall goal of the project is to build the disaster prevention capacity of communities in Tajikistan through close cooperation with local authorities and NGOs, with special attention paid to gender aspects. To this end, the project used shake table techniques to demonstrate the importance of both structural and non-structural mitigation.

A "mini house" built of traditional local materials but big enough to fit equipment including furniture, a TV-set and a cupboard was presented to training participants who were representative community members. The main idea was to demonstrate the advantages of applied non-structural items, like fasteners. In the first case, fasteners were not used and all the household furniture and equipment were sent flying around in the house. In the second case, fasteners were used and as a result household items remained in place. Mitigation training used two houses made of the same local construction material. An earthquake simulated by the shake table proved the safety of the house strengthened at the additional cost of only 15%.

The project team was quite satisfied with the overall outcomes of community training based on their monitoring and evaluation. Non-structural mitigation measures were seen during monitoring visits in several communities where training was held; local materials were used as fasteners for household equipment in order to prevent loose items from injuring family members and damaging the houses.

Later in the year, the team was pleasantly surprised by the follow-up from community members. People who had participated in training workshops came to the SFL Office seeking advice on making new seismic-resistant homes. The fact that people came for advice and not to ask for funding or resources proves the positive change in people's minds, reduced dependency on external assistance, and demonstrated the understanding that their lives are in their own hands.

Lessons Learned and Practical Advice

Lessons Learned

- Structural and non-structural mitigation measures can reduce the number of people killed and injured in a disaster by 50% and considerably prevent material damage.
- Creation of sustainable skills and knowledge as well as good partnership relations should be fostered between local communities, local authorities and NGOs.
- Training for school students and local entrepreneurs in producing non-structural mitigation items (such as clamps, brackets, etc.) proved most useful.
- Training local government officials in structural and non structural mitigation measures is an important aspect of local capacity building.

Practical Advice / Recommendations

- Words used during training in mitigation should be carefully chosen to avoid creating panic among the community.
- Assistance or training in structural and non-structural mitigation measures should be aimed at the whole community and not only at the victims of the recent disaster, in order to avoid misunderstanding and negative feelings.
- Reimbursement needs either to include the whole community or it should be performed in the form of a micro loan.
- Try to find **local** solutions to **local** problems with the use of **local** resources!

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International Strategy for Disaster Reduction

SUMMARY of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (Hyogo Framework)

Expected outcome, strategic goals and priorities for action 2005-2015

Expected Outcome
The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries

Strategic Goals

- The integration of disaster risk reduction into sustainable development policies and planning
- Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards
- The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes

Priorities for Action

Key Activities

1. Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institutional basis for implementation	2. Identify, assess and monitor disaster risks and enhance early warning	3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels	4. Reduce the underlying risk factors	5. Strengthen disaster preparedness for effective response at all levels
• DRR institutional mechanisms (national platforms); designated responsibilities • DRR part of development policies and planning, sector wise and multisector • Legislation to support DRR • Decentralisation of responsibilities and resources • Assessment of human resources and capacities • Foster political commitment • Community participation	• Risk assessments and maps, multi-risk: elaboration and dissemination • Indicators on DRR and vulnerability • Data & statistical loss information • Early warning: people centered; information systems; public policy • Scientific and technological development; data sharing, space-based earth observation, climate modeling and forecasting; early warning • Regional and emerging risks	• Information sharing and cooperation; • Networks across disciplines and regions; dialogue • Use of standard DRR terminology • Inclusion of DRR into school curricula, formal and informal education • Training and learning on DRR: community level, local authorities, targeted sectors; equal access • Research capacity: multi-risk; socio-economic; application • Public awareness and media	• Sustainable ecosystems and environmental management • DRR strategies integrated with climate change adaptation • Food security for resilience • DRR integrated into health sector and safe hospitals • Protection of critical public facilities • Recovery schemes and social safety- nets • Vulnerability reduction with diversified income options • Financial risk-sharing mechanisms • Public-private partnership • Land use planning and building codes • Rural development plans and DRR	• Disaster management capacities: policy, technical and institutional capacities • Dialogue, coordination & information exchange between disaster managers and development sectors • Regional approaches to disaster response, with risk reduction focus • Review & and exercise preparedness and contingency plans • Emergency funds • Voluntarism & participation

Cross Cutting Issues

- Multi-hazard approach
- Gender perspective and cultural diversity
- Community and volunteers participation
- Capacity building & technology transfer

Contributing to the achievements of the internationally agreed development goals (including the MDGs)

DRR= disaster risk reduction

www.unisdr.org/wcdr

Continued
SUMMARY of the Hyogo Framework for Action 2005-2015:
Building the Resilience of Nations and Communities to Disasters (Hyogo Framework)

Implementation and Follow-Up

In order to achieve the goals and act upon the priorities identified in this Framework, the following tasks have been identified to ensure implementation and follow-up by States, regional and international organizations in collaboration with civil society and other stakeholders. The ISDR partners, in particular the Inter-agency Task Force on Disaster Reduction and secretariat, are requested to assist in implementing this Framework for Action.

General Considerations

- Implementation by different stakeholders, multi-sectoral approach; participation of civil society (NGOs, CBOs, volunteers), scientific community & private sector is vital
- States primarily responsible; an enabling international environment is vital, incl. strengthened regional capacities
- Build multi-stakeholder partnerships
- Particular attention to:
  - Small island developing States: Mauritius Strategy;
  - Least developed countries;
  - Africa
- States, regional and international organizations to foster coordination among themselves and a strengthened International Strategy for Disaster Reduction (ISDR)
- Follow-up integrated with other major conferences in fields relevant to DRR; reviews as appropriate

Actors

Critical tasks

States

- Designate national coordination mechanisms for the implementation and follow up, communicate to the ISDR secretariat;
- National baseline assessments of the status of DRR;
- Publish and update a summary of national programme for DRR including international cooperation;
- Develop procedure for reviewing national progress including systems for cost benefit analysis and ongoing monitoring on risk;
- Consider acceding to, approving or ratifying relevant international legal instruments and to make sure they are implemented;
- Promote the integration of DRR with climate variability and climate change into DRR strategies and adaptation to climate change; ensure management of risks to geological hazards.

Regional Organizations and Institutions

- Promote regional programmes including for technical cooperation, capacity development, the development of methodologies and standards for hazard and vulnerability monitoring and assessment, the sharing of information and effective mobilization of resources;
- Undertake and publish regional and sub-regional baseline assessments;
- Coordinate and publish reviews on progress and support needs, and assists countries in preparation of national summaries;
- Establish specialized regional collaborative centers;
- Support the development of regional mechanisms and capacities for early warning, including for tsunami

International Organizations (including UN System and IFIs)

- Engage in the implementation of the ISDR by encouraging integration of DRR into humanitarian and sustainable development fields;
- Strengthen the capacity of the UN system to assist disaster-prone developing countries in DRR and implement measures for assessment of progress;
- Identify actions to assist disaster-prone developing countries in the implementation of the Hyogo Framework, ensure their integration and that adequate funding is allocated; assist in setting up national strategies and programmes for DRR;
- Integrate actions into relevant coordination mechanisms (UNDG, IASC, RCs and UN Country Teams);
- Integrate DRR into development assistance frameworks such as CCA/UNDAF, PRSP;
- In collaboration with networks and platform support: data collection and forecasting on natural hazards and risks; early warning systems; full & open exchange of data;
- Support States with coordinated international relief assistance, to reduce vulnerability & increase capacities;
- Strengthen international mechanisms to support disaster stricken States in post-disaster recovery with DRR approach
- Adapt & strengthen inter-agency disaster management training for DRR and capacity building.

ISDR (Inter-Agency Task Force on Disaster Reduction & secretariat)

- Develop a matrix of roles and initiatives in support of follow/up to the Hyogo Framework;
- Facilitate the coordination of effective actions within the UN system and other international and regional entities to support the implementation of the Hyogo Framework, identify gaps, facilitate processes to develop guidelines and policy tools for each priority area;
- In broad consultation, develop generic, realistic and measurable indicators. These indicators could assist States in measuring progress in the implementation of the Hyogo Framework;
- Support national platforms & regional coordination;
- Register relevant partnerships with Commission on Sustainable Development;
- Stimulate the exchange, compilation, analysis and dissemination of best practices, lessons learnt;
- Prepare periodic review on progress towards achieving the objectives of the Hyogo Framework and provide reports to the UNGA & other UN bodies

Resource Mobilization: States, Regional and International Organizations

- Mobilize resources and capabilities of relevant national, regional and international bodies, including the UN system;
- Provide and support the implementation of the HFA in disaster prone developing countries, including through financial and technical assistance, addressing debt sustainability, technology transfer, public-private partnership and North-South and South-South cooperation;
- Mainstream DRR measures into multilateral and bilateral development assistance programmes;
- Provide adequate voluntary financial contribution to the UN Trust Fund for DR to support follow-up activities to Hyogo Framework; review usage and feasibility for the expansion of this fund;
- Develop partnership to implement schemes that spread out risks, reduce insurance premiums, expand insurance coverage and increase financing for post-disaster reconstruction, including through public and private partnerships. Promote an environment that encourages a culture of insurance in developing countries.

Source: Outcome of the World Conference on Disaster Reduction, Hyogo, Kobe Japan, 18-22 Jan 2005

www.unisdr.org/wcdr

Glossary

This terminology developed by UN/ISDR in cooperation with other experts in the field presents these basic definitions on disaster risk reduction in order to promote a common understanding on this subject, for use by the public, authorities and practitioners.

Acceptable risk:
The level of loss a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.
In engineering terms, acceptable risk is also used to assess structural and non-structural measures undertaken to reduce possible damage at a level which does not harm people and property, according to codes or «accepted practice» based, among other issues, on a known probability of hazard.

Biological hazard:
Processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Examples of biological hazards: outbreaks of epidemic diseases, plant or animal contagion, insect plagues and extensive infestations.

Building codes:
Ordinances and regulations controlling the design, construction, materials, alteration and occupancy of any structure to insure human safety and welfare. Building codes include both technical and functional standards.

Capacity:
A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability.

Capacity building:
Efforts aimed to develop human skills or societal infrastructures within a community or organization needed to reduce the level of risk. In extended understanding, capacity building also includes development of institutional, financial, political and other resources, such as technology at different levels and sectors of the society.

Climate change:
The climate of a place or region is changed if over an extended period (typically decades or longer) there is a statistically significant change in measurements of either the mean state or variability of the climate for that place or region. Changes in climate may be due to natural processes or to persistent anthropogenic changes in atmosphere or in land use. Note that the definition of climate change used in the United Nations Framework Convention on Climate Change is more restricted, as it includes only those changes which are attributable directly or indirectly to human activity.

Coping capacity:
The means by which people or organizations use available resources and abilities to face adverse consequences that could lead to a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards.

Counter measures:
All measures taken to counter and reduce disaster risk. They most commonly refer to engineering (structural) measures but can also include non-structural measures and tools designed and employed to avoid or limit the adverse impact of natural hazards and related environmental and technological disasters.

Disaster:
A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.
A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

Disaster risk management:
The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

Disaster risk reduction (disaster reduction):
The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.
The disaster risk reduction framework is composed of the following fields of action, as described in ISDR's publication 2002 «Living with Risk: a global review of disaster reduction initiatives», page 23:
Risk awareness and assessment including hazard analysis and vulnerability/capacity analysis;
Knowledge development including education, training, research and information;
Public commitment and institutional frameworks, including organizational, policy, legislation and community action;
Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
Early warning systems including forecasting, dissemination of warnings, preparedness measures and reaction capacities.

Early warning:
The provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare

for effective response. Early warning systems include a chain of concerns, namely: understanding and mapping the hazard; monitoring and forecasting impending events; processing and disseminating understandable warnings to political authorities and the population, and undertaking appropriate and timely actions in response to the warnings.

Ecosystem:
A complex set of relationships of living organisms functioning as a unit and interacting with their physical environment. The boundaries of what could be called an ecosystem are somewhat arbitrary, depending on the focus of interest or study. Thus the extent of an ecosystem may range from very small spatial scales to, ultimately, the entire Earth (IPCC, 2001).

El Niño-southern oscillation (ENSO):
A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns.
The El Niño part of ENSO refers to the well-above-average ocean temperatures along the coasts of Ecuador, Peru and northern Chile and across the eastern equatorial Pacific Ocean, while the Southern Oscillation refers to the associated global patterns of changed atmospheric pressure and rainfall. La Niña is approximately the opposite condition to El Niño. Each El Niño or La Niña episode usually lasts for several seasons.

Emergency management:
The organization and management of resources and responsibilities for dealing with all aspects of emergencies, in particular preparedness, response and rehabilitation. Emergency management involves plans, structures and arrangements established to engage the normal endeavors of government, voluntary and private agencies in a comprehensive and coordinated way to respond to the whole spectrum of emergency needs. This is also known as disaster management.

Environmental impact assessment (EIA):
Studies undertaken in order to assess the effect on a specified environment of the introduction of any new factor, which may upset the current ecological balance. EIA is a policy making tool that serves to provide evidence and analysis of environmental impacts of activities from conception to decision-making. It is utilized extensively in national programming and for international development assistance projects. An EIA must include a detailed risk assessment and provide alternatives solutions or options.

Environmental degradation:
The reduction of the capacity of the environment to meet social and ecological objectives, and needs.
Potential effects are varied and may contribute to an increase in vulnerability and the frequency and intensity of natural hazards. Some examples: land degradation, deforestation, desertification, wild land fires, loss of biodiversity, land, water and air pollution, climate change, sea level rise and ozone depletion.

Forecast:
Definite statement or statistical estimate of the occurrence of a future event (UNESCO, WMO).
This term is used with different meanings in different disciplines.

Geological hazard:
Natural earth processes or phenomena that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Geological hazard includes internal earth processes of tectonic origin, such as earthquakes, geological fault activity, tsunamis, volcanic activity and emissions as well as external processes such as mass movements: landslides, rockslides, rock falls or avalanches, surface collapses, expansive soils and debris or mud flows. Geological hazards can be single, sequential or combined in their origin and effects.

Geographic information systems (GIS):
Analyses that combine relational databases with spatial interpretation and outputs often in form of maps. A more elaborate definition is that of computer programs for capturing, storing, checking, integrating, analyzing and displaying data about the earth that is spatially referenced. Geographical information systems are increasingly being utilized for hazard and vulnerability mapping and analysis, as well as for the application of disaster risk management measures.

Greenhouse gas (GHG):
A gas, such as water vapour, carbon dioxide, methane, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), that absorbs and re-emits infrared radiation, warming the earth's surface and contributing to climate change (UNEP, 1998).

Hazard:
A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.
Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydro-meteorological and biological) or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, frequency and probability.
Hazard analysis:
Identification, studies and monitoring of any hazard to determine its potential, origin, characteristics and behavior.

Hydro-meteorological hazards:
Natural processes or phenomena of atmospheric, hydrological or oceanographic nature, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.
Hydro-meteorological hazards include: floods, debris and mud floods; tropical cyclones, storm surges, thunder/hailstorms, rain and wind storms, blizzards and other severe storms; drought, desertification, wild land fires, temperature extremes, sand or dust storms; permafrost and snow or ice avalanches. Hydro -meteorological hazards can be single, sequential or combined in their origin and effects.

Land-use planning:
Branch of physical and socio-economic planning that determines the means and assesses the values or limitations of various options in which land is to be utilized, with the corresponding effects on different segments of the population or interests of a community taken into account in resulting decisions.

Land-use planning involves studies and mapping, analysis of environmental and hazard data, formulation of alternative land-use decisions and design of a long-range plan for different geographical and administrative scales. Land-use planning can help to mitigate disasters and reduce risks by discouraging high-density settlements and construction of key installations in hazard-prone areas, control of population density
and expansion, and in the sitting of service routes for transport, power, water, sewage and other critical facilities.

Mitigation:
Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Natural hazards:
Natural processes or phenomena occurring in the biosphere that may constitute a damaging event.
Natural hazards can be classified by origin namely: geological, hydro-meteorological or biological.
Hazardous events can vary in magnitude or intensity, frequency, duration, area of extent, speed of onset, spatial dispersion and temporal spacing.
Preparedness:
Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

Prevention:
Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters. Depending on social and technical feasibility and cost/benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In
the context of public awareness and education, related to disaster risk reduction changing attitudes and behavior contribute to promoting a «culture of prevention».

Public awareness:
The processes of informing the general population, increasing levels of consciousness about risks and how people can act to reduce their exposure to hazards. This is particularly important for public officials in fulfilling their responsibilities to save lives and property in the event of a disaster. Public awareness activities foster changes in behavior leading towards a culture of risk reduction. This involves public information,
dissemination, education, radio or television broadcasts, use of printed media, as well as, the establishment of information centers and networks and community and participation actions.

Public information:
Information, facts and knowledge provided or learned as a result of research or study, available to be disseminated to the public.

Recovery:
Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery (rehabilitation and reconstruction) affords an opportunity to develop and apply disaster risk reduction measures.

Relief / response:
The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

Resilience / resilient:
The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures.

Retrofitting (or upgrading):
Reinforcement of structures to become more resistant and resilient to the forces of natural hazards.
Retrofitting involves consideration of changes in the mass, stiffness, damping, load path and ductility of materials, as well as radical changes such as the introduction of energy absorbing dampers and base isolation systems. Examples of retrofitting includes the consideration of wind loading to strengthen and minimize the wind force, or in earthquake prone areas, the strengthening of structures.

Risk:
The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation Risk = Hazards x vulnerability. Some disciplines also include the concept of exposure to refer particularly to the physical aspects of vulnerability. Beyond expressing a possibility of physical harm, it is crucial to recognize that risks are inherent or can be created or exist within social systems. It is important to consider the social contexts in which risks occur and that people therefore do not necessarily share the same perceptions of risk and their underlying causes.

Risk assessment/analysis:
A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend. The process of conducting a risk assessment is based on a review of both the technical features of hazards such as their location, intensity, frequency and probability; and also the analysis of the physical, social, economic and environmental dimensions of vulnerability and exposure, while taking particular account of the coping capabilities pertinent to the risk scenarios.

Structural / non-structural measures:
Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural measures refer to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts.

Sustainable development:
Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of «needs», in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and the future needs. (Brundtland Commission, 1987). Sustainable development is based on socio-cultural development, political stability and decorum, economic growth and ecosystem protection, which all relate to disaster risk reduction.

Technological hazards:
Danger originating from technological or industrial accidents, dangerous procedures, infrastructure failures or certain human activities, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Some examples: industrial pollution, nuclear activities and radioactivity, toxic wastes, dam failures; transport, industrial or technological accidents (explosions, fires, spills).

Vulnerability:
The conditions determined by physical, social, economic, and environmental factors or processes, which in-crease the susceptibility of a community to the impact of hazards. For positive factors, which increase the ability of people to cope with hazards, see definition of capacity.

Wild-land fire:
Any fire occurring in vegetation areas regardless of ignition sources, damages or benefits.

Summary

Success Stories collected and presented here are just few examples of the sustained efforts taken by communities, governments, other organizations, and individual beneficiaries. Readers will have noticed that this short booklet did not try to impress them with the amount of money allocated and spent in each project. In this particular case — in the area of disaster prevention, mitigation, and preparedness a single human life is so precious no money can be put on the scale.

What is more important is the revival of individual and local initiative. It is no secret that fifteen years of continued international humanitarian aid created a certain dependency and, to some extent, "killed" the desire to bear individual responsibility. On the other hand, fifteen years was time sufficient for the people to understand that no external "do-gooder" can resolve their long-term problems. Hence, there is a growing initiative at all levels.

However "low-scale" and "small-impact" some of the successful interventions may seem, they have a positive snow-ball effect. Some can be easily replicated in other areas and countries, while others may inspire governments and communities to find other local solutions to local problems.

Again, nothing new is in the repeated appeal to invest more efforts, time and resources in preventive and mitigation techniques. Outcomes will not take long.

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