

Living with Risk: Toward Effective Disaster Management Training in Africa

Prvoslav Marjanovic and Krisno Nimpuno

In recent years, the world has witnessed a succession of disasters—floods, wildfires, storms, earthquakes, volcanic eruptions, and landslides. These claimed many thousands of lives, caused material losses in the billions of dollars, and inflicted a terrible toll on developing countries in particular, where disasters divert attention and resources from development needed desperately to escape poverty.

It is a well-known fact that today's disasters are often generated by, or at least extended by, human activities. At the most dramatic level, human activities are changing the natural balance of the planet and interfering with the atmosphere, oceans, polar ice caps, forest cover, and the pillars that make our world what it is.

Population growth and associated pressures cause more people to live in flood plains or in areas prone to landslides. Inadequate land-use planning, poor environmental management, and a lack of appropriate institutional and legislative arrangements increase the risk and multiply the effects of disasters.

Living with risk is the order of the day, and we must learn to reduce these risks through appropriate measures focused on planning, forecasting, and mitigation. We need to build a world of resilient people, communities, and nations.

In recent years, there has been a major conceptual shift in how people seek to cope with disasters that arise from natural hazards. While humanitarian response capacities are vital and need continued attention, the focus on addressing risk underlines the recognition that human intervention designed to reduce the vulnerability of communities and assets can reduce the impact of disasters. Gradually, environmental and development stakeholders are becoming more involved in the management of risk and vulnerability reduction due to their close interaction with natural resources management.

The African Ministerial Statement to the World Summit on Sustainable Development states that the increased incidence of natural disasters in Africa poses a major obstacle to the African continent's efforts to achieve sustainable development, especially in view of the region's insufficient capacities to predict, monitor, handle, and mitigate natural disasters. Reducing the vulnerability of the African people to natural disasters and environmental risks is mentioned as a requirement to achieve the poverty-reduction goals of the Millennium Declaration alongside other basic requirements, including economic growth, access to sources of energy, and basic health services. Extreme weather events such as floods and droughts induced by climate change are singled out.

Following the meeting of the Council of Ministers of SADC (South African Development Community), held in August 2000 in Windhoek, it became apparent that the SADC region is not well prepared to deal with disasters and that a major drive toward an effective training program in disaster management and vulnerability reduction is necessary. The University of the Witwatersrand has responded to this need and, in partnership with Disaster and Emergency Reference Centre from the Netherlands (DERC) and the National Disaster Management Centre of South Africa (NDMC), has initiated activities to support the needs of the region and the soon-to-be-established Disaster Management Facility within the SADC structure.

The creation of the disaster-management structure within SADC is primarily driven by the events that unfolded in February 2000 with the advent of Cyclone Eline. In the initial phase of the flooding disaster, SADC was reduced to a spectator while the international aid providers took center stage. Even when SADC managed to intervene, the thrust was not as focused as it could have been. Such a level of regional unpreparedness is untenable and should

not be repeated in the future. The general view emerged that SADC ought to have a disaster-management structure backed by vibrant and sustainable support from which to draw resources to assist stricken member states. The events in February 2000 also demonstrated that the focus on relief will not be sufficient to provide long-term and sustainable means for dealing with disasters. The preparedness measures need to focus on vulnerability reduction; relief should not be viewed as a panacea to all problems associated with major disasters.

While there is always a crucial role to be played by the international community in its humanitarian assistance following major disasters, it should be stressed that SADC countries do not have intimate experience in dealing with aid agencies. Obstructive “red tape,” with officials clinging to rules and regulations that frustrate the efforts of the aid provider, is common, and failure to realize the magnitude of the disaster skills—which are different from the “business as usual” approach—that are needed is often at the core of effective management of disasters. Equally, the skills for preparing disaster management plans are just as lacking, despite a legal requirement for such plans to be prepared in many of the SADC countries. The assessment of risk and damage is yet another area in which there is a lack of capacity within SADC.

There is therefore a profound need for an effective and accelerated training and education program to ensure adequate preparedness for natural disasters, which, statistically, are on the increase. South Africa has prepared a Disaster Management Bill, which was promulgated and has become a national Disaster Management Act. The principal agency for the implementation of the Act is the National Disaster Management Centre. As a part of this initiative, a Disaster Manager has been appointed in each of the local authorities in South Africa, with the task of preparing a Disaster Management Plan for his area. It quickly became evident that the capacity to meet the requirements of the new policy and legislation is lacking and particularly so in areas most vulnerable to disasters. It became evident that training and capacity building in disaster management are a prerequisite to effective implementation of the new policies and legislation.

This paper presents the initial results of a joint initiative between the University of the Witwatersrand and

the National Disaster Management Centre to address the training and capacity building needs that have been identified.

The Status of Disaster Management in SADC Countries

Before one can assess the training and capacity-building needs for disaster management, it is necessary to review the current status of disaster management in some SADC countries.

Zimbabwe

- Major hazards include drought, flooding, epidemics, public transportation accidents, industrial accidents, forest fires, and environmental degradation.
- The central government initiates disaster-preparedness programs through relevant sector ministries with local administrations taking the responsibility for implementing and maintaining their effectiveness.
- The Ministry of Local Government, Public Construction and National Housing is charged with the coordination role, as stated under the Civil Protection Act No. 5 of 1989.
- Civil Protection Act No. 5 also established a National Civil Protection Fund, which receives money from the government and the public to be applied to enhancing civil protection measures through research, training, and the acquisition of materiel, among other applications. This act is under review and will address the legislative gaps in the areas of fire and ambulance services, and the enforcement of sectoral preparedness planning.
- A National Civil Protection Coordination Committee is responsible for civil protection functions and is comprised of senior officers selected from government ministries and departments, parastatals, and NGOs. Similar multisectoral representation is maintained at the provincial and district levels. All three levels have functional subcommittees with responsibilities according to specialty.
- Mission Statement: “to provide for and ensure optimal emergency preparedness and disaster prevention at the individual, community, sectoral, local authority,

and national level through regulatory mechanisms and coordinated strategic planning for emergencies.”

- Constraints and needs: equipment, including rescue, communications, and early warning; inadequate funding; legislative gaps; and staff development.

Zambia

- Types of disasters include drought, floods, epidemics, refugees, fires, pest infestations, internally displaced persons, persons with HIV/AIDS, transportation accidents, water hyacinth, industrial accidents, and mining accidents.
- Institutional framework allows for a national disaster committee, technical committees, specialized sub-committees, provincial disaster committees, and district disaster committees.
- DMMU consists of a secretariat and three regional offices with the functions of coordination, vulnerability/risk assessment, training/capacity building, advocacy, stockpiling, resource mobilization, needs assessment, impact assessment, and research.
- The Disaster Management Training Centre offers a three-week disaster-management course at the SADC-level.
- Funding: annual budget allocation of approximately US\$200 million.
- Stakeholders include the government, United Nations system, NGOs, community, and the private sector.

Tanzania

- Major hazards faced are drought, floods, landslides, epidemics, pest infestation, earthquake, accidents, fire, and civil strife, which create flows of refugees into Tanzania.
- Tanzania has legislation covering disaster management; however, it needs an amendment in order to focus on the management of disaster activities rather than on relief coordination.
- Other government approaches to preparedness include crop and food security monitoring by the Ministry of Agriculture and the Department of Meteorology; a national policy to conserve land from overgrazing, soil compaction, and erosion; a national environmental policy to control degradation and raise public awareness; and policies to control population growth,

reforest lands, improve storage and rainwater harvesting, ensure sound management of the environment, and discourage people from living in flood plains.

- The government has established strategic grain reserves.
- With UNDP assistance, Tanzania has prepared a draft disaster-management policy and enabling legislation; carried out a training needs assessment and risk assessment/vulnerability analysis; developed a framework for a disaster-management plan; created an MIS; and started a public awareness program.
- Further requirements for disaster management in Tanzania include strengthening the disaster-management department through training; preparing sectoral-, regional- and district-level disaster management plans; inventorying resources; mapping temporary shelter areas and sources of relief goods; increasing public awareness; and establishing national and regional emergency committees.

South Africa

- Events/disasters occurring in South Africa include droughts, floods, wildfires, fires in informal settlements, industrial accidents, displacement, high winds, and disease outbreaks and epidemics.
- In January 2000, South Africa launched a “White Paper on Disaster Management,” which presented an approach that prioritizes prevention rather than focusing primarily on relief and recovery efforts. The White Paper emphasizes the importance of preventing human, economic, and property losses, and avoiding environmental degradation. The White Paper also placed special emphasis on pursuing international and regional cooperation with vigor.
- The Disaster Management Bill was published for public comment on 21 January 2000, while the final draft of the bill was introduced into parliament in early 2001.
- The National Disaster Management Act was adopted by parliament in 2002.
- The cabinet established an Inter-Ministerial Committee on Disaster Management in 1997, which consists of nine cabinet ministers and their deputies. An Inter-departmental Disaster Management Committee was also established, comprising representatives of national

and provincial government departments, national associations and institutions, the private sector, and NGOs. Similar structures exist on provincial and local government levels.

- The National Disaster Management Centre was established in 1999 and continues to have responsibility for coordinating actions during all phases of a disaster, with a focus on information management.
- Local authorities are responsible for disaster preparedness, but may seek assistance at the provincial level if resources are not sufficient at the local level.
- Shortcomings and/or needs include stockpiling equipment; training and capacity building; simulation exercises; vulnerability assessments; and communication and early-warning systems.

Seychelles

- The National Disaster Committee is chaired by the Principal Secretary of Environment and falls under the aegis of the Cabinet of Ministers, which is led by the vice president. The committee consists of senior members of various ministries, NGOs, and the private sector.
- Seychelles has a national disaster plan, which outlines the roles and responsibilities of each relevant organization. Additionally, several ministries have their own response plan, i.e., the health sector.
- Weaknesses: not much emphasis is placed on preparedness, and the concept of disaster management is not well established; public awareness of disaster management is low.
- Positive aspects: good communication systems; small population; some personnel have been trained in disaster management; the risk of disasters is minimal.
- Seychelles would like the following to be addressed on a regional scale: organize disaster-management training; evaluate disaster-management capabilities in each country and carry out vulnerability assessments; serve as focal point for information collection and dissemination of knowledge related to disaster management; organize simulation exercises.

Mozambique

- Mozambique is undergoing a process of rapid sociopolitical, economic, and institutional transformation.

- Mozambique has suffered from a wide range of natural and man-made disasters. Since its independence from Portugal in 1975, Mozambique has been victim to drought, floods, cyclones, massive war-provoked population displacements, coastal oil spills, erosion and landslides, wildfires, pests, epidemics (cholera, bubonic plague, meningitis), forest fires, and large transportation accidents. The three hazards mentioned first—droughts, floods, and cyclones—are a priority for disaster reduction.
- After successive floods in the Limpopo Valley (1976–77), the Buzi and Pungue Valleys (1978), and the Zambezi Valley (1979), it became evident that Mozambique needed to develop an integrated Disaster Management Policy that combined prevention, mitigation, preparedness, and response in the context of post-war reconstruction and development. Mozambique is prone to continuing and recurrent natural disaster threats. Lack of planning and preparation in anticipation of such hazards increases the loss of life and exacerbates the vulnerability of the population when disaster strikes. Mozambique currently lacks an integrated disaster-management policy and structure.
- The now-established institutional framework provides for an interministerial Disaster Management Council chaired by the prime minister. A free-standing National Institute for Disaster Management, INGC, is the secretariat for the council and the principal body for disaster management at a national level. Provincial and local-level structures will be established. INGC replaces the former council, but still reports to the Ministry of Foreign Affairs and Cooperation.
- INGC is responsible for developing a Disaster Management Plan that includes prevention, mitigation, preparedness, and response. In the absence of a Disaster Management Plan, the roles of various partners in civil protection have so far not been defined. Consequently, there is little coordination between them in mitigation matters. The coordination mandate of INGC is now seen as taking responsibility for control of all bilateral- and multilateral-supported disasters.
- Although INGC keeps these institutions informed of current disaster issues, there is little tangible activity that coordinates disaster-prevention programs. The various ministries continue their individual mitigation

efforts without the benefit of a civil-protection framework or a disaster-response plan.

- The Ministry of Public Works tries to follow and promote the existing building and planning regulations, and the Ministry of Health strengthens its general public health services, which currently, under donor pressure, focus above all on AIDS prevention information.
- The structure of disaster responsibilities in Mozambique leaves much to be desired. INGC, the inter-governmental committee, is the coordinator for sector ministries, U.N. agencies, provinces, and the private sector, and reports to the prime minister through the Ministry of Foreign Affairs.
- Seven task force subcommittees exist and have well-defined roles and responsibilities.
- Contingency planning, from the national to the district levels, is in place; the degree of its effectiveness is not known.

Mauritius

- The dominant threat, by far, is cyclones—few miss the island nation. Consequently, the government has developed sophisticated planning, preparedness, early warning, and responder responsibility systems. Despite the frequency and severity of cyclones in Mauritius, no lives have been lost in many years.
- Mauritius uses a standardized system of cyclone terminology and classes of cyclone warnings, familiar to all citizens.
- The government convenes a planning session of relevant ministries, departments, and essential services, which comprise the Central Cyclone Committee. This annual meeting is two weeks long. Local cyclone committees also meet annually.
- The warning system for the population is a simple system of red or blue (termination) flags, displayed on public buildings, police stations, fisheries posts, and the like.
- Relief operations are conducted by the government through a standing cabinet committee.
- Other hazards include torrential rain and flooding, as well as landslides.
- Mauritius has a thriving NGO community and many U.N. specialized agencies; therefore, it has a congenial climate for strengthening disaster preparedness.

Malawi

- The Department for Coordination and Disaster Management, Relief, and Rehabilitation has the responsibility for disaster-management issues in Malawi; the most frequent hazards are flooding, drought, epidemics, and refugee flows.
- Malawi has national legislation establishing the institutional framework for disaster management. The legislation also provides for a National Disaster Preparedness and Relief Committee (NDPRC), which includes relevant ministries and departments, as well as some NGOs. This committee provides policy guidance to the Commissioner for Disaster Preparedness, Relief, and Rehabilitation.
- District Development Committees are the local government equivalent of the NDPRC; the chief executive of each district assembly is responsible for the local disaster management program, assisted by NGOs.
- With the help of UNOCHA, the Government of Malawi has prepared a draft national disaster-management plan; an accompanying manual is planned when funds are available to complete the planning process.
- The government is now turning its attention to disaster mitigation, prevention, and reduction. This approach recognizes that a disaster can wipe out decades of development efforts.
- Malawi's primary short-term needs are in the area of communications: radios, communications vehicles, and satellite phones.

Namibia

- National disaster preparedness in Namibia is in an emerging stage, with much left to be done.
- Since drought is endemic to Namibia, the country has a National Drought Policy. Some strategies being implemented under that policy include pest, drought, and flood management. The government has established a National Drought Fund for implementation.
- The Ministry of Health and Social Services runs a Disaster Surveillance and Epidemic Management Section; it also conducts public awareness campaigns on epidemics such as HIV/AIDS.
- Environmental disaster mitigation activities are being carried out by the Ministry of Environment and Tourism; some national policies are in place.

- The Directorate of Maritime Affairs is implementing a national oil-spill contingency plan.
- A search and rescue center is being established, lessening Namibia's dependence on South Africa for airborne operations.
- Twenty-three regional trainers have been trained in disaster preparedness and management; other training has also been carried out.
- Namibia's needs in disaster management include training; equipment, including boats and helicopters; and medical equipment.
- Namibia feels that SADC member nations would benefit from a common ground (terminology, etc.) for training.

Botswana

- The body responsible for Disaster Management in Botswana is the National Disaster Preparedness Committee, which is chaired by the Deputy Permanent Secretary. Representatives include the Deputy Permanent Secretaries from the line ministries, the Botswana Defense Force, the Botswana Police Service, and the Botswana Red Cross. The National Disaster Management Office was established in 1998, and is the secretariat to the NCDP. Its mandate is to coordinate all disaster management activities. District Disaster Management Committees chaired by district commissioners are also in place.
- Botswana is characterized by an inadequate level of preparedness; inadequate search and rescue capability; poor information management systems; and bureaucratic red tape.
- The most common disaster in Botswana is drought. Botswana is also reported to have the highest rate of HIV/AIDS infection in the world, which makes management of the pandemic a government priority. In February 2000, the cyclones originating in the Mozambique channels resulted in the heaviest floods ever recorded in Botswana's history.
- Other disaster include floods, veldt fires, epidemics, animal diseases, vectors such as malaria-carrying mosquitoes and tsetse flies, pest infestations, cyclones, strong winds, earthquakes, transport accidents, refugee influx, industrial accidents, and chemical spills.

- The disaster management structure for Botswana is at three levels.
- The needs identified are: a finalized disaster profile and National Disaster Management Plan, which will form the basis for a legal framework; capacity building at the national and local levels; training; development of a strategic plan and budget; and decentralization of basic stockpile items.

Angola

- Very little is in place for effective disaster management in Angola. An ad-hoc technical group has been created to assist in preparing a disaster management plan.
- In 1999, Angola suffered damage from heavy rains in Benguela, and desertification and drought affected the provinces of Luanda, Bye, Moxico, Kuando-Kubango, and Namibe, as well as other parts of the country. The overuse of land causes landslides in Moxico and the northern and southern sides of Luanda.
- The government has made available some financial resources to fund small projects, but the amount of funding is insufficient.
- Angola supports a regional coordinating mechanism for disaster management.

It is also of interest to summarize the recommendations of the SADC Disaster Management Steering Committee to the Council of Ministers made in 2002. The Terms of Reference for the SADC Disaster Management Mechanism should be as follows:

- Act as an information and communications hub linking individual national centers, regional sector structures, related NGOs, training and research institutions, and other existing capacities in a two-way communication system
- Facilitate regional collaboration for all aspects of disaster management
- Coordinate any regional response to disasters as requested by member states
- Promote and, where necessary, implement and manage disaster-management programs within the region in collaboration with member states
- Mobilize resources, facilitate appeals for assistance, and undertake fundraising for disaster management and disaster response

- SADC should develop a protocol on disaster management in the region
- SADC should develop disaster-management standard operating procedures
- The Council of Ministers should ensure that each member nation clearly indicates one focal point for disaster management in each country
- Member states should promote and encourage the active participation of civil society and the private sector in all aspects of disaster management
- Member states should be encouraged to promote in-country seminars and workshops to capacitate local communities and stakeholders
- Member states should be proactive and should sensitize government officials and communities to the importance of disaster prevention or mitigation and preparedness
- The SADC region should work collectively to undertake staff development, to include:
 - Creating a coordinated staff training program in disaster management, taking appropriate measures to develop and retain staff in order to ensure institutional memory and providing the resources and facilities that allow disaster management personnel to maximize their performance
 - The region should work collectively to create a common language and procedures for disaster management
- SADC should commit to assisting member states in undertaking disaster vulnerability assessments and risk mapping
- SADC member states should ensure that there is close collaboration between and among SADC institutions and other organizations involved in similar disaster management activities in the region
- Member states should promote the appropriate, timely, and effective dissemination of accurate information to all stakeholders, particularly disaster managers and high-risk communities.

Training and Capacity-Building Needs for Disaster Management in SADC

From the above summary, it is evident that the training and capacity building needs are extensive, diverse, and multidisciplinary, and that no single training institution

or program can meet all needs. It is thus evident that a cooperative network approach is essential to ensure that effective training and capacity building in disaster management can be developed and implemented. In addition, it is also evident that any training and capacity-building effort has to be established bearing in mind two main factors:

- The urgent short-term need to provide basic training for all those involved in the first line of disaster-management activities and to do so as quickly as possible
- The need to establish a stable and sustainable training and capacity-building program to respond to the long-term needs of the region.

The first of the above factors requires an extensive series of short courses to address short-term needs and would focus on fundamentals of disaster management from a practical point of view, while the second factor requires the establishment of formal regional training programs in disaster management, which will lead to formal qualifications at undergraduate and postgraduate levels. The short-term needs can only be met through “mobilization” of all available resources and will require international cooperation and regional effort.

The long-term needs, on the other hand, require thorough planning and development and are best suited to a network approach similar to the one taken by Water-Net (a regional initiative for a regional Masters Program in Water Resources Management) to develop a regional educational program in Disaster Management and Vulnerability Reduction.

The long-term training and capacity-building objectives should be:

- Reducing the incidence and impact of crisis and disaster occurrences
- Eliminating risks and vulnerability to such events
- Promoting effective national and regional strategies in crisis and disaster prevention, preparedness, mitigation, response, and recovery
- Efficiently coordinating and collaborating all phases of crisis and disaster management, between and among national and international partners
- Making effective and efficient institutional and legislative arrangements
- Developing appropriate planning and intervention strategies focused on vulnerability reduction rather than relief

- Fostering international cooperation and sharing of resources and experiences
- Building effective information bases and other resource management
- Utilizing regional resources and focusing efforts on developing sustainable regional capacity to deal with disaster management.

Disaster Management Training Initiatives in South Africa

In South Africa there is a widely recognized need for disaster management training and capacity building. Three main initiatives are worth mentioning: the University of Free State Initiative, the Potchefstroom University Initiative, and the University of the Witwatersrand Initiative.

The University of Free State Initiative

The University of Free State has introduced formal education (Magister and an Advanced Diploma in Disaster Management) as well as informal training and an education program (short courses). The formal program has three formal contact sessions each year of five days each. During the first contact, session students are oriented and receive all course material for the first year. The course consists of eight compulsory courses, two electives, and a research project reported in a mini-dissertation format. The course can be taken over a minimum period of two years (full-time). However, students will be allowed to take the course over a three-year period (part-time). Compulsory courses are: Research Methodology, Hazards of Disaster Management, Strategic Management, Advanced and Specific Disaster Management Principles and Practices, Advanced Disaster Risk Management, Information Technology in Disaster Management, Public Health, and Management of Disasters (Natural and Man-made). Elective courses include: Trauma Management, Political Strategic Planning, Information Management, Ethnic and Cultural Conduct, Media Liaisons, Environmental Degradation, Disaster Vulnerability, and Risk Assessment. Admission is in accord with the university's admissions policies.

The Potchefstroom University Initiative

The African Centre for Disaster Studies (ACDS) was established in January 2002 at the Potchefstroom University for Christian Higher Education within the School for Social and Government Studies. The explicit aim of the ACDS is to address the need for education and research in disaster-related activities within Southern Africa and the wider African context. At the time of writing, the ACDS center is planning to offer:

Certificate Course in Disaster Studies (to start in 2003)

The objective of the certificate course in Disaster Studies is to provide the student with skills and competency in the management of hazards, risks, vulnerability, disasters, and their associated secondary effects. The main emphasis of the course is on disaster-risk reduction through the use of vulnerability-reduction techniques and hazard assessment and mitigation, within the context of sustainable development and sustainable livelihoods. The program lasts one year and consists of the following modules: Disasters: A Theoretical Perspective; Disaster Risk Reduction; Disaster Planning; Disaster Recovery; Disasters and Sustainable Development; Disaster Information Management and Communication.

Short Courses in All Aspects of Disaster Studies (to start in 2003)

The short courses currently planned are: Basic Course in Disaster Management; Integrated Development Planning and the Municipal Disaster Plan; Disaster Preparedness Planning.

An Undergraduate Degree in Disaster Management (to start in 2004) Details of the program are not known at this time.

The University of the Witwatersrand Initiative

The University of the Witwatersrand has responded to the urgent needs for training and capacity building in disaster management by partnering with DERC and the NDMC to offer a series of short courses and develop a new postgraduate and research program in Disaster Management.

The Disaster Preparedness Training Program (short courses) has been developed as a basic training program for municipal and district disaster managers. The first

training cycle of six modules, developed for the municipal disaster managers of Limpopo province, was implemented in 2002, January through October. The next cycle of short courses will be offered during 2003 and regularly thereafter. The short courses have been certified by the NDMC and are currently in the process of verification by the South African Qualifications Authority.

The six training modules aim at developing a good understanding of the principles of disaster reduction and impart skills in disaster mitigation as well as in disaster response. Three modules address mitigation planning and three modules focus on emergency response. The program is also suitable for senior NGO staff. The program consists of six modules of one week each, which are conducted at two months intervals. A short description of each of the modules is given below:

Module 1. Introduction to Disaster Management

This module places disaster management in the framework of development planning and identifies strategy options to reduce disasters. Introductions to the main natural hazards, to conflict and displacement-related emergencies, and technological hazards are presented. Introductions to natural disasters cover the underlying phenomena of meteorology, hydrology, and seismology that pose hazards. An overview is given of the legal and administrative measures that societies take to ensure safe and sustainable development. Public perceptions of emergencies and existing disaster myths and their influence on emergency responses are studied. Human behavior, both individually and collectively, form a major factor in the development of disasters. The critical factors affecting human health during emergencies are presented and mitigation options are reviewed. Several case studies of major emergencies are presented.

The various phases of disasters—prevention, mitigation, preparedness, emergency response, relief, recovery, and rehabilitation—are reviewed and the roles and actors in disaster interventions are identified. The multi-disciplinary nature of disaster management, in particular, earth sciences, physical planning, public administration, sociology, and health, is discussed. The common options for disaster reduction are presented. The factors that increase and decrease disasters' impacts are analyzed.

Module 2. Hazards and Vulnerabilities

The module reviews hazard profiles and possible effects and impacts of hazards. It shows that hazards are not the cause of disasters, and establishes the causative links between disasters and vulnerabilities. These vulnerabilities prove to be the causes of natural disasters, technological disasters, and civil strife. De facto disasters are failures in development planning. They are events that can be avoided, which is the essence of disaster reduction.

For each hazard a profile is presented, related to location, frequency, and intensity, and the forces causing these hazards are explained. Threat recognition elements are studied. Social, economic, physical, and managerial vulnerabilities to various hazards are reviewed, with a variety of case studies. The course reviews administrative, technological, legal, and cultural aspects of disaster reduction and emphasizes the importance of community participation in all public efforts in this field. Vulnerability mapping is an important activity for guiding disaster-reduction efforts, and remote sensing as well as field monitoring are presented as options in this respect.

Module 3. Mitigation Planning

The principles of disaster mitigation, in particular those related to prevention and preparedness, are studied as the main tools in disaster reduction. The focus of these efforts is to address vulnerabilities. The historical process of devising mitigation strategies is illustrated by various case studies and demonstrates that disasters can be prevented. Hazard-specific preparedness and mitigation measures are reviewed for relevant locations. Such mechanisms relate to international monitoring (e.g., by remote sensing), by national agencies (e.g., volcano observatories), or by community organizations (e.g., river level monitoring or pre-cyclone shuttering of buildings). Specific impacts of hazards are countered by various protective measures, while monitoring mechanisms are developed for threat recognition and warning. The purpose and effect of mitigation measures are reviewed. Choices and priorities in mitigation are identified and elements of mitigation planning are reviewed in relation to the community in question. The training needs

of such actors are assessed and plans for appropriate materials are developed, while the role of mobilization and public information is stressed. A collective memory and hazard consciousness are needed at all levels. Mitigation planning is presented as a variety of safety measures, which depend on a culture of safety and participation.

Module 4. Emergency Response

Preparedness to take action when hazard threats occur is the prime instrument in reducing impacts. Development of response capacities and the availability of logistics and supply resources are fundamental. Planning of intervention alternatives, schemes for management of public behavior, and the determination of various alert phases allow organized interventions under conditions of potential chaos. Coordination between security, rescue, and logistics services, and public initiatives and responses are to be vested in an agreed decision-making process. Crisis management emerges therefore as an important technique to maximize the effect of the allocated resources that can bring order into potential conditions of chaos. The importance of establishing Emergency Operation Centers is stressed. The role of relief, especially of international NGOs, is analyzed, with particular attention to its disruptive effects on the regular development process. The differences between local and international relief are studied and mechanisms to reduce negative effects are discussed. The mobilization of local response capacities is a central theme.

Module 5. Displacement and (Re-) Settlement

Refugee influxes and various types of internal displacement have become major issues in Africa. The causes of displacement due to war, civil strife, environmental degradation, and economic changes are reviewed. The social consequences and the issues of settlement, shelter, health, and economic survival are reviewed. The present policies and planning methods in emergency settlement are studied, while options for sustainable settlements are presented. Early site selection is a key activity in proactive planning. Innovative “Self Help” building technologies

are studied. Much attention is paid to the environmental impact of emergency settlements. Site selection, self-help housing, phased infrastructure, and central services are covered, with particular attention to site selection, availability of building materials, and water supply. The UNCHS manual for resettlement forms the basis for this section. Camp management issues, logistics, security, and social services are addressed, and relief programs of NGOs in food supply, fuel, water and sanitation, education, and health services are covered.

Module 6. Developing Disaster Plans

Disaster plans are administrative instruments for the effective deployment of the necessary response resources, through command and control measures. They clarify mandates and clear lines of command. The plans identify which resources are needed, where they may be found, and how they can operate smoothly in a coordinated response. They confirm collaboration agreements that in times of emergency make all necessary resources available for deployment and stipulate requisition procedures. Both government and nongovernment agencies are included, while the necessary responses from the affected populations are channeled and controlled. Communication systems are of critical importance and allow a rapid decision-making process that facilitates smooth operations. Public regulations and a legal basis for the plan are essential, but smooth implementation of the plan depends above all on good cooperation and trust.

Mitigation plans are incremental development plans for decreasing, and possibly eliminating, vulnerabilities. They form a key element in development planning, but require constant improvement and monitoring by safety specialists. The appointment of municipal and district mitigation officers is presented as an important element in disaster reduction.

In addition to the above, a number of short courses have been delivered outside of South Africa, including:

- Kenya: Introductory Disaster Management training courses were conducted in Kenya, for leading NGOs in the field of relief, which expressed a desire to develop proactive disaster reduction programs (e.g., CARE Kenya and the Anglican Church).

- Tanzania: Several training workshops were conducted in two national educational institutes, with participation from neighboring countries. A draft disaster plan was developed for the Ministry of Health.
- Mozambique: A training program is being developed, as part of an ongoing U.N. project on flood mitigation, addressing community needs in flood-prone areas. Surveys of vulnerability factors in informal urban settlements have been concluded.
- Ethiopia: In collaboration with U.N. Habitat, a training course on earthquake-resistant adobe housing was conducted at the University of Addis Ababa.
- Egypt: An introductory workshop on vulnerabilities in informal settlements was conducted at the Center of Planning and Architectural Studies, a nongovernmental human-settlements planning institute.

The postgraduate program in Disaster Management is focused on two main areas of activity:

- A research program with a focus on understanding disasters in Africa
- A graduate diploma and a Master's Program in Disaster Management.

The research program was initiated during 2002 with support from the Ford Foundation. Two research projects have begun: droughts in Southern Africa and wild-fires in Southern Africa. Two Masters of Science theses are expected to be completed by the end of 2002 and one doctoral thesis is to be submitted in 2003. The research program is expected to grow in other areas of interest and will include but not be limited to problems such as information management and dissemination, remote sensing and disaster management, and institutional aspects of disaster management.

The proposed programs leading to a graduate diploma and/or Master of Science in Disaster Management are currently going through the University Academic Structures for approval. A blended learning approach, combining in-class teaching, project work, and field and action learning is adopted. It is anticipated that the first students will register for degrees in January 2004. The programs are to be offered in partnership with the relevant faculties of the university using Wits School for the Environment as a conduit for cross-disciplinary studies. The graduate diploma in Disaster Management will consist of six modules similar to those currently offered as short courses but with more theoretical background

and an in-depth analysis included in the curricula. The program will be based on extensive materials developed by DERC, materials currently in use by the U.N. agencies and universities in the United States, Asia, and Europe, with appropriate modifications to suit South African and regional needs.

In accordance with the requirements of the National Qualifications Framework and the South African Qualifications Authority, the programs will be outcomes-based and will undergo normal verification and quality assurance processes. Entry into the program will be in accordance with the university's admissions policies, which also include recognition of prior knowledge. Master's degree program students will be required to take additional courses and submit a research thesis equivalent to six months of full-time engagement.

In addition to the three initiatives discussed, a number of technikons in South Africa are currently developing appropriate disaster-management programs, some of which will be offered through distance learning.

The University of Cape Town also has an active program in disaster management but details about it were not available at the time of writing.

International Network on Disaster Management Training in Africa—DIMITRA

The International Network on Disaster Management Training in Africa—DIMITRA—is an initiative aimed at mobilizing the limited resources in Africa and extending training and capacity-building initiatives to the continent. It is envisaged as a Pan African initiative open to all with a focus on vulnerability reduction and learning to live with risk. The initiative was launched with support from the World Bank's Disaster Management Facility and the ProVention Consortium at an International Disaster Management Training Workshop conducted in parallel with the WSSD in August 2002 during the CEMSA 2002 International Conference on Environmental Management and Sustainable Development in Africa. Participants from 10 countries (Botswana, Egypt, Kenya, Nigeria, Netherlands, South Africa, Tanzania, Thailand, U.K, and Zimbabwe) deliberated for three days on the training and capacity-building needs in disaster management and have developed an action

plan that forms the basis for future DIMITRA activities. Fund raising is currently in progress to support the implementation of the DIMITRA Action Plan.

DIMITRA is a network of university departments and research and training institutes specializing in disaster management and vulnerability reduction. Member institutions will be asked to endorse Vision for Risk-Free Environments, currently under development and aimed at regional integration and economic benefits for present and future generations in Africa.

The mission of DIMITRA is to enhance regional capacity in disaster management and vulnerability reduction through training, education, research, and outreach by sharing the complementary expertise of its members. DIMITRA member institutions will share expertise in various aspects of disaster management and vulnerability reduction. The ultimate objective is to develop and implement a regional post-graduate program in disaster management and vulnerability reduction aimed at educating a new generation of disaster managers in Africa to address the complex and integrated nature of disaster problems facing Africa.

DIMITRA Structure

DIMITRA is envisaged as a membership organization. DIMITRA members will meet during the Annual General Meeting. The first DIMITRA annual general meeting will be held in the first quarter of 2003 to discuss and adopt the constitution of DIMITRA. The AGM elects members to the steering committee that will oversee the DIMITRA secretariat. The University of Witwatersrand currently hosts the secretariat and is driving the initiative until funding is secured for DIMITRA to function on its own.

Membership of DIMITRA is open to institutions in Africa that are involved in training, education, and research in fields directly related to disaster management and vulnerability reduction, preferably at graduate and post-graduate levels. The primary requirements of members are to subscribe to the principles of DIMITRA; to commit to further integrated management and prevention, rather than relief, through sharing expertise and facilities with other members; to contribute to the development and maintenance of selected course modules;

and to allow peer review. DIMITRA will also have “supporting members,” strategic partners and donors who will sit on the DIMITRA Steering Committee and guide its activities.

Conclusions

Disaster risk management needs to be led and based within governmental authority, but its success cannot be accomplished without the benefits of the widespread participation of many others. While policy direction is crucial and legal foundations assure a continuing legitimacy, it is the professional and human resources delivered on the ground that are the measure of success. In Africa the focus must thus be on the development of human resources, which are so lacking; in addition, focused efforts on an international scale are urgently needed.

For this to happen, there must be coordinated effort and a systematic approach to establish sound foundations and larger administrative and resource capabilities. The burden is too large for any individual country or government to handle—international efforts based on mobilizing locally available resources are required. This is amenable to a broad network such as DIMITRAN, the one recently initiated, and actions are needed to make such a network effective. This will in turn require funding and buy-in from policy makers. The University of the Witwatersrand considers supporting such initiatives to be its social responsibility and is taking the initial responsibility to make such initiatives a success. But we cannot do it alone and support and contributions from others are needed and welcome. We look forward to a rewarding future.

Bibliography

- Anderson, Mary B., and Peter J. Woodrow. 1989. *Rising from the Ashes: Development Strategies in Times of Disaster*. Boulder, CO: Westview Press.
- Asian Disaster Preparedness Center, Bangkok. 1999. *Managing Disasters in Asia and the Pacific*. A Review of Lessons Learned during the International Decade for Natural Disaster Reduction.
- “Balancing the Environment and the Economy: Approaches for Mitigation.” 2001. S01-13, Natural Hazards Center Research and Applications Workshops, session summaries, August.

- Blaikie, P., T. Cannon, I. Davis, and B. Wisner, B. 1996. *At Risk: Natural Hazards, People's Vulnerability, and Disasters*. London and New York: Routledge.
- Christoplos, Ian, J. Mitchell, and A. Liljelund. 2001. "Re-framing Risk: The Changing Context of Disaster Mitigation and Preparedness." *Disasters* 25 (3): 195.
- Disaster Management Bill. 2001. Pretoria, South Africa. Government Printer.
- Gilbert, Roy and Alcira Kreimer. 1999. "Learning from the World Bank's Experience of Natural Disaster Related Assistance." Disaster Management Facility of the World Bank, Urban and Local Government Working Paper Series N°2. Washington, D.C.
- Green Paper on Disaster Management. Pretoria, South Africa. Government Printer. 1998.
- IDNDR (International Decade for Natural Disaster Reduction). 1999. *Proceedings*, IDNDR Programme Forum.
- ISDR (International Strategy for Disaster Reduction). 2002. "Disaster Reduction and Sustainable Development." ISDR Background document for the World Summit on Sustainable Development (WSSD) N°5.
- SADC (Southern African Development Community). 2001a. "Disaster Management Strategy." Secretariat, Gaborone.
- SADC. 2001b. "Strategy for Flood and Drought Management in the SADC Region." SADC, Water Sector Coordinating Unit. Maseru.
- UNEP (United Nations Environment Programme). 2002. "Global Environmental Outlook" (GEO-3 Report). A series of UNEP.