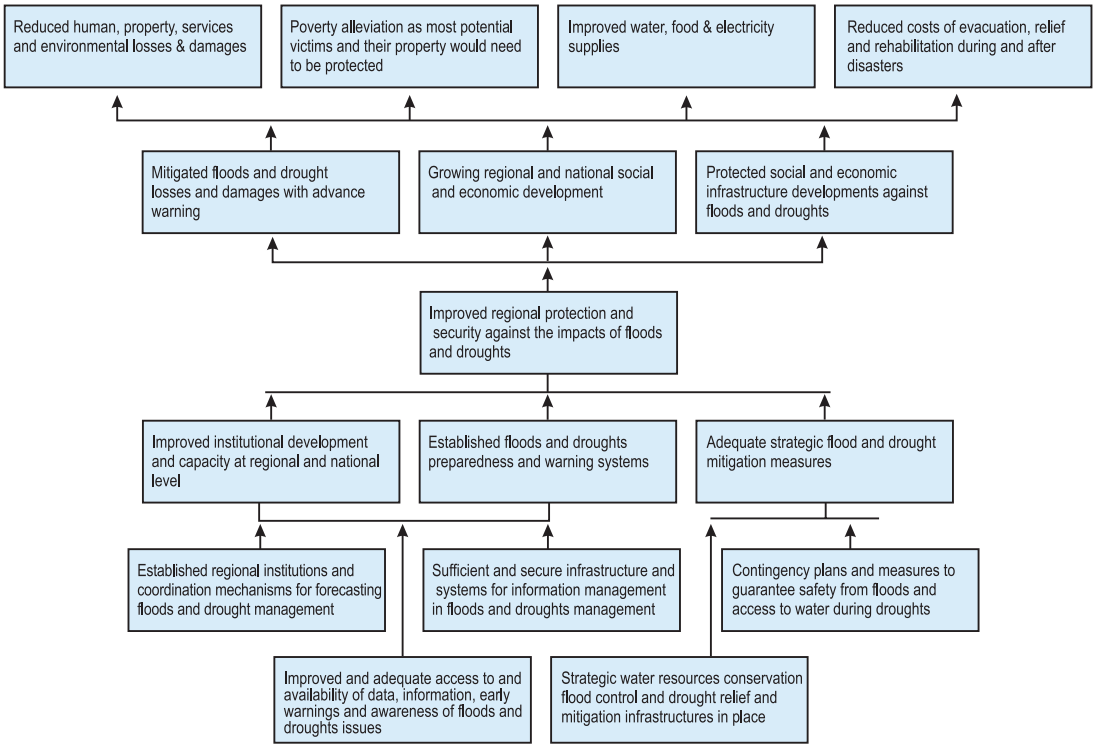
Figure 3.1
Southern African Development Community strategy for floods and drought management in the region



Source: SADC Water Sector Coordination Unit, 2001.

The centre provides opportunities to develop the technical and analytical abilities of staff, drawn from meteorological and hydrological services in the region through a secondment programme. It also manages meteorological and climate databanks for the region.

SADC programmes in water resources, environment and land management all have crucial roles to play in developing policies that take account of risk in their respective areas of expertise in all SADC countries. These include a number of projects related to land-use practices and conservation of environmental conditions, which can reduce both flood and drought-prone conditions.

Various SADC programmes also relate to the risks posed by climate change, and this places it in the forefront of inter-agency cooperation and collaboration to reduce the risk of future hydrometeorological hazards.

The water sector has long given attention to the development of cooperative agreements on shared river basins, but the floods of 2000 and 2001 underlined the need for greater attention to regional flood risk, in addition to recurrent drought. The need for inter-state cooperation associated with water-related hazards is particularly acute as there are more than ten shared watercourses in the region, with the largest, the Zambezi River flowing through nine countries.

The successful implementation of the SADC disaster reduction strategy rests on interaction between different technical and administrative networks across Southern Africa. In May 2001, an integrated Strategy for Flood and Drought Management in SADC countries was approved for implementation over a four-year period. The strategy focuses on preparedness and contingency planning, early warning and vulnerability information systems, mitigation measures, response activities and recovery strategies.

The process involves regular consultations through which the national directors of disaster management, early warning, meteorological and water authorities meet with SADC counterparts to monitor progress and address impediments to reduce drought and

flood-related disasters. This process has been assisted by USGS support for the development of flood and drought maps for the region.

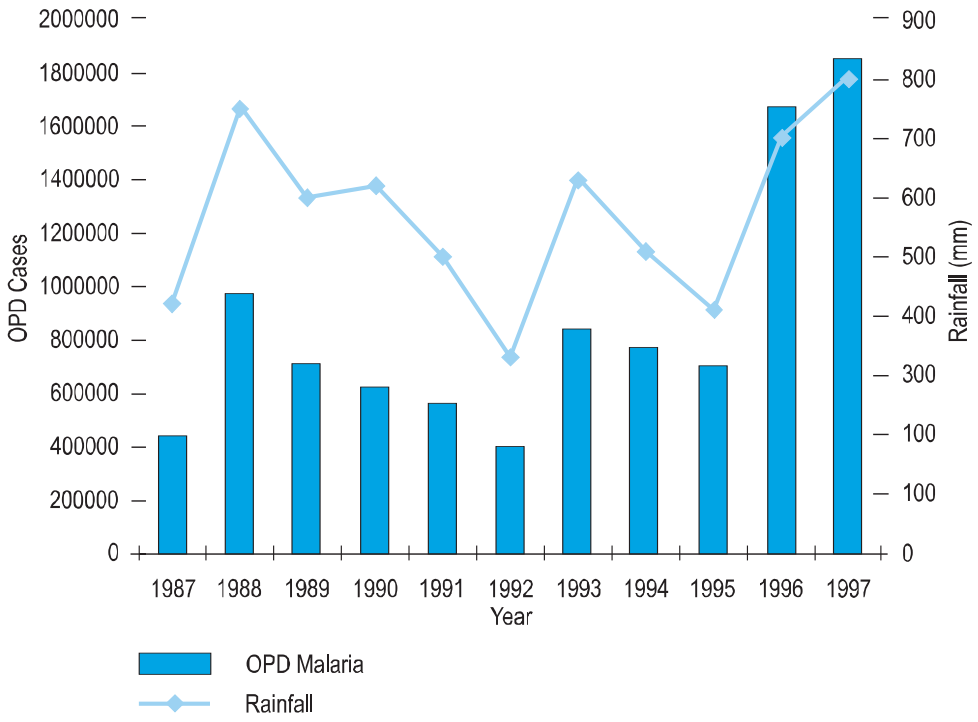
Another example of regional technical cooperation is demonstrated by the coordinated use of 50 real-time data collection stations installed in 11 countries under the SADC Hydrological Cycle Observing System. These stations and the information they gather are expected to make major improvements in the availability of data for trans-boundary hydrological information for flood forecasting. This European Union funded project is implemented by SADC in association with the national hydrological services of the participating countries.

In addition, the Zambezi River Authority (ZRA) was established by Zambia and Zimbabwe in 1998 to coordinate their decisions on water use, power generation, as well as upstream and downstream risk consequences of their water management policies.

Following the 2000 floods, the ZRA formed a Joint Operations Technical Committee with Hidroeléctrica de Cabora Bassa in Mozambique to share data and technical information about the operations of the Kariba and Cabora Bassa reservoirs. Cooperation is furthered by a weekly exchange of data and monthly meetings during the critical rainy season.

SADC's health sector works closely with the WHO Inter-Country Office for Southern Africa; WHO has long recognized the public health consequences of disasters. The WHO Southern Africa Malarial Control Programme addresses the causative factors of hazards in creating epidemics. The very close correlation that exists between temperature, precipitation and the incidence of malaria in specific locations underlines the essential cooperation between all sectors relating to water, climate, land, environment, health and disaster risk management.

Figure 3.2
A comparison of rainfall and malaria by year in Zimbabwe



Source: WHO Southern Africa Malarial Control Programme, WHO Inter-Country Office for Southern Africa, Harare, Zimbabwe.

West Africa

The Economic Community of West African States

The Economic Community of West African States (ECOWAS) is composed of 16 countries with the objective of promoting cooperation and integration leading to an economic union in West Africa. The community of interests has progressed in phases to implement its agenda, leading from the foundation of its organizational structures and related protocols, through efforts in conflict management to a current focus on regionalization activities.

Against this background, environment and natural resource management issues pertaining to risk factors cover four areas in ECOWAS. There are regional meteorological and water resource management programmes, subregional programmes for desertification control, and a programme to control floating weeds.

The meteorological initiative is supported by the Global Environment Facility (GEF) and the African Development Bank (AfDB) with recent activities focusing on revising regional applications of meteorological programme applications in environmental management and agricultural sectors. Attention has also been given to monitoring the implementation of the METEOSAT information and data communications project in member states.

There is presently no subregional activity on natural disaster reduction nor a consolidated regional strategy of risk management activities designated as such within the programme portfolio of the ECOWAS Secretariat. The subregional programme for desertification control of the Subregional Action Programme for West Africa essentially functions as a disaster reduction and risk management initiative, but it is not regarded as such by the ECOWAS Secretariat. However discussions were initiated among some ECOWAS members late in 2003 about the possibly desirability of formulating a regional strategy for disaster risk reduction.

Both the desertification control and the meteorological information programmes offer possibilities for the inclusion of any future subregional disaster reduction initiatives that may be devised. There are also elements in the ECOWAS organizational framework that would allow for the development of a comprehensive disaster reduction and risk management initiative, such as a protocol relating to the mechanism for conflict prevention, management, resolution, peacekeeping and security.

There are other activities which can provide some associated benefits and collaboration to the management of risk issues throughout the area, despite their largely singular concerns. Some of these are outlined below.

The Sub-Regional Action Programme to Combat Desertification in West Africa and Chad provides a strategic and programmatic framework for integrating any disaster reduction and risk management initiatives into poverty reduction, environmental protection and sustainable development planning in the subregion. It also provides a basis for cooperation among various inter-governmental organizations, such as the West Africa Economic and Monetary Union, CILSS and the Niger Basin Authority.

Other subregional technical institutions that could be involved in this process are ACMAD in Niamey, Niger and AGRHYMET, also located in Niger. These institutions provide a basis for the engagement of scientific and technical hydrometerological inputs to disaster reduction and risk management strategies in the subregion. Their activities contribute to fulfilling roles similar to those provided by the Drought Reduction Centres in East and Southern Africa.

The Sahel Institute in Bamako, Mali and both the Regional Remote Sensing Centre and the African Centre for Studies on Rural Radio located in Ouagadougou, Burkina Faso, are other examples of subregional institutions pertinent to disaster risk management in West Africa. Unrealized opportunities remain, that could be augmented by international organizations and UN agencies, to link these various institutional and technical capabilities for a more structured regional approach to monitor hazards to reduce disaster risks in West Africa.

Despite its seeming distanced subject, the ECOWAS Ceasefire Monitoring Group could provide a system of potential strategic and

contingency planning, communications, information and operational capabilities that could serve as a backbone for any eventual subregional disaster reduction and risk management initiatives.

It could provide the principles for collaboration in areas including early warning, disaster management focused at both subregional and national levels. It could be employed to encourage a consistent approach to coordinating national disaster management strategies or allocating resources. In terms of potential, such a force capability in West Africa is an advantage not equally evident in other African regions.

In this respect, ECOWAS is currently developing communication and information management capability for early warning and other shared information needs in collaboration with external partners. It is also anticipated that ECOWAS will play a leading future role in the implementation of the New Partnership for Africa's Development (NEPAD), where growing involvement with environmental management can provide a relevant link to risk management in practice.

Asia

In contrast to Latin America and the Caribbean and responding to different conditions than those in Africa, regional collaboration in Asia stems less from the consequences of a single devastating disaster. Rather, it results more from shared outlooks emerging from various professional interests.

It is difficult to identify a single approach to disaster risk reduction among the many cultural, social, and political distinctions in Asian societies. Yet, there is a clear movement to identify and address disaster risks. People involved in wider issues of development are emerging as potential collaborators in reducing disaster risk. These include policy makers involved in environmental management, climate variation, natural resource utilization, regional planning, the construction or protection of infrastructure, education, communications and public administration.

In many of the examples reviewed here, a growing involvement with risk issues is a feature of regional forums that previously adopted more narrow concepts of crisis or in some cases may not have discussed risk in explicit terms.

A multi-donor funded partnership to mitigate natural hazards in central Viet Nam brings government agencies together with international and regional NGOs to address the issues of disaster risks at both national and district levels. The partnership tackles such concerns as disaster preparedness, water resource management, community relocation and rehabilitation, environmental management and livelihood issues of vulnerable communities through specific projects.

Over the past several years, a Regional Consultative Committee on Regional Cooperation in Disaster Management (RCC) has been convened by the Asian Disaster Preparedness Center (ADPC) with support from the Australian Agency for International Development (AusAID). The committee comprises heads of national disaster management authorities from 24 countries in Asia.

Members have endorsed the importance of the RCC as a forum to exchange information and experience regarding national disaster risk management systems. Annual meetings held in 2000, 2001 and 2002 addressed capacity-building and reviewed experiences of new legislation, policy and institutional reform, and related planning processes.

These meetings recommended more information exchange to enable countries developing new or modified legislation or institutional arrangements to learn from the experiences of others in the region. Countries were also encouraged by other's examples to develop disaster risk management plans at national, provincial and local levels. Through these actions, the RCC has served to consolidate and strengthen regional initiatives, even though the various priorities and interests of the individual countries may vary.

The second RCC meeting urged countries to adopt a total disaster risk management strategy that would represent "a comprehensive approach to multi-hazard disaster risk management and reduction, which includes prevention, mitigation and preparedness in addition to response and

recovery". The following areas of action were identified:

- developing community programmes for preparedness and mitigation;
- building capacity within national disaster management systems;
- promoting cooperation and enhancing the mutual effectiveness of programmes of subregional organizations, such as those of the Association of South East Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC), the South Pacific Applied Geoscience Commission (SOPAC), the Mekong River Commission (MRC), and the International Centre for Integrated Mountain Development (ICIMOD); and
- creating awareness and promoting political commitment through regional initiatives.

The 2002 meeting was attended by the heads of national disaster management offices of 23 Asian countries and included a special session about drought management and mitigation in Asia. The meeting endorsed the adoption of comprehensive disaster management approaches by all member countries and called for capacity-building programmes catering to different audiences.

Information on these and other initiatives as well as the experiences of several countries in the region were shared in regional workshops on institutional frameworks and planning for disaster risk management. One, organized in Bangkok in April 2002 by ADPC with the support of the European Community Humanitarian Aid Office (ECHO), OFDA/USAID and the Asian Development Bank (ADB) provided additional opportunities to establish links and develop relationships among individuals and institutions involved in disaster risk management planning in the region. Another conducted under the auspices of the Asian Urban Disaster Mitigation Program in Bali, Indonesia in October 2002 reviewed the accomplishments and the new organizational and operational relationships that have been developed over the past seven years of disaster risk reduction activities in ten countries.

The Asian Disaster Reduction Centre (ADRC) is a multilateral organization for disaster reduction based in Kobe, Japan. Composed of 23 member countries plus four additional advisory countries, ADRC engages focal points in participating governments to facilitate the exchange of information. It strives to identify acute needs and to develop human resources dedicated to disaster reduction.

ADRC also works with other disaster management organizations engaged in Asia, such as OCHA, UN Centre for Regional Development (UNCRD), ADPC, and OFDA/USAID. It conducts studies and encourages research that will contribute to putting disaster management technologies to practical use. This includes the use of geographic and satellite information systems. It also maintains a web site of products and techniques that are useful for disaster reduction practices such as methods for structural reinforcement against earthquakes and preventing landslides.

ADRC provides financial and technical support for activities and disseminates beneficial experience around the world. By using these tools and based on specific requests, it has launched cooperative projects to develop disaster risk management capacities of its member countries. These projects include the promotion of educational programmes to develop disaster reduction capacities, (community-based flood disaster mitigation project in Indonesia, school educational programme for disaster reduction in the Philippines); and activities that increase professional skills (urban search and rescue training in Singapore).

The centre also encourages operational analysis and the circulation of technical knowledge by inviting visiting researchers from member countries to ADRC, and by conducting short-term visitor training programmes.

Regional cooperation is promoted further by ADRC's management of an information database on natural disaster reduction in Asia. With a particular focus on matters of legislation, disaster management, training and country reports, the web site shares lessons for disaster reduction among Asian countries.

ADRC organizes international conferences and workshops to discuss the status of disaster reduction activities in Asia. In 2002, it held the

Fourth ADRC International Meeting in New Delhi, followed immediately by a second meeting of the same regional participants to discuss ISDR involvement in Asia. Later in the year, ADRC and OCHA jointly conducted the Regional Workshop on Networking and Collaboration among NGOs of Asian Countries in Disaster Reduction and Response, in Kobe, Japan.

The Fifth ADRC International Meeting was convened in Kobe, Japan in 2003 where particular emphasis was given to reviewing the achievements and challenges in disaster reduction in Asia as a basis to develop the paradigm of related regional and international cooperation further. This series of annual meetings continues a process to build disaster reduction capacities and the evolution of guidelines that can improve its effectiveness in Asia, in the process serving as a contribution to the review of the *Yokohama Strategy and Plan of Action for a Safer World*.

With common objectives but different emphasis, both ADPC and ADRC have cooperated with OCHA to organize consultative meetings involving regional institutions, UN agencies and multilateral development assistance organizations. Such meetings were held in Kathmandu in 2001 and Bangkok in June 2002.

This second meeting discussed emerging international partnerships for reduction of risk and vulnerability to natural hazards with additional partners in the region focused on total disaster risk management. These included the longstanding interaction with UNDP and IFRC, and also marked the productive relationships maintained with the USAID Regional Office in Manila and the European Commission's regional Disaster Preparedness ECHO (DIPECHO) programmes based in Bangkok, among others.

ADRC maintained other interests in regional cooperation for total disaster risk management with the Asian Development Bank, the International Institute of Disaster Risk Management (IDRM), Emergency Management Australia (EMA), ICIMOD and ASEAN.

The ASEAN Secretariat is another regional institution that has linked disaster risk issues with other programme interests. The ASEAN Secretariat and member countries have reached an advanced stage of planning for disaster management. With technical support from ADPC and additional assistance from the European Union they have developed a new ASEAN Regional Programme on Disaster Management to guide cooperative action among the member countries in the following areas:

- planning and conducting joint projects;
- collaborating on research and encouraging networks among member countries;
- building capacities and developing human resources in areas of priority concern;
- sharing information, best practices, and disaster management resources;
- promoting partnerships among various stakeholders including government authorities, NGOs, community and international organizations; and
- promoting advocacy, public awareness and education programmes related to disaster management.

The ASEAN Regional Forum (ARF) is another platform composed of the ASEAN countries and 13 additional dialogue partners: Australia, Canada, China, European Union, India, Japan, Republic of Korea, Mongolia, New Zealand, Papua New Guinea, Russian Federation and the United States.

Under its umbrella, several groups have been established to promote cooperation in specific areas including disaster relief and marine search and rescue. Achievements of ARF include a series of training activities, developing a matrix of past cooperation in disaster relief among member countries, conducting an inventory of early warning systems and drafting guidelines for post-disaster responsibilities. Annual meetings have been held since 1997 and by drawing participation from senior levels of ministries of foreign affairs, defence, disaster management and others they have provided a unique platform to consider multiple aspects of disaster management.

Elsewhere in Asia, the South Asia Association for Regional Cooperation (SAARC) consists of seven member countries: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. At a meeting of the SAARC Technical Committee on

Environment, Meteorology and Forestry in January 2002, reference was made to "the need for mechanisms to promote capacity-building and technology transfer to support natural disaster management".

It was further stressed that together with concerns about the negative impacts which climate change exerts in the region, a common South Asian position should be developed on these issues in international forums.

At the 11th Summit Meeting of SAARC held in Kathmandu in 2002, the consensus view was that "the Heads of State or Government felt a strong need to devise a mechanism for cooperation in the field of early warning, as well as preparedness and management of natural disasters, along with programmes to promote the conservation of land and water resources".

As all SAARC member countries are exposed to similar hazards, they have much operational experience in disaster risk management that could be exchanged. Possibilities include the sharing of more information in training, operational and technical professional information. Other initiatives could further the exchange of government officials, and more coordination in policy formulation and implementation, especially in efforts to reduce risks associated with trans-boundary hazards and to increase operational cooperation in disasters that affect neighbouring countries.

There are other technical frameworks in Asia that focus increasing attention on the consequences of natural hazards. As climate has become accepted as a major determinant in contributing to recurrent risks, the meteorological services of the region have worked in close partnership with an increasingly wide range of sectoral agencies. The unprecedented breadth of impacts associated with the El Niño/La Niña events during 1997-1998 across South East Asian countries underlined the need for effective and continuing risk assessments.

The application of seasonal climate forecasting is now considered increasingly as an integral part of comprehensive risk management. Regional institutions such as ADPC have also become more involved in working with national agencies and technical institutions to study the impacts of past extreme climate events in order to anticipate and mitigate the impacts of future occurrences.

In May 2002, a two-week training course on the applications of climate information was organized jointly by ADPC and the Thai Meteorological Department. It brought together, for the first time, meteorological forecasters, water resource managers, agriculture sector managers and food logisticians. The participants assessed the risks posed by climate variability in the region and worked to develop strategies to minimize those risks.

Such activities illustrate a movement towards the introduction of risk management concepts in other resource management sectors beyond traditional or singular disaster management organizations.

International relationships at the regional level are a key requirement in the development of effective flood early warning systems as rivers pass from one country to another. The development of expanded institutional capacities of the Mekong River Commission (MRC) over recent years is another fine example of good regional cooperation. The MRC has developed a long-term flood management programme that was given impetus by the devastating floods of 2000 in the Mekong Delta.

The programme reflects the priorities identified by MRC member countries and is being implemented by them over the six-year period, 2002-2008, in association with their respective national disaster management agencies and NGOs active in the region. Activities include flood emergency management and mitigation projects, land-use management, transboundary flood issues and the dissemination of early warnings.

Although there is a system for tracking river levels, there is still no proper early warning system that will provide information to disaster-prone populations, and there is no centralized information centre. To address this and other issues, the UN Disaster Management Team in Cambodia is currently supporting the development of a regional network for disaster management and mitigation in the Mekong countries. This is to reduce the vulnerability of the poorest residents to the negative impacts of disasters and to protect broad based development gains.

Cambodia response to ISDR questionnaire, 2001.

Box 3.14
Challenges for regional interaction in Asia

- Tunnel vision that considers risk awareness marginal and places greater importance on political visibility in responding to disasters that have occurred.
- Different constituencies and mandates pertaining to various sectors of disaster risk management.
- Scarcity of resource allocations for risk reduction in contrast to emergency response.
- Weak or inconsistent use of dynamic risk assessments in national development strategies.
- No single umbrella organization representative of regional interests and priorities related to disaster risks.
- Lack of awareness, policy or economic motivation to include disaster risk impact analysis in project designs.
- Different, overlapping or overlooked geographical coverage of countries where donor interests are concerned.
- Lack of programmatic mechanisms for matching regional providers with local needs – decisions often influenced more by political affinities than potential disaster risks.
- Nationalist motivation or competing initiatives and duplication among donor interests.
- Bilateral versus multilateral initiatives, donor or supply-side influenced projects.
- National policy objectives contrasting with broader regional collaboration.
- Insufficient working-level cooperation and knowledge transfer, duplication of information collection and dissemination.
- Limited opportunities for dialogue on a regional level. Lack of structured communication and knowledge of other agency programmes.

The extent of cultural variation and political diversity across Asia can work against regional cooperation. However, at least some of these limitations can be overcome, or measures taken to resolve them if the international donor community and regional organizations alike work towards a more consistent understanding that accords disaster risk reduction an explicit and visible role in development strategies (see box 3.8).

The extent of cultural variation and political diversity across Asia can impede regional cooperation. However, by focusing on common interests through a more coherent approach pursued by the international donor community and regional organizations, disaster risk reduction can assume a more distinctive and visible role in development strategies.

Pacific small island developing states

The management of disasters is widely recognized in the Pacific as a national concern, although in a reflection of deeply held cultural attributes, it is equally understood that strengthening regional linkages and fostering a sense of common purpose improves overall disaster and risk management capabilities for all.

The similarity of hazards that Pacific small island developing states (SIDS) face, the shared problems they experience, and a generally common approach adopted in their institutional arrangements have provided a fruitful basis for regional cooperation.

Regional organizations have buttressed these attributes further by working through the principles of partnership in development efforts in the individual Pacific SIDS. Regional cooperation also has been demonstrated by the multilateral and bilateral technical assistance organizations that have long been active in disaster relief and rehabilitation work in the region.

During the past 25 years though, people in the Pacific have displayed a consistent regional approach of transforming policy objectives, public understanding and practical implementation related to disaster management. This has proceeded from the prior concentration on the needs for urgent disaster assistance during a crisis, to the ongoing identification and management of risks experienced by local communities, integrated into overall national development strategies.

The emphasis has changed now to a more proactive approach of increasing awareness about natural hazards and preparing for them. The major challenge in this respect for the Pacific region has been to formulate and implement strategies to reduce community vulnerability. Throughout the region, governments have been encouraged to develop risk reduction strategies and local communities are becoming motivated through ongoing and consistent public education campaigns.

There has been an admirable progression of well-structured programmes for disaster risk

management in the Pacific. Throughout, it has been guided by the political practice of regional consensus, with each stage championed by respected regional organizations. The consistency of approach and continuity that has been provided by national, regional and international partners alike has been a hallmark of successful regional collaboration.

During the 1980s, the Office of the UN Disaster Relief Coordinator (UNDRO) supported disaster preparedness and response activities in the Pacific by providing technical and financial assistance for disaster management seminars, workshops and planning exercises. In October 1990, a South Pacific Programme Office (SPPO) was established in Suva, Fiji to act as the coordination centre for these activities.

During the next ten years SPPO evolved in response to altered UN organizational responsibilities, successively pursued by the UN Department of Humanitarian Affairs (UNDHA), and then by UNDP South Pacific Office (UNDP-SPO). Their joint and proactive approach created the evolution of a regional strategy known as the South Pacific Disaster Reduction Programme (SPDRP) which had two phases: from 1994-1997 and 1998-2000. This sustained common effort greatly aided the development of individual national plans for disaster risk management.

During much of the 1990s SPDRP pursued objectives to:

- strengthen human resources and institutional capacity to manage the effects of natural disasters effectively and rapidly;
- provide appropriate technical support materials for disaster management at all levels of responsibility;
- establish a disaster management information system;
- achieve an acceptable and sustainable level of regional cooperation and collaboration;
- empower communities to reduce their vulnerability to natural disasters;
- establish training capacities at regional and national levels;
- increase national capabilities through mitigation measures and development activities; and
- strengthen sustainability through improved regional and national coordination and mutual support.

Activities were clustered under six related programme components that provided a uniform and consistent focus throughout the region:

- in-country training and technical assistance;
- regional training;
- disaster mitigation activities;
- development and use of regional support materials;
- information management; and
- regional cooperation and coordination.

Although SPDRP was planned and coordinated on a regional basis, much of the activity was demonstrated by individual Pacific island states. The collective programme provided a mechanism for international donors to target assistance for the region that avoided duplication of effort and inter-agency competition. Support was channelled through SPDRP by Australia, China, Germany, Japan, Netherlands, New Zealand, United Kingdom and United States.

An integral part of the SPDRP was the Pacific regional IDNDR programme, greatly facilitated by the Australian National Coordination Committee for IDNDR, which funded 31 country projects. It also supported several other regional projects, conducted both regional and international meetings and maintained an active programme to disseminate information.

By a decision taken by all the Heads of State through the Pacific Forum, a Disaster Management Unit was established within the South Pacific Applied Geoscience Commission (SOPAC-DMU) in July 2000. SOPAC-DMU was created to provide an institutionalized regional approach to disaster risk management while drawing upon the accomplishments of SPDRP from the 1990s.

The annual Pacific Regional Disaster Management Meetings and other activities initiated by SPDRP continue in the SOPAC-DMU programme. Information is disseminated regularly through the publication of quarterly SOPAC-DMU reports and a newsletter. Other major efforts continue to engage the commitment of international agencies and to develop expanded partner relationships through formal memorandums of understanding with foreign

In the South Pacific, a risk assessment project, known as the Pacific City Project, is being implemented by the South Pacific Applied Geoscience Commission (SOPAC) in the capitals of Pacific small island developing states. The project was originally based on earthquake related hazards, but it will now be extended to include other hazards. A micro-zoning map is now in place for the seismic hazard maps.

Tonga response to ISDR questionnaire, 2001.

government agencies and international institutions.

The goal of SOPAC-DMU is to strengthen national disaster management programming capacities and to integrate risk management practices within the economic strategies of countries in order to achieve long-term community resilience.

The current strategy for improving Pacific regional collaboration rests on two primary objectives: to establish a highly functional coordinating body (SOPAC-DMU), and to strengthen the capacity of national risk officials to accomplish effective disaster management programmes domestically.

This will be implemented through the Comprehensive Hazard and Risk Management (CHARM) programme, a comprehensive strategy based on sustainable hazard and risk management. The approach is based on the Australia/New Zealand Risk Management Standard and will allow Pacific island states to clearly identify, prioritize and then manage community risks. It also seeks to achieve greater effectiveness in disaster response and recovery practices.

It is expected that CHARM strategies will lead to a redefinition of national disaster management office (NDMO) responsibilities in a number of countries, as disaster risk management is integrated in government planning. Therefore, advocacy at senior levels of government and the involvement of professional development strategies are also priorities.

There are many government ministries and regional organizations undertaking risk management projects. Many of these are conducted in isolation, with little shared information which can lead easily to duplication. Officials need to have a comprehensive understanding of all the hazards and the risks that exist, together with an overview of projects being undertaken elsewhere in the region, if they are to have a clear picture of remaining needs.

The CHARM approach is based on coordinated efforts and familiarity with all risk-related projects that are underway and their respective linkages. By integrating a variety of professional disciplines from many different sectors CHARM works to assimilate risk awareness into the national planning processes. This process equally

Box 3.15
Progress in the Pacific

There has been admirable progress of well-structured programmes for disaster risk management among Pacific small island developing states (SIDS). Programmes are guided by regional consensus and championed by respected regional organizations:

- From 1990-1999, IDNDR provided a common purpose and an international structure to address a shared need for disaster reduction across Pacific SIDS.
- In 1993-1994, Pacific SIDS developed a common programme on Natural Disaster Reduction in Pacific Islands Countries, presented at the World Conference on Disaster Reduction in Yokohama, Japan, 1994.
- From 1994-2000, UNDP South Pacific Office supported the South Pacific Disaster Reduction Programme (SPDRP), which proceeded in two phases from 1994-1997 and 1998-2000.
- A tripartite review conducted by the UN Department of Humanitarian Affairs-South Pacific Office (UNDHA-SPO) and SPDRP, led to a Regional Disaster Management Framework being formulated in September, 1997.
- The Alafua Declaration was adopted by the Pacific Islands Forum in September 1999 to institutionalize a collective regional strategy for disaster reduction.
- In July 2000, the South Pacific Applied Geoscience Commission-Disaster Management Unit (SOPAC-DMU) replaced SPDRP.
- With the design and official endorsement of a Regional Programme Plan, SOPAC-DMU embarked on a three year implementation process from 2001-2004.
- Future directions will be guided by the innovative Comprehensive Hazard and Risk Management (CHARM) project, an integrated risk management framework and practice to manage unacceptable risks in Pacific SIDS, in the context of national development planning, encompassing both regional and individual country initiatives.

needs to be supported by developing skills, training continuously and advocating for risk reduction measures to be implemented.

In order to institutionalize these principles by translating concepts into activities, CHARM has identified the following strategic elements:

- *Creation of a regional CHARM development strategy*
  As a new concept, CHARM requires investment in the professional development of senior officers from stakeholders' agencies. It also requires close collaboration with the region's traditional donors and other regional organizations.
- *Foster national development strategies*
  With linked programmes that can optimize technical assistance and future planning, CHARM provides an inter-agency basis for sustained commitments by government and non-government players.
- *Training*
  As CHARM will require time and the collaborative effort of all major stakeholders for it to be fully implemented, in-country training capacities need to be developed and strengthened to drive this process.
- *Strengthen information technology capabilities*
  A critical factor is to ensure that NDMOs throughout the region are equipped with human and technical capacities to manage multidisciplinary information resources. This will require appropriate technological tools and computer-based information and communication systems.

Another example of regional collaboration elsewhere in the Pacific has been driven by a specific intention to assess the potential effects of climate change and variability on the US-affiliated Pacific islands. The Pacific assessment was a regional contribution to the first US National Assessment of the Consequences of Climate Change and Variability, coordinated by the East-West Center in Honolulu, Hawaii.

It was accomplished between 1998-2000 through the collaboration of partners from the region and representatives from all US-affiliated islands; namely Federated States of Micronesia, Northern Mariana Islands, Hawaii, Marshall Islands, American Samoa, Palau and Guam.

The initiative sought to nurture the critical partnerships necessary to develop and use climate related information to understand and respond to the challenges and opportunities presented by climate variability and change. Based on extensive involvement of experts and stakeholders from diverse knowledge groups, the assessment combined research and analyses with dialogue and education.

In the end, the assessment was an exciting and highly interactive process involving more than 200 participants who were engaged through small discussion groups and two key workshops organized to encourage and accommodate widespread regional participation in research and dialogue.

Box 3.16
Comprehensive Hazard and Risk Management

The key elements of the Comprehensive Hazard and Risk Management (CHARM) process carried out in the Pacific are:

- identifying known hazards;
- analyzing each hazard against national development priorities;
- identifying vulnerable sectors in relation to hazards;
- identifying risks and determining the most appropriate ways to manage those risks within realistic time and resource frameworks;
- identifying what activities or projects are already being implemented or proposed, both at the country level and by regional organizations;
- identifying programming gaps;
- identifying possible options for altered development priorities in light of impact scenarios; and
- determining lead responsibilities and agencies for managing the implementation of the risk reduction strategy.

"Disaster management is everyone's business. It is a fundamental component of individual, community, business, NGO and government safety and well-being. It is an essential pre-requisite for the achievement of community resilience and sustainable development. [To] ensure an integrated and sustainable approach to comprehensive hazard and risk management is achieved, a major function of the Disaster Management Unit will be to act as a coordinator to bring together major stakeholder groups representing regional, governmental, community, corporate and NGO interests. In this broker and facilitator role, the DMU will play a pivotal part in identifying, encouraging and assisting in disaster reduction and risk management activities throughout the region and within Pacific island countries."

Source: SOPAC, 2000; and SOPAC-DMU, 2001.

Box 3.17
Shared principles for adaptation to a changing climate in the Pacific

- Responding to climate variability is an information-intensive endeavour that requires a continuing dialogue among scientists and decision makers.
- Research results must be transformed into useful and usable information for any productive action to result.
- The effects of climate need to be considered on multiple, interacting sectors and activities of the society.
- Integrate science and decision-making across sectors and among the different levels of government responsibility.
- Address current deficiencies in reliable baseline information and island-specific vulnerability studies (one size does not fit all in either science or decision-making).
- Enhance and strengthen programmes of education, training and public outreach.
- Pursue proactive, forward-looking approaches, emphasize precautionary approaches that enhance flexibility and reduce the adverse effect of unanticipated consequences.
- Improve climate monitoring and prediction by integrating climate information, such as El Niño forecasts.
- Monitor changes in sea level, periodically updating inundation maps and related planning assumptions.
- Identify, evaluate and utilize more sustainable approaches to water resource management, agricultural practices, and other types of natural resource management activities including forests, wetlands and foreshores.
- Enhance consideration and integration of traditional knowledge and practices.
- Embed disaster risk management, preparedness and response activities in sustainable development planning processes.

The assessment supported exploration of climate vulnerability in a number of key sectors. In considering the challenges of ensuring public safety and protecting community infrastructure, a number of climate-related hazards of concern were identified. These included droughts, fires, tropical cyclones and other severe storms, floods, mud and landslide hazards, episodic high surf conditions, sea-level variation (on various time scales), and long-term sea-level rise (with coastal inundation hazards).

The full report documents the potential impacts, sensitivity and resilience in the context of providing access to fresh water, protecting public health, and ensuring public safety and protecting community infrastructure. It also looks at the economic and social considerations of climate change and variability in sustaining agriculture, tourism and promoting the sustainable use of marine and coastal resources.
<www2.eastwestcenter.org/climate/assessment>

Box 3.18
Implementing CHARM

There are several key principles for implementing the Comprehensive Hazard and Risk Management:

- Ensure ownership by the country;
- Ensure links with national strategic plans;
- Ensure harmony with existing systems;
- Ensure appropriate communication and consultation with communities, stakeholders, donors and development partners;
- Establish the principle that risk reduction is vital to national development and that CHARM is a powerful tool in the reduction of risk; and
- Ensure CHARM is promoted as a public safety tool, a risk reduction change driver, as cost-effective and as part of an agreed regional programme with donor support.

Europe

Risk reduction is not a subject that has yet stimulated a comprehensive institutional arrangement throughout Europe, although there are a number of individual initiatives which do contribute to increasing opportunities of collaboration within specific political or subject matter contexts. However, as severe climate events, and notably recent storms, floods and coastal pollution have occurred with considerable social and economic ramifications in a number of European countries, there may be growing political stimulus for more regional cooperation related to disasters. It remains to be seen, however, the extent to which more resources may be allocated for disaster risk reduction, in contrast to recovery and rehabilitation after social assets and critical infrastructure are destroyed.

The most significant example of European cooperation relating to hazards and risk management is the EUR-OPA Major Hazards Agreement of the Council of Europe, which has the objective of enhancing multidisciplinary cooperation between member states to ensure better prevention, protection and relief in the event of major natural or technological disasters.

This intergovernmental European Open Partial Agreement (hence, EUR-OPA) was established by the Council of Europe in 1987 and provides the opportunity for any other non-member state of the European Council to accede to its arrangements and terms for collaboration. As of August 2002, it had 28 members, including 14 Mediterranean countries (Albania, Algeria, France, Greece, Italy, Lebanon, Malta, Morocco, the Former Yugoslav Republic of Macedonia, Portugal, Spain, Turkey, Monaco and San Marino).

The agreement is conducted in collaboration with the European Union, other European institutions, such as the European Space Agency (ESA), and international organizations. Specialized UN agencies including the International Atomic Energy Agency (IAEA), the International Labour Organization (ILO), ISDR, OCHA, UNESCO, and WHO, as well as IFRC and NATO, are also affiliated. There are two aspects to cooperation: political, and scientific and technical.

Politically, decisions are taken by government ministers, following guidelines and priorities for action that are defined at ministerial sessions and transmitted to the Committee of Permanent Correspondents and its various sub-committees. A platform for concerted action and cooperation was formulated through these measures whereby countries were placed on an equal footing to designate representation from Europe for the Inter-Agency Task Force on Disaster Reduction (IATF/DR). This common approach also embarked on a comparative analysis of national legislation relating to risk management in Europe.

In the scientific and technical domain, research and coordination efforts are encouraged through the European Network of Specialized Centres. Twenty-three technical institutions share functions in research, training and expertise on different, but often linked issues of risk important to European and Mediterranean countries. The centres are situated in Western, Eastern and Central European countries, as well as in other countries that share the Mediterranean basin.

Several important recommendations for enhanced cooperation in matters of risk reduction were adopted at the Ninth Ministerial Session of the EUR-OPA Major Hazards Agreement in Bandol, France in October 2002. One called for the development of increased European-Mediterranean collaboration particularly through the exchange of information, and another identified the first phase of implementing risk reduction policies and procedures that could further ISDR objectives.

The major decisions taken are summarized below:

- Establish Euro-Mediterranean Synergy to strengthen disaster reduction and preparedness by establishing a network focusing on procedures and protocols for more online exchange of information and data concerning the occurrence and effects of disasters, as well as the use of uniform terminology and definition of risk management concepts. Risk assessment procedures and techniques likewise could be better harmonized to consider such areas as the stability of buildings and civil engineering works, and the safety of chemical, radiological and other hazardous facilities such as pipelines. Early warning systems for natural and technological hazards were similarly identified as areas for future commitments. Throughout, a common commitment was acknowledged that the agreement's undertakings must address the nature of hazards and their prevention and that all information, knowledge and scientific expertise should facilitate risk management decision-making.

- Association with the objectives and activities of ISDR was encouraged by calling for the establishment or consolidation of national programmes or platforms for disaster reduction in the Euro-Mediterranean region and that they be accorded recognition and support by national governments. The integration of risk management into planning and land-use policy was highlighted as having particular potential impact. While these and related measures could be pursued in cooperation with the Council of Europe and the European Commission, it was noted that it should also be developed with the support of the ISDR Secretariat, in particular for the benefit of developing countries.

- To further these intentions, interest was expressed in sponsoring a joint regional conference by EUR-OPA Major Hazards

Box 3.19

Major Hazards Agreement of the Council of Europe (EUR-OPA) Specialized Centres

European Centre for Disaster Medicine (CEMEC), San Marino promotes the prevention and mitigation of the effects of natural and technological disasters.
<http://www.diesis.com/cemec>

European University Centre for Cultural Heritage (CUEBC) in Ravello, Italy. CUEBC is an experimental laboratory that conducts scientific research and specialist matters. It is part of the European University for Cultural Heritage.
<http://www.cuebc.amalficoast.it/>

European Natural Disasters Training Centre (AFEM) in Ankara, Turkey. Its main goal is to reduce the destructive effects of hazards through research, training and education at all levels, from policy makers to field workers associated with disaster preparedness and response.
<http://www.europarisks.coe.int/afem50.htm>

European Centre for Prevention and Forecasting of Earthquakes (ECPFE), in Athens, Greece, is involved in all aspects of prevention as well as in the development of practical ways of managing earthquakes.
<http://www.europarisks.coe.int/ecpfe50.htm>

European Centre on Geomorphological Hazards (CERG) in Strasbourg, France. CERG is concerned with studying the major hazards associated with earthquakes and landslides.
<http://www.europarisks.coe.int/cerg50.htm>

Euro-Mediterranean Seismological Centre (CSEM) in Bruyères-le-Châtel, France. CSEM members are devoted to the promotion of seismological research.
<http://www.emsc-csem.org/> and <http://www.csem.bruyeres.cea.fr>

European Centre for Geodynamics and Seismology (ECGS), in Walferdange, Luxemburg, acts as a link between scientific research and its application to the prevention and interpretation of hazards.
<http://www.ecgs.lu>

European Centre on Training and Information of Local and Regional Authorities and Population in the Field of Natural and Technological Disasters (ECMHT) in Baku, Azerbaijan. It provides training and information of local and regional authorities in the field of major hazards.
<http://www.europarisks.coe.int/ecmht50.htm>

Euro Mediterranean Centre on Evaluation and Prevention of Seismic Risk (CEPRIS) in Rabat, Morocco. It works to develop a unified strategy and common frameworks for coordinating regional seismo-tectonic zoning and assessment of seismic hazards and risks in the Mediterranean region.
<http://www.europarisks.coe.int/cepris50.htm>

European Centre for School Training in Risk Prevention (CSLT) in Sofia, Bulgaria. It develops and promotes general and partial educational policies, training concepts and teaching methods in the field of risk prevention training in schools.
<http://www.bg400.bg/cslt>

Euro-Mediterranean Centre for Research on Arid Zones (CRSTRA) in Algiers, Algeria, conducts scientific and technical research programmes on arid zones and zones threatened with desertification and drought.
<http://www.europarisks.coe.int/crstra50.htm>

European Centre of Technogenic Safety (TESEC) in Kiev, Ukraine, is a scientific research and educational organization.
<http://www.europarisks.coe.int/tesec50.htm>

European Centre for Vulnerability of Industrial and Lifeline Systems (ECILS) in Skopje, the Former Yugoslav Republic of Macedonia. It promotes programmes for theoretical and applied research of urban vulnerability.
<http://www.iziis.ukim.edu.mk>

European Centre on Urban Risks (CERU) in Lisbon, Portugal. Its principal functions are to provide a framework for coordinating relief and natural and technological hazard management and for devising a common strategy to combat urban hazards.
<http://www.europarisks.coe.int/ceru50.htm>

European Centre on Floods (AECF) in Kishinev, Moldova concentrates on proposals to prevent the risk of flooding.
<http://www.europarisks.coe.int/aecf50.htm>

Euro-Mediterranean Centre on Insular Coastal Dynamics (ICOD) in Valletta, Malta. ICOD's brief is to work in three main areas of education, applied research and information activities related to coastal dynamics.
<http://www.icod.org.mt/IcoD/ICoD main.htm>

Scientific Centre of Monaco, European Oceanological Observatory (OOE) in Monaco, conducts research with the objective of evaluating major ecological risks and restoring degraded habitats.
<http://www.europarisks.coe.int/ooe50.htm>

European Centre of New Technologies for the Management of Major Natural and Technological Hazards (ECNTRM) in Moscow, Russian Federation. One of its primary objectives is the use of space technologies for the forecasting, prevention and relief in major natural and technological disasters.
<http://www.europarisks.coe.int/ecntrm50.htm>

Higher Institute of Emergency Planning (ISPU) in Archennes, Belgium, organizes specific courses concerning problems of emergency planning for officials in public office.
<http://www.europarisks.coe.int/ispu50.htm>

European Centre for Research into Techniques for Informing Populations in Emergency Situations (CEISE) in Madrid, Spain. Its work concerns methods of informing the public in emergency situations.
<http://www.proteccioncivil.org>

European Inter-regional Centre for Training Rescue Workers (ECTR) in Yerevan, Armenia, provides training of rescue workers and related instructors for humanitarian assistance.
<http://www.europarisks.coe.int/ectr50.htm>

European Centre on Geodynamical Hazards of High Dams (GHHD) in Tbilisi, Georgia, was created to develop multinational, multidisciplinary approaches to the problems of geodynamic hazards, generated by high dams.
<http://www.europarisks.coe.int/ghhd50.htm>

European Advisory Evaluation Committee for Earthquake Prediction (EAECEP) is a committee of the Council of Europe. This institution of 13 specialists was established in 1993 by the Committee of Ministers and works closely with the EUR-OPA Specialized Centres. It is responsible for giving advice on earthquake prediction made by scientists.
<http://www.europarisks.coe.int/eaecep.htm>

Agreement, the ISDR Secretariat and the government of Spain within two years to review and consolidate the work accomplished and to make specific proposals for the improvement of risk management in the Euro-Mediterranean region. Specific problems of individual subregions were identified as involving aspects of international cooperation within and outside the Euro-Mediterranean area including the transboundary aspects of risk management, and the contribution of science and technology to disaster management.

- Information and awareness of disaster reduction and preparedness could be improved in European and Mediterranean countries by the implementation of a radio and Internet risk information broadcast (IRIS project), and through the continuation of training and research programmes in universities as well as by creating national observatories to monitor safety in schools and higher education. These latter activities form part of the FORM-OSE Program, which also includes the Sismo School Programme, an awareness initiative for students that will place working seismic stations in schools.

- Strengthened measures for implementation of risk reduction initiatives should be pursued by the Executive Secretary of the EUR-OPA Major Hazards Agreement developing cooperation further with the European Commission. This could be developed particularly with the Directorate General of the Environment, leading to the implementation of existing EUR-OPA initiatives in risk reduction.

Several developments within the European Union have begun to draw the European Commission's attention to the need to elaborate a more integrated approach to vulnerability and risk reduction. While within the commission itself, there is not yet an overall strategy, funding has been committed to support some specific activities related to disaster reduction.

In terms of research related to natural hazards and disaster risk issues, there are two different Directorates General (DG) involved. Direct research explicitly earmarked as a percentage of the overall European Commission (EC) budget for research is undertaken by the DG Joint Research Centre (JRC) to support policy-making within the EC. Considerably more additional research funds are managed by the DG Research. Even though it does not conduct research itself, the DG Research does allocate funds among many professional, commercial and academic bodies to study hazard and risk subjects, and is equally responsible for the management and supervision of specific framework programmes.

These commitments underwrite a variety of programme activities by which the European Union expresses its overall research agenda, and both the DG JRC and DG Research are involved with advancing those objectives through their respective activities. The DG JRC has been carrying out research in the field of natural hazards over many years, while in parallel the DG Research has been funding many initiatives across Europe that enhance collaboration in the field.

In both these related research aspects, as well as with the additional interests particularly of the DG for the Environment, it is evident that throughout Europe individual countries address hazard and risk factors through their respective national, regional, and local projects. Furthermore, there are a variety of consortiums that also collaborate on joint projects in areas such as floods, wildfires, and trans-national collaboration as in river basin initiatives for the Danube, Rhine and Elbe rivers, among others.

The EC position on disaster management and civil protection matters is more explicit and focused than the overall understanding of disaster reduction as a strategy involving the management of risks and vulnerability as components of long-term development planning. Several EU countries participating in the ISDR programme have displayed a broader understanding of these issues and the related complementary associations.

These countries, together with those due to join the EU in 2004, are working with ISDR to further develop the process underway within the European Commission to enable vulnerability and risk considerations to find their appropriate position and profile among the strategic agenda of the EU.

Two legislative measures adopted in recent years illustrate efforts that can lead to a more holistic approach to disaster risk management and vulnerability reduction. However, a strong civil protection connotation remains present in both. A European Council decision of October 2001 supported "establishing a Community mechanism to facilitate reinforced cooperation in civil protection assistance intervention". While the text mentions prevention, it does so with no further elaboration nor does it provide any practical details.

An earlier decision in December 1999, about "establishing a Community action programme in the field of civil protection" makes reference to risk awareness and assessment as well as the general context of sustainable development. In an annex, reference is also made to potential projects of general interest which may draw attention to "prevention, preparedness, detection and study of the causes of disasters (analysis of risks and vulnerability)", and "analysis of the socio-economic implications of disasters".

The first community action programme in the field of civil protection (1998-1999) defined a general framework for community involvement and expressed the commitment to initiate long-term programmes. A subsequent programme running from 2000-2004 identifies five major projects, including a new one relating to the prevention of natural and technological disasters. This anticipates the implementation of common principles and guidelines for disaster prevention at all levels in the European Union. Three fields are considered: risk assessment procedures; the prevention of flash floods and the mitigation of their impact; and the reduction of fire risks.

Concerning specific experiences accumulated in this field, a report on risk assessment procedures used in civil protection and rescue services in different EU countries was prepared from data collected by questionnaire in 1998. The report describes the use of risk assessment methods in these countries and provides examples of best practices. Several other projects have been completed, which relate to floods.

Guidelines for the prevention of flash floods have also been prepared in anticipation of elaborating a pan-European flood forecasting and modelling system to provide the basis for an early warning system. Other important programmes exist in Europe to facilitate the exchange of information and to guide European organizations and EU member states in identifying hazards and managing hazards and disaster risks.

A special unit of targeted research for decision support within the Joint Research Centre's Institute for the Protection and Security of the Citizen, Technological and Economic Risk Management Unit serves as a useful facility for disaster risk reduction. There, the Major Accident Hazards Bureau (MAHB) is dedicated to providing scientific and technical support for the actions of the European Commission in controlling major industrial hazards.

MAHB endeavours to assist other EC, and in particular the DG of Environment to implement EU policies on the prevention, mitigation and control of major hazards or technological accidents. It conducts scientific and technical activities related to the daily implementation of relevant EC legislation, such as the original Seveso Directive which was approved by the Council of Ministers in 1982 after the chemical accident at Seveso, Italy. <http://mahbsrv.jrc.it/>

Another DG supported service is the Natural and Environmental Disaster Information Exchange System (NEDIES). It has a primary objective to support European Commission services, governments and EU organizations in their efforts to prevent and prepare for natural and environmental disasters and to manage their consequences.

The project has been launched to supply updated information about the occurrence of natural and environmental disasters and their management, as well as to supply information on past disasters and main consequences, methods and techniques relevant for the prevention of disasters, preparedness and response for civil protection services.

It also provides an interdisciplinary platform for dialogue among all actors in natural and environmental disaster management, creating the possibility of a common European repository of disaster experience, with a particular focus on mitigation of disaster consequences. <http://nedies.jrc.it>

The European Environment Agency's (EEA) core task is to provide decision makers with the information needed for creating sound policies to protect the environment and to support sustainable development. In the area of disaster risk reduction, it conducts studies on issues such as the impact of extreme hydrological hazards in relation to Europe's water resources. It also supports the EC in diffusing information on the results of environmental research.

European cooperation for international development assistance

Another important dimension of European cooperation is the European Union's commitment to support disaster risk management activities through international development assistance. In this respect the primary instrument is the European Community Humanitarian Aid Office (ECHO). As a service of the European Commission, ECHO's primary mandate is to provide emergency assistance and relief to the victims of natural disasters and conflicts outside the European Union.

However, in following earlier IDNDR and Yokohama strategy recommendations, it also works to ensure disaster prevention and preparedness. This includes funding community-oriented pilot projects. From 1994-1997, ECHO financed prevention and preparedness projects in various locations totalling about US$ 20 million. A specific programme for disaster preparedness was created within ECHO in 1996 for that purpose.

DIPECHO is a regional programme to implement ECHO-financed activities, initially in Central America, the Caribbean and South-East Asia, plus Bangladesh. The operating criteria is to finance projects which promote better integration between disaster prevention and sustainable development, rather than to finance those project activities which are already considered a part of existing development programmes.

Additionally, 17 projects totalling more than US$ 5 million were financed in the First Action Plan

for the Andean Community, targeting vulnerable, disadvantaged urban and rural communities, municipal agencies and local disaster-related organizations. Through these projects, training, planning and prevention works have been implemented.

DIPECHO now allocates about US$ 7 million worldwide each year. The programme's principal objective is focused on reducing the impact of natural disasters by strengthening local physical and human resources in high-risk areas. <http://www.disaster-info.net/dipecho>

ECHO is committed to increasing its support for disaster preparedness in Central Asia. Over the past decade, natural hazards such as landslides, floods and earthquakes have killed about 2,500 people and affected 5.5 million people, or 10 per cent of the total population in Tajikistan, Kyrgyzstan, Uzbekistan, Kazakhstan and Turkmenistan. ECHO has provided nearly US$ 1 million for ad hoc disaster preparedness activities in Central Asia since 1998.

Greater attention is now considered to be warranted by the high frequency and serious impact of natural disasters, and the low response capacity in many of the vulnerable areas. Early in 2003, the European Commission approved a US$ 2.75 million action plan to help vulnerable populations in Central Asia prepare for and respond to natural disasters.

The money will support small-scale infrastructure projects, disaster preparedness initiatives and response mechanisms. Funds will be allocated to international agencies operating in the region, via ECHO. The decision marks an extension of DIPECHO to Central Asia.

The action plan's specific objectives are to strengthen the capacity of local communities to foresee, respond to and cope with disasters, and to protect vulnerable groups from likely natural disasters through small-scale infrastructure works, early warning systems, disaster preparedness training, radio communication systems and public awareness campaigns.

Local response capacities will also be strengthened through local disaster management plans. Structural measures will be employed to protect vulnerable communities from avalanches, mudslides and flooding through the construction of protection barriers, the reinforcement of mountainsides and by strengthening the banks of flood-prone rivers.

Most of the approximately US$ 3 million will be allocated for operations in Tajikistan, the most vulnerable of the five countries. Disaster-prone regions in Kyrgyzstan and Uzbekistan will also be targeted.

European subregional frameworks

Within Europe, there are emerging initiatives striving to adopt a broader professional community of interests to a subregional operational framework that relate to disaster risk reduction. Some examples, with origins provoked by a specific type of hazard or technical consideration and the need to seek broader trans-state policy commitments, are presented below.

Case: Central and Eastern Europe

The Central European Disaster Prevention Forum (CEUDIP) was established in 1999 through the efforts of the national committees for IDNDR from the Czech Republic, Germany, Hungary, Poland and Slovakia. The motivation was to formulate an institutional mechanism that could increase the collaboration in disaster reduction related to all types of hazards, particularly floods, often experienced simultaneously by these neighbouring countries.

Following the shared experience of the Oder River floods early in 1999, the initial interest that stimulated the participating countries was a common desire to improve early warning capabilities. Other issues have since emerged, such as the role of the media in disaster reduction, national legislation about declared emergencies, the participation of civil society in disaster reduction activities, and the preparation of training materials.

Since 1999, the forum has conducted annual meetings in Prague, Warsaw, Bratislava and Bonn. The members of CEUDIP agreed at their meeting in 2000 that closer cooperation would be

required with EU policies related to civil protection and disaster reduction. As four of the CEUDIP countries have been accepted for future membership in the EU, they have assigned particular relevance to assess their present capabilities in relation to EU norms.

The participants of CEUDIP have recognized the growing importance of strong and active participation of the public, working through civic groups and NGOs to supplement the efforts of government institutions and agencies. At CEUDIP's meeting in Bratislava in 2001, it was agreed to improve common regional standards and to develop a project of cooperation with EU institutions involved in emergencies, risk and disaster reduction issues.

In 2002, unusually heavy rainfall provoked record floods in the major rivers of Central Europe with extremely high water levels recorded on the Elbe, Danube and Vltava rivers. Much of the Czech Republic and Slovakia and parts of Germany and Austria were affected, with record water levels recorded in the centres of Prague and Dresden. Elsewhere in Europe, Italy, Spain, the Russian Federation, Romania and Hungary also suffered repercussions from the heavy rainfall.

About 100 people died, hundreds of thousands were evacuated, and tremendous damage was caused, including the loss of much physical infrastructure. Munich Re. estimated the losses as more than US$ 15 billion.

The EU has few means to help member states address such losses in the short term. After the severe consequences of the 2002 floods, this lack of capacity was widely criticized. The European Commission has since been forced through political pressure to consider several propositions, including the re-establishment of a previously maintained contingency solidarity fund.

Originally conceived to assist member states respond to losses from extraordinarily severe natural disasters, defined as causing damages of more than 1 billion Euros or 0.5 per cent of a country's GDP, the fund is expected to be financed from various sources, including structural and regional funds. While initially intended to be re-capitalized in the amount of 500 million Euros, strong political imperatives have boosted the amount to 1 billion Euros following the effects of the Central European floods. It remains to be seen to what extent such resources will be committed to risk identification, assessment and protection, in contrast to replacing or repairing assets only after they become lost or damaged.

Additionally, in responding to the Vltava and Elbe floods, the United States Trade and Development Agency (USTDA) sponsored a symposium in Prague in December 2002 that brought US and Czech experts together. This meeting on Flood Management Strategies: Recovery and Prevention discussed ways that US public and private sectors could assist in reconstruction efforts and develop strategies to prevent future flood damage, including flood risk management. A US$ 395,000 grant was offered by USTDA to the Regional Government of Central Bohemia to set up an emergency management system.

The Swiss government provided about US$ 25 million in a similar initiative to spur regional cooperation in flood-stricken regions in Austria and Slovakia, although it was directed mainly towards immediate recovery needs rather than to motivate prevention activities.

By contrast, the World Wide Fund for Nature (WWF) called for European prevention policies to work with nature by implementing wetlands and floodplains protection as well as soil, forest and water ecological management. This would prevent future extreme events, as was the case in some parts of Bratislava where floodplains were able to absorb the Danube floodwaters.

Aside from specific flood-induced initiatives, there are other subregional associations that have been established through the creation of the Central European Initiative (CEI) Cooperation Agreement on the Forecast, Prevention and Mitigation of Natural and Technological Disasters. An agreement was concluded in 1996 between Austria, Croatia, Hungary, Italy, Poland and Slovenia, with the European Commission maintaining observer status for improved cooperation in matters of civil protection and disaster management.

Areas identified for specific attention include the exchange of scientific and technical information or

data on a regular basis, as well as improving the communications links among national institutions involved with earthquakes. Common research programmes have been identified and joint efforts pursued for the training of specialists that were conducive for setting up joint programmes. A common operational manual comprising data from the five countries has also been compiled to further this objective. <http://www.ceinet.org>

Within a more of a regional security context, driven by common political interests, the South-East European Stability Pact has developed a role in disaster management issues with the creation of a Disaster Preparedness and Prevention Initiative (DPPI). This framework was initiated in March 2000 with 12 Eastern European countries participating with international organizations including OCHA, IFRC and NATO, to foster regional cooperation and coordination in disaster preparedness and prevention for natural and human-induced disasters. Initially a regional risk assessment and capabilities survey was carried out in the 12 countries of Eastern Europe.

In particular, the DPPI encourages the development of environmental regulations and codes that can contribute to the prevention and mitigation of disasters. Additional attention has been given to facilitate operational matters of disaster preparedness like advance negotiation on border crossing procedures and the agreement on subregional disaster management standards. More information is available online. <http://www.stabilitypact.org>

Within the subregion, there have been antecedents for civilian-military programmes within individual countries that serve a variety of interests. Bulgaria's State Agency for Civil Protection participated, since April 1998, in the activities of the Black Sea Economic Cooperation Framework, under an agreement directed at protecting the population from natural and human-induced disasters. It then became associated with the CEI cooperation agreement in 1999.

Since then, the same civil protection agency signed an agreement in April 2001 in Sofia, Bulgaria to establish a Civil-Military Emergency Planning Council (CMEPC) for South-Eastern Europe by cooperating with Croatia, the Former Yugoslav Republic of Macedonia and Slovenia. While Albania, Greece, Turkey and Romania were participating in the CMEPC initiatives, they also had the option to join the agreement as full members if they wished.

Case: Mediterranean countries

Within the technical and scientific community, countries throughout the Mediterranean basin are benefiting from the Programme for Reducing Earthquake Losses in the Eastern Mediterranean (RELEMR).

Initially organized by UNESCO, the USGS, and European and other US earth science organizations, RELEMR is based on an earlier successful joint endeavour, the Programme for Assessment and Mitigation of Earthquake Risk in the Arab Region (PAMERAR). <http://www.unesco.org/science/earthsciences/disaster/disasterPAMERAR.htm>

Both of these programmes have concentrated on activities designed to "establish or reinforce seismic and strong motion networks, promote the formulation of seismic building codes and provide training in seismology, earthquake engineering and civil defence".

The reduction of earthquake losses in RELEMR is pursued through seismic-technical framework studies, earthquake monitoring and assessment, risk assessments and the implementation of related risk reduction measures. These will be accomplished by participating countries in areas including the expansion of urban planning, building codes, strengthening and rehabilitating existing buildings, and improving poor foundation soils. <http://www.unesco.org/science/earthsciences/disaster/disasterRELEMR.htm>

Case: Russian Federation and Commonwealth of Independent States (CIS)

Traditionally, the Russian Federation has been involved in international cooperation in natural disaster reduction. Currently, about 30 intergovernmental agreements on disaster reduction are in effect with other countries, with another dozen or so cooperative agreements under various stages of negotiation.

Regional multilateral cooperation is growing within the CIS Intergovernmental Council for Natural and Technological Emergencies. In 2002, a code for interaction in natural and technological hazard mitigation was adopted by the CIS. This followed the creation of a joint intergovernmental scientific programme on risk reduction in 2001. One of its goals was the design of unified legal and technical norms for disaster management. In 1998, an intergovernmental science and technology programme for seismic monitoring of the CIS territory was adopted. It aimed to develop regional monitoring and warning systems. However, effort to motivate local community action remains an area where much more attention and commitment is necessary.

Since 1998, several measures were adopted to organize the regional intergovernmental programme for development of a joint CIS corps for emergencies, with additional efforts envisaged to improve related information use, communication and warning systems.

Regional interactions also take place in the border areas of the Russian Federation and neighbouring countries. Recently, joint efforts were undertaken with China in flood prevention and preparedness; with Kazakhstan in locust mitigation; and in Mongolia to halt the spread of foot and mouth epidemics.

The Russian Federation is also participating in bilateral cooperation in natural disaster management. Special bilateral cooperation agreements on emergency mitigation have been concluded with France, Spain, Viet Nam and India. Bilateral projects have also been implemented in particular areas of emergency forecasting and mitigation of natural hazards in Greece, and in the management of forest fires elsewhere.

Future challenges and priorities

Regional cooperation, interaction and experience

In reviewing the accomplishments of regional cooperation in different parts of the world, two factors stand out. Institutionally, the sustained commitment of permanent facilities and institutions are integral to promoting multidisciplinary approaches to disaster risk management. More fundamental, it is crucial that there is understanding that leads to the acceptance of countries in the same region sharing both their information and their concerns in various forums, so that they may collaborate more effectively in their activities.

It is clear that both policy interests and material resources must transcend strictly national outlooks. Regional efforts must support both the human growth and organizational development that are essential for strengthening national as well as local capacities. The examples cited demonstrate that in some instances such recognition is thrust upon a region abruptly, such as Hurricane Mitch on Central America, or it may evolve more methodically through shared orientations as has been the case for Pacific island states.

In all cases there needs to be an established and consistently supported apolitical institutional hub that can promote as well as respond to multidisciplinary and multi-state issues related to disaster risk reduction.

The function which these institutions serve as a dissemination vehicle, acting as clearing houses for diverse material that merges political, professional and public interests should not be overlooked in building regional collaboration. There is little doubt that the momentum and resulting success in regional cooperation also is due to the efforts of regional and international organizations.

While organizations such as IFRC, UN agencies and the development banks are working throughout the world to encourage more productive forms of collaboration, the regional emphasis provided by organizations such as PAHO, OAS, UNDP, CEPREDENAC, PREANDINO in the Americas; ADPC and ADRC in Asia; SADC, IGAD, WMO, UNDP and UNEP in Africa; and OCHA, UNDP and SOPAC in the Pacific, has proven to be of unparalleled importance

In 2003, both ISDR and UNDP Bureau for Crisis Prevention and Recovery opened African regional offices in Nairobi, Kenya. Increased policy interest and new initiatives also are emerging in Africa. SADC has been working to provide policy impetus for disaster risk awareness in Southern Africa. IGAD is increasingly seeking to promote a fuller engagement in Eastern Africa. However, in more general terms, the realization of practical forms of institutional commitment in Africa overall, continues to be a challenge.

It is hoped that through more guidance to ECOWAS member states in West Africa, as well as within the countries of Northern and Central Africa, a greater awareness of shared consequences of risk factors with the environment, sustainable development, livelihoods and government policies will result. NEPAD too, offers a promise for more cooperation among African countries to give enhanced visibility to disaster risk issues through its specific commitments to environmental concerns.

Throughout the Arabic-speaking world and among European countries too, there is an absence of consolidated recognition or material support for a sustained regional focus on disaster risk reduction.

An international framework of regionally focused institutions should be created and sustained, dedicated to the various aspects of disaster risk management practice. The wider dissemination of information about hazards and risk management and the purposeful sharing of experience are the lifeblood of more regional cooperation.