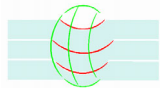




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**Review of the Yokohama Strategy and
Plan of Action for a Safer World**

Review of the Yokohama Strategy and Plan of Action for a Safer World

Note by the Secretariat*

The present document has been prepared in accordance with General Assembly resolutions 56/195, paragraph 18, and 57/256, paragraphs 4, 5 and 7, where it was proposed to undertake the review of the Yokohama Strategy and Plan of Action for a Safer World (1994), and to report its conclusions at the World Conference on Disaster Reduction (WCDR).

The document has benefited from views expressed at the ninth and tenth sessions of the United Nations Inter-Agency Task Force on Disaster Reduction, which were held on 4 and 5 May and on 7 and 8 October 2004, respectively. Additional comment has been provided by the Governments, international organizations and non-governmental organizations that attended the first session of the Preparatory Committee for the Conference, on 6 and 7 May 2004, and later upon their consideration of the Draft Review of Yokohama Strategy and Plan of Action for a Safer World (A/CONF.206/PC(II)/3) at the second session of the Preparatory Committee, on 11 and 12 October 2004.

The Conference secretariat intends to disseminate comprehensive material reflective of the Yokohama Review process through various products for different audiences.

* This document was submitted late due to the extensive internal and external consultations that had to be undertaken.

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I. Introduction

A. Background

1. In its resolution 57/256, the General Assembly requested a review of the Yokohama Strategy and Plan of Action for a Safer World, Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action. The Secretary-General proposed that this review of the Yokohama Strategy (“the Yokohama Review”) be carried out by the secretariat of the International Strategy for Disaster Reduction (ISDR) in consultation with relevant stakeholders. The Assembly reiterated that request in its resolution 58/214, and stated that the review should be concluded at the World Conference on Disaster Reduction at Kobe, Hyogo, Japan, from 18 to 22 January 2005.

2. The Yokohama Review has been an analytical process covering the period from 1994 to the present. The resulting document reflects the current state of awareness and accomplishments, limitations and constraints, and presents consolidated observations about global disaster risk reduction.¹

3. Growing understanding and acceptance of the importance of disaster risk reduction depend on the subject’s embodiment in global commitments to sustainable development, most clearly expressed in the Johannesburg Plan of Implementation of the World Summit on Sustainable Development,² especially through its provisions on vulnerability, risk assessment and disaster management. The end of the period 2005–2015 will coincide with the Commission on Sustainable Development’s review of disaster management and vulnerability within its fifth cycle (2014–2015), as part of the follow-up to the Summit. The year 2015 is also the target for achieving the Millennium Development Goals, with which disaster risk reduction is inherently linked.

B. Methodology and reference material

4. This review takes account of documentation from the International Decade for Natural Disaster Reduction (IDNDR), and since 2000, from the ISDR. These sources have been supplemented by the experience and views provided by Governments, institutions and individuals engaged in disaster and risk management or the various dimensions of sustainable development, with increasing attention being paid to poverty eradication programmes.

5. The conclusions of the IDNDR Programme Forum and the Proceedings of the Sub-Forum on Science and Technology in support of Natural Disaster Reduction, and the final report of the IDNDR Scientific and Technical Committee (A/54/132 and Add.1) catalogued many initial accomplishments and highlighted areas for future attention.

¹ The updated phrase ‘disaster risk reduction’ is used throughout this document to denote the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development. (*Living With Risk*, Vol. II, Annex 1, Terminology: Basic terms of disaster risk reduction, ISDR, 2004).

² *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August – 4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex.

6. The recommendations in Assembly resolution 54/219 that launched the ISDR provide further confirmation of Member States' intentions to improve intersectoral collaboration and the coordination of disaster reduction commitments within and beyond the United Nations system. The Inter-Agency Task Force for Disaster Reduction (IATF/DR) was created to coordinate strategies and policies for disaster reduction with the efforts of the secretariat of the ISDR to ensure synergies between organizations of the United Nations system and activities in the socio-economic development and humanitarian fields.³ The ISDR Framework for Action (2001) further identified priority areas for implementation.

7. Since 2001, the ISDR secretariat has collected information on policy, technical and awareness-raising activities aimed at reducing disaster risks around the world. This has involved the participation of many organizations and documentation of their accomplishments spanning humanitarian, environmental, technical, and development endeavours associated with numerous global agendas.⁴ More than 50 regional and thematic consultations organized by partner organizations with ISDR support during 2003 and 2004 have provided the benefits of experience and insight to the Yokohama Review.

8. Many examples of achievement and related information about global experience in disaster risk reduction appear in the two-volume sourcebook and directory *Living with Risk: A global review of disaster reduction initiatives* (United Nations, 2004) and in the subsequent ISDR publication *Know Risk* (forthcoming, United Nations, 2004). A set of three CD-ROMs prepared by the ISDR secretariat, *Disaster Risk Reduction 1994–2004*, provides global statistical information, country profiles, resource documents, selected professional commentary, and practical experience from more than 120 countries.

9. The crucial relevance of the multiple relationships between disaster risks and development is elaborated in the United Nations Development Programme (UNDP) publication *Reducing Disaster Risk: a Challenge for Development* (2004), including a Global Disaster Risk Index, compiled with contributions from the United Nations Environment Programme – Global Resource Information Database (UNEP-GRID) and the ISDR secretariat, among others.

C. Hazard, vulnerability and risk reduction: the basis for commitment

10. Considered together, the Yokohama Message and the Principles of the Yokohama Strategy distil the essence of the strategy and its Plan of Action for a Safer World: unless disaster risk reduction becomes part of countries' development plans and programmes at all levels, progress in social and economic development will continue to be eroded by recurring disasters.

11. Since the Yokohama Strategy was adopted, there have been about 7,100 disasters resulting from natural hazards around the world. They have killed more than 300,000

³ UN General Assembly resolution 56/195

⁴ IATF Information Paper, *Extracts Relevant to Disaster Risk Reduction from International Policy Initiatives 1994–2003*. (4-5 May 2004).

people, and caused more than US\$ 800 billion in losses.⁵ Some estimates suggest that well over 200 million people have been affected every year by 'natural' disasters since 1991.⁶

12. Two-thirds of the recorded disasters since 1994 were floods and storms. These included record rainfall episodes, extraordinary floods, and unprecedented storms distributed across each of the five continents. The severity of Hurricane Mitch alone eliminated more than 10 years of development gains in some parts of Central America.

13. It was equally a period of extremely severe and protracted droughts, at times accompanied by record-setting temperatures in many parts of the world. The years 1998, 2002, and 2003 globally averaged were the warmest on record. Exceptional heat waves in Asia and Europe killed thousands. Such natural conditions combined with human behaviour as unprecedented and often uncontrollable wildfires occurred on all five continents.

14. The period witnessed one of the past century's most intense El Niño episodes in 1997-1998, resulting in the widespread droughts, flooding and other weather changes. These events had a heavy impact on agriculture and food security, health and infrastructure. Losses have been estimated at 20,000 lives and \$35 billion in material damages.

15. The scientific understanding on climate change, as set out in the periodic assessments of Intergovernmental Panel on Climate Change (IPCC), has grown firmer since 1994, as has public and government concern in many countries. Global average temperatures are increasing, sea levels are rising, and glaciers are retreating. However, it is not established whether extreme weather conditions that lead to disasters have changed significantly. IPCC reports project that intensified drought and high rainfall conditions are likely in the future, in some regions. Intense debate continues internationally on what the long-term impacts will be and about how best to tackle the problems.

16. Although geological disasters accounted for only about 15 per cent of the recorded events during the past 10 years, they resulted in one-third of the 300,000 fatalities. A sequence of highly destructive and deadly earthquakes between 1999 and 2004 raised public outcry about the needlessly high number of fatalities and the lack of public safety afforded to public facilities, especially schools. Severe landslides and debris- and mud-flows, which often demonstrate the compound effects of hydrometeorological, geological and environmental hazards, accounted for another 40,000 deaths.

17. As forceful as these severe hazards have been, their effects have been much greater because of the inadequately addressed vulnerabilities of the communities affected, particularly in developing countries. While only 11 per cent of people exposed to natural hazards live in low human development countries, they account for more than 53 per cent of total recorded deaths.⁷ Analysis conducted by UNDP emphasizes that both vulnerability and hazards are conditioned by human activities, often disclosed by fewer institutional capabilities or the limited application of existing knowledge.

18. Rapid urbanization shapes disaster risks through a complex association of concentrated populations, social exclusion and poverty compounded by physical vulnerability. This can be seen in the consequences of unsuited land use, inadequate

⁵ Munich Reinsurance NatCat Database, compiled for the ISDR secretariat in April, 2004.

⁶ Jan Egeland, United Nations Under-Secretary General for Humanitarian Affairs, and Chair, United Nations Inter-Agency Task Force for Disaster Reduction, Introductory Comments, IATF-8 Meeting, 5-6 November 2003, Geneva.

⁷ *Reducing Disaster Risk*, Op cit. pp. 10, and 88-89.

protection of urban infrastructure, ineffective building code enforcement, poor construction practices and limited opportunities to transfer or spread risk.

19. In rural areas too, livelihoods are placed at increasing risk because of conditions such as poverty, declining natural and land resources, and other economic and social pressures linked to global development patterns, the attractions of urban life, and rising pressure in international markets. All of these conditions, which deepen vulnerability and spawn risk, continue to be tolerated despite existing knowledge, policies and technical abilities — insufficiently applied.

20. As the potential for disasters has increased significantly, officials and the public are gaining a clearer perception of conditions of vulnerability. There is mounting evidence of better understanding about the relationships between poverty, sustainable environmental practices, the management of natural resources and the relative exposure of populations to both traditional and emerging disaster risks.

21. Wide experience demonstrates that the socio-economic effects and risk consequences of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) make it more than only a public health issue. Environmental pollution also highlights risk issues that go beyond technical considerations, which include matters of both human and animal health, access to water and food security, and the sustained environmental conditions necessary for gainful livelihood.

22. There are similar concerns about the spatial distribution of risk exposure, which has implications for governance, policy formulation and operational responsibilities. Rivers often demarcate borders, affecting several neighbouring countries when they flood. As storms, fault lines and river basins extend beyond individual countries and recognize no single sovereignty, the simple determination of causes and effects can prove very difficult. Hazard awareness or disaster and risk management strategies must therefore take account of growing transnational and either sub-regional or transregional consequences of contemporary disaster risks.

23. Current trends in vulnerability and in natural, environmental, technological and biological threats to societies reinforce the fact that they are often interrelated, and that they can result in widespread and compound effects. It is therefore crucial that those threats be taken into consideration when developing local risk reduction strategies, drawing upon broad professional and organizational relationships that go beyond more traditional approaches of protection. Both the wider scope of sectoral interests involved and extended geographical exposure hold particular importance for small island developing States, least developed countries and other highly vulnerable societies or groups.

II. Accomplishments and remaining challenges

24. In the past 10 years, concepts associated with disaster risk reduction have advanced in both scope and sophistication. By common acknowledgement, the Principles of the Yokohama Strategy remain valid. The multisectoral and multi-stakeholder emphasis foreseen by the Yokohama Strategy remains crucial for developing a culture of prevention to reduce physical, social, economic and environmental vulnerability and hazard impacts through the enhancement of national and particularly local capabilities.

25. There is evidence of greater official and public understanding that the threat of combined political, economic and environmental consequences of disasters demands more effective means to address vulnerability to current and emerging risks. Many commentators urge that, beyond general recognition and endorsement of these values, significantly greater commitment in practice is required.

26. The use of commonly understood terminology for risk reduction, recognized policy frameworks and implementation mechanisms is increasing. During the past two years, considerable inter-agency effort has been deployed, including IATF/DR participation and the inputs of countries' experiences, to develop a framework for more effective disaster reduction. The following observations are in line with the essential components of such a strategic approach to disaster reduction.

A. Governance: organizational, legal and policy frameworks

(i) Foundation policies

27. Evidence exists of increasing official concern and growing public recognition that there is more to disasters than responding to a destructive event. Virtually all information submitted by Governments cites some measure of national policy or legislation related to the management of disasters; a minority cite strategic risk reduction programmes explicitly or refer to the subject's integration into national planning objectives.

28. Among specialists in many professional disciplines and within the international development community, more attention is now given to vulnerability and the anticipation of potential risk consequences. Among international organizations the subject has resulted in more explicit organizational arrangements within the Food and Agriculture Organization of the United Nations (FAO), UNDP, UNEP, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the World Food Programme (WFP), the World Health Organization (WHO), the World Meteorological Organization (WMO), the International Federation of Red Cross and Red Crescent Societies, and the Organisation for Economic Cooperation and Development (OECD).

(ii) Integrating disaster risk reduction into development

29. Many examples of good practice in disaster risk reduction can be cited from individual sectors such as public health, environment and natural resources management, subsistence agriculture, infrastructure protection or regional planning. Fewer examples can be mentioned of comprehensive national policies.

30. Important insights can be gained from activities undertaken in the past 10 years by countries such as Australia, Bolivia, China, Ethiopia, India, the Islamic Republic of Iran, Mexico, Mongolia, Mozambique, South Africa, Switzerland and Viet Nam. By focusing on an assessment of the threats that disaster risks currently pose to national development objectives, they have shown an increased coherence in reviewing long-standing policies related to disaster management.

31. Other countries, including Colombia, Costa Rica, the Czech Republic, Ecuador, El Salvador, Kenya, Romania, the Russian Federation, the former Yugoslav Republic of Macedonia and Uganda are currently engaged in modifying and updating earlier policies with a more comprehensive and strategic approach to disaster reduction.

32. Regionally coordinated strategies have been productive, resulting in expanded policy awareness and operational capabilities. This has been evident especially in sustained commitments among Pacific states, throughout Asia and in Central American and Caribbean countries and more recently among Andean countries and in Europe. There is also now agreement to pursue efforts among African countries.

33. In many of these countries, decisions have been taken to formulate new and comprehensive strategic policies, rather than only amending existing approaches that were

often derived from assumptions no longer suited to an assessment of current risks. Often those decisions were tied to broader national development policies or political objectives that could command public interest. Importantly, these efforts were planned and are being implemented over an extended time period, reflecting foresight on expected long-term benefits.

34. These policy commitments have involved the highest levels of Government in the process, often with an extended legislative process involving community dialogue, supported by additional technical or sectoral interests. By contrast, implementation requirements often hinge on the development of decentralized, sub-national and local levels of responsibility with the effective mobilization of public interest and participation.

(iii) Resource requirements

35. Resource limitations are frequently cited as impediments to initiating or realizing far-sighted disaster reduction programmes. Despite the many calls for mainstreaming disaster risk reduction into development planning, very few resources are allocated specifically from development budgets to realize risk reduction objectives, either at the national level or through international financial mechanisms. Initiatives that encourage the explicit commitment of development funds for disaster risk management need to be supported as a matter of principle and priority.

36. Considering that most resources invested in disaster risk reduction come from the humanitarian sector – a precious resource pool that has barely enough funds to cover response and relief activities – one realistic national viewpoint was that risk reduction components could be incorporated easily into development programmes by government departments at all levels of activity, given the awareness and conviction to do so. It was considered essentially an internal matter for the authorities concerned to allocate development resources to risk reduction endeavours.

(iv) National platforms

37. The creation of continuing support for national committees or similarly recognized multidisciplinary, multisectoral and multi-stakeholder national platforms for disaster reduction has been widely advocated. Such platforms are recognized as important mechanisms for advancing national commitments to disaster reduction, but the actual number of vigorous national platforms still remains modest.

38. Whereas a number of national committees during the 1990s were largely notional or primarily technical in orientation, new interest has been evidenced in the establishment of national platforms to address countries' specific exposure to risks. Countries such as China, the Islamic Republic of Iran, Japan, New Zealand and Switzerland have absorbed earlier ad hoc national committees into established governmental institutions so as to ensure closer association with national planning processes, and therefore more sustained attention to risk reduction.

39. Information supplied by countries refers to the catalytic role provided by international advocacy and especially IDNDR/ISDR processes in bringing together existing but often fragmented capabilities and institutional resources within a country. Examples of countries proceeding to capitalize on this motivation to combine technical and official efforts in national platforms currently include Algeria, Armenia, Bulgaria, Canada, Colombia, the Comoros, Costa Rica, the Czech Republic, Djibouti, Ecuador, France, Gabon, Germany, Hungary, Kenya, Madagascar, Nicaragua, the Philippines, the Republic of the Congo, the Republic of Korea, the Russian Federation, Spain, Uganda and Zambia.

(v) **Partnerships, public participation and local communities**

40. Beyond the role of official national structures, the recognized value of wider public participation and efforts that span public and private interests has greatly increased during recent years. This has led to some innovative partnerships and other efforts to strengthen relationships among academic or technical expertise, commercial and industrial interests and government authorities.

41. As Governments proceed to adopt more comprehensive disaster risk reduction strategies, particular efforts are required to strengthen the mutually supporting roles envisaged at national, municipal and local levels of activity. Wider opportunities for engagement and more support to non-governmental organizations, community-based organizations, and the promotion of volunteerism remain to be addressed more systematically and effectively in coming years if enhanced and sustained capabilities are to be realized within local communities.

B. Risk identification, assessment, monitoring and early warning

(i) **National risk assessments**

42. Risk assessment has most frequently been undertaken as a largely technical activity identified predominantly with the historical occurrence, public exposure and consequences of hazards. As newly emerging risks threaten interconnected interests in a complex global environment, there is need for greater awareness of the social and economic dimensions of vulnerability. This has begun to be addressed through local risk assessments and opportunities that encourage wider public dialogue. These and similar motivational mechanisms enable the wider realization of development principles such as equity, public participation, good governance and transparency.

43. Countries report a need for these more broadly conceived approaches to risk assessment, but also express dissatisfaction with present capabilities to fully undertake them because of perceived limitations of human, technical and material resources. However, experience has shown that risk assessments can bring to light previously unconsidered community interests and resources, thereby serving as positive motivational tools.

(ii) **Data use and methodological requirements**

44. There is increasing recognition of the need for continuous updating of data and related analytical tools, both within countries and regionally in respect to transborder or regional-scale risks and shared resource basins. This requires improved availability and free exchange of data, coupled with retrospective studies of lessons learned and projections of future trends and scenarios, mainstreamed into commonly accepted sectoral practices.

45. Common approaches to the maintenance of national data sets related to hazards and disaster consequences are widely recognized as inadequate. This is evident from an international perspective as well as from countries' own documentation, as information available is frequently partial, dated, sporadic or fragmented. It is often widely dispersed among different authorities or agencies, or shared only with considerable reluctance.

46. To enable countries to assess risks more systematically and to evaluate risk management options better, more standardized data collection and analysis methods are needed. Within countries, there is a requirement for wider and systematic dissemination of information on disaster risks, impacts and management options, particularly in local communities where the actual needs exist.

47. An internationally led effort is suggested to improve standards of hazard data and disaster information, as well as to identify characteristic indicators of disaster effects. Efforts are also required to ensure the free exchange of information. Some progress has been made towards common hazard and disaster statistics in the global EM-DAT International Disasters Data Base. Associated work is being advanced jointly by several organizations in order to gain wide acceptance of a unique disaster GLoBal IDentifier (GLIDE) referenced coding system. Annual compilations of global catastrophic events by major reinsurance companies and more consistent rendering of localized disasters by the Latin American Network for Social Study of Disaster Prevention (LA RED) illustrate other valued statistical resources.

(iii) Emerging risks

48. Emerging risks have been receiving additional attention both internationally and within many countries throughout the past 10 years, emphasized most recently in the General Assembly resolution 58/215 on natural disasters and vulnerability. Members of the IATF/DR have regularly noted growing concerns about the consequences of urban risks and the associated exposure of complex modern infrastructure. Other development specialists and some national commentators have emphasized threats resulting from the global dimensions of economic development, underlining, for example, a need for greater attention to the interaction between natural and human-induced hazards such as technological risks. Many countries have expressed a growing concern about environmental risks and the potential for serious socio-economic implications that could be linked to changing climatic conditions.

49. A growing trend is evident in some countries' efforts to address all types of risk identification and management related to pre-planning and post-incident actions, whether the 'triggering events' are related to natural, human-induced, environmental or technological emergencies. This rationale is especially relevant for smaller countries or for those that do not have the resources to maintain separate agencies to address different types of emergencies.

50. Methodologies for dynamic assessment and for disaster risk management need to evolve with the changing risk landscapes of disaster risk most pertinent to vulnerable populations where they live and work. This territorial emphasis is particularly relevant to national planning and commitments and to sustainable development expectations, such as those cited for the Millennium Development Goals.

(iv) Early warning

51. Early warning is widely accepted as a crucial component of disaster risk reduction. When effective early warning systems are in place, thousands of lives can be saved, as was the case in Cuba during Hurricane Michelle in 2001. Awareness of the importance of early warning systems is growing, owing to the recognition that significantly greater populations and assets are exposed to hazards and to concerns that the characteristics of extreme weather may be changing in the future.

52. Almost all countries maintain services to monitor weather hazards and provide public warnings of adverse conditions. The technological capacities of early warning systems have steadily improved since 1994, through growing scientific understanding of weather and climate processes and other geophysical conditions, improved observation systems and greatly enhanced computer-based prediction and communications technologies.

53. Current warning systems are nevertheless limited, as revealed at two international conferences held in Germany (Potsdam 1998, Bonn 2003). The policymakers, technical

specialists and practitioners involved in these meetings concluded that many countries lacked effective early warning systems, leaving millions at risk, and that the social and policy components of early warning systems had not kept pace with the technological capabilities.

54. A primary limitation is that early warning systems are too often seen in the narrow technical sense of a prediction service, with resulting weaknesses in knowledge of the risks faced, including relevant environmental risks and changing human vulnerability, inadequate communication of warnings, and lack of preparedness and capacity to act on warnings. The role of early warning in sustainable development often is not recognized.

55. Participants at the Bonn conference called for an international early warning programme with specific priorities to assist countries in building early warning systems that would truly reach and serve those at risk. Considerable opportunity exists to improve systems through simply strengthening and better integrating existing capacities and networks. National platforms for disaster risk reduction and national meteorological and hydrological services can play key roles in stimulating this process. Early warning should be incorporated as an essential element of national development policies and plans.

C. Knowledge management and education

(i) Information management and exchange

56. Much of the advancement that has occurred in realizing disaster reduction objectives must be credited to the abundance and widespread exchange among a growing number of users of data, public or private institutional information, and professional experience related to hazards, human vulnerability and the management of risks. No other operational function has been so consistently referred to as being essential for successful disaster reduction achievements as the availability and systematic dissemination of useful information.

57. Many organizations are committed to clearing-house activities that provide disaster risk-related information for the benefit of decision-makers and practitioners or to increase public awareness. The growth of professionally recognized information centres that facilitate the collection, synthesis, and wider dissemination of information pertinent to disaster risk reduction has been a major accomplishment during the past 10 years. Many commentators stressed the need for such a global capacity for disaster risk reduction, specifically encouraging the ISDR secretariat to fulfil such a role.

(ii) Education and training

58. Over the past 10 years, notable achievements have been made in the field of education, training and research related to hazards and risk issues, especially in higher levels of education. This generally affirms the importance of education for creating a culture of disaster reduction, leading to changed attitudes and behaviours over time.

59. The field of education offers numerous advantages for giving more explicit attention to disaster reduction awareness. Teachers are widely recognized leaders; learning and educational facilities are highly valued in local communities around the world. Children are identified as effective communicators, building their own skills and abilities as bases for sustainability. However, specific disaster risk issues have been incorporated into curricula slowly, and explicit programmes of risk education remain the exception rather than the norm in most countries. A gap exists between the growing recognition of the importance of teaching about disaster risks and actually doing it.

60. Considerable scope can be found to relate relevant risk perceptions and awareness to existing course material, although a “lack of resources for teachers and materials” is too easily cited as an impediment. Education-related practical measures offer more encouragement. For example, community involvement in safe building practices for schools is being advanced through local education and demonstration. Good practices are displayed by projects such as EDUPLAN Hemisferico in the Americas, the Kathmandu Valley Earthquake Risk Management Program in Nepal and the United Nations Centre for Regional Development’s (UNCRD) Earthquake Safety Initiative in India, Indonesia, Nepal and Uzbekistan.

61. At higher levels of education and in professional training, more efforts are needed to integrate risk management into other subjects related to the environment, natural resources and sustainable development. The many recognized disaster and risk management training and related promotional centres remain important focal points for regional and international attention in support of national and local endeavours. The Asian Disaster Reduction Center in Kobe, Japan was established in specific response to the Yokohama Strategy. The forthcoming United Nations Decade on Education for Sustainable Development (2005–2015) coordinated by UNESCO offers considerable promise for more attention and support for a wider global exchange of experience.

62. The United Nations inter-agency Disaster Management Training Programme, administrated by UNDP with support from OCHA reflects the training demands of a changing professional environment. It is currently engaged in a strategic review to assess the programme’s strategic focus, purpose and added value considering present trends and future challenges in supporting efforts to build capacities for disaster and risk management.

63. Capacity-building features in many commentaries as another crucial element for realizing disaster reduction objectives. Emphasis is frequently given to the need to build capacity in the most vulnerable communities, as exemplified by the Red Crescent/Red Cross movement’s work with vulnerability and capacity assessments as primary components of local development activities. More attention is needed to develop expanded opportunities for non-governmental organizations, the private sector and distance education in this respect. The wider use of local experience and traditional knowledge also is stressed.

64. Despite growing awareness of community-based training activities, much remains to be done to progress beyond the rhetoric. More candid dialogue among stakeholders at local levels is required to identify longer-term objectives. Needs remain to be determined -- what is actually required, where and by whom, and how can the most appropriate training be provided most effectively. The highly regarded Cyclone Protection Programme for rural communities in Bangladesh provides a good model of sustainable activity over 30 years.

(iii) Research

65. Research related to hazards and disaster risks has expanded greatly during the past 10 years. Globally, particular significance has been given to the sociology of disasters and its multidisciplinary nature, reflecting the importance of human dimensions that in turn highlight the relevance of vulnerability in conditioning people’s exposure to risk. *Disasters by Design* (Mileti, 1999) is a classic example of coordinated research on a national scale involving more than 250 contributors drawn from many professional disciplines. It was funded jointly by more than a dozen Government agencies in the United States and resulted in a comprehensive assessment of national perceptions of risk. The German Research Network for Disaster Reduction is another example of a cross-sectoral initiative created to pursue coordinated research programmes focused on disaster reduction issues.

66. On a regional basis, the European Commission and, in particular the Directorates-General for Research, Information Society Technologies, and the Joint Research Centre,

provide examples of institutional support given to multinational and interdisciplinary research in the fields of natural and technological disasters through successive Framework Programmes for Research and Technological Development. There is a continuing need to promote applied research that assists in mainstreaming vulnerability considerations into development activities. Multi-disciplinary research agendas also need to reflect national and regional perspectives.

67. Economic analyses documenting the financial consequences of disasters and the cost-benefit assumptions of disaster reduction are eagerly sought by decision-makers. There is an equally pressing global interest in demonstrating mitigation benefits and related costs and determining useful criteria to support investment in risk reduction. Current trends in research related to human dimensions of vulnerability, including gender and psychological issues, risk awareness and means to motivate wider public participation in risk management also need to continue.

(iv) Public awareness

68. Public awareness is understood as a core element of successful disaster reduction. Since 1986, the annual United Nations Sasakawa Award for Disaster Reduction remains the most important award for the subject in the world, serving as the primary international awareness-raising instrument of the ISDR secretariat. Experience in the past 10 years demonstrates that public awareness is essential for motivating vulnerable populations to become more active in risk reduction, and for stimulating local communities to assume more responsibility for their own protection.

69. National and local authorities have a crucial role to play in influencing public opinion, reflecting the attention received by the subject in national planning and development objectives. Many countries commemorate the International Day of Disaster Reduction or a similar day of remembrance, information or motivation. However, more strategic, longer-term and better-resourced marketing strategies need to be developed to present clear concepts and more consistent expressions of the practical feasibility of disaster risk reduction.

70. Much more can be done to increase awareness through schools, local organizations and community networks that unite members according to common interests. Considerable interest can be stimulated by weaving disaster reduction subjects into popular culture. Educators and practitioners observe the need for information to be conveyed more imaginatively, with local orientation and more use of vernacular languages.

71. The abundance of information available and the ease of global communications require that messages about disaster reduction be pertinent and clearly focused for specific target audiences. There is a continuing challenge to focus people's attention on their local exposure to hazards and their own immediate vulnerabilities, rather than on the distant disasters that receive extensive media coverage. The media remain greatly underutilized as a resource for mounting more effective public awareness and advocacy campaigns about risk-related issues.

D. Reducing underlying risk factors

72. A positive trend has emerged toward the pursuit of risk factors in individual sectoral programmes, with additional attention given to vulnerability awareness in development contexts. This has been important for mainstreaming disaster risk reduction into activities in such areas as education, health, water, agriculture, forestry, environment and physical planning.

73. While many examples are concentrated in single ministries or within a few sectors, countries involved in the Andean Development Corporation have adopted a wider approach. By working through the Andean Regional Programme for Risk Prevention and Reduction formed after the El Niño event of 1997–1998, several sectoral approaches to vulnerability and disaster risk reduction have been coordinated across various ministries, with common purpose expressed throughout the participating countries.

74. This Andean experience is one of several that demonstrates the many skills, abilities and techniques available and widely practised that can reduce people's exposure to disaster risks. Further efforts to consolidate and share technologies and apply existing institutional abilities or resources, especially with developing countries and those in special circumstances, need to be encouraged and supported.

(i) Environmental and natural resources management

75. Given the close linkages between disaster risk factors and environmental and natural resource management issues, a huge potential exists for the exploitation of existing resources and established practices aiming at greater disaster reduction. The need for carefully drawn up forest, vegetation, soil, water, and land management measures is increasingly recognized, and such measures are being effectively employed to lessen disaster risks. Widely practised Environmental Impact Assessments lend economic justification and existing techniques to the conceptualization and conduct of hazard and disaster risk impact assessments. Pacific island States are developing an environmental vulnerability index to give decision-makers access to more systematic information with the goal of increasing resilience and building sustainability. The Republic of Korea designates particularly threatened environments as potential risk zones to be monitored closely from both developmental and natural resource perspectives.

76. The retention and restoration of wetlands as advocated by the RAMSAR Convention and the reintroduction of tidal mangrove plantations as pursued by the National Red Cross Society in Viet Nam and non-governmental organizations in Bangladesh have demonstrated benefits from the use of natural resources to reduce disaster risks. The widespread use of traditional farming methods by community-based organizations in Honduras gives emphasis to vegetation and land use for improved land stabilization, reduced water runoff and retarding land degradation.

77. Considerable scope can be found for the development of enhanced relationships and more cross-cutting opportunities among disaster risk management and environmental organizations, particularly by engaging non-governmental organizations such as the World Conservation Union (IUCN), World Wide Fund for Nature (WWF) and International Institute for Sustainable Development (IISD). Increased synergy and resource opportunities also can be pursued together with the work of international conventions, including the RAMSAR Convention on Wetlands, the Convention on Biological Diversity, the United Nations Convention to Combat Desertification and the United Nations Framework Convention on Climate Change.

(ii) Social and economic development practices

78. Most developing countries lack the specific social and economic mechanisms that protect the more vulnerable or disadvantaged segments of the population in economically developed countries. With few institutionalized social security programmes, poor and marginalized people in developing countries have had little recourse in times of crisis, other than typically relying on support from family relationships or community-based mutual assistance. There is growing recognition that programmes of individual social sectors such as education and health, or livelihood concerns such as agriculture and animal husbandry, can spearhead efforts to afford better protection from disasters by reducing vulnerabilities.

79. Community-based initiatives to protect schools, health facilities and local water systems through increased public participation have been pursued for many years by the Organization of American States (OAS) and the Pan American Health Organization (PAHO) in Latin America and the Caribbean. In the Philippines, the Department of Social Welfare and Development has worked closely with the Office of Civil Defense and grass-roots non-governmental organizations to broaden the social aspects of community support and to build local capacities for disaster risk reduction.

80. By contrast, and for economic and commercial reasons, mechanisms that spread risks more widely throughout a society, such as crop or housing insurance or institutionalized social security schemes, are not so widely available in most developing countries. Although originally thought unfeasible, social and economic initiatives to foster development through grass-roots lending schemes and micro-investment programmes have been applied with considerable success by the Grameen Bank in Bangladesh and more localized social mutual aid funds.

81. Despite a few exceptions such as the relationship between InterPolis Reinsurance and the Kalanjiam Foundation in southern India and a Government-sponsored programme in Viet Nam, few micro-finance or lending programmes can be cited that specifically encourage risk reduction practices among impoverished populations. Some rehabilitation programmes following the Gujarat earthquake in India and other pilot activities in corporate social responsibility in Bangladesh demonstrated the necessity, but also the challenges for development practice and for private investment, of engaging community participation in all stages of these programmes.

82. At macroeconomic levels, evidence of growing institutional commitment to and investment in disaster risk reduction is growing. Among the international financial institutions, the Hazard Management Unit of the World Bank has been instrumental in raising the visibility of investment in disaster risk reduction. It was crucial in forging advocacy links between the private sector, insurance and investment interests in creating the ProVention Consortium, currently hosted by the International Federation of Red Cross and Red Crescent Societies.

83. Following the devastation of Hurricane Mitch in Central American countries and since 2000, the Inter-American Development Bank has made disaster reduction one of the core elements of its lending strategies for development. The Caribbean Development Bank has proceeded to do likewise, and after two years of internal study, the Asian Development Bank announced a newly revised policy in 2004 to promote more disaster reduction through its lending policies. Currently, the African Development Bank in partnership with the African Union, New Partnership for Africa's Development (NEPAD) and the ISDR secretariat is formulating guidelines for countries to mainstream disaster risk reduction into development strategies.

84. Similarly, the insurance industry has routinely been active and visible, by providing compelling statistical documentation and analysis of the disaster risks and their costs to countries. Nevertheless, Governments and insurance companies still face challenges in translating viable risk transfer mechanisms to the uninsured or poorly insured and often small-scale property-owners in developing countries.

(iii) Land-use planning and other technical measures

85. Land-use planning has proven an essential tool for disaster reduction by involving risk assessment, environmental management, productive livelihoods and development activities. It is often a critical interface between urban and rural landscapes where natural resources are under greatest threat from growth and development. However, other powerful

short-term economic forces can easily override less obvious long-term risk avoidance perspectives.

86. Similar conditions apply to other technical or structural measures for the reduction of underlying risk factors. Extensive knowledge and technical skills can be exploited to minimize disaster risks by mapping areas of extreme risk, strengthening buildings, protecting infrastructure, and setting standards of construction. Building codes and disaster-resistant construction measures are widely known and are updated with the collaboration of engineers, scientists and other technical specialists in most countries.

87. The extent to which technical measures are employed routinely, or existing standards regularly enforced, is problematic. In many countries the effectiveness of such essential instruments for disaster reduction is often compromised by inadequate political and institutional support.

88. Wide participation of stakeholders becomes essential if the high potential of sustainable regulatory practices is to be realized. This requires the combined interests of risk management, environment, professional and technical abilities, investment and development working for a common purpose, with success closely linked to perceptions about the immediate territorial or community conditions they share.

(iv) Advanced technologies

89. The value of advanced technologies for disaster reduction is widely recognized. Their use has increased as the tools have improved, costs have decreased and local access has increased. Techniques related to remote sensing, geographic information systems, space-based observations, computer modelling and prediction, and information and communications technologies have proved very useful, especially in risk identification, mapping, monitoring, territorial or local assessments, and early warning activities. The decade has seen steady improvement in forecasts of severe weather, for example.

90. The use of advanced technologies and associated data sets in environmental management suggests possibilities for synergy and shared approaches with disaster risk management. With decreasing costs, these tools have become much more readily available as routine capacities and more useful at local scales in many countries. More sophisticated monitoring and modelling techniques need to place useable data and results, including early warnings, into the hands of local communities and decision-makers.

91. While countries valued the increased availability of advanced technologies, some were disappointed that their technical capabilities or data were insufficient to make more effective use of them. Many countries recognize the need to minimize duplication, ensure compatibility and promote open exchange of information among different ministries, as well as to facilitate cross-disciplinary applications essential for effective disaster reduction.

92. Several other initiatives that take advantage of space and telecommunications-based applications for disaster reduction are being developed and will be implemented through global and regional strategic partnerships. The United Nations Office for Outer Space Affairs and the action team of the Committee on the Peaceful Uses of Outer Space are proceeding to implement an integrated global system for the management of natural disaster reduction and relief efforts. A recent global multilateral initiative, involving both developed and developing countries, has developed a framework document for a 10-year plan to implement a Global Earth Observation System of Systems. One of its objectives is the reduction of losses from disasters and improved understanding, assessment and prediction of weather and climate system variables.

93. While the value of technology for disaster reduction is widely appreciated, the benefits are not so easily realized institutionally because of the often rigorous support

systems, sustained resources and technical capabilities required. Therefore, technologically sophisticated countries and organizations need not only to encourage the wider application of these resources in developing countries and for disaster-affected communities, but also to support fulfilment of associated human and technical requirements.

E. Preparedness for effective response and recovery

94. Existing disaster management and civil protection functions within Governments have proved to be important components of disaster risk management. This is evident especially in preparedness activities and contingency planning for which specialized skills, public mobilization, and public information are essential. Disaster managers and civil protection officials can become instrumental in motivating communities to engage in risk-awareness activities, hazard mapping and protection of critical infrastructure. Civil protection agencies also can provide added support and extend their technical knowledge to ongoing training activities. They have much to contribute by conveying lessons from previous emergency operations to help planning processes for future disaster reduction strategies.

95. Most countries have some form of legislated emergency management capacity, but only a minority have realized the strong potential that these agencies represent for developing more comprehensive and strategic approaches to disaster risk identification, awareness and management. As the national authority for all aspects of emergency situations in the Russian Federation, EMERCOM exemplifies revised organizational commitments and expanded capacities to give more emphasis to disaster risk reduction. Other examples of more holistic approaches to risk management and emergency response capabilities are found in Australia, Chile, Colombia, Cuba, France and New Zealand, among others.

96. To increase the level of the awareness and management capabilities required to address current disaster risks, legislation and institutional arrangements are needed that bring together all parties in disaster and risk management sectors to plan and respond in more integrated and better coordinated ways. Joint efforts and the wider sharing of good practices can serve to link the needs of risk awareness and analysis with the operational knowledge and experience of emergency managers. In a wider frame of reference, the supporting roles of other government agencies, local government authorities, essential infrastructure and lifeline utilities managers, business interests, non-governmental organizations and the public itself all need to be factored into a more inclusive and deliberative process.

97. The demand is growing within the emergency management community for the investment of significantly increased resources in preparedness, prevention and mitigation actions. The concern has been expressed that disproportionate amounts are routinely committed by Governments and international organizations to emergency response and rehabilitation, often in haste, resulting in duplicated efforts and without the same oversight generally required for development expenditures.

98. Partly in response to the growing cost and developmental consequences of disasters, the British Department for International Development and the NGO Tear Fund have recently commissioned studies to determine the perceived limitations and constraints in attaining more balanced funding for disaster risk management between the emergency relief and development sectors.

99. Many emergency response and recovery funds can be used only once important social and economic assets have been lost; many fewer resources are invested to minimize losses through prior investment. This suggests an important need for the application of

more effective incentives or deterrents that promote complementary responsibilities and operational functions. Resource requirements also need to be taken into account through a clear understanding of the respective costs and benefits of disaster and risk management.

III. Conclusions

A. Accomplishments

100. Major accomplishments have been made in the realization of the goals of the Yokohama Strategy, increasingly if not universally grounded in understanding among countries that disaster risk reduction is essential for sustainable development, as well as the growing awareness that developmental activities may in some instances also create or worsen vulnerabilities. The Principles of the Yokohama Strategy remain valid as means to guide in the development of policy frameworks to enhance national and particularly, local capabilities in disaster reduction.⁸ Internationally, important multilateral agreements related to disaster risk reduction have been reached, including the various conventions related to environmental threats and the specific resolutions, declarations and initiatives pertinent to achieving sustainable development, notably the Millennium Development Goals.

- Countries have forcefully expressed well-founded interests through policy statements such as the Johannesburg Plan of Implementation, which call for international and regional commitments and national actions to reduce vulnerability, undertake risk assessments and pursue comprehensive disaster and risk management strategies. However, it is widely considered that more tangible commitments are necessary to translate these expressions into action.
- There is evidence of expanded global understanding of the relationships between poverty, sustainable environmental practices, the management of natural resources and global risks, such as concerns associated with climate variation, urban growth, global health issues, and modern technology. The need for more integrated approaches to disaster and risk management is being validated as new strategic policies and implementation approaches are being adopted in a growing number of countries.
- Positive, if partial, progress has been made towards mainstreaming disaster risk reduction into national planning and development strategies. Progress is currently more evident at international and some regional levels, such as the consolidation of the IATF/DR, the advocacy of international financial institutions and supporting efforts of some United Nations regional economic commissions.
- Particular regard is shown for the important motivational and sustaining values of regional/sub-regional political, technical, educational and information institutions in helping to build, coordinate and support countries' disaster reduction strategies.
- In contrast to the earlier emphasis on largely scientific and technical approaches and the frequent employment of physical techniques to mitigate the effects of natural hazards on national populations, considerable progress is evident in the expanded and more inclusive focus on the social dimensions and multisectoral interests of human vulnerability.

⁸ Such indicative relationships are noted in A/CONF.206/PC(II)/3 Annex of 8 September 2004.

- More interdisciplinary and organizational relationships are being developed, with a wider appreciation of the essential principle of partnership and equitably shared responsibilities and resources. Unless attention is paid to public risk exposure at local levels, individual countries' efforts risk being focused disproportionately on international outlooks or towards centralized national levels of responsibility.
- Considerable knowledge, skills and technical abilities exist to minimize the effects of hazards and to reduce people's vulnerability and exposure to disaster risks. These abilities are applied to significant beneficial effect in some countries, but very unevenly, occasionally or poorly in others, owing to a lack of international cooperation assistance and technology transfer, to the extent possible.
- Information focused on disaster risk reduction is a much valued resource; its expanded availability, dissemination and use are widely considered an important accomplishment. Along with education more generally and capacity-building at all levels, knowledge management and the development of social capital should be viewed as priority investments in sustainability.

B. Gaps and challenges

101. In addition to a lack of systematic implementation, cooperation and reporting of progress to reduce risk and vulnerability to disasters, contributors to the Yokohama Review process have identified the following gaps and challenges. They are presented as keys that may provide greater protection from disaster risks to people where they live and work. They may also provide an impetus to engage officials, institutions and the public in creating greater resilience to threats posed by disasters in the future.

102. Governance: organizational, legal and policy frameworks

1. Ensuring an established disaster reduction strategy that is linked to individual sectoral interests and integrated into national and local development planning and objectives.

2. Establishing or strengthening national platforms for disaster reduction, comprising actors from multiple sectors and sustained by sufficient resources to make progress, in addition to the recognition of the political will and practical action needed to support disaster risk reduction.

3. Ensuring that roles, responsibilities, opportunities and resources for the development of risk reduction strategies are based on partnerships, are grounded in local community interests and encourage wide public participation, including the engagement of disadvantaged people.

4. Judiciously allocating resources from emergency and development budgets, internationally, regionally and within countries, to enhance disaster risk reduction strategies in practice.

5. Advancing the use of commonly understood terminology for disaster reduction and using flexible policy frameworks that allow for a variety of implementation approaches.

103. Risk identification, assessment, monitoring and early warning

1. Establishing standards for the systematic collection and archiving of comprehensive national statistical records pertaining to the many related aspects of disaster risk reduction (including data related to built environments, lifelines and critical

infrastructure; socio-economic aspects of vulnerability; and for hazard analysis and disaster operational requirements).

2. Evaluating country-wide assessments of risk status (including hazard maps and vulnerability trends) and conducting risk assessments, incorporating technical and socio-economic dimensions; with analysis extended, where suited, to territorial or adjacent locations of shared exposure to disaster risks.

3. Building early warning systems that are centred on people at risk and that integrate the essential dimensions of risk assessment, warning generation, dissemination, preparedness and response capabilities.

4. Implementing the programmatic recommendations of the Second International Conference on Early Warning as endorsed by the General Assembly; particularly through the expansion of international coordination and the integration of early warning into development policy.

104. Knowledge management and education

1. Introducing disaster reduction subject matter into curricula at all levels of education and professional training, focusing on schools and other highly valued institutions.

2. Developing and supporting institutional capabilities for the collection, consolidation, and wide dissemination and use of current and traditional disaster reduction information and experience.

3. Emphasizing the benefits of experience through wider circulation and use of case-studies, professional exchanges between countries, and institutionalized efforts to identify and incorporate lessons learned from prior events.

4. Pursuing research agendas that bring together multiple disciplines and professional interests, feeding into decision-making processes and leading to the implementation of disaster reduction at all levels.

5. Formulating multifaceted and continuous public awareness strategies for advancing and advocating policies, capacity development and public understanding; involving professional, public and private resources and abilities, including those of the media, in the process.

105. Reducing underlying risk factors

1. Relating risk reduction to environmental, natural resources, climate, and similarly related geophysical areas of interest, abilities and commitments.

2. Joining social and economic development principles and practices with technical abilities to protect crucial infrastructure and reduce conditions of poverty for vulnerable populations.

3. Developing or involving the wider collaboration of public and private interests, scientific and professional abilities, and related partnerships both within and beyond specific areas of sectoral concentration, including the encouragement of wider knowledge exchange and technology transfer among all countries.

4. Enhancing the availability and appropriate use of technical measures of land-use planning, building and construction codes, and advanced technological skills and techniques by particularly disadvantaged and disaster-prone countries.

5. Identifying and encouraging local adoption of financial and related investment instruments to share, transfer or minimize risk exposure, particularly among the most vulnerable populations and within local communities.

106. Preparedness for effective response and recovery

1. Expanding public dialogue, official practice and professional involvement related to the entire range of shared and complementary disaster and risk management needs and responsibilities.

2. Identifying and allocating existing resources from the establishment, development and emergency budgets for disaster and risk management to greater effect in the realization of sustained risk reduction.

3. Evaluating the current suitability of all disaster and risk management policies, operational abilities and needs against present and emerging risks.

107. The Yokohama Review conclusions recognize that awareness and expressions of the importance of disaster risk reduction are illustrated by numerous individual examples and efforts. Many decision makers also know what is to be done, in some cases with resources already at their disposal. However, all stakeholders need to do much more to put their intentions into actions, if people around the world are indeed to become safer from disasters.

Annex

Evolutionary development of the Principles of Yokohama Strategy into a renewed policy framework for disaster reduction

<i>Yokohama principles</i>	<i>Policy framework – Thematic areas (based on good practices and implementation options for the future)</i>
<p>Principle 3. Disaster risk reduction integral aspects of development policy and planning at national, regional, bilateral, multilateral and international levels.</p> <p>Principle 6. Participation at all levels, from the local community through the national government to the regional and international level is crucial for effective disaster risk reduction.</p> <p>Principle 10. Each country bears the primary responsibility for protecting its people, and national assets from the impact of natural disasters.</p>	<p>Governance: Institutional and policy frameworks for risk reduction</p> <ul style="list-style-type: none"> • Socio-economic policies, effective utilization of resources • Environmental policies • Risk reduction and sustainable development • National policies, institutional development and legislation • Local authorities and municipal policies for risk reduction • Partnerships, community action and participation • Transparency and accountability • Science and technology policies
<p>Principle 1. Risk assessment is a required step for adoption of disaster risk reduction policies and measures.</p> <p>Principle 5. Early warnings and their effective dissemination using telecommunications and broadcast services, are key to successful disaster risk reduction.</p> <p>Principle 6. Participation at all levels, from the local community through the national government to the regional and international level is crucial for effective disaster risk reduction.</p>	<p>Risk identification, assessment monitoring and early warning</p> <ul style="list-style-type: none"> • Hazard and vulnerability assessments • Data-collection and information use • Disaster impact assessments • Forecasting and early warning • Climate and environmental risk assessment • Urban risk • Drought

*Yokohama principles**Policy framework – Thematic areas (based on good practices and implementation options for the future)*

Principle 4. Development and strengthening of capacities for disaster risk reduction is a top priority area.

Principle 6. Participation at all levels, from the local community through the national government to the regional and international level is crucial for effective disaster risk reduction.

Principle 7. Education and training of entire communities is crucial for the design and application of proper development patterns that reduce vulnerability of targeted groups.

Principle 8. The international community needs to share the necessary technology for disaster risk reduction as an integral part of technical cooperation.

Principle 9. Environmental protection as a component of sustainable development consistent with poverty alleviation is imperative for disaster risk reduction.

Principle 2. Disaster risk reduction of primary importance in reducing the need for disaster relief.

Principle 8. The international community needs to share the necessary technology for disaster risk reduction as an integral part of technical cooperation.

Principle 10. The international community should demonstrate strong political determination to mobilize adequate and make efficient use of existing financial, scientific and technological resources for disaster risk reduction, bearing in mind the needs of developing countries, particularly least developed countries.

Knowledge management and education

- Information management
- Education for sustainable development
- Disaster risk reduction at university level
- Training
- Research agendas
- Public awareness-raising tools

Reduce underlying risk factors

- Land use planning
- Environment, natural resources management
- Financial instruments; insurance, micro-finance – safety nets
- Safer construction, infrastructure protection
- Advanced technologies

Preparedness for effective response and recovery

- Relief with vulnerability reduction approach

Implementation Mechanisms:

- Regional institutional frameworks for risk reduction
- International cooperation policy for risk reduction (bilateral and multilateral)
- Partnerships, community action and participation