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DRAFT REVIEW OF YOKOHAMA STRATEGY AND PLAN OF ACTION FOR A SAFER WORLD

Note by the Secretariat

The present document has been prepared in accordance with the UN General Assembly resolutions A/RES/56/195 (para 18) and A/RES/57/256 (paras 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 present draft has benefited from views of the UN Inter-Agency Task Force for Disaster Reduction at its Ninth Session 4-5 May, 2005, and those provided by Governments, international organizations and non-governmental organizations which attended the First Preparatory Committee for the WCDR, 6-7 May 2004. Additional insight has been provided by regional and thematic consultations and by partner organizations, including information assessing the current status of disaster reduction provided by more than 80 countries.

It is presented to the Preparatory Committee for review and comment, noting that its contents are supplemented by an Information Paper summarizing information provided by countries on the status of disaster reduction. The Conference secretariat intends to disseminate the results of the review through various products for different audiences.

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I. INTRODUCTION

A. Background

1. At its 57th session, the United Nations 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* (A/RES/57/256). This review of the Yokohama Strategy, (simplified as “the Yokohama Review”) was proposed by the Secretary-General to be carried out by the secretariat of the International Strategy for Disaster Reduction (ISDR) in consultation with relevant stakeholders. Member States reiterated this request at the 58th session (A/RES/58/214) with the Yokohama Review to be concluded at the World Conference on Disaster Reduction in Kobe, Hyogo (WCDR), 18-22 January, 2005.

2. The Yokohama Review is an analytical process which reflects the current state of awareness and accomplishments, limitations and constraints, and expresses conclusions in global disaster risk reduction¹ from 1994 to the present. Its findings will contribute to a specific programme of action for disaster risk reduction 2005-2015 to be recommended by the WCDR.

3. The growing understanding and acceptance of the importance of disaster reduction is dependent on the subject’s embodiment in global commitments to sustainable development most clearly expressed in the Johannesburg Plan of Implementation adopted at the World Summit on Sustainable Development (WSSD) in September 2002. 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 WSSD. The year 2015 is also the target for achieving the Millennium Development Goals, with which successful disaster reduction is inherently linked.

B. Methodology and reference documentation

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

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. The related expression of ‘disaster risk management’ implies the systematic process of using administrative decisions, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures in the context of disaster risk reduction. (Living With Risk, Vol. II, Annex 2, Terminology: Basic terms of disaster risk reduction, ISDR, 2004).

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 A/54/132/Add. 1, respectively, July, 1999) catalogued many initial accomplishments and highlighted areas of future attention. They reinforced the relevance and in some cases expanded the Principles of the Yokohama Strategy, notably in emphasizing needed attention for emerging risks and the expanded use of multidisciplinary relationships.

6. Recommendations in resolution A/RES/54/219 that launched the ISDR provide further confirmation of Member States' intentions in furthering improved intersectoral collaboration and coordination for disaster reduction commitments within and beyond the United Nations system. The Inter-Agency Task Force for Disaster Reduction (IATF/DR) was created to provide coordination of strategies and programmes for disaster reduction and to ensure synergy with activities in the socio-economic development and humanitarian fields.

7. The ISDR Framework for Action (2001) further identified priority areas for implementation: i) increasing public awareness to understand risk, vulnerability and disaster reduction; ii) promoting the commitment of public authorities to disaster reduction; iii) stimulating multidisciplinary and intersectoral partnerships and networks; iv) improving scientific knowledge about the causes of natural disasters, as well as the effects that natural hazards and related technological and environmental disasters have on societies; v) international cooperation for reducing the impact of El Niño and other aspects of climate variation; and vi) strengthening early warning system capacities.

8. Since 2001, the ISDR secretariat has collected information on policy, technical and awareness raising activities to reduce disaster risks around the world. This has involved the participation of many organizations, and has documented their accomplishments spanning humanitarian, environmental, technical and development endeavours. A wide selection of this information appears in the two volume sourcebook and directory published by the UN as *Living with Risk: A global review of disaster reduction initiatives* (2004).

9. Global development agendas have provided additional experience pertinent to disaster reduction. The ISDR secretariat has compiled references relating disaster reduction to 25 international development agendas, contained in the IATF Information Paper of "Extracts Relevant to Disaster Risk Reduction from International Policy Initiatives 1994-2003". (4-5 May 2004).

10. The crucial relevance of these relationships is presented in a UNDP publication, *Reducing Disaster Risk: A Challenge for Development* (2004) compiled with contributions from UNEP-GRID and the ISDR secretariat, among others. An associated Global Disaster Risk Index considers indicators that can contribute to measuring the relative vulnerability of countries to selected natural hazards as they continue to be refined.

11. 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. Regional or subregional preparations for WCDR have involved participants from more than 100 countries and additional regional organizations. Important

information about the status of disaster reduction has been provided by more than 80 countries through August 2004 in response to a request from the ISDR secretariat.

12. Additional views of practitioners were shared among 730 participants from 107 countries who participated in a public electronic dialogue on “Building disaster-resilient communities and nations”. Conducted by the ISDR secretariat with UNDP support in July 2004, the dialogue provided more than 70 examples of good practice.

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

13. 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 reduction becomes part of countries’ national development plans and programmes, progress in social and economic development will continue to be eroded by recurring disasters.

14. 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 people, and caused more than US\$ 800 billion in losses.² The UN Under-Secretary General for Humanitarian Affairs has indicated “that on average, with well over 200 million people affected every year by ‘natural’ disasters since 1991, this is seven times more than the average of 30 million people affected annually by conflict.”³

15. Two-thirds of the recorded disasters since 1994 were floods and storms. These included several 1:100 year floods, record rainfall episodes and unprecedented storms especially across Asia, Europe, Africa, and the Americas. The severity of Hurricane Mitch eliminated more than 10 years of development gains throughout countries in Central America. As a result, it stimulated policy shifts towards more preventive approaches. Historically, the most serious winter storms were recorded in Australia, Canada, Mongolia, and parts of Western Europe, while the USA suffered two of its most costly tornado seasons in 1998 and 2003.

16. It was equally a period of extremely severe and protracted drought conditions, at times accompanied by record-setting temperatures in parts of Africa, Europe, Central and North America. These natural and climatic conditions combined with human behaviour to fuel unprecedented and uncontrollable wildfires on four continents.

17. The period witnessed one of the past century’s most intense El Niño episodes of cyclical climatic variation in 1997-98. Heightened political, economic and scientific interest in global warming was accompanied with 1998, 2002, and 2003 being the warmest years ever recorded. The Inter-governmental Panel on Climate Change has noted that “... regional changes in climate have already affected hydrological systems and terrestrial and marine ecosystems”, and “that the rising socio-economic costs related to weather damage and to these regional variations suggest

² Munich Reinsurance NatCat Database, compiled for the ISDR secretariat in April, 2004.

³ Jan Egeland, UN Under-Secretary General for Humanitarian Affairs, and Chair, UN Inter-Agency Task Force for Disaster Reduction, Introductory Comments, IATF-8 Meeting, 5-6 November 2003, Geneva.

increasing vulnerability to climate change”. This in turn is projected to “increase threats to human health particularly among lower income populations and within tropical and subtropical countries”.

18. Inhabitants of small islands and low-lying coastal areas are placed at particular risk of severe social and economic consequences from such events. With an estimate that about three quarters of all recorded natural disasters are associated with hydrometeorological effects, it remains a matter of considerable concern that an increase in climate variability and some extreme events is projected with modeling that suggests “... increasing concentrations of greenhouse gases resulting in changes in the frequency, intensity and duration of extreme events”.

19. Although geological disasters accounted for only about 15 per cent of the recorded events, they resulted in one-third of the 300,000 fatalities during the ten years. The 1995 earthquake in Japan was by far the most costly single event during the period with more than US\$ 100 billion in losses and more than 5,000 people killed. A sequence of highly destructive and deadly earthquakes between 1999-2004 occurring in Turkey, China, India, Honduras, Italy, Algeria, Iran and Morocco raised a growing public outcry about the needlessly high number of fatalities.

20. Severe debris- mud or landslides equally demonstrated the compound effects of hydrometeorological, seismic, and environmental hazards. These accounted for another 40,000 deaths in countries that included Venezuela, Honduras, Nicaragua, Dominican Republic, Italy, Sri Lanka, and China, among others.

21. As strong as these exceptional hazards have been, their effects have undoubtedly been much greater because of the inadequately addressed vulnerabilities of the communities which they devastated. The hazards themselves disclosed human limitations in institutional terms. It is also increasingly recognized that development itself can increase the risk of disasters.

22. While only 11 percent of people exposed to natural hazards live in low human development countries, they account for more than 53 percent of total recorded deaths.⁴ Analysis conducted by UNDP emphasizes that both vulnerability and hazards are conditioned by human activities. Reducing the number and effects of natural disasters means tackling the development challenges that lead to the accumulation of hazard and human vulnerability that prefigure disaster.

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

24. In rural areas too, livelihoods are placed at increasing risk because of conditions of poverty, declining resources, and growing economic and social pressures often resulting from

⁴ *Reducing Disaster Risk*, Op cit. pp. 10, and 88-89.

dominant influences easily identified with growth and global pressures. Each of these conditions which deepen vulnerability and spawn risk continue to be tolerated despite knowledge, sometimes policies, and often technical abilities at address hazardous conditions are known and available beforehand.

25. As the potential for disasters has increased significantly, conditions of vulnerability have become more widely perceived by officials and the public. While there is mounting evidence of better understanding about relationships between poverty, sustainable environmental practices, the management of natural resources and the relative exposure of populations to both traditional and emerging disaster risks.

26. The severe social and economic effects of HIV/AIDS and the disastrous consequences for national development demonstrate the futility of identifying risk reduction with more narrowly-configured "natural" hazards alone. The recent global experience of other rapidly transmitted and extremely costly diseases, such as SARS, bovine encephalitis, Avian flu and the Ebola virus, underlines the unavoidable international consequences for disaster and risk management. From a developmental standpoint, they pose great threats of severe social and economic consequences, threatening individual livelihoods.

27. These inherent relationships among increased vulnerability and natural, technological, environmental and biological threats to societies are inter-related. They also exert compound effects on sustainable development, so there are growing efforts to address them in a fully integrated territorial approach focused at local levels. An urgent need to do so applies especially for small island developing states, least developed countries and other highly vulnerable societies or groups.

II. ACCOMPLISHMENTS AND REMAINING CHALLENGES - DISASTER REDUCTION CONVICTIONS TO BE REALISED

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

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

30. To proceed towards more widespread practice, there is a growing use of commonly understood terminology for risk reduction, recognized policy frameworks and implementation mechanisms. During the past two years, there has been considerable inter-agency effort including IATF/DR participation and the benefits of countries' experiences to develop an updated framework for guiding and monitoring more consistent understanding and emerging

expectations for effective disaster reduction. The subject was further refined through a public electronic dialogue during 2003.

31. The observations which follow relate to the themes of a strategic disaster reduction policy framework, which can guide the development of future plans of action as also noted in the concluding Recommendations.

A. Governance: institutional and policy frameworks

i) Foundation policies

32. During the past ten years, there is evidence of increasing official concern and growing public recognition that there is more to disasters than responding to a fateful and destructive event. Virtually all information submitted by governments cite some measure of national policy or legislation related to the management of disasters, even as a minority cite strategic risk reduction programmes explicitly or refer to the subject's integration into national planning objectives.

33. 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 FAO, UNICEF, UNDP, UNEP, UNESCO, UNICEF, UN-OCHA, WFP, WHO, WMO, the International Federation of Red Cross and Red Crescent Societies.

ii) Integrating disaster reduction into development

34. There are many examples of good practice in disaster reduction cited from individual sectors such as public health, environment and natural resources management, subsistence agriculture, infrastructure protection or regional planning. There have been fewer examples of comprehensive national policies.

35. Important insights can be gained from activities undertaken in the past ten years by countries such as Australia, Bolivia, China, Ethiopia, India, Iran, Mexico, Mongolia, Mozambique, South Africa, Switzerland, Vietnam. By focusing on an assessment of current threats which disaster risks pose to national development objectives they have shown an increased coherence in reviewing their long-standing policies related to disaster management.

36. Other countries including Colombia, Costa Rica, Czech Republic, Ecuador, El Salvador, Kenya, Macedonia, Romania, Russia, and Uganda are currently engaged in modifying and updating earlier policies with a more comprehensive and strategic approach to disaster reduction.

37. Regionally coordinated strategies have also been productive, resulting in expanded policy awareness and operational capabilities. This has been especially evident in sustained commitments among Pacific island states, throughout Asia, in Central American and Caribbean countries, among Andean countries and most recently as agreed among African countries.

38. In many of these countries, a comprehensive programme was fundamentally redesigned rather than amending previous structures. Often they were tied to broader national development policies or political objectives which could command public interest. Importantly, these efforts were planned and are being implemented over an extended time period, thereby reflecting foresight on expected benefits. This was often accompanied by increased advocacy and projected commitments that enabled capacities to be created in support of proposed changes.

39. An extended legal process involving community dialogue has been employed to attract more interest, to build supporting constituencies, and to provide a firm legal basis for designating roles and responsibilities. These commitments have involved the highest levels of authority in Government in the process, but implementation requirements hinged on developing decentralized, sub-national and local levels of responsibility. Successful programmes have depended on a systematic use of data compilation, public information and awareness, and cross-sectoral communication flows.

iii) Resource requirements

40. Resource limitations are frequently cited as impediments to initiate or realize far-sighted disaster reduction programmes. It is ironic to note that despite the many calls for mainstreaming disaster reduction into development planning, specifically designated resources to realize these objectives from development budgets are extremely limited, whether sought in national or through international financial mechanisms. Initiatives that encourage the explicit commitment of development funds for disaster reduction practices need to be supported as a matter of principle and priority.

41. As the greater amount of resources for disaster reduction still depend on dated or restricted humanitarian requirements, a national outlook provided by South Africa on the status of disaster reduction offers encouragement in its convincing expression of possibly changing perceptions:

“In accordance with the commitments made by political leaders in adopting the Johannesburg Plan of Implementation of the World Summit on Sustainable Development, incorporation of a risk-reduction component into each development programme implemented by each government department at all three levels of governance, would be an invaluable means to invest in the protection of developmental gains. Funding is available from national budgets, as well as from bilateral and multilateral development assistance, for the implementation of development programmes, and there exist no reasons why there should not be a risk-reduction component incorporated into each development programme, to protect it against damage from disasters, and thereby ensure that it remains sustainable.”

iv) National platforms

42. The creation or continuing support for national committees or similar officially recognized multidisciplinary, multisectoral, and multi-stakeholder national platforms for disaster reduction has been advocated as important mechanisms for advancing national commitment to disaster reduction.

43. Whereas a number of the national committees during the 1990s were largely notional, primarily technical in orientation, or more sporadic in their activities, there is now a resurgence to recognize broader national platforms or institutional mechanisms resulting from country's particular needs. Some countries such as China, Iran, Japan, New Zealand and Switzerland accommodated earlier national committees into the basic institutions of governance to ensure the presence of risk reduction throughout all related governmental responsibilities.

44. Information supplied by countries refer to the catalytic role provided by international advocacy in bringing together existing but often fragmented capabilities and institutional resources within a country. Recent examples of countries proceeding to capitalize on this motivation to combine technical and official efforts in national platforms include Algeria, Armenia, Colombia, Costa Rica, Ecuador, Germany, Kenya, Nicaragua, Russian Federation, and Uganda.

45. As the actual number of existing, resourced and vigorous national platforms still remains quite modest, it has been widely noted that building well-functioning and competent national platforms requires strong leadership, resources and is labour-intensive. Achieving effective inter-ministerial coordination around the subject and the wider inclusion of civil society remain challenges in many countries.

v) Partnerships, public participation and local communities

46. Beyond the role of official national structures, the recognized value of wider public participation and the use of partnerships of various descriptions has greatly expanded during the past ten years. The scale of the needs and the diversity of resources required demand partnerships that span public and private interests, with increased attention given to an unfulfilled need of building and sustaining capacities within local communities.

47. The importance and viability of such collaboration was demonstrated by innovative relationships and partnerships developed among official and non-governmental actors working with local communities following earthquakes in Colombia, Turkey and India in 1994, 1999 and 2001.

48. A much more active approach to informing, motivating and involving people in all aspects of disaster reduction in their own local communities, must be noted as a priority of disaster reduction. In practice, strengthened partnerships between national, municipal and local authorities, as well as between public and private sectors of society remain expectations to be addressed more systematically and more conscientiously for greater effectiveness in coming years.

B. Risk identification, assessment, monitoring and early warning

i) National risk assessments

49. 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 inter-related interests in a global environment, and with the increasing complexity of societies everywhere, this is now changing.

50. There is considerable evidence about the growing awareness of the social and economic dimensions of vulnerability, noted especially when efforts are made to conduct assessments at local community levels. Increased attention is being devoted to sustainable development principles of equity, public participation, good governance and transparency as essential global values.

51. Countries report a need for more broadly conceived approaches to risk assessment. By working with technical agencies alone, the extent to which the various results are consolidated or fed into comprehensive national analytical and decision-making processes is less evident. At the same time, a dissatisfaction is expressed with present capabilities to fully undertake these expanded functions because of perceived human, technical and material resource limitations.

52. As disasters occur locally, more risk assessments need to be oriented within local conditions and sensibilities. Practice has demonstrated that risk assessments can uncover latent interests and identify resources in communities, thereby also serving as positive motivational tools. They can also disclose or synthesize existing but previously unconsidered information, thereby becoming powerful public awareness mechanisms.

ii) Data use and methodological requirements

53. The findings of the review underline that the changing risk landscape requires a continuous updating of data and related analytical tools. This needs to be viewed as a continuous process with forward-looking studies coupled with retrospective studies of lessons learned, mainstreamed into common practice in the quest towards developing a culture of disaster reduction.

54. There is a widespread recognition of the inadequacy or absence of common approaches to the maintenance of national data sets related to hazard occurrences and disaster consequences. This is evident from an international perspective as well as from countries' own documentation. Commonly, information available within countries is partial, dated, sporadic, or fragmented, and often widely dispersed among different authorities or agencies.

55. There are crucial needs for more standardized data collection and analysis methods, indicators and presentation of information, which an internationally-led effort could do much to improve. There is also a requirement within countries for authoritative, systematic and impartial information on disaster risks and impacts to be made available more widely, particularly at local community levels where the actual needs exist.

iii) Emerging risks

56. Emerging risks are receiving additional attention both internationally and within many countries throughout the past ten years with a focus on potential hazards and changing conditions of vulnerability, emphasized most recently in the UN Resolution on Natural Disasters and Vulnerability (A/RES/58/215). Growing population concentrations and urban risks have been

stressed repeatedly, compounded by increasing environmental risks and serious socio-economic threats posed by climate change.

57. 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 national commentators and development specialists have noted threats resulting from some of the global dimensions of economic development, underlining the need for greater attention to be given to the interaction between natural and human-induced hazards such as technological risks.

58. A number of countries reported growing awareness about a failure to maintain advanced states of risk awareness and operational readiness with regard to rapid technological change in increasingly complex societies. Therefore a growing trend is being expressed by countries of the need to take account of all types of risk identification and management related to pre-planning and post-incident actions, whether the risks are related to natural, human-induced or technological emergencies.

59. This view results from the operational needs for agencies to plan for and respond to impacts whatever the source of the disaster. It has been noted that this rationale is especially relevant for smaller or less resourced countries which do not have the resources to maintain separate agencies to address different types of emergencies. In other countries, the concept of ensuring 'human security' is gaining attention as a definitive measure to approach the identification and monitoring of emerging risks regardless of their original sources.

60. Dynamic assessment and disaster risk management methodologies need to evolve with the changing global risk landscapes most pertinent to vulnerable people in their places of habitation and livelihood. This territorial concentration is particularly relevant to national planning and commitments when considered in the context of sustainable development expectations, such as those expressed for achieving the Millennium Development Goals.

iv) Early warning

61. Early warning is widely accepted as a crucial component of disaster risk reduction, and has shown that when it is in place thousands of lives have been saved, as was the case during in Cuba during Hurricane Michelle in 2001. Almost all countries maintain competent hydrological and meteorological services which monitor hazards and provide public warnings of adverse conditions. The continued development of observation and forecasting technologies through growing scientific understanding and modeling capabilities for weather events, climate, and other geophysical conditions with improved communications technologies, have led to progressive improvement in the technological basis for early warning since 1994.

62. In addition to the relationships between weather and climate phenomena and the increased frequency and severity of hydrometeorological hazards, the adaptation to climate change coupled with rapidly increasing vulnerability presents a major challenge. Because of the incremental change involved, the heightened relevance for early warning systems capabilities will assume even greater importance in disaster reduction strategies.

63. Nevertheless, a number of fundamental issues limiting the effectiveness of current warning systems remain. Two international conferences held in Potsdam (1998) and Bonn (2003) Germany, brought together policymakers, technical specialists and practitioners in participatory dialogue for more effective early warning practice. Participants' experience emphasized the need for wider integration of early warning into public policies. Further requirements were expressed to relate early warning processes more effectively to economic policy, environmental management, social and community development.

64. Conclusions demonstrated that the social components and policy development of early warning systems had not kept pace with the technological capabilities to detect, monitor and forecast hazards. At the same time, the demands on early warning systems are growing, owing to increasing exposure and more vulnerabilities, environmental degradation, and changing perceptions of risk. Additional attention needed to be devoted to ensure that people at risk receive understandable warnings, know how to react and that there are sufficient local capacities to do so, especially in developing countries.

65. Efforts can be made to improve early warning systems and ensure their greater effectiveness such as supporting growth in capacities and enhancing links between policy makers, technical specialists and the public. Considerable opportunity exists to address early warning globally through stronger policy-based, people-centered approaches. To a significant extent this can be accomplished by strengthening public investment in existing national hydrological and meteorological services and fostering their professional abilities for disaster reduction.

C. Knowledge management and education

i) Information management and exchange

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

67. Many organizations are committed to clearing house activities that provide disaster risk-related information for the benefit of advocacy to decision-makers, among practitioners or to increase public awareness. The growth of professionally recognized information centres which facilitate the collection, synthesis, and wider dissemination of information pertinent to disaster reduction has been a major accomplishment during the past ten years.

68. They serve essential functions in fostering organizational relationships and operational networks that transcend individual sectors or professional disciplines. They draw on literally thousands of subject-based sources and suppliers of information relevant to disaster reduction.

69. Many commentators stressed the need for a global information or clearing house capacity for disaster reduction, specifically encouraging the UN/ISDR to fulfil such a role. Shared experiences and examples of good practice, the dissemination of resource materials, use of standardized terminologies or concepts, professional organizational references and contacts, forthcoming events, possible training opportunities and available funding opportunities are all cited as valuable tools in advancing disaster reduction in practice.

ii) Education and training

70. The range of interests and achievements in education, training and research related to hazards and risk-related issues have grown significantly in the past ten years, affirming the importance of education for creating an established culture of disaster reduction. It is widely recognized that teachers are influential leaders and the social values of learning and educational facilities are highly regarded in local communities around the world. Children are identified as effective communicators as they develop their own skills and abilities, building sustainability in the process. However, it must be noted that in many countries disaster reduction is being incorporated into curricula slowly with different degrees of success as the lack of resources for training teachers and developing materials continue to be challenges.

71. Community involvement in safe building practices of schools is being advanced through local education and demonstration. The good practices displayed by projects such as EDUPLAN Hemisferico in the Americas, the Kathmandu Valley Earthquake Risk Management Program in Nepal and UNCRD's Earthquake Safety Initiative in India, Indonesia, Nepal and Uzbekistan protect schools. At the same time, the attention focused on schools enables them to become resource centres for a wider community commitment to disaster reduction.

72. At more advanced levels of education and vocational or professional training, more efforts are needed to integrate risk management considerations into other subjects related to the environment, natural resources and sustainable development. The forthcoming UN Decade on Education for Sustainable Development coordinated by UNESCO (2005-2015) offers considerable promise for more attention and additional resources in such a wider global exchange of experience.

73. The many recognized disaster and risk management training centres remain important focal points for regional and international attention in support of national and local endeavors. There are more than a hundred different educational and training programmes related to hazard studies and risk issues offered through academic departments, although concentrated mostly in the Americas and Asia.

74. Reflecting the training demands of a changing professional environment, the UN inter-agency Disaster Management Training Programme, administered by UNDP with support from OCHA, is undertaking a review in 2004 to assess the programme's strategic focus, purpose and added value in light of present trends and future challenges and demands made on UN country disaster management teams

75. Capacity-building features in many commentaries as another crucial element for realizing disaster reduction objectives. Emphasis is frequently given to the need of building from the

bottom-up, starting with the most vulnerable communities before proceeding to the more ambitious provincial and national scales. A positive example is found in the Red Crescent/Red Cross movement's emphasis of building community capacities for disaster reduction by working through the promotion of vulnerability and capacity assessments as primary components of local development activities. Elsewhere, the importance of local experience and traditional knowledge is stressed.

76. However, while there is evidence of these trends, more rhetorical expressions about community-based training activities also remain. More candid dialogue among stakeholders at local levels is required to identify longer-termed objectives. Specifically there are needs to determine what is actually required, where, by whom, and the means by which the most appropriate training can be provided most effectively. The highly regarded Cyclone Protection Programme for rural communities in Bangladesh suggests that more informal techniques may be more suited and can be sustained.

77. Much information received from countries cited persistent difficulties in implementing viable programmes in capacity-building because of limited financial, material and human resources although few commentators provided indications of actively seeking new approaches. More attention is needed to explore the feasibility and roles of the private sector, NGOs, academic and research institutions, distanced education and the media in this respect.

iii) Research

78. Research related to hazards and disaster risks has expanded greatly during the past ten years, often pursued by specialist research institutes. Within Europe, interest can be seen in the expanding research budget and output related to hazards and risk management practices of the European Commission's Directorate General Joint Research Centre.

79. Particular significance has been given to the sociology of disasters and other human dimensions that 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 key government agencies in the United States and served to conduct a comprehensive national assessment of disaster thinking and to stimulate an extended dialogue about national policies and future research agendas.

80. Internationally, there is a pressing global interest to demonstrate mitigation benefits and related costs, as well as determining useful criteria to support investment in risk reduction. In this regard, the ProVention Consortium is undertaking an important scoping study during 2004 on *Measuring Mitigation: Methodologies for assessing natural hazard risk and the net benefits of mitigation*.

81. Further economic analysis of the financial consequences of disasters and documenting cost-benefit assumptions of disaster reduction are eagerly sought by decision-makers. The recent World Bank Disaster Risk Management Series publication *Understanding the Economic and Financial Impacts of Natural Disasters* (Benson and Clay, 2004), and other examples of successful case studies in risk reduction are in continuous demand to bolster decision-making.

82. 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 need to continue. Applied research which leads to mainstreaming vulnerability parameters within development activities should be promoted, in order to have more data to conduct better vulnerability assessments.

iv) Public awareness

83. Public awareness is a core element of successful disaster reduction, as was recognized by its designation as one of ISDR's four main objectives when it was established in 2000. Experience in the past ten years has demonstrated that it has become even more crucial to the extent that vulnerable populations are increasingly being encouraged to participate and to assume more responsibility for their own protection.

84. Since 1986, the annual UN Sasakawa Award for Disaster Reduction remains the most important award for the subject in the world with a \$ 50,000 annual prize. It serves as ISDR's primary international awareness raising instrument by recognizing outstanding experts or organizations whose work has contributed to the development of innovative disaster reduction practices.

85. National 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 another locally specific day of remembrance to highlight local awareness of hazards or past disasters. However, more strategic, longer-termed, and better-resourced marketing strategies need to be developed presenting clear concepts and more consistent expressions of the practical feasibility of disaster reduction.

86. Raising public awareness of risk issues and existing community strengths is possible by adopting a participatory approach, but members of the public should not become totally dependent on government initiatives. There is much more that can be done to increase awareness through schools, community organizations, and other local community activities such as gender-based interests and other socio-cultural motivations. Educators and practitioners observe the need for information to be conveyed more imaginatively, with local orientation and more use of vernacular languages. There has been considerable interest stimulated by weaving disaster reduction subject matter into other forms of popular culture at local levels.

87. In Kobe, Japan, the Disaster Reduction and Human Renovation Institution is an innovative museum and public educational facility that recalls the devastating earthquake in 1995 through multiple media and imaginative displays. In Latin American and Caribbean countries, enthusiastic responses have greeted radio dramas that detail hazard awareness and local risk management activities presented with humor and local story lines. An education kit containing an imaginative board game "Riskland" has been disseminated throughout Latin America, the Caribbean and several countries beyond, having been translated into a number of local languages.

88. With the abundance of information available and the immediacy of global communications, there is a continuing challenge to focus on clear and pertinent messages about disaster reduction and direct them to reach intended targets efficiently. Obtaining wider public attention about local exposure to hazards, the vulnerabilities of people and their livelihoods and efforts to reduce risk remains a challenge, in contrast to the extensive media coverage of emergency response or recovery from a disaster. The media generally remains a greatly underutilized resource in mounting more effective public awareness and advocacy campaigns about risk-related issues.

D. Reducing underlying risk factors

89. There has been a positive trend for risk factors to be pursued through individual sector-based programmes with additional attention given to vulnerability awareness in development contexts in recent years. This has been an important development in mainstreaming disaster reduction into the on-going activities of in such areas as education, public health, water, agriculture, forestry, environment and physical planning among others.

90. While many examples are concentrated in single ministries or within few sectoral outlooks, a particularly good and expanded example is a coordinated approach adopted by countries involved in the Andean Development Corporation. By working through the Andean Regional Programme for Risk Prevention and Reduction formed after the severe El Niño event of 1997-98, several sectoral approaches to vulnerability and disaster reduction have been coordinated across various ministries, with common purpose expressed throughout the participating countries.

91. This experience is only one example that demonstrates that there are many known skills, abilities and techniques available and widely practiced that have the potential to reduce people's exposure to disaster risks. However, in many locations such knowledge remains insufficiently used on a regular basis to reduce disasters. Further efforts to consolidate or share relevant 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

92. With the close association of environmental issues and natural resource management with risk exposure and development practices, there is a huge potential to direct existing resources and established practices for greater disaster reduction. Careful forest, vegetation, soil, water, and land management with the intention of inhibiting risks is becoming more evident for effective disaster reduction.

93. Widely practiced Environmental Impact Assessments are recognized as being able to lend economic justification and existing techniques to the conceptualization and conduct of associated activities in hazards and disaster risk impact assessments. Pacific island states are presently developing an Environmental Vulnerability Index to characterize the vulnerability of natural systems so that decision-makers can have a more informed basis on which to guide their efforts to reduce vulnerability and build resilience towards sustainability. South Korea designates

particularly threatened environments as potential risk zones to be monitored carefully from both developmental and natural resource perspectives.

94. 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 Vietnam and NGOs in Bangladesh, demonstrate benefits from the use of natural resources to reduce disaster risks. The widespread use of traditional farming practices in Honduras gives emphasis to vegetation and land use for improved land stabilization, reduced water runoff, and retarding land degradation.

95. These applications demonstrate a potential for added economic value through multiple uses and support for a variety of informal economic sectors and livelihoods. Further consideration of the economic valuation of environmental actions for risk reduction and related techniques for “green accounting” demonstrate previously unutilized resources available for disaster risk management with the additional value of developmental returns including the motivation of people in local communities.

96. Overall, there is considerable opportunity to develop enhanced relationships and more active cross-cutting interests among disaster risk management and environmental organizations, with particular impetus devoted to engaging NGOs such as the World Conservation Union, World-wide Fund for Nature, and the International Institute for Sustainable Development.

97. Increased synergy and resource opportunities also should be pursued between disaster risk management and the various international conventions including the RAMSAR Convention on Wetlands, the Convention on Biological Diversity, the UN Convention to Combat Desertification, and the UN Framework Convention on Climate Change.

ii) Social and economic development practices

98. Mechanisms that are able to address risk reduction through social and economic development and to provide added protection for the more vulnerable or disadvantaged segments of the population have generally been available to people in economically developed countries. In many instances the motivations, supporting mechanisms and capabilities developed within social sectors such as those of education, health, and social welfare have spearheaded the wider penetration of disaster reduction in communities.

99. There have also been some important instances of established sectoral support for disaster reduction in developing countries. 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 and the Pan American Health Organization in Latin America and the Caribbean. The National Society for Earthquake Technology has done similar work with schools in Nepal. In the Philippines, the Department of Social Welfare and Development has worked closely with the Office of Civil Defense and grass roots NGOs to broaden the social aspects of community support and to build local capacities for disaster reduction for many years.

100. By contrast, mechanisms to spread risks more widely throughout a society or the availability of institutionalized social security schemes are not so widely available in most developing or particularly disadvantaged countries. Crop or housing insurance, or other mechanisms to protect productive assets and critical infrastructure are less widely accessible, often for economic or commercial reasons.

101. There have been social and economic initiatives to foster development through grass-roots lending schemes and micro-investment programmes. These have been applied with considerable success by the Grameen Bank in Bangladesh and through projects supported around the world by the NGO Trickle Up, among other examples. There have been fewer opportunities of micro-finance or lending programmes that have specifically encouraged the reduction of disaster risks for impoverished populations.

102. Some efforts have been made to transfer basic elements of social security and economical transfer of risk, as in some rehabilitation programmes following the Gujarat, India earthquake and exploratory corporate social responsibility and community insurance programmes in Bangladesh. These experiences demonstrated the necessity, but also the challenges, of ensuring community-based participation in all stages of the design, planning, implementation and management of such programmes.

103. Often these most vulnerable circumstances are below economically viable or ordinary commercial thresholds. Therefore, the identification, development and testing of social and economic measures for reducing risks presents challenges for development practice as well as for private investment.

104. At macro-economic levels, there has been much more evidence of growing institutional commitment and investment in disaster reduction. Among the international financial institutions, the Hazard Management Unit of the World Bank was instrumental in raising the visibility of investment in disaster reduction initially as an element of rehabilitation lending after disasters. 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.

105. Following the devastation of Hurricane Mitch in Central American countries, 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 UN/ISDR is formulating guidelines for countries to mainstream disaster reduction into development strategies.

106. The insurance industry has always been active and visible in efforts to support measures that aim to reduce risk. It has provided considerable information and definitive public awareness material containing compelling statistical documentation and astute trend analysis. Along with other corporate risk evaluation and financial investment interests dealing particularly with

seismic, environmental, and more recently climate-related risks, the insurance industry remains an important advocate with considerable financial and policy influence.

107. Despite frequently expressed interest and widespread policy support for expanded commitments to disaster reduction, Governments and insurance companies still face unmet challenges in translating viable risk transfer mechanisms to the uninsured or poorly-insured and often small-scale property-owners who cannot benefit from established protective measures that are commonplace in richer countries.

iii) Land use, planning and other technical measures

108. Land-use planning has been demonstrated as an essential tool for disaster reduction. Involving risk assessment, environmental management, productive livelihoods and the realization of development, it is often a critical interface between urban and rural landscapes where natural resources are under greatest threat from growth and development. Cuba provides a good example where this has been done systematically.

109. There are however, other powerful economic influences that easily override long-term perspectives of protection with the attractions of short-term gain and exploitation. The value and use of land also remains a matter of intense social, legal and political contention in almost all societies, often being imbued with strong cultural and historical implications that pose major impediments to realizing legislated requirements. The rapid and often uncontrolled growth of urban and agricultural environments and the rising expectations of economic opportunities undermine the effectiveness of land use and planning measures for disaster reduction.

110. Efforts to ensure the participation of the widest range of stakeholders become essential if the high potential of sustainable regulatory practices is to be realized. This requires the combined interests of risk management, environment, investment and development working for common purpose, with success closely linked to the perceptions about the immediate territorial or community conditions which they share.

111. Similar conditions also apply with respect to other technical or structural measures related to reducing underlying risk factors. There is extensive knowledge and many technical skills and abilities that are known to minimize disaster risks by mapping areas of extreme risk, by strengthening buildings, protecting infrastructure, and setting standards of construction.

112. Positive examples can be seen of strong stakeholder participation drawn from both public and private sector interests in such programmes as Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters (RADIUS), the World Seismic Safety Initiative, the Earthquake Megacities Initiative and GeoHazards International. The Asian Urban Disaster Mitigation Program of the Asian Disaster Preparedness Center and activities of the United Nations Centre for Regional Development have both worked to marry technical insights with the social and economic requirements inherent in community-based disaster reduction.

113. Building codes and disaster resistant construction measures are widely known, studied and even updated with productive collaboration between engineers, scientists and other technical specialists in most countries. The extent to which they are used routinely, or existing standards

regularly enforced, is much more problematic. Experience has demonstrated that realizing the effectiveness of the range of technical measures is often more of an institutional and governance challenge than necessarily a technical one.

iv) Advanced technologies

114. There has been widespread recognition of the value and increasing use of advanced technologies for disaster reduction in recent years as technologies have evolved, costs have decreased and local access improved. Techniques related to remote sensing, geographic information systems, space observation, information and communications technologies have proven to be very useful especially in risk identification, mapping, monitoring, territorial or local assessment, and early warning activities.

115. As many of the advanced technologies have found widespread application in environmental management and worked to develop more standardized data sets, they suggest future possibilities of synergy and shared resources between environmental and disaster risk management practitioners. As these sophisticated tools have become more affordable and technical abilities have grown in many countries, they are increasingly useful at local scales.

116. Information received from countries about advanced technologies illustrate their widespread use in hazard mapping and risk assessment exercises. Some countries also conveyed disappointment about their insufficient technical capabilities or data to make more effective use of these technologies. Within many countries there is a recognized need to minimize duplication, ensure compatibility and to promote open exchange of information among different ministries as well as facilitating cross-disciplinary applications essential for effective disaster reduction.

117. As reducing disaster risks at local levels should be a principal goal, sophisticated monitoring techniques must go beyond simple reporting of past events or monitoring possible hazards. Earth observation and related remote sensing applications need to place data in the hands of local communities for implementing land management practices or conveying effective early warning messages.

118. Other initiatives to use space and telecommunications-based applications for disaster reduction are being developed to define global strategic partnerships. The UN Office for Outer Space Affairs, the Committee on the Peaceful Uses of Outer Space action team on disaster management, and the European Space Agency's Global Monitoring of Environment Security are some of the agencies working closely with national space agencies in this regard.

119. In April 2004, countries meeting at the second Earth Observation Summit in Tokyo adopted a 10-year implementation plan (2005-2015) to achieve comprehensive, coordinated, and sustained earth observations and launched a Global Earth Observation System of Systems. A primary objective of this initiative is the reduced loss of life and property from natural and human-induced disasters, and the improved understanding, assessment and prediction of weather events and climate variability and change.

120. While the potential value of technology for improved disaster reduction is widely appreciated, the theoretical opportunities they represent are not always so easily realized

institutionally because of the rigorous support systems, sustained resources and technical capabilities that they demand.

121. There is a need for technologically sophisticated countries and organizations to enable the wider application of these resources to developing countries and the most disaster-affected communities, but also to support the continuing human and technical requirements so that the opportunities may be realized economically and in a sustainable manner.

E. Preparedness for effective response and recovery

122. Existing disaster management and civil protection functions within governments have proven 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. There is some growing recognition of expanding roles and opportunities by revising organizational abilities towards wider local community participation in risk awareness, hazard mapping, prioritizing protection of critical infrastructure and other activities relating to lessons learned from prior disaster impacts.

123. As the national authority for all aspects of emergency situations in the Russian Federation, EMERCOM is an example of organizational development to provide more emphasis to responsibilities associated with disaster risk management. Other examples are found in Australia, Chile, Colombia, Cuba, France and New Zealand among others in which disaster management agencies have expanded their previous activities through more involvement and wider public communication into areas of risk awareness, identification and management.

124. To effectively address current disaster risks in all of the awareness and management capabilities required, commentators to this review have emphasized the need for legislation and institutional arrangements that bring together all the parties in the disaster and risk management sectors to plan and respond in a more integrated and better coordinated way.

125. Joint and collaborative planning and a wider sharing of respective good practices are required to link hazard analysis and risk management activities with the 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, NGOs and the public itself all need to be factored into a more participative and deliberative process.

126. There is a growing expression for significantly more resources to be invested in preparedness, preventive and mitigation actions within the emergency management community. This stands in strong contrast to the disproportionate amounts routinely committed by Governments and international organizations to emergency response and rehabilitation, often in haste, duplicated efforts and without the same oversight which is demanded for other developmental expenditures.

127. Partially in response to the growing cost and developmental consequences of disasters, recent studies have been commissioned by the British Department for International Development and the Tear Fund NGO to determine the reasons for perceived limitations and constraints of

more balanced funding between emergency relief and development emphasizing the relevance of disaster risk management in each. Some commentators⁵ note that the ease by which international funding can be obtained for disaster relief and response through humanitarian appeals at the time of a disaster can divert funding and hinder progress towards reducing risks and achieving longer-term development objectives.

128. It is a greatly uneconomic irony that most emergency response and recovery funds can only be used once important social and economic assets have been lost, when many fewer resources are invested to minimize the likelihood of losing such basic infrastructure in the first place. There is a glaring need for more productive incentives and deterrents to be employed to rationalize the complementary responsibilities, operational functions and resource requirements to meet the resulting needs of all aspects of disaster and risk management. For that to occur more coherence is necessary in understanding and relating their respective costs and benefits to a society.

III. RECOMMENDATIONS FOR THE FUTURE

129. The following summarized recommendations of the Yokohama Review are key to realizing sustained commitments to disaster reduction. The annexed table demonstrates their evolutionary development from the Principles of the Yokohama Strategy towards a renewed policy framework for disaster reduction in the future.

130. Governance: institutional and policy frameworks

- Ensure a legally established disaster reduction strategy, fully integrated into national development planning and objectives.
- Maintain an officially recognized, multisectoral and resourced national platform for disaster reduction.
- Base explicit roles, responsibilities, opportunities and resources grounded in partnerships on local community interests, with essential public participation.

131. Risk Identification, assessment, monitoring and early warning

- Establish standards and maintain comprehensive national statistical records of hazard occurrences and related disaster consequences
- Evaluate country-wide status, and conduct requisite risk assessments at most appropriate levels of jurisdictional responsibility.
- Identify unmet early warning system requirements, emanating from the most potentially threatened local communities.

132. Knowledge management and education

- Introduce disaster reduction subject matter into curricula at all levels of education, focusing on schools and other highly valued institutional facilities.

⁵ Mozambique and the Great Flood of 2000, (Christie & Hanlon, 2001)

- Develop and support institutional capabilities for wide dissemination and use of disaster reduction information and experience.
- Formulate multi-faceted and continuous public awareness strategies managed with professional, public and private resources and abilities.

133. **Reducing underlying risk factors**

- Relate risk reduction to environmental, natural resource, climate change and similarly related geophysical areas of interest, abilities and commitments.
- Engage social and economic development principles and practices with technical abilities to reduce the exposure of society's most crucial infrastructure and most vulnerable segments of the population.
- Identify and apply financial and related investment instruments to share, transfer or minimize risk exposure, particularly among the most vulnerable populations and within local communities.

134. **Preparedness for effective response and recovery**

- Expand public dialogue, official practice and professional involvement related to the entire range of disaster and risk management needs and responsibilities.
- Allocate resources for disaster and risk management to realize greater protective intent from establishment, development and emergency budgets.
- Evaluate suitability of all disaster and risk management policies, operational abilities and requisite needs against present and emerging risks.

135. **Key Implementation Measures**

- Ensure the use of regional/subregional political, technical, educational and information institutions as particularly productive and sustaining measures to help build, coordinate and support countries' disaster reduction strategies.
- Emphasize efforts to instil wider knowledge and multiple coping capabilities in local communities.
- Invest attention and resources in building people's increased understanding, active participation and implementation capabilities.

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, infrastructure, and national assets from the impact of natural disasters.</p>	<p>Theme 1: 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>Theme 2: 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

<i>YOKOHAMA PRINCIPLES</i>	<i>POLICY FRAMEWORK - THEMATIC AREAS (BASED ON GOOD PRACTICES AND IMPLEMENTATION OPTIONS FOR THE FUTURE)</i>
<p>Principle 4. Development and strengthening of capacities for disaster risk reduction is a top priority area.</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 7. Education and training of entire communities is crucial for the design and application of proper development patterns that reduce vulnerability of targeted groups.</p>	<p>Theme 3: Knowledge and education</p> <ul style="list-style-type: none"> • Information management • Education for sustainable development • Disaster risk reduction at university level • Training • Research agendas • Public awareness-raising tools
<p>Principle 8. The international community needs to share the necessary technology for disaster risk reduction as an integral part of technical cooperation.</p> <p>Principle 9. Environmental protection as a component of sustainable development consistent with poverty alleviation is imperative for disaster risk reduction.</p>	<p>Theme 4: Reduce underlying risk factors</p> <ul style="list-style-type: none"> • Land use planning • Environment, natural resources management • Financial instruments; insurance, micro-finance – safety nets • Safer construction, infrastructure protection • Advanced technologies
<p>Principle 2. Disaster risk reduction of primary importance in reducing the need for disaster relief.</p>	<p>Theme 5: Preparedness for effective response and recovery</p> <ul style="list-style-type: none"> • From relief to development
<p>Principle 8. The international community needs to share the necessary technology for disaster risk reduction as an integral part of technical cooperation.</p> <p>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.</p>	<p>Implementation Mechanisms (related to Theme 1):</p> <ul style="list-style-type: none"> • Regional institutional frameworks • Partnerships, community action and participation