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Global and Regional Mechanisms of Disaster Risk Reduction and Relief:

Review, Evaluation, Future Directions of Integration

Presentation by

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Table of Contents

Introduction

The destructive earthquake and tsunami crisis that have dramatically stroke the South of Asia on the 26th of December 2004 have brought into question the creation of a regional tsunami warning system in the Indian Ocean.

This massive event, which affected 12 countries and caused the loss of more than 165,000 lives, has shown more than ever that *individual countries cannot deal efficiently on their own with trans-boundary natural disasters of such amplitude*. In order to limit the impact of these catastrophes, and facilitate the relief operations, common actions are needed at the regional level, through the establishment of regional disaster risk reduction strategies, including the elaboration of regional early warning systems.

This presentation aims therefore to highlight *the important role of regional organizations and regional frameworks of co-operation for developing countries* both in the process of preventing and mitigating risks as well as in the post-disaster relief actions. It consists out of a review of the main concepts and governance frameworks used for disaster risk reduction (part A) and an assessment of a series of case studies dealing with how regional organisations cope with it.

The UNU has recently installed a research and training centre that deals with Environment and Human Security (UNU-EHS). It is there that the UNU specialists and specific activities on the reduction of risks resulting from environmental hazards are to be found. The present authors are however affiliated to another UNU body, UNU-CRIS, studying regional integration and cooperation frameworks worldwide from a comparative perspective. Hence, although mentioning also some technical concepts, the present background paper will rather focus on the role of *regional governance frameworks* in risk reduction. Concrete proposals are offered on potential mechanisms for building a '*regional-global integrated disaster risk reduction and relief mechanism'*.

A. Disaster Risk Reduction and Relief: Concepts and Governance Frameworks

In this first part, the current concepts and governance frameworks for disaster risk reduction and relief will be briefly presented, with an emphasis on the conceptual shift from crisis management to risk reduction approaches based on integrating risk reduction in sustainable development and poverty reduction. The presentation will then highlight the achievements and challenges of the current *global framework* for disaster risk reduction, and the conceptual justification for strengthening *regional frameworks* as the necessary level of action able to bridge the gap between the international arena and the needs and realities of developing countries.

1. The Conceptual Shift from Crisis Management to Risk Reduction

Disasters have continuously represented a challenge for human settlements throughout history. In the traditional approach used until the second half of the 20th century, the emphasis has been laid on the organization of massive **relief** operations rather than on **preventive** activities. This approach was also based on the conviction that disasters were seen as 'one-off events and responded by governments and relief agencies without taking into account the social and economic implications and causes of these events'[2].

During the last decades, a gradual shift has taken place (see Table 1 in Annex 1) from pure crisis management and relief operations to a more comprehensive and integrated **disaster risk reduction** theory defined as 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'[3].

1.1. Concepts related to disaster risk reduction

1.1.1. Disasters, Risk and Hazard

Following a definition elaborated by the UN International Strategy for Disaster Reduction (ISDR), which has extensively worked on the unification of conceptual tools relating to disaster management, a **disaster** can be defined as 'a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources'[4].

Earthquakes and tsunamis are only two of a wide variety of natural phenomena that are usually associated to the notion of "disaster". But, although these natural factors can bring massive destruction with, they will give birth to disasters only in the cases where certain **conditions** are met. In other words, *'A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.'*[5]

Risk = Hazard x Vulnerability

[2] Yodmani, S., 'Disaster Risk Management and Vulnerability Reduction: Protecting the Poor', Paper Presented at the *Asia and Pacific Forum on Poverty*, Asian Development Bank, 5 February 2001, p. 1.
[3] Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR), *Living with Risk - a global review of disaster reduction initiatives,* United Nations, 2004, p 17.
[4] *Living with Risk*, *op. cit*., Vol. II. Annex 1, ISDR, 2004, p. 3.
[5] *idem*., vol. I, pp. 16-17.

Following this formula, 'the negative impact – the disaster – will depend on the characteristics, probability and intensity of the hazard, as well as the susceptibility of the exposed elements based on physical, social, economic and environmental conditions'[6].

The ISDR defines a **hazard** as 'A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydro-meteorological and biological) or induced by human processes (environmental degradation and technological hazards)'[7].

Three main categories of hazards are distinguished: *natural*, *technological*, and *environmental degradation*. **Natural** hazards can also be divided into several categories (see Table 2 in Annex 1)- hydro-meteorological, geological and biological - although they can largely vary in their characteristics. As a consequence, several international institutions have developed hazard catalogues[8]. Tsunamis, for instance, are part of the hydro-meteorological hazards which include phenomena such as 'floods, debris and mud floods; tropical cyclones, storm surges, thunder/hailstorms, rain and wind storms, blizzards and other severe storms; drought, desertification, wild land fires, temperature extremes, sand or dust storms; permafrost and snow or ice avalanches'[9].

1.1.2 Vulnerability vs. capacity

Risk is based on a combination of hazards with a second factor - **vulnerability** – that comprises the "conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards"[10]. Vulnerability sources, which can increase the negative impact of hazards on communities, can be grouped in four main categories: economic, environmental, physical and social.

The evolution of disaster risk assessment has reached in the last decades the conclusion that any efficient preventive action against disasters should strongly take into consideration **the link between sustainable development and vulnerability reduction**[11]. In this context, an important element is the fight against **poverty**, poor people being one of the most affected categories and experiencing the biggest problems of recovering after disasters which often cause the loss of their whole income. Extensive work has been performed therefore towards integrating the fight against poverty in disaster management[12].

The opposite of vulnerability is **capacity,** a **'**combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. *Capacity may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management. Capacity may also be described as capability*'[13].

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[6] *Living with Risk*, *op. cit.*, 2004, p. 36.
[7] *Living with Risk*, *op. cit*., Vol. II. Annex 1, p.5.
[8] *Living with Risk*, *op. cit*., p. 37.
[9] *Living with Risk*, *op. cit*., Vol. II. Annex 1, p. 5.
[10] *Idem*, p. 41.
[11] see UN/ISDR, 'Disaster Reduction and Sustainable Development: Understanding the links between vulnerability and risk to disasters related to development and environment', *Background paper developed in a participatory manner as a contribution to the process leading to the World Summit on Sustainable Development (Johannesburg, 26 August – 4 September 2002)*, 2002.
[12] Yodmani, S., 'Disaster Risk Management and Vulnerability Reduction. Protecting the Poor', op. cit., p. 1.
[13] *Living with Risk*, *op. cit*., Vol. II. Annex 1, p. 2.

1.1.3 Disaster Risk Assessment and Reduction Framework

In order to reduce the impact of hazards through the study of vulnerability sources a detailed methodology has been developed comprised under the notion of disaster **risk assessment,** understood as the process **'**based on a review of both the technical features of hazards such as their location, intensity, frequency and probability; and also the analysis of the physical, social, economic and environmental dimensions of vulnerability and exposure, while taking particular account of the coping capabilities pertinent to the risk scenarios'[14].

The UN ISDR has designed a standard *disaster risk reduction framework* composed of five main fields of action:

1. ***Risk awareness and assessment*** including hazard analysis and vulnerability/capacity analysis;
2. ***Knowledge development*** including education, training, research and information;
3. ***Public commitment*** and institutional frameworks, including organisational, policy, legislation and community action;
4. ***Application of measures*** including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
5. ***Early warning systems*** including forecasting, dissemination of warnings, preparedness measure and reaction capacities[15].

2. The Current Global Governance Approach to Risk Reduction-Achievements and Challenges

2.1 The International Decade for Natural Disaster Reduction (IDNDR)

The United Nations have initiated during the last two decades a series of actions which have gradually shaped a global conceptual and institutional framework for tackling disasters, based on a preventive-risk reduction oriented strategy. Following a resolution adopted on 22 December 1989, the UN General Assembly has designated the 1990s as the International Decade for Natural Disaster Reduction (IDNDR) with the aim "to reduce through concerted international action, especially in developing countries, the loss of life, property damage, and social and economic disruption caused by natural disasters, such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruption, wildfires, grasshopper and locust infestations, drought and desertification and other calamities of natural origin"[16].

2.1.1 The Establishment of a New Institutional Framework: 1990-1994

In this framework, governments were called upon to formulate national disaster-mitigation programmes, and particularly in developing countries, to integrate them fully into their national development programmes, to establish national committees in co-operation with the relevant scientific and technological communities and take measures, as appropriate, to increase public awareness. At the same time, the regional commissions of the United Nations were "urged to play an active role in implementing the activities of the Decade, considering that natural disasters often transcend national boundaries".

[14] *Idem*, p. 6.
[15] *Living with Risk*, *op. cit.*, 2004, p. 17.
[16] Resolution 44/236 Adopted at the Forty-fourth Session of the United Nations General Assembly, 22 December 1989, following resolutions 42/169 of 11 December 1987 and 43/202 of 20 December 1988 on natural disaster reduction.

The UN has also set up an institutional framework aiming to support the Office of the United Nations Disaster Relief Co-ordinator[17] and the Director-General for Development and International Economic Co-operation, as the focal point for oversight and co-ordination of the IDNDR. Resolution 44/236 created (i) a **Special High-Level Council**, consisting of internationally prominent persons, in charge of providing the Secretary-General with overall advice with respect to the Decade, (ii) a **Scientific and Technical Committee** consisting of up to 25 scientific and technical experts from national and UN bodies in charge of developing programmes aiming to reduce gaps in technical knowledge identified by national committees; (iii) a **Secretariat** established at the United Nations Office at Geneva and responsible for the day-to-day co-ordination of Decade activities. A Trust Fund financed by voluntary contributions from Governments, international organizations and the private sector was created in order to support the IDNDR.

2.1.2 The Yokohama Strategy and Plan of Action for a Safer World

From 1990 to 1994 a series of meetings were organized but there were few effective activities implemented on the ground. In May 1994, the UN organized a conference in Yokohama[18], Japan, aiming to perform the mid-term review of the IDNDR. The Conference adopted the *Yokohama Strategy and Plan of Action for a Safer World* (see Annex 2) based on **ten principles**, which represent the pillars of the current global governance approach to disaster risk reduction.

Conceptually, the Strategy acknowledges the importance of risk assessment in the development of disaster prevention and preparedness strategies aiming to reduce the need for disaster relief. Early warnings are considered as key factors to successful disaster prevention and preparedness, while vulnerability can be reduced by education and training, sharing of technology, environmental protection and the fight against poverty.

In the governance field, the Yokohama principles give a primary role to **national measures** considering that "Each country bears the primary responsibility for protecting its people, infrastructure, and other national assets from the impact of natural disasters"[19]. Two principles underline nevertheless the importance of a **multi-level approach** stating that "Disaster prevention and preparedness should be considered integral aspects of development policy and planning at national, regional, bilateral, multilateral and international levels"[20] and that "Preventive measures are most effective when they involve participation at all levels from the local community through the national government to the regional and international level"[21].

The role assigned to the **global community** is to "demonstrate strong political determination required to make efficient use of existing resources, including financial, scientific and technological means, in the field of natural disaster reduction, bearing in mind the needs of the developing countries, particularly the least developed countries'[22].

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[17] With role and responsibilities in the field of disaster mitigation and response in conformity with its mandate contained in General Assembly resolution 2816 (XXVI) of 14 December 1971.

[18] General Assembly Resolution 46/149 of 18 December 1991 convening in 1994 of a world conference of representatives of national committees for the Decade, Economic and Social Council decision 1993/328 of 30 July 1993 on the World Conference on Natural Disaster Reduction.

[19] World Conference on Natural Disaster Reduction, *Yokohama Strategy and Plan of Action for a Safer World. Guidelines for Natural Disaster Prevention, Preparedness and Mitigation*, Yokohama, Japan, 23-27 May 1994, Principle 10.

[20] *Yokohama Strategy and Plan of Action for a Safer World*, Principle 3.

[21] *Yokohama Strategy and Plan of Action for a Safer World*, Principle 6.

[22] Yokohama Strategy and Plan of Action for a Safer World, Principle 10.

2.2. The 1999 Succession: the ISDR

At the end of the 1990s, in order to ensure the continuity of actions, the partners in the International Framework of Action for the Decade have established in July 1999 the succession of the IDNDR through the International Strategy for Disaster Reduction (ISDR), with a mandate building on the Yokohama Strategy[23]. The UN/ISDR is the focal point within the United Nations system for coordination of strategies and programmes for disaster reduction and to ensure synergy between disaster reduction activities and those in the socio-economic and humanitarian fields. Its particular important role is to encourage both policy ad awareness activities by promoting national committees dedicated to disaster reduction and working in close associations with regional initiatives.

Accordingly, in order to facilitate the implementation of the Strategy, the General Assembly endorsed the proposal of the Secretary-General to establish an inter-agency task force and an inter-agency secretariat for disaster reduction[24]. Chaired by the Under-Secretary-General for Humanitarian Affairs, the Inter-Agency Task Force, which meets twice a year in Geneva, is the principal body for the development of disaster reduction policy and is composed of:

- a) up to fourteen representatives of agencies, organizations and programmes of the United Nations system: FAO, ITU, UNDP, UNITAR, UNEP, UNESCO, UN-HABITAT, WFP, WHO, WMO, WB, UNU, UNCRD;

- b) up to eight representatives from regional entities: African Union, Asian Disaster Preparedness Centre, Asian Disaster Reduction Centre, Commonwealth of Independent States (CIS) Interstate Council (Represented by EMERCOM, Moscow, Russia), European Commission Directorate General - Joint Research Centre (EC/ DG-JRC), Ibero-American Association of Civil Defence and Civil Protection, Inter-American Committee on Natural Disaster Reduction, Organization of American States (OAS), NEPAD Secretariat, South Pacific Applied Geoscience Commission, and

- c) up to eight representatives of civil society and relevant professional sectors: Drought Monitoring Centre (DMC), Global Fire Monitoring Centre (GFMC), International Council for Science (ICSU), International Federation of the Red Cross (IFRC), Munich Re. CRED, University of Louvain, Belgium.

The IATF/DR **Working Groups** bring together specialists and organisations to discuss issues of relevance to disaster reduction such as climate variability, early warning, vulnerability and impact assessment, wild land fires and drought[25]. The Task Force has set up, since its establishment in 2000, **regional outreach programmes** in Africa (UN/ISDR Africa, with headquarters in Kenya) and Latin America (UN/ISDR Latin America and the Caribbean with headquarters in Costa Rica). More recently, an open-ended regional for disaster reduction in Asia (Asia Partnership) has been launched by the UN Inter-Agency Secretariat for ISDR, the Asian Disaster Preparedness Centre (ADPC) and the Asian Disaster Reduction Centre (ADRC) in consultation with UNDP's Bureau for Crisis Prevention and Recovery and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

The UN/ISDR Secretariat carries out the day-to-day implementation of the ISDR and supports the implementation of the ISDR by formulating annual strategic plans of action/workplans delineating activities of a substantive nature to be carried out within specified timeframes.

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[23] Geneva mandate, "A safer world for the twenty-first century: risk and disaster reduction", Economic and Social Council took note of the strategy in its resolution 1999/63.
[24] General Assembly 54/219 of 22 December 1999 UN General Assembly resolutions 54/219 and 56/195.
[25] Currently, the Task Force has four Working Groups (WG1 on Climate and Disasters, chaired by WMO; WG2 on Early Warning, chaired by UNEP; WG3 on Risk, Vulnerability and Impact Assessment, chaired by UNDP; and WG4 on Wildland Fires, chaired by the Global Fire Monitoring Center, Freiburg, Germany).

2.3 Achievements 1994-2004

The 2000 report of the UN Secretary-General on the implementation of the International Strategy for Disaster Reduction (ISDR) already underlined both conceptual advances and the persistence of deficiencies in the implementation of disaster management[26]. As highlighted by the *Review of the Yokohama Strategy and Plan of Action for a Safer World* drafted for the United Nations World Conference on Disaster Reduction (18-22 January 2005), in the decade which has passed since the launching of the *Yokohama Strategy* in 1994, several achievements in disaster risk reduction and relief have been accomplished. These could be summarized as follows[27]:

- **Global acknowledgement** of the link between disaster risk reduction sustainable development, and poverty;
- **Conclusion of multilateral agreements** related to disaster risk reduction, and the inclusion of risk reduction measures in important environmental and sustainable development agreements (i.e. the Millennium Development Goals);
- **Calls through policy statements**, such as the Johannesburg Plan of Implementation, for international and regional commitments, national actions to reduce vulnerability, undertake risk assessments and pursue comprehensive disaster and risk management strategies;
- More **integrated approaches to disaster and risk management** adopted in a growing number of countries;
- **Partial progress** made towards **mainstreaming disaster risk reduction into national planning** and development strategies;
- Progress 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;
- More inclusive focus on **the social dimensions and multisectoral interests** of human vulnerability and the need for partnerships and equitably shared responsibilities and resources;
- The **development of knowledge, skills and technical abilities** to minimize the effects of hazards and to reduce people's vulnerability to disaster risks;
- Acknowledgement and actions towards **the availability, dissemination and use of information** focused on disaster risk reduction.

2.4 Challenges

At the same time, since the adoption of the Yokohama Strategy and the launch of the UN Decade for Disaster Prevention, disasters continued to represent an important challenge for the current governance structures bringing considerable human and material losses. According to the ISDR, during the last decade "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. Some estimates suggest that well over 200 million people have been affected every year by 'natural' disasters since 1991"[28]. The contributors to the Yokohama Review have identified several important challenges in the **five main fields** relating to disaster risk reduction and relief: (i) Governance-organizational, legal and policy frameworks; (ii) Risk identification, assessment, monitoring and early

[26] Implementation of the International Strategy for Disaster Reduction: Report of the Secretary-General (A/56/68 - E/2001/63)
[27] United Nations World Conference on Disaster Reduction, *Review of the Yokohama Strategy and Plan of Action for a Safer World*, A/CONF.206/L.1, Kobe, Hyogo, Japan, 18-22 January 2005, pp. 18.
[28] *Review of the Yokohama Strategy and Plan of Action for a Safer World. Note by the Secretariat,* Op.cit., p. 5.

warning; (iii) Knowledge management and education; (iv) Reducing underlying risk factors; (v) Preparedness for effective response and recovery (see Annex 4).

The main gaps in the current governance organizational, legal and policy frameworks of disaster risk prevention and relief can be grouped under the following categories:

- The **'implementation gap'**: "a lack of systematic implementation, cooperation and reporting of progress to reduce risk and vulnerability to disasters"[29]. The global acknowledgement of principles necessary for risk reduction should be backed by concrete implementation measures and institutional changes are needed on the ground.

- The '**national capability gap'**: the formulation and implementation of the current risk management approach is primarily relying on the national level. But national capabilities exist to varying degrees. Only few countries have comprehensive strategies or capacities.

- The '**participation gap**': In order to enhance the efficiency of the measures, there is a need to ensure 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".

- The **'resources gap'**: **"**Resource limitations are frequently cited as impediments to initiating or realizing far-sighted disaster reduction programmers. 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"[30].

In the field of risk identification, assessment, monitoring and early warning[31], the Review underlined the need of: (a) **establishing common standards** for the collection and archiving of comprehensive national statistical records of data related to all aspects of vulnerability (built environments, lifelines and critical infrastructure; socio-economic vulnerability), and for hazard analysis and disaster operational requirements; (b) **country-wide assessments of risk status** (including hazard maps and vulnerability trends) and conducting risk assessments, incorporating technical and socio-economic dimensions; with analysis of territorial or adjacent locations of shared exposure to disaster risks; (c) building **early warning systems** centered on people at risk and that integrate the essential dimensions of risk assessment, warning generation, dissemination, preparedness and response capabilities and (d) **integrating early warning into development policy**. Specific gaps were identified also with regard to knowledge-management, research and education, technical measures for reducing the underlying risk factors, as well as regarding the general measures to be followed for strengthening preparedness for effective response and recovery.

2.5 The 2005 Kobe conference: the Framework For Action 2005-2015

The World Conference on Disaster Reduction held in Kobe, Hyogo, from 18 to 22 January 2005 adopted a *Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* aiming to develop a relevant framework for action in the five key areas of disaster risk reduction and relief above-mentioned so as to obtain a '*substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries*'[32]. Keeping as a corner-stone the Principles contained in the Yokohama Strategy, the new Framework reaffirms the

[29] Idem, p. 19.
[30] Ibidem, p. 8.
[31] Summarized from United Nations World Conference on Disaster Reduction, *Review of the Yokohama Strategy and Plan of Action for a Safer World. Note by the Secretariat,* Kobe, op. cit., p. 19.
[32] World Conference on Disaster Reduction, *Abstract from the advance copy of the Report of the Conference (A/CONF.206/6), Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and, Communities to Disasters*, Kobe, Hyogo, Japan, 18-22 January 2005, p. 5.

primary responsibility of individual states to reduce disaster risk by creating **integrated, multi-hazard approaches to disaster risk reduction**, while acknowledging at the same time that **'**in the context of increasing global interdependence, concerted international cooperation and an enabling international environment are required to stimulate and contribute to developing the knowledge, capacities and motivation needed for disaster risk reduction at all levels'[33]. Drawing on the conclusions of the review of the Yokohama Strategy, and on the basis of deliberations at the World Conference on Disaster Reduction, the Conference has adopted five priorities for action:

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.
6. In their approach to disaster risk reduction, States, **regional** and international organizations and other actors concerned should take into consideration the key activities listed under each of these five priorities and should implement them, as appropriate, to their own circumstances and capacities[34].

For the first time detailed specific tasks were attributed to regional organizations and institutions with a role related to disaster risk reduction is detailed along five main dimensions:

a) Promote **regional programmes**, including programmes for technical cooperation, capacity development, the development of methodologies and standards for hazard and vulnerability monitoring and assessment, the sharing of information and effective mobilization of resources, in view of supporting national and regional efforts to achieve the objectives of this Framework for Action;

b) Undertake and **publish regional and sub-regional baseline assessments** of the disaster risk reduction status, according to the needs identified and in line with their mandates;

c) **Coordinate and publish periodic reviews** on progress in the region and on impediments and support needs, and assist countries, as requested, in the preparation of periodic national summaries of their programmes and progress;

d) Establish or strengthen **existing specialized regional collaborative centers**, as appropriate, to undertake research, training, education and capacity building in the field of disaster risk reduction;

e) Support **the development of regional mechanisms and capacities for early warning** to disasters, including for tsunami [35].

[33] *Idem*, p. 6.
[34] World Conference on Disaster Reduction, *Hyogo Framework for Action 2005–2015, op. cit.,* p. 7-8.
[35] Idem, p. 17.

3. The Relevance of Strengthening Regional Frameworks of Risk Reduction

The recent tsunami tragedy has shown more than ever that natural hazards are often trans-boundary in nature and are produced by factors specific to a certain geographical region. As illustrated by different analysis, some regions are more vulnerable than others to disasters given certain geographical, natural and socio-economic characteristics (see Table 3 in Annex II). As an example, the study of the *Regional Proportion of Natural Disasters Occurrence in the World* shows that 'Asia has been suffering from about 38 % of the major natural disasters of the world. Meanwhile, Asian region accounts for 57 % of killed people by natural disasters and 88 % of the affected people. The number of people killed and affected, and the amount of damage tend to be higher compared to the number of disasters.'[36]

In this paper, we will try to argue that this regional dimension of disasters should be matched by an enhancement of the regional activities in the field of disaster risk prevention and relief, taking into account also the increased competences of 'new regionalism' organizations in the last decade and the possibility of approaching disaster reduction as a regional public good.

3.1 The Growing Importance of Regional Integration as a Level of Governance

The growing interdependence brought about in the last decades by globalization has increased demand of governance at an intermediary level situated above the state and below the global level**.** 'Regional integration' has acquired several meanings as successive waves of regionalism occurred during the last half-century. After the Second World War, the wave of regionalization focused on trade liberalization between neighboring countries in order to spur inter-country transactions. The European market integration has become already in the 1960s and 1970s a trigger for the creation of similar free trade areas and common markets in Africa, Asia and Latin America. But these initiatives were often subject to failure and, at the end of the 1970s there were few places outside Europe where regionalist experiments had produced tangible results.

A second wave of regionalism, launched at the beginning of the 1990s, is qualitatively different from the previous one, as it is increasingly no longer only about trade, but presents itself as a "multidimensional form of integration which includes economic, political, social and cultural aspects, and thus goes far beyond the goal of creating region-based free trade regimes or security alliances"[37]. This '**new regionalism**' aims to promote such "world values" as security, development, ecological sustainability, more than globalism[38]. The EU is a good example of this wave of regionalism, as it has managed to develop a model of integration that incorporates political elements in deep economic integration.

Although initiated in Europe, the second generation regional integration is not anymore an exclusively European phenomenon, and has also spread on all the other continents. We are currently witnessing the rise of many regional organisations that are in the process of being strengthened - in Latin America, with the consolidation of Mercosur, CAN and CARICOM, in Asia, with the consolidation of ASEAN and SAARC, or in sub-Saharan Africa, with the rapid development of SADC, ECOWAS, and COMESA and the emergence of the continental initiative of a New Partnership for African Development (NEPAD).

Regional integration is a mechanism that can (i) empower relatively small countries to have a voice next to large countries and (ii) allow poor countries to integrate more easily in the world economy.

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[36] Asian Disaster Reduction Center, *ADRC 20th Century Asian Natural Disasters Data Book*, http://www.adrc.or.jp/publications/databook/databook_20th/top_e.htm

[37] Hettne, The New Regionalism: A Prologue', in: B. Hettne, A. Inotai and O. Sunkel, ed. by, *Globalism and the New Regionalism*, Macmillan, London, 1999, p. xvi.

[38] Hettne, B., idem, p. xvi.

Considering their fragmented nature, the economies of the developing countries are enormously challenged by the pressures of global competition. Regional integration is an important tool for helping the developing countries to be integrated in the world economy and to protect themselves from the 'dark sides' of globalisation at the same time.

Additionally, as highlighted by recent studies[39], the potential benefits of 'second generation' regional integration for developing countries go beyond economic advantages to encompass a wide variety of benefits:

I. The strengthening of trade integration in the region;

II. The creation of an appropriate enabling environment for private sector development;

III. The development of infrastructure programmes in support of economic growth and regional integration;

IV. The development of strong public sector institutions and good governance;

V. The reduction of social exclusion and the development of an inclusive civil society;

VI. Contribution to peace and security in the region;

VII. The building of environment programmes at the regional level;

VIII. The strengthening of the region's interaction with other regions of the world.

At the same time, 'New regionalism' has brought the participation of multiple stakeholders in the regional processes and the increased involvement of the regional level in **the provision of public goods** through the pooling of resources.

3.3 Disaster Risk Reduction as a Regional Public Good

Following the classical definition by Samuelson[40], public goods have two main characteristics: *non-excludability* (those who do not pay for the good cannot be excluded from it) and *non-rivalry* (the consuming of the good by one person does not affect the availability of that good for others). In other words, once a public good has been produced "each and everyone can enjoy it without limiting the possibility for anyone else to do the same. Once security has been obtained within a region, all its inhabitants can freely enjoy this public good".[41]

Public goods can be classified according to different criteria: following a rather geographical aspect taking into account their jurisdiction and their benefits coverage[42], they can be local, national (National Public Goods), **regional/transnational** (R/TPG) or global (GPGs). While global public goods are defined as "goods whose benefits extend to all countries, people, and generations"[43], RPGs are defined by Ferroni as:

> "a class of public goods in between national and global public goods. They benefit spillover communities that, depending on the problem being addressed, can range from a

[39] Van Langenhove, L., 'Regional Integration and Global Governance', *UNU Nexions*, UNU Press, 2003, p. 4.
[40] Samuelson, P. A., 'The pure theory of public expenditure', *The Review of Economics and Statistics*, vol. 36, issue 4, 1954, pp. 387-389, http://www.econ.ucsb.edu/~tedb/Courses/UCSBpf/readings/sampub .pdf;
[41] Stålgren, P., 'Regional Public Goods and the Future of International Development Co-operation A Review of the Literature on Regional Public Goods', *Expert Group on Development Issues, Swedish Ministry for Foreign Affairs Working Paper 2000/2*, Stockholm, p. 8.
[42] Kaul, I., and Mendoza, U. R., 'Advancing the concept of Public Goods', in: Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza (ed. By), *Providing Global Public Goods. Managing Globalization*, OUP, 1999, p. 108.
[43] Kaul, I., Conceição, P., Le Goulven, K., and Mendoza, U. R., 'How to improve the provision of Global Public Goods', in: Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza, op. cit., p. 23. http://www.globalpublicgoods.org/

couple of neighbouring countries to a continent or hemisphere. Their production typically requires cross border collective action that engages all (or most) of the members of the spillover group. Exceptionally, RPGs may be provided by one or a few leading nations motivated by a combination of self- interest and broader objectives. International public goods, and RPGs, include the knowledge, the regimes, and the standards and rules that are required to address cross-border problems or to engender desirable cross-border externalities; the institutions that monitor and enforce the rules and regimes; and the benefits that arise and are shared indiscriminately among countries." [44]

Of course, while trying to conceptualise regional public goods the definition of the region itself may often pose a problem, and the distinction between regional and global public goods may not be very clear. As put by Hettne and Söderbaum:

> "The regional dimension implies that the *problem* as such, whether it is civil war or contagious diseases, can be more or less distinctively regional, and if managed successfully be transformed into a regional public good, for instance a regional security community or a health control system covering a particular region. To the extent that the problem is exclusively regional, the 'region' is defined by the problem at hand, for instance a river system which covers a number of countries and which constitutes both threats in the form of flooding and potentials in the form of energy and irrigation. However, there is not necessarily a coincidence between the range of the regional problem and the regional cooperation mechanism supposed to manage the problem".[45]

Acknowledging also the importance of separating different types of regional co-operation mechanisms able to provide public goods, Hettne and Söderbaum make a classification along two dimensions: a) the level of institutionalisation and b) unidimensionality versus multimensionality.

Hettne and Söderbaum's Typology of regional cooperation mechanisms[46]

	Organisation	**Network**
Unidimensional	Sectoral organizations Security organizations Economic integration arrangements Regional development banks	Research networks Public-private partnerships Civil society networks
Multidimensional	Comprehensive organizations River basin organizations UN Economic Commissions	Growth triangles Cross-border micro-regional organizations Development Corridors

The study of the capacity to provide regional public goods along these categories shows that 'actor ness' depends on "the coherence and institutionalization of the region. A strong and well-organised

[44] Ferroni, M., 'Regional Public Goods: The Comparative Edge of Regional Development Banks', Prepared for a Conference on *Financing for Development: Regional Challenges and the Regional Development Banks* at the Institute for International Economics, February 19, 2002, p. 2, available on-line at: http://www.iie.com/publications/papers/ferroni0202.pdf; see also Ferroni, M. 'Regional Public Goods and the Regional Development Banks', *The Courier ACP-EU*, n° 202 january-february-march 2004, p. 35, http://europa.eu.int/comm/development/body/publications/ courier/courier202/pdf/en_35.pdf;

[45] Hettne, B. and Söderbaum, F., "Regional Cooperation. A tool for addressing regional and global challenges", Report for the International Task Force on Global Public Goods, 17 August 2004, p. 2.

[46] Idem, p.6.

region – with a high degree effective institutions – will contribute not only to RPGs but also to GPGs"[47].

Several elements of **disaster risk reduction** - such as environmental protection systems, health, infrastructure and education - are often listed individually in the definitions of regional public goods. The UN itself has recently listed among the regional public goods recommended to be supported internationally and integrated in the national MDG-based poverty reduction strategies: (i) the creation of infrastructure for transport, energy, and water management; (ii) coordination mechanisms to manage transboundary environmental issues; (iii) institutions to promote economic cooperation, including coordination and harmonization in trade policies and procedures; (iv) political cooperation mechanisms for regional dialogue and consensus building, as exemplified by the African Peer Review Mechanism.[48]

Tackling disaster risk management from a regional public good perspective would bring **several advantages**. First, while trying to set up mechanisms for disaster risk prevention and relief, a major problem for developing countries consists in the gathering of the necessary financial resources. Conceiving disaster risk prevention mechanisms as regional public goods **could bring forward new arguments for the economic case for intervening at supra-national level**[49].

Additionally, as highlighted by Ferroni's analysis of the general advantages for addressing regional public goods through regional institutionalized mechanisms other benefits would include: "locking (the countries) into reform commitments; creating venues and peer pressure to address negative neighborhood effects; taking advantage of opportunities for liberalization and reform in a more controlled and predictable setting than that encountered in a multilateral context; and creating value by following up on a derived demand for cooperation in areas beyond trade, including infrastructure, finance, labor codes, product safety, law enforcement, the environment, and other fields"[50].

[47] Hettne, B., and Söderbaum, F.,op. cit., p. 13.
[48] UN Millenium Project, *Investing in Development. A Practical Tool to Achieve the Millenium Development Goals*, Millenium Project Task Force Report, New York, 2005, p. 224.
[49] Sandler, T., 'Global and Regional Public Goods: A Prognosis for Collective Action', *Fiscal Studies* (1998) vol. 19, no. 3, pp. 221–247.
[50] Ferroni, M., op. cit., 2002, p. 3.

B. Review of Regional Experiences

In this second part, several continental experiences and different case studies of regional organizations in developing countries dealing with disaster risk reduction and relief will be assessed, allowing us in the following parts to make concrete proposals on how the global institutions could better interact with regional organisations (especially those from developing countries) in the fields of disaster risk reduction and relief in order to answer the current governance needs and challenges.

4. The empirical view – Regional mechanisms and disaster management

Disasters are nothing more than the materialization of risks, which depend not only on the natural conditions but also on a degree of vulnerability that favours the occurrence of a crisis. Such social and environmental conditions are generally the result of the kinds of development pursued and the debt accumulated with nature.

Too often, poverty and human need conspire with nature to increase the destruction from natural disasters in the region, multiplying the risk factors. Therefore, disasters should not be analysed just as natural facts but in their relation with development – leading to preventive management and planning efforts that should be directed to reduce or avert the social, economic and environmental consequences.

And because disasters are more often regional than national in nature, it makes sense to understand what regions have done to cope with their vulnerability to natural hazards. Indeed, it seems that disasters are becoming more regional in nature. Even if they are not directly regional, the interlinkages between neighbour states are so deep today that even if a disaster hits one single country, its consequences are felt all over the region if not in other neighbour regions. Thus, the response must also be regional.

The following section will therefore deal with these regional mechanisms, understanding how each region has been developing disaster risk reduction, mitigation and response mechanisms, and how they have been used in times of need.

Some questions arise and need to be assessed. Which are the regional bodies that have been involved in these developments and cooperating with the UN-ISDR? Along with the progress felt inside regional organizations, other mechanisms have been created independently from these high-level political organizations – technical and expert mechanisms – non-political in nature. How efficient are these structures, acting only at the expert level, and not having the weight of a political organization?

In order to understand these trends in hazard management development, we will look at some regional disasters occurring in the last years – to understand the different responses given in the different regions. We chose to analyse major disasters in the most vulnerable regions – Southern Africa, Central America and South Asia - not only because they are hit more frequently, but also because they are less developed – and therefore increasingly vulnerable to natural disasters.

They allow us to understand if the regional disasters had a proportional and efficient regional response, if the regional organizations were involved and if these disasters created a momentum for further development in the creation of regional mechanisms for future prevention and management of natural hazards.

4.1 Africa

Africa is the only continent where the share of reported disasters in the world total has increased over the past decade. The occurrence of disasters triggered by natural hazards, the number of people affected and economic losses are rising in Africa – hydro-meteorological hazards (drought, floods, windstorms and wildfire) accounting for most of them. On an individual hazard basis, epidemics are the major cause of disasters – HIV-AIDS, malaria and tuberculosis are impacting households and communities so severely that they place downwards pressure on sustainable development, particularly on sub-Saharan Africa. Moreover, disasters significantly derail development in affected countries and are an impediment for sustainable development in this continent.

According to the World Meteorological Organization, 75% of all natural disasters are related to weather and climate. And even if the earthquakes and tsunamis are the most publicized, natural disasters such as floods and drought have been the ones affecting more people – not per disaster, but because they happen much more often and affect the less developed regions – Asia and Africa. Over the last 30 years, the number of lives lost to natural disasters has decreased to about 60 000 per year, but the numbers of people affected and estimated economic losses have been steadily increasing, and the number of people affected in the last 10 years has been 7 times superior to the one of people affected by conflicts. Africa has been suffering mainly from drought related disasters, which lead to agriculture and economic losses and very often to famines.

The frequency of natural disasters often results in human beings developing risk-aversion and adaptive strategies. Africa seems therefore to have been developing new capacities in this sense. Actually, this seems to be the continent where more regional disaster risk reduction and management efforts have been developing – coming from the regional and sub-regional organizations, and therefore, from a political will to act together, as part of the governance development already felt in other dimensions of human security. However, the resources are limited, and therefore development is very slow.

The Organization of African Unity, today **African Union (AU)**, has been concerned with natural hazards since it was born. Its Constitutive Act seeks to achieve human security for the peoples of Africa, this including strengthening of resistance and response to disasters. However, the path developed has been the conventional one – its early concern was with reactive emergency response, given mainly through the Special Emergency Assistance Fund (SEAF), set up in 1985 and focusing on relief activities but also supporting a wide range of interventions deemed to be promoting local livelihood sustenance and protection from damage from disasters and other emergencies.

These activities supported by the AU show not only the concern with localized community-based disaster risk reduction but also the important link between disaster management and conflict resolution and peace management processes in the overall AU agenda. Also important is the fact that the initial concern with post-disaster recovery is being explicitly transformed to focus on preparedness for disaster prevention and mitigation.

When the Yokohama strategy was implemented, OAU was one of the few regional organizations involved with disaster relief becoming a decade partner, having performed a major role in sensitizing African governments about the importance of natural disaster reduction

In addition, the AU is playing its role in providing policy direction and popularising the approach of disaster risk reduction globally – acting as a 'champion' in Africa. AU's experience in disaster relief and construction, as well as its advisory role in the international arena, contributed to the promotion of a regional strategy, programme and mechanism for disaster management in Africa.

Sub regional disaster management programmes are only beginning to be implemented. At the technical level, institutions such as the African Centre of Meteorological Application for Development (ACMAD), the IGAD Climate Prediction and Application Centre and the SADC Drought Monitoring Centre provide disaster risk reduction services.

ECOWAS has not yet developed a sub-regional disaster management strategy or programme. However, it is developing mechanisms in areas such as environment and natural resource management, covering desertification control, and water resource management, all of which have implications for disaster management, providing a possible future framework for a comprehensive sub-regional disaster management strategy in this region. Efforts are indeed underway with the support of NEPAD and the UN/ISDR.

Similarly to ECOWAS, **ECCAS** has not yet developed a sub-regional disaster management agency, programme or institutional structure. It has however established a Department of Humanitarian Affairs aimed at emergency response – which can provide ECCAS with the institutional base necessary for the development of a comprehensive sub-regional disaster management agency. ECCAS has also expressed interest in developing a sub-regional strategy for disaster risk management with the support of UN/ISDR.

As for **SADC**, the development of its regional strategy has been related since the beginning with disaster management, recommended in the very first SADC summit, and going through significant progress in developing and institutionalising a sub-regional disaster management. There is a Disaster Management Steering Committee – providing technical support for sub-regional effort and a Regional Disaster Management Unit, mobilizing resources and coordinating emergency preparedness and relief and recovery interventions, while a Disaster Response Task Force is activated during regional emergencies. The major areas of the programme cover food security, climate and environment and water management, developing information on weather threats, drought conditions and food security potentials. Both aspects of disaster risk management (proactive and compensatory) have been split by allocating responsibilities to the various structures of SADC.

These initiatives show the importance the organization has been attaching to disaster management within the context of its political agenda – and therefore to the link between natural disaster management and peace and security within the sub-regional disaster management strategy. Also the SADC sub-regional disaster management programme is strongly linked to its broader regionalization agenda because a key objective of the programme is for disaster risk management to actively and synergistically promote regionalism.

The **Inter-Governmental Authority for Development (IGAD)** has developed a regional strategy to strengthen disaster preparedness and response capabilities, which incorporates a Regional Programme for Disaster Risk Management, with specific objectives for regional cooperation, effective implementation of policy and legislation among member states, strengthening community participation in disaster issues and establishing a sub-regional mechanism. IGAD operates a Regional Early Warning System (REWS) as a key component of national drought and flood preparedness and response programmes in the Greater Horn of Africa. In addition, IGAD has worked with member states to develop a sub-Regional Action Plan to Combat Desertification.

These are however few and limited institutions. Indeed, disaster risk policies and institutional mechanisms do exist at various degrees of completeness in African countries – however their effectiveness is limited. Countries are in different stages of development of institutional frameworks for DRR because some embraced the need earlier, others are yet to understand the implications, and others even lack the capacity to design them. Sub regional early warning systems covering food security, drought and climatic factors exist in some parts of Africa but desertification-monitoring systems are only now being developed.

The continued focus on emergency response results in greater emphasis on post-disaster lost assessment than on participatory risk assessment. A major gap is weak knowledge management – there is inadequate focus on information management and communications, training and research. The fact is that disaster risk reduction mechanisms suffer from similar governance weaknesses as

development interventions, particularly low compliance and enforcement of policies, laws, regulations, standards and codes.

Regional and sub-regional organizations and countries are making efforts to develop their policies, legislation, plans and agencies for disaster risk management. But disaster risk reduction is yet to be effectively institutionalised in Africa. **NEPAD** is trying to offer the opportunity to promote a strategic approach to improving and enhancing their effectiveness and efficiency – through the Africa Regional Strategy for DRR.

NEPAD's objective is to eradicate poverty and promote sustainable development. This includes reducing livelihood and development risks on the continent arising from disaster and other threats. The need to address disasters comprehensively came to the fore during the process of developing NEPAD's operational programmes – to focus on disasters arising from natural and related human induced hazards.[51] The focus is not to establish a regional mechanism, but to facilitate initiatives by regional structures and countries, and to develop and implement their own strategies in harmony with the regional strategy.

AU and NEPAD believe that the right approach is a transformation of the basic mindset and practices of national authorities - focusing on sustainability in reducing disaster risks, instead of conventional reactive emergency responses.

4.1.1 Case Study: Drought in Southern Africa

Drought has occurred with increasing frequency in a large number of African countries. Indeed, recent droughts in sub-Saharan Africa have had severe social, political and economic consequences at the national level – loss of human life and reduced life expectancy, dislocation of societies (migration to urban areas), increased unemployment, loss of soil and vegetative cover, reduced underground water resources, declines in foreign exchange earnings, social disruption and loss of self-respect and dignity - as individuals, households and countries are reduced to begging for support from the international community.

During the 1991-92 drought, as many as 200 million residents of the ten SADC countries were considered "at serious risk". In Zimbabwe, the main cause was reduced rainfall (barely 50 per cent of the average) resulting in national harvest that was just 20 per cent of the normal. Beyond its profound economic impact, some 18 million, especially in the southern African region were directly at risk of starvation. In Swaziland, South Africa and Zimbabwe, sugar cane industries almost ground to a halt because there was no water for irrigation, compelling countries to release or retrench labour. In 1992, it was estimated that the drought caused 80,000 jobs to be lost in agriculture, at the same time as the material conditions of workers were dramatically affected.

If we look at the immediate responses to this type of drought – the first one has been always coming from the communities themselves – assisting a "vulnerable group" with the local drought committees. The responses given by governments to the drought situation have been undertaken through various programmes most of them directed to post-disaster reconstruction activities, especially in the creation of employment. The governments seem to have been working together to respond to a problem that is indeed regional and not to be tackled by one state alone.

The interventions of NGO's have largely been complementary to those of the Governments and to the work developed by UN agencies, such as UNICEF, World Food Programme and UN Disaster Relief Coordinator (UNDRO), developing water programmes and food assistance. These operations have provided food assistance for between 1.1 and 1.4 million beneficiaries during the 4-year period.

[51] ISDR, Africa Regional Strategy for Risk Reduction, Meeting of Experts, Johannesburg, South Africa, 31 May / 1 June 2004.

This case shows however how both governments and households are ill prepared to deal with these emergencies, even if they work together. However, and differently from other regions of Africa, Southern Africa seems to have unique regional capacities that permit it to cope more effectively with natural threats that have little respect for national borders. This crisis stimulated a concerted regional and international response, a cross-border collaboration that would not have been possible without a number of earlier humanitarian and political measures.

The creation of the Southern African Development Coordination Centre (SADCC) in 1980, to reduce economic dependence on apartheid South Africa and coordinate investment and aid, stimulated collaboration between countries. SADCC made food security a priority for regional coordination, setting up a regional early warning unit and a centre for agricultural research. It also put great effort into improving transport and communications infrastructure and rehabilitation ports.

From late 1991, SADCC's Early-Warning Unit, international famine early-warning systems and NGOs gathered growing evidence of drought and crop failure. The early-warning unit's vigilance and ability to work with international, bilateral and other partners was pivotal to the successful response. In June 1992, when food crisis threatened, SADCC launched a joint appeal with the UN, which provided a vital platform for attracting international attention and generated 108 million US dollars in food and non-food assistance.

In an international, regional and national effort SADC and South Africa shipped approximately 5 times more food and goods than had been shipped to the Horn of Africa during the famine crisis in 1984-85, in an operation involving eleven countries. There was an unprecedented level of communication across regional borders and between different organizations - a rare model of inter-country cooperation pushed by the sub-regional organization. [52]

This case shows how the work developed by a regional or sub-regional integration organization can be successful, building on networks of dialogue that are not ad-hoc, but permanent and using its existing structures to avoid duplication of efforts. Also, the efforts of a political organization are likely to have more impact, having all the political weight needed to creating awareness and response from the international community.

4.2 The Americas

The Americas are renowned for their vulnerability to natural events – seismic and volcanic activity, hurricanes, forest fires, and most recently, drought, the Central and South American regions being more vulnerable than North America. Environmental degradation has caused greater vulnerability, as it was clearly shown with the recent phenomenon of El Niño.

Since 1983, the regional organization, **Organization of American States (OAS)** has provided technical support to reduce vulnerability to natural disasters and mitigate their effects. Working with national, regional and international institutions, the OAS conducts vulnerability assessments, provides training and helps formulate disaster mitigation policies and guidelines. Its Office for Sustainable Development and environment (OSDE) lends support to its member states to assess their vulnerability to natural hazards and mitigate the effects of disasters.

Recently, noting that many Central American and Caribbean nations of the Americas have suffered devastating floods and hurricanes and that historically tsunamis have caused colossal damage and loss of life along the coasts of Chile and Peru, the Inter-American Committee on Natural Disaster reduction

[52] See A.Holloway, "Drought Emergency, Yes … Drought Disaster, No: Southern Africa 1991-93", Cambridge Review of International Affairs, Vol. 14, no.1, 2000, pp.254-76.

(IACNDR) was convened with the objective of improving regional and global cooperation in disaster relief, including the establishment of early warning systems.[53]

Indeed, many countries in the Caribbean and Latin America are highly hazard-prone and have significant proportion of vulnerable people in their populations. Too often, poverty and human need conspire with nature to increase the destruction from natural disasters in the region. Flimsy houses, poorly constructed roads and bridges, deforestation along riverbanks, on hills and in wooded areas, and human settlements along river basins all multiply the risk factors.

In the 1970s and 1980s, a number of major disasters in the region revealed the lack of coordination in relief work and highlighted the need for a shift in focus from response to preparedness. These countries exerted great effort to bring about genuine regional cooperation, mostly on the economic sphere but also in the area of disaster relief and disaster risk reduction. Indeed, States of this region can point to substantial progress, in cooperation, assistance, mutual aid and solidarity. Latin America has learned from experience that agreements and treaties between neighbouring countries are best suited to tackling disasters that strike at common borders.

This has been clearly visible since the beginning of the 1980s, when bilateral and sub-regional agreements especially designed for border regions were cemented. In the 1990s, disaster mitigation rose up in the agenda, with the recognition that there was a role for other governmental agencies and NGOs in disaster management.

Little by little, the advent of the International Decade for Natural Disaster Reduction has altered the situation of unpreparedness that prevailed at the beginning of the 70s. The need for foresight, preparation and mitigation became clearly evident, and with it, the need for well trained human resources, leading to the development of training schemes, and with these, a body of regional and sub-regional regulations on disaster administration.

At the same time, there has been greater collaboration between national governments, at first in relief but increasingly in preparedness. One example is the Pan-Caribbean Disaster Preparedness Project, established in 1981, and ten years later institutionalised as the **Caribbean Disaster Emergency Response Agency (CDERA)**.

However, the main structure developed in the region for natural hazards management and risk reduction is the coordination **Centre for the Prevention of Natural Disasters in Central America (CEPREDENAC)**. CEPREDENAC was established in 1988, with the assistance of the Swedish International Development Agency (SIDA) and has played a major work in stimulating and coordinating work on mitigation. This is a regional institution, part of the Central American Integration System (SICA) with the purpose to promote natural disaster reduction, through the exchange of experience, technology and information; analysis of strategies to common problems and external cooperation. Projects are ongoing in these areas with the support of the Scandinavian countries, USAID and EU-ECHO.

Overall, the number and outreach of technical assistance projects in all aspects of mitigation and preparedness have grown considerably during the past 20 years. Regional, national and local training programmes have proliferated, some with support from international donors, and consequently, research work and educational programmes have been growing accordingly in this area.

There has also been a long tradition of information sharing among scientists, little by little extending to national and regional earth science associations, some of them active worldwide, and thus leading to a formal scientific cooperation network. In Latin America, the case of the **Regional Seismology Centre for South America (CERESIS)** is relevant: it has strengthened and expanded cooperation among the countries and their scientific and technical organizations. In conjunction with the UNESCO

[53] Statement by the Chair of the OAS Permanent Council, Organization of American States, 6th January 2005.

regional earth sciences programme and with participation from various organizations, it has thus been possible to establish an increasingly formal network of cooperation and scientific and technological transfer in the region.[54]

Another important advance was the organizing of periodic meetings, held to enable professionals from different sub-regions to consider what progress has been made, and to identify solutions to common problems. Further than this, the regional structures have been working together in projects that aim to promote public awareness on disaster risk reduction.

These developments show that a regional dimension of disaster risk reduction and relief responses is being developed in the American continent, not only at the regional but also at the sub-regional level.

4.2.1 Case Study: Hurricane Mitch – Central America

The El Niño phenomenon brought different risk scenarios for different American states that originated an institutional movement with no precedent in the American continent. Life in Central America was rendered nightmarish when a record breaking 1998 Atlantic hurricane season saw Mitch blast across the region in late October.

Part of the El Niño phenomenon, Hurricane Mitch was an exceptional event that hit Honduras and other countries of Central America (Belize, Guatemala, El Salvador, Costa Rica, Nicaragua and Panama), from 25 October to 1 November 1998. Because it remained static for days, it resulted in the largest natural disaster experienced in Central America in recent memory, leading to the death of about 11,000 people. Precise damage estimates are not available but are reported to exceed 5 billion USD.

Honduras was particularly vulnerable to its effects because of environmental degradation (such as deforestation), rapid population growth, inadequate infrastructure and massive disparities in the distribution of wealth, which resulted in extremely vulnerable conditions for the poorest. Economic losses were estimated at around 5m US dollars. The Interamerican Development Bank estimated that up to 90% of Honduras transportation and communication infrastructures were destroyed during the hurricane.

These countries were vulnerable and unprepared in terms of policy, systems, and resources for rapid recovery. A policy of "all aid is welcome" was adopted; overlooking coordination in what could have been a more efficient demand policy. This resulted in a supply driven response to the recovery phase. No clear criteria existed to determine who had been affected by the hurricane, to what degree, and therefore who might be eligible for state and / or international assistance. Neither were there criteria for deciding on which solutions would be short or long term – in terms of energy restoration, water drainage or house reconstruction also seem to have been lacking.[55]

National coordination for recovery also appears to have been weak. The presence of NGOs in municipalities was determined on an ad hoc basis and the governments showed a low rate of execution for reconstructing housing and infrastructures. Therefore, the municipal and community level became key to the recovery process, also showing fragilities – while most of them were chronically weak, some displayed greater capacity and were able to respond in the absence of external assistance.

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[54] See ISDR Conference - Programmes and Policies of the International Decade for the Natural Disaster Reduction, Regional Reports, Summaries of presentations, A/Conf.172/13/Add.1, 29 April 1994.

[55] See TELFORD John, ARNOLD Margaret, HARTH Alberto, with ASONOG, "Learning Lessons from Disaster Recovery – The Case of Honduras", The World Bank, Disaster Risk Management Working Paper Series n. 8., June 2004, p. iv.

The coordination support by the UN and other multilateral bodies such as CEPREDENAC was regarded as weak, and the donor G-5, subsequently G-15 mechanism proved more efficient. Nonetheless, coordination in the group was mainly limited to bilateral donors, with competition and duplication becoming evident among many international agencies and most of the external funding coming on a short-term basis – from emergency reconstruction instruments.

International recovery efforts worked best where international agencies already had a presence in the country, since they knew partners at the local context. Some international organizations arrived with little or no prior experience in the country and with staff unable to speak the local language.

EU-ECHO co-chaired an inter-service group to implement a two-stage action plan – a rapid response to immediate needs and a coordinated effort of rehabilitation, working closely with USAID and other organizations in coordinating a donor response to El Niño.

The principal lessons to take from this case study are:

- Overall, the main critic given to the relief efforts seems to have been the lack of coordination in the relief responses. This gives us a case for further development of regional mechanisms. The missing coordination could have been handled by a regional mechanism – which would link needs with responses at the local, regional and international level.
- Recovery is essentially a development issue. Recovery is inextricably linked with poverty and the vulnerability of the affected state and communities before, during and after the disaster.
- In order to give a sustained long-term response based on development, a sustained coordination effort is needed. This coordinated effort should be regional and based on principles of transparency and good governance, ecological and social vulnerability responses, decentralization and local government, trade and migration – all these dimensions must be equated.

4.3 Europe

Europe, although sometimes considered as relatively safer from hazards than other regions, is also not immune to natural disasters. Europe's diverse geophysical and climatic characteristics make it susceptible to a wide range of extreme natural events. Thus, the large system of western, central and Eastern Europe, as well as the smaller streams of the Mediterranean, make these areas vulnerable to flooding. Similarly, Southern Europe is prone to drought, the Mediterranean and Eastern Europe to forest fires, Western Europe to storms, mountain areas such as the Alps and Pyrenees to avalanches and eastern Mediterranean to earthquakes and volcanic eruptions.

What makes this region more different than the others is the different vulnerability to hazards, shown by the different order of magnitude in human and infrastructure costs. Indeed, human losses are always very low compared to the numbers presented by the major disasters in Asia for example, while the infrastructure costs show to be higher, exactly because of the level of development that has been reached. Indeed the greater the technological and infrastructure development, the bigger the costs to suffer. A good example is the impact of floods in Europe from 1998 to 2002 – having affected 1.5% of the population, with a few hundreds of fatalities but leading to at least 25billion euro in insured economic losses.[56]

The lower vulnerability of Europe to natural disasters in terms of human losses shows thus the important link between risk vulnerability and sustainable development. Indeed the EU has been the most integrated region of the world, and tries now to be the most developed one.

[56] European Environment Agency, "Mapping the Impacts of Recent Natural Disasters and Technological Accidents in Europe", Environmental Issue Report, no35, EEA, Copenhagen, 2003.

The Council of Europe is a very significant example of European cooperation relating to hazards and risk management – with the EUR-OPA Major Hazards Agreement (Intergovernmental European Open Partial Agreement), which has the objective of enhancing multidisciplinary cooperation between member states to ensure better prevention, protection and relief in the event of major natural or technological disasters. This agreement is conduced in collaboration with the EU, other European institutions and several specialized UN agencies. In the scientific and technical domain, research and coordination efforts are encouraged through the European Network of Specialized Centres.

The European Union is assisted at this level by the MAHB – Major Accident Hazards Bureau – a mechanism dedicated to providing scientific and technical support for the actions of the European Commission in controlling major industrial hazards. For the management of natural hazards, the Natural and Environmental Disaster Information Exchange System (NEDIES) is the mechanism provided by the European Commission, supporting its services, but also governments and other EU agencies, in their efforts to prevent, prepare for and manage natural disasters. The European Environment Agency also has tasks in this field, providing decision-makers with the information needed for environmental and development policy-making.

One other important structure is the European Community Humanitarian Aid Office (ECHO), also a service of the European commission, with the role of providing emergency assistance and relief to the victims of natural disasters and conflicts outside the EU. This structure is therefore directed for assistance to more vulnerable regions, therefore working outside the EU region. **ECHO's Disaster Prevention, Mitigation and Preparedness Programme (DIPECHO)** is aimed at risk assessment and disaster mitigation and started working on these more vulnerable regions – Caribbean, Central America and South East Asia.

Finally, also very important mechanism, and the one acting more frequently in the European region is NATO's **EADRCC – Euro-Atlantic Disaster Response Coordination Centre**, created in 1998 as the focal point for coordinating disaster relief efforts of the 46 Euro-Atlantic Partnership Council (EAPC) nations in case of natural or technological disasters within the EAPC geographical area.[57]

The lesser degree of vulnerability and advanced stage of development of this region have also lead to a development of instruments towards other regions. Indeed, the European disaster risk reduction, prevention and management mechanisms have grown mainly side by side or as part of the regional integration or cooperation processes, like the Council of Europe, the EU, or NATO. The trend is actually to use these mechanisms towards other regions, less developed and therefore more vulnerable. However, with the new types of hazards threatening the region – terrorist threats, chemical bacteriological, radiological and nuclear hazards, accidents and potential dangerous industrial plants, the European organizations have acknowledged that they are increasingly expected to help solve and prevent these new problems, looking at identification of man made hazards, information exchange, monitoring, early warning and standardization.[58]

Between Europe and Asia is the Caucasia – Central Asia region, which has also been focusing on hazard prevention and management, through the Commonwealth of Independent states, its regional organization and its **Intergovernmental Council for Natural and Technological Emergencies**. This structure has adopted an intergovernmental science and technological programme for seismic monitoring and accorded a code for interaction in natural and technological hazard mitigation. The aim is mainly to design unified legal and technical norms for disaster management. Since 1998, several measures were adopted to organize the regional intergovernmental programme for development of a joint CIS corps for emergencies, with additional efforts envisaged to improve related information use, communication and warning systems.

[57] NATO EADRCC Web page, available at http://www.nato.int/eadrcc/

[58] European Commission, "Civil Protection: improvement of public awareness and safety in the face of natural and man-made hazards", Working Document issued by Environment DG, available at http://www.europa.eu.int/comm/environment/civil/prote/consultation_en.htm

4.4 Asia – Pacific Region

Asia-Pacific region has been one of the most affected regions by natural disasters in the world, and the most affected last year, with the catastrophic proportions of the Tsunami. It is estimated that over 50 per cent of the world's major disasters occur in Asia. Floods, droughts, cyclones, storm surges, earthquakes, landslides and volcanic eruptions periodically affect a large number of countries in the region, causing great loss of life and extensive damage to property and infrastructure.

Both floods and drought have shown to be frequent, remaining an obstacle to development and always having a bigger impact on the most underdeveloped areas. But the ones having claimed more lives are the geological hazards – mainly earthquakes, tsunamis, volcanic eruptions and landslides. The region covers many areas of high seismic activity and volcanism. It has been estimated that, during the past 300 years, close to 3 million have died around the world as a result of earthquakes and that 75% of those fatalities occurred in Asia and the Western Pacific.[59]

Besides facing the largest share of natural disasters, this region also has one of the largest numbers of poor, socially disadvantaged groups, therefore more vulnerable to disasters. In many coastal areas of Asia prone to damage by tropical cyclones and storm surges – because of the economic and population pressures, increasing numbers of people are living in dangerous zones. Hazards having such an important impact in Asian and Pacific communities and development, it is normal to expect the development of regional structures to deal with them. In fact, two types of structures have been emerging: the regional organizations - political and governance oriented, but acting and developing their responses in this area; and more technical mechanisms – technical and non-political in nature.

As for the technical mechanisms, two structures account for the hazard management efforts in this region – the **Asian Disaster Preparedness Centre (ADPC)** and the **Asian Disaster Reduction Centre (ADRC)**. The first one – ADPC, is based in Thailand and is recognized as an important neutral focal point in Asia and the Pacific for promoting disaster awareness and the development of local capabilities to foster institutionalised disaster management and mitigation policies[60]. As for ADRC, this is a multilateral organization for disaster reduction based in Kobe, Japan, and oriented towards exchange of information among the participant countries and identification of acute needs and development of human resources dedicated to disaster reduction.

Also important is the **International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU)**, formed in 1968. Its main purpose is to assure that tsunami watches, warning and advisory bulletins are disseminated throughout the Pacific to member states in accordance with procedures outlined in the Communication Plan for the Tsunami Warning System.[61]

As for the regional organizations, it is interesting to see that the regional organizations of South East Asia and East Asia have been developing their own disaster risk reduction and relief mechanisms, being among the first to develop cooperation with the ISDR for the decade on disaster risk reduction.

The **Association of South East Asian Nations (ASEAN)** developed regional collaboration in matters connected with natural disasters, under the purview of the ASEAN Experts Group on Disaster Management (previously known as ASEAN Experts Group on Natural Disasters) whose mission is "to enhance regional cooperation in all aspects of disaster management, including prevention, mitigation, preparedness, response and recovery, trough more effective mutual assistance activities, in order to minimize the adverse consequences of disasters on economic and social development in member countries". The Expert Group meets every two years since 1975.

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[59] See "Programmes and Policies of the International Decade for Natural Disaster Reduction, Regional Reports, A/CONF.172/13/Add.2, 2 May 1994, p.3.
[60] See ADPC website, available at http://www.adpc.net/general/adpc.html
[61] See ICG / ITSU Website, available at http://ioc.unesco.org/itsu/

As for the **South Asia Association for Regional Cooperation (SAARC)**, the organisation decided in 1987, to intensify regional cooperation and to commission a study on the causes and consequences of natural disasters and the protection and preservation of the environment. The consequent studies undertaken led to recommendations, and decisions that included improving climate-monitoring capability through networking arrangement and through SAARC Meteorological Research Centre (SMRC); developing climate change and sea-level rise scenarios through country-specific studies and the sharing of information.

The **Pacific Islands Forum (PIF)** has also been developing instruments in this area, having established a Disaster Management Unit within the South Pacific Applied Geoscience Commission (SOPAC-DMU).

4.4.1 Case Study - The Indian Ocean Tsunami

As the UN Secretary General has stated, "What happened on 26 December 2004 was an unprecedented, global catastrophe. It requires an unprecedented, global response".

The tsunami waves that struck the shores of numerous countries across the Indian Ocean on 26 December 2004 caused tragic loss of life and massive destruction. Twelve countries were hit – India, Indonesia, Kenya, Malaysia, Maldives, Myanmar, Seychelles, Somalia, Sri Lanka, Thailand and Tanzania and over 235,000 lives lost.

The tsunami has had an enormous humanitarian, social and economic impact throughout the region, with political implications on a global scale. The UN has declared that the current relief operation will be the costliest ever. The UN Secretary General has stated that reconstruction would probably take between five and ten years.

The short, medium and long-term consequences of this horrendous natural disaster are far-reaching. International support, including support from the people and governments of the European Union, has been generous and unprecedented.[62] Governments from around the world have responded to the tsunami with unprecedented promises of aid. In almost every case, this response has followed enormous demonstrations of public compassion and generosity.[63] Since the 6 January, ministers and officials started meeting in several cities – Jakarta, Brussels, Geneva, Paris and elsewhere, to talk about humanitarian relief, reconstruction and debt relief. They also confirmed UN's leading role on co-ordination of aid, in what the world organization believes to be the biggest humanitarian aid operation in its nearly 60-year history.

In what response is concerned, we may be assisting once more to a problem of supply oriented relief, like in the case of Central America, when stroke by Hurricane Mitch, with response coming from an immense number of international organizations, UN Agencies, governments, regional organizations and NGOs – and lack of coordination among them. However, it is too soon to make up conclusions, only three months after the disaster has occurred.

Who's working? Besides UN agencies and the Red Cross, there is an immensity of NGO's on the ground, together with academic and research institutions, more technical structures, some of them regional in nature – like the ADPC (Asian Disaster Preparedness Centre), governments and governmental institutions, regional and other international organizations.

Among the later are the European Union and more specifically the European Commission, with Humanitarian Aid Office – ECHO, the Council of Europe, ASEAN, the Asian Development Bank, the

[62] See Wikipedia Encyclopedia, "2004 Indian Ocean Earthquake", data from March 2005, available at: http://en.wikipedia.org/wiki/2004_Indian_Ocean_Earthquake

[63] Oxfam Briefing Note, "The Asian Tsunami, three weeks on", Oxfam International 14th January 2005.

Commonwealth, NATO, OAS and OIC and even the Pan American Health Organization. These are of interest, being all of them proponents of regional cooperation and/or regional integration and showing here the case for inter-regional cooperation.

The regional organizations more directly concerned with this disaster – SAARC and ASEAN, are now both struggling with the relief and reconstruction efforts, and it is still to early to say how affected were their integration processes. However, the consequences for SAARC were visible from January, having postponed its summit firstly for the disaster and now indefinitely for political reasons. But even if political sensibilities are very present right now, the partner countries of SAARC did not deny the needed assistance to their neighbours.

As for ASEAN, so far the organization has taken bold action to assist in the international relief and reconstruction efforts. It seems however, that the tsunami disaster has also created a momentum for further cohesion of ASEAN as a regional bloc. ASEAN leaders are now proving their leadership in managing the relief efforts and, in the process shaping a new, stronger ASEAN - admitting that what ASEAN needs henceforth is to build on a "culture of solidarity" so that states can secure themselves "not only from the fury of natural disasters, but also the folly of human conflict".[64]

ASEAN has convened a Special ASEAN Leader's Meeting in Jakarta on 6th January - where the leaders agreed, together with the heads of some international organizations, to establish an early warning system for the Indian Ocean and the possibility of debt moratorium for countries affected by the disaster. Later on, a China-ASEAN Workshop on Earthquake-Generated Tsunami Warning was held in Beijing on 25-26 January, in order to exchange experiences and lessons from the Indian Ocean tsunami disaster and explore ways to carry out joint initiatives in the field of early warning. The Workshop recognized that a tsunami warning system should be established by building on the existing regional and international capabilities with the cooperation and support of international organizations as UNESCO/IOC and UN/ISDR.

At the same time as the regional organizations push for further development in disaster risk reduction and management, the tsunami disaster proves to be not only regional but also global in consequences – becoming a boost for the development in this field.

The United Nations World Conference on Disaster Reduction – a long-planned event – gained added importance in the wake of the Indian Ocean Tsunami, and has concluded in Kobe, Japan, with a pledge to reduce the risks facing millions of people who are exposed to natural calamities. The UN Conference adopted a 10-year plan to tackle natural hazards – and "help reduce the gap between what we know and what we do" through the "critical ingredient of political commitment"[65]

Also and most important, one month after the disaster, a UN adviser recommended Asia make a single unified effort to develop a tsunami early warning system for the Indian Ocean to avoid confusion and the influence of local politics. A UN sponsored meeting of experts has called on all affected countries to establish emergency contact centers by the end of March this year.

Organized by the UNESCO's Intergovernmental Oceanographic Commission (IOC), a six-day meeting of experts in Paris stressed the need for warnings from sophisticated scientific sensors to reach local communities and for the public to be educated to act upon them. The experts welcomed an offer from the Pacific Tsunami Warning Center, the only such body in the world at present, and the Japan Meteorological Agency, to provide reliable interim tsunami advisory information to authorized

[64] Indonesian President Susilo Bambang Yudhoyono, quoted by Yang Razali Kassim, in "Nature's Test for New ASEAN Leadership", Tech Central Station, 21st January 2005.
[65] Jan Egeland – UN Emergency Relief Coordinator, quoted by the UN News Service, "UN Conference adopts a 10-year Plan to Tackle Natural Hazards", 23rd January 2005.

contacts in the Indian Ocean countries, pending the establishment of a full-fledged system, which UN officials hope to have up and running by June 2006.[66]

However, the setting up of the warning system is not the only step to be taken. It is also important to make the information get to the public – to have proper communication mechanisms in order for the risk reduction efforts to be efficient. At the latest gathering in Paris March 3-8, the ISDR secretariat addressed the need for public outreach and education in creating an early warning system. It is not only a question of gathering information, but also of spreading it and creating public awareness – in order for these efforts to have a successful outcome and for the early warning system to be truly efficient.

Some early conclusions:

- This case shows again how disasters do not recognize borders and can affect entire regions, and again, the need for regional responses. Countries need to work together at the regional and international levels ahead of times, instead of waiting until disasters strike to respond.
- While the appropriate technology to detect seismic activity already exists, a failure in communication meant that the relevant authorities and local communities were caught unaware of the tsunami. In most areas there were no tsunami warning systems or mechanisms to warn the population living around the most hit areas[67]. Also, the determination that the earthquake had actually been much stronger than the initial 8.1 magnitude estimate was not made until after the tsunami had already struck.
- There is a clear need for a coordinated system that not only gathers the needed information in time for prevention, but also spreads this information to its target public – this means not only technical but also communication systems to be improved.
- These have been major faults, that states and regional organizations are now trying to overcome, through the increased coordination of information and the creation of risk reduction mechanisms – one of them the Indian Ocean Early Warning system.

C. Evaluation and conclusions

The study of several case studies in different regions of the world, hit by different types of natural hazards, enabled some considerations on commonalities of the response given by the different regional and international structures working on this field.

- The first conclusion that can be taken from these case studies is the **lack of coordination** in most cases – having rendered the responses very supply-oriented instead of demand-oriented and therefore not efficient. The latest case – the Indian Ocean Tsunami, has shown however, even if too early to take conclusions, that there are some lessons learned from previous cases. The UN has taken upon her the coordination of the relief efforts and it is possible to see some more concerted long-term approaches coming out of this disaster.

- **Lack of long-term approaches** – only short-term relief policies, not taking in consideration sustainable development in disaster risk reduction. Lack of linkage between disaster relief, development and disaster risk reduction and vulnerability reduction.

- **Increasing role of regional organizations**, side by side with local and international NGOs and the UN agencies. All the cases have shown the involvement of one or more regional

[66] UN News Service, "UN Moves Ahead with Interim Tsunami Early Warning System for Indian Ocean", 09th March 2005.

[67] Bangladesh, however already has a system of warning by bikes and whistles, to warn people of cyclones and the rise in water. See Carol Pearson, "Creating a Tsunami Warning System is Possible But Challenging, 07/01/ 2005, available at http://www.voanews.com/english/2005-01-07-voa39.cfm

structures, instead of only NGOs or UN Agencies. This proves the comparative advantage that regional bodies can have, having an established network that can be used in international relief operations but also in the construction of disaster prevention mechanisms for the whole region.

- Latest major disaster – 'the biggest in the history of humanity' has made **a push for development** in regional and global hazard management mechanisms. The Indian Ocean Tsunami opened the way for the creation of a new Early Warning System in the Indian Ocean, imperative for the management and prevention of future hazards in that region.

In parallel with the transition in the policy formulation field from a "culture" of reaction and relief to a culture of disaster prevention and risk reduction, the **disaster management governance structure** has not evolved yet from the primary responsibility of the national level to a multi-level integrated approach and from a 'top-down' government-led approach to a multi-stakeholder 'community-based approach', as shown by the following table:

Field of Action	**Main Characteristics**	**Evolution** *Fulfilled/ In process*	**Desired Outcome**
Policy Formulation and Conceptualisation	**Reaction and relief** Based on civilian crisis management	***Evolution Fulfilled*** →	**Disaster Prevention and Risk Reduction** Inter-sectoral and based on sustainable development
Disaster Governance Institutional/ Regulatory Structure	Responsibility predominantly at **Global and National** levels	***Evolution In Process*** →	**Integrated Multi-level Approach** Particular increase of Global-Regional Partnership
Disaster Governance Participatory Structure	**Government-led** Top-down	***Evolution In Process*** →	**Multi-stakeholder** 'Community-based'

Nevertheless, with the increased acknowledgement of the role to be played by regional organizations through the new strategy designed at Kobe for 2005-2015, there is hope that both multi-level governance and increased participation will gradually increase in the following years.

D. Prescribing Future Policy: Regional Threats Need Regional Response

If hazards are increasingly regional, they have to be dealt with at the regional level and in a coordinated manner – not only through bilateral neighbourhood cooperation. Regional Organizations already have the structures that can allow for future development in this area, enabling easier coordination efforts and a stronger impact than the one given by the technical level structures.

5.1 New Level of Commitment Needed – Regional-Global Mmechanism for DRR

Coordination should be an essential element strengthened while addressing in disaster prevention, mitigation, preparedness and response for the entire UN system, regional organisations, governments and NGOs. National governments, as the primary level in charge of disaster prevention, need to demonstrate their political will and commitment to disaster risk reduction through concrete measures,

e.g., reserve national budget line for disaster risk reduction, support and capacity- building for disaster risk management.[68]

But efforts still need to be made in order **to enhance complementarity between the regional and the global level** and **avoid duplication**. In order that the global and regional agencies work better together and be better coordinated, a more structured relationship needs to be developed **both at political and technical level** which should give birth in the future to a coherent Regional-Global mechanism for Disaster Risk Reduction and Relief.

Several institutional measures/mechanisms could be used to achieve these objectives:

a) Reviewing/Clarifying Regional Representation within the IATF/DR

As underlined in Section 2.1.3, the current International Inter-Agency Task Force on Disaster Reduction (IATF/DR) as the principal body for the development of disaster reduction policy, has three 'concentric circles' of members, among which a group is composed of regional organizations.

Nevertheless, the regional members of the IATF/DR are mostly continent-wide 'umbrella' organisations. The different sub-continental multimensional 'new regionalism' organizations that are gradually expanding their tasks in disaster prevention and relief (such as ASEAN, SCAN, SADC) do not have a specific membership category, synergies with them being established through the intermediary 'umbrella' continental organizations. But these represent in some cases loose forms of technical co-operation without clear linkages to the sub-continental regional organisations.

As an example, to the difference of the African Union - which has a comprehensive and almost 'constitutional' organic relationship with the African regional economic organizations - the two Asian organizations represented in the IATF/DR are networks based on exchange of technical expertise between member states, an the role of Asian regional organizations is not particularly highlighted in their activities.

The ADPC is a regional resource centre working towards disaster reduction for safer communities and sustainable development in Asia and the Pacific recognized as an important neutral focal point in Asia and the Pacific for promoting disaster awareness and the development of local capabilities to foster institutionalised disaster management and mitigation policies. Initially established as an outreach centre of the Asian Institute of Technology, ADPC was registered as an independent international foundation based in Thailand in 1999. An international Advisory Council comprising disaster management experts from all over the world advises the Centre on its programmatic direction[69].

The Asian Disaster Reduction Centre, established in Kobe since 1995, aims to be a centre for promoting multinational disaster reduction cooperation, by promoting the exchange of disaster reduction experts from each member country and concerned bodies, accumulating and providing disaster reduction information, and carrying out research into multinational disaster reduction cooperation[70].

The IATF/DR holds nevertheless a specific channel of direct contact with the different sub-continental regional organizations through its two **regional outreach centres** (UN/ISDR Africa, UN/ISDR Latin America and the Caribbean) and the UNISDR/Asia Partnership. These regional hubs have organised

[68] UN ISDR, "10 Lessons Learned from the South Asia Tsunami of 26 December 2004", United Nations International Strategy for Disaster Reduction, 07th January 2005.
[69] http://www.adpc.net

[70] http://www.adrc.or.jp/

since their creation various co-ordination activities with sub-continental organizations, but they differ in coverage, capacities, and approaches.

While in Africa and Latin America and the Caribbean the UN/ISDR regional units have achieved so far a well structured relationship with the regional sub-continental organizations, in Asia the "open-ended regional partnership for risk and vulnerability reduction in Asia" initiated by the ISDR is of a much more loose form.

Proposal: *The IATF/DR regional 'entities' membership could be revised in order to represent in a more realistic way the developments of 'new regionalism' organisations on the various continents: a new sub-category could be added in order to involve these sub-continental regional organisations directly in the IATF/DR work and meetings.*

b) Enhancing Regional-Global Political Dialogue within the ISDR

The main activities of co-operation between the global and the regional levels are currently mostly developed through the regional outreach programmes programmes, which outreach focuses on **technical cooperation and exchange of best practices**. Dialogue at high political levels is developed only at the occasion of the International Conferences such as Yokohama and Kobe, which take place every 4 years.

In the absence of open dialogue, valuable information and research from technical sectors is redundant. The issues have to be raised to the political level. Therefore coordination should be handled not only at the level of expert and technical exchange of information, but also **at the political level** – between the stakeholders – where the regional organizations and processes have an important role to play in the creation of a regional-global security mechanism.

Proposal: *Taking the discussions from the technical to the political level will enable more efficient management and policies. Reducing risk depends on communication and information exchange between the scientific community and politicians.*

c) Enhancing Inter-continental and Inter-regional Exchanges of Experiences

The regional outreach centres of the ISDR have played so far without a doubt an important role in developing common activities and in the co-ordination between different regional organisations from one continent through the organization of preparatory processes of major international conferences organised by the UN, such as the Yokohama and Kobe Conferences. A very successful example was the *African Regional Consultation on Disaster Risk Reduction*[71], which allowed for consultations between regional organisations in order to elaborate a unified position for the Kobe 2005 Conference.

Nevertheless, **exchanges among regional organisations from different continents** take place only in the frame of the major international conferences. At Kobe, two regional sessions – one on **'**Central America in Perspective. Regional Challenges on Risk Reduction' and one on 'Geographical proximity- common threats' – were organised but regional participants were mainly the 8 regional entities members of the IATF/DR, with the one exception of the Coordination Centre For the Prevention of Natural Disasters in Central America (CEPREDENAC).

Proposal: *New for a allowing for increased inter-continental dialogues could be created in the ISDR framework in order to promote exchanges of successful regional projects of disaster prevention and relief from the different continents.*

[71] UN/ISDR Africa, *African Regional Consultation on Disaster Risk Reduction,* 2-3 June 2004, Johannesburg, South Africa.

d) A New Technical Working Group

In 2000, the UN/ISDR Task Force has initiated four Working Groups: WG1 on Climate and Disasters (chaired by WMO), WG2 on Early Warning (chaired by UNEP), WG3 on Risk, Vulnerability and Impact Assessment (chaired by UNDP), and WG4 on Wild land Fires (chaired by the Global Fire Monitoring Centre, Freiburg, Germany). Three of them - WG1, WG2 and WG4 - came to a close in 2003, developing into other specific programmes or networks, which continue to inform the Task Force on their progress.

Next to WG3 on Risk, Vulnerability and Disaster Impact Assessment which continued it's activities for the World Conference on Disaster Reduction in Kobe, the three new working groups were created for 2004-2005: Climate Change and Disaster Risk Reduction (co-chaired by UNDP and WMO); Disaster Reduction in Africa (co-chaired by AU and NEPAD secretariat): and WCDR preparations (convened by the ISDR secretariat).

Proposal: *a new Working Group could be settled in order to tackle the regional dimension of disaster-related exchanges of technical data, capacity development advances and needs as well as other technical aspects comprised in the mandate recently given to regional organizations in the 2005-2015 framework of action*.

5.2 Using further the Potential of Regional Organisations for Development

Given the strong link between sustainable development and vulnerability, besides the activities of pure risk reduction and relief, the importance of 'new regionalism' processes also in promoting sustainable development is capital for rendering the regions less vulnerable and more able to cope with natural risks.

5.3 Exploring Further the Conceptualization of DRR Frameworks as Regional Public Goods

As argued earlier in this paper, conceiving DRR co-operation frameworks at regional level as regional public goods would bring several advantages. The major consideration laying behind the "rationale for "going regional" is linked to the belief that the right combination of countrybased and transnational measures leads to outcomes that are superior to those achievable on the basis of national measures alone. Countries engage in regional cooperation to realize benefits that cannot be obtained autonomously.'[72]

But, next to the benefits stays also the issue who pays. The spillover -over effects are often hard to calculate and therefore benefits for the financing source difficult to be underlined. Tackling more In the future the DRR co-operation frameworks at regional level from a regional public goods perspective should be explored further in order to bring forward new arguments for the economic case for intervening at supra-national level in the provision of disaster prevention and relief mechanisms and institutions. This would allow to bridge the important 'resources gap' which has been constantly hindering the current global system based on voluntary contributions and could promote financing mechanisms at regional level.

Bibliography

- Asian Disaster Reduction Center, "ADRC 20th Century Asian Natural Disasters Data Book", http://www.adrc.or.jp/publications/databook/databook_20th/top_e.htm

[72] Ferroni, M., op. cit., 2002, p. 3.

- DUNNE, P., and MHONE, G., "Africa's Crises: Recent Analysis of Armed Conflicts and Natural Disasters in Africa", In Focus Programme on Crisis Response and Reconstruction Working Paper n.5, International Labour Office, Geneva, March 2003.
- EU EC, "Civil Protection: improvement of public awareness and safety in the face of natural and man-made hazards", Working Document issued by Environment DG of the European Commission, available at: http://www.europa.eu.int/comm/environment/civil/prote/consultation_en.htm
- HETTNE, B., "The New Regionalism: A Prologue", in: B. Hettne, A. Inotai and O. Sunkel, ed. by, Globalism and the New Regionalism, Macmillan, London, 1999, pp. xv-xxxi.
- HETTNE, B., and SŐDERBAUM, F., "Regional Cooperation. A tool for addressing regional and global challenges", Report for the International Task Force on Global Public Goods, 17 August 2004.
- HOLLOWAY, A., "Drought Emergency, Yes … Drought Disaster, No: Southern Africa 1991-93", Cambridge Review of International Affairs, Vol. 14, no.1, 2000, pp.254-76.
- FERRONI, M., "Regional Public Good: The Comparative Edge of Regional Development Banks", Prepared for a Conference on Financing for Development: Regional Challenges and the Regional Development Banks at the Institute for International Economics, February 19, 2002, available on-line at: http://www.iie.com/publications/papers/ferroni0202.pdf
- FERRONI, M., 'Regional Public Goods and the Regional Development Banks', *The Courier ACP-EU*, n° 202 january-february-march 2004, pp. 35-36. Available at: http://europa.eu.int/comm/development/body/publications/courier/courier202/pdf/en_35.pdf
- KASSIM, Y. R., "Nature's Test for New ASEAN Leadership", Tech Central Station, 21st January 2005.
- KAUL, I., and MENDOZA, U. R., "Advancing the concept of Public Goods", in: Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza (ed. By), Providing Global Public Goods**.** Managing Globalization, OUP, 1999, pp. 78-111.
- KAUL, I., CONCEIÇÃO, P., LE GOULVEN, K., and MENDOZA, U. R., 'How to improve the provision of Global Public Goods', in: Inge Kaul, Pedro Conceição, Katell Le Goulven and Ronald U. Mendoza, (ed. By), Providing Global Public Goods**.** Managing Globalization, OUP, 1999, pp. 23-58.
- ROCHA, J. L. and I. CHRISTOPPLOS, "Disaster Mitigation and Preparedness in Nicaragua after Hurricane Mitch", Report for research project 'NGO Natural Disaster Mitigation and Preparedness (ESCOR Award No. R7231), January 2000.
- SAMUELSON, P. A., 'The pure theory of public expenditure', The Review of Economics and Statistics, vol. 36, issue 4, 1954, pp. 387-389, available at http://www.econ.ucsb.edu/~tedb/ Courses/UCSBpf/readings/sampub.pdf
- SANDLER, T., "Global and Regional Public Goods: A Prognosis for Collective Action", *Fiscal Studies* (1998) vol. 19, no. 3, pp. 221–247.
- STÅLGREN, P., "Regional Public Goods and the Future of International Development Co-operation A Review of the Literature on Regional Public Goods", Expert Group on Development Issues, Swedish Ministry for Foreign Affairs Working Paper 2000/2, Stockholm.
- TELFORD, J., ARNOLD, M., HARTH, A., and ASONOG, "Learning Lessons from Disaster Recovery – The Case of Honduras", The World Bank, Disaster Risk Management Working Paper Series n. 8., June 2004.
- VAN LANGENHOVE, L., "Regional Integration and Global Governance", in : *UNU Nexions*, UNU Press, 2003, p. 4.
- VARGAS, L., R. D., "Disaster Mitigation in Central America", International Decade for Natural Disaster Reduction, Osservatorio Vesuviano, April 1994.
- YODMANI, S., "Disaster Risk Management and Vulnerability Reduction: Protecting the Poor", Paper Presented at the Asia and Pacific Forum on Poverty, Asian Development Bank, 5 February 2001.

UN Documents:

UN/IDNDR, "Declaration of Intent. The Geneva Mandate On Disaster Reduction", IDNDR International Programme Forum, 5-9 July 1999.

UN/ISDR, "Living with Risk: A Global Review of Disaster Reduction Initiatives", Inter-Agency Secretariat of the International Strategy for Disaster Reduction, 2004 Edition.

- _____, "Living with Risk: A Global Review of Disaster Reduction Initiatives", Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR), United Nations, 2004, vol. I, II, and Annex.
- _____, "Crónicas de Desastres – Fenómeno El Niño, 1997-1998", Organización Panamericana de La Salud, Washington, D.C., Agosto, 2000.
- _____, "Africa Regional Strategy for Disaster Risk Reduction", Revised Draft, Meeting of Experts, Johannesburg, South Africa, May-June 2004.
- _____, "Integrated Drought Management: Lessons for Sub-Saharan Africa", International Hydrological Programme, UNESCO Division of Water Sciences.
- _____, UN ISDR Conference - Programmes and Policies of the International Decade for the Natural Disaster Reduction, Regional Reports, Summaries of presentations, A/Conf.172/13/Add.1, 29 April 1994.
- _____, "Programmes and Policies of the International Decade for Natural Disaster Reduction, Regional Reports, A/CONF.172/13/Add.2, 2 May 1994.
- _____, "10 Lessons Learned from the South Ásia Tsunami of 26 December 2004", United Nations International Strategy for Disaster Reduction, 07th January 2005.
- _____, "Disaster Reduction and Sustainable Development: Understanding the links between vulnerability and risk to disasters related to development and environment", Background paper developed in a participatory manner as a contribution to the process leading to the World Summit on Sustainable Development (Johannesburg, 26 August – 4 September 2002).
- _____, "Compilation of the Outcomes of the Regional and Thematic Meetings for the Preparation of the World Conference on Disaster Reduction (WCDR), 18-22 January 2005, Kobe-Hyogo, Japan.
- _____, "Mapping the Impacts of Recent Natural Disasters and Technological Accidents in Europe", Environmental Issue Report, no35, European Environment Agency, EEA, Copenhagen, 2003.

UN General Assembly, "Resolution 2816 (XXVI). Assistance in cases of natural disatsres and other disaster situations", 14 December 1971.

UN General Assembly, "Resolution 42/169. International decade for natural disaster reduction", A/RES/42/169, 11 December 1987.

UN General Assembly, "Resolution 43/202. International Decade for Natural Disaster Reduction", A/RES/43/202, 20 December 1988.

UN General Assembly, "Resolution 44/236. International Decade for Natural Disaster Reduction", A/RES/44/236, 22 December 1989.

UN General Assembly, "Resolution 46/149. Strengthening of the coordination of humanitarian emergency assistance of the United Nations", A/RES46/149, 18 December 1991.

UN General Assembly, "Resolution A/RES/48/188 International Decade for Natural Disaster Reduction", A/RES/48/188, 21 December 1993.

UN General Assembly, "Resolution 54/219. International Decade for Natural Disaster Reduction: successor arrangements adopted on 22 December 1999", A/RES/54/219, 3 February 2000.

UN General Assembly, "Resolution 56/195. International Strategy for Disaster Reduction", A/RES/56/195, December 2001.

UN Millenium Project, "Investing in Development. A Practical Tool to Achieve the Millenium Development Goals", Millenium Project Task Force Report, New York, 2005.

UN Secretary-General, "Implementation of the International Strategy for Disaster Reduction: Report of the Secretary-General", A/56/68 - E/2001/63, 8 May 2001.

UN World Conference on Natural Disaster Reduction, "Yokohama Strategy and Plan of Action for a Safer World. Guidelines for Natural Disaster Prevention, Preparedness and Mitigation", Yokohama, Japan, 23-27 May 1994.

UN World Conference on Disaster Reduction, "Review of the Yokohama Strategy and Plan of Action for a Safer World", A/CONF.206/L.1, Kobe, Hyogo, Japan, 18-22 January 2005.

UN World Conference on Disaster Reduction, "Abstract from the advance copy of the Report of the Conference. Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters", A/CONF.206/6, Kobe, Hyogo, Japan, 18-22 January 2005.

UN News Service, "UN Conference adopts a 10-year Plan to Tackle Natural Hazards", 23rd January 2005.

UN News Service, "UN Moves Ahead with Interim Tsunami Early Warning System for Indian Ocean", 09th March 2005.

Websites:

ISDR website available at: http://www.unisdr.org
ADPC website, available at http://www.adpc.net/general/adpc.html
ADRC website, available at http: http://www.adrc.or.jp/
International Coordination Group for the Tsunami Warning System in the Pacific, Web page, available at http://ioc.unesco.org/itsu/
NATO EADRCC Web page, available at http://www.nato.int/eadrcc/
Oxfam Briefing Note, "The Asian Tsunami, three weeks on", Oxfam International 14th January 2005.
Relief Web, http://www.reliefweb.int/rw/dbc.nsf/doc100?OpenForm
SOPAC Homepage http://www.sopac.org/tiki/tiki-index.php
Wikipedia Encyclopedia, "2004 Indian Ocean Earthquake", March 2005, available at http://en.wikipedia.org/wiki/2004_Indian_Ocean_Earthquake

Annex I

Table 1. Different management approaches: crisis management versus disaster risk reduction[73]

Emergency assistance, crisis management		**Disaster risk reduction strategies**
1. Primary focus on hazards and disaster events 2. Single, event-based scenarios 3. Basic responsibility to respond to an event.	**Emphasis**	1. Primary focus on vulnerability and risk issues 2. Dynamic, multiple risk issues and development scenarios 3. Fundamental need to assess, monitor and update exposure to changing conditions
4. Often fixed, location-specific conditions 5. Responsibility in single authority or agency 6. Command and control, directed operations 7. Established hierarchical relationships 8. Often focused on hardware and equipment 9. Dependent on specialized expertise	**Operations**	4. Extended, changing, shared or regional, local variations 5. Involves multiple authorities, interests, actors 6. Situation-specific functions, free association 7. Shifting, fluid and tangential relationships 8. Dependent on related practices, abilities, and knowledge base 9. Specialized expertise, squared with public views, priorities
10. Urgent, immediate and short time frames in outlook, planning, attention, returns	**Time horizons**	10. Comparative, moderate and long time frames in outlook, planning, values, returns
11. Rapidly changing, dynamic information usage, often conflicting or sensitive 12. Primary, authorized or singular information sources, need for definitive facts 13. Directed, 'need to know' basis of information dissemination, availability 14. Operational, or public information based on use of communications 15. In-out or vertical flows of information	**Information use and management**	11. Accumulated, historical, layered, updated, or comparative use of information 12. Open or public information, multiple, diverse or changing sources, differing perspectives, points of view. 13. Multiple use, shared exchange, inter-sectoral use of information 14. Matrix, nodal communication 15. Dispersed, lateral flows of information
16. Relates to matters of public security, safety	**Social, political rationale**	16. Matters of public interest, investment and safety
Source: T. Jeggle, 2001.		

[73] Source: Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR), *Living with Risk - a global review of disaster reduction initiatives,* United Nations, 2004, p, 13.

Table 2. Hazard Classification[74]

HAZARD

A potentially damaging physical event, phenomenon or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

NATURAL HAZARDS

Natural processes or phenomena occurring in the biosphere that may constitute a damaging event. Natural hazards can be classified according to their geological, hydrometeorological or biological origins.

ORIGIN	PHENOMENA / EXAMPLES
Hydrometeorological hazards Natural processes or phenomena of atmospheric, hydrological or oceanographic nature.	• Floods, debris and mudflows; • Tropical cyclones, storm surges, wind, rain and other severe storms, blizzards, lightning; • Drought, desertification, wildland fires, temperature extremes, sand or dust storms • Permafrost, snow avalanches.
Geological hazards Natural earth processes or phenomena that include processes of endogenous origin or tectonic or exogenous origin, such as mass movements.	• Earthquakes, tsunamis; • Volcanic activity and emissions; • Mass movements, landslides, rockslides, liquefaction, sub-marine slides; • Surface collapse, geological fault activity.
Biological hazards Processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances.	• Outbreaks of epidemic diseases, plant or animal contagion and extensive infestations.

TECHNOLOGICAL HAZARDS

Danger associated with technological or industrial accidents, infrastructure failures or certain human activities which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation, sometimes referred to as anthropogenic hazards. Examples include industrial pollution, nuclear release and radioactivity, toxic waste, dam failure, transport, industrial or technological accidents (explosions, fires, spills).

ENVIRONMENTAL DEGRADATION

Processes induced by human behaviour and activities (sometimes combined with natural hazards) that damage the natural resource base or adversely alter natural processes or ecosystems. Potential effects are varied and may contribute to an increase in vulnerability and the frequency and intensity of natural hazards. Examples include land degradation, deforestation, desertification, wildland fires, loss of biodiversity, land, water and air pollution, climate change, sea level rise and ozone depletion.

[74] Source: Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR), *Living with Risk - a global review of disaster reduction initiatives,* United Nations, 2004, p. 39.

Annex II

1.The Yokohama Principles

1. Risk assessment is a required step for the adoption of adequate and successful disaster reduction policies and measures.
2. Disaster prevention and preparedness are of primary importance in reducing the need for disaster relief.
3. Disaster prevention and preparedness should be considered integral aspects of development policy and planning at national, regional, bilateral, multilateral and international levels.
4. The development and strengthening of capacities to prevent, reduce and mitigate disasters is a top priority area to be addressed during the Decade so as to provide a strong basis for follow-up activities to the Decade.
5. Early warnings of impending disasters and their effective dissemination using telecommunications, including broadcast services, are key factors to successful disaster prevention and preparedness.
6. Preventive measures are most effective when they involve participation at all levels, from the local community through the national government to the regional and international level.
7. Vulnerability can be reduced by the application of proper design and patterns of development focused on target groups, by appropriate education and training of the whole community.
8. The international community accepts the need to share the necessary technology to prevent, reduce and mitigate disaster; this should be made freely available and in a timely manner as an integral part of technical cooperation.
9. Environmental protection as a component of sustainable development consistent with poverty alleviation is imperative in the prevention and mitigation of natural disasters.
10. Each country bears the primary responsibility for protecting its people, infrastructure, and other national assets from the impact of natural disasters. The international community should demonstrate strong political determination required to mobilize adequate and make efficient use of existing resources, including financial, scientific and technological means, in the field of natural disaster reduction, bearing in mind the needs of the developing countries, particularly the least developed countries.

2. Table 3. Average number of people affected per million inhabitants by UN regions 1994 - 2003[75]

Region	hydrometeo	geological	biological	technological
Africa	17888	60	1227	10
Americas	5453	491	91	74
Asia	64043	948	33	11
Europe	2850	58	26	12
Oceania	34380	704	27	41

[75] Source: ISDR website, www.unisdr.org.

Annex III: Regional mechanisms for Disaster Risk Reduction and Management

	Region/Sub-region	International/Regional Organizations Involved	Regional Institutions/ Frameworks of co-operation
Africa	**African Region**	**African Union (AU)**	• **Special Emergency Assistance Fund (SEAF)** – set up in 1985 with the objective of giving assistance to African member countries affected by drought and famine.
	East African Sub-region	**Intergovernmental Authority on Development (IGAD)**[76]	• 1986: creation of the **Intergovernmental Authority on Drought and Development (IGADD)** aiming to mitigate the effects of drought and food insecurity. • 1996: creation of the Intergovernmental Authority on Development (IGAD) adopting a broader approach to developmental objectives. • 2000: Regional strategy to enhance Disaster Management Capability in the IGAD Region;
		East African Community (ECCAS)	• Not yet developed a sub-regional disaster management strategy or programme. Has however established a Department of Humanitarian Affairs aimed at emergency response.
	Southern African Sub-region	**Southern African Development Community (SADC)**	• 1980s: **SADCC Regional Early Warning Unit** • 1999: SADC Ad Hoc Working Group on Disaster Management • 2001: integrated Strategy for Flood and Drought Management in SADC countries • **2002: SADC Disaster Management Framework - establishing a Technical Steering Committee on Disaster Management**
	West African Sub-region	**Economic Community of West African States (ECOWAS)**	• Presently no sub regional activity on natural disaster reduction nor a consolidated regional strategy. • The sub regional program for desertification control of the Sub regional Action Program for West Africa essentially functions as a disaster reduction and risk management initiative. • Discussions were initiated among some ECOWAS members late 2003 on the desirability of formulating a regional strategy for disaster risk reduction.
The Americas	***American Region***	**Organization of American States (OAS)**	• **Office for Sustainable Development and Environment** – Lends support to member states to assess their vulnerability to natural hazards and to mitigate the effects of disasters.
	Central American Sub-region	**Central American Integration System's (SICA)**	• 1988: creation of the **Coordinating Center for the Prevention of Natural Disasters in Central America (CEPREDENAC)**[77] • 1993: decision to create a *Regional Plan for Disaster Reduction* (PRRD); • 1995: CEPREDENAC became the official SICA specialized organization for DRR strategies. • 1999: *Strategic Framework for the Reduction of Vulnerability and Disasters in Central America,* • *Five Year Plan for the reduction of Vulnerability and Disaster Impacts (1999-2004)*
	The Caribbean Sub-region	**Caribbean Community (CARICOM)**	• 1991: the **Caribbean Disaster Emergency Response Agency** (CDERA)[78] • CARICOM link to the **UNEP** Programme of Action for Small Island Developing States (SIDS)
		The Association of Caribbean States	• **ACS Directorate of Natural Disasters** • **ACS Special Committee on Natural Disasters** • 1999: signature of the *Agreement between Member States and Associate Members of the Association of Caribbean States for Regional Cooperation on Natural Disasters* currently under ratification
	South American Sub Region	**Andean Develpoment Corporation (ADC)**[79]	• 2000: ADC established the **Andean Regional Programme for Risk Prevention and Reduction** (PREANDINO)
		Andean Community (CAN)[80]	• 2002: the **Andean Committee for Disaster Prevention and Assistance** (CAPRADE), • **2004: *Andean Strategy for Disaster Prevention and Relief***[81]
		Common Market of the South (MERCOSUR)	• This economic and trade cooperation structure has not yet developed mechanisms to deal with natural hazards.
Europe	**European Region**	**Council of Europe**	• 1987 - **EUR-OPA Major Hazards Agreement of the Council of Europe** (Intergovernmental European Open Partial Agreement) - objective of enhancing multidisciplinary cooperation between member states to ensure better prevention, protection and relief in the event of major natural or technological disasters. • **European Network of Specialized Centers**. Scientific and technical domain, research and coordination efforts.
	Western Europe Sub-region	**European Union**	• **MAHB – Major Accident Hazards Bureau** –Dedicated to providing scientific and technical support for the actions of the European Commission in controlling major industrial hazards • **NEDIES** - Natural and Environmental Disaster information Exchange System - primary objective to support European Commission services, in their efforts to prevent and prepare for natural disasters and their management and to manage their consequences. • **European Environment Agency (EEA)** - Provides decision makers with the information needed for creating sound policies to protect the environment and to support sustainable development. • **ECHO – European Community Humanitarian Aid Office**. Primary mandate is to provide emergency assistance and relief to the victims of natural disasters and conflicts outside the EU.

[76] http://www.igad.org/
[77] http://www.cepredenac.org
[78] http://www.cdera.org/about_history.php
[79] http://www.caf.com/view/index.asp?ms=11&pageMs=12803
[80] http://www.comunidadandina.org/ingles/treaties/dec/d591e.htm
[81] http://www.comunidadandina.org/normativa/dec/DEC591.pdf

Europe	**Central and Eastern Europe**	**Central European Disaster Prevention Forum (CEUDIP)**	• Established in 1999, to increase the collaboration in disaster reduction related to all types of hazards, particularly floods.
		The South-East European Stability Pact	• Cooperation Agreement on the Forecast, Prevention and Mitigation of Natural and Technological Disasters.[82]
		Central European Initiative (CEI)	• **Disaster Preparedness and Prevention Initiative (DPPI)** - initiated in March 2000 with 12 East European countries participating with international organizations including OCHA and NATO, to foster regional cooperation and coordination in disaster preparedness and prevention for natural and human-induced disasters.
		(CMEPC)	• **Civil Military Emergency Planning Council for South Eastern Europe -** Cooperation between Bulgaria, Croatia, FYR, Macedonia and Slovenia.
	Mediterranean countries	**RELEMR & PANEMAR programs**	• **RELEMR** - Program for Reducing Earthquake Losses in the Eastern Mediterranean – based on an earlier program; • **PAMERAR** - Program for Assessment and Mitigation of Earthquake Risk in the Arab Region. • Both designed to establish or reinforce seismic and strong motion networks, promote the formulation of seismic building codes and provide training in seismology, earthquake engineering and civilian defense.
Caucasia and Central Asia	**Russian Federation and CIS countries**	**Commonwealth of Independent States (CIS)**	• **CIS Intergovernmental Council for Natural and Technological Emergencies**. • **1998** – Adopted an intergovernmental science and technological program for seismic monitoring of the CIS territory, aiming to develop regional monitoring and warning systems. • **2001** – Creation of a Joint intergovernmental scientific program on risk reduction. • **2002** – Accorded a code for interaction in natural and technological hazard mitigation
Asia - Pacific		**Asian Disaster Preparedness Center (ADPC)**	• **Regional Consultative Committee on Regional Cooperation in Disaster Management (RCC)** The committee comprises heads of national disaster management authorities from 24 countries in Asia, and has served to consolidate and strengthen regional initiatives. • **2001 RRC meeting** - urged countries to adopt a total disaster risk management strategy that would represent "a comprehensive approach to multi-hazard disaster risk management and reduction, which includes prevention, mitigation and preparedness, in addition to response and recovery". • **2002 RRC meeting** – special session on drought management in Asia.
		The Asian Disaster Reduction Center (ADRC) Kobe, Japan	• **The Asian Disaster Reduction Center (ADRC)** is a multilateral organization that tries to facilitate the exchange of information among participating countries and to identify acute needs and to develop human resources dedicated to disaster reduction.
	South East Asia	**Association of South Eastern Asian Nations (ASEAN)**	• Advanced stage of planning for disaster management. With technical support from ADPC and additional assistance from the EU, a new **ASEAN Regional Programme on Disaster Management** was developed.
		ASEAN Regional Forum (ARF)	• Annual meetings have been held since 1997, providing a unique platform for assessing multiple aspects of disaster management. Under ARF's umbrella, several groups have been established to promote cooperation in specific areas including disaster relief and marine search and rescue.
		Mekong River Commission (MRC)	• Has developed a long-term flood management programme that was given impetus by the devastating floods of 2000 in the Mekong Delta.
	South Asia	**South Asia Association for Regional Cooperation (SAARC)**	• SAARC Technical Committee on Environment, Meteorology and Forestry meeting in January 2002 to discuss these issues.
	Pacific	**South Pacific Programme Office (SPPO)**	• Established to coordinate the activities undertaken with the support Office of the UN Disaster Relief Coordinator (UNDRO), • Their joint and proactive approach created the evolution of a regional strategy known as the South Pacific Disaster Reduction Program (SPDRP) – a common effort that greatly aided the development of individual national plans for disaster risk management.
		Pacific Islands Forum (PIF)	• **Disaster Management Unit** was established within the South Pacific Applied Geoscience Commission (**SOPAC-DMU**) to provide an institutionalized regional approach to disaster risk management while drawing upon the accomplishments of SPDRP from the 1990s. • **CHARM – Comprehensive Hazard and Risk Management Programme** will guide future directions. CHARM will allow Pacific island states to identify; prioritize and then manage community risks. It also seeks to achieve greater effectiveness in disaster response and recovery practices.

[82] www.ceinet.org