



WATER HAZARD RISKS



« Communities will always face natural hazards, but today's disasters are often generated by, or at least exacerbated by, human activities. At the most dramatic level, human activities are changing the natural balance of the earth, interfering as never before with the atmosphere, the oceans, the polar ice caps, the forest cover and the natural pillars that make our world a liveable home. But we are also putting ourselves in harm's way in less visible ways. Destitution and demographic pressure have led more people than ever before to live in flood plains or in areas prone to landslides. Poor land-use planning; environmental mismanagement; and a lack of regulatory mechanisms both increase the risk and exacerbate the effects of disasters.»

Kofi Annan



WATER HAZARD RISKS

A Priority for Integrated Water Resource Management

Paper developed by UN-WATER in support of the World Conference on Disaster reduction Reduction (WCDR), 18-22 January 2005 and the principle programme outcome “Building the resilience of nations and communities to disasters: Framework for action 2005–2015”.

The paper is also a contribution to the International Decade for Action ‘Water for Life’ (2005-2015).

Poor development practices

According to the UNDP publication “Reducing Disaster Risk: A Challenge for Development” the process of development itself has a huge impact, both positive and negative, on disaster risk, in many countries. Countries that face similar patterns of natural hazards, from floods to droughts, often experience widely differing impacts when disasters occur. The impact depends in large part on the kind of development choices they have made previously.

Source: A Global Report Reducing Disaster Risk – A Challenge for Development

BOX 1

CURRENT TRENDS

Water related hazards affect millions of people, jeopardising human security and hampering socio-economic activities. Both the Johannesburg Plan of Implementation (JPol) and the Millenium Development Goals (MDGs) have stressed the need for closer interaction between hazard risk reduction and sustainable development. In addition, hazard risk reduction is increasingly recognised as an integral part of water policies and agendas.

Water-related hazards are major features of natural disasters world-wide. At almost any point in any time, a hazard is threatening communities a community, their its property and even their the lives of the inhabitants. Few of these events are reported in the international media due to their local impacts as their impacts are only local in nature. However, the events like floods in Bangladesh and Haiti this year draw significant international attention.

Floods, droughts and other water related hazards have major impacts on the socio-economic well being of countries. In some cases, countries different parts of a country can experience extremes conditions like floods and droughts simultaneously.

Between 1991 and 2000 over 665,000 people died in 2,557 natural disasters of which 90% were water-related events (WMO, 2004). In 2003 alone, over 254 million people were affected by natural hazards, an increase of 180 per cent compared to 1990 (CRED). During the two El Niño years of 1991/92 and 1997/98, floods in China affected over 200 million people in each year. Losses stemming from disasters have greater impact in developing countries as compared to developed countries. More than 95% of all deaths caused by disaster occur in the developing countries.

According to the Inter-governmental Panel on Climate Change (IPCC), these trend is for this situation to get worse are likely to get worse, as there is a high degree of confidence that the magnitude and frequency of floods and droughts will increase during the 21st century due to changes in mean and/or variability of climate climate change (IPCC TAR, 2001). Other in addition to other factors, such as: population growth, increased wealth, demographic shifts, and changes in land use and the value of various goods may also result in an increased level of damage and loss of life associated with water-related disasters.





UNDERLYING CAUSES

Hazards, such as floods and droughts, occur naturally in association and are associated with excess or insufficient rainfall, river overflow, and other natural related phenomena. Although their effects and severity depends on a host of other factors and a combination of local and sometimes distant external conditions influences, many of which are a result of human intervention. Vulnerability of a society is one such key factor.

Some of the main underlying causes of vulnerability, which are integrally linked and mutually reinforcing, are:

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BOX 2

► POVERTY

Factors such as low income, poor housing and public services, and lack of social security and insurance cover, force the poor to behave in ways that expose themselves to greater risk. The poor are forced to exploit make use of vulnerable environmental resources for their survival, thereby increasing both the risk and exposure to disasters, in particular those triggered by floods, droughts and landslides.

Lack of capital or wealth accumulation over the long run tends to undermine sustainable development. The infrastructure built within the economic constraints may not be able to withstand the hazard. Recurrent floods and windstorms, for example, not only destroy national wealth, but also hinder efforts to accumulate physical and human capital.

► UNPLANNED URBANIZATION

With the an increasing population more and more people are forced to occupy hitherto inhabited areas, often with greater risk of exposure to exposed to hazards. The situation is aggravated due to a trend of migration towards urban areas and as the new, often poor settlers, occupy areas at risk often in peri-urban informal settlements.

In addition, urbanisation is influencing the hydrological processes and accentuating flood peaks. Various land-use changes like elimination of natural flood retention coupled with interference with natural drainage conditions due to infrastructure development may also increase the flood hazard both in downstream and upstream reaches. The development activities have to be coordinated in such a way that they do not contribute to increase in the intensity of the hazard or spread them, exposing new areas.





► ENVIRONMENTAL DEGRADATION

Failure to limit environmental degradation resulting from human intervention can increase the vulnerability to risks posed by natural hazards. The 2004 catastrophic floods in Haiti, highlighted the lack of effective land management, the exploitation of charcoal as a domestic fuel and consequent deforestation, which combined together, enhance the country's vulnerability to floods and mudslides. The neighbouring Dominican Republic depends entirely on natural gas for cooking and as a consequence does not have similar problems.

► FRAGMENTED INSTITUTIONAL STRUCTURES

Lack of coordination among institutions at national and local levels is a major constraint to implement effectively disaster risk reduction, as it results in narrow, sectoral approaches and poor planning. It is increasingly recognized that reducing the vulnerability to water-related disasters involves far more groups than just the water sector.

► IMBALANCE BETWEEN PREVENTION AND RESPONSE RESOURCES

Although there is a growing political awareness of the impediment, which floods and droughts pose for the development of countries, this awareness has not resulted in an adequate allocation of resources.

Traditionally, disaster management has essentially been problem response driven: usually after a severe flood a project would be quickly implemented without giving enough thought to the impact such solutions would have on upstream and downstream areas.

In addition, international, national and local resources are still predominantly used for emergency response operations after a disaster occurs. A recent study shows that it is up to 8 times cheaper to invest in longer-term prevention, mitigation and preparedness than in post disaster emergency response.

In addition, according to the World Water Development Report – Water for people, Water for life (WWAP, 2003), the traditional sectoral planning approach of the water sector has limited the capacity for effective integration of disaster risk reduction concerns. There remains a lack of understanding of the intrinsic links between disasters risk reduction and the broader water agenda and in particular relevant policies and strategies related to the emerging Integrated Water Resource Management (IWRM).

Drought – 'the silent killer of the rural poor'

Vulnerability to drought is dynamic and influenced by a multitude of factors, including population growth and regional shifts in population, urbanization, technology, government policies, land use and other natural resource management practices, desertification processes that reduce the productivity of the natural resource base, water use trends, and increasing environmental awareness.

Identified shortcomings and needs include predominantly data and information products and capacity building in the application of this information in decision making. As droughts had a strong connectivity to climate variability and climate extremes such as El Niño, clearer seasonal forecasts are needed, including drought monitoring tools, and integrated drought and climate monitoring systems based on multiple indicators to fully understand the magnitude, spatial extent, and impacts.

Inter-Agency Task Force on Disaster Reduction (IATF/DR) ad-hoc discussion group on drought (ISDR, 2003)

BOX 3



International Strategy for Disaster Reduction (ISDR)

The loss of human lives and the rise in the cost of reconstruction efforts and loss of development assets has forced the issue of disaster reduction and risk management higher on the policy agenda of affected governments as well as multilateral and bilateral agencies and NGOs. This trend led to the adoption of the International Strategy for Disaster Reduction (ISDR)¹ by governments. The aim of the ISDR is to mobilize governments, UN agencies, regional bodies, the private sector and civil society to unite efforts in building resilient societies by developing a culture of prevention and preparedness.

The ISDR has recently established a Platform for the Promotion of Early Warning (PPEW) based in Bonn, Germany

For more information <http://www.unisdr.org> and www.unisdr-earlywarning.org

BOX 4

► UNDERSTANDING RISK AND VULNERABILITY

Risk and vulnerability assessments, involving all sections of society, are a prerequisite to identify the areas at greatest risk and the most appropriate risk management measures for a given region or community. Areas exposed to hazards should be notified to all development authorities through risk maps.

It is vital to understand the interplay between hazards, the development process and poverty in order to ascertain the way in which current and future development planning and implementation leads to, or has the potential to, increase vulnerability and risk.

Continued collaboration between climate scientists and water managers is crucial to make the best prediction and forecasting tools available to water managers.

► ENHANCING PUBLIC AWARENESS PROGRAMMES

The process starts with formal educational programmes including curricula revision, teacher training and development of resource centres. However, the process needs to expand to training activities for all levels of society by training efforts, especially targeting professionals and community-based leaders and organizations. Training is however just one element and consideration should be given to the development of awareness raising material such as pamphlets and fliers.

Strengthen mechanisms for sharing of information, knowledge and experiences, in particular on good practice in reducing the risk of vulnerable communities to floods and droughts, at the international, regional and national level are also required.

Emphasis should be on the adoption of flexible strategies tailored to each region recognizing the importance of evaluating differing options and their relative advantages and disadvantages.





Integrated Flood Management is a process promoting an integrated – rather than fragmented – approach to flood management. It integrates land and water resources development in a river basin, within the context of IWRM. The objective is not only to reduce the losses from floods but also to maximize the efficient use of flood plains – particularly where land resources are limited and improve the quality of life while mitigating the risks. In turn, increases in flood losses can be consistent with an increase in the efficient use of flood plains in particular and the basin in general.

Source: WMO-GWP Associated Programme on Flood Management (APFM, 2003)

BOX 5

UNESCO and WMO agreed to launch a joint UNESCO/WMO initiative on floods to synergize the activities of the two organizations. United Nations University (UNU) has also expressed its interest in becoming a partner organization of UNESCO and WMO in developing the programme. Accepting the wider participation of other entities such as United Nations International Strategy for Disaster Reduction (UNISDR), the International Association of Hydrological Science (IAHS) etc., this joint venture on floods has become a truly International Flood Initiative, contributing to meeting the Millennium Development Goals and to the International Decade “Water for Life” (2005 – 2015).

The Initiative will focus on the overall objective: To minimize the loss of life and reduce property damage associated with flood disasters, while enabling maximization of the social, environmental and economic benefits of floods.

The launch of the Initiative is to be declared at the World Conference on Disaster Reduction (WCDR) to be held at Kobe, Japan, in January 2005.

BOX 6

► STRENGTHENING MONITORING, FORECASTING AND EARLY WARNING CAPACITIES

Monitoring hazards is a vital part of the equation. Local hydrological and meteorological data are the basis for risk assessment, effective building effective standards, planning controls and other regulations that ensure thatenable houses and other infrastructure can provide forto meet adequate safety criteria for the users, and the occupants. Such planning initiatives should and ensure the continuity in theof economic activities. Such Ddata and information needs to be made available as a public good and funded by the Government. The extent to which a hazard may becomes a disastrous event has a lot to do with the planning, early warning and protective measure taken.

An efficient early warning system should deliver dependably accurate information on the likely events in a timely manner. It requires a rapid, dependable and people-centred distribution system for forecasts, advisories and warnings to all interested parties, and a prompt and effective response to warnings from both government and public.





RECOMMENDED AREAS FOR ACTION

In order to ensure an effective integration of disaster risk reduction concerns into IWRM and related development policies, particular focus is required in the following areas:

► STRENGTHENING INSTITUTIONAL ARRANGEMENTS

Disaster risk reduction and management policies should take highest priority in development plans at all levels.

Authorities need to ensure an institutionalised dialogue mechanism and adopt an integrated, comprehensive and multi-hazard strategy for disaster risk reduction, including prevention, mitigation, preparedness, response, recovery and rehabilitation. This can most appropriately be provided through multi-disciplinary and inter-sectoral interactions, taking into consideration socio-economic and cultural factors and actively involving the civil society, from international to the local level. Wherever possible the existing institutions and those used for IWRM should be used.

Effective institutional strengthening involves elements such as:

- . Strengthening Appropriate legal frameworks available to which address integrated flood management approaches based on risk management strategies with due consideration to the development processes;
- . Informed Decision making based on sound scientific knowledge, as well as local, indigenous knowledge; by the using tried and tested techniques, and by evaluating any promising innovations;
- . An information base which supports planning and a proactive response to disaster mitigation and reduction;
- . Participatory and transparent approach which includes a representative range of stakeholders in the decision making process;
- . Regional and subregional approaches, strategies and cooperation arrangements where rivers span two or more national boundaries for a harmonized approach;
- . Partnerships among different levels of Government, civil society, private sector groups and communities;
- . Decentralized decision-making through local authorities and basin committees, including the provision of adequate resources and clarify division of responsibilities at various levels;
- . Effective policies to regulate further growth of human settlements in risky areas including appropriate economic policies, such as fiscal incentives for orientation of economic activities away from disaster-prone areas.

Disaster risk reduction, and related strategies, such as integrated flood management, is a comprehensive processes that goes beyond traditional response to the impact of individual events and hazards. These strategies need to be multi-sector and inter-disciplinary in nature and comprise a wide range of interrelated activities at the local, national, regional and international levels.

It involves the adoption of suitable regulatory and other legal measures, institutional reform, improved analytical and methodological capabilities, appropriate technologies, capacity building, financial planning, public education, community involvement and awareness.





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