Environmental Risk -Assessment:

An Approach Toward Environmental Hazard and Disaster Risk Management

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Paper Outline

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Introduction

* "I...think there is much greater environmental awareness now than than there used to be. We are much better educated and are learning where the hazards are, what products are causing us problems."- Don **Bremer.** Vice-President of Restoration **Environmental Contractors.**

Introduction

- Environment: is the sum of all external conditions affecting the life, development and survival of an organism
- Environmental degradation exacerbates the impact of natural disasters
- Last four decades natural disaster have caused major loss of human lives and livelihoods, destruction of economic and social infrastructures and significant environmental damage.

Introduction

- There are huge efforts worldwide to manage disasters
- A healthy environment enhance the capacity to reduce the impact of natural and man made disaster
- Purpose of the paper is to discuss the link between environmental risk assessment and disaster risk management as main task for world sustainable development.

Purpose

- To what extent Environmental Risk
 Assessment contribute for Disaster Risk
 Management
- To what extent Environmental Risk
 Assessment influence sustainable development through Disaster Risk
 Mitigation
- What is the link between Environmental Risk Assessment e Disaster Risk Management

Environmental Hazards and risk Assessment

- Risk assessment: a process to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.
- Environmental risk assessment aggregates a set of tools for defining the probability and magnitude of adverse effects to human health and natural resources posed by environmental agents.

Environmental Hazards and risk Assessment

- Water related events, floods and droughts, are a major concern since the dawn of the human civilization
- They continue to hit every generation of human beings, bringing suffering, death and and still growing material losses;

Environmental Hazards and risk Assessment

- Human activity continues to alter the biosphere, changes in environment in specific places and at ecosystem levels
- Environmental degradation compounds the actual impact of disasters, limits an area's ability to absorb the impact, and lowers the overall general natural resilience to hazard impact and disaster recovery.



Source: ISDR



Environmental degradation Ground water

- Most water is located underground in aquifers
- Trans boundary characteristics of aquifers create togetherness of nations
- Developing countries lead the over use of ground water
- Ground water degradation because of:
 - 1. Excessive exploitation
 - 2. Inappropriate or uncontrolled activities (waste, chemicals contaminate water)
 - 3. Major change of land e.g removal of natural vegetation.

Environmental degradation Air Pollution

- There is a major concern under the air pollution worldwide
- Automobile and power plants are part of the problem
- Global warming and greenhouse gases such as CO2, methane and nitrous oxide
- Burning fossil fuel like oil, coal and other natural gases

Environmental degradation Soil

- Erosion and soil degradation form an increasing threat to land worldwide
- Two thirds of Africa is dry land over 70% is degraded [UNEP]
- About 90 % in countries close to Sahara have been affected and evidences show that the desert does to south and east
- In Africa 90% of all wood is used for cooking and other energy needs and the demand for fuel wood has grown considerably since the oil price in 1974.

Environmental degradation Climate change

- IPCC third Assessment Report (2001)
 estimates the full warming range over 1990 to
 2100 to be 1.4°C (2.5°F) to 5.8 °C (10.5C°) with
 the mid range estimate being 3°C (5.4°F).
- Warming-up of the atmosphere is part of changes in climate and if it persists it will influence water availability, flood hazards, agricultural productivity and natural areas.
- Natural and human systems are exposed to these changes and it undermine sustainability.

Environmental degradation / Human Health

- Human health is intimately connected to the surrounding environment
- It is usually difficult to identify the cause-and effect relationship between, say, noise, pollution and heart disease.
- The IPCC special report on regional impact of climate change acknowledges that climate have impact on vector-bone disease.
- Most African countries are affected by environmental related diseases such as malaria, cholera, meningitis, rift valley fever



Disaster:

- 1. A great or sudden misfortune
- 2. A complete failure
- 3. A person or an enterprise ending in a failure
- An event that produces subversion or a sudden and violent change in order of things,
- A natural hazard is the necessary condition for the occurrence of a disaster
- Natural hazards are triggering disaster events

* Natural disaster risk can be determined by three main factors: Hazards, element at risk, and vulnerability.

Total Risk $\equiv (\sum elements \ at \ risk) * ("hazard"*vu ln g$

- * The elements: populations, communities, the built environment, the natural
 - environment, economic activities and services, which are threaten by a disaster in a given area.



- Disaster reduction and environmental management should become national priorities
- Disaster reduction and environment have a lot in common
- Disaster reduction practitioner should use the environmentalist experience
- Disaster risk management approaches reflects a planned and structured actions to deal with natural hazards risk before an event strikes

Environment and sustainability

- Can sustainable development, along with international strategies and instruments aiming at poverty reduction environmental protection, be successful without taking into account the risk of natural hazards and their impacts?
- * Can the planet afford the increasing costs and losses due to so called natural disasters?

The answer is NO!

Some Conclusions

- Climate change exaggerates current pressures in water management
- There is a strong need and deeper analysis of environmental risk assessment in order to create sustainable world
- Environmental risk assessment is the decisive step for disaster risk mitigation and management

Some Conclusions

- * Climate change is not a isolated issue
- Planned population settlement and urbanization and natural resources usage in order to maintain environmental patterns and promote sustainable development
- Control environmental hazards to avoid degradation of soils, water, air and human health

Thank you very much!

