


# Linking disaster risk reduction and climate change adaptation


**Inter-Agency Secretariat for the International Strategy for Disaster Reduction (UNISDR)**

Workshop on Insurance and Climate Change  
14 to 16 May 2003, Bonn, Germany



## OVERVIEW

- A. Trends
- B. Disaster reduction a tool for climate change adaptation
- C. Financial services and instruments



## Disaster reduction - trends

Less people die from disasters, but increased number of disasters, economic losses and affected population.


### Disaster impacts

Period	Dead (million)	Affected population (million)
1970-79	~2.0	~1,000
1980-89	~1.0	~1,500
1990-99	~1.0	~2,000

### Economic losses related to number of disasters

Period	Number of disasters	Economic losses (million)
1970-79	~1,500	~100
1980-89	~3,000	~200
1990-99	~5,000	~700

Source: OFDA/CRED International Disaster Database



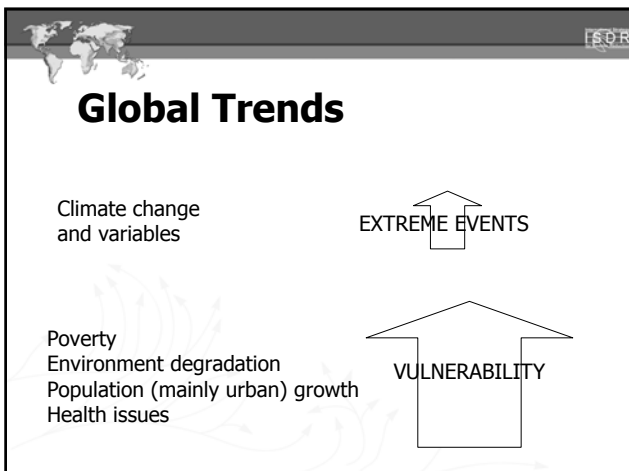
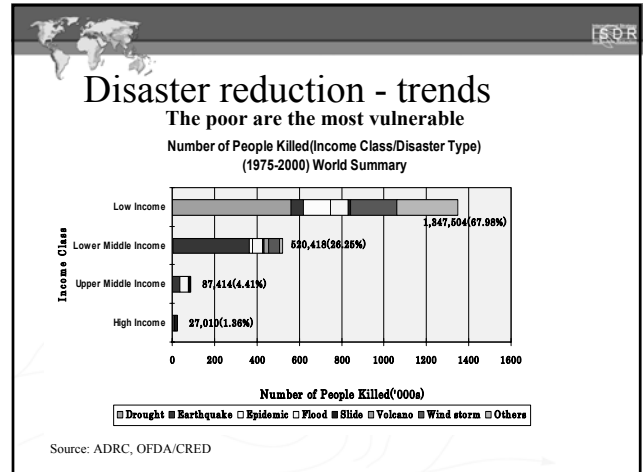
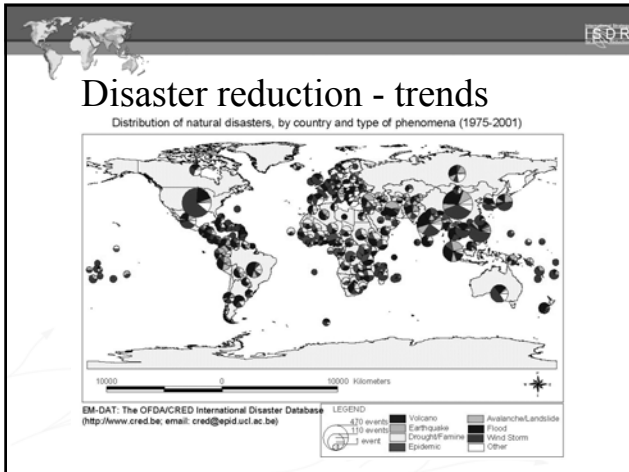
## Disaster reduction - trends

### Trends in economic impact of disasters

#### Disaster losses, total and as share of GDP, in the richest and poorest nations, 1985-1999

Nation Type	Economic losses (Billion Dollars)	Losses as percent of GDP
Richest Nations	~550	~1.5
Poorest Nations	~220	~13.5

Source: MunichRe, Abramovitz, 2002

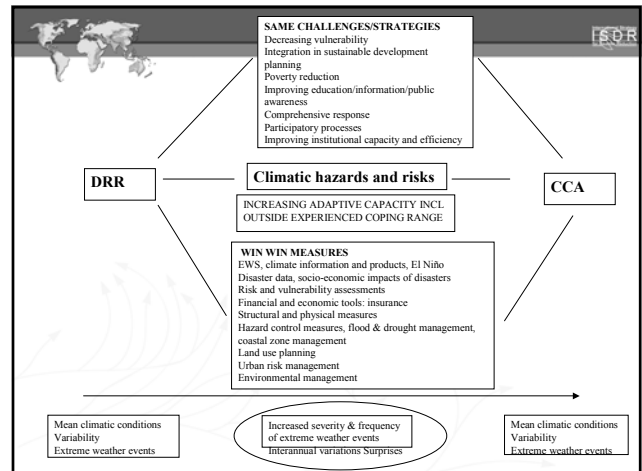
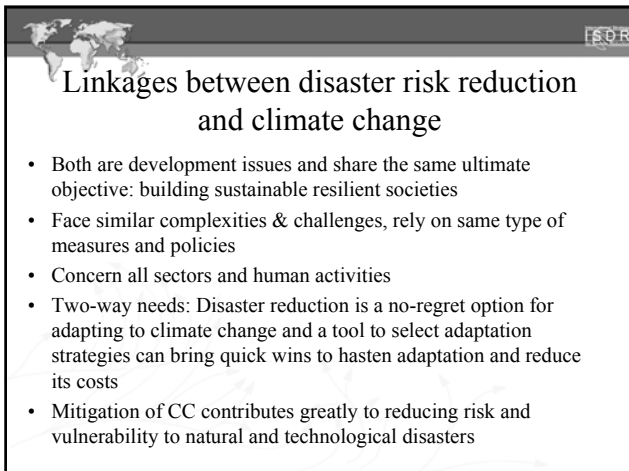
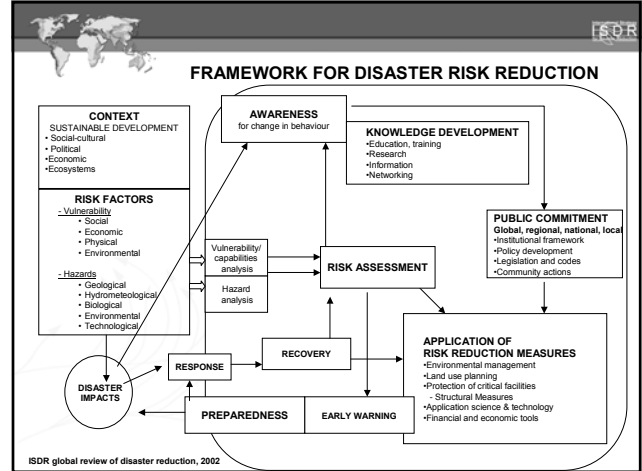
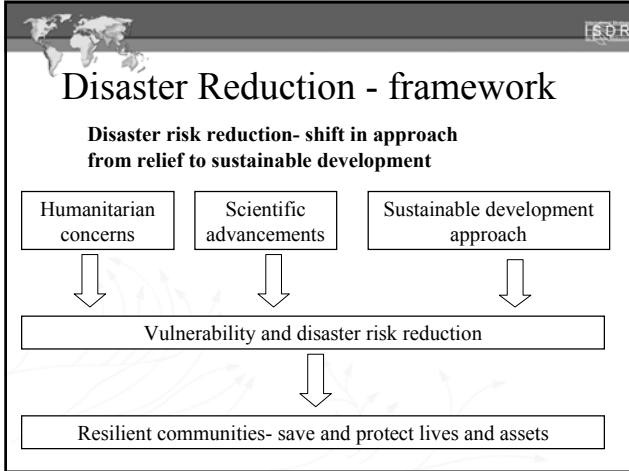



### Disaster Reduction - framework

**What is disaster risk reduction ?**

The sum of measures, which can be undertaken to reduce human and social vulnerability.


Measures include *risk assessments, education and information management, land use planning, environmental management, protection of critical facilities, application of science and technology in all fields, including for early warning.*





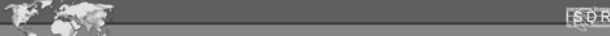
## Examples of Disaster Reduction Tools for Climate Change Adaptation

- Disaster data and trends
  - in frequency and intensity of extreme events
  - social, economic impacts
- Vulnerability and risk assessment data and methodologies



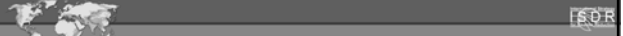
## Examples of Disaster Reduction Tools for Climate Change Adaptation

- Disaster Risk Reduction applications
  - Environmental management
  - Financial and economic tool (i.e. insurance)
  - Social aspects and safety nets
  - Land use planning
  - Protection of critical facilities
  - Structural measures (engineering)
  - Application of science and technology
  - Early warning



## Examples of Disaster Reduction Tools for Climate Change Adaptation

- Additional inputs from disaster reduction
  - Identify successful disaster risk reduction practices (similar to CC adaptation) or ‘what not to do!’
  - Constraints in the application of disaster risk reduction (ie political, institutional –policy, legislation, organizational, education, science & technology-)
  - Risk perception/risk awareness
  - Lessons learnt from community level, grass root coping strategies, knowledge development and training
  - Ongoing efforts to integrate disaster reduction into national development planning processes



## Financial services and instruments for disaster risk reduction

- Mounting costs of disasters in the late 1990s
- Less than one-fourth of all disasters from natural hazards around the world are insured
- US, UK and Japan amounted for 55% of the total
- Developing Asia represent half of all damage and two-thirds of all the casualties from catastrophic events in 1997 and “owned” only 8% of the insurance coverage for catastrophes purchased in the world market
- Lack of insurance coverage and weak social safety nets in a country imply a high level of vulnerability

Source: Living with Risk – global review of disaster reduction initiatives




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## Financial services and instruments for disaster risk reduction

- **INTERNATIONAL ASSISTANCE**
  - Official Development Assistance
  - United Nations System
  - Multilateral Development Banks/International Monetary Fund
- **NATIONAL FINANCING**
  - Calamity Funds
  - Reconstruction / Mitigation / Vulnerability Reduction Funds
  - Social Funds/Public Works Program
- **MARKET-BASED INSTRUMENTS OF RISK MANAGEMENT**
  - Insurance
  - CAT Bonds and Weather Derivatives
  - Microfinance

Source: Living with Risk – global review of disaster reduction initiatives




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## Official Development Assistance

Year	Contribution for Natural Disasters (US Million Dollars)
1992	257.44
1993	77.66
1994	113.47
1995	104.67
1996	84.14
1997	302.69
1998	1,151.87
1999	296.41
2000*	
2001	331.51
2002	238.27

- Nearly exclusively from OECD countries
- ODA for natural disasters is often combined with conflict
- Total donor contribution for all kinds of humanitarian assistance was US \$4.2 billion in 2001 and US\$4.5 billion in 2002. Out of this assistance, natural disasters accounted for a small percentage: US\$ 331.51 million in 2001 and US\$238.27 million in 2002

\* The data for the year 2000 is unavailable.  
Source: OCHA, <http://www.reliefweb.int/arfts/>



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## United Nations System

- United Nations (UN) system provides a wide-ranging emergency support through its multiple agencies, specializing in different areas
- Limited resources for post-disaster rehabilitation and reconstruction
- Consolidated Appeal Process (CAP). Since 1992, it mobilized US\$904 million in cash and in-kind contributions and channeled US\$37 million directly through the CAP for natural disasters. It also provided cash grants of US\$4 million to developing countries through its Central Emergency Revolving Fund (CERF)

Source: Living with Risk – global review of disaster reduction initiatives



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## Multilateral Development Banks

The World Bank and regional development banks are main sources of funding following a major disaster.

### World Bank

- Since 1980, the World Bank has invested US\$7.5 billion directly in 102 natural disaster reconstruction operations
- The Bank also reallocates from normal development projects to help finance emergency activities following a disaster.
- After Hurricane Mitch disaster, the Bank reallocated US\$200 million lending from regular projects to finance part of the reconstruction needs of the four countries most affected, Honduras, Nicaragua, Guatemala, and El Salvador
- After the Bhuj earthquake in India in 2001, the World Bank made available a sum of US \$ 400 million by restructuring existing loans.


Source: Living with Risk – global review of disaster reduction initiatives



### Inter-American Development Bank

- Major lender for reconstruction in the Latin America and Caribbean region. In the last 10 years, lent around US\$2 billion for emergency operations and organize reconstruction.
  - physical infrastructure 65 percent
  - re-establishing social services 25 percent
  - credit lines and support for productive activities 10 percent
- Two thirds of IDB loans represented new monies to the affected countries
- Emergency Reconstruction Facility (ERF), a mechanism that allows the Bank to respond quickly to disasters with loans of up to US\$20 million from ordinary capital
- Sector Facility for the Prevention of Natural Disasters to support pilot programs in disaster prevention and risk management.

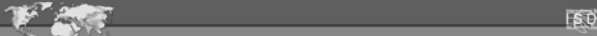
Source: Living with Risk – global review of disaster reduction initiatives



### Asian Development Bank

- Asian Development Bank (ADB) has provided more than US\$2 billion for reconstruction, rehabilitation and mitigation projects for countries in the Asia-Pacific region.
- *Rehabilitation Assistance to Small Developing Member Countries Affected by Natural Disasters*, created in 1987 for the small island member states of the South Pacific region and the Maldives
- *Rehabilitation Assistance After Disasters*, created in 1989.
- Since 1987, rehabilitation loans worth US\$3.6 million have been approved for small developing member states under the first Facility. Twenty loans totaling \$997 million have been extended to developing countries under the second.
- A further 14 projects, dating from 1992, which incorporated disaster mitigation measures. These projects (worth US\$1 billion) were primarily large engineering projects relating to flood control.
- Financed at least 31 disaster-related technical assistance loans.

Source: Living with Risk – global review of disaster reduction initiatives



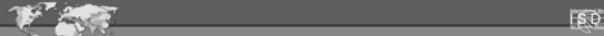
### African Development Bank (AfDB)

- Since 1979, the AfDB has provided 8 loans totaling \$94.2 million for rehabilitation, reconstruction and preparedness for natural disasters
- *Special Relief Fund* has been created to provide grants to countries hit by natural and technological disasters as well as complex emergencies
- Projects for improving disaster preparedness are also supported

### Caribbean Development Bank

- Provided a total of US\$53 million for post-disaster rehabilitation and reconstruction
- Provides grants of up to US\$100,000 for emergency relief following a disaster, channeled through the Caribbean Disaster and Emergency Relief Authority (CDERA)

Source: Living with Risk – global review of disaster reduction initiatives





### International Monetary Fund: Balance of Payment Support

- Since 1962, the International Monetary Fund (IMF) has provided emergency assistance to member countries afflicted by natural disasters—such as floods, earthquakes, hurricanes, or droughts



Country	Year	Event	Amount (US\$ Million)	Percent of Quota
Bangladesh	1998	Floods	138.2	25.0
Dominican Republic	1998	Hurricane	55.9	25.0
Haiti	1998	Hurricane	21.0	25.0
Honduras	1998	Hurricane	65.6	50.0
St. Kitts and Nevis	1998	Hurricane	2.3	25.0
Turkey	1999	Earthquake	501.0	37.5
Malawi	2002	Food shortage	23.0	25.0
Grenada	2003	Hurricane	4.0	25.0

Source: International Monetary Fund

**Example of a Regional Disaster Reduction Fund:  
European Union Solidarity Fund**

- Worth up to € 1 billion annually
- Set up following the floods that hit central Europe during the summer of 2002. assistance to a Member State or a country applying for accession, which is affected by a major disaster
- A major disaster has been defined as damages estimated either at over EUR 3 billion (2002 prices), or at more than 0,6 percent of its gross national income
- So Far € 444 million for Germany, € 134 million for Austria, € 129 million for the Czech Republic and € 21 million for France






**NATIONAL FINANCING FOR DISASTER RISK REDUCTION**

Domestic financing for disaster risk management has been slow to develop owing to both institutional and informational weaknesses in dealing with disaster risks.

- Calamity Funds
- Reconstruction / Mitigation / Vulnerability Reduction Funds
- Social Funds
- Public Works Program

Source: Living with Risk – global review of disaster reduction initiatives






**MARKET-BASED INSTRUMENTS OF RISK MANAGEMENT**

**Insurance**

- In the developed world, insurance is a standard practice of transferring risk from one entity or individual to a collective.
- Insurance has caught up in developing countries too, but the lack of insurance for catastrophic risks is in contrast to the use of insurance for other risks
- Developed countries also transfer their catastrophic risk from the national insurance system into worldwide risk-sharing pools
- In developing countries, the coverage of catastrophic risk insurance is limited by both the demand and supply side problems

Source: Living with Risk – global review of disaster reduction initiatives

**Alternative Risk Transfer Mechanisms: CAT Bonds and Weather Derivatives**

The Bermuda Commodities Exchange introduced futures and options contracts based on the Guy Carpenter Catastrophe Index



The Chicago Board of Trade (CBOT) opened for trading in quarterly futures and options contract based on reported catastrophe losses

The Catastrophic Risk Exchange (CATEX) was established in early 1996 as an Internet-based business-to-business exchange for all types of insurance contracts and related risk management products

CAT bonds, also known as Act of God bonds, were first issued in 1996

The World Bank is investing US\$10 million in a weather risk management project aimed at introducing weather hedges in Morocco.[3]

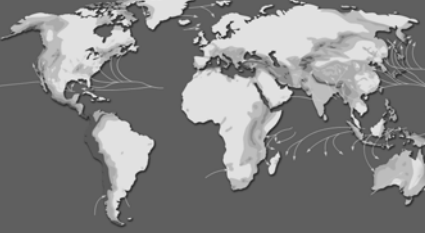
Despite the support of global financial markets, these instruments have not been very successful.

## Microfinance

- Started in Bangladesh with the Grameen Bank, and expanded to a number of countries with different institutional models
- Microfinance is strongly linked to poverty alleviation efforts for more than a decade, its potential for helping households in crisis or disaster situations has been recognized only recently, in particular after the devastating Bangladesh floods in 1998
- Some MFIs have begun experimenting with insurance products for disaster response, in some cases turning to the re-insurance market to spread aggregate risks
- Many of the MFIs' disaster-related services have not been replicated yet. It requires sustained effort through design of appropriate microfinance products and services
- Investment in these products and services will be mutually beneficial to the well-being of client households and to the strength and solvency of MFIs

Source: Living with Risk – global review of disaster reduction initiatives









# Living with Risk

A global review of disaster reduction initiatives



Preliminary version  
Geneva, July 2002

*EMBARGO until launch on 9 August 2002 in Tokyo*

## Conclusions

- Paradigm shift from managing disasters to managing risk
- Need to show evidence of the benefit of reducing vulnerability to disaster
- Integrate disaster reduction into sustainable development policies and plans of action
- Improved international co-ordination

## Conclusions

- Ensure risk transfer or insurance related actions enhance communities resilience to extreme events (reduced exposure and vulnerability)
- Promote arrangements for public-private partnership in risk sharing
- Include mechanisms to deal with small disasters with large local consequences

**THANK YOU**