



## Achievements and Challenges in International Activities for Disaster Risk Reduction and Building Resilience to Natural Hazards

International Memorial Symposium on  
 "Protecting Lives from Earthquake and Tsunami Disasters"  
 BRI/GRIPS/UNESCO, Sokairo-Hall of GRIPS  
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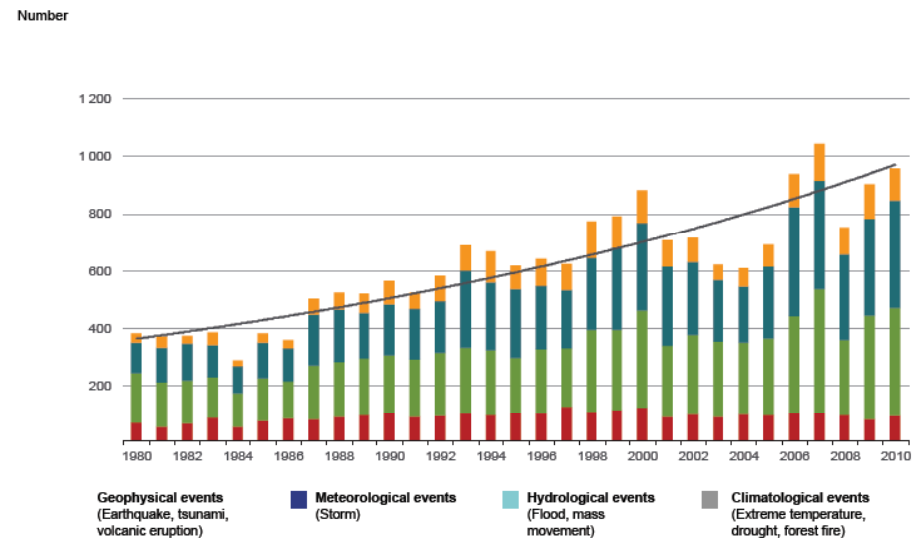
[www.irdrinternational.org](http://www.irdrinternational.org), [www.preventionweb.net](http://www.preventionweb.net), [www.unisdr.org](http://www.unisdr.org)

## Overview

- I Global data and trends on "natural " disasters, understanding key concepts
- II Key international instruments: UN International Strategy for Disaster Reduction and its Hyogo Framework for Action (2005-2015), and Integrated Research on Disaster Risk
- III Climate change, a main disaster reduction issue

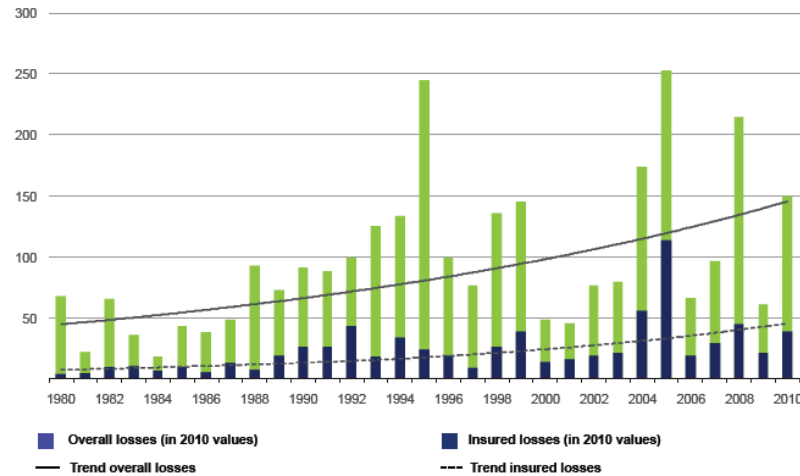
- I Global data and trends on "natural " disasters, understanding key concepts

Natural catastrophes worldwide 1980 – 2010  
 Number of events with trend



## Natural catastrophes worldwide 1980 – 2010 Overall and insured losses with trend

(bn US\$)



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## Significant natural catastrophes worldwide 1980 – 2010 10 costliest natural catastrophes ordered by overall losses

Period	Event	Affected Area	Overall losses	Insured losses	Fatalities
			US\$ m, original values		
25-30.8.2005	Hurricane Katrina	USA: LA, New Orleans, Slidell; MS, Biloxi, Pascagoula, Waveland, Gulfport	125,000	62,200	1,300
17.1.1995	Earthquake	Japan: Hyogo, Kobe, Osaka, Kyoto	100,000	3,000	6,400
12.5.2008	Earthquake	China: Sichuan, Mianyang, Beichuan, Wenchuan, Shifang, Chengdu, Guangyuan, Ngawa, Ya'an	85,000	300	84,000
17.1.1994	Earthquake	USA: Northridge, Los Angeles, San Fernando Valley, Ventura, Orange	44,000	15,300	60
6-14.9.2008	Hurricane Ike	USA, Cuba, Haiti, Dominican Republic, Turks and Caicos Islands, Bahamas	38,300	18,500	170
May-September 1998	Floods	China: Jangtsekiang, Songhua Jiang	30,700	1,000	4,200
27.2.2010	Earthquake, tsunami	Chile: Bio Bio, Concepción, Talcahuano, Coronel, Dichato, Chillán; Del Maule, Talca, Curicó	30,000	8,000	520
23.10.2004	Earthquakes	Japan: Honshu, Niigata, Ojiya, Tokyo, Nagaoka, Yamakoshi	28,000	760	50
23-27.8.1992	Hurricane Andrew	USA: FL, Homestead; LA, Bahamas	26,500	17,000	60
27.6-13.8.1996	Floods	China: Guizhou, esp. Guiyang; Zhejiang; Sichuan; Hunan; Anhui, Jiangxi; Hubei, Guangxi; Jiangsu	24,000	445	3,050

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17.1.1994	Earthquake	USA: Northridge, Los Angeles, San Fernando Valley, Ventura, Orange	44,000	15,300	60
7-21.9.2004	Hurricane Ivan	USA, Trinidad and Tobago, Venezuela, Colombia, Mexico	23,000	13,800	130
19-24.10.2005	Hurricane Wilma	USA, Bahamas, Cuba, Haiti, Jamaica, Mexico	22,000	12,500	40
20-24.9.2005	Hurricane Rita	USA: LA, Lake Charles, Holly Beach, Cameron, New Orleans; MS, TX, Houston	16,000	12,100	10
27.2.2010	Earthquake, tsunami	Chile: Bio Bio, Concepción, Talcahuano, Coronel, Dichato, Chillán; Del Maule, Talca, Curicó	30,000	8,000	520
11-14.8.2004	Hurricane Charley	USA, Cuba, Jamaica, Cayman Islands	18,000	8,000	40
26-28.9.1991	Typhoon Mireille, floods	Japan: Kyushu, Hokkaido, Hakata	10,000	7,000	60

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## Significant natural catastrophes worldwide 1980 – 2010 10 deadliest events

Period	Event	Affected Area	Overall losses	Insured losses	Fatalities
			US\$ m, original values		
12.1.2010	Earthquake	Haiti: Port-au-Prince, Petionville	8,000	200	222,570
26.12.2004	Earthquake, tsunami	Sri Lanka, Indonesia, Thailand, India, Bangladesh, Myanmar, Maldives, Malaysia	10,000	1,000	220,000
2-5.5.2008	Cyclon Nargis	Myanmar: Ayeyawaddy, Yangon, Bugalay, Irrawaddy, Bago, Karen, Mon, Laputta, Haing Kyi	4,000		140,000
29-30.4.1991	Tropical cyclon	Bangladesh: Bay of Bengal, Cox's Bazar, Chittagong, Bala, Noakhali districts, esp. Kutubdia	3,000	100	139,000
8.10.2005	Earthquake	Pakistan, India, Afghanistan	5,200	5	88,000
12.5.2008	Earthquake	China: Sichuan, Mianyang, Beichuan, Wenchuan, Shifang, Chengdu, Guangyuan, Ngawa, Ya'an	85,000	300	84,000
July-August 2003	Heatwave, drought	France, Germany, Italy, Portugal, Romania, Spain, United Kingdom	13,800	20	70,000
July-Sept. 2010	Heatwave, drought	Russia	2,000	20	56,000
21.6.1990	Earthquake	Iran: Caspian Sea, Gilan Provinz, Manjil, Rudbar, Zanjan, Saft, Qazvin	7,100	100	40,000
8-19.12.1999	Floods, flash floods	Venezuela: Vargas, La Guaira Punta de Mulatos, Miranda, Nueva Esparta, Yaracuy, Kolumbien	3,200	220	30,000

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## What is Disaster Risk Reduction (DRR)?

- A conceptual framework consisting of ways and means:
  - To minimize disaster risks (hence, loss of lives, livelihoods and property) by reducing the degree of vulnerability and increasing resilience capacity
  - To avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of natural hazards with a sustainable development approach

$$\begin{array}{|c|} \hline \text{Natural hazard} \\ \hline \text{+ Exposure} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{Vulnerability} \\ \hline \text{- Capacity} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Disaster Risk} \\ \hline \end{array}$$

## Global Trends - Disasters are NOT natural

Greater exposure to natural and human-induced hazards, climate change and variability

HAZARDS +  
EXTREME EVENTS

Socio-economic: poverty & unsustainable development styles, unplanned urban growth and migrations, lack of risk awareness & risk governance institutions & accountability...

Physical: insufficient land use planning, housing & critical infrastructure in hazard prone areas, little safety awareness...

Ecosystem & natural resource depletion (coastal -coral reefs, mangroves...-, mountains, watersheds, wetlands, forests...)



### The vision of disaster risk reduction: Building resilient communities towards sustainable development

The six principles of sustainability  
[www.colorado.edu/hazards/publications/informer/informer3/informer3c.htm](http://www.colorado.edu/hazards/publications/informer/informer3/informer3c.htm)



### Traditional perceptions and approaches on disasters... priorities have been and still are...

- **Public fatalistic perception:** « natural » disasters = acts of god = focus on preparedness for response, not understanding disasters as a human creation through wrong or incomplete development, not focused on building resilience and reducing human and social vulnerability, as it has happened in health and accidents prevention, among other hazards
- **Governance & policy processes focused on preparing for the emergency and the short-term:**
  - EMERGENCY MANAGEMENT: disaster management & humanitarian action: politically sensitive, « CNN syndrome » with DRR still a small complementary/secondary function
  - SECTORIAL AND SHORT-TERM development with policy integration, long-term sustainable development vision and holistic approach still mainly theoretical
- **Fragmented knowledge transmission in academic institutions:** NATURAL SCIENCES, ECONOMICS & QUANTITATIVE ANALYSIS and not enough social sciences, psychology, anthropology, sociology, communications, management and leadership, ethics, governance, « new economics »... or knowledge-based and applied research (DRIP syndrome)



## Two key documents

### *Natural Hazards, Unnatural Disasters – The Economics of Effective Prevention* by World Bank and ISDR system

- Evaluates economic arguments related to DRR, through a cost-benefit analysis of different DRR policies and measures
- Influences the broader thinking related to disaster risk, awareness of the potential to reduce the costs of disasters, and guidance on the implementation of disaster risk-reducing interventions
- The study was issued in Nov 2010 and is available at: <http://www.gfdrr.org/gfdrr/nhud-home>

### *2011 Global Assessment Report on Disaster Risk Reduction* by ISDR system partners

- Report was launched at the 3rd session of the Global Platform for DRR, Geneva, 8-13 May 2011
- It contains new approaches, mainly requesting for radical reform of institutional mechanisms for managing risk among other
- Available at [www.preventionweb.net](http://www.preventionweb.net) and [www.unisdr.org](http://www.unisdr.org)

## Disaster Reduction – An Agenda in Progress

1989: IDNDR 1990-1999 – promotion of disaster reduction, scientific development

1994: 1<sup>st</sup> WCDR - Yokohama Strategy and Plan of Action – Mid-term review IDNDR, first disaster reduction policy guidance

1998: UNDP inherits DRR function from DHA (former OCHA) for supporting capacity development on DRR at national level

2000: International Strategy for Disaster Reduction (ISDR) – for increased public awareness, link to sustainable development, enlarged coordination at int'l and regional levels, networking and partnerships ISDR secretariat, UN Trust Fund

2002: Johannesburg Plan of Implementation- WSSD Includes a new section on "An integrated, multi-hazard, inclusive approach to address vulnerability, risk assessment and disaster management..."

2005: 2<sup>nd</sup> WCDR - Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters

2007: 1<sup>st</sup> session Global Platform for Disaster Risk Reduction (GP2007)

Monitor HFA progress, facilitate further actions and partnerships, take stock, identify gaps and obstacles and share lessons and good practices

2009: 2<sup>nd</sup> session Global Platform for DRR (GP2009) Monitor HFA progress, identify gaps and priorities

2010: Mid-term review of the HFA and links with CC Adaptation COP-16, MDGs 2010 review and 2012 Sustainable Development Rio Summit

2011: 3<sup>rd</sup> session Global Platform for DRR (GP2011, Geneva, 8-13 May 2011) Monitor HFA progress, identify gaps and priorities; 4<sup>th</sup> session, Geneva, 19-23 May 2013...

## II

### Key international instruments: UN International Strategy for Disaster Reduction and its Hyogo Framework for Action (2005-2015), and Integrated Research on Disaster Risk

## International Strategy for Disaster Reduction

### Launched in 2000 by UN General Assembly Resolution A/54/219 as successor of the International Decade on Natural Disaster Reduction – IDNDR, 1990-1999:

The ISDR aims at building disaster resilient communities by promoting increased awareness of the importance of disaster reduction as an integral component of sustainable development, with the goal of reducing human, social, economic and environmental losses due to natural hazards and related technological and environmental disasters.



**World Conference on Disaster Reduction**  
2<sup>nd</sup> WCDR, Kobe, Hyogo, Japan, 18-22 January 2005

**Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters (HFA)**

- ✓ 3 Strategic goals
- ✓ 5 Priorities for action
- ✓ Implementation and follow-up

**Expected outcome:**

The WCDR resolved to pursue the following expected outcome for the next 10 years: *the substantial reduction of disaster losses, in lives & in the social, economic & environmental assets of communities & countries*. The realization of this outcome will require the full commitment & involvement of all actors concerned, including governments, regional & international organizations, civil society including volunteers, the private sector & the scientific community.

**Hyogo Framework for Action 2005-2015 (continued)**

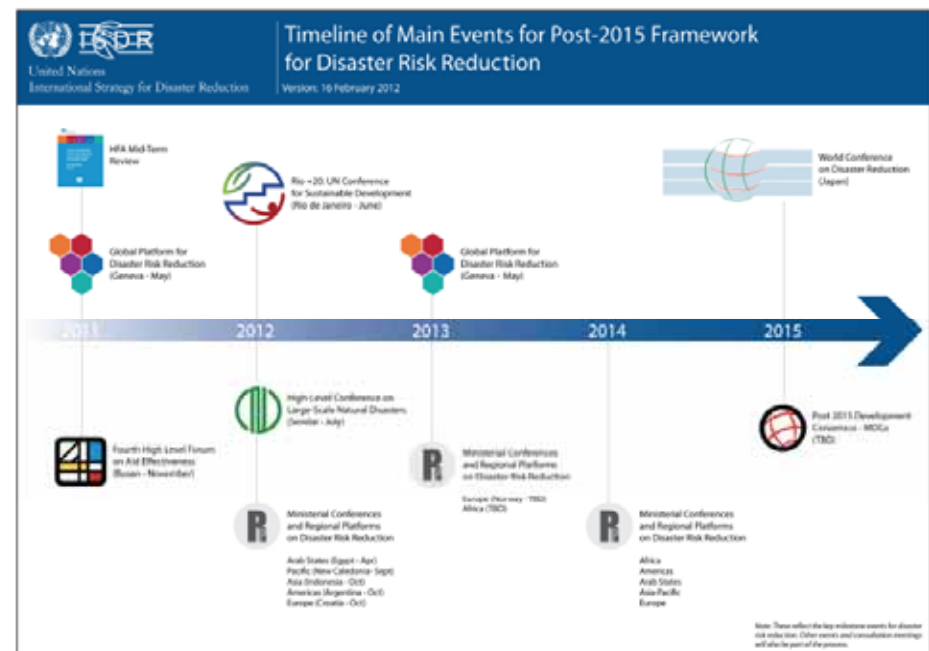
**Five priorities for action:**

1. **Governance:** ensure that disaster risk reduction is a national and local priority with strong institutional basis for implementation
2. **Risk identification:** identify, assess and monitor disaster risks and enhance early warning
3. **Knowledge:** use knowledge, innovation and education to build a culture of safety and resilience at all levels
4. **Reducing the underlying risk factors** in various sectors (environment, health, construction, private sector etc.)
5. **Strengthen disaster preparedness for effective response**

**Hyogo Framework for Action 2005-2015 (continued)**

3 strategic goals:

- The integration of disaster risk reduction into sustainable development policies & planning
- The development & strengthening of institutions, mechanisms & capacities to build resilience to hazards
- The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response & recovery programmes



## Disaster Reduction – An Agenda in Progress, cont...

### Next challenges, to 2015 & beyond...

- **Stronger risk governance institutions**, including integration of DRR into various sectors: issue management; team building; stronger local implementation with greater participation, decentralization, transparency and accountability at all levels...
- **DRR recognized as urgent first step for CC adaptation** in successor agreement to Kyoto Protocol (Doha 2012...), urgency to start planning for future relocations due to sea-level rise, glacier melting and water pressures...
- **Hazard risk as essential requirement in MDGs and future SDGs (UNCSD, Rio+20)** & development planning & sectors (land-use, urban & sectorial planning)

## The Integrated Research on Disaster Risk programme of ICSU/ISSC/ISDR

### Key questions and a response:

- Why, despite advances in the natural and social science of hazards and disasters, do losses continue to increase?
  - To what extent is the world-wide growth in disaster losses a symptom and indicator of unsustainable development?
- The IRDR Science Plan: addressing the challenge of natural and human-induced environmental hazards with an integrated approach to research on disaster risk through: an international, multidisciplinary (natural, health, engineering and social sciences, including socio-economic analysis) collaborative research programme. To be found at: **IRDR Science Plan at:** [www.irdrinternational.org/](http://www.irdrinternational.org/)

## Disaster Reduction – An Agenda in Progress, cont...

- **Hazard risk reduction recognized as essential ecosystem service** by environmental policies & legislation
- Greater awareness-raising programmes for wider public understanding of risk & vulnerability, in particular of **building safety for homes, schools, offices...**;
- **Greater leadership by high-level authorities** in public & private sectors & civil society to ensure a paradigm shift; risk knowledge, a regular feature in educational programmes at all levels, same as health or traffic prevention...
- Enhanced **ethical perspective of disasters & risk reduction** as part of sustainable development (6 sustainability principles), including rights-based approach, accountability & transparency for disaster losses & impacts, participation, decentralisation...
- Urgency in building resilience in those countries whose **economy & trading capacity** are dependent on exports that are especially affected by recurrent natural hazards such as tropical storms, floods or drought

## Forensic Disaster Investigations – FORIN & IRDR Legacy

- Probe further into complex and underlying causes of growing disaster loss
- Fundamental cause of disasters
- Trace out and assign causal explanation of losses
- Intervening conditions that increased or reduce losses
- Series of case studies
- Common template and methodology as a standard for research on disaster risk
- An enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts.
- Societies to shift focus from response-recovery towards prevention-mitigation, building resilience and reducing risks, learning from experience and avoiding past mistakes.





### III

## Climate change, a main disaster reduction issue

## Climate change and disaster risks

1. Evidence of more extreme events already found (IPCC Assessments) – temperatures rising, loss of glaciers and polar ice, droughts, heavy rainfall, heat and cold waves, stronger tropical cyclones, floods...
2. Populated deltas as well as small island developing states (SIDS) are most at risk to sea-level rise
3. Impacts in 3 ways: (i) more extreme events (increased frequency and intensity) in same areas (ii) more extreme events in new areas, not prepared for them and (iii) new impacts from sea level and temperature rise, glacier melting and greater stresses on ecosystems and water
4. Increasing disaster risk is primarily due to development practices

## Climate policy to reduce disaster risks

1. UNFCCC COP 13 2007 Bali Action Plan proposed “*risk management and risk reduction strategies, including risk sharing and transfer mechanisms*”... and ... “*disaster reduction strategies and means to address loss and damage in developing countries*”...
2. UNFCCC Ad-hoc Working Group on Long-term Cooperative Action agreed on DRR & HFA for CC adaptation at 2009 COP 15 Copenhagen, confirmed at 2010 COP 16 Cancun Adaptation Framework and Durban 2011...
3. Disaster risk reduction & CC adaptation have the most leverage when placed at the centre of national development planning, DRR still to be integrated in national CC adaptation plans (NAPAs & other), & in criteria for all adaptation funding
4. IPCC 2012 Special Report on Managing the Risk of Extreme Events & Disasters to advance CC Adaptation (SREX), available at <<http://ipcc-wg2.gov/SREX/>>

- ***Climate change and disaster risk are intertwined issues***
- ***Important opportunity to achieve reductions in disaster risk***
- ***HFA as an important available tool for adaptation to climate change and other hazards (earthquakes, etc.)***
- ***ISDR, IRDR, GFDRR, GNDR in place, more partnerships to take actions and work together***

## Some reflections as conclusions

- Need to avoid using « natural » disasters and use instead 'natural hazards' and 'disasters' or preferably, 'disasters caused by vulnerability to natural hazards' or 'disasters triggered by natural hazards'...
- Need to promote and develop a policy focus on risk reduction and management (prevention, mitigation, preparedness) as essential requirement for SD, also of interest to private sector for ensuring business continuity, not only as CSR
- Use comparisons with health prevention policies for advocacy and policy-making
- A main common objective of DRR and CCA policies is to advocate for the urgent need to reduce risk and vulnerability to current climate variability as a first step or basis for adaptation to the longer-term effects of CC...

**THANK YOU**

[www.irdrinternational.org](http://www.irdrinternational.org)

[www.preventionweb.net](http://www.preventionweb.net)

[www.unisdr.org](http://www.unisdr.org)

[www.globalquakemodel.org](http://www.globalquakemodel.org)