

# DISASTER THROUGH A DIFFERENT LENS

Behind every effect, there is a cause



A guide for journalists covering disaster risk reduction



United Nations

**This guidebook is not for disaster risk reduction practitioners,  
but for journalists and the media who are interested in learning  
more about disaster risk reduction issues.**

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## UNISDR

The International Strategy for Disaster Reduction (ISDR) is a strategic framework, adopted by United Nations Member States in 2000, that guides and coordinates the efforts of a wide range of partners to achieve substantive reduction in disaster losses and build resilient nations and communities as an essential condition for sustainable development.



International Strategy for Disaster Reduction

## ECHO

The mandate of the European Commission's Humanitarian aid and Civil Protection Directorate General (ECHO) encompasses humanitarian assistance and civil protection and aims to save and preserve life as well as prevent human suffering of populations affected by natural or man-made disasters. Beyond disaster response, ECHO equally strives to enhance disaster prevention and preparedness, both within the European Union (EU) and beyond.

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## Acronyms

AIDS	Acquired immune deficiency syndrome
BBC	British Broadcasting Corporation
CDMP	Comprehensive Disaster Management Programme (Bangladesh)
CRED	Centre for Research on the Epidemiology of Disasters
DfID	UK Department for International Development
DRR	Disaster risk reduction
GAR	Global Assessment Report
GDP	Gross domestic product
FAO	Food and Agriculture Organization (UN)
FEMA	US Federal Emergency Management Agency
HFA	Hyogo Framework for Action
HIV	Human immunodeficiency virus
IFRC	International Federation of Red Cross and Red Crescent Societies
IOC	Intergovernmental Oceanographic Commission of UNESCO
IPCC	Intergovernmental Panel on Climate Change
ISDR	International Strategy for Disaster Reduction
IUCN	International Union for Conservation of Nature
LDC	Least developed countries
LHD	Low human development
NGO	Non-governmental organization
NOAA	US National Oceanic and Atmospheric Administration
NWFP	North-West Frontier Province (of Pakistan)
OCHA	UN Office for the Coordination of Humanitarian Affairs
OECD	Organization for Economic Co-operation and Development
OFDA	Office of US Foreign Disaster Assistance
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNU	United Nations University
USGS	US Geological Survey
WMO	World Meteorological Organization

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## Foreword

*The earthquake and tsunami that struck Japan on 11 March 2011 is a stark reminder that disasters can hit anywhere at any time. Yet many actions can still be taken – by developed and developing nations alike – to build resilience and mitigate the impacts of natural hazards.*

*In this regard, newspapers, radio, television and other media have an important role to play in creating awareness and disseminating information about such disasters. Coverage of the Indian Ocean tsunami in 2004, the Sichuan earthquake in China, Cyclone Nargis in Myanmar in 2008 and the catastrophic earthquake in Haiti in 2010 as well as yearly floods, droughts, avalanches, storms and volcanic eruptions throughout the world have all created international public attention and, at times, alarm.*

*Unfortunately, this coverage has not yet triggered the changes in policy and legislation that are needed to save lives and protect livelihoods. Governments are still slow to implement disaster risk reduction policies and they continue to react to disaster emergencies, rather than look for ways to prevent them.*

*As reporters, commentators and broadcasters, you can do more than just inform and raise awareness about disasters. You can make a real difference in the way people think and act, especially now when climate change is recognized as a major challenge that will aggravate our vulnerability to disasters.*

*Exploring the root causes of disasters and their social dimensions will lead to disaster risk reduction stories that can help communities and countries understand what it is that makes them vulnerable, and what they can do to increase their capacities to cope with disasters.*

*You are much more than a simple mirror of society. You are a powerful force that can change the minds of people. You can influence policy change and, together with other development stakeholders, bridge the information gap between communities and governments. You can help make populations safer and change the world from a culture of reaction to a culture of prevention.*

**Margareta Wahlström,**

UN Special Representative of the Secretary-General for Disaster Risk Reduction.



## Introduction

### **Hazards are natural. Disasters are not.**

There is nothing “natural” about a disaster. Nature provides the hazards – earthquakes, volcanic eruptions, floods and so on – but humans help create the disaster. We cannot prevent a volcanic eruption but we can prevent it from becoming a disaster.

A volcano that erupts in a middle of the wilderness, for example, is a natural hazard. But if it erupts near a large city it has the potential to turn into a disaster, threatening the lives of hundreds of thousands of people and their communities.

Here are many ways to prevent or lessen the impact of a disaster: by integrating volcano risk in urban planning; reducing the number of people living close to a volcano; educating and alerting them about the dangers; preparing them to evacuate when the volcano erupts and; identifying shelters to protect them. These are all measures covered within disaster risk reduction.

Once we understand that there is a difference between “natural hazard” and “disaster”, we then understand that disasters are mostly human-induced, and increasingly triggered by human activities such as deforestation, rapid urbanization, environmental degradation and climate change.

The first step you could take as a reporter is to avoid the term “natural disaster” and use instead “disaster” or “natural hazard”. This will help change the way that opinion leaders and the public at large perceive disasters. By doing so, you will help create a culture of prevention and not just a culture of reaction.

Newspapers and broadcasting organizations often have reporters who specialize in economics, education or health. Disaster risk reduction (DRR), however, is not on the news agenda for the mass media. This is a book for reporters and broadcasters who want to know more about those urgent, terrifying and all-too-often tragic moments when the fabric of national and civic government encounters the forces of nature. It is a manual for the media, compiled by journalists and disaster experts, who understand that disaster risk reduction is a civic duty, government responsibility, national obligation and a good story.

# 1. What You Need to Know about Disaster Risk Reduction

# The basics: Getting the words right

*Disasters can affect everyone, and are therefore everybody's business. Disaster risk reduction should be part of everyday decision-making: from how people educate their children to how they plan their cities. Each decision can make us either more vulnerable or more resilient.*

Before one begins to write about disaster risk reduction, it is important to have a good background on the issue and understanding of the terminology used:

### **Hazard**

A hazard is a physical event, phenomenon or human activity that can cause the loss of life or injury, property damage, social and economic disruption, or environmental degradation. Hazards have different origins: natural (geological, hydro, meteorological and biological) or due to human actions (environmental or technological).

### **Disaster**

Disasters are a combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the negative consequences of risk. A hazard becomes a disaster when it coincides with a vulnerable situation, when societies or communities are unable to cope with it with their own resources and capacities.

### **Vulnerability**

Vulnerability is the degree to which someone or something can be affected by a particular hazard and depends on a number of factors and processes:

- *physical* (unstable locations, closer proximity to hazards, fragile unprotected houses).
- *economic* (no productive assets, limited income earning opportunities, poor pay, single income revenue, no savings and insurance).
- *social* (low status in society, gender relations, fewer decision-making possibilities, oppressive formal and informal institutional structures, and political, economic and social hierarchies).
- *psychological* (fears instigated by religious and other belief systems, ideologies, political pressures, mental illness).
- *physiological* (status in life – young, old, adolescent, pregnant, lactating mothers, chronic illness, disability, exposure to sexual violence and harassment, HIV/Aids and other infections).





Disasters in proportion: HIV/AIDS kills 3 million people every year. Malaria claims 1.3 million lives. About 1.2 million die in traffic accidents annually.

## Risk

Risk is the probability of harmful consequences or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable populations.

## Disaster Risk Reduction

Disaster risk reduction (DRR) includes all the policies, strategies and measures that can make people, villages, cities and countries more resilient to hazards and reduce risk and vulnerability to disasters.

DRR includes different components:

**Prevention** integrates all the activities to provide outright avoidance of the adverse impact of hazards and the means to minimize related environmental, technological and biological disasters.

**Mitigation** has different meanings for practitioners in the climate change and disaster-management communities, often leading to confusion. For disaster management, mitigation focuses on structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

**Preparedness** activities contribute to the pre-planned, timely and effective response of individuals and communities to reduce the impact of a natural hazard and deal with the consequences of a potential disaster.

**Recovery** consists of decisions and actions taken after a disaster to restore or improve the pre-disaster living conditions of the stricken community.

**Reconstruction** is the set of actions taken after a disaster to enable basic services to resume functioning, repair physical damage and community facilities, revive economic activities, and support the psychological and social well-being of the survivors.

*(See Annex II for more information on terminology)*





# Face the facts: Disaster statistics and trends

*Disasters caused by vulnerability to natural hazards killed more than a quarter of a million people in 2010, one of the deadliest years in more than a generation. From the earthquake in Haiti and other major tremors in Chile and China, to floods in Pakistan, Australia and Europe, to wildfires in Russia, barely a day went by in 2010 without lives lost, people displaced and property damaged as a result of these disasters.*

*Below is a list of 10 disaster-related statistics and trends that you should know before writing a disaster risk reduction story.*

## 1. More than 226 million people are affected by disasters every year

In 2010 alone, 373 disasters resulted in the deaths of 226,000 and affected 207,000 persons. Over the decade 2000-2010, 400 disasters accounted for 98,000 deaths and 226,000 million affected each year. In total, 1,077,683 people lost their lives while 2.4 billion were affected by disasters during the decade. (CRED).

**Trend:** More people will be at greater risk in the future as more people live in unsafe urban settlements, especially in coastal areas exposed to floods, cyclones and storms. The trend shows a constant increase, even excluding major events with over 10,000 deaths such as the tsunami in the Indian Ocean in 2004, Cyclone Nargis in 2008, and the Pakistan, China and Haiti earthquakes in 2005, 2008 and 2010, respectively.

## 2. Earthquakes and droughts are the biggest killers

More than 680,000 people died in earthquakes between 2000 and 2010 due mainly to poorly built buildings. Collapsing buildings and fires following an earthquake are often the main causes of death. The highest risk levels occur in middle-income countries that have not adequately planned or regulated urban growth. Earthquakes are the deadliest disasters in all continents, but droughts remain the highest disaster killer in Africa. Since 1980, drought and associated famine have claimed nearly 558,000 lives and affected more than 1.6 billion people (CRED).

**Trend:** As cities continue to grow and as more people crowd into poorly built housing settlements, the trend of earthquake-related deaths will probably continue to rise. In the years to come, climate change will also trigger more droughts throughout the world.

### 3. Floods and storms are hazards that affect most people

Disasters resulting from such natural hazards as tropical cyclones, windstorms, floods and related landslides affect the most people. Such weather-related disasters represent about 81 per cent of all events, 72 per cent of all economic losses and 23 per cent of fatalities for the period 2000-2010. On average, about 37 million people are affected every year by cyclones, hurricanes and typhoons, nearly 366,000 by landslides and 102 million by floods (CRED).

**Trend:** More people are living in climate risk hotspots. Of the 33 cities that will have at least 8 million residents by 2015, 21 are in coastal areas. Coastal flooding is expected to increase rapidly due to sea level rise and weakening of coastal ecosystems such as coral reefs impacted by sea temperature rise.

### 4. Asia is most at risk

Asia continues to be the most affected continent, with more than 62.5 per cent of deaths caused by disasters and 89.7 per cent of the affected people. Africa, Asia and the Americas together account for 87 per cent of the total deaths associated with disasters during the period 2000-2010. Europe and North America are less affected in terms of death and injury but more in terms of economic impacts. The 66 disasters reported in Europe in 2007 accounted for 28 per cent of the world's economic losses from natural hazards but only five per cent of people killed globally.

**Trend:** According to the fourth IPCC report, nearly 200 million people today live in coastal flood zones; in South Asia alone, the number in such areas exceeds 60 million people.

## 5. Poor people are the most vulnerable

Poor people are more affected by disasters than any other economic group. This is true both in developing and developed countries. All countries are vulnerable to natural hazards, but most of the 3.3 million deaths from disasters in the last 40 years have been in poorer nations. Poor people are also the ones who suffer the greatest long-term consequences of disasters as they have no insurance and no means to recover quickly; they often lose their homes, jobs and livelihoods, which make them more vulnerable to the next disaster.

***Trend:** As more poor people concentrate in urban slums, the numbers vulnerable to disasters will also increase. Three billion of the world's people live in poverty on less than US\$2 per day and 1.3 billion on less than US\$1 per day. According to UN-Habitat, by 2030, nearly 3 billion people will live in slums.*

## 6. Women, children and disabled are among the most vulnerable

Women and children are 14 times more likely to die than men during a disaster, according to IUCN. In industrialized countries, more women than men died during the 2003 European heatwave; many more African-American women were affected by Hurricane Katrina in 2005 than men. In many countries, women have subordinate positions, restricted mobility, less educational opportunity, less voice in decision-making and poorer employment, all of which increases vulnerability. During Hurricane Mitch in 1998, a disproportionate number of street children in Central America were affected. Save the Children reports that more than 50 per cent of all those affected by disasters worldwide are children.

***Trend:** There has been some progress with women and children vis-a-vis awareness raising and preparedness. But as long as these two groups continue to be largely excluded from disaster risk reduction decision-making and education, no real progress will be achieved.*





## 7. Economic damage from disasters is on the rise

From 2000 to 2010, economic damage as a result of disasters came to about US\$ 1 trillion; in 2010 alone, the total estimated damage was US\$109 billion. Damage in the past two decades is significantly greater than in earlier decades. This could reflect greater exposure, or better reporting, or both. Rich countries (United States, Europe, and increasingly Asia) incur greater absolute damage as the value of their infrastructure is higher. The damage is least in Africa, where the poor possess little. The 2005 Indian Ocean tsunami cost US\$10 billion whereas Hurricane Katrina cost more than US\$130 billion in the United States. The average cost of a disaster in a highly developed nation is US\$636 million, a medium-developed nation US\$209 million and low-income nation US\$79 million.

**Trend:** A joint report from the World Bank and United Nations indicates that annual global losses from natural hazards could triple to US\$185 billion by the end of this century, even without calculating the impact of climate change. Climate change could add another US\$28-68 billion more in damages each year as tropical cyclones alone are predicted to become more severe and frequent.

## 8. Small-scale disasters create long-term impacts

Tens of thousands of small-scale disasters occur each year throughout the world because of flooding, landslides, fires and storms. The impact of small disasters can be just as damaging as large ones, causing injury and death, undermining livelihoods and leading to chronic poverty.

**Trend:** Small-scale disasters are often unreported but have an increasingly huge impact on development and poverty.

## 9. Less than 0.7 per cent of the total relief aid goes to disaster risk reduction

Only 0.1 per cent of international humanitarian aid went to prevention in 2001 and 0.7 per cent in 2008, according to the World Bank. At the Second Session of the Global Platform on Disaster Risk Reduction in 2009, participants agreed to target the equivalent of 10 per cent of humanitarian relief funds for disaster risk reduction work. Similarly, a 10 per cent figure has been proposed as a target share of funding for post-disaster reconstruction and recovery projects as well as national preparedness and response plans. Calls were made for at least one per cent of all national development funding and all development assistance funding to be allocated to risk reduction measures.

**Trend:** Disaster risk reduction is often seen as a long-term solution, whereas it is really a short-term solution with immediate returns that will considerably reduce poverty, climate change impacts and disaster risks.

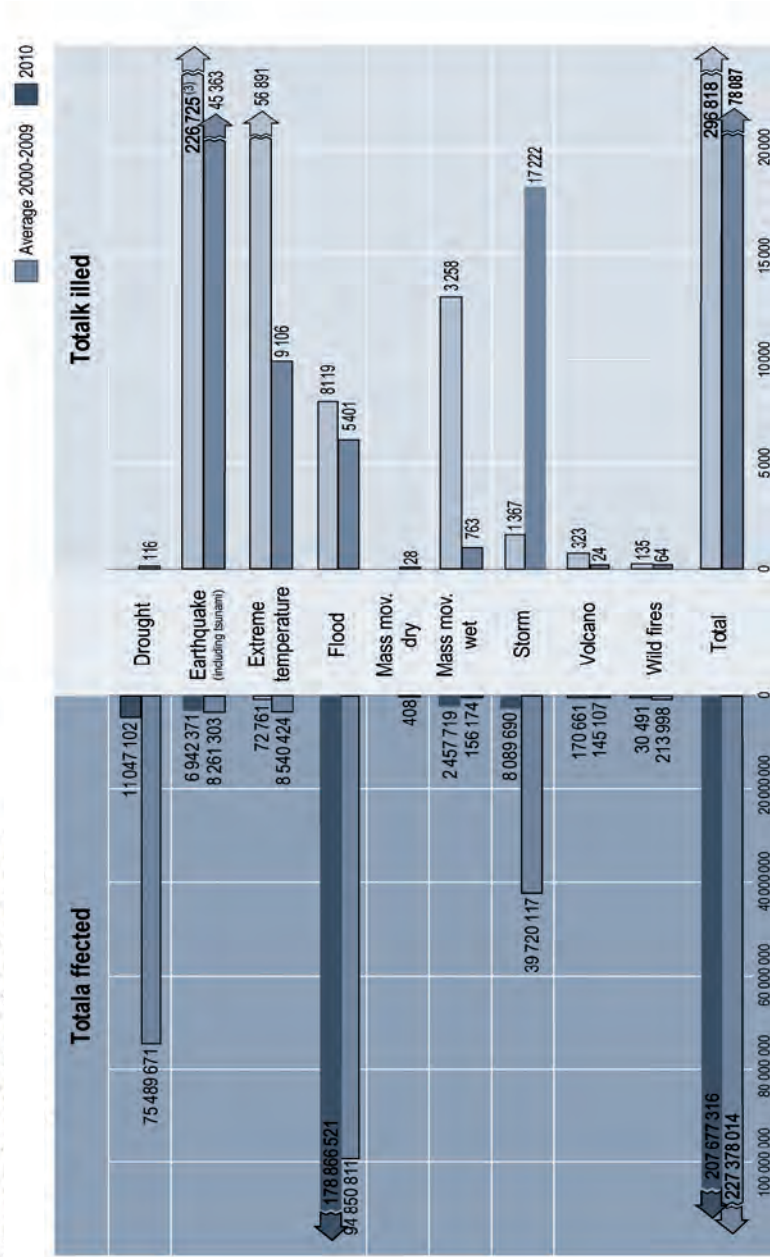
## 10. Prevention pays.

Thanks to effective building codes and other DRR measures, Chile's 8.8-magnitude earthquake in 2010 killed only one person out of every 595 affected; Haiti's earthquake, while 500 times less powerful, killed one in every 15 affected. No one was killed in a 7.2-magnitude earthquake in Christchurch, New Zealand, in 2010. Despite the great loss of life as a result of the earthquake and tsunami in Japan in 2011, more lives would have been lost and damage would have been far greater had the Japanese government not invested 5 per cent of their annual budget in DRR in the past 15 years; investments made in building codes and preparedness measures after a 1995 earthquake in Japan saved lives in 2011.

**Trend:** Investing in DRR is a triple win – it helps reduce the impacts of hazards, decreases poverty and allows communities to adapt to climate change. DRR is not about asking for more money but for using development and humanitarian aid money in different ways.

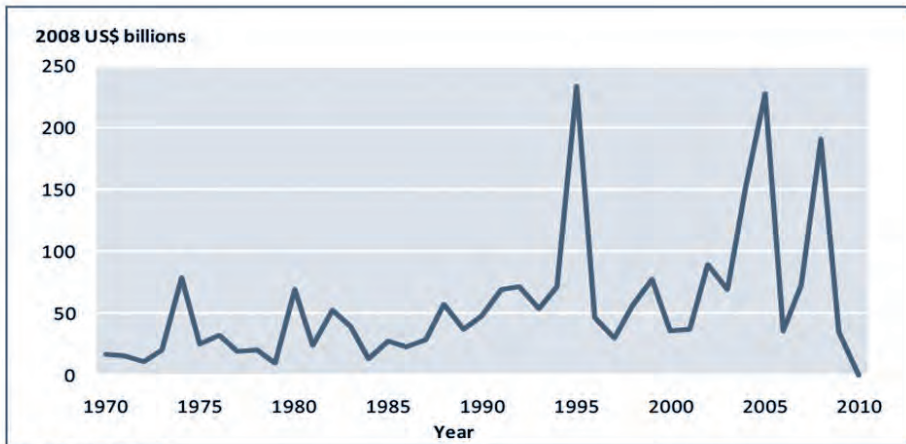
# Disasters in numbers

## Human impact by disaster types



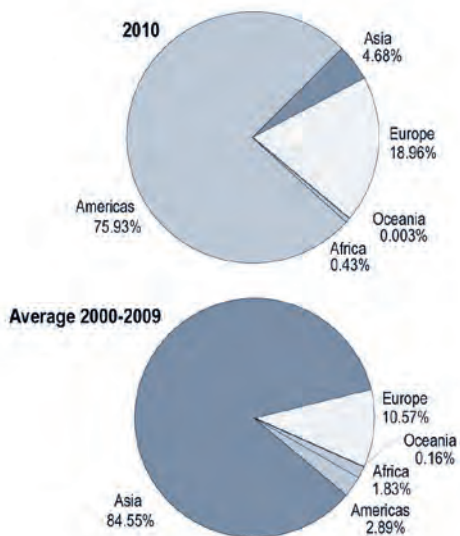
# Disasters in numbers

## Global economic damages from hazards, 1970-2010

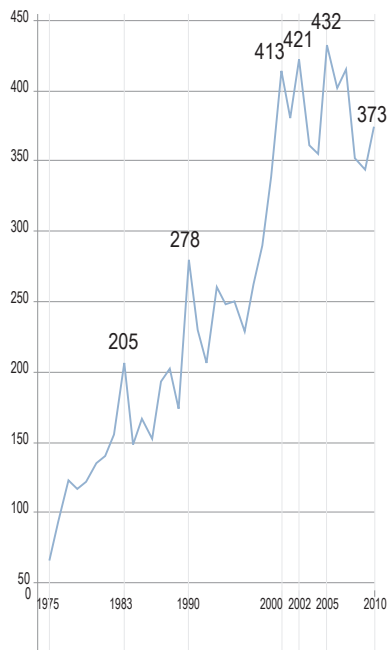


Source: EM-DAT/CRED.

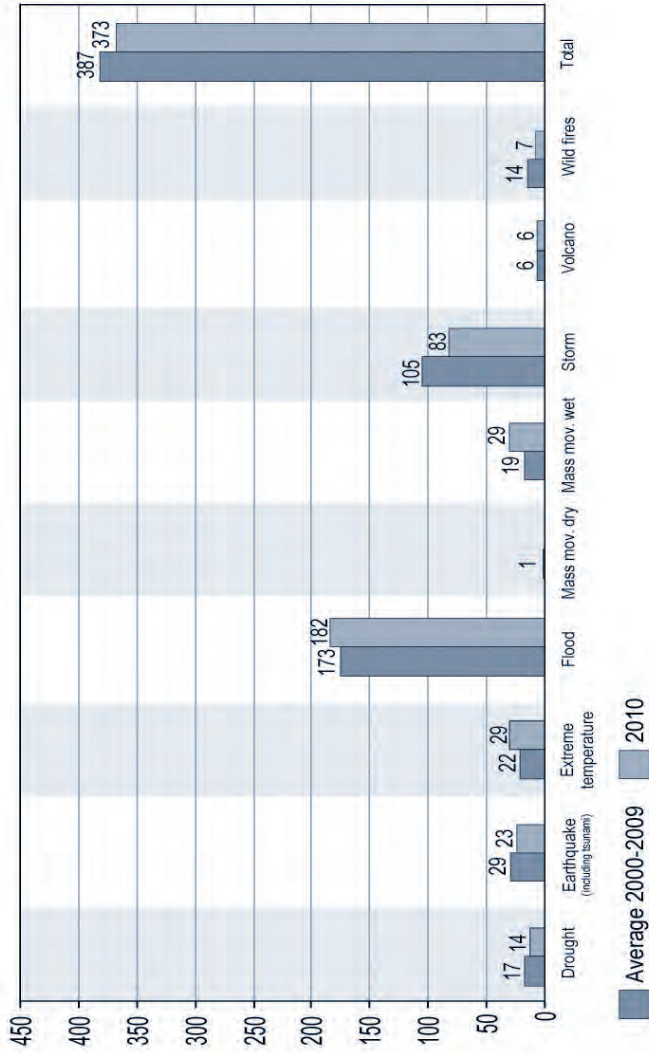
Percentage of people killed by disasters by region



Trend of reported disasters, 1975-2010



## Disaster occurrence by disaster type



## Disasters\* 2000-2010 by disaster type

dis_type	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
Drought	188	1159	765943815	27009968	0
Earthquake (seismic activity)	313	680351	89555405	215715421	15532041
Extreme temperature	250	147952	85477001	37992269	2835000
Flood	1910	62131	1127374632	203938263	25624000
Mass movement dry	8	282	4083	0	0
Mass movement wet	220	10891	4019458	2029785	195000
Storm	1137	173587	405290861	491358572	214150334
Volcano	66	560	1621730	177869	0
Wildfire	149	770	2170469	24137467	7050500
Grand Total	4241	1077683	2481457454	1002359614	265386875

## Weather-related disasters 2000-2010

dis_type	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
Drought	188	1159	765943815	27009968	0
Flood	1910	62131	1127374632	203938263	25624000
Mass movement wet	220	10891	4019458	2029785	195000
Storm	1137	173587	405290861	491358572	214150334
Grand Total	3455	247768	2302628766	724336588	239969334

## Disasters\* by continent 2000-2010

continent	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
Africa	711	15550	159425327	9920317	69500
Americas	1016	247970	82723767	448343185	198587000
Asia	1684	674106	2227956401	390703029	23224841
Europe	661	138764	10130373	135313203	33938534
Oceania	169	1293	1221586	18079880	9567000
Grand Total	4241	1077683	2481457454	1002359614	265386875

### Disasters\* by year 2000-2010

start_year	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
2000	413	9686	173154137	45724436	5380000
2001	379	30981	108735282	27049439	6574000
2002	421	12580	658053253	52074152	10973500
2003	360	109991	254988805	69810350	12552300
2004	354	241635	161718429	136175178	42844541
2005	432	89192	160242259	214202351	92292000
2006	401	23491	126009007	34104949	7075000
2007	414	16940	211303791	74420257	22699000
2008	351	235287	220854596	190548247	30918500
2009	343	11082	198720579	48740483	12323000
2010	373	296818	207677316	109509772	21755034
Grand Total	4241	1077683	2481457454	1002359614	265386875

### Drought 1980-2010 by continent

continent	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
Africa	197	553093	291159346	4816693	0
Americas	99	77	47183620	15432539	0
Asia	105	5308	1311750144	33302907	0
Europe	36	2	10482969	21461309	0
Oceania	14	60	8027635	10103000	0
Grand Total	451	558540	1668603714	85116448	0

### Disasters\* in 2007 by continent

continent	Count of seq	Sum of no_killed	Sum of total_affected	Sum of total_dam ('000 US\$)	Sum of insur_dam ('000 US\$)
Africa	85	1131	9519431	755341	0
Americas	102	2114	9116698	16517126	8201000
Asia	152	12634	190849489	34545932	2239000
Europe	66	819	1646560	21164206	11579000
Oceania	9	242	171613	1437652	680000
Grand Total	414	16940	211303791	74420257	22699000

\* Biological disasters excluded (epidemics, insect infestations) - Created on: January 11-2011. - Data version: v12.07  
 Source: «EM-DAT: The OFDA/CRED International Disaster Database - www.emdat.be - Université Catholique de Louvain - Brussels - Belgium»





# Why are disasters happening?

*Disasters happen for many reasons but four main factors are contributing to the increase of disaster risks: climate change, rapid urbanization, poverty and environmental degradation.*

# Climate Change







Photo courtesy of Yann Arthus-Bertrand

More than 20 million people are threatened by sea-level rise in Bangladesh by 2020.

## Climate change

Climate change will create new hazards such as glacier melting, sea level rise and extreme weather events in proportions never seen before. This will aggravate the existing disaster risks and vulnerabilities and expose millions of people never affected before around the world.

### The facts

In its *Fourth Assessment Report*, the Intergovernmental Panel on Climate Change (IPCC) predicted that by 2100:

- Global average surface warming will increase by between 1.1°C and 6.4°C.
- Sea level will rise by between 18cm and 59cm; sea-level rise, coupled with coastal storms, will increase the risks of flooding and threaten protective ecosystems.
- Oceans will become more acidic and warmer.
- Extreme heatwaves and heavy rainfalls will become more frequent.
- More heatwaves will increase death rates among the elderly, very young, chronically ill and socially isolated.
- Higher latitudes will experience more precipitation; subtropical land areas will become more arid.
- Tropical cyclones (including typhoons and hurricanes) will become more intense, with higher peak wind speeds and heavier precipitation, as tropical sea surface temperatures increase.
- Regions hardest hit will include the Arctic, sub-Saharan Africa, small islands, developing states, Asian deltas and coastal zones.
- Increased drought in some regions will lead to land degradation, crop damage and reduced yields; livestock deaths and wildfire risks will increase, and people dependent on agriculture will face food and water shortages, malnutrition and increased disease, with many being forced to migrate.

- Greater rainfall in some areas will trigger more floods and landslides, with consequent disruption to agriculture, urban settlements, commerce and transport.
- Increases in the number and intensity of powerful cyclones will affect coastal regions and threaten very large additional losses of life and property.
- As temperatures rise, glaciers melt, increasing the risk of lake bursts and disastrous floods; as mountain glaciers recede, farmers and towns downstream that depend in the summer months on glacial melt water will increasingly be at risk.

### What can be done?

#### Nations can:

- Make disaster risk reduction a national and local priority, with strong institutions to implement decisions.
- Set up early warning systems that reach all people, in time for appropriate action, and accompany the warnings with helpful advice.
- Incorporate climate risk in all urban planning and water and forest management processes.
- Maintain and strengthen coastal wave barriers, river levees, flood ways and flood ponds.
- Have adequate drainage systems to avoid flooding.
- Incorporate climate risks in infrastructure projects, especially in hospitals, schools and water supplies.
- Support diversification, including new sources of income, new crops and agricultural techniques, and new ways to improve water uptake and reduce erosion.
- Build mechanisms that will get people out of harm's way in a hazard and prepare shelters to protect them when they are forced to move.



# Rapid and unplanned urbanization







Photo courtesy of Yann Arthus-Bertrand

Half of the population in Caracas, Venezuela, lives in slums which are prone to mudslides when floods occur.



## Rapid and unplanned urbanization

The rapid growth of cities, combined with climate change and the urban population explosion, will create new stresses for urban settlements and make city dwellers increasingly vulnerable.

### The facts

- One out of every two people now lives in a city; this proportion will go on rising; by 2030, 5 billion of the planet's expected 8.1 billion population will be urban.
- One in three of the urban population lives in marginal settlements or crowded slums with inadequate access to clean water, sanitation, schools, transport and other public services
- One city dweller in four lives in absolute poverty; by 2030, two-thirds of humankind will live in cities and three billion in slums.
- Eight of the 10 most populous cities on the planet are vulnerable to earthquakes; 6 of the 10 are vulnerable to floods, storm surges and tsunamis.
- Ineffective land-use planning, inadequate enforcement of building codes and faulty construction standards put millions at risk.
- By 2015, 33 cities will have at least 8 million residents; of these, 21 are in coastal areas and particularly vulnerable to meteorological hazard driven by climate change (e.g. Dhaka, Shanghai, Manila, Jakarta, and Mumbai). Cities with weak governance and small and medium-sized urban areas are more vulnerable to disasters as they have weaker capacities to manage urban growth, deforestation and destruction of coastal systems.

According to UN-HABITAT, up to 3,351 cities around the world are located in low-lying coastal zones that may be affected by rising sea levels. Six out of the 10 largest cities are also located along seismic fault lines.

## What can be done?

### Nations can:

- Have national and local budgets to systematically integrate disaster risk reduction in all aspect of urban planning
- Plan urbanization and avoid building in risk areas.
- Avoid the development of slums, offering safe lands to low-income families.
- Have safer schools, hospitals, roads, bridges than can withstand any type of hazard.
- Identify high-risk areas, build disaster risk reduction into development programmes and implement effective disaster recovery policies.
- Integrate seismic risk assessment in the construction of buildings in areas exposed to earthquakes.
- Involve people at risk by educating them on disaster risk reduction and in making their own neighborhoods safer; this effectively empowers people and increases their capacity to respond to disaster.
- Protect communities by installing early warning systems.
- Make warnings more effective with regular drills and increase community ability to foresee, prepare for and cope with disasters.
- Give poor communities access to financial mechanisms to protect houses and incomes.

### Making Cities Resilient

UNISDR launched a worldwide campaign in 2010 to make cities more resilient. The campaign proposes a checklist of Ten Essentials for Making Cities Resilient that can be implemented by mayors and local governments. The checklist is derived from the five priorities of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, a key instrument for implementing disaster risk reduction. Achieving all, or even some, of these Ten Essentials will help cities to become more resilient.



Poverty aggravated the impacts of the 2010 earthquake in Haiti.

## Poverty

Poverty and socio-economic inequalities are aggravating disaster factors. They not only make poor people more vulnerable to disasters but they trap them in a vicious circle of poverty.

### The facts

- Disasters hit poor people the hardest. It is not only true in developing countries but also in developed countries. Levels of vulnerabilities are highly dependent upon the economic status of individuals, communities and nations. The most affected people during the Katrina hurricane in the United States were the poor communities. During the hurricane season in 2008, Haiti was the hardest hit among the Caribbean states.
- Fifty-three per cent of affected people by disasters live in developing countries while 1.8 per cent lives in developed countries. Over 95 per cent of the people killed by disasters lived in middle and low-income countries, using World Bank classification based on gross national income (GNI) per capita.
- Disasters affect poor countries and poor communities disproportionately. The World Bank reports that: “This disproportionate effect on developing countries has many explanations. Lack of development itself contributes to disaster impacts, both because the quality of construction often is low and building codes, and registration processes, and other regulatory mechanisms are lacking, as well as numerous other development priorities displace attention from the risks presented by natural events” (Hazards of Nature, Risks to Development, World Bank 2006).
- A country’s level of development has a direct impact on the damage natural hazards inflict on populations. Less-developed countries suffer most, as they are more frequently hit and more severely affected. Their weak infrastructure and limited capacity for prevention makes them more vulnerable than wealthy, industrialized nations.

- One half of the world population is vulnerable to disasters because of their social living conditions. Slums and poor urban settlements are the most exposed to disasters.
- An estimated 1 billion people worldwide live in slums and shanty towns, which are vulnerable to disasters.
- Extensive research shows the poor are more likely to occupy dangerous, less desirable locations, such as flood plains, river banks, steep slopes and reclaimed land because the price is cheaper.
- Poor people tend to live in poorly built and unprotected building that will be the first to collapse in any disaster.
- Losses from disasters are most devastating to the poorest people.
- Disasters have long-term consequences on poor people as they have less means to recover. Poor people not only lose their family members, houses, main source of income and livelihoods when disasters happen but also become more vulnerable to future disasters.

### What can be done?

#### Nations can:

- Establish urban development programmes that reduce the creation of slums in risk areas and prevent the growth of housing on dangerous slopes or flood plains.
- Provide the poor with access to lands that are safe.
- Involve the poorest communities in building their own capacity to resist disaster since they have most to lose, and to give them a greater political stake in the community.
- Give the poorest people full access to early warning systems, preparedness measures and at the same time access to financial mechanisms that can help them protect their homes, health and livelihoods.
- Develop micro-finance mechanisms that include micro-credits, micro-savings and micro-insurance -- instruments that help reduce poverty by also reducing vulnerability to natural hazards.





# Environmental degradation







Photo courtesy of Yann Arthus-Bertrand

Haiti. Forests only represent 2 per cent of the total surface of Haiti today; deforestation will aggravate the impacts of floods in the future.



## Environmental degradation

Communities can all too often increase the probability and severity of disasters by destroying the forests, coral reefs and wetlands that might have protected them.

### The facts

- Forests once covered 46 per cent of the Earth's land surface – half of these have disappeared; only one-fifth of the Earth's forests remain undisturbed.
- Coral reefs are home to one-fourth of all marine species; 60 per cent of coral reefs could be lost in the next 20-40 years.
- The expansion of deserts and the degradation of land threaten nearly one-quarter of the planet's land surface; more than 250 million are directly affected by desertification and 1 billion are at risk.
- Global warming could be accompanied by widespread species loss, ecosystem damage, flooding of human settlements and greater frequency and severity of other disasters due to vulnerability to natural hazards.

### What can be done?

#### Nations can:

- Undertake land-use planning with an ecosystem approach.
- Recognize the risk reduction function of ecosystems in environmental policies and legislation.
- Identify and protect natural buffers such as forests, wetlands and coral reefs.
- Restore forests and plant mangroves to shield communities from hazards such as storm surge, coastal flooding and tropical storms.
- Manage forests to reduce wildfire risk.

### Why we should protect the environment

Wetland and forest ecosystems function as natural sponges that absorb and slowly release surface water, rain, snowmelt, groundwater and floodwater.

The destruction of such natural buffers can put tens of thousands at risk.

Mangroves, dunes and reefs, for example, act as natural physical barriers that protect communities from coastal hazards. As they disappear, communities become at greater risk of flooding. Likewise, deforestation makes flooding more severe because slopes stripped of tree cover are less able to hold water. As a result, soil erosion lowers the productivity of farmland, amplifies drought and eventually leads to desertification.

*“The six countries that have best addressed the underlying risk drivers of badly planned and managed urban development, ecosystem decline and poverty and which have strong governance are Switzerland, Sweden, Denmark, Ireland, Norway and Finland. The bottom six countries (Afghanistan, Chad, Haiti, Somalia, Democratic Republic of Congo and Eritrea) are low-income nations that are experiencing or have recently experienced conflicts or political crisis.”*

Global Assessment Report 2011



# How can we prevent disaster?

*In January 2005, just three weeks after the tsunami in the Indian Ocean killed an estimated 250,000 people, 168 governments met at the second World Conference on Disaster Reduction, in Kobe, (Hyogo), and agreed on a 10-year plan to reduce disaster losses by 2015. This plan is called the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.*

## Hyogo Framework for Action

The main goal of the Hyogo Framework for Action (HFA) is to build the resilience of cities, communities and nations and reduce the impacts of disasters by 2015 in terms of lives and economic losses. It does not set any target but identifies three strategic goals and five priority areas of action that will make nations and communities safer from disasters if implemented.

### Strategic goals:

- 1. Integrate DRR into sustainable development policies, planning and programmes.**
- 2. Develop institutions, mechanisms and capacities at all levels, particularly the community level, to contribute to building resilience to hazards.**
- 3. Systematically incorporate DRR in emergency preparedness, response and recovery programmes.**

### Priority areas of action:

- 1. Ensure that DRR is a national and local priority, with a strong institutional basis for implementation.**
  - Make risk reduction a higher policy and political priority, engaging the highest levels of authority in nations and communities.
  - Have in place a national legal and institutional framework that will focus on risk reduction and identify “who does what”, and involve all main stakeholders to prevent, mitigate and prepare against the impact of hazards at a regional, national and local level.
- 2. Identify, assess and monitor disaster risks and enhance early warning.**
  - Define the area of risk through assessment tools such as hazard and vulnerability maps, and have good early warning systems in place.

**3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.**

- Raise community awareness about disasters, educate children at school and promote the use of knowledge to build a culture of safety and resilience at all levels.

**4. Reduce the underlying risk factors.**

- Plan for land use.
- Protect natural buffers.
- Build resilient houses and critical infrastructures such as hospitals, schools, bridges and roads in safe areas.
- Have social and financial mechanisms in place.
- Reduce risk in all sectors (agriculture, tourism, health, transport).

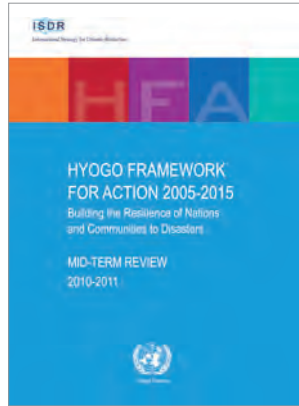
**5. Strengthen disaster preparedness at all levels**

- Have well prepared and rehearsed evacuation plans.
- Understand hazard warnings.
- Organize drills.
- Have pre-disaster recovery plans.

The HFA is not a binding document, but it is the only international framework that provides a strategic and comprehensive global approach to the challenge of reducing risks from natural hazards by 2015. It represents a significant shift of attention toward the root causes of disaster as an essential part of sustainable development, rather than on disaster response alone.

To date, 192 nations have established a focal point to implement the Hyogo Framework for Action, and many have committed at least 10 per cent of relief funds towards prevention of future disasters.

DRR is gaining momentum, but more commitments and investments are needed to protect the most vulnerable populations.



## **Hyogo Framework for Action 2005-2015 Mid-Term Review.**

To learn more about what has been done since the adoption of the HFA in 2005, read the HFA Mid Term Review that has been launched in Rome in March 2011.

Resources required from international sources to achieve the goals of the Hyogo Framework range from US\$750 million up to US\$2.4 billion annually. The first figure is based on an assumed 10 to 1 ratio between the total annual international humanitarian assistance and the estimated cost of disaster reduction. The second is a calculation that DRR might cost 1 per cent of the total international development funding from private and public sources, put at US\$239 billion.

For more information about the HFA, visit: [www.unisdr.org/eng/hfa/hfa.htm](http://www.unisdr.org/eng/hfa/hfa.htm)

MAKING NEWS ...

# World News

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## Earthquake

Powerful earthquake has destroyed entire area and caused enormous loss of lives and impacted the future of the region. Unstable

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## Who is responsible for disaster risk reduction?

*While the primary responsibility falls on governments, the Hyogo Framework for Action also recognizes that regional, civic and local authorities, non-governmental organizations and individual citizens must be involved. Without the full participation of states, communities and individuals, the implementation of disaster risk polices would not be possible.*

## DRR is everybody's business

Collaboration is at the heart of the Hyogo Framework. Disasters can affect everyone, and are therefore everybody's business. DRR should be part of everyday decision-making: from how people educate their children to how they plan their cities. Each decision can make us either more vulnerable, or more resilient.

To learn more about who does what in the United Nations to promote DRR policies, please refer to *"Disaster Risk Reduction in the United Nations 2009"*. The publication brings together the core set of ISDR system partners, the Inter-Agency Group, and lists disaster risk reduction networks and national counterparts, responsible for various areas of work at the country level.

For more information, visit: <http://www.unisdr.org/publications/v.php?id=9866>.

***"Disaster risk reduction is every citizen's responsibility. All of us may be affected by hazards – be it an earthquake, hurricane or floods. Lives and livelihoods can be saved when DRR is made a priority."***

Salvano Briceño, Director of UNSIDR





# Frequently asked questions about disaster risk reduction

*Below is a list of 10 frequently asked questions about disaster risk reduction:*

## **1. Why is DRR not a priority for governments?**

For some governments, DRR is often not a priority issue, especially as it requires long-term investment and the rewards may not be visible during an elected government's term of office. DRR measures are seen as insurance against something that might happen, but not necessarily linked to immediate danger. If DRR measures work well, they represent an invisible success; if there has been no disaster then nobody is conscious of this success, so there is no political reward. Climate change and the measurable increase in the number of disasters worldwide may change such perceptions, especially as disasters cause significant damage to infrastructure and even threaten national security.

## **2. Is disaster risk a development issue?**

Disaster risk reduction is a development issue. There is a close correlation between disasters, poverty, development and the environment. As the poor exploit environmental resources for survival, disaster risk increases; repeated exposure to disaster can lead to chronic poverty. One way to break the cycle is to introduce DRR measures as part of development programmes. Decision-makers who ignore the link between disasters and development do a disservice to the people who place their trust in them. Increasingly, ministries of planning and finance, with the support of the United Nations and NGOs, are assessing development projects in the context of risk reduction and management, and are designing risk reduction and recovery programmes with long-term development needs in mind.

### **3. Does corruption reduce the efficiency of DRR measures?**

Corruption threatens development, it undermines aid efforts and it deters donor nations. The problem is large enough and widespread enough for the declaration of an official United Nations anti-corruption day. To mark the day in 2009, United Nations Secretary-General Ban Ki-moon said that when public money is stolen for private gain, it means fewer resources to build schools, hospitals, roads and water treatment facilities. Development is not the only casualty. Corruption also steals elections, undermines the rule of law and can jeopardize security (*See Annex III*).

### **4. Are all disasters linked to climate change?**

Climate is a pattern of weather observed over decades. There have always been dramatic, extreme events and it would be wrong – and even misleading – to link any one flood, windstorm, heatwave or drought to climate change. But it would be true to say that the apparent increasing frequency and severity of extreme weather events is consistent with predictions made by the IPCC. An IPCC special report – *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation for adaptation to climate change* – provides more specific insights into the question.

### **5. Is DRR really cost effective?**

It is difficult to estimate the cost of a disaster that DRR might have prevented. There seems to be no internationally agreed way to define a cost, agree to a benefit, discount the future or determine the value of a human life. But both the World Bank and the US Geological Survey believe risk management can deliver significant benefits, and that economic losses worldwide from disasters in the 1990s could have been reduced by US\$280 billion if US\$40 billion had been spent on preventive measures. The World Meteorological Organization (WMO) believes US\$1 invested in prevention could save US\$7 in recovery. The United States Federal Emergency Management Agency (FEMA) says US\$ 1 invested in prevention saves between US\$4-7 in recovery.



## 6. Do you have to be a rich country to implement DRR policies?

DRR policies are more an investment than a cost. And it is more a question of priorities rather than costs. There are measures that do not cost a lot but which can save lives and the livelihoods of people. Educational measures that introduce DRR into the school curriculum and preparedness measures, such as ones implemented in Bangladesh, Vietnam and Cuba, are effective measures that have largely contributed to reducing the number of killed by disasters in these countries. Policies that prevent building in disaster-prone areas and agricultural adaptations that secure a harvest in time of drought or flooding would not necessarily be costly, but they would require a preventative approach. Some measures do require investment. For example, it might cost an extra 10 per cent on the initial construction budget to build a hospital that would withstand hazards; this is not a lot compared to the cost of a hospital that is destroyed in a disaster.

## 7. What are the limits of DRR?

DRR can reduce the impact of disasters, but it cannot make a region or a nation totally disaster-proof. Early warning systems can reduce the impact of a tsunami if people know what to do when it is issued but cannot protect someone on the beach from a 10-metre wave. Communities have different capacities to face disasters, but even wealthy countries that spend heavily on risk reduction can suffer severe damage. Hurricane Katrina, heading for New Orleans in 2005, was rated as a Category 5 hurricane: the severest category of all. Later, as it moved towards land, its severity was downgraded to Category 4. Unfortunately, the levees that protected the poorest parts of the city were designed to withstand only a Category 3 hurricane.

## 8. Why has it taken so long to include DRR in humanitarian relief and development policies?

Historically, disasters were seen as unpredictable natural events to which citizens and governments could only respond. Most governments, NGOs and even donor nations focused on emergency action. Now, experts have a better understanding of the causes and the socio-economic factors that go into the making of disasters. This understanding reveals that political action is possible before disasters happen. DRR policies are now seen as solutions that could help reduce the impact of disasters and make communities more resilient to future hazards. The shift from a culture of reaction to a culture of prevention is a slow one, but governments, donors and agencies now involved in the recovery process after an emergency recognize the benefits of incorporating DRR measures in their rebuilding programmes.

### A changing humanitarian world

Today, less than five per cent of public aid is spent on risk prevention, while the bulk of it is swallowed up by emergency response. A more even balance must be achieved. For every dollar spent on prevention, there is a saving of between US\$4-6 dollars in emergency response. For example, IFRC disaster preparedness programmes in Mozambique and Bangladesh have saved thousands of lives in recent years. We are working hard to improve the lives of vulnerable people worldwide. But a single humanitarian operator, however powerful, cannot make a difference alone.

*Excerpts from a speech by Markku Niskala, former Secretary-General (2003-2008) of the International Federation of Red Cross and Red Crescent Societies (IFRC)*

## 9. Are disasters linked to conflict?

Disasters caused by natural hazards – such as earthquakes, volcanic eruptions, floods, tsunamis and hurricanes – can have major political consequences. They often create grievances that lead to conflict by causing mass disruption to people’s lives and livelihoods. In the immediate aftermath of a disaster, a country’s physical infrastructure is affected, often preventing the adequate distribution of food and medical supplies; crops are destroyed, giving rise to food shortages, famines and localized conflicts over resources. As a disaster destroys many key social and political institutions, it can threaten political stability.

The impact of disaster on divided communities can fan the flames of dispute, or perhaps extinguish them. The Indonesian region of Aceh was the scene of a long and bitter conflict between separatists and the central government when the Indian Ocean tsunami hit the coast in December 2004. The devastation seemed to help warring communities to make a new beginning, with a formal compromise in 2005. But the same wave of destruction seemed to make little difference to the civil war in Sri Lanka, according to research published by the University of Oslo.

## 10. What is the role of the private sector in DRR?

The private sector can play an important role in reducing disaster impacts by investing more in DRR, both for their own businesses continuum, and in local communities where their workforce resides. For multinational companies with global reach, corporate social responsibility initiatives should seize upon DRR as an increasingly important development and humanitarian issue.

Small businesses — which often represent the majority of many countries' economies are also an important source for DRR support. They can build homes, commercial buildings and civil infrastructure, and provide communications as part of an emergency contingency plan. When a natural hazard threatens a nation, public facilities and private businesses alike have to protect their assets, workforce, and supply and distribution chains in order for society and the economy to keep functioning. Public-private partnerships, therefore, are an important step in reducing the risk of disaster.



# Key disaster risk reduction messages

1. Disasters are not “natural”. Hazards are. Disasters can often be prevented and their impact mitigated.
2. Prevention pays and has an immediate return. Prevention is not a cost, it is an investment.
3. Disasters do not only cause immediate human suffering and destruction but impede long-term development by keeping people trapped in a vicious spiral of poverty.
4. Disaster risk reduction is about saving lives and livelihoods by changing people’s mindsets. It is about shifting from response to prevention and reducing communities’ vulnerability.
5. People have a right to live in safety and with dignity. It is a state’s responsibility to protect its citizens. It is therefore vital that DRR policies are systematically integrated into sustainable development strategies at all levels, national to local.
6. Hospitals, schools and all critical infrastructure safety are essential for reducing societies’ vulnerability. Governments have a responsibility to protect critical buildings such as schools and hospitals, making communities more resilient to disasters.
7. Early warning systems can save lives. If alarms are sounded before disaster strikes, human loss can be avoided.
8. Educate to build a culture of prevention. People need to be provided with knowledge, skills and resources to protect themselves from disaster risk, same as in health or traffic.
9. Safe and healthy environment is vital. It is everybody’s responsibility to protect the environment to mitigate the impact caused by natural hazards.
10. Climate change adaptation starts with disaster risk reduction. Climate change is predicted to increase frequency and intensity of storms, floods and droughts. Communities need to be prepared to be able to deal with the impact of climate-related hazards.

# 2. Disaster Risk Reduction and the Media



## Exploring the root causes of disasters and their social dimensions lead to disaster risk reduction stories.

*By asking questions such as:*

- *Why are disasters happening?*
- *How can we prevent disasters?*
- *Who is responsible?*

*The media can influence political decisions, change public attitudes and, of course, save lives.*



# Responsibility of the media in disaster reporting

*Jonathan Baker is a broadcaster and editor, and until 2010 was deputy head of newsgathering for the BBC. He has since become principal of the BBC's College of Journalism. The views expressed here are his own.*

*Whether we like it or not, the way a media organization responds to a disaster will be driven first and foremost by how strong a story they think it is. To put it crudely: How bad is it? When reports come in of a catastrophic flood or an earthquake, the journalistic instinct will be to ask questions like these:*

- *How many people are dead, injured, made homeless? (Enough to mean that I have to run the story)*
- *Are people from my own country likely to be among the victims? (If not, am I interested?)*
- *What are the video pictures like? (If they're good, I might run them, regardless of the answers to the previous two questions)*
- *Should a journalist be sent to the scene, and if so, how far away is it, how long will it take to get there and how much will it cost? (My budget's always under pressure)*
- *Will my audience be interested in the story? (And will they care?)*
- *What other news is there today? (I never have enough room for all the news I want to carry)*
- *Might I win an award for covering this? (That would be nice)*

*These are the selfish, but perfectly understandable reflexes of news people the world over, be they employed by commercial or public service organizations. And even when a disaster satisfies these editorial requirements, it cannot be guaranteed to*

*command any volume of coverage. A famine in Africa might fall off the editorial list on the grounds that it has been going on for a long time and is likely to continue for some time. Or, there is nothing “new” to say, and there is a sense of helplessness that no one can do anything to prevent it. Widespread flooding in Bangladesh, for example, might not figure in an editorial discussion because of the regular, seasonal nature of such occurrences – it’s not news.*

*This may perhaps sound callous, and it is certainly depressing, but surely it is also inevitable. By some computations, there is, literally, a disaster for every single day of the year. Many will pass virtually unnoticed. Most will receive news coverage in the region in which they occur, but few will feature on a global news agenda. Frustratingly, those that do will not always be the ones most deserving of attention. Think of the huge international coverage given to the floods in Mozambique some years back. Was that a reflection of the number of dead, the number of homeless, economic or environmental damage? It was surely a lot more to do with all those dramatic pictures of helicopters plucking people to safety, and the story of the woman who gave birth in a tree while awaiting rescue.*

*Elsewhere in this book you will find powerful arguments intended to change that mindset, helping journalists focus on prevention rather than cure, on early warning and explanation, and on subsequent efforts to rebuild and recover. It is much harder to sell these stories to news organizations that are conditioned simply to reporting events as they occur, and which have a limited attention span and little interest in context or background. But many will see it as part of their responsibility to take a broader and more multifaceted approach to their journalism.*

*And that broader approach should also drive their actual reporting of an event. If the reportage will be seen or heard in the affected area, there is obviously a huge public information remit for the media. This could take many forms – details of which areas are worst affected, weather forecasts, where to find shelter, water, food and other necessities. To this might be added news of the hospitals treating victims, and where it is possible to find news of people who might have been caught up in the disaster.*

*This primary phase of the disaster coverage will often see the media, governments, emergency services and relief organizations working together to get the maximum amount of information to the maximum number of people. All of this is a legitimate, indeed obligatory, part of the media's reporting effort. To this extent, everyone is a public service broadcaster in these circumstances. Sometimes, audiences will want to know what they can do to help – with money, food, clothing, medical supplies – and the coverage can advise them on what is most needed and how it can be conveyed to the disaster zone.*

*Audiences will also want to know more about what has happened and why. Many disasters can be traced to a cause, man made or natural. People the world over were desperate to know the cause of the tsunami, which had such a devastating impact over such a wide area. Mudslides can sometimes be linked to deforestation many miles upstream. Increasingly, people look for links to global warming and climate change.*

*Often, too, there is a natural human desire to hold someone accountable, to find someone to blame. Did a government ignore calls for early warning systems, or skimp on defences against hazards? Did it turn a blind eye to excessive logging or toxic emissions from a chemical plant? Did a company ride roughshod over safety regulations because they would have hit profits? Were the forest fires started on purpose?*

*All of these are important areas for journalistic exploration, not least because they contribute towards efforts that can be made either to prevent such a disaster ever happening again or – if that's not feasible – mitigating the effects, should it strike again in future. News organizations should feel the need to keep returning to stories to make sure that promised new regulations have indeed been put into place, that overseas aid has gone to those who most need it, that reconstruction is proceeding at a reasonable pace. Holding people accountable for their areas of responsibility is one of the basic purposes of a properly functioning media.*

*From all of which it will be evident that even given their blinkered and highly subjective response to a disaster, the media can and should take a prominent role in bringing it to public attention, support the relief effort by the rapid dissemination of information, explain the background and causes, and hold people to account for their actions. These are responsibilities that most news organizations would recognize and readily accept.*



# Ten good reasons to report on disaster risk reduction

*In the course of the last three decades, broadcasters, magazine editors, newspaper journalists and bloggers have helped make dramatic changes in social attitudes to drinking, smoking, diet, HIV and AIDS and the environment. If disaster risk reduction becomes a normal part of the national, civic and media agenda, it will be because of systematic, measured and sensible reporting by responsibly-minded people in the media.*



*Below is a list of ten good reasons to report on disaster risk reduction:*

## **1. Natural hazards are on the rise and will continue to make news**

Natural hazards are likely to remain among the most challenging issues in the future as poverty, urban risks, climate change and environmental degradation expose more people to an entirely new scale of devastation. Disaster risk reduction stories do not need more money or manpower; they require another mindset, established information sources and a good understanding of the “process” behind every disaster.

## **2. DRR is a political issue**

As disasters continue to rise and people demand more action from their governments to take preventive action, DRR is likely to become a significant political issue in the years to come. As populations are increasingly affected by sea-level rise, floods and droughts – which can contribute to economic and political instability – most disaster-prone countries will be less inclined to accept the recurrence of disasters fatalistically and will urge for more political commitment. The increasing damage from disasters both within and beyond national boundaries will also make the case for closer regional and international collaboration. ASEAN countries have called for making the HFA a binding document, while Brazilian President Dilma Rouseff has called for implementing an early warning system and more preparedness in her country after 900 people died in mudslides in January 2011. Other governments are calling for more DRR action, but too many are doing it only when disasters have already hit their countries.

### **3. DRR is an economic issue**

Disasters are costing more and have long-term economic impacts on both developed and developing countries alike. Disasters caused US\$109 billion in economic damage in 2010, three times more than in 2009. The 8.8-magnitude earthquake that struck Chile in February 2010 cost US\$ 30 billion. Although Haiti's earthquake was the deadliest event of 2010, killing more than 250,000 people, its economic toll was US\$8 billion. The July-August floods in Pakistan cost US\$9.5 billion, while damage caused by floods in Australia were estimated at AUS\$30 billion. The Icelandic volcano crisis in April 2010 cost airlines more than US\$1.7 billion in lost revenue (IATA). In 2005, Hurricane Katrina did US\$130 billion worth of damage. The rising costs seem to continue to mount with damages of last Tohoku earthquake and tsunami in Japan expected to total over US\$300 billion.

### **4. DRR is a human right issue**

Governments have the primary responsibility of protecting their citizens against disasters. Recent humanitarian crises caused by disaster situations have raised new challenges, in particular in relation to the protection of the basic human rights of disaster-affected populations and victims at times of disasters. While the concept of human rights protection is widely acknowledged as a crucial element of humanitarian strategies in times of emergency and disaster situations, the longer-term aspects linked to the promotion and definition of a human rights-based approach in disaster prevention and reduction is still limited.

## **5. DRR is an environmental issue**

Environmental management has an important role to play in reducing many of the risks posed by natural hazards. Ecosystems act as natural, dynamic barriers that can help protect vulnerable communities from at least some of the impacts of climate change. DRR is likely to become more mainstreamed into the sustainable development agenda and climate change negotiations, which already receive significant media coverage.

## **6. DRR is a cultural issue**

People have different perceptions of disasters and react in different ways. Some people ignore hazards and believe they are inevitable, while others believe that they are an act of God or nature and that there is nothing they can do. But many societies realize that hazards can be identified and disasters prevented. Using traditional knowledge, people in many regions have adapted building design to withstand earthquakes, or to survive flooding. People also confront hazards in different ways according to the traditions of their culture. When the Indian Ocean tsunami hit in December 2004, over 250,000 people were killed throughout Asia, but only seven died out of a population of approximately 83,000 on Simeulue Island, just 40 km from the epicentre of the earthquake. Nearly the entire population on the island survived thanks to knowledge of previous tsunamis, handed down from each generation to the next; people sensed they had to evacuate and go towards higher ground to survive.

## **7. DRR is a gender issue**

In poorer countries, women and children tend to be the most affected by disasters. In many countries, the vulnerability of women is much greater because of their subordinate position in the family, lack of control over the means of production, restricted mobility, limited facilities for education, lack of employment, and inequalities in food intake relative to men. As a result of Cyclone Nargis in 2008 in Myanmar, twice as many women died as men in the 18-60 age groups. Highlighting examples of women leaders in their communities across Asia and Africa can be very attractive stories, contributing to women's empowerment.

## **8. DRR provides good investigative and in-depth stories**

Journalists do more than just break the news. There are many ways of getting disaster risk reduction into the public consciousness, ways that can inform, educate and raise awareness and concern about one particular threat. They can question the performance of governments, and alert and help a particular vulnerable audience to cope with a potential disaster. They can draw attention to vulnerability, and warn of “disasters in the making” based on risk assessments. Such reports raise the controversial elements of governance, corruption, budgetary folly, and, of course, potential danger. Long before Hurricane Katrina, the Times-Picayune of Louisiana investigated the disaster-to-be and warned with considerable accuracy, in a five-part series, of what might happen.

## 9. DRR is NOT only a disaster story.

DRR stories do not just have to be about the disasters themselves. Covering current risks and dangers, commemorating past disasters, reporting on disaster recovery and reconstruction efforts as well as on positive measures that can save lives, such as education and traditional knowledge, can be good stories too. The story of Tilly Smith, a young English girl on vacation in Phuket, Thailand, during the 2004 tsunami is one of them. Tilly saved hundreds of people in her hotel, thanks to a geography lesson she had in school on tsunamis before going on vacation.

## 10. DRR is everybody's business

As “mirrors of the society”, the media has a responsibility to raise the profile of disaster risk reduction issues among the public at large. Media played an essential role in raising awareness about the dangers of AIDS and road safety and diminishing the number killed every year by these two threats. No one would stop using seat belts or condoms because they have never had an accident or never contracted HIV. In the same way, no one should fail to take care of their homes, workplaces or children's schools because they have not suffered floods or earthquakes. Media can help make everybody a risk reducer and make the world safer against disasters. Media have also another main role in the early warning chain as they are often the first ones to issue early warning messages.



Global Platform on Disaster Risk Reduction, 2009



# Tips for reporting on disaster risk reduction

*Newspaper reporters, broadcasters and news agencies play a crucial role in promoting DRR before and after disasters.*



## Here are some tips for ensuring good DRR coverage:

### For editors

- Have an internal policy about who covers disasters.
- Have an internal contingency plan to cope with disasters.
- Have a plan to alert and issue early warning messages.
- Assign one reporter to cover DRR; the same reporter can also cover climate change.
- Allow time and space to investigate the causes of a disaster.
- Invest in DRR knowledge by sending reporters to DRR media training or on disaster field trips.
- Understand the role you can play in policy change.
- Organize private meetings at the higher level with national disaster managers.
- Organize awareness programmes to sensitize and educate vulnerable people.

### For reporters

- Develop private contacts with disaster experts before disasters happen; know who they are, their exact speciality and have regular contact with them.

- Have a contact list for experts in urban risks, early warning systems, climate change, gender, environmental and development issues to enrich the disaster story.
- Have contacts with national and local meteorological departments, disaster managers, ministers and ministries involved in disaster reduction, civil protection or civil defence.
- Maintain updated lists of experts for every type of hazard likely to happen in your country.
- Keep updated statistics on previous events in your region.
- Become familiar with the most disaster-prone zones and vulnerable areas.
- Keep a track record of past disasters and lessons learned.
- Get familiar with the main prevention and mitigation measures taken by your authorities so that you are ready when disasters strike.
- Know the factors that can make a disaster worse.
- Base your information only on sound scientific knowledge.
- Invest in DRR knowledge to dig out stories later on.
- Listen to communities and what they have to say.

# What can you do before and after disasters?

## Before disasters

- Investigate the potential threats and risks that might endanger the lives of populations in your village or country (informal settlements, poor construction in disaster-prone zone and destruction of natural environmental buffers)
- Do not wait for a disaster before writing about potential threats. Be pro-active.
- Investigate the degree of DRR (prevention, mitigation, preparedness, recovery) measures undertaken.
- Keep the memory of past disasters alive: people have a tendency to forget and react only when disasters happen.
- Cover drills, preparedness exercises, education measures and activities to inform people on their risk and vulnerabilities and educate them about what they can do.
- Have informal briefings with disaster managers to be updated; conduct interviews and initiate a possible debate on a DRR issue.
- Develop regular stories on people's vulnerabilities to disasters – social, environmental, economic vulnerabilities – and report on how the public and governments interact.
- Have informal and regular meetings with the academic and scientific community who have a lot of useful material about risk assessment and mitigation measures – this will help you be accurate and deliver sound scientific information when disasters strike.

- Participate in disaster management meetings to understand how they function.
- Link any story on the environment, poverty, climate change or urban risk to a disaster risk reduction issue; in other words, report on disasters in the making where vulnerabilities are developing in hazard-prone zones.
- Take any international disaster opportunity to highlight a local or national potential threat.
- Commemorate the International Day for Disaster Reduction, which is on 13 October.

## After disasters

### DRR: “The perfect second day story”

- Inform about the causes that trigger disasters and not only about the facts.
- Question the lack of early warning.
- Question the lack of urban planning.
- Question the lack of building resilience.
- Question the lack of education and preparedness.
- Question the performance of people responsible for disaster management
- Question the lack of investment, financial resources and political will in DRR.
- Question DRR measures in place: how did they work?
- Think about social vulnerability and the gender issue: why do more women than men die in disasters?

- Investigate the economic, social, cultural impacts of the disaster.
- Find experts who could draw lessons, quoting multiple sources.
- Analyse in depth the causes of the disasters: Why did it happen? Could it have been averted?
- Recall the economic and human cost of past recoveries, the absence of lessons learned.
- Look at similar threats or previous disasters in other countries to inform about possible solutions.
- Follow up on the long-term effects of disasters with current affairs programmes.
- Question the recovery and reconstruction phases and publish editorials that can trigger a debate.
- Keep post-disaster issues in the news (necessary investments, measures that need to be taken, corruption, lack of political priorities). Can it happen again? What needs to be improved?
- Continue informing and investigating to change attitudes and policies.
- Be alert for new disaster hazards; visit exposed sites.
- Keep the topic alive by including DRR issues in cultural and social events covered by media (e.g. children's programmes, current affairs programmes, talk shows, soap operas, etc.).
- Develop stories where similar disasters may happen or are bound to happen given similar vulnerabilities and hazard trends.

# NEWS

## Latest news

President has laid out details of an economic plan  
to create jobs. — page 2

Over \$1 billion in money owed to them  
at Windows & Doors factory remained camped out  
to leave the Goose ... page 6

Attracting Investors  
has spurred one of the highest weekly investment  
in the area. — page 14

## Business

Number 5  
internet ve  
<http://www.illinois.gov>

## Economic Plan

But as the economy continues to  
execute its investment strategy  
a depression. The plan would  
provide incentives and tax breaks  
could trigger a recession. The  
Economic Recovery Act of 2009  
is a part of the stimulus package.  
The bill would also provide tax  
breaks for businesses that invest  
in research and development.



# Media checklist

## When disasters happen, one should ask the following:

### General questions

Where did it occur and when? What are the specifics of the disaster context?

Why did it happen?

What was predictable?

What are the causes, the main underlying factors behind the tragedy (poverty, climate change, environmental degradation, urban growth)?

Could it have been averted?

Was there any DRR policy in place?

Was an early warning system in place?

Did it function?

How was the response?

Did people react to it? Quote different sources.

### Questions about structural elements

How many houses were destroyed?

How many hospitals and schools were destroyed?

Was there any land-use planning in place?

Was there any land-use planning policy integrating a multi-hazard approach?

Were houses and schools protected against hazards?

How were the houses built? Were any building codes in place? Was resilient building material used?



### **Questions about non-structural elements**

How was the environment affected?  
Was deforestation an issue?  
Were there any natural buffers?  
What other non-structural measures were in place?

### **Questions about preparedness measures**

Was there a contingency plan in place?  
How were poor people, women and children affected?  
What was the impact on different economic groups?  
Who was most impacted?  
Were there any shelters in place?

### **Economic questions**

What was the economic impact?  
How much should be invested in DRR?

### **Recovery process questions**

In what way is it built back better?  
Is DRR integrated in the recovery process?  
What is needed to better protect the most vulnerable populations?  
What is the DRR budget in the reconstruction budget?

### **Responsibility questions**

Who was in charge?  
Who should have been in charge?





# Examples of disaster risk reduction reporting

Here are examples of published stories that put the media checklist into practice.

## 1. Australia's disaster risk preparedness helped prevent Cyclone Yasi casualties

**UN News Centre, 4 February 2011**

*A high level of disaster risk awareness, preparedness and planning helped prevent casualties when Tropical Cyclone Yasi struck north-east Australia earlier this week, the United Nations' top disaster risk official said today, urging other countries to invest in improving their capacity to respond to such disasters.*

*“What people bill as a miracle comes down to understanding risk, and knowing how to reduce vulnerability and minimize exposure to risk,” said the Special Representative of the Secretary-General for Disaster Risk Reduction, Margareta Wahlström, referring to news reports of Australians in the state of Queensland bunkering down in their homes, evacuating to shopping centres or driving to safer places further south.*

*Cyclone Yasi crossed into Queensland at midnight local time on Wednesday, but despite its category five strength, there were no reports of serious injuries or fatalities, according to the UN Office for the Coordination of Humanitarian Affairs (OCHA).*

*Ms. Wahlström noted that before the cyclone made landfall, authorities had warned that a “life threatening” weather system – with the intensity of Hurricane Katrina which struck the United States in 2005 – would slam the north-eastern coast. The warning was in line with last year's predictions from the Australian Bureau of Meteorology that the country would experience more frequent and severe cyclones this season.*

*Australia has had a long history of dealing with extreme weather – from Cyclone Tracy in 1974 to Cyclone Larry in 2006, both category four storms – which has offered the country lessons on resilience.*

*“Not every at-risk country has the same level of risk awareness as Australia, which is worrying because any of them stand a chance of being hit by the next big storm,” said Ms. Wahlström. “Part of our advocacy is to convince governments to invest in building resilience amongst everyday people, and that no city is immune to disaster.”*

*The UN International Strategy for Disaster Reduction Secretariat (UNISDR) is the secretariat of a strategic framework – known as the International Strategy for Disaster Reduction and adopted by United Nations member states in 2000 – which aims to guide and coordinate the efforts to achieve substantive reduction in disaster losses and build resilient nations and communities as an essential condition for sustainable development.*

*In May, UNISDR will hold the third meeting of the Global Platform for Disaster Risk Reduction, a gathering of the world’s disaster risk community to discuss accelerating world-wide momentum on disaster risk reduction.*

## 2. Deforestation and poverty behind Haiti flood crisis

**AFP, 7 September 2008**

*With severe flooding, hundreds dead and hundreds of thousands lacking food and basic provisions, Haiti has been hit badly so far this hurricane season, with four severe storms in less than four weeks.*

*The Caribbean nation has suffered more than its neighbors, also lashed by major storms, in part because of severe deforestation and extreme poverty.*

*After Tropical Storm Fay and Hurricane Gustav in August, the poorest country in the Americas was devastated by Tropical Storm Hanna last week, and flooding was*

*compounded Saturday night and Sunday when Hurricane Ike clipped the country's northern peninsula as it raged westward toward Cuba. Damaged infrastructure and continuing rains left aid organizations struggling to bring emergency assistance to hundreds of thousands of storm victims.*

*About 600 people died in Haiti's recent storms, according to UN and government figures, and one million were affected. The storms also battered roads and bridges. But many say the damage could have been reduced by better environmental planning.*

*"There's a real emergency. Measures should be taken to slow down the degradation of the environment in Haiti," said Joel Boutroue, representative of the United Nations Development Programme (UNDP).*

*"With this rhythm of deforestation, we're up against a wall," Boutroue said, adding that the lack of tree cover contributes to poverty as well as provoking flooding. The use of charcoal in most cooking in Haiti – where some 70 percent live on less than two dollars per day – has contributed to massive deforestation. Wood is systematically cut for use as charcoal, in baking and for laundry, contributing to Haiti's environmental destruction. Haiti's plant cover is estimated at less than two percent and recent heavy downpours led to severe flooding much worse than in the neighboring Dominican Republic, which shares the island of Hispaniola with Haiti. Haitian Environment Minister Jean-Marie Claude Germain said a lack of proper agricultural planning dating back to the country's independence at the start of the 19th century contributed to the country's vulnerability.*

*"In neighboring Dominican Republic, plant cover is estimated at 30 per cent and the army looks after the environment sector, contrary to Haiti where there's no environment policy," Germain said. The country's geography compounds the problems: with 80 percent of Haiti covered by mountains, all kinds of hurricanes pose a threat, said meteorologist Ronal Semelfort. Boutroue, an international aid coordinator, called on the Haitian government and international donors to invest in the environment and "act quickly" to rethink reforestation programs.*

*"They need to make changes now, pending significant government reforms," he said.*

### 3. Flooding: Blame ministers' penny pinching and the planners — not the weather

*By Geoffrey Lean, Daily Mail, 27 June 2007*

*Never before has there been a summer's day quite like it - but scientists say that Monday's monsoon-like downpours are the increasingly strange shape of things to come. In that case, Government penny pinching and neglect have left us woefully unprepared to face a frequently flooded future. Rain is only to be expected, naturally, in the weeks of Glastonbury and Wimbledon: our traditional summer would scarcely be the same without either of these very British events suffering at least one washout. But Monday was something else altogether: the wettest day in what looks like being the wettest June on record.*

*More rain fell across Britain in just 24 hours than we usually receive during the whole of what is supposed to be "flaming June". The Environment Agency officially describes the deluge as "unprecedented" and adds that, as a result, flooding went "off the scale". But this is not simply an act of Nature. This flooding was also a result of systematic, shortsighted failings on part of successive governments. Now questions must be answered:*

- ***Why has half the new housing built since the Second World War been built on flood-prone land?***
- ***Why do we keep concreting over the countryside, destroying the natural drainage process?***
- ***Why are less than 50 per cent of our major flood defence systems up to the job?***
- ***Why have so many of our rivers been straightened in a disastrous attempt to control their flows?***
- ***Why do local authorities and ministers continue to flout official planning guidelines?***

*Until we address these issues, yesterday's scenes of chaos will become commonplace. Much of Sheffield was still awash with water that, at its worst, had reached six feet deep. Local people described how streets had been turned into 'tributaries of the Don' and some had to be rescued by helicopter.*

*In nearby Rotherham engineers yesterday scrambled to save a dam from collapsing under the weight of water and inundating three villages. A state of emergency was declared in Hull.*

*Over 1,400 people had to be evacuated from their homes in Sheffield – a fate shared by families from Chesterfield to Cheltenham, from Worksop in Nottinghamshire to Waynfleet in Lincolnshire. As yesterday dawned, there were 146 official flood warnings, 23 of them "severe", in place across South Yorkshire, Lincolnshire and the Midlands. And though yesterday's better weather brought some relief, more rain is expected. Of course, there have been torrential downpours before. Back in July 1955, a record ten inches fell in 24 hours in Martinstown in Dorset. And – even more incredibly – seven and a half inches bucketed down in just two hours at one spot in West Yorkshire in July 1989.*

*But heavy downpours are getting more frequent. Research at Newcastle University last year concluded that rainstorms have got twice as intense over much of Britain over the last four decades, as the climate has become warmer, and that the most severe happen four times more often. Some parts of the country, especially Scotland and the Northwest, it adds, are regularly deluged with a foot of rainfall within ten days, as if in the Indian monsoons.*

*The trend is expected to continue, and to lead to more floods. Scientists at Reading University predict that very wet winters will become five times as common over the course of the century, while the Environment Agency estimates that days of heavy rainfall will increase three or four fold, making flooding ten times more frequent.*



*Even now we are woefully vulnerable, thanks to decades of official complacency. More than two million homes, housing one in every twelve Britons, are already at risk of flooding; over 400,000 – home to 900,000 people – severely so. Half of all the new housing built since the war, extending over an area the size of the West Midlands, has been imprudently built on land prone to flooding under today's weather conditions. The Environment Agency has objected to hundreds of thousands of applications for housing in such areas over the last decade, only often to be ignored by local authorities or overridden by ministers - in flagrant contravention of official planning guidelines.*

*Concreting over the countryside turns woods, grassland and marshes - which absorb the rain - into impermeable-areas which cannot absorb it. So instead of gently percolating into the ground or forming wildlife rich wetlands, the water sheets off the hard surfaces, and plunges into drains and culverts, swelling rivers and making them burst their banks more readily.*

*And the naturally bendy and meandering rivers have themselves been straightened out, often in a misguided attempt to “control” their flows. The result has been the opposite of what was intended; the water runs more quickly down the channels, making it all the more able to break out of them. Many vulnerable towns and villages still have not been provided with defences against flooding. And a report by the National Audit Office this month concluded that only 57 per cent of existing flood defence systems are in good condition. For the most important systems, such as those protecting towns, the figure was even lower – at just 46 per cent. All this is expected to get worse as rainfall becomes greater and more intense. The Association of British Insurers estimates that – unless ministers change their policies, and increase spending – the number of homes at risk of flooding will almost double to 3.5 million. Last time Britain suffered severe, widespread, flooding in the autumn of 2000 – ministers promised us that changes would indeed happen. Deputy Prime Minister John Prescott, whose home city of Hull was so badly affected on Monday, described the floods of seven years ago as “a wake-up call”.*

*It was a tacit – and accurate – admission that, up to then, ministers had been sleepwalking into disaster. But, though they may not have reverted to the same deep slumber over the last seven years, they have certainly been dozing.*

*Spending on flood defences has been increased, but by not nearly as much as was needed, or as authoritative studies recommended. The result is that half of existing defences are not good enough, and that much-needed new ones have not been provided. Just ask the people of Ripon. Two years ago, the Environment Agency approved a scheme to protect the historic Yorkshire cathedral city. It would have cost £11million, but was calculated to provide a nine fold return on the investment. Yet Margaret Beckett, the then Environment Secretary, refused to provide the necessary funds. The work that should have started on it in 2006, was instead put back to 2012. Then, a week ago, when the current round of flooding began, the river Skell burst its banks in the city, forcing people from their homes and leaving damage that will cost millions to repair.*

*Wigan – which has flooded three times over the last four decades – and Banbury are among other towns where protection schemes should already be under way, but again they have been postponed through ministerial scrimping. Meanwhile the National Audit Office report showed that not enough was being spent on maintaining and improving existing defences either. Ministers have tightened up planning guidance against building in vulnerable land, but have woefully failed to enforce it. Worse, they have flouted their own rules – planning to build 200,000 houses on flood-prone land in the Thames Gateway.*

*Monday's floods have now sounded another, even louder alarm. The new prime minister, Gordon Brown must heed it. No-one in the Government better knows the value of money, but he has also shown that he appreciates the value of timely investment. He should now put an end to the irresponsibly short-sighted disregard of the Blair years, and start putting the cash aside for what look like being a frightening number of all-too-rainy days.*

## Media initiatives to promote DRR

Indonesia's Tempo Magazine was one of the first magazines to publish articles on disaster risk reduction on a regular basis. The following is a UNISDR interview with the magazine's Executive Editor, Yuli Ismartono, about DRR coverage.

### How and why did you start working on disaster risk reduction?

*After the 2004 tsunami that hit the provinces of Aceh and northern Sumatra, and the massive earthquake that hit Yogyakarta in Java, the magazine was featuring more articles related to disasters, particularly other incidents like floods, mudslides and even impending volcanic eruptions happening in between. We wanted to do more than just report the incident. We wanted to know what happened to the lives of the people impacted by the disasters and what were the governments – both local and central – doing about mitigating these disasters.*

### Why did you open a disaster risk reduction section?

The special section on risk reduction followed the section on the tsunami in Aceh and Sumatra. The post-tsunami rebuilding and rehabilitation involved many social issues that needed to be exposed. After two years, we decided to continue it by focusing more on risk reduction and disaster management, and thus cover other parts of the country.

### Who is your audience?

Our audience is made up of subscribers and readers of Tempo, a wide range of people from government officials and diplomats to private sector executives, academics and students. It is also read by subscribers in neighbouring Singapore, Malaysia and Australia.

### How many journalists work on this section? How much does it cost?

We rely on our correspondents and freelancers to do stories. If we suggest the story idea, the reporter is paid the equivalent of US\$50 per story. If the story idea comes from the reporter himself, he or she is paid US\$75 per story. On average we carry three main stories.

### **How do you choose your subjects?**

#### **Is it an investigative piece? An opinion piece?**

Usually we seek out NGOs in the field working in this area and consult with them on what is new, what needs to be exposed. We might have a three-page investigative piece but usually an ordinary news feature is two pages long. We don't have an opinion piece but we may feature a column by a third party.

#### **What is the feedback so far inside your network and outside?**

We have received positive feedback because no other magazine carries such a dedicated and focused section. We suspect that our copy is probably used in presentations, especially by schools. One university once asked permission to replicate an edition that featured a map of hotspots past and present.

#### **What main problems do you face when you cover this type of story?**

The problems faced are the same as when we do ordinary reporting: to get to the core of the story, reluctant interviewees, especially government officials. And we need all this to balance the story. During actual disasters, access to site is usually a problem. Getting the reporters to understand the scope of the story so that they get a comprehensive picture might be a problem, especially for those that are young and inexperienced. We feel that an occasional training on covering risk reduction and disaster management, to recognize a good story and write it, is needed for some journalists outside of the mainstream.

#### **Did you feel any resistance inside your organization?**

Yes, it was not considered a topic that would sustain readers' interest. I had to go outside the office to get the necessary funding to make it happen.

#### **Do you see a change in the political perception of disasters in your country?**

The general increased media coverage on climate change is making people more aware of disasters in Indonesia and the need to mitigate risks. The movement towards such awareness is being led by NGOs but affected local governments are now requesting assistance from donor countries and international organizations to help them with programmes.



## DRR on TV

RPN9 Television – Radio Philippines Channel 9 dedicates one regular piece on disaster risk reduction news every day in their bulletins.

*“We want to help change common perceptions about disasters. That while response and prevention may be important, mitigating disaster risks is what really matters. On TV it may seem out of synch. We may be the only network talking about floods and typhoons during sunny days, but we have embraced a larger cause, a strategic vision. It helps us marginalize what has been troubling us. It gives us a reason to stay on the air and find meaning in our existence.”*

— *Orlando Mercado, Radio Philippines Network President and CEO*





# 2004 Indian Ocean Tsunami

*Tsunamis are not very rare, but they are not always as destructive as the Indian Ocean event in 2004. This was the most devastating tsunami on record so far, with the loss of more than 230,000 people.*



Indian Ocean Tsunami



*On 26 December 2004 an oceanic earthquake of 9-9.3 on the Richter Scale, centred in the Indian Ocean off the coast of northern Sumatra, Indonesia, resulted in a tsunami with waves more than 30 metres high. The earthquake and the tsunami killed an estimated 230,000-310,000 people in more than 12 countries, and particularly affected Sri Lanka, south India, Thailand, Indonesia, Somalia, Myanmar, Malaysia and the Maldives. Among the dead were at least 9,000 foreign tourists and expatriates from 39 countries. Sweden was the hardest-hit European country, with 500 nationals dead or missing. The tsunami was a dramatic reminder that the impact of a disaster is rarely confined to its primary location.*

## **Why were so many people affected?**

### **There was no effective early warning system in place.**

As the horror of the devastating tsunami of 26 December 2004 unfolded, the world was shocked to learn that if tsunami early warning systems had been in place in the region, many thousands of lives could have been saved. Although the Pacific Tsunami Warning Centre was established in 1949, steps were not taken to establish an Indian Ocean warning system until 2005.

## **How can such a disaster be prevented or reduced in the future?**

### **Careful coastal land-use planning can minimize risk.**

Nearly three billion people, or almost half the world population, live in coastal zones, which in many cases are prone to natural hazards – especially tropical cyclones, floods, storms and tsunamis. For many, the sea provides a source of income, such as for fishing villages right on the shore. Governments and local authorities need to undertake long-term land use planning to ensure that disaster risks are minimized.

## **Public awareness and education are essential for protecting people and property.**

In Thailand over 1,800 lives were saved because a tribal leader recognized the imminent danger when the sea suddenly receded, and so decided to evacuate his people up to the hills. Some 100 tourists owe their lives to a 10-year-old girl from England who warned them to flee to safety, moments before the tsunami engulfed the beach. The girl recognized the signs after learning about tsunamis in her geography class. The tsunami highlighted risks that other regions face owing to the lack of regional tsunami warning systems, such as the Caribbean and countries located along the Mediterranean coastline.

## **Developing and respecting appropriate building codes can minimize exposure to risks.**

Construction of housing and hotels in vulnerable coastal areas along the Indian Ocean meant that thousands of people were engulfed by the enormous tsunami while they were sunbathing on the beach or sleeping in their hotels. Regulations to manage the construction of new buildings near the coastline and the development of multi-story designs that offer refuge on higher floors are examples that could mean fewer lives lost from tsunamis in the future.

## **Countries can work together ahead of time, as well as when disaster strikes.**

There were many instances of countries in the Indian Ocean region quickly providing help to affected neighboring countries. But countries can also cooperate ahead of time before disasters strike, for example on regional early warning systems, and preparedness and response plans, in addition to developing necessary systems at the national and local levels.

**Reducing risk depends on close interaction between the scientific and technical community, public authorities and community-based organizations.**

The disaster demonstrated the importance of strong interaction and communication between technical and political actors. There is a need to strengthen the link between scientific and technical institutions, national and local authorities, and community leaders to build knowledge and the basis for avoiding future human, economic and social losses from disasters.

# Mount Pinatubo, the Philippines (1991)

*After more than 500 years of dormancy, Mount Pinatubo on the isle of Luzon in the Philippines erupted in June 1991, producing one of the largest and most violent eruptions of the 20th century. The Pinatubo eruption was 10 times larger than the 1980 eruption of Mount St Helens, killing more than 700 people and leaving 200,000 people homeless.*



*At the peak of the eruption, ash reached heights of 30 km. The ash cloud from the volcano covered an area of some 125,000 km<sup>2</sup>, bringing darkness too much of central Luzon. Volcanic deposits, ash and mudflows destroyed much of the area surrounding the volcano. Thousands of houses were demolished in the eruption.*

## **Why were so many people affected?**

A succession of earthquakes on the north-western side of the volcano in March provided the first hints of danger, and scientists began monitoring the mountain. People began to leave the area voluntarily. The authorities evacuated people from the 10km zone in April, and then from the 20km zone and 40km zone in June, as explosive eruptions began. In all, 60,000 people were cleared from the 30km zone. Many of the subsequent deaths were caused by roof collapses. Ten billion tonnes of magma erupted from the mountain and thick layers of ash were spread over 125,000 km<sup>2</sup>. The weight of the ash was amplified by heavy rain from a typhoon that arrived almost at the same time, killing hundreds of people. In the aftermath, hundreds more died because they could not receive hospital treatment as health facilities had been destroyed.

## **How can such a disaster be prevented or reduced in the future?**

### **Monitoring and early warning systems saved many lives.**

The Philippine Institute of Volcanology and Seismology issued a series of warnings indicating the possibility of a major eruption two weeks before the eruption. These warnings and continuous monitoring allowed the orderly evacuation of over a quarter of a million people. Having a monitoring system in place to observe the changing conditions of the volcano is fundamental to predict eruptions and proceed to early

evacuations. Volcano risk reduction demonstrates the importance of the strong interaction and communication between scientific and technical institutions, national and local authorities, and community leaders. Public awareness and education are also essential. People living nearby a volcano need to be aware of their risks and educated in how to respond to early warning messages and evacuate on time.

### **Hazard maps are essential to identify risks and vulnerability.**

Knowing the potentially dangerous zones and identifying the vulnerable populations are essential to alert and evacuate people quickly. Land-use planning can minimize the impact of eruption. Volcano risks are substantially reduced if the development of infrastructure is limited in hazardous areas. Volcanic soils are very fertile so it is often unrealistic to prevent people from living close to the slopes but people should be prepared to evacuate if human settlement cannot be avoided.

### **Awareness of specific types of disaster risks and building with that information in mind can minimize risks.**

Many people died because roofs collapsed under the weight of accumulated wet ash. Resistant building materials can avoid the collapse of roofs.

### **Health facilities and hospitals are critical infrastructures that must be protected against disasters and all efforts made for them to be accessible.**

Damage to health facilities in the volcanic area caused many deaths as a lot of people could not be assisted when medical help was most needed. Telecommunications and the media have a crucial role to play in disaster risk reduction; telephone systems, mobile communications, television, radio, news services and the Internet are essential tools to communicate the warning and inform people on their risks and vulnerabilities.

# Hurricane Katrina, United States (2005)

*Hurricane Katrina hit the Gulf Coast of the United States on 29 August 2005, killing more than 1,800 people, damaging more than 215,000 homes and causing US\$130 billion worth of damage. The storm surge put intolerable strain on flood defences surrounding New Orleans and flooded 75 per cent of the historic city where old and inadequate protective embankments failed within hours of the hurricane making landfall.*



Hurricane Katrina

## Why were so many people affected?

Although mandatory and voluntary evacuation orders were issued before Katrina struck, and 80 per cent of the 1.3 million people in New Orleans managed to leave, many people were at risk because public transport had been shut down. Nursing homes were unable to evacuate residents.

## How can such a disaster be prevented or reduced in the future?

### **Warnings can only be effective if people know how to respond to them.**

Despite the warnings and the citywide mandatory evacuation, many people either refused or were unable to evacuate. They did not understand the urgency of the warning or did not have the physical or financial means to evacuate. Many were also afraid of looting. Local governments have a role to ensure the security of citizens.

### **Public awareness and education are essential to protect people and their property when disasters happen.**

People need to be prepared through regular drills to evacuate and respond to early warning messages. Shelters must be identified and transport has to be made available for people to evacuate before cyclones hit. Preparedness can save people and help evacuate the most vulnerable groups such as children, pregnant women, the elderly and disabled people.

### **Earlier investment in disaster risk reduction would have saved lives and money.**

If local government had invested in upgrading the levee systems and in better flood protection, economic losses would have been reduced and lives would have been saved. In a June 2006 report on the disaster, the US Army Corps of Engineers (which built the levees) admitted that faulty design specifications, incomplete sections and substandard



construction of levee segments contributed to the damage done by Hurricane Katrina. A report released by the American Society of Civil Engineers in June 2007 admitted that two-thirds of the flooding in the city could have been avoided if the levees had held.

### **Hurricane Katrina demonstrated the need for a better interaction between technical and political actors.**

Scientists warned about the collapse of defences and levees but their call was not heard. Risk reduction depends on the close interaction between the scientific and technical community, public authorities and community-based organizations. The management of the aftermath of the hurricane also demonstrated a lack of coordination between national, state and city officials.

### **Schools, hospitals, bridges, airports and roads need to function during and after disasters.**

Hospitals, schools and other main urban infrastructure were flooded and not able to function months after the disaster. Most of the major roads into and out of the city were damaged.

### **Disasters have long-term consequences on people's lives.**

After the hurricane many people were displaced and never returned to their homes. Katrina redistributed over one million people from the central Gulf coast elsewhere across the United States. By late January 2006, about 200,000 people were once again living in New Orleans, less than half of the pre-storm population.

### **The role of the media during Katrina was crucial, and reporters became involved in crisis management.**

Because telephone systems collapsed or were swept away, reporters and broadcasters became in some cases the only link between stranded refugees and the authorities. The Times-Picayune, a local New Orleans newspaper, lost its printing

presses but concentrated coverage on its website, which became a vital link for rescue operations. The media also played an important role in the initial warnings, and afterward in the analysis of the causes of the disaster.

# Kashmir earthquake, Pakistan (2005)

*The 2005 Kashmir Earthquake (also known as the South Asian earthquake) was a major earthquake centred in Pakistan-administered Kashmir and in the North West Frontier Province (NWFP); it also affected parts of India.*



UN Photo Evan Schneider Mansehra, Pakistan

*The earthquake occurred at 08:52 Pakistan Standard Time on 8 October 2005 and registered 7.6 on the Richter Scale, making it similar in intensity to the 1906 San Francisco earthquake and the 2001 Gujarat earthquake. According to CRED, 73,338 were killed and 128,309 injured, and more than 3.5 million people were affected by the earthquake, which caused a total of damage of US\$5.2 billion.*

## Why were so many people affected?

Most of the casualties were in Pakistan, and most victims perished as buildings collapsed. The earthquake destroyed more than 7,500 schools. An estimated 17,000 children died as their schools fell in upon them, and – because it was during Ramadan, the Islamic month of fasting – many people were taking a nap after a pre-dawn meal, and had no warning. Many hospitals were destroyed, and some died because they could get no treatment. The quake triggered landslides, burying or wiping out roads in many areas within the NWFP and Pakistan-Administered Kashmir. Many highways were blocked at several points, hindering access and relief efforts.

## How can such a disaster be prevented or reduced in the future?

**Developing and using appropriate building codes can minimize exposure to risks.**

The existence of land-use planning and application of building regulations would have prevented many buildings from collapse and saved many lives. An assessment of damaged buildings in Muzaffarabad and the surrounding area by the Earthquake Engineering Center of the University of Engineering and Technology in Peshawar, showed that about 60 per cent of the buildings in urban areas were not reinforced with solid concrete block masonry buildings. It was the collapse of more than 70 per cent of these buildings that was responsible for the majority of deaths and injuries.

## **A disaster management plan in place before disaster strikes can save lives.**

Every disaster-prone country should have permanent disaster management capabilities and resources in place. Since the 2005 earthquake, Pakistan has established a National Disaster Management Agency that undertakes a number of activities to better prepare its vulnerable populations for seismic risks. The earthquake hit many remote mountainous areas, which were difficult to reach. The rough terrain and the high attitude made rescue operations difficult. Seismic risk mapping should be integrated in land-use planning with appropriate enforcement regulations.

## **Schools, hospitals and critical infrastructure such as bridges must be protected in earthquake-prone areas.**

Ensuring the continuity of basic services such as healthcare, education, transportation, water sanitation and energy are vital after a disaster. Education can save lives. Many children could have been saved if they had received some earthquake education at schools. There are some basic life-saving skills such as evacuation or seeking protection by going under a table (duck and cover) that could have saved many lives.

## **Heritage buildings should be better protected against earthquakes.**

In Indian Kashmir, the main minaret of the Hazratbal shrine, believed to house a relic of the prophet Muhammad, was damaged. The 200-year-old Moti Mahal fort in Poonch district, Kashmir, collapsed.

## **It is better to invest in disaster prevention before a disaster occurs.**

The Asian Development Bank (ADB) and World Bank estimated that Pakistan would need approximately US\$5.2 billion to implement a relief, recovery and reconstruction strategy, after a preliminary damage and needs assessment was released on 12 November 2005.





# Avalanches

*Thousands of avalanches occur every year, killing an average of 500 people worldwide.*





*Alpine countries are the most prone to avalanches. In the past 10 years, France has recorded more avalanche fatalities than any other country, followed by Austria (18 per cent), the United States (17 per cent), Switzerland (16 per cent), Italy (12 per cent), Canada (9 per cent), Spain (3 per cent), and Germany and Norway (both 2 per cent). Avalanches cannot always be predicted but they are linked to weather conditions that can be forecast in advance. Most accidents now occur because people ignore warnings. Around 95 per cent of all avalanche incidents are due to slab avalanches with skiers involved.*

### **General description**

Avalanches occur when massive slabs of snow break loose from a mountainside and shatter like broken glass as they race downhill. These moving masses can reach speeds of 130 km/hour within about five seconds. Winter avalanches become a hazard when the gradient is steeper than 22°, and whenever the depth of newly fallen snow is greater than 75 centimetres (90 per cent of avalanches occur during snowstorms). Airborne powder-snow avalanches carry ahead of them a shockwave powerful enough to flatten forests and dismantle buildings, and the violent internal swirls within such avalanches have been measured at 300 km/hour. Wet snow avalanches carry with them uprooted trees and boulders and increasing destructive potential. One fall of 2.5 million tonnes was estimated to have generated the energy of 300 million horsepower as it crashed to the base of the Italian Alps.

### **Risk factors**

A quick change in any of the risk factors – weather, snowpack and terrain – can trigger an avalanche and create the conditions for a low, moderate, considerable or high avalanche hazard. Climate change will be a major risk factor in the future as any change in temperatures can trigger avalanches. Risk factors increase with population as winter sports lovers crowd into ski resorts and developers build in vulnerable places.

## Vulnerable areas

Human settlements in avalanche-endangered zones; people living in rural mountainous villages with no early warning systems; human settlements with no forest cover; skiing populations and tourists not educated in avalanche risk.

## Disaster risk reduction measures

- Not building houses, roads and other critical infrastructures (ski stations, hotels, schools, hospitals, etc.) in avalanche hazard areas.
- An early warning system linked with a national avalanche warning service to receive timely information on the overall avalanche danger situation.
- Information on avalanche impacts and risks for tourism information offices.
- Studying, planning and executing adequate technical measures if necessary.
- Tree planting; forested areas provide protection against the release of avalanches.
- Building codes and appropriate materials to reinforce resilience.
- Raising awareness, educating and training people, including advising residents, tourists and people attending ski schools on what to do before, during and after an avalanche.

## Useful links

- Avalanche Center – [www.avalanche-center.org/News](http://www.avalanche-center.org/News)
- Emergency Events Database (EM-DAT) – [www.em-dat.net](http://www.em-dat.net)
- Ifyouski.com – [www.ifyouski.com/Avalanche/Types](http://www.ifyouski.com/Avalanche/Types)
- Natural Disasters Website – [www.naturaldisasters.ednet.ns.ca/avalanche.html](http://www.naturaldisasters.ednet.ns.ca/avalanche.html)
- National Snow and Ice Data Center – [nsidc.org/snow/avalanche](http://nsidc.org/snow/avalanche)
- Oracle ThinkQuest: Natural Disasters – <http://library.thinkquest.org/03oct/004777/NatDisasterPages>
- Swiss Federal Institute for Forest, Snow and Landscape Research – [www.slf.ch/english\\_EN](http://www.slf.ch/english_EN)

# Droughts

*Droughts are a weather-related natural hazard, which can affect vast regions for months or years. They can have a significant impact on a country or region's economic performance, particularly food production.*



Since 1980, more than over 558,000 people have been killed and more than 1.6 billion affected by droughts. It is expected that vulnerability to drought will increase mainly due to population increases, environmental degradation and development pressures.

### General description

A drought usually refers to an extended period of below-normal rainfall. Although what is considered “normal” varies from one region to another, drought is a recurring feature of nearly all the world’s climatic regions. The effects of drought vary greatly, depending on agricultural, urban and environmental water needs. There are four different ways that drought can be defined:

- Meteorological – a measure of departure of precipitation from normal; due to climatic differences what is considered a drought in one location may not be a drought in another location.
- Agricultural – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
- Hydrological – occurs when surface and subsurface water supplies are below normal.
- Socio-economic – refers to the situation that occurs when physical water shortage begins to affect people.

### Risk factors

Drought risks are not only associated with deficient or erratic rainfall but to poverty and rural vulnerability, poor water and soil management, weak or ineffective governance and climate change. Climate change will contribute to a shortage of rainfall and consequently desertification.

### Vulnerable areas

In its report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, the IPCC confirms that the atmosphere is warming, a trend that will have impact on the frequency and severity of some natural hazards, such as drought. For example in the

African Sahel, warmer and drier conditions have led to a reduced growing season with detrimental effects on crops. In southern Africa, longer dry seasons and more uncertain rainfall are prompting adaptation measures (IPCC). Poor rural households, whose livelihoods depend on rainfed subsistence agriculture are the social groups most exposed and vulnerable to drought. Droughts are rarely or solely responsible for conflicts, but they can contribute to the likelihood of conflict by increasing competition for scarce resources and by exacerbating ethnic tensions usually due to displacement or migration.

### **Disaster risk reduction measures**

Exposure to drought varies regionally and over time, and there is little, if anything, that can be done to alter its occurrence. However, it is critically important for scientists to understand and communicate the probability of drought events of various levels of intensity and duration. The elements for a drought risk reduction framework can be summarized in four main areas:

- Policy and governance as an essential element for drought risk management and political commitment.
- Drought risk identification, impact assessment and early warning, which includes hazard monitoring and analysis, vulnerability and capability analysis, assessments of possible impacts, and the development of early warning and communication systems.
- Drought awareness and knowledge management to create the basis for a culture of drought risk reduction and resilient communities.
- Effective drought mitigation and preparedness measures to move from policies to practices to reduce the potential negative effects of drought.

All of these elements need strong political commitment, community participation, and consideration of local realities and indigenous knowledge.

## Measuring droughts

The World Meteorological Organization (WMO) has recently adopted the Standardized Precipitation Index (SPI) as a global standard to measure meteorological droughts. The SPI is a powerful, flexible and simple to calculate index based on rainfall data, which can identify wet periods/cycles as well as dry periods/cycles.

### Useful links

- Global Assessment Report - <http://www.preventionweb.net/english/hyogo/gar/2011>
- National Drought Mitigation Center – <http://drought.unl.edu>
- NOAA Drought Information Center – <http://www.drought.noaa.gov>
- US Drought Monitor – <http://www.drought.unl.edu/dm/monitor.html>

# Earthquakes

*Earthquakes are the natural hazard that causes most deaths per event. According to CRED, between 1988 and 2007, more than 495,000 people died in earthquakes and approximately 3 billion people live in regions prone to earthquakes.*



UN Photo 2 Evan Schneider Ying Xiu Township-China 24 May 2008

Geophysicists can identify places where earthquakes are sure to happen, but nobody can predict when an earthquake will happen, or its severity.

### General description

The Earth's surface is made of 15 tectonic plates, all of them moving and any of which may trigger an earthquake. About 90 per cent of the most destructive earthquakes are of tectonic origin, three per cent are of volcanic origin while per cent of earthquakes are caused by an underground collapse. Seismologists register more than 30,000 tremors every year, but most of these are of low magnitude and some powerful quakes occur in remote regions or near well-prepared communities and do little harm.

### Risk factors

Many factors aggravate earthquake risks, including:

- Population density – as more people are living in earthquake-prone zones, they are at greater seismic risk. Eight out of the 10 most populated cities in the world are prone to earthquakes and are located in developing countries. Most of the world's earthquakes occur around the Pacific Rim and many of these are in Asia where two-thirds of the world's population lives.
- Poorly built and non-engineered buildings – non-engineered buildings and poor construction that cannot resist the force of seismic shocks are more likely to collapse on people and kill them.
- Poverty – constrains more people to live in crowded, sub-standard housing and unsafe places. Earthquakes hurt the poor more than the rich, because education and high building standards can save lives, whereas ignorance and corruption can cost lives.

### Vulnerable areas

Urban centres located in earthquake zones, populations in older buildings and non-engineered buildings with a high occupancy rate in earthquake-prone zones.

### Disaster risk reduction measures

- Integrating seismic risk into land-use planning and urban development strategies in earthquake-prone zones.



- Ensuring that building codes are enforced in critical high-use and high-occupancy infrastructure (hospitals, schools, housing, factories) in earthquake zones to prevent buildings from collapse, and maintain continuity of basic services (healthcare, education, transportation, water, sanitation, energy, etc.) after an earthquake.
- Having a warning system in place to at least cut off the main gas and electricity supplies to reduce fire risk. In Kobe, Japan, in 1995, many people died in the fires triggered by the earthquake.
- Improving education and awareness through training and preparedness programmes in schools and workplaces on the importance of building safety.

### **Richter Scale**

The ranking system used to measure earthquake magnitudes is called the Richter Scale. Developed by Charles Richter in 1935, it indicates the energy released by an earthquake. Another ranking system, the Modified Mercalli Intensity Scale, measures seismic intensity. The magnitude of an earthquake is a measured value of the earthquake size. The intensity of an earthquake is a measure of the shaking created by the earthquake; this value varies with location.

## Richter Scale Categories

<3.5	Generally not felt, but recorded
3.5-5.5	Felt, but rarely causing any damage
<6.0	Slight damage to well-constructed buildings, heavy damage to poorly constructed buildings
6.1-6.9	May damage inhabited areas up to 100 km wide
7.0-7.9	Major earthquake that may cause serious damage in a very wide area
>8.0	Serious earthquake that causes damage hundreds of kilometres away from the epicentre
>9.0	Rare great earthquake, major damage in a large region of over 1,000 km

(Source: USGS)

### Useful links

- Earthquakes and Megacities Initiative – [www.emi-megacities.org/home](http://www.emi-megacities.org/home)
- Emergency Events Database (EM-DAT) – [www.em-dat.net](http://www.em-dat.net)
- PreventionWeb – [www.preventionweb.net/english/hazards/earthquake](http://www.preventionweb.net/english/hazards/earthquake)
- USGS, Earthquake Hazards Program – <http://earthquake.usgs.gov/learn/faq>

# Floods

*Floods affect more people than any other hazard. Some 1.5 billion people were affected by floods in the last decade of the 20th century. Worldwide, nearly 200 million live in coastal zones at risk of flooding.*



### **General description**

Flooding is usually the result of heavy or continuous rain that exceeds the absorptive capacity of the soil and the flow capacity of rivers, streams and coastal areas. Floods can be triggered by thunderstorms, tornadoes, tropical cyclones, monsoons, melting snow and dam breaks. The most common floods are flash floods, snowmelt floods, coastal floods and river floods. Flash floods – suddenly, especially at night – are the most dangerous.

### **Risk factors**

Rapid population growth, rapid urbanization, environmental degradation such as the loss of forests and natural flood buffers, and climate change, will expose more people to future floods. Melting glaciers and rising sea levels will bring floods to places not previously at risk.

### **Vulnerable areas**

Developing countries are most at risk and although Asia remains the continent most hit by floods, Africa and Latin American countries are also heavily affected. In 2008, floods affected 40 million in China and 20 million in India. Rich nations however are not flood-proof. Floods in Europe in 2002 killed more than 100 people, and flash floods in Britain did US\$2 billion worth of damage. The poor, with the least means to adapt are often forced to live in high-risk places: slopes, flood plains, ravines, or in crowded, urban low-lying areas in mega-cities.

### **Disaster risk reduction measures**

- Integrate flood risk assessment into urban planning strategies; avoid building on flood-prone land, develop new building codes to reinforce flood resistance, and create more space for rivers, flood plains and wetlands.
- Ensure health of coastal reefs and mangrove plantations, which can reduce the speed of seawater, wave strength and wind force in coastal storm surges.

- Maintain early warning systems, backed up by regular drills and evacuation exercises
- Have an evacuation plan for those at risk, including the elderly, disabled and very young.
- Catalyse finance and insurance schemes to protect assets and livelihoods, which are often destroyed by flood.

#### Useful links

- Association of State Floodplain Managers – [www.floods.org](http://www.floods.org)
- Centre for Research on the Epidemiology of Disasters (CRED) – [www.cred.be](http://www.cred.be)
- Emergency Events Database (EM-DAT) – [www.em-dat.net](http://www.em-dat.net)
- Global Identification Number – [www.glidenumber.net](http://www.glidenumber.net)
- UNISDR Guidelines for Reducing Flood Losses – <http://www.unisdr.org/eng/library/isdr-publication/flood-guidelines/isdr-publication-floods.htm>

# Hurricanes, cyclones and typhoons

*Hurricanes, cyclones and typhoons affect millions every year, and in the future they are likely to be more severe and frequent due to climate change.*



Hurricanes are usually more destructive than floods and cause catastrophic damage along coastlines and several hundred miles inland because more people live there. Hurricanes Mitch and Katrina are among the worst Atlantic hurricanes in history; Mitch killed 11,000 people in 1998 and caused extreme damage, estimated at over US\$6.5 billion. In 2005, Katrina killed more than 1,800 people and cost US\$130 billion in damages.

### **General description**

Cyclones, hurricanes and typhoons, although named differently, describe the same disaster type. They are referred to as cyclones in the Indian Ocean and South Pacific, hurricane in the western Atlantic and eastern Pacific, and typhoons in the western Pacific. In the Caribbean, August and September are peak months of the hurricane season, which lasts from the beginning of June through the end of November. In the eastern Pacific, the season starts in mid-May and finishes in November.

### **Risk factors**

Climate change, environmental degradation and urban growth in coastal areas are likely to expose more people to hurricanes in the future.

### **Vulnerable areas**

Coastal areas are the most hurricane-prone areas. Hurricanes are generally followed by heavy rains and floods and, in flat coastal areas, by surges that may threaten tens of thousands of people living by the sea. China, Bangladesh, India and the Caribbean are the most affected each year by this kind of disaster. Populations living close to coastal areas and in poor buildings and fragile constructions are also the most vulnerable as high winds cause major damage to infrastructure and housing (people in mobile homes in hurricane zones are very vulnerable).

Hurricanes are ranked according to the Saffir-Simpson hurricane scale, which classifies the damage caused by hurricanes to wind speed. Hurricanes can inflict terrible damage even when wind speeds are not very high.

### Hurricane Categories

Category	Wind speed (km/h)	Effects
1	119-153	No real damage to buildings; some coastal flooding.
2	154-177	Some roofing, door and window damage; considerable damage to vegetation.
3	178-209	Destruction of mobile homes; more inland flooding damage.
4	210-249	Erosion and flooding of inland areas; roofs are torn off.
5	>250	Complete roof failures and some complete building failures. Flooding and landslides; usually mass evacuation is implemented.

(Source: USGS)

### Disaster risk reduction measures

- Have an early warning system in place to evacuate people on time. Cyclones, hurricanes and typhoons can be predicted several days in advance and having an early warning system in place is the best way to protect people. This technology is nevertheless not enough if drills and evacuation exercises are not undertaken in a regular manner to ensure the full community participation and immediate response.
- Structural measures to withstand or lessen the impact of winds and flooding can reduce the damage caused by hurricanes.
- Flood risk assessment should be integrated into urban planning strategies.



- People should avoid building directly on the coastline, where hurricane waves may cause flooding.
- Wind-proof buildings are needed to provide community shelter during hurricanes.
- Builders should use flood-resistant material, such as concrete, ceramic or brick.
- Sea walls and revetments could help protect the shore from storm waves.
- Mangroves and trees and coral reefs should be protected as they act as natural wave breakers; wetlands and forests can serve as flood control systems, storing large amounts of floodwater, and should also be preserved.
- Raise community awareness, and prepare and practice community evacuation plans, not forgetting the very young, elderly and disabled.
- Incorporate education on hurricanes and protection from hurricane damage in school and social activities.

### Useful links

- Atlantic Oceanographic & Meteorological Laboratory – <http://www.aoml.noaa.gov/hrd/tcfaq/tcfaqHED.html>
- BBC, Nature's lethal weapons – <http://news.bbc.co.uk/2/hi/202344.stm>
- Federal Emergency Management Agency (FEMA) – [http://www.fema.gov/hazard/hurricane/hu\\_about.shtm](http://www.fema.gov/hazard/hurricane/hu_about.shtm)
- NOAA: Hurricane Preparedness – <http://www.nhc.noaa.gov/HAW2/english/intro.shtml>

# Landslides

*Asia is the continent most affected by landslides; the Americas suffers more deaths, and Europe bears the most economic losses with an average damage of almost US\$ 23 million per landslide.*



Landslides can reach speeds of over 50 km/h and can bury, crush or carry away people, objects and buildings. Landslides cannot be predicted but people living in landslide-prone areas can be warned in advance if there is a warning system in place measuring rainfall levels.

### **General description**

There are five main types of mass landslide movement: falls, topples, slides, flows and spreads. The most common types are soil and rockslides, and mud and debris flows, which are among the most destructive. Submarine landslides, or massive slides and rock falls hitting the sea can also cause tsunamis. Landslides can be triggered by geological and physical causes such as glacier or snow melts, heavy rains and water pressure, earthquakes, volcanic eruptions and over-steep slopes. Landslides can also be triggered by human action, the most common being building on unstable slopes.

### **Risk factors**

Worldwide population growth, rapid urbanization and environmental degradation (deforestation and inappropriate use of lands and slopes) are increasing landslide risk and exposing more people to the landslide danger. High population density, heavy rainfall and rapid land use changes increase the instability of slopes, making people more vulnerable to landslides.

### **Vulnerable areas**

Urban areas are the most vulnerable because of the large population at risk. People on unstable slopes and steep terrains are particularly at risk. Areas previously affected by landslides and areas anywhere along unstable slopes, from top to bottom, are also more prone to landslides. Poor people remain among the groups most vulnerable to landslide as they are often constrained by economic reasons to live in high-risk areas such as slopes, floodplains and ravines, and have the least means to adapt and respond to disasters.

### Disaster risk reduction measures

- Have a hazard map to identify landslides risk and vulnerabilities.
- Have a monitoring system in place to observe and alert when landslides happen.
- Integrate landslide risk assessment into urban planning strategies.
- Develop new building codes and standards, emphasizing the use of building materials to reinforce infrastructure resilience to landslides.
- Implement structural measures such as providing practical stabilization of hazardous slopes, redesigning river protection to reduce erosion and modifying geometrical characteristic of the slope
- Secure towns, villages and tunnels at the bottom of slopes with concrete retaining walls and protection.
- Reinforce river protection with wooden dams of limited height in streambeds with potential debris flow.
- Improve drainage, building tunnels and trenches to stabilize slopes.
- Protect forest cover and ban logging.
- Educate people and raise awareness of landslide risk.
- Develop an early warning system to measure rainfall levels, with regular drills and evacuation exercises and ensure community participation.
- Have a contingency plan in place at a national and local level for people to evacuate in time.

### Useful links

- Emergency Events Database (EM-DAT) – [www.em-dat.net](http://www.em-dat.net)
- International Consortium on Landslides (ICL) – [www.iclhq.org](http://www.iclhq.org)
- International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) – [www.issmge.org/home/page.asp?sid=296&mid=2&PageId=34546](http://www.issmge.org/home/page.asp?sid=296&mid=2&PageId=34546)
- Kyoto University Research Center on Landslides – <http://landslide.dpri.kyoto-u.ac.jp/J-RCL.html> – [www.fema.gov/hazard/landslide/index.shtm](http://www.fema.gov/hazard/landslide/index.shtm)
- Prevention Web – [www.preventionweb.net/english/hazards/land-slide](http://www.preventionweb.net/english/hazards/land-slide)
- USGS Landslide Hazards Program – <http://landslides.usgs.gov/learning/faq>

# Tornadoes

*Tornadoes kill fewer than 100 per year on average but they can be very destructive and cause huge economic losses.*



The United States is a major hotspot with about 1,000 tornadoes every year, causing 80 deaths and more than 1,500 injuries per year. America gets 75 per cent of all the world's tornadoes, followed by Canada and Bangladesh (on 26 April 1989, a tornado killed 1,300 people north of Dacca, Bangladesh). Australia, New Zealand, South Africa, India, Argentina and the Russian Federation are also prone to strong tornadoes.

### General description

Tornadoes are vertical funnels of rapidly spinning air. Their winds may top 400 km/h and can clear-cut a pathway of more than 1 km wide and 80 km long. Most tornadoes are about 100 meters wide; larger tornadoes can be 1 km wide and travel for 50 km or more. Tornado size does not necessarily indicate how destructive it is. Small tornadoes can also be very destructive. Many tornadoes are clearly visible during daylight when not obscured by rain or low clouds. Tornadoes have many distinct shapes, sizes, colors and intensities.

### Risk factors

Lack of early warning systems and preparedness programmes increase the risk for all populations. However, even when warning systems are in place, the aged and children have higher mortality rates given their lower capacity to respond. Populations living in mobile homes are at greater tornado risk. The rate of serious injury for mobile homes occupants is 85.1 per 1,000 compared to 3 per 1,000 for occupants in standard homes.

### Vulnerable areas

The most tornado-prone areas in the world are in North America, in particular the Great Plains in the United States and south-central Canada. "Tornado Alley" – a region that includes eastern South Dakota, Nebraska, Kansas, Oklahoma, northern Texas and eastern Colorado – is home to the most powerful and destructive of these storms. Considerable numbers of tornadoes are reported in the plains of Europe, South Asia, East Asia, Australia and South America. Communities living in fragile buildings such as mobile homes and elevated buildings that can collapse are extremely vulnerable. Communities living in poorly built houses close to potential flying objects are in particular danger. People outdoors when tornadoes occur are at higher risk of mortality.

### Top 10 tornadoes by number of people killed

Disaster	Date	Deaths
Bangladesh	1989	1,300
Bangladesh	1969	917
United States	1925	695
Bangladesh	1973	681
Bangladesh	1977	623
Bangladesh	1996	605
United States	1840	317
United states	1896	255
India	1998	250

(Source: EM-DAT, OFDA/CRED International Disaster Database)

### Disaster risk reduction measures

- A hazard map to identify risk and vulnerability.
- A monitoring system in place to observe thunderstorms with radar and to receive reports on tornadoes.
- A warning and communication system to alert people in the path of the tornado.
- Basements and cellars in houses and underground shelters to protect people.
- Avoiding mobile home settlements in risky zones.
- Education and awareness about tornadoes, warnings and safe action.

## The Enhanced Fujita Tornado Scale

The Fujita Scale is named for Dr TT (Ted) Fujita, who made the first systematic study of tornado forces; it was replaced by the Enhanced Fujita (EF) Scale in February 2007. The EF Scale better represents tornado damage surveys by aligning wind speed more closely with the storm damage.

<b>EF-0:</b> 65-85 mph (105-137 km/h), minor damages, tree branches broken.
<b>EF-1:</b> 86-110 mph (138-178 km/h), roofs stripped, mobile homes pushed off foundation or overturned.
<b>EF-2:</b> 111-135 mph (179-218 km/h), considerable damage, mobile homes demolished, trees uprooted.
<b>EF-3:</b> 136-165 mph (219-266 km/h), roofs and walls torn down, trains overturned, cars thrown.
<b>EF-4:</b> 166-200 mph (267-322 km/h), well-constructed walls leveled, cars thrown and small missiles generated.
<b>EF-5:</b> >200 mph (>322 km/h), homes lifted off foundation and carried considerable distances, autos thrown as far as 100 meters.

(Source: FEMA)

### Useful links

- FEMA – [www.fema.gov/hazard/tornado/index.shtm](http://www.fema.gov/hazard/tornado/index.shtm)
- NOAA US Tornado Climatology – <http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html>
- PBS Nova – <http://www.pbs.org/wgbh/nova/tornado/country.html>
- Prevention Web – <http://www.preventionweb.net/english/hazards/tornado>
- Storm Prediction Center – [www.spc.noaa.gov/faq/tornado](http://www.spc.noaa.gov/faq/tornado)
- Tornado Project – [www.tornadoproject.com](http://www.tornadoproject.com)



# Tsunami

*The Pacific is by far the most active tsunami zone, according to the US National Oceanic and Atmospheric Administration (NOAA), but tsunamis have been generated in the Caribbean and Mediterranean seas, and the Indian and Atlantic oceans.*



Indian Ocean Tsunami

The most destructive tsunamis are generated by large, shallow earthquakes with an epicentre or fault line near or on the ocean floor. Usually, it takes an earthquake with a Richter magnitude exceeding 7.5 to produce a destructive tsunami. Receding water is one of the first visual signs of a tsunami. Experts believe that a receding ocean may give people as much as five minutes' warning to evacuate the area.

### **General description**

A tsunami comes from the Japanese word for “harbour wave” and is a series of giant, long ocean waves (10 or more) created by an underwater disturbance such as an earthquake, landslide, volcanic eruption or meteorite; it consists of a series of waves with crests arriving every 10 to 60 minutes. The danger from a tsunami can last for several hours after the arrival of the first wave. Sometimes a tsunami initially causes the water near shore to recede, exposing the ocean floor. Tsunami waves can be very long (as much as 100 km) and be as far as one hour apart. They are able to cross entire oceans without great loss of energy. The Indian Ocean tsunami traveled nearly 5,000 km to Africa, arriving with sufficient force to kill people and destroy property. Tsunamis can travel up rivers and streams that lead to the ocean and put thousands of people inland at risk. Although relatively infrequent, violent volcanic eruptions represent also impulsive disturbances, which can displace a great volume of water and generate extremely destructive tsunami waves in the immediate source area.

### **Risk factors**

More people are living by the sea, in earthquake-prone zones, in poor quality buildings, all of which makes more people vulnerable to a tsunami. The destruction of the environment and natural barriers and the lack of coastal land-use planning are factors that aggravate tsunami impacts. The development of tourist settlements in tsunami-prone zones with no tsunami risk assessment also increases vulnerability.

### Vulnerable areas

All oceanic regions of the world can experience tsunamis, but in the Pacific Ocean and its marginal seas, there is a much more frequent occurrence of large, destructive tsunamis because of the many large earthquakes along the margins of the Pacific Ocean. All low-lying coastal areas can be struck by tsunamis. Some of them can be very large; their height can be as great as 10 metres or more (30 metres in extreme cases), and they can move inland several hundreds of meters, depending on the slope of the ground (IOC).

Communities living by the sea within 200 metres of low-lying coastal areas are the most vulnerable to direct impacts of tsunami waves, and the debris brought by these waves. Communities living in structures constructed of wood, mud, thatch, sheets, and structures without proper anchorage to foundations are at risk from tsunami waves and flooding. Tourist communities with no previous education on tsunami risk as well as fishermen at sea and fishing communities are particularly at risk.

### Disaster risk reduction measures

- Understand what a tsunami is and how it develops and its impact on the coast.
- Have a tsunami hazard map, including clear designation of shelter or safer areas, which can be reached immediately.
- Have an early warning system in place.
- Reinforce building structures: move homes and buildings away from the shoreline.
- Protect essential infrastructure such as schools and hospitals, roads, harbors, power plants, banking and building structures at higher levels if possible.
- Install seawalls and revetments, structures that can be built along the shoreline to help protect the shore from storm waves.
- Ensure that natural barriers – dunes, mangroves and coral reefs – are protected; they help mitigate impact on shore.
- Keep tsunami indigenous knowledge and practices alive in the memory of vulnerable populations can also save lives.

- Educate populations and tourists on tsunami risks and integrate tsunami education in the school curricula.
- Make sure people know that when seawaters recede noticeably, everyone must head for high land.
- Place tsunami evacuation signs along roadways clearly indicating the direction inland or to higher ground.

### Useful links

- NOAA – <http://www.tsunami.noaa.gov>
- <http://www.ioc-unesco.org/>

Historically tsunamis have devastated coastal cities. The tsunami that destroyed Callao, Peru in 1746 killed all but a handful of its 6,000 inhabitants. Callao now has a population of more than 800,000. Peru is one of the countries that could be hit with a devastating one in 500 year tsunami with wave heights of over 6 metres reaching the coast-line in less than 15 minutes.

Japan is the country with the largest GDP (over US\$140 billion in 2009) and the second largest population (4.5 million people) exposed to high-severity tsunamis

*Global Assessment Report 2011*

# Volcanoes

*There are more than 1,500 volcanoes potentially active in the world and more than one million volcanic vents under the sea; about 50-60 volcanoes erupt every year worldwide.*



Volcanoes produce a wide variety of natural hazards that can kill people and cause huge economic losses. Avalanches generated by large masses of volcanic cone sliding into the sea can trigger a tsunami. Compared to other natural hazards, such as earthquakes, volcanic eruptions caused generally fewer deaths as eruptions are often predictable and people can be evacuated in time.

### General information

A volcano is an opening, or rupture, in the planet's surface or crust, which allows hot, molten rock, ash and gases to escape from deep below the surface. Volcanic eruptions can be ranked along a spectrum from quiet (effusive) to violent activity, from non-explosive, slow-moving lava flows to explosive eruptions that blast material into the air (magma and gas). The violence of the eruption is determined mainly by the amounts and rate of effervescence of the gases and by the viscosity of the magma itself.

### Risk factors

Although recent decades have seen remarkable progress in monitoring active volcanoes, volcano risk is increasing due to rapid urbanization and the high density of populations living on volcano slopes and valleys. About 500 million people worldwide are exposed to volcano risk and more than 60 large cities are located near active volcanoes. Volcanoes with a high hazard potential are located mainly in developing countries around the circum-Pacific belt (part of Asia, Latin America, the Caribbean and Southwest Pacific.)

### Vulnerable areas

Populations living close to a volcano with no monitoring and early warning systems are the most vulnerable to volcano eruption. Poor people are among the most vulnerable as they are often economically constrained to live in high-risk zones such as on the slopes of an active volcano or in nearby valleys and less prepared to cope with disasters. People living near volcanoes will be the most vulnerable and forced to abandon their land and homes, sometimes forever. People living far away from the eruption can be also affected as their cities and towns, crops, industrial plants, transportation systems, and electrical grids will be damaged by tempura, ash, lahars and flooding.

### Disaster risk reduction measures

- Have a hazard map to identify volcano risk and vulnerability.
- Install a monitoring system to observe the behavior of a volcano to predict eruptions and proceed to early evacuation.
- Integrate volcano risk in land-use planning: volcano risk can be substantially reduced by limiting the development of infrastructure in hazardous areas.
- Ensure contingency and response plans are in place at a national and local level to evacuate people on time.
- Educate people and raise awareness on volcano risk.

The volcanic ash cloud which affected Europe in April 2010 is estimated to have cost US\$521 million in lost GDP in the United Kingdom and US\$4.7 billion globally. While volcanic eruptions have always occurred, the impacts in 2010 highlighted new vulnerabilities. *Global Assessment Report 2011*

### Useful links

- European Volcanic Society – <http://www.sveurop.org>
- Geological Survey of Canada – <http://gsc.nrcan.gc.ca>
- IRD – <http://www.ifremer.fr/ird>
- Island Vulnerability – <http://www.islandvulnerability.org>
- Michigan Technological University Volcanoes Page – <http://www.geo.mtu.edu/volcanoes>
- USGS – <http://volcanoes.usgs.gov>



# Wildfires

*Wildfires are not a major cause of death but they can be very destructive. Many wildfires are caused by human activities, either accidentally or as a consequence of carelessness, or arson. These fires often get out of control and spread very easily over vast areas.*





The 2007 Greek forest fires killed 77 people and the October 2007 California wildfires destroyed at least 1,500 homes and more than 200,000 hectares of land from Santa Barbara County to the US–Mexico border. Wildfires in the Russian Federation in 2010 killed at least 50 people and destroyed 40,000 hectares of protected forest.

### General description

The term “wildfire” is used for uncontrolled fire that destroys forests and many other types of vegetation, including animal species. Three conditions need to be present for a wildfire to burn: fuel, oxygen and a heat source. Fuel is any flammable material surrounding a fire, including trees, grasses, bushes and even houses. A heat source can be anything from lightning, burning campfires or cigarettes, hot winds and even the sun.

### Risk factors

The Global Fire Monitoring Centre, which is monitoring worldwide fires, is projecting increasing fire risk in the future due to increasing demand for agricultural lands for food and beanery production and the necessity to use fire for land-use change, the expansion of residential areas/infrastructures built near fire-prone vegetation, and extended periods of drought. Wildfires will cause more land degradation (soil erosion, loss of land productivity) and as a consequence will create more flooding and landslides.

### Vulnerable areas

Agricultural and pasture lands in which fire is used for controlling weeds, bush encroachments, and for land cleaning are the most wildfire-prone areas as well as fire-prone natural forest, bush land and grassland ecosystems with high occurrence of natural fires in the subtropics (e.g. Africa, Australia), or in the northern latitudes (e.g. North America, Russia) and agricultural and forest plantations (e.g. eucalypt and pine plantations). Other vulnerable areas include: residential areas or scattered houses/infrastructures nearest to fire-prone vegetation; residential areas or

individual structures made of easily flammable materials (e.g. wood, thatch, wooden shingles or otherwise easily ignitable roofing materials); and abandoned rural villages and human settlements with no one to manage, prevent or respond to wildfires.

### Disaster risk reduction measures

- Limit development in high bushfire risk areas and clear the vegetation surrounding homes and other structures.
- Build fire lanes or breaks between homes and any forested or bush land areas, if a natural firebreak (such as a road or a river) does not exist.
- Plant vegetation of low flammability.
- Avoid building in high-risk areas bordering forests, grasslands, or bushlands and restricting human development to relatively fire-safe areas.
- Use fire-resistant building materials.
- Use traditional and advanced methods of prescribed burning for sustainable agriculture and flora and fauna management, including fuel management and restoration of fire regimes.
- Enact legislation and regulation at the appropriate jurisdictional levels.
- Conduct community-based fire risk minimization activities during all stages of fire management.
- Provide community alerts through fire danger rating systems; these systems forecast the potential for fire, based on recent rainfall, temperature, wind speed, and fuel on the ground.
- Educate the community and raise public awareness about the risks of wildfires as people are often responsible for wildfires.
- Develop firefighting capacities and public safety.

### Useful links

- Community-Based Fire Management (Brim) – <http://www.fire.uni-freiburg.de/Manag/CBFiM.htm>
- FAO – <http://www.fao.org/forestry/firemanagementstrategy/en>
- Global fire Monitoring Center – <http://www.fire.uni-freiburg.de>
- Wild land Fire Early Warning Portal – <http://www.fire.uni-freiburg.de/fwf/EWS.htm>



# Resource centers

## For Statistics

### **Centre for Research on the Epidemiology of Disasters**

The Centre for Research on the Epidemiology of Disasters (CRED), located in the School of Public Health of the Catholic University of Louvain in Brussels, Belgium, is an essential source for journalists. It maintains a global Emergency Events Database (EM-DAT) and a comprehensive record of natural hazards, documenting more than 12,500 events by type and country of occurrence over the last century. You can use their database to find information about past disasters by country, date and hazard type.

Webster: <http://www.cred.be>

### **Munich Reinsurance**

The Nat Cat service is another highly regarded database that is maintained by the Research and Development Department of Munich Reinsurance (Munich Re), in Munich, Germany. It provides information about major and technological natural catastrophes that have occurred around the world since 1965.

Website: <http://www.munichre.com>

### **Swiss Reinsurance**

Another major global reinsurance company, Swiss Reinsurance (Swiss Re), maintains specific data on natural hazards and catastrophes since the 1970s. Some of this information is provided through their SIGMA publication, published eight times a year. Swiss Re also publishes an annual review, which summarizes annual data on disaster incidence and analyses, trends in risk, exposure and commercial insurance considerations in several languages.

Website: <http://www.swissre.com>

## For more information about disasters:

### **MCEER Information Service**

The MCEER is a comprehensive source for information on earthquake engineering, hazards mitigation, disaster preparedness and related topics. It posts new content frequently, covering a wide range of news and research topics.

Website: <http://mceer.buffalo.edu>

### **Prevention Web**

PreventionWeb.net provides the best comprehensive news and information on disaster risk reduction, easily categorized by theme/issue, natural hazard or country. PreventionWeb.net offers disaster risk reduction news, country reports, publications, multimedia and podcasts, networks on disaster risk reduction, an events calendar, organization contacts, and all the professional resources you need to develop disaster risk reduction stories.

Website: <http://www.preventionweb.net>.

### **Relief Web**

Relief Web, an electronic database and information service operated by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), focuses primarily on current international emergencies and disasters with humanitarian implications, although it also provides response-oriented information about disasters. Relief Web provides an excellent and wide-ranging selection of information, press accounts, related contacts and operational information, and maintains an archive of specialized maps related to emergency and crisis events.

Website: <http://www.reliefweb.int>

## **UNISDR**

The United Nations International Strategy for Disaster Reduction (ISDR) is a strategic framework, adopted by United Nations Member States in 2000, with the aim of guiding and coordinating the efforts of a wide range of partners to achieve substantive reduction in disaster losses and build resilient nations and communities as an essential condition for sustainable development. The ISDR system comprises numerous countries, organizations, intergovernmental and non-governmental organizations, financial institutions, technical bodies and civil society, which work together and share information to reduce disaster risk.

Website: <http://www.unisd.org>

### **Additional DRR resource links include:**

- Global Facility for Disaster Reduction and Recovery – [www.gfdr.org/gfdr](http://www.gfdr.org/gfdr)
- National Oceanic and Atmospheric Administration (NOAA) – [www.noaa.gov](http://www.noaa.gov)
- Portail de la prévention des risques majeurs – [www.prim.net](http://www.prim.net)
- Save the Children – [http://www.savethechildren.net/alliance/what\\_we\\_do/drr/index.html](http://www.savethechildren.net/alliance/what_we_do/drr/index.html)
- UN System's Work on Climate Change – [www.un.org/climatechange/index.shtml](http://www.un.org/climatechange/index.shtml)
- US Geological Survey – [www.usgs.gov](http://www.usgs.gov)

## Disaster Risk Reduction Publications

### **Disaster Risk Reduction: A Development Concern**

This United Kingdom government publication in 2004 focused on so-called natural disasters, and examines the growing burden of disasters on the poor; their adverse effects on development and on progress towards the Millennium Development Goals; their roots in past development failures; why development tends to overlook disasters; and how disaster risk reduction can be better integrated into development policy and practice.

Website: <http://webarchive.nationalarchives.gov.uk/+http://www.dfid.gov.uk/pubs/files/disaster-risk-reduction-policy.pdf>

### **Global Assessment Report on Disaster Risk Reduction 2009 Risk and Poverty in a Changing Climate**

Present hard-hitting evidence to demonstrate how, where and why disaster risk is increasing globally, the Global Assessment Report 2009 – the first biennial global assessment of disaster risk reduction prepared in the context of the International Strategy for Disaster Reduction (ISDR) – presents key findings from a global analysis of disaster risk patterns and trends, including where high mortality and economic loss is concentrated.

Website: <http://www.preventionweb.net/english/hyogo/gar>

## **Global Assessment Report on Disaster Risk Reduction 2011 Revealing Risk Redefining Development**

This report takes as its starting point a rapidly increasing political commitment towards addressing the twin challenges of disaster risk reduction and climate change adaptation within a broad framework of sustainable development and poverty reduction. It offers an updated analysis of global risk patterns, trends and drivers, an identification of the costs and benefits of addressing different risk segments and strata, a review of progress between 2009 and 2011 towards the Hyogo Framework of Action, and a set of policy recommendations to create an enabling environment for risk reduction.

Website: <http://www.preventionweb.net/english/hyogo/gar/2011/>

## **Global Environment Outlook**

GEO is the United Nations Environment Programme's synthesis of environmental trends, containing baseline information on emerging environmental issues and threats, and policies being implemented at global and regional levels. Its findings and recommendations are the basis of UNEP activities in warning, vulnerabilities and risk assessments.

Website: <http://www.unep.org>

## **Human Development Report – Fighting Climate Change: Human Solidarity in a Divided World (2007-2008)**

The Human Development Report 2007/8 shows that climate change is not just a future scenario, and that increased exposure to droughts, floods and storms is already destroying opportunity and reinforcing inequality. The report challenges the entire human community to undertake prompt and strong collective action on climate change based on shared values and a shared vision.



Website: <http://hdr.undp.org/en/reports/global/hdr2007-8/>

### **IFRC World Disasters Report**

Since 1993 the World Disasters Report, published annually by the International Federation of Red Cross and Red Crescent Societies (IFRC), has provided the latest trends, facts and analyses of the world's humanitarian crises, and addresses the question of disaster preparedness and its value in terms of lives, livelihoods and assets saved.

Website: [http://www.ifrc.org/publicat/wdr2010/index.asp?navid=09\\_03](http://www.ifrc.org/publicat/wdr2010/index.asp?navid=09_03)

### **In the Face of Disaster: Children and Climate Change**

This report, published by Save the Children, explores the potential impact of climate change and natural disasters on children – in particular on their health, nutrition, protection and education. It looks at disaster risk reduction, and the importance of involving children and communities in these strategies.

Website: [http://www.eird.org/publicaciones/Climate\\_Change\\_and\\_children\\_Report\\_PDF.pdf](http://www.eird.org/publicaciones/Climate_Change_and_children_Report_PDF.pdf)

### **Living with Risk: A Global Review of Disaster Reduction Initiatives**

Published by UNISDR, this book provides guidance and policy orientation, as well as serves as a reference for lessons on how to reduce risk and vulnerability to hazards. It is intended for people who have an interest in and practice disaster risk management and sustainable development.

Website: [http://www.unisdr.org/eng/about\\_isdr/bd-lwr-2004-eng.htm](http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm)

### **Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention**

This publication, published by the World Bank and UN, looks at disasters primarily through an economic lens. But lenses can distort as well as sharpen images, so the book also draws from other disciplines: psychology to examine how people may misperceive risks, political science to understand voting patterns, and nutrition science to see how stunting in children after a disaster impairs cognitive abilities and productivity as adults much later. It asks not only the tough questions, but some unexpected ones as well: Should all disasters be prevented? Do disasters increase or decrease conflict? Does foreign aid help or hinder prevention?

Website: <http://www.unisdr.org/english/networks/gfdrr/documents/v.php?id=15136>

### **Reducing Disaster Risk: A Challenge for Development**

In this document, UNDP presents a Disaster Risk Index, which will compare countries according to their relative risk levels over time. The index highlights the level of national progress made in mitigating disaster risk.

Website: <http://www.undp.org/bcpr/disred/rdr.htm>

### **State of the World's Cities 2006/7**

This report, published by UN-Habitat, exposes the impact of poverty from rural areas to urban slums. It provides hard data to confirm that the world's one billion slum dwellers are more likely to experience hunger and disease, miss out on education, have fewer chances of employment and die earlier.

Website: <http://www.unhabitat.org>

More publications on disaster risk reduction can be found at: <http://www.unisdr.org/eng/library/lib-index.htm>

## Experts

*Below is a list of international and national organizations working on DRR issues.*

### NGOS and other international organizations

Action Aid International - [www.actionaid.org](http://www.actionaid.org)

Asian Disaster Preparedness Center (ADPC) - [www.adpc.net](http://www.adpc.net)

Asian Disaster Reduction Center (ADRC) - [www.adrc.or.jp](http://www.adrc.or.jp)

Care International - [www.care.org](http://www.care.org)

Christian Aid - [www.christian-aid.org.uk](http://www.christian-aid.org.uk)

International Federation of Red Cross and Red Crescent Societies (IFRC) - [www.ifrc.org](http://www.ifrc.org)

International Union for Conservation of Nature (IUCN) - [www.iucn.org](http://www.iucn.org)

Oxfam - [www.oxfam.org](http://www.oxfam.org)

Prevention Consortium - [www.proventionconsortium.org](http://www.proventionconsortium.org)

Tear Fund - [www.tearfund.org](http://www.tearfund.org)

World Bank (Hazard Risk Management) - [www.worldbank.org](http://www.worldbank.org)

World Economic Forum - [www.weforum.org](http://www.weforum.org)

### Africa

Africa, Caribbean and Pacific (ACP) Secretariat - [www.acpsec.org](http://www.acpsec.org)

African Development Bank (AfDB) - [www.afdb.org](http://www.afdb.org)

African Union Commission (AU) - [www.africa-union.org](http://www.africa-union.org)

Drought Monitoring Centre for the Greater Horn of Africa - [www.dmcn.org](http://www.dmcn.org)

IGAD Climate Prediction and Applications Centre (ICPAD) - [www.icpac.net](http://www.icpac.net)

New Partnership for Africa's Development (NEPAD) - [www.nepad.org](http://www.nepad.org)

### Asia and the Pacific

Aga Khan Development Network - [www.akdn.org](http://www.akdn.org)

All India Disaster Mitigation Institute (AIDMI) - [www.aidmi.org](http://www.aidmi.org)

Asian Development Bank (ADB) - [www.adb.org](http://www.adb.org)

Asian Disaster Reduction and Response Network (ADRRN) - [www.adrrn.net](http://www.adrrn.net)

Association of Southeast Asian Nations (ASEAN) - [www.aseansec.org](http://www.aseansec.org)

Bangladesh Disaster Preparedness Centre (BDPC) - [www.bdpc.org.bd](http://www.bdpc.org.bd)

National Disaster Management Authority, Pakistan (NDMA) - [www.ndma.gov.pk](http://www.ndma.gov.pk)  
National Society for Earthquake Technology, Nepal (NSET) - [www.nset.org.np](http://www.nset.org.np)  
Pacific Disaster Center (Hawaii, USA) - [www.pdc.org](http://www.pdc.org)  
South Asian Association for Regional Cooperation (SAARC) - [www.saarcsec.org](http://www.saarcsec.org)  
South Pacific Applied Geosciences Commission (SOPAC) - [www.sopac.org](http://www.sopac.org)

## **Europe**

CIS Interstate Council - [www.emercom.on.ufanet.ru](http://www.emercom.on.ufanet.ru)  
Council of Europe (CoE) - [www.coe.int](http://www.coe.int)  
Economic Cooperation Organization - [www.ecosecretariat.org](http://www.ecosecretariat.org)  
European Commission's Humanitarian Aid and Civil Protection Department (ECHO) - [ec.europa.eu/echo/index\\_en.htm](http://ec.europa.eu/echo/index_en.htm)  
European Commission- Joint Research Centre (EC/JRC) - [www.jrc.cec.eu.int](http://www.jrc.cec.eu.int)

## **The Americas**

Association of Caribbean States (ACS) - [www.acs-aec.org](http://www.acs-aec.org)  
Caribbean Disaster Emergency Management (CDEMA) - [www.cdera.org](http://www.cdera.org)  
Centro de Coordinación para la Prevención de los Desastres Naturales en América Central (CEPREDENAC) - [www.cepredenac.org](http://www.cepredenac.org)  
Comité Andino para la Prevención y Atención de Desastres (CAPRADE) - [www.caprade.org](http://www.caprade.org)  
Comunidad Andina de Naciones (CAN) - [www.comunidadandina.org](http://www.comunidadandina.org)  
Inter-American Development Bank (IADB) - [www.iadb.org](http://www.iadb.org)  
Organization of American States-Inter-American Committee on Natural Disaster Reduction (OAS-IACNDR) - [www.oas.org/usde](http://www.oas.org/usde)

## **Other international expert organizations**

Earthquakes and Megacities Initiative (EMI) - [www.emi-megacities.org/](http://www.emi-megacities.org/)  
Global Fire Monitoring Center (GFMC) - [www.fire.uni-freiburg.de](http://www.fire.uni-freiburg.de)  
Group on Earth Observations (GEO) - [www.earthobservations.org](http://www.earthobservations.org)  
International Consortium on Landslides (ICL) - [www.ichq.org/](http://www.ichq.org/)  
International Council for Science (ICSU) - [www.icsu.org](http://www.icsu.org)

## United Nations

Food and Agriculture Organization (FAO)  
- [www.fao.org](http://www.fao.org)

International Civil Defence Organisation  
(ICDO) - [www.icdo.org](http://www.icdo.org)

International Labour Organization (ILO) -  
[www.ilo.org](http://www.ilo.org)

International Telecommunication Union  
(ITU) - [www.itu.int](http://www.itu.int)

Office for the Coordination of  
Humanitarian Affairs (OCHA) -  
<http://ochaonline.un.org>

Pan American Health Organization  
(PAHO) - <http://new.paho.org/disasters>

United Nations Centre for Regional  
Development (UNCRD) - [www.uncrd.or.jp](http://www.uncrd.or.jp)

United Nations Convention to Combat  
Desertification (UNCCD) - [www.unccd.int](http://www.unccd.int)

United Nations Economic and Social  
Commission for Asia and the Pacific  
(UNESCAP) - [www.unescap.org](http://www.unescap.org)

United Nations Educational, Scientific  
and Cultural Organization (UNESCO) –  
[www.unesco.org](http://www.unesco.org)

United Nations Environment Programme  
(UNEP) - [www.unep.org](http://www.unep.org)

United Nations Human Settlements  
Programme (UN-Habitat) -  
[www.unhabitat.org](http://www.unhabitat.org)

United Nations International Children's  
Emergency Fund (UNICEF) -

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

United Nations Institute for Training and  
Research (UNITAR) -

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

UNOSAT - [www.unosat.org](http://www.unosat.org)

United Nations Regional Economic  
Commissions for Africa (ECA) -  
[www.uneca.org](http://www.uneca.org)

United Nations Regional Economic and  
Social Commissions for Latin America  
and the Caribbean (ECLAC) - [www.eclac.cl](http://www.eclac.cl)

United Nations Framework Convention  
on Climate Change (UNFCCC) -  
[www.unfccc.int](http://www.unfccc.int)

United Nations University (UNU) -  
[www.unu.edu](http://www.unu.edu)

United Nations Volunteers (UNV) -  
[www.unv.org](http://www.unv.org)

World Food Programme (WFP) -  
[www.wfp.org](http://www.wfp.org)

World Health Organization (WHO) -  
[www.who.org](http://www.who.org)

World Meteorological Organization  
(WMO) - [www.wmo.int/disasters](http://www.wmo.int/disasters)

## Media Contacts

*The following are media contacts within many of the main UN and international organizations working on disaster risk reduction issues:*

### European Commission's Humanitarian Aid Office (ECHO)

Tel: +32 2 295 44 00

E-mail: [echo-info@ec.europa.eu](mailto:echo-info@ec.europa.eu)

### Inter-governmental Panel for Climate Change (IPCC)

For media questions about climate change or to be directed to an expert for more information, please send a mail to [ipcc-media@wmo.int](mailto:ipcc-media@wmo.int).

### International Federation of Red Cross and Red Crescent Societies (IFRC)

<http://www.ifrc.org/en/news-and-media/media-center/media-contacts-in-the-zones/>

### United Nations Children's Fund (UNICEF)

[http://www.unicef.org/media/media\\_contact.html](http://www.unicef.org/media/media_contact.html)

### United Nations Development Programme (UNDP)

Media enquiries

Tel: +1 212 906 5382

Fax: +1 212 906 5364

E-mail: [UNDP-newsroom@undp.org](mailto:UNDP-newsroom@undp.org)

### UNDP Bureau for Crisis Prevention & Recovery (BCPR)

Tel: +1 212 906 6711

E-mail: [bcpr@undp.org](mailto:bcpr@undp.org)

United Nations Environment Programme (UNEP)

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## Conclusion: The Power of Change

As someone in the media, what should you be doing? Is it a journalist's job to change society?

In fact, the media does have a huge and sometimes imperceptible role in changing human behaviour, simply by reporting news that seems important, and continuing to do so.

In the course of the last three decades, broadcasters, magazine editors, newspaper journalists and bloggers have helped make dramatic changes in social attitudes to drinking, smoking, diet and the transmission of sexual diseases such as HIV and AIDS. If you believe climate change to be a global problem, you do so because of consistent reporting within the media over the last two decades. And if disaster risk reduction becomes a normal part of the national, civic and media agenda, it will be because of systematic, measured and sensible reporting by responsibly-minded people in the media.

There will be resistance to such reporting, from the readership, from city authorities and from government ministers. There always is resistance: people are naturally unwilling to change their ways, and naturally inclined to discount dangers of which they have not previously been aware. But regardless of the obstacles, you must go on exploring the possibilities of disaster, and soberly reminding people of hazards that exist, and precautions not taken. The paradox is that you report these warnings in the hope that you will be proved wrong.

You won't get much credit for warning about disasters that turn out not to be disasters. But who wants to become notorious for saying that a disaster could not happen, just before it does happen?



In the first week of May 1902, *Les Colonies*, the newspaper of the village of St Pierre on the French Caribbean Island of Martinique, downplayed the danger of the active volcano Mount Pélee, by convincing residents that the town was the safest place to be. On 8 May, the volcano erupted, catastrophically killing 28,000 people.

The moral for all journalists of this lesson from history is: take disasters seriously. They happen. But something could have been done to save lives and prevent tragic losses. We can see this with terrible clarity after each tragic, overwhelming disaster. The great challenge for the media is to see the truth of this before it happens, and help to prevent it.

## **Annex I: A Brief History of the Evolution of Disaster Risk Reduction**

### **Phase I: Natural Hazards**

Disaster risk reduction was initially built on the concept that natural hazards cause disasters, and that by better understanding the nature of hazards – earthquakes, cyclones, floods and droughts – communities and countries can then better respond to their devastating impacts. The first phase began when natural scientists who study the hazards such as earthquakes and floods began to work with the development and relief agencies that normally respond to disaster emergencies. These two communities are at the heart of the drive to reduce human suffering.

### **Phase II: Physical Vulnerability**

The second phase of disaster risk reduction dates back to the 1970s and 1980s when applied scientists and technical professionals, such as civil and structural engineers, architects and city planners, got involved. During this time experts started to observe the impacts of natural hazards on a city, particularly the physical vulnerability of structures – why some buildings were destroyed and some partially damaged while others remained intact. By calculating the vulnerability as well as the likely hazard, one could start to calculate the risk of likely losses.

New approaches to disaster risk reduction were introduced, including disaster-resilient building codes, better land-use planning to avoid building in hazard-prone areas, retrofitting existing structures (i.e. hospitals, schools and bridges) and flood defences and control schemes. These approaches moved the focus from disaster prevention to disaster mitigation. Engineers, for example, certainly were not expected to prevent a flood or earthquake from happening, but they could mitigate damage and losses by reducing the vulnerability.

### **Phase III: Social and Economic Vulnerability**

In the third phase of disaster risk reduction, geographers and social scientists started to pay more attention to the social, cultural and economic vulnerabilities of natural hazards. For example, take two identical buildings that suffer the exact same level of damage.

In one building live families that are wealthy and who have insurance and savings, while the other building is home to poor families who have no insurance or savings accounts and are unemployed. The impact of the same disaster on these two different social groups will be completely different.

One cannot blame an earthquake on social inequalities and development; it is a natural phenomenon. But one can question those that build low-income housing in earthquake-prone areas that lack basic health or educational services. This is not natural but rather a product of unsustainable development.

Natural hazards are a challenge for development, and as a result, the disaster risk reduction community started to turn their attention to how to intervene in the processes that generate social and economic vulnerability and inequality.

#### **Phase IV: Development and Environmental Degradation**

Since the 1990s, the fourth phase of disaster risk reduction has taken on a more holistic approach that tries to understand and address the links between natural disasters, development and the environment. While hazards such as earthquakes and volcanoes are natural, these hazards and many others – flash floods, landslides, droughts – are being exacerbated by development and environmental degradation as a result of human activities.

Take the case of the massive earthquake that struck Mexico City in 1985. Because the city was built on a drained lake, the area was at a high hazard risk to begin with, making the impact of the disaster that much more dangerous. There are many other places around the world where cities are exposed to human-made hazards. Climate change is also increasing risk on both the hazard and vulnerability sides.

Disaster risk reduction has evolved. Most interventions today, however, can still be linked to any of the four phases discussed above. From the first phase, experts are still working on preparedness and early warning as well as strong natural science research to understand the hazard component of risk. From the second phase, there

continues to be significant advances in improving building resilience and applying insurance-based instruments to help people mitigate losses based on calculating physical vulnerability.

While there is still a long way to go in understanding all implications of human and social vulnerabilities in creating and developing risk, there has been progress on addressing social and economic development as described in the third phase. The fourth and current phase is still a work in progress as the disaster risk reduction community continues to grapple with the impacts of climate change and environmental degradation. But it is also a phase in which people at risk are increasingly viewed as “subjects” rather than “objects” of disaster risk reduction. This is a perspective that is most likely to continue.

\* This brief history of disaster risk reduction is based on an interview with Andrew Maskrey, Senior Advisor at UNISDR in charge of coordinating the Global Assessment Report on Disaster Risk Reduction.

## **Annex II: Terminology**

### **Acceptable risk**

The level of loss a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.

### **Building codes**

Regulations controlling the design, construction, materials, alteration and occupancy of any structure to insure human safety and welfare. Building codes include both technical and functional standards.

### **Capacity**

The 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.

### **Climate change**

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.

### **Climate change adaptation**

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

### **Climate risk management**

An approach to systematically manage climate-related risks affecting activities, strategies or investments, by taking account of the risk of current variability and extremes in weather as well as long-term climate change.

### **Climate variability**

Variations in the mean state and other statistics (such as standard deviations, statistics of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).

### **Coastal erosion**

Landward movement of the shoreline due to the forces of waves and currents. Coastal erosion is likely to get worse due to sea level rise and more intense storms associated with climate change.

### **Complex disaster**

A disaster that has no single root cause (such as a storm) but emerges due to a combination of factors, which may involve an extreme weather event, conflict and/or migration, environmental degradation and other issues. Complex emergencies are becoming more likely due to climate change, which may alter hazards and amplify underlying vulnerabilities.

### **Disaster preparedness**

This includes activities that contribute to the pre-planned, timely and effective response of individuals and communities to reduce the impact of a hazard and deal with the consequences of a disaster.

### **Disaster recovery and rehabilitation**

Decisions and actions taken after a disaster with a view to restoring and improving the pre-disaster living conditions of the stricken community – that is to say, to enable basic services to resume functioning, to repair physical damage to community facilities, and to revive economic activities and support the psychological and social well-being of the survivors while contributing to reduce further risks.

### **Early warning**

The provision of timely and effective information through identified institutions, which allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response. Early-warning systems depend on: understanding and mapping the hazard; monitoring and forecasting; processing and disseminating understandable warnings to political authorities and the population; and undertaking the right, timely actions in response to the warnings.

### **El Niño Southern Oscillation (ENSO)**

A complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts, such as altered marine habitats, rainfall changes, floods, droughts and changes in storm patterns.

### **Extreme weather event**

Weather that is extreme and rare in a particular place, such as extremely intense rainfall, extreme heat and a very strong windstorm. By definition, the characteristics of what is called “extreme weather” vary from place to place. Often it is defined as something that on average has happened less than once every thirty, fifty or a hundred years.

### **Global warming**

The rise in average temperature on earth due to the increasing amounts of greenhouse gases in the atmosphere. The media often uses this term to refer to “climate change” (a concept that includes global warming as well as other changes).

### **Greenhouse gas (GHG)**

A gas, such as carbon dioxide and methane, which absorbs and re-emits infrared radiation. When pollution adds these gases to the earth's atmosphere, they trap more solar energy in our planet (like in a greenhouse) warming the earth's surface and contributing to climate change.

### **Land-use planning**

Branch of physical and socio-economic planning that determines the means and assesses the values or limitations of various options in which land is to be utilized, with the corresponding effects on different segments of the population or interests of a community taken into account in resulting decisions.

### **Mitigation**

This term has different meanings for practitioners in the climate change and disaster-management communities, often leading to confusion. Mitigation in disaster risk management means the structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

### **Prevention**

Prevention integrates all activities that provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters.

### **Retrofitting or upgrading**

Reinforcement of structures to become more resistant and resilient to the forces of natural hazards.

### **Risk assessment/analysis**

A methodology to determine the nature and extent of risk by analysing 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.



### **Sustainable development**

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of “needs”, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and the future needs.

This glossary builds on definitions provided by the Brundtland Commission, IPCC Fourth Assessment Report, IFRC, UNDP, GEF Adaptation Policy Frameworks, UNISDR and World Bank.

### **For further information on DRR and related concepts, visit:**

United Nations International Strategy for Disaster Reduction  
Compendium of disaster risk reduction terms, compiled from a broad range of resources.

<http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm>

### **United Nations Development Programme**

Short glossary of terms appended to the publication Reducing Disaster Risk: A Challenge for Development.

<http://www.undp.org/bcpr/disred/documents/publications/rdr/english/glossary.pdf>

### **Intergovernmental Panel on Climate Change**

Glossary of terms used by Working Group II: Impacts, Adaptation and Vulnerability in the Third Assessment Report 2001

[http://www.grida.no/climate/ipcc\\_tar/wg2/689.htm](http://www.grida.no/climate/ipcc_tar/wg2/689.htm)

### **United Nations International Strategy for Disaster Reduction**

Terminology: Basic Terms of Disaster Risk Reduction. <http://www.unisdr.org/eng/library/lib-terminology-eng%20home.htm>.

### **Annex III: Corruption Costs Lives**

Corruption is the least recognized perpetrator of vulnerability to natural hazards, and yet its consequences are rarely reported; thriving in secrecy and silence, its nature and modus operandi are lack of hard evidence. Its consequences, however, can be catastrophic.

The OECD Secretary-General has stated that: “The impact of corruption goes far beyond the specific misbehaviour of the actors involved. Its repercussions sweep across entire populations...through derailed development plans and incoherent investment decisions. Unfinished roads, crumbling schools and crippled health systems are...a few examples [of its] impact”.

Excused as “common practice” by many, the consequences of corruption are disadvantage, deprivation, poverty, disease, economic loss and death. Yet corruption in varying degrees is evident in all countries.

Construction is the most corruption-prone industry worldwide on Transparency International’s 2002 Bribe Payer’s Index. Corrupt construction administration is given as the reason why, for example, in one earthquake-prone European country, 5,500 school buildings are reported as not having conformed to building regulations and more than half as not having “certificates of safety”. Similarly, an economically disadvantaged region of the same country remains so after the equivalent of millions of US dollars have been donated for infrastructure development in that region over a period of 50 years. In one county of another severely earthquake prone country, the chief administrator is stated to have personally “acquired” the equivalent of almost US\$5 million and, in another county, the “anti-corruption chief” himself accrued bribes worth more than US\$4.25 million.

Corruption on these scales cannot be regarded as normal practice or as accidental slips from a normally benevolent administration, but as premeditated systematic financial misappropriation. In these two countries, taken as examples,

school buildings have been revealed in earthquakes to have been inadequately constructed and consequently to have suffered the greatest damage and numbers of deaths and injuries.

Corrupt practices in construction are one reason why building failure in earthquakes cannot be prevented only by building legislation. Cement for concrete may be reduced, steel reinforcement omitted, and overall construction quality depleted when inspections of work in progress are influenced or eradicated by bribery. Only when buildings fail and collapse in earthquakes are the resulting shortcomings exposed.

Building construction is, by its nature, a process of cover up, the work of one trade being hidden by the next – from foundations in the ground to the last coat of paint. Only independent regular inspection can ensure its integrity. But the main perpetrators may not be site workers. Pressure for omissions, to cut costs or to save time, may be applied by managers as a consequence of backhanders to obtain the work and to secure the contract, an increase of overheads only redressed by cutting costs and reducing quality in the process.

There is strong correlation between national incidences of corruption and politically owned and controlled newspapers, radio and television. Increased public understanding of housing construction, for example, and of its lethal potential in the creation of vulnerability, a prime requirement of risk reduction, can be aided by an informed and independent media, and examples could be made by the exposure of corrupt officials if the media is not prevented by its owners or other authorities from doing so.

Overall, the need for transparent local governance, without which communities are unlikely to become aware of policy decisions by which they may be affected. The ISDR mission for the achievement of disaster resilient communities could be derailed by parallel covert and corrupt decision making in land, forestry and water management for example, and in development projects generally, by which local

communities, vulnerability to all hazards is exacerbated by actions of which they may be unaware, and which may be beyond their power to prevent.

The negative and damaging potential for corrupt practice has to be recognized as a component of vulnerability and risk reduction, and opportunities for corrupt dealing eradicated, as a part of obtaining of commitment from public authorities to implement disaster reduction policies and actions. Disaster reduction science and its applications should include enhanced awareness of corruption, and of its origins, causes, sources and practices, any of which have the potential to destroy otherwise humanitarian objectives.

Corruption Costs Lives is based on an interview with James Lewis, is an architectural and environmental writer, and a member of the Royal Institute of British Architects (RIBA) with Datum International.

## Bibliography or References

*Bhatti, Amjad and Madhavi Malalgoda Ariyabandu. Disaster Communication: A Resource Kit for Media. Colombo and Islamabad: ITDG-South Asia and Journalists Resource Centre. Duryog Nivaran Publication, 2002.*

*Ferris, Elizabeth. Natural Disasters, Conflict, and Human Rights: Tracing the Connections. The Brookings Institution – University of Bern Project on Internal Displacement, 2010. Available from [www.brookings.edu/speeches/2010/0303\\_natural\\_disasters\\_ferris.aspx](http://www.brookings.edu/speeches/2010/0303_natural_disasters_ferris.aspx).*

*German Committee for Disaster Reduction (2002). Journalist's Manual on Disaster Management. Bonn, Germany.*

*Gunawardene, Nalaka and Frederick Noronha. Communicating Disasters: An Asia Pacific Resource Book. Bangkok: UNDP Regional Centre and TVE Asia Pacific, 2007*

*UN-HABITAT (2006). State of the World's Cities 2006/7. London, UK: Earthscan.*

*United Nations International Strategy for Disaster Reduction (2009). Disaster Risk Reduction in the United Nations: Roles, Mandates and Areas of Work of Key United Nations Entities. Geneva, Switzerland.*

*United Nations International Strategy for Disaster Reduction (2009). Global Assessment Report on Disaster Risk Reduction: Risk and Poverty in a Changing Climate. Geneva, Switzerland.*

*United Nations International Strategy for Disaster Reduction (2011). Global Assessment Report on Disaster Risk Reduction. Geneva, Switzerland.*

*United Nations International Strategy for Disaster Risk Reduction (2011). Hyogo Framework for Action 2005-2015: Mid-Term Review 2010-2011. Geneva, Switzerland.*

*United Nations International Strategy for Disaster Reduction (2004). Living with Risk: A Global Review of Disaster Reduction Initiatives. Geneva, Switzerland.*

*World Bank, 2010. Natural hazards, unnatural disasters: the economics of effective prevention - World Bank ISBN: 978-0-8213-8050-5; SKU: 18050*



***“Millions of people in my country think that a disaster is God-given, or a natural process, and I was among them. After reading this media book, I clearly realized that we were wrong. In fact, all of us are responsible for all types of disasters.”***

Shreeram Singh Basnet, Journalist, Nepal

***“The media book is a good reference and guide book for journalists writing about issues related to disaster risk reduction and disaster preparedness. It is clear and comprehensive and provides good examples of reporting on disasters. It should be on the desks of all editors.”***

Yuli Ismartomo, Tempo Magazine, Indonesia

***“ We, journalists need to change the way we report on disasters if we want politicians in South America to change the way they deal with disasters. We can influence them and help saving more people from disaster impacts.”***

María Antonia Ortiz Molina, El Heraldo, Honduras