

Disaster data: key trends and statistics

This year's *World Disasters Report* features the latest verified data on both "natural" and technological disasters from the past decade (1992-2001). Our natural disaster data are divided into hydro-meteorological and geophysical disasters, in order to track the changing impact of weather-related hazards. And we analyse the data not only by country and continent, but according to levels of human development, to highlight the relationship between development and disasters.

Weather-related disasters continue to soar

While the total number of all disasters reported during 2001 was lower than the previous year, at 712 events it still represents the second highest total of the decade (see Table 1). The overall figure disguises some disturbing trends. Countries of low human development (LHD) reported an increase in disasters. Africa reported twice as many disasters last year compared to the decade's average of 94 events.

From 1992-1996 an average of 75 floods per year was reported. But in 2001, for the second year running, the number of reported floods was more than double that figure (see Table 5). While the number of geophysical disasters has remained fairly constant, the past two years have seen the highest numbers of weather-related disasters reported over the decade. However, while half of all disasters reported in 2001 were hydro-meteorological, nearly one-third were transport accidents. In Africa, 46 per cent of all reported disasters during the decade were transport related (see Table 9).

Deaths double between 2000 and 2001

A total of 39,073 people were reported killed by disasters in 2001 (see Table 2). While this was nearly double the figure for the previous year, it was lower than the decade's annual average of around 62,000. Most of the fatalities for 2001 were reported in countries of medium human development (MHD), which registered an increase in deaths from disasters of 25 per cent compared to the ten-year average.

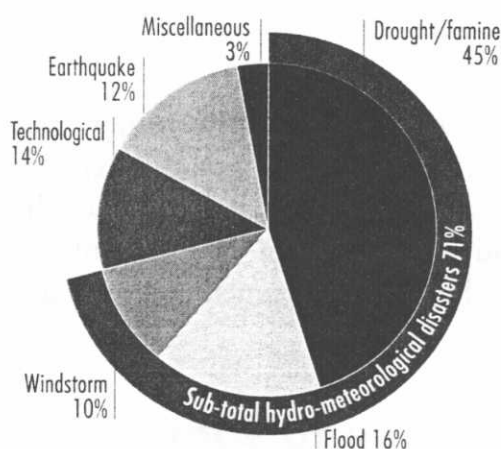
Last year, earthquakes proved to be the world's deadliest disasters, accounting for over half the year's toll (see Table 6). Much of this can be attributed to the quakes which hit the Indian state of Gujarat in January 2001. For the first year in the decade, geophysical disasters killed more people than weather-related disasters. Over the decade, however, hydro-meteorological hazards have claimed 71 per cent of all lives lost to disasters (see Figure 8.1).

Photo opposite page:
Behind the data are individual men, women and children, each with a story to tell, a life to lead or a livelihood to lose. Getting the numbers right helps improve the efficiency and effectiveness with which humanitarian agencies serve vulnerable people.

Yoshi Shimizu/
International Federation,
Sierra Leone 2001

Figure 8.1
Source: CRED

Reported deaths from all disasters (1992-2001)



Oceania, tidal waves claimed 66 per cent. Surprisingly, Africa's deadliest disasters were transport accidents – claiming 45 per cent of the decade's deaths.

Disasters affect 170 million worldwide

Last year, a total of 170 million people were reported affected by disasters – below the decade's average of 200 million (see Table 3). However, this disguises a figure of 11 million affected in the Americas in 2001, more than double that continent's annual average.

Earthquakes affected more people during 2001, 19 million, than any other year of the decade (see Table 7). Meanwhile drought/famine affected over 86 million people last year, many of those living in central and south Asia. Over the decade, however, floods

accounted for nearly two-thirds of all those affected by disasters (see Figure 8 2).

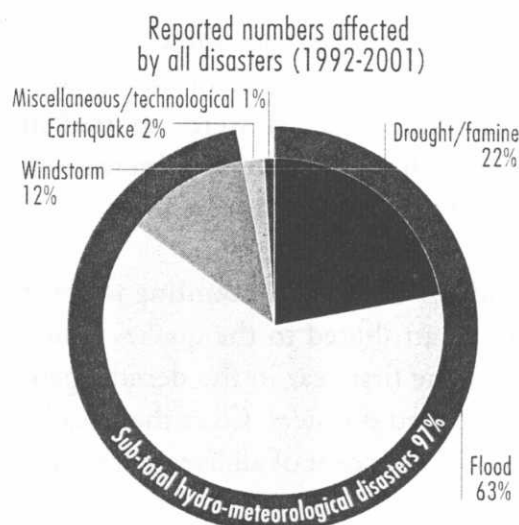


Figure 8.2
Source: CRED.

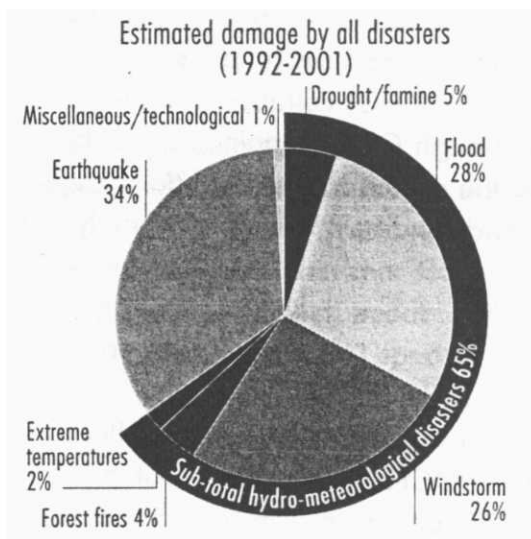
Weather-related disasters have been the most pervasive in the past ten years. Drought/famine accounted for 82 per cent of all those affected in Africa, 48 per cent in Oceania and 35 per cent in the Americas. Meanwhile, floods accounted for 69 per cent of all those affected in Asia. And windstorms accounted for 36 per cent of those affected in the Americas, and 33 per cent in Europe (see Table 11).

Disaster damage below decade's average

The total amount of estimated damage (direct damage to infrastructure, crops, etc.) inflicted by disasters during 2001 was US\$ 24 billion – the decade's lowest and well below the annual average of US\$ 69 billion (see Table 4). Two-thirds of 2001's damage was reported from MHD countries. Earthquakes caused an estimated US\$ 9 billion of damage and windstorms US\$ 8 billion last year (see Table 8).

Over the decade, earthquakes have proved the most expensive of disasters, costing the world US\$ 238 billion in damage alone – without even measuring the effect on economies. Around half of this figure, however, can be attributed to one event – the 1995 quake in Kobe, Japan. Globally, floods and windstorms are very nearly as costly as earthquakes (see Figure 8.3).

Disasters can have a devastating effect on the development of poorer nations. In Honduras, for example, Hurricane Mitch put the country's economic development back 20 years. In 1998, an El Niño year, Peru suffered storm damage to public infrastructure estimated at equivalent to 5 per cent of gross domestic product (GDP). In 1999, losses from earthquakes in Turkey and landslides in Venezuela cost these countries the equivalent to 10 per cent of their GDP.



Looking at the different continents, the costliest disasters over the past ten years have been floods in Africa (35 per cent) and Europe (37 per cent), windstorms in the Americas (54 per cent), earthquakes in Asia (46 per cent) and drought/famine in Oceania (47 per cent) (see Table 12).

Disasters kill fewer but affect more

Over the past 30 years, the impacts of natural disasters have changed dramatically (see Chapter 1, Figure 1.1). Deaths from natural disasters fell from nearly 2 million in the 1970s to just under 800,000 in the 1990s. But numbers reported affected by natural disasters rocketed from just over 700 million in the 1970s to nearly 2 billion in the 1990s.

The reasons behind these statistics are complex and need further analysis. However, the drop in fatalities can be attributed in part to better disaster preparedness. In 1970 a cataclysmic cyclone killed half a million people in Bangladesh – accounting for a

Box 8.1 EM-DAT: a specialized disaster database

The Centre for Research on the Epidemiology of Disasters (CRED), established in 1973 as a non-profit institution, is located at the School of Public Health of the Louvain Catholic University in Brussels, Belgium. CRED became a World Health Organization (WHO) collaborating centre in 1980. Although CRED's main focus is on public health, the centre also studies the socio-economic and long-term effects of large-scale disasters.

Since 1988, CRED has maintained an Emergency Events Database (EM-DAT), sponsored by the International Federation, WHO, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the European Community Humanitarian Office (ECHO). USAID's Office of Foreign Disaster Assistance (OFDA) also collaborated in getting the database started, and a recent OFDA/CRED initiative has made a specialized, validated disaster database available on CRED's web site. The database's main objective is to assist humanitarian action at both national and international levels and aims at rationalizing decision-making for disaster preparedness, as well as providing an objective base for vulnerability assessment and priority setting.

Tables 1 to 13 in this chapter have been drawn from EM-DAT, which contains essential core data on the occurrence and effects of over 12,000 disasters in the world from 1900

to the present. The database is compiled from various sources, including UN agencies, NGOs, insurance companies, research institutes and press agencies. The entries are constantly reviewed for redundancies, inconsistencies and the completion of missing data.

CRED consolidates and updates data on a daily basis; a further check is made at three-monthly intervals; and revisions are made annually at the end of the calendar year. Priority is given to data from UN agencies, followed by OFDA, and then governments and the International Federation. This priority is not a reflection on the quality or value of the data, but the recognition that most reporting sources do not cover all disasters or have political limitations that may affect the figures. ■

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quarter of that decade's fatalities from natural disasters. Following that catastrophe, the Bangladesh government supported by the Red Cross Red Crescent initiated the cyclone preparedness programme (CPP) – a system of early warning and evacuation that has proved enormously successful (see Chapter 1, Box 1.1). In the 1990s alone, the CPP successfully evacuated 2.5 million people into emergency shelters before cyclones hit – and very probably saved their lives as a result.

Many factors are likely to be contributing to the increase in those reported affected by disasters. The profile of vulnerability is changing. As more people move into urban areas and slum settlements, they are increasingly living in the path of disaster. Traditional coping mechanisms are being eroded as families fragment and communities disperse. Environmental degradation is increasing the negative effects of floods, windstorms and droughts. While disaster preparedness measures are helping save lives, the failure to reduce risks more broadly may be contributing to the higher numbers of disaster-affected people. Better reporting of the numbers of disaster-affected people may contribute to the higher figure. And as pointed out below, the definition of “affected” is open to interpretation.

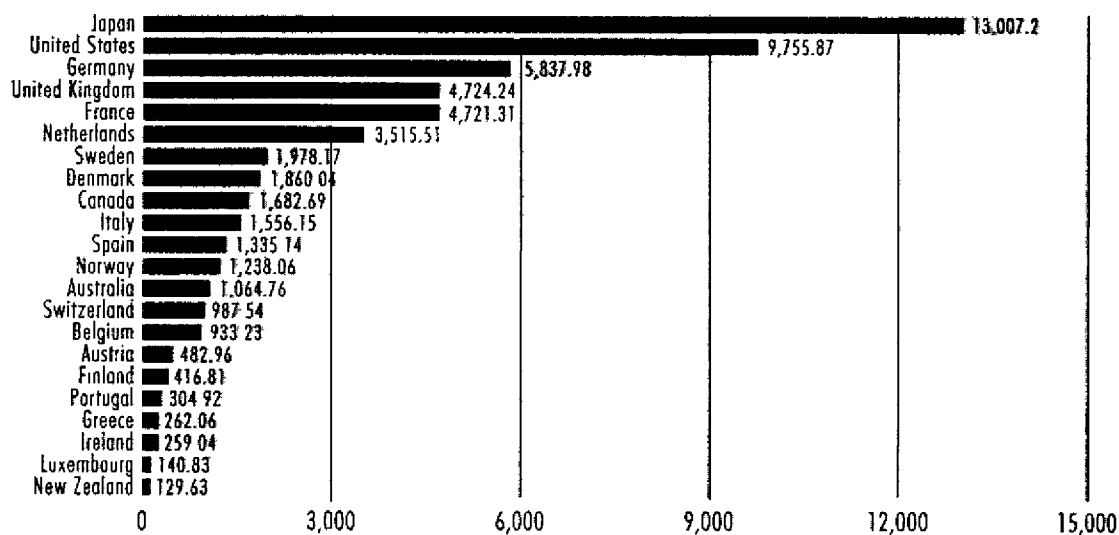
This global trend of lower deaths and higher numbers of affected is mirrored by the past two decades of data on all disasters (natural and technological). Worldwide, such disasters claimed 1 million lives from 1982-91. This total fell by 40 per cent to around 620,000 deaths from 1992-2001 (see Table 13). But the numbers affected by all disasters climbed from 1.7 billion (1982-91) to 2 billion (1992-2001).

However, these global figures disguise some serious discrepancies between the continents. The fall in global disaster fatalities over the past two decades is largely due to an enormous drop in African deaths, from 575,000 (1982-91) to 40,000 (1992-2001). The high fatalities from the earlier decade relate to the series of famines which devastated the Horn of Africa in the mid-1980s. Apart from Africa and Europe, the rest of the world reported substantial increases in the numbers of disaster fatalities in the past two decades. For Oceania, deaths tripled from one decade to the next, while for Asia deaths were up 41 per cent and for the Americas up 32 per cent. Meanwhile, the figures for those affected have more than tripled in Europe and increased 12-fold in Oceania.

Development and emergency aid fall

Official development assistance (ODA) from members of the Organisation for Economic Co-operation and Development's (OECD) Development Assistance Committee (DAC) slipped to US\$ 53.7 billion during 2000, the latest year for which statistics are available (see Figure 8.4). This represented a drop of around US\$ 2.7 billion from aid disbursements during 1999. Some of this decrease was accounted for by Japan, the world's largest donor, which slashed its aid by US\$ 1.8 billion. France cut its aid by over one-quarter to the lowest level of the past decade. Nine out of the 22 DAC donors gave more than in 1999, notably the United Kingdom, which increased its aid by over US\$ 1 billion, a 30 per cent increase.

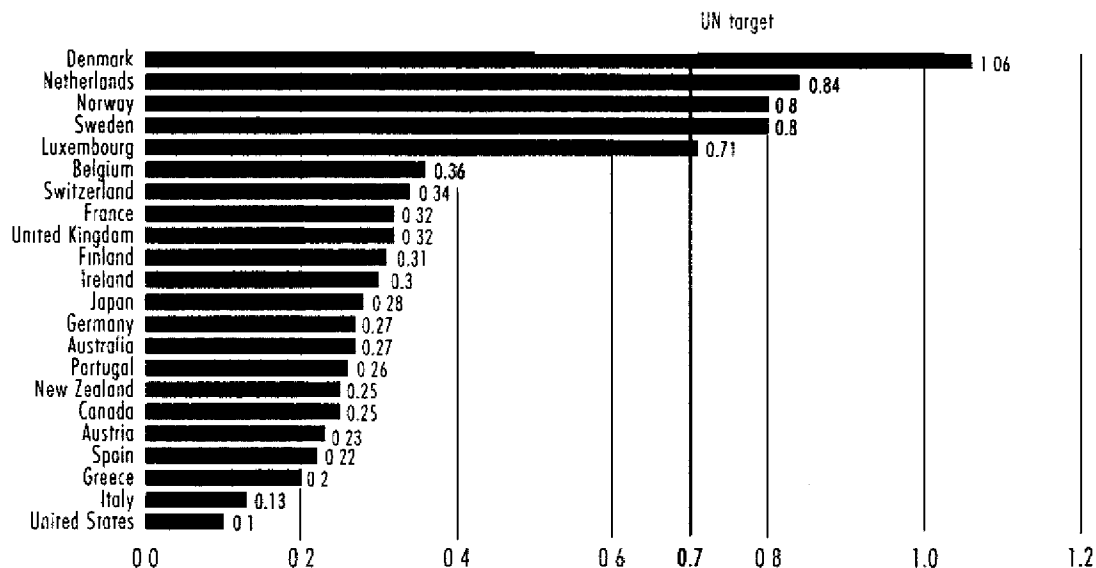
Expressed as a percentage of donor countries' gross national product (GNP), ODA remained static during 2000 at 0.39 per cent (see Figure 8.5). Denmark, the Netherlands, Norway and Sweden remained the most generous donors, exceeding the



ODA net disbursements in 2000 (US\$ millions)

United Nations (UN) target of 0.7 per cent, as they have done for the past decade. But 2000 saw a new member of the exclusive “0.7 per cent club”: Luxembourg, which steadily increased its development assistance from 0.21 per cent of GNP in 1990 to 0.71 per cent in 2000. The United States stayed at the bottom of the pile, donating one-tenth of 1 per cent of its US\$ 10 trillion GNP in aid.

Emergency/distress relief from DAC donors fell from the decade’s high of US\$ 4.4 billion in 1999 to US\$ 3.6 billion in 2000 (see Figure 8.6). However, 2000’s figure was



ODA as a percentage of DAC donors' GNP, 2000

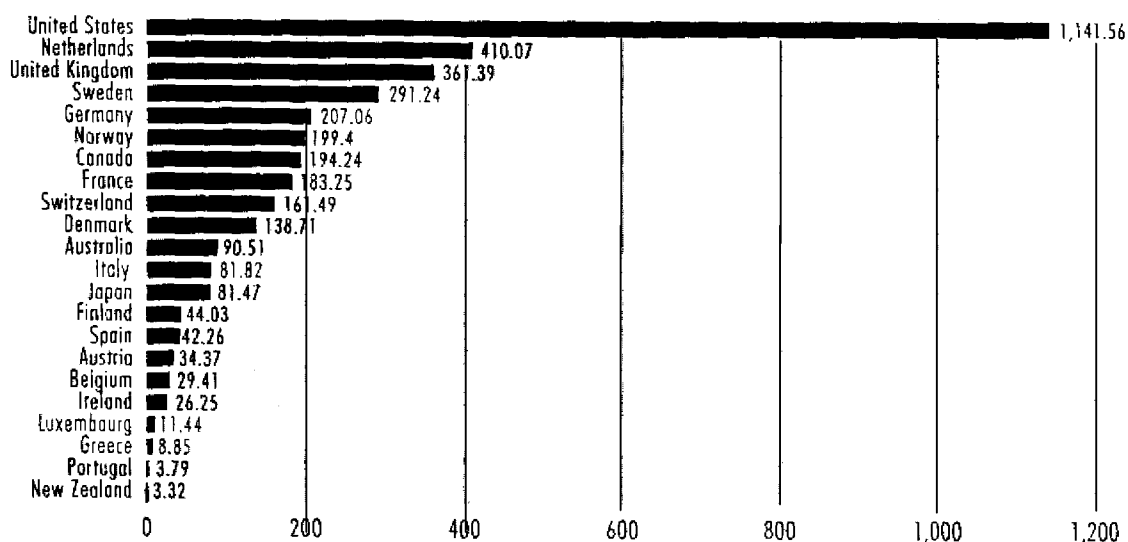
still the second highest of the decade. The biggest donor was the United States, which accounted for one-third of all emergency aid donations.

Sea-change in attitudes to aid?

Following the attacks in the United States on 11 September 2001, a number of world leaders suggested that the fight against poverty could help create a more secure global environment. James Wolfensohn, president of the World Bank, was one of the first to make the connection between terrorism and poverty. Just weeks after the attacks, he said, "We estimate that tens of thousands more children will die worldwide and about 10 million more people are likely to be living below the poverty line of \$1 a day because of the terrorist attacks."

In February 2002, Colin Powell, US secretary of state, argued before a meeting of business leaders that "terrorism really flourishes in areas of poverty, despair and hopelessness, where people see no future". Wolfensohn added that "hard-headed politicians" should act out of self-interest and view greater financial aid to poor countries "as an insurance policy against future terrorism".

At the same time, the UN's secretary-general, Kofi Annan, called on governments to raise an extra US\$ 50 billion a year in ODA to improve the chances of attaining the international development goals of 2015. These include halving the numbers of people living in hunger and poverty, ensuring that all children complete primary education, and halting the spread of AIDS. Annan said that this increase in rich-country aid, which would amount to a doubling of ODA, was "an immediate, short-term tar-



Emergency/distress relief by DAC donors in 2000 (US\$ millions)

Box 8.2 US Committee for Refugees

USCR is the public information and advocacy arm of Immigration and Refugee Services of America, a non-governmental organization. USCR's activities are twofold: it reports on issues affecting refugees, asylum seekers, and internally displaced people; and encourages the public, policy-makers, and the international community to respond appropriately and effectively to the needs of uprooted populations.

USCR travels to the scene of refugee emergencies to gather testimony from uprooted people, to assess their needs, and to gauge governmental and international response. The committee conducts public briefings to present its findings and recommendations, testifies

before the United States Congress, communicates concerns directly to governments, and provides first-hand assessments to the media. USCR publishes the annual World Refugee Survey, the monthly Refugee Reports and issue papers. ■

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get, to be achieved within two or three years". Annan compared humanity to passengers on a small, storm-tossed boat: "If they are sick, we all risk infection, and if they are hungry, all of us can easily get hurt."

In March 2002, the World Bank echoed Annan's call for a doubling of world aid, and its president called on rich countries to lower their trade barriers to products from poor countries. Farming subsidies paid by wealthy countries are six times greater than foreign aid flows, he said. Some critics of the United States' government have pointed out that the average US cow is subsidized by US\$ 600 per year – double the amount on which over 1 billion human beings subsist.

The rhetoric was ratcheted up in preparation for the Monterrey conference in March 2002, which saw 50 world leaders meet in Mexico to review the state of development finance. Mike Moore, head of the World Trade Organization, told delegates, "Poverty in all its forms is the greatest single threat to peace, security, democracy, human rights and the environment."

The Monterrey meeting failed to produce the doubling in aid pledges that the UN and World Bank had sought. But some of the world's biggest donors made moves in the right direction. The European Union agreed to boost its aid budgets by US\$ 7 billion by 2006. And the US pledged to increase foreign aid spending by 50 per cent, or US\$ 5 billion, in the three years from 2004.

However, the US administration has made it clear that they regard aid as contingent on political and economic reforms. Kofi Annan expanded on this new “global deal” in Mexico: “Where developing countries adopt market-oriented policies, strengthen their institutions, fight corruption, respect human rights and the rule of law, and spend more on the needs of the poor, rich countries can support them with trade, aid, investment and debt relief.” And while the amounts pledged in Monterrey were not enough, Annan concluded, “These decisions do suggest that the argument on principle has now been won. All governments accept that official aid is only one element in the mix, but an essential one. Aid is much more effective than it was 20 years ago.”

Disaster data: handle with care

Data on disaster occurrence, its effect upon people and its cost to countries remain, at best, patchy. No single institution has taken on the role of prime providers of verified data, so the *World Disasters Report* draws upon two main sources: the Centre for Research on the Epidemiology of Disasters (CRED) and the US Committee for Refugees (USCR) (see Boxes 8.1 and 8.2). CRED has used the OECD’s DAC database for ODA and emergency/distress relief statistics.

Key problems today with disaster data include the lack of standardized collection methodologies and definitions. Problems exist over such loose categories as “internally displaced” people or even people “affected” by disaster. Much of the data in this chapter, except that on DAC spending, is culled from a variety of public sources: newspapers, insurance reports, aid agencies, etc. The original information is not specifically gathered for statistical purposes and so, inevitably, even where the compiling organization applies strict definitions for disaster events and parameters, the original suppliers of the information may not. The figures therefore should be regarded as indicative. Relative changes and trends are more useful to look at than absolute, isolated figures.

Information systems have improved vastly in the last 25 years and statistical data is now more easily available. However, the lack of systematic and standardized data collection from disasters in the past is now revealing itself as a major weakness for any long-term planning. Despite efforts to verify and review data, the quality of disaster databases can only be as good as the reporting system. Fortunately, due to increased pressures for accountability from various sources, many donor and development agencies have started placing priority on data collection and its methodologies, but this has yet to result in any recognized and acceptable international system for disaster-data gathering, verification and storage.

Dates can be a source of ambiguity. For example, the declared date for a famine is both necessary and meaningless – famines do not occur on a single day. In such

Box 8.3 Global Identifier Number (GLIDE)

Accessing disaster information can be a time-consuming and laborious task. Not only is data scattered but frequently identification of the disaster can be confusing in countries with many disaster events. To address these problems, CRED, together with their technical advisory group partners (ReliefWeb-OCHA, the Asian Disaster Reduction Center-Kobe, OFDA-USAID, the UN's Food and Agricultural Organization, the National Oceanic and Atmospheric Administration-Office of Global Programs and the World Bank) have launched a new initiative: GLIDE.

A Global Identifier number (GLIDE) is issued every week by EM-DAT at CRED whose net captures all the disasters that fulfil the EM-DAT criteria. The components of a GLIDE number consist of two letters to identify the disaster type (e.g., ST for storms); the year of the disaster; a four-digit, sequential disaster number; and the three-letter ISO code for country of

occurrence. So, for example, the GLIDE number for Hurricane Mitch in Honduras is: ST-1998-0345-HND.

This number is posted by ReliefWeb on all their documents relating to that particular disaster and gradually all other partners will include it in whatever information they generate. As information suppliers join in this initiative, documents and data may be captured by any web search engine based on one single number with high specificity. The success of GLIDE depends on its widespread use and its level of utility for practitioners.

Today, users all over the world can pick up the GLIDE number from the home pages of CRED (<http://www.cred.be>) and ReliefWeb (<http://www.reliefweb.int>). At present in an experimental phase, the group welcomes comments or suggestions. For more information, please contact: sapir@epid.ucl.ac.be ■

cases, the date the appropriate body declares an official emergency has been used. Changes in national boundaries also cause ambiguities in the data, most notably the break-up of the Soviet Union and Yugoslavia, and the unification of Germany.

Data can be skewed because of the rationale behind data gathering. Reinsurance companies, for instance, systematically gather data on disaster occurrence in order to assess insurance risk, but only in areas of the world where disaster insurance is widespread. Their data may therefore miss out poorer disaster-affected regions where insurance is unaffordable or unavailable.

Data on the numbers of people affected by a disaster can provide some of the most potentially useful figures, for planning both disaster preparedness and response, yet these are also some of the most loosely reported figures. The definition of "affected" is open to interpretation, political or otherwise. In conflict, warring parties may wish to maximize sympathy for their causes and exaggerate the numbers of people under their control who are said to be affected. Even if political manipulation is absent, data

is often extrapolated from old census information, with assumptions being made about percentages of an area's population affected.

Part of the solution to this data problem lies in retrospective analysis. Data is most often publicly quoted and reported during a disaster event, but it is only long after the event, once the relief operation is over, that estimates of damage and death can be verified. Some data gatherers do this, and this accounts for retrospective annual disaster figures changing one, two and sometimes even three years after the event.

Methodology and definitions

The *World Disasters Report* divides disasters into the following types:

Natural disasters

- **Hydro-meteorological:** avalanches/landslides; droughts/famines; extreme temperatures; floods; forest/scrub fires; windstorms; and other (insect infestation and waves/surges).
- **Geophysical:** earthquakes; volcanic eruptions.

Non-natural disasters

- **Industrial:** chemical spill, collapse of industrial structures, explosion, fire, gas leak, poisoning, radiation.
- **Miscellaneous:** collapse of domestic/non-industrial structures, explosion, fire.
- **Transport:** air, rail, road and water-borne accidents.

CRED uses the following definitions for disaster and conflict:

Disaster

A situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance. In order for a disaster to be entered in EM-DAT at least one of the following criteria has to be fulfilled:

- 10 or more people reported killed;
- 100 people reported affected;
- a call for international assistance; and/or
- declaration of a state of emergency

Killed: People confirmed dead, or missing and presumed dead.

Affected: People requiring immediate assistance during a period of emergency, i.e., requiring basic survival needs such as food, water, shelter, sanitation and immediate

medical assistance. In EM-DAT, the total number of people affected include people reported injured, homeless, and affected.

Estimated damage: The economic impact of a disaster usually consists of direct damage (e.g., to infrastructure, crops, housing) and indirect damage (e.g., loss of revenues, unemployment, market destabilization). EM-DAT's estimates relate only to direct damage.

Refugees, asylum seekers and internally displaced people

The data in Tables 14, 15 and 16 were provided by USCR, and concern three categories of uprooted people: refugees, asylum seekers and internally displaced people. Data concerning these populations are often controversial because they involve judgments about why people have left their home areas. Differing definitions of the groups in question often promote confusion about the meaning of reported estimates.

USCR does not conduct censuses of these populations, although it does conduct first-hand site visits to assess refugee conditions. The committee evaluates population estimates circulated by governments, UN agencies and humanitarian assistance organizations, and discerns which of the various estimates appear to be most reliable. The estimates reproduced in these tables are USCR's preliminary year-end figures for 2001.

The quality of the data in these tables is affected by the less-than-ideal conditions often associated with flight. Unsettled conditions, the biases of governments and opposition groups, and the need to use population estimates to plan for providing humanitarian assistance can each contribute to inaccurate estimates.

Tables 14 and 15 concern refugees and asylum seekers: Table 14 lists refugees and asylum seekers by country of origin, while Table 15 lists the two groups by host country. Refugees are people who are outside their home country and are unable or unwilling to return to that country because they fear persecution or armed conflict. Asylum seekers are people who claim to be refugees; many are awaiting a determination of their refugee status. While not all asylum seekers are refugees, they are nonetheless entitled to certain protections under international refugee law, at least until they are determined not to be refugees.

Different standards for refugee status exist in different countries or regions. Recognition of refugee status, however, does not make someone a refugee, but rather declares her or him to be one. "He does not become a refugee because of recognition, but is recognized because he is a refugee," the UN High Commissioner for Refugees (UNHCR) has noted. Not all refugees are recognized as such by governments.

USCR includes in Table 15 people who have been admitted as refugees or granted asylum during the year, but thereafter regards them as having been granted permanent protection, even if they have not yet officially become citizens of their host country. This method of record-keeping differs from that employed by UNHCR, which continues counting refugees until they gain citizenship.

Table 16 concerns internally displaced people. Like refugees and asylum seekers, internally displaced people have fled their homes; unlike refugees and asylum seekers, however, internally displaced people remain within their home country.

No universally accepted definition of an internally displaced person exists. USCR generally considers people who are uprooted within their country because of armed conflict or persecution – and thus would be refugees if they were to cross an international border – to be internally displaced. Broader definitions are employed by some agencies, however, who sometimes include people who are uprooted by natural or man-made disasters or other causes not directly related to human rights.

Internally displaced people often live in war-torn areas and may be subject to ongoing human rights abuse, sometimes at the hands of their own government. Most of the internally displaced are neither registered nor counted in any systematic way. Estimates of the size of internally displaced populations are frequently subject to great margins of error.

In the following tables, some totals may not correspond due to rounding.