Chapter

Good data for effective response

Acceptability to disaster victims and to donors is increasingly important for aid agencies. Without reliable information to steer programmes and good historic data to look for changes and trends, agencies will never be locked into a reactive mode, never really able to learn from the past and improve for the future. *Liliane de Toledo/ International Federation, Cape Verde.*

Data on disaster occurrence, its effect upon people and its cost to countries remain at best, patchy. Despite a considerable increase in the funds being invested in disaster response, particularly international response, the international humanitarian community has been slow to recognize the need for consistent, and authoritative, objective data on disaster occurrence. More importantly, it has not been willing to invest the capital and authority necessary to allow any one institution to take on the role of prime providers of verified data. It is for this reason that the *World Disasters Report* draws upon five main sources of information for the data presented here: the Centre for Research on the Epidemiology of Disasters (CRED); the US Committee for Refugees (USCR); the PIOOM Foundation based at Leiden University in the Netherlands; the Organisation for Economic Co-operation and Development's (OECD) Development Assistance Committee (DAC); and INTERFAIS, a World Food Programme (WFP) information system. Each organization is described in more detail below.

One of the key problems today with disaster data collection is the lack of standard, accepted 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 government humanitarian 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.

Disaster data

Information systems have improved vastly in the last 25 years and statistical data as a result are much more easily available. An increase in the number of disaster victims, for example, does not necessarily mean that disasters, or their impact, are increasing, but may simply be a reflection of better reporting.

However, the lack of systematic and standardized data collection from disasters, technological or natural, in the past is now revealing itself as a major weakness for any developmental planning. Despite efforts to verify, cross-check and review data, the quality of disaster databases can only be as good as the reporting system. Cost-benefit analyses, impact analyses of disasters or rationalization of preventive actions are severely compromised by unavailability and inaccuracy of data or even field methods for collection. Fortunately, as a result of 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 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. In such cases, no attempt has been made to retrospectively desegregate or combine data. Statistics are presented for the country as it existed at the time the data were recorded.

Data can be skewed because of the rational behind data gathering. Reinsurance companies, for instance, systematically gather data on disaster occurrence in order to assess insurance risk, but they only do this for areas of the world where disaster insurance is a regular occurrence, thus missing out whole regions where disasters affect some of the poorest countries and peoples to whom disaster insurance is an impossibility.

Data on the numbers of people affected by a disaster are 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 a great deal of interpretation, political or otherwise. In conflict, each party will wish to maximize sympathy for its cause and will thus maximize the number of people under its control who are said to be suffering. Even if political manipulation is absent, data is often derived by extrapolation from old census data, with assumptions being made about what percentage of an area's population is affected. Compounding errors in the original census, its extrapolation to present-day figures and the percentage of the population thought to be affected can sometimes render the final figure almost meaningless.

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, after 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.

The bottom line, though, is that our data, at the aggregated international level, is still relative and indicative, rather than absolute. We can use it to identify potential trends and to understand the relative scale of things – which types of disasters affect most people, for instance – but we cannot use it to predict necessary investment in disaster preparedness or future needs for disaster response.

CRED

Based at the Department of Public Health, Catholic University of Louvain (Belgium), CRED has developed a system of databases for global disaster management, drawing on its existing disaster documentation, information network and computer system. Tables 1 to 12 of this database section were derived from the EM-DAT, a disaster-events database developed by CRED and sponsored by the International Federation of Red Cross and Red Crescent Societies, the World Health Organization (WHO), the United Nations (UN) Office for Coordination of Humanitarian Assistance (OCHA, formerly the UN's Department for Humanitarian Affairs), the European Community Humanitarian Office (ECHO) and the UN's International Decade for Natural Disaster Reduction (IDNDR). USAID's Office of Foreign Disaster Assistance also collaborated in getting this database started.

EM-DAT is now fully operational, with more than 12,000 records of disaster events from 1900 onward, and its own menu for updates, modification and retrieval. Designed to have the right level of detail for wide use, the entries are constantly reviewed for redundancies, inconsistencies and the completion of missing data.

The criteria for entry of an event is ten deaths, and/or 100 affected, and/or an appeal for assistance. Each new event is entered with date, type of disaster and country. Data on human or economic impact are consolidated at CRED at three-month intervals the first year. Annual updating is undertaken the following year.

In cases of conflicting information, priority is given to data from governments of affected countries, followed by OCHA, and then the US Office for Foreign Disaster Assistance. Agreement between any two of these sources takes precedence over the third. This priority is not a reflection on the quality or value of the data, but the recognition that most reporting sources have vested interests, and figures may be affected by socio-political considerations. While CRED can take no responsibility for any figures reported to it and used in EM-DAT, the source of the data can always be provided.

USCR

The US Committee for Refugees (USCR), which supplied the data for tables 13 to 15, is the public information and advocacy arm of Immigration and Refugee Services of America an NGO. USCR's activities are twofold – it reports on issues affecting refugees, asylum seekers and internally displaced people; and it 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 US 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.

PIOOM

Data for table 16 were provided by PIOOM – the Interdisciplinary Research Programme on the Root Causes of Human Rights Violations. Based at Leiden University in the

Netherlands, PIOOM was established in 1988 to study violence and human rights. PIOOM's researchers at Leiden and Utrecht universities collaborate with the London-based FEWER (Forum on early warning and early response) consortium and other associates worldwide.

The violation of human rights often acts as an indicator for escalating conflicts, and is frequently the result of armed disputes, so the monitoring of conflict dynamics is central to PIOOM's effort to understand the root causes of human rights violations. PIOOM hopes that by studying and promoting the study of human rights and violence it may help reduce worldwide human rights violations

DAC/OECD

The data in table 17 have been supplied by the OECD's Development Assistance Committee, which is the principal body through which OECD deals with issues related to cooperation with developing countries. The committee is concerned with support for efforts in developing countries to strengthen local capacities to pursue integrated development strategies, and studies the financial aspects of development assistance, statistical problems, aid evaluation, and women in development.

INTERFAIS/WFP

The source of information for table 18 is INTERFAIS (the International Food Aid Information System), a system funded by WFP It is a dynamic system, which involves the interaction of all users, represented by donor governments, international organizations, NGOs, recipient countries and WFP country offices. All information is cross-checked before being disseminated. Its comprehensive and integrated database allows the monitoring of food aid allocations and shipments for the purpose of improving food aid management, coordination and statistical analysis. The database is updated on a continuing basis, and data can therefore change as allocation plans and delivery schedules are subject to modifications. Data is available from 1988.

Tables 1 to 12

CRED's data have appeared in each edition of the *World Disasters Report* since the pilot issue in 1993.

Tables 1 to 8 present the **average annual number of people reported killed, affected, made homeless or injured** per five-year period, from 1973 to 1997. The use of five-year periods allows for better trend analyses, and reduces the influence of individual years. The tables also include an average figure for the whole 25-year period. Tables 1 to 4 divide the data by region, and tables 5 to 8 by type of disaster.

Table 9 presents the **average annual number of disasters** from 1988 to 1997. The longer ten-year period was chosen to allow for infrequent yet important disasters – earthquakes and volcanoes. The data is divided into two sets of disaster types – those with, and those without, a natural trigger.

Table 10 presents the **number of disasters** reported in 1998. As for table 9, the data is divided into two sets of disaster types – those with and those without a natural trigger.

Table 11 presents the **number of people reported killed or affected** per country. The data is divided into two sets: ten-year annual average for 1988-1997, and the total for 1998.

Table 12 presents the **average annual estimated damage** per region from 1988 to 1997 (i.e , ten years, rather than five years as was the case in some previous editions). The data has been subdivided into disaster type.

Tables 13 to 15

The data in these tables were provided by the US Committee for Refugees (USCR), and concern three categories of uprooted people: refugees, asylum seekers and internally displaced people. Data concerning these populations are often controversial, for they involve judgements 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 itself 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, attempting to discern which of the various estimates appear to be most reliable. The estimates reproduced in these tables are USCR's preliminary year-end figures for 1998.

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 13 and 14 concern refugees and asylum seekers: table 13 lists refugees and asylum seekers by country of origin, while table 14 lists the two groups by host country. The totals in the two tables are not equal because many governments do not report country-of-origin data or because of rounding.

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 tables 13 and 14 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 adopted country. This method of record-keeping differs from that employed by UNHCR, which continues counting refugees until they gain citizenship.

Table 15 concerns 'internally displaced people'. Like refugees and asylum seekers, internally displaced people have fled their homes; unlike refugees and asylum seekers, however, they 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 internally displaced people 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.

Table 16

In recent years, the world has had to cope with an increasing number of humanitarian emergencies. According to one source, there were an average of five ongoing emergencies each year between 1978 and 1985. In 1989, that number rose to an average of 14. It jumped to an average of 24 humanitarian crises in 1996.

Given the scarcity of resources that can be allocated (at present levels of 'political will'), a sorting of disasters according to severity becomes a humanitarian aid necessity. The worst catastrophes should receive most attention. In order to separate bad from worse, some form of quantification needs to be introduced. It has been noted that some of the worst crises are the result of a cumulation of cross-impacting crises, warfare, massive displacement, collapse of the health system and a deterioration of the food situation.

Based on these four variables and data from the period from 1995 to 1998, PIOOM has classified 40 humanitarian emergencies. PIOOM operationalized these four variables as follows:

War: fatalities from violent political conflict or armed low- or high-intensity conflict, expressed in the number of people killed in political violence in 1998. The following logarithmic scale was utilized to grade the degree of violence:

1 = <315; 2 = 316-999; 3 = 1,000-3,162; 4 = 3,163-10,000; 5 = >10,000 fatalities.

Displacement: number of refugees and internally displaced people, based on 1998 USCR data (describing the situation as of December 1997) and media reports indicating major changes during 1998. The following scale was used:

1 = <100,000; 2 = 100,000-316,199, 3 = 316,200-999,999; 4 = 1,000,000-3,162,000; 5 = >3,162,000 people.

Disease: expressed in terms of mortality of children under five years of age per 1,000 live births, based on 1995 UNICEF data. The following scale was used:

1 = 5-68; 2 = 69-131; 3 = 132-194; 4 = 195-257; 5 = 258-320 children.

Hunger: calorie intake per capita, expressed in calorie supply as a percentage of requirements, based on 1992-1996 FAO/UNICEF data) The following scale was used:

1 = 141-157; 2 = 124-140, 3 = 107-123; 4= 90-106; 5 = 72-89 per cent.

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

Chapter 9 Data sources

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Table 1 Annual average number of people reported killed* by region and period (1973 to 1997)

	AFRICA	AMERICAS	ASIA	EUROPE	OCEANIA	TOTAL
1973 to 1977	84,413	8,519	68,454	2,318	107	**163,811**
1978 to 1982	1,436	3,172	16,529	1,406	35	**22,579**
1983 to 1987	115,269	10,853	17,073	2,302	189	**145,686**
1988 to 1992	12,272	5,248	63,435	2,352	138	**83,445**
1993 to 1997	7,919	3,065	19,078	1,996	149	**32,206**
1973 to 1997	44,262	6,171	36,914	2,075	124	**89,546**

** Figures for those reported 'killed' in disasters should include all confirmed dead and all missing and presumed dead. Frequently, in the immediate aftermath of a disaster, the number of 'missing' is not included, but it may be added later.*

Since the mid- to late 1980s less individuals have been reported killed as a direct result of disasters. This is particularly true for Africa. While food aid programmes there (e.g., WFP) have markedly ameliorated flood/drought severity, it is also the case that more people were reported killed by conflicts in Africa in this period. In addition, in those African countries with conflicts, individuals that are actually killed from natural disasters will probably be either classified as having died due to the conflict, or will simply not be reported. The picture is more complex for Asia with better cyclone-warning measures now in place but, as seen between 1988 and 1992, an occasional very severe cyclone can cause extensive casualties. Source: CRED, UC Louvain.

Table 2 Annual average number of people reported affected* by region and period (1973 to 1997)

	AFRICA	AMERICAS	ASIA	EUROPE	OCEANIA	TOTAL
1973 to 1977	4,521,227	1,723,145	62,502,799	332,850	24,903	**69,104,925**
1978 to 1982	11,045,092	2,737,382	127,831,208	465,920	50,625	**142,130,228**
1983 to 1987	16,873,956	8,217,134	137,858,113	179,882	179,910	**163,308,996**
1988 to 1992	18,859,379	4,417,961	154,905,725	833,020	73,166	**179,089,251**
1993 to 1997	8,895,569	1,868,214	150,661,006	1,004,214	4,891,355	**167,320,359**
1973 to 1997	12,039,045	3,792,767	126,751,770	563,177	1,043,992	**144,190,752**

** Defining 'people affected' is extremely arduous. Figures will always rely on estimates, as there are many different standards, especially in major famines and in the complex disasters of the former Soviet Union and eastern Europe.*

In contrast to those reported killed by disasters, it is clear that, globally, the scope for individuals seriously affected by disasters has remained essentially unchanged for 20 years. Either the present disaster preparedness programmes are ineffectual in reducing the numbers reported affected, or the benefits of such programmes are being militated by other factors – fast population growth in many countries, deforestation and mass movements of individuals from rural areas into increasingly overcrowded urban areas. Source. CRED, UC Louvain.

Table 3 Annual average number of people reported made homeless* by region and period (1973 to 1997)

	AFRICA	AMERICAS	ASIA	EUROPE	OCEANIA	TOTAL
1973 to 1977	146,950	325,217	3,026,946	104,200	394	**3,603,706**
1978 to 1982	149.570	239,220	588,882	40,923	14.068	**1,032,662**
1983 to 1987	188,984	385,988	2,361,435	14,878	15,746	**2,967,031**
1988 to 1992	380,478	394,118	10,861,685	25,157	9,720	**11,671,158**
1993 to 1997	571,721	207,451	4,250,166	26,925	33,070	**5,089,333**
1973 to 1997	287,541	310,399	4,217,823	42,416	14,600	**4,872,778**

** 'Homeless' is defined as the number of people reported needing immediate assistance with shelter Discrepancies may arise when source figures refer to either individuals or families. Average family sizes for the disaster region are used to reach consistent figures referring to individuals.*

The number reported homeless is increasing in Africa. These individuals are in addition to those displaced by internal conflicts The most probable reason for this increase is a combination of increased population densities and the mass population movements in the Great Lakes region. Levels in Asia have dramatically declined in the last ten years – again related to the better flood preparedness and warning measures Elsewhere, there has been little change in the numbers reported homeless. The difference between 'affected' and 'homeless' is not always clear. Therefore, to obtain a more realistic idea of the numbers involved, the number of homeless for the last five years should be added to the number of people affected. Source: CRED, UC Louvain.

Table 4 Annual average number of people reported injured* by region and period (1973 to 1997)

	AFRICA	AMERICAS	ASIA	EUROPE	OCEANIA	TOTAL
1973 to 1977	218	16,858	43,507	6,591	277	**67,451**
1978 to 1982	2,248	7,760	18,824	3,147	147	**32,126**
1983 to 1987	859	14,729	30,547	1,292	2,242	**49,670**
1988 to 1992	2,718	5,171	108,510	1,680	155	**118,234**
1993 to 1997	5,094	4,631	85,840	5,058	394	**101,018**
1973 to 1997	2,228	9,830	57,446	3,554	643	**73,700**

** People 'injured' covers those reported with physical injury, trauma or illness requiring medical treatment as a direct result of disaster. First aid and other care by volunteers or medical personnel is often the main form of treatment provided at the disaster site, but it has not been defined whether people receiving these services should be included as 'injured'.*

The doubling in the numbers reported injured from 1973 to 1997 is partly due to increased reporting efficiency. However, the main reason for the doubling is the massive increase reported in Asia. This time period has been associated with a number of large earthquakes in this area, which have a relatively high injury-to-death ratio. In comparison, in 1988 less than 20,000 individuals were reported injured in Asia. Elsewhere, there has been relatively little change in the numbers reported injured over time. Source: CRED, UC Louvain.

Table 5 Annual average number of people reported killed by type of disaster and by period (1973 to 1997)

Disasters with a natural trigger

	EARTH-QUAKE	DROUGHT and FAMINE	FLOOD	HIGH WIND*	LAND-SLIDE	VOLCANO	OTHER**	TOTAL
1973 to 1977	61,752	83,800	7,236	6,949	999	34	1,750	**162,520**
1978 to 1982	6,920	115	5,550	4,388	369	129	2,702	**20,174**
1983 to 1987	3,775	112,062	5,120	6,411	696	4,714	6,172	**138,951**
1988 to 1992	15,037	2,128	8,642	32,486	1,094	151	14,943	**74,481**
1993 to 1997	4,596	186	7,671	4,331	792	66	6,401	**24,043**
1973 to 1997	18,416	39,658	6,844	10,913	790	1,019	6,394	**84,034**

* *'High wind' consists of hurricanes, cyclones, typhoons, storms and tornadoes*
** *'Other' consists of avalanches, tsunami, hot and cold waves, insect infestations and epidemics, and forest fires*

Disasters with a non-natural trigger

	ACCIDENT	TECHNOLOGICAL ACCIDENT	URBAN FIRE	TOTAL
1973 to 1977	868	152	271	**1291**
1978 to 1982	1,713	387	305	**2405**
1983 to 1987	5,310	1,006	419	**6,735**
1988 to 1992	7,268	1,223	472	**8,963**
1993 to 1997	6,978	419	766	**8,163**
1973 to 1997	4,428	637	447	**5,512**

In the 1970s and 1980s, earthquakes, droughts and famines were the biggest killers – responsible for over 80 per cent of reported deaths. In the 1990s, these seem to be responsible for less deaths. It is probable that a combination of construction of water reservoirs and better food security measures has greatly reduced the deaths caused by droughts and famines, and more rapid local disaster responses has reduced fatal casualties following earthquakes. There is little discernible pattern in the numbers killed by the other natural disasters – with death from floods constant, despite better flood preparedness measures in place in high-risk areas such as Bangladesh. As 1998 has shown, high winds can kill thousands of individuals. Technological disasters are responsible for relatively few deaths, with the increase in the number of people killed by accidents probably a function of better reporting. Source: CRED, UC Louvain.

Table 6 Annual average number of people reported affected by type of disaster and by period (1973 to 1997)

Disasters with a natural trigger

	EARTH-QUAKE	DROUGHT and FAMINE	FLOOD	HIGH WIND*	LAND-SLIDE	VOLCANO	OTHER**	TOTAL
1973 to 1977	1,094,668	45,461,680	18,785,594	2,750,573	17,400	42,300	41,300	**68,193,515**
1978 to 1982	576,297	94,214,945	38,420,265	7,873,833	4,642	91,600	460,451	**141,642,031**
1983 to 1987	454,448	125,658,677	31,313,881	52,49,119	10,469	38,469	453,831	**163,178,894**
1988 to 1992	5,097,228	25,792,309	111,430,298	25,432,460	622,087	225,140	10,434,804	**179,034,328**
1993 to 1997	728,927	15,539,820	130,937,617	17,184,841	35,394	74,485	2,774,421	**167,275,505**
1973 to 1997	1,590,314	61,333,486	66,177,531	11,698,165	137,999	94,399	2,832,961	**143,864,855**

* *See table 5*
** *See table 5*

Disasters with a non-natural trigger

	ACCIDENT	TECHNOLOGICAL ACCIDENT	URBAN FIRE	TOTAL
1973 to 1977	2,022	8,940	3,448	**14,410**
1978 to 1982	75,881	119,560	44,755	**240,196**
1983 to 1987	298	110,159	19,645	**130,102**
1988 to 1992	1,007	28,123	25,793	**54,923**
1993 to 1997	10,771	6,016	28,067	**44,854**
1973 to 1997	17,996	54,560	24,342	**96,897**

Despite increased flood awareness and cyclone-warning measures, the last ten years has seen an increase of more than 300 per cent in the numbers of individuals affected by floods and high winds. Increases in population densities, forcing more and more individuals to live in relatively high-risk areas, such as river deltas, are probably one of the major reasons for this. In contrast, droughts and famines have declined by more than 80 per cent during this period – again reflecting the effectiveness of food aid programmes and large-scale water programmes in Africa. The consequences of the two major nuclear accidents (Three Mile Island and Chernobyl), as well as the Bhopal gas leak, can be clearly seen in the numbers reported affected by technological accidents in the late 1970s to the mid-1980s. Source: CRED, UC Louvain.