

29 Natural disasters

Many parts of Asia and the Pacific have seen their economic and social development stalled, or even reversed, by natural disasters. Across the region, people have lost their assets, their livelihoods, or their lives in types of disaster that are likely to become more frequent or severe as a result of climate change.

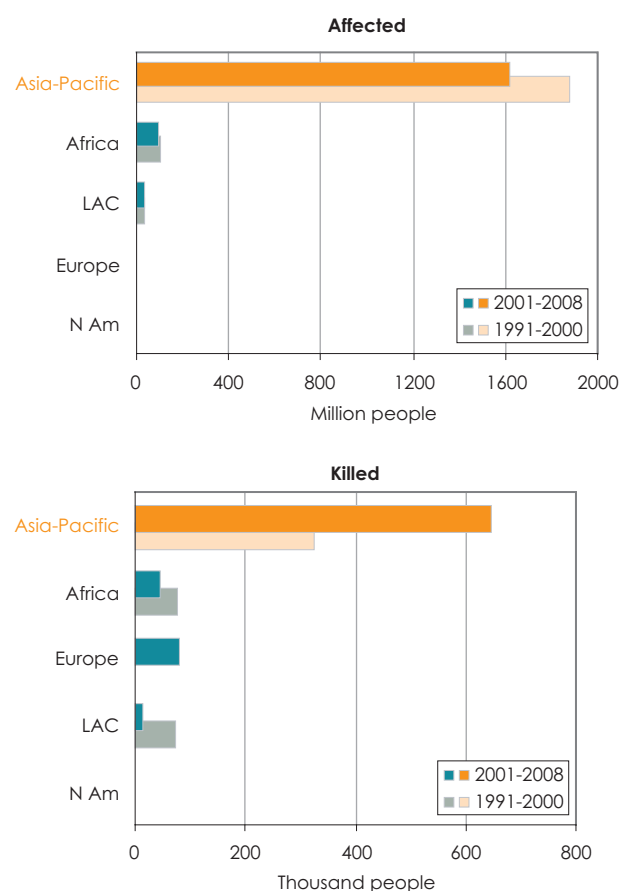
Natural disasters inflict enormous economic and social costs – siphoning off resources that could otherwise be used to ensure social progress and reduce poverty. They have hit with particular force in Asia and the Pacific. In the first nine months of 2008, disasters across the region accounted for 37 per cent of the world's total, accounted for more than 99 per cent of the world's reported victims, more than 94 per cent of people affected, and over 87 per cent of overall economic damage.

Natural disasters threaten aspirations and hamper the achievement of the Millennium Development Goals (MDGs). The 2004 Indian Ocean tsunami, for example, in a single day killed over a quarter of a million people and blighted the lives and prospects of over two million people more. In the Indonesian province of Aceh, poverty rates suddenly rose from 30 to 50 per cent (MDG 1). Powerful earthquakes such as the ones in Gujarat, Pakistan in 2001, or in Sichuan, China in 2008 also devastated basic social infrastructure, effectively locking thousands of children out of school (MDG 2). Likewise, cyclones such as Sidr in Bangladesh or Nargis in Myanmar have disastrous human consequences, often hitting hardest at infants and their mothers (MDGs 3&4). Disasters also compromise access to basic sanitation and safe water sources (MDG 7), impairing advances in maternal health (MDG 5) and often allowing communicable diseases to proliferate (MDG 6).

For Asia and the Pacific, 2008 was a disastrous year. From January to September 2008, a total of 28 disasters caused by natural hazards affected more than 101 million people, killed more than 223,000 and caused more than \$103 billion in economic

Figure 29.1

People affected by natural disasters, global regions, 1991-2000 and 2001-2008



damage. The deaths from disasters in 2008 were nearly four times the annual average for the previous decade. This was because the disasters were far more lethal – as expressed by the natural disasters mortality ratio – the number of lives lost to disasters per 100,000 deaths. On this basis, compared with 2007, natural disasters in 2008 were 16 times more likely as a cause of death, deepening impacts on the most vulnerable in the region, increasingly crowding into cities.

The year was not quite as bad for economic damage. Indeed January to September 2008 actually saw less economic damage than in 2007 and less than the yearly average between 1998 and 2007.

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Nevertheless, average economic damage in the eight years after 2000 – about \$156 billion per year – was 20 per cent higher than the average for the 1990s.

Among the most serious events were earthquakes, floods and typhoons. One of the worst was the Wenchuan Earthquake in Sichuan Province of China on 12 May which killed 87,000 people, affected more than 45 million others and caused \$20 billion in damage. In June the same area also flooded, affecting 40 million people and inundating 2.2 million hectares of farmland. Direct economic losses were estimated at \$3 billion.

On 21 June 2008, Typhoon Fengshen in the Philippines affected at least 4 million people and left 573 dead in just four hours. Damages were estimated at \$95.2 million. The typhoon caused widespread damage to the agricultural and fishing industries and ruined more than 300 schools at an estimated replacement cost of \$4.7 million. Added to these costs is the long-term damage to human development, as children have been forced to delay schooling or had their education cut short.

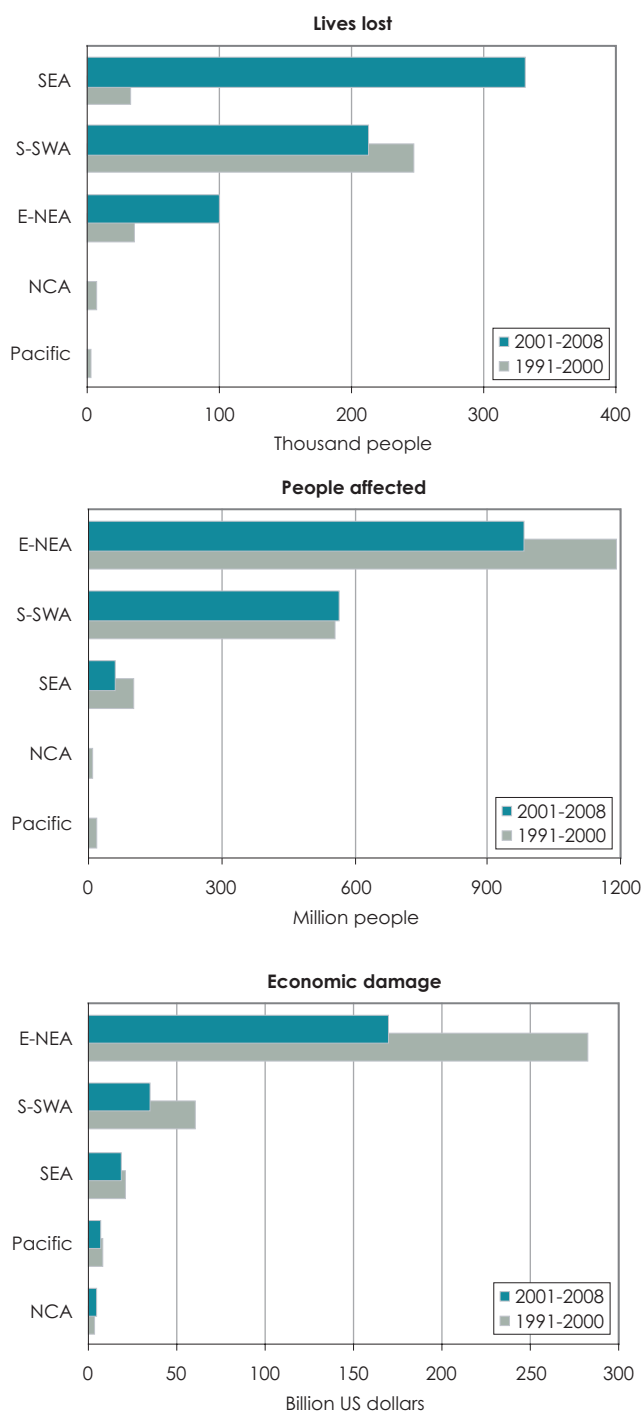
Through August and September floods in Nepal and India displaced hundreds of thousands of people and inundated 100,000 hectares of farmland. They caused immediate crop losses estimated at \$8 million while also destroying the seeds for winter crops.

Since natural disasters, as opposed to regular seasonal flooding, are discrete events, it is often difficult to analyse trends. Some of these events may occur only once every few decades or once a century. Nevertheless it is important to stand back and attempt a broader perspective on disasters – especially as climate change will influence their frequency and severity. Overall it is possible to draw three conclusions. First, the greatest numbers of people affected are in East and North-East Asia and in South and South-West Asia. Specifically, the largest numbers of people affected are in the most populous countries in the region: China, India, Bangladesh and Indonesia. With most of the region's people living in these areas they are likely to continue as disaster hot spots. Second, natural disasters appear to have become more lethal. With current population growth and migration trends, human populations increasingly occupy higher-risk areas in greater numbers, making large disasters potentially affecting more people. In 2008, for instance, Cyclone Nargis and the Sichuan Earthquake killed large numbers of people. Compared with the previous decade, the first decade

of the twenty-first century thus far has proven much worse. Third, in 2008, disasters continue to disproportionately affect the poor, in the poorest countries. The largest share of deaths in Asia and the Pacific were in the least developed countries, with nearly 135,000 deaths. In the 15 years between 1990 and 2005 the region's high-income economies lost just 8,881 lives in disasters. With few financial assets or options to diversify their livelihoods the most vulnerable are the poor.

Figure 29.2

Cumulative impact of natural disasters by subregion, 1991-2000 and 2001-2008



Natural disasters deprive countries of resources – human, financial and natural – that could otherwise be harnessed for economic and social development. National and regional efforts to reduce the risks from natural disasters should therefore be closely linked with programmes to alleviate poverty and promote economic and social development. While countries will have to take most of these measures themselves they can also benefit considerably from regional cooperation, sharing experiences in disaster management, and developing

the necessary infrastructure. With the increasing occurrence and severity of natural disasters, the need to adopt disaster risk reduction strategies to protect the vulnerable against disasters mounts in urgency.

The Hyogo Framework for Action, endorsed by 168 countries and coordinated by the United Nations International Strategy for Disaster Reduction, provides nations and communities the roadmap to disaster-proof the significant development gains measured across Asia-Pacific over the last generation.

Cyclone Nargis

Nargis was a category 3 cyclone which made landfall on 2 May 2008 in the Ayeyarwady Division of Myanmar, approximately 250 kilometres south-west of Yangon. Nargis was the worst natural disaster in the history of Myanmar, and the most devastating cyclone to strike Asia since 1991. Heavy rains and winds up to 200 kilometres per hour affected more than 50 townships in Yangon and Ayeyarwady Divisions causing catastrophic destruction and leaving more than 2.4 million people in urgent need of assistance.

The Post Nargis Joint Assessment (PONJA) reported that close to 60 per cent of all households in the area lost their houses. Forty-three per cent lost all their food stocks during the cyclone, and another 33 per cent lost some or most of their stocks. In Kyaiklat and Labutta townships four out of five households lost most or all of their food stocks.

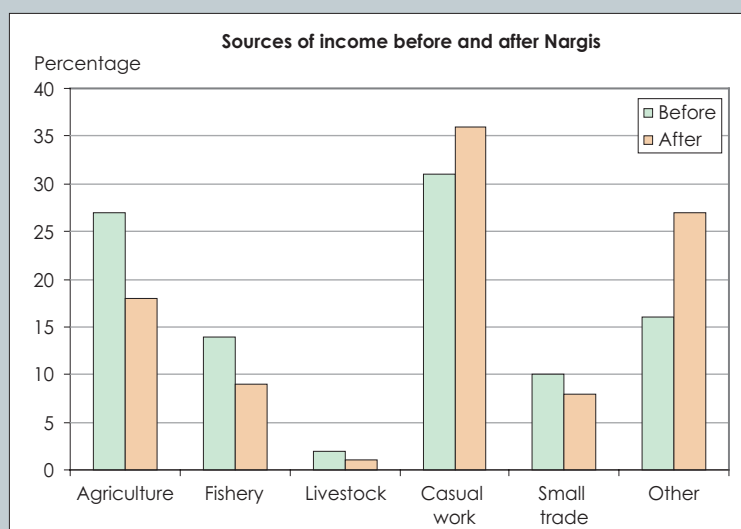
PONJA was a joint ASEAN, United Nations and Myanmar Government effort that rapidly provided the information base for humanitarian and recovery programmes. It assessed the vulnerabilities of the affected population, including the damage to assets, and estimated the losses of income for households and the economy as a whole. The ESCAP Statistics Division led the data analysis of the village

tract assessment. Other technical support was provided by a number of humanitarian and development partners, including the Asian Development Bank, the World Bank, and many NGOs.

A central focus of PONJA was to capture the effect of Nargis on people's livelihoods. The delta area people are primarily farmers, fishermen and labourers. The disaster flooded over 600,000 hectares of agricultural land, killing up to 50 per cent of draught animals, destroying fishing boats and washing away food stocks and agricultural equipment. Total economic damage was more than \$10 billion. One of the most enduring affects, however, was that people lost their livelihoods. Fishermen in coastal areas lost as much as half of their small boats and 70 per cent of their fishing gear. Moreover many small villages along the delta were affected by the damage to small multi-purpose boats on which they relied for provisions.

The cyclone also created serious health hazards – by flooding ponds with seawater, and damaging sanitary and health facilities risking the spread of enteric diseases. Health staff reported a considerable decline in health service provision. This was particularly serious for immunization and communicable diseases with decreases from 83 to 66 per cent and from 43 to 34 per cent, respectively. Another particular concern was the drop in health care services for birth delivery from 81 to 71 per cent.

This experience has shown that responding effectively to disaster depends on high-quality data. It is vital, for example, to have geo-referenced baseline data from administrative sources, censuses and surveys, and also to identify social infrastructure and vulnerable groups at a highly-disaggregated level. It is also important to use common codes, definitions and administrative boundaries so as to be able to link various databases and provide the baseline data for cross-sectoral and in-depth assessments.



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Deaths caused by natural disasters (number)

The number of deaths recorded due to natural disasters, expressed as a cumulative number over five-year periods.

Aggregates: Sum of individual country values. **Source:** EM-DAT: Emergency Events Database. (online database, accessed in August 2008.)

Natural disasters mortality ratio (per 100,000 deaths)

The cumulative number of deaths recorded due to natural disasters in a five-year period divided by the total number of deaths from all causes during the same period, expressed per 100,000 deaths. **Aggregates:** Averages are calculated as the sum of natural-disaster deaths divided by the sum of total deaths. **Source:** EM-DAT: Emergency Events Database. (online database, accessed in August 2008).

People affected by natural disasters (number)

The total number of people affected by natural disasters over a five-year period. Affected people are people requiring immediate assistance during a period of emergency, such as food, water, shelter, sanitation and immediate medical assistance. Includes cases of an infectious disease introduced in a region or a population that is usually free from that disease. **Aggregates:** Sum of individual country values. **Source:** EM-DAT: Emergency Events Database. (online database, accessed in August 2008).

People affected ratio (per 100,000 population)

The total number of people affected by natural disasters divided by total population of the respective country or area, calculated for five-year periods and expressed per 100,000 population. Affected people are people requiring immediate assistance during a period of emergency, such as food, water, shelter, sanitation and immediate medical assistance. The definition includes cases of an infectious disease introduced in a region or a population that is usually free from that disease. **Aggregates:** Averages are calculated as the sum of number of people affected by natural disasters divided by total population. **Source:** EM-DAT: Emergency Events Database. (online database, accessed in August 2008).

Economic damage (million US dollars)

The estimated economic impact of disasters consisting of direct (e.g. damage to infrastructure, crops, housing) and indirect (e.g. loss of revenues, unemployment, market destabilization) consequences on the local economy. For each disaster, the registered figure corresponds to the damage value at the moment of the event (nominal value). **Aggregates:** Sum of individual country values. **Source:** EM-DAT: Emergency Events Database (online database, accessed on 10 December 2008).

29.3 Natural disasters, economic damage

Economic damage from natural disasters

	Million US dollars					
	91-95	96-00	01-05	2006	2007	2008
East and North-East Asia	179 189	103 022	103 240	14 964	22 185	29 533
China	48 756	72 736	43 125	12 464	8 005	29 533
DPR Korea	15 110	8 202	30	0	300	0
Hong Kong, China	519	10	0	0	0	0
Japan	113 675	18 183	49 671	2 500	13 810	0
Macao, China	0	0	0	0	0	0
Mongolia	10	1 793	0	0	0	0
Republic of Korea	1 118	2 099	10 414	0	70	0
South-East Asia	6 471	13 933	9 223	4 817	3 639	443
Brunei Darussalam	0	2	0	0	0	0
Cambodia	250	162	53	0	1	0
Indonesia	545	10 277	4 965	3 314	1 671	0
Lao PDR	329	1	0	0	0	0
Malaysia	0	356	510	22	968	0
Myanmar	145	0	501	0	0	0
Philippines	2 090	457	321	347	17	250
Singapore	0	0	0	0	0	0
Thailand	2 553	317	1 928	35	2	3
Timor-Leste	0	0	0	0	0	0
Viet Nam	559	2 361	945	1 099	981	190
South and South-West Asia	20 398	39 755	26 920	3 768	4 762	0
Afghanistan	64	20	5	0	0	0
Bangladesh	3 233	5 039	2 700	0	2 414	0
Bhutan	0	4	0	0	0	0
India	9 014	7 996	15 599	3 390	376	0
Iran (Islamic Rep. of)	5 383	3 779	1 070	58	22	0
Maldives	30	0	470	0	0	0
Nepal	207	35	0	0	2	0
Pakistan	1 102	258	5 477	0	1 947	0
Sri Lanka	283	3	1 346	3	0	0
Turkey	1 080	22 621	255	317	0	0
North and Central Asia	1 368	1 774	1 962	1 209	446	980
Armenia	0	141	0	0	0	0
Azerbaijan	16	140	55	0	0	0
Georgia	2	230	352	0	0	0
Kazakhstan	40	2	8	0	0	130
Kyrgyzstan	197	4	4	0	0	0
Russian Federation	540	1 078	1 416	1 187	446	0
Tajikistan	473	129	127	22	0	850
Turkmenistan	100	0	0	0	0	0
Uzbekistan	0	50	0	0	0	0
Pacific	4 149	4 408	4 120	1 286	1 438	90
Australia	2 813	4 058	3 091	1 282	1 400	90
American Samoa	0	0	200	0	0	0
Cook Islands	0	0	0	0	0	0
Fiji	361	31	34	1	38	0
French Polynesia	0	0	0	0	0	0
Guam	420	200	131	0	0	0
Kiribati	0	0	0	0	0	0
Marshall Islands	0	0	0	0	0	0
Micronesia (F.S.)	0	0	1	0	0	0
Nauru	0	0	0	0	0	0
New Caledonia	0	0	40	0	0	0
New Zealand	152	76	531	3	0	0
Niue	0	0	40	0	0	0
Northern Mariana Is.	0	0	0	0	0	0
Palau	0	0	0	0	0	0
Papua New Guinea	119	43	0	0	0	0
Samoa	278	0	2	0	0	0
Solomon Islands	0	0	0	0	0	0
Tonga	0	0	51	0	0	0
Tuvalu	0	0	0	0	0	0
Vanuatu	6	0	0	0	0	0
Asia and the Pacific	742 746	653 275	998 644	68 210	150 109	102 889
LLDC	1 485 493	1 306 549	1 997 287	136 420	300 217	205 777
LDC	4 542	5 261	3 730	0	2 417	0
ASEAN	6 471	13 933	9 223	4 817	3 639	443
ECO	8 456	27 003	7 000	397	1 969	980
SAARC	13 934	13 355	25 596	3 393	4 740	0
Central Asia	828	696	546	22	0	980
Pacific island dev. econ.	1 184	274	498	1	38	0
Low-income	21 788	16 305	9 842	1 121	5 646	1 040
Middle-income	71 089	121 959	71 706	21 138	11 544	29 916
High-income	118 697	24 627	63 878	3 785	15 280	90
Other world regions						
Africa	2 889	2 305	7 171	229	755	1
Europe	25 522	64 107	59 919	924	20 252	1 998
Latin America & Carib.	14 011	26 207	30 431	368	8 254	209
North America	111 981	53 857	254 494	6 422	9 363	18 175
Other countries/areas	1 648	17 271	1 842	117	3 960	15
World	371 376	326 637	499 322	34 105	75 054	51 444