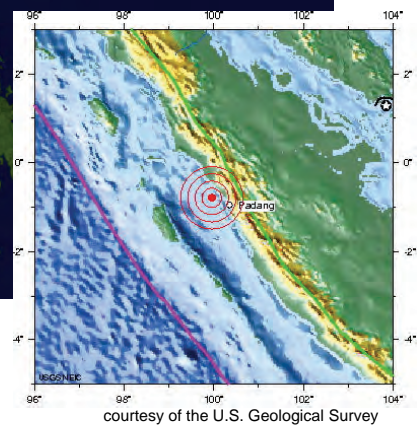




Natural Disaster Data Book 2009 (An Analytical Overview)



Asian Disaster Reduction Center

Overview

The Asian Disaster Reduction Center (ADRC) Natural Disasters Data Book 2009 provides the statistical perspectives in figures and tables for 2009 as well as for the period 1975-2009 based on data obtained by EM-DAT.

According to EM-DAT, 399 natural disasters occurred in 2009 worldwide, killing almost 16,000 people and affecting over 220 million people. The estimated amount of economic damage came close to US\$50 billion.

By region, Asia is the highest in all the indices: in disaster occurrences, Asia accounts for 35.8 percent; number of people killed, 52.1 percent; total number of affected people, 78.3 percent; and amount of economic damage, 44.9 percent.

Worldwide disaster trends in composition of indices and top shares of impacts vary by disaster type. For instance, flood made up the largest share of 37.8 percent of all disaster occurrences; epidemic, 30.5 percent of total number of people killed; drought, 49.0 percent of total affected people; and storm, 53.0 percent of total amount of economic damage.

Within Asia, the indices show similar trends except in the category of fatality which is led by storm-related disasters with a share of 34.0 percent. *Typhoon Ketsana* alone caused 715 deaths and affected a total of more than 7.5 million people across 4 countries—the Philippines, Viet Nam, Cambodia and Lao P.D.R. Total economic damage exceeded US\$1.1 billion. In addition, *Typhoon Morakot* wrecked havoc in the Philippines, Taiwan, and China, killing 664, affecting a total of over 13 million people and costing about US\$1.7 billion in economic damage. Another major disaster in Asia includes the September earthquake in Sumatra, Indonesia, which killed 1,195 people, affected a total of over 2.5 million people and caused around US\$2.2 billion worth of economic damage.

Data Book 2009 also contains tables of the 25 worst disasters by number of people killed and total affected people, economic damage, and their respective ratios to population and gross domestic product. It also includes tables of 2009 disasters in ADRC member and other Asian countries sorted by country and disaster type.

[Notes]

Source:

All the data are based on EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be, Université Catholique de Louvain, Brussels (Belgium), unless otherwise stated.

EM-DAT Criteria:

For a disaster to be entered into the database, at least one of the following criteria must be fulfilled:

- Ten (10) or more people reported killed
- Hundred (100) or more people reported affected
- Declaration of a state of emergency
- Call for international assistance.

Data:

“0” (zero) in tables reflect the EM-DAT database, which originally records them as zeros.

“Total affected people” are the sum of injured, homeless, and affected. EM-DAT defines affected people as people requiring immediate assistance during a period of emergency; it can also include displaced or evacuated people.

Disaster Terms:

“Earthquake or seismic activity” includes ground shaking and tsunami.

“Epidemic” includes bacterial and viral infectious diseases.

“Extreme Temperature” includes heat wave, cold wave, and extreme winter conditions.

“Flood” includes general flood, and flash flood.

“Mass Movement” includes avalanche, landslide, and rockfall.

“Storm” includes local storm, tropical cyclone, and winter storm.

“Volcano” means volcanic eruption.

“Wildfire” includes bush/brush fire, forest fire, and scrub/grassland fire.

Sub-regions in Asia:

Central Asia is composed of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan

Eastern Asia is composed of China P Rep, Hong Kong (China), Japan, Korea Dem P Rep, Korea Rep, Macau, Mongolia, and Taiwan (China)

South-Eastern Asia is composed of Brunei Darussalam, Cambodia, Indonesia, Lao P Dem Rep, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam

Southern Asia is composed of Afghanistan, Bangladesh, Bhutan, India, Iran Islam Rep, Maldives, Nepal, Pakistan, and Sri Lanka

Western Asia is composed of Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine (West Bank), Qatar, Saudi Arabia, Syrian Arab Rep, Turkey, United Arab Emirates, Yemen, Yemen Arab Rep, and Yemen P Dem Rep

To access the ADRC Natural Disaster Data Book 2009 online,
log onto: <http://www.adrc.asia/publications/databook/DB2009.html>

For inquiries, please contact rep@adrc.asia.

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1. Impacts of Natural Disasters by Region, 2009

This section covers the impacts of natural disasters—occurrence, number of deaths, total number of affected people, and economic damage—that took place in different regions across the world in 2009. As shown in Figure 1, Asia ranks first in all of the impact categories, most significantly in total number of affected people (close to 80%). In all indices except economic damage, the second most affected continent is Africa. The lack of recorded data of economic damage found in CRED EM-DAT is a possible reason for the tiny share of this category in Africa.

After Asia, the Americas records the largest economic damage but ranks third in all other categories. Following the general trend from previous years, natural disasters have the least impacts on Europe and Oceania. However, Europe suffers a higher than usual economic damage mainly due to the 2009 L'Aquila earthquake which occurred in Italy, along with several cases of flooding and extreme temperatures in other parts of the region.

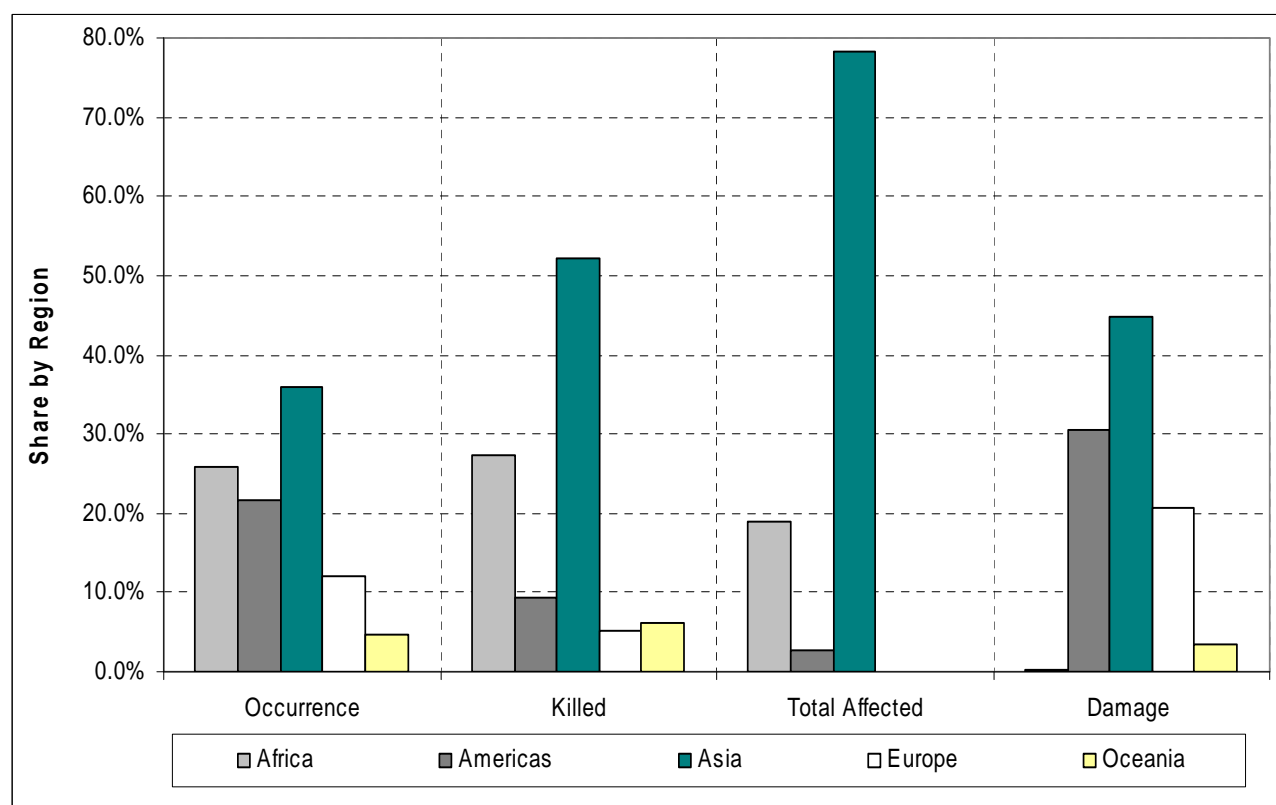


Figure 1: Impacts of Natural Disasters by Region, 2009

Table 1: Impacts of Natural Disasters by Region, 2009

Region	Impact			
	Occurrence (share in %)	Killed (share in %)	Total Affected ('000) (share in %)	Damage (US\$ millions) (share in %)
Africa	103 (25.8)	4,368 (27.4)	42,043 (18.9)	173 (0.4)
Americas	86 (21.6)	1,488 (9.3)	6,030 (2.7)	15,032 (30.5)
Asia	143 (35.8)	8,317 (52.1)	174,106 (78.3)	22,105 (44.9)
Europe	48 (12.0)	821 (5.1)	106 (0.0)	10,239 (20.8)
Oceania	19 (4.8)	967 (6.1)	77 (0.0)	1,726 (3.5)
Total	399 (100)	15,961 (100)	222,362 (100)	49,275 (100)

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

2. Impacts of Natural Disasters by Disaster Type, 2009

This section provides the breakdown of impacts of disasters sorted by disaster type. As Figure 2 shows, although the same dominant disaster type cannot be witnessed in all impact categories, flood and storm are generally prevalent by consistently being in the top three places. Flood (37.8%), epidemic (30.5%), drought (49.0%) and storm (53.0%) rank number one in impact categories of occurrence, killed, total affected and damage, respectively.

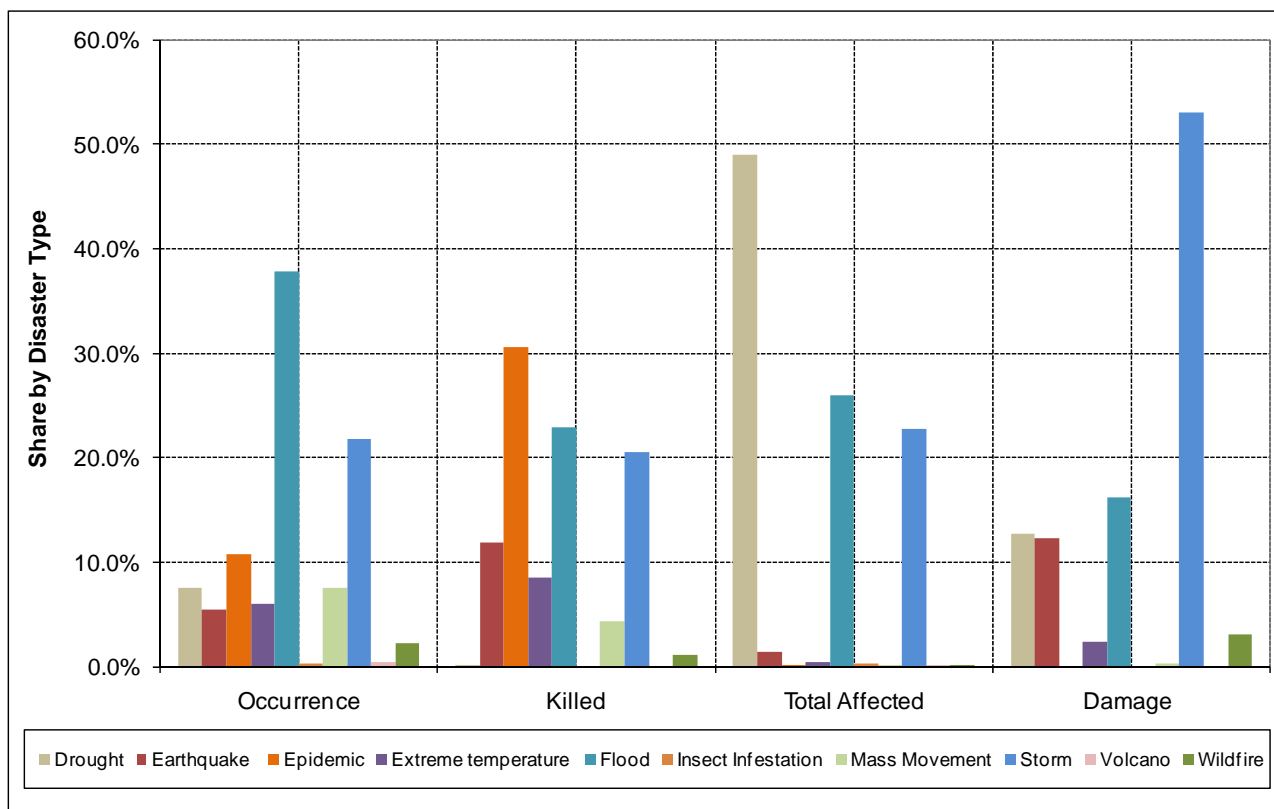


Figure 2: Impacts of Natural Disasters by Disaster Type, 2009

Table 2: Impacts of Natural Disasters by Disaster Type, 2009

Disaster Type	Impact			
	Occurrence (share in %)	Killed (share in %)	Total Affected ('000) (share in %)	Damage (US\$ millions) (share in %)
Drought	30 (7.5)	4 (0.0)	108,946 (49.0)	6246 (12.7)
Earthquake	22 (5.5)	1,888 (11.8)	3,221 (1.4)	6059 (12.3)
Epidemic	43 (10.8)	4,875 (30.5)	492 (0.2)	0 (0.0)
Extreme Temperature	24 (6.0)	1,370 (8.6)	856 (0.4)	1162 (2.4)
Flood	151 (37.8)	3,654 (22.9)	57,659 (25.9)	8004 (16.2)
Insect Infestation	1 (0.3)	0 (0.0)	500 (0.2)	0 (0.0)
Mass Movement	30 (7.52)	693 (4.3)	47 (0.0)	154 (0.3)
Storm	87 (21.8)	3,287 (20.6)	50,583 (23.0)	26135 (53.0)
Volcano	2 (0.5)	0 (0.0)	48 (0.0)	0 (0.0)
Wildfire	9 (2.3)	190 (1.2)	12 (0.0)	1515 (3.1)
Total	368 (100)	15,268 (100)	222,364 (100)	49,275 (100)

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

3. Impacts of Natural Disasters in Asia by Disaster Type, 2009

This section provides the overview of impacts of disasters sorted by disaster type in Asia. As depicted in Figure 3, the three most predominant disaster types in general are flood, storm and drought. Flood is the most frequent with a share of more than 35 percent compared to other disasters. Storm ranks first in the number of deaths and economic damage, while drought, with a share of close to 40 percent, leads in total number of affected people. The share of deaths caused by earthquake in Asia (16.4%) is slightly high compared to that in the world (11.8%).

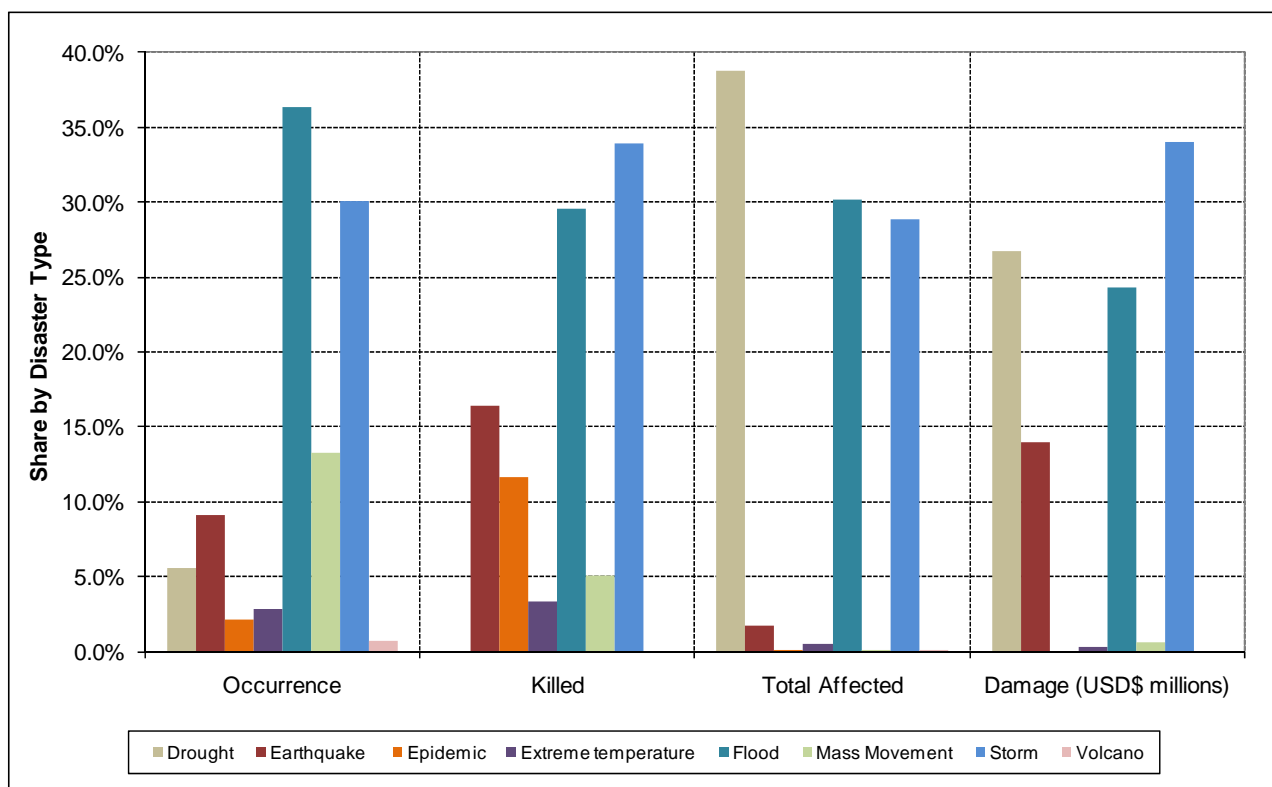


Figure 3: Impacts of Natural Disasters by Disaster Type in Asia, 2009

Table 3: Impacts of Natural Disasters by Disaster Type in Asia, 2009

Disaster Type	Impact			
	Occurrence (share in %)	Killed (share in %)	Total Affected ('000) (share in %)	Damage (US\$ millions) (share in %)
Drought	8 (5.6)	0 (0.0)	67,463 (38.7)	5,918 (26.8)
Earthquake	13 (9.1)	1,365 (16.4)	2,957 (1.7)	3,099 (14.0)
Epidemic	3 (2.1)	971 (11.7)	95 (0.1)	0 (0.0)
Extreme Temperature	4 (2.8)	278 (3.3)	819 (0.5)	62 (0.3)
Flood	52 (36.4)	2,461 (29.6)	52,532 (30.2)	5,367 (24.3)
Mass Movement	19 (13.3)	417 (5.0)	12 (0.0)	139 (0.6)
Storm	43 (30.1)	2,825 (34.0)	50,182 (28.8)	7,519 (34.0)
Volcano	1 (0.7)	0 (0.0)	47 (0.0)	0 (0.0)
Total	143 (100)	15,268 (100)	174,107 (100)	22,104 (100)

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be.

Université Catholique de Louvain, Brussels (Belgium)

4. Trends of World Natural Disasters, 1975-2009

In terms of number of disasters, the year 2009 has a slight increase from the previous year 2008. The upward shift of disaster occurrence's trend continues from the end of the 1990s, which is clearly depicted in the collective 5-year period representation of data in Figure 4-2.

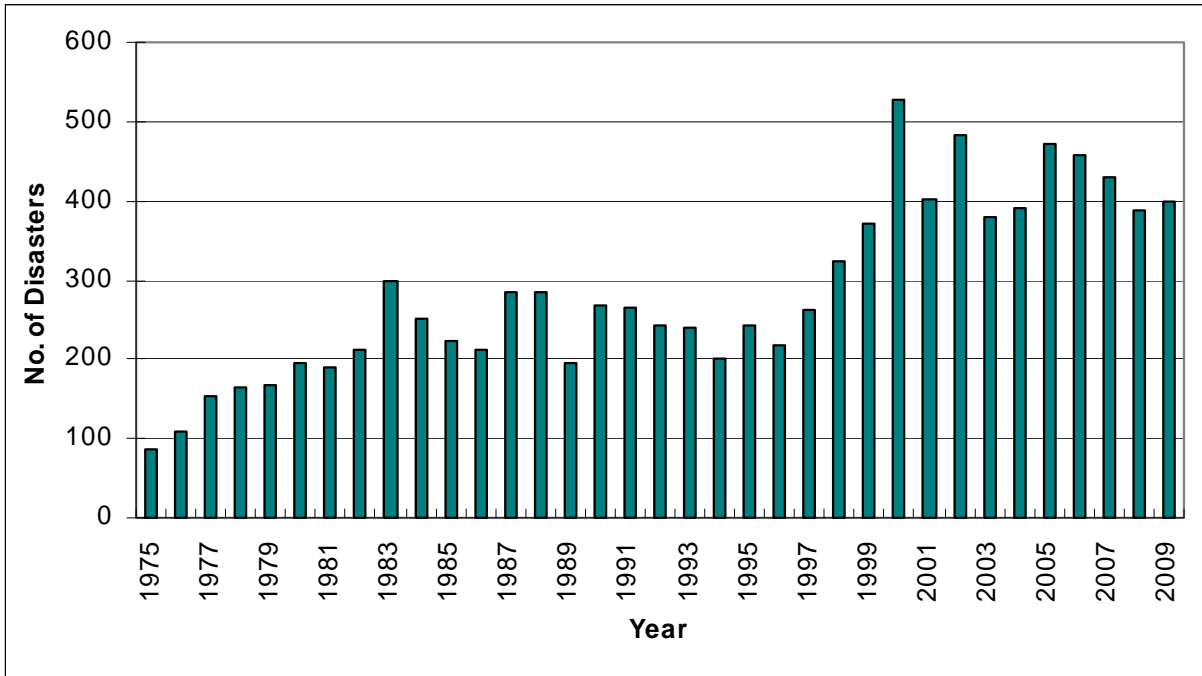


Figure 4-1: Disaster Occurrence, 1975-2009

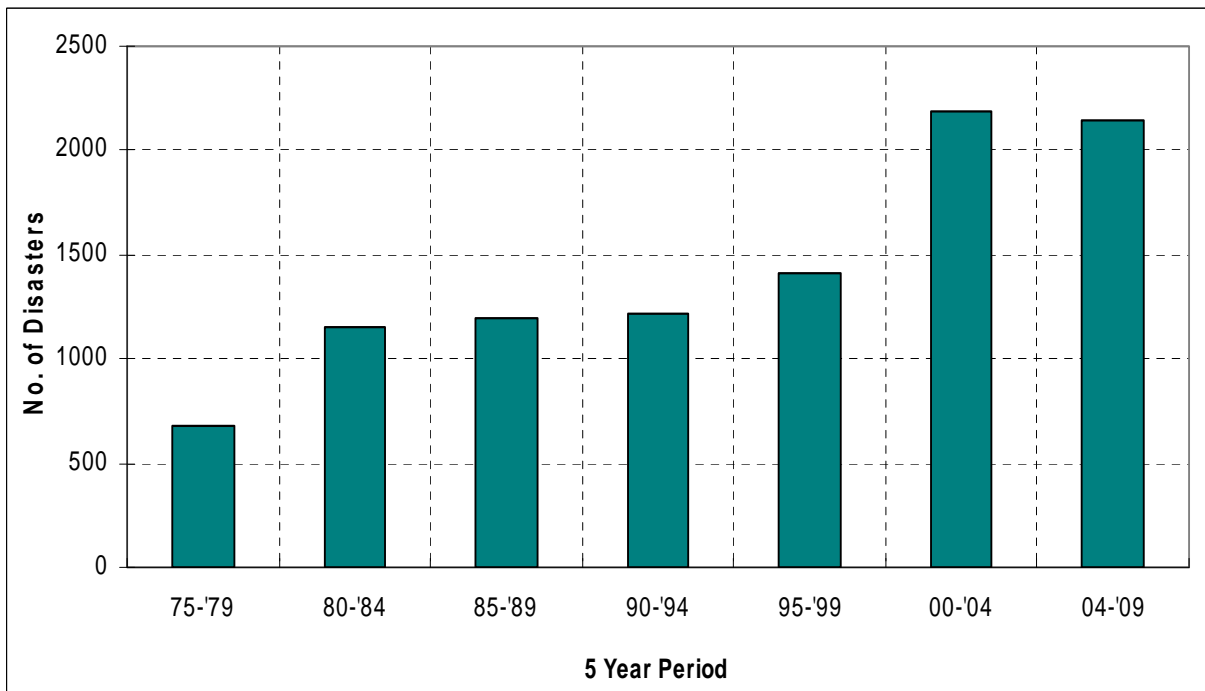


Figure 4-2: Disaster Occurrence (5-year period), 1975-2009

Source:
 EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
 Université Catholique de Louvain, Brussels (Belgium)

4. Trends of World Natural Disasters, 1975-2009 (continued)

The year 2009 is among the years with the lowest number of recorded fatalities caused by natural disasters during the period 1975-2009. In comparison to 2008, 2009 witnesses a drastic reduction in the impact category of number of people killed. For the 5-year period analysis, the first half of the current decade in the 21st century closely matches the second half, with the number of people killed at approximately 400,000 in each period.

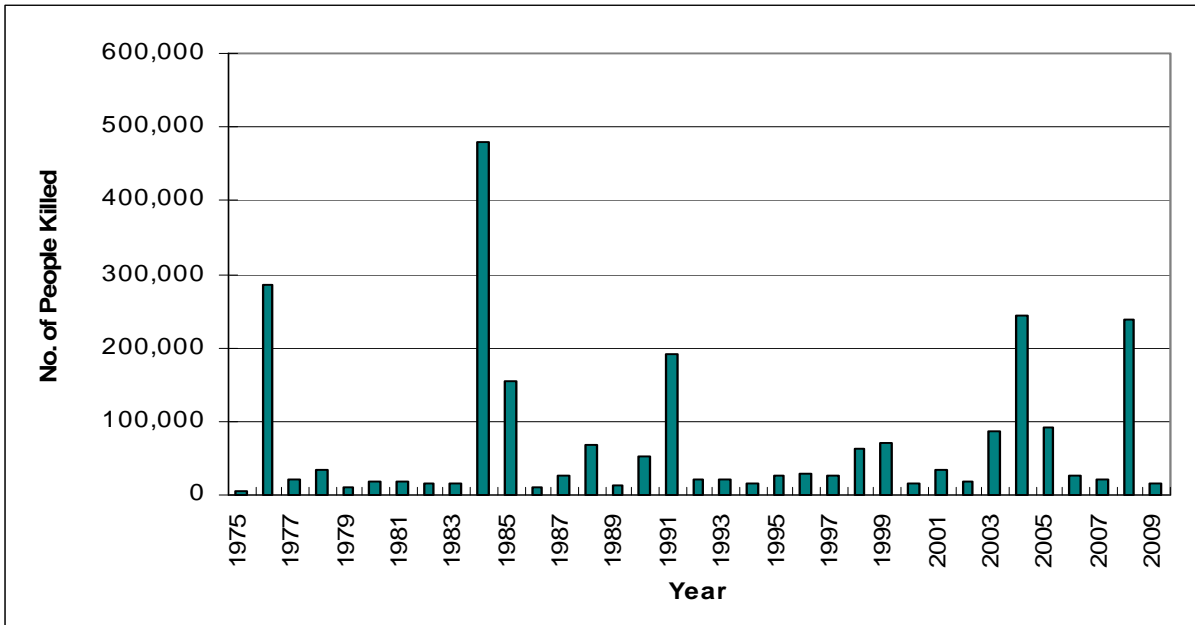


Figure 4-3: Number of People Killed, 1975-2009

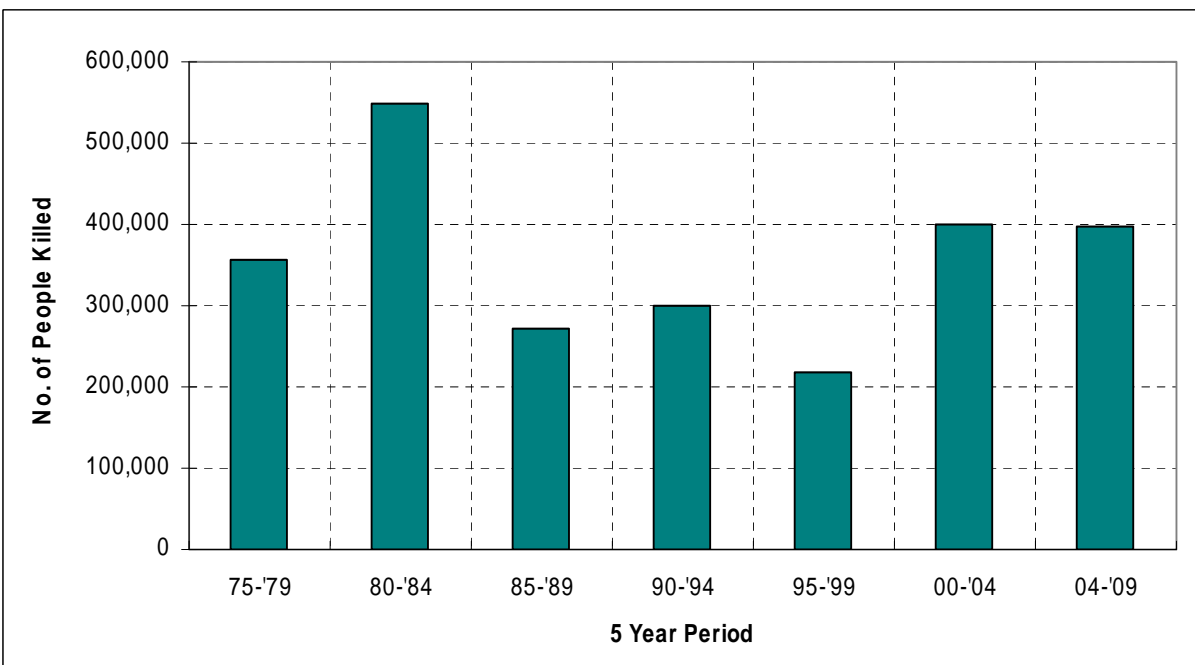


Figure 4-4: Number of People Killed (5-year period), 1975-2009

Source:
 EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
 Université Catholique de Louvain, Brussels (Belgium)

4. Trends of World Natural Disasters, 1975-2009 (continued)

In terms of total number of affected people, 2009 sees a somewhat higher figure compared with 2008. For the 5 year period representation of data, it is evident that the total number of affected people in the second half of the current decade is noticeably lower than the first. The total number of affected people for the period 2000-2004 is the highest during the extended period of 1975-2009. As shown in Figure 4-6, there is a general upward trend from 1975 to 2009.

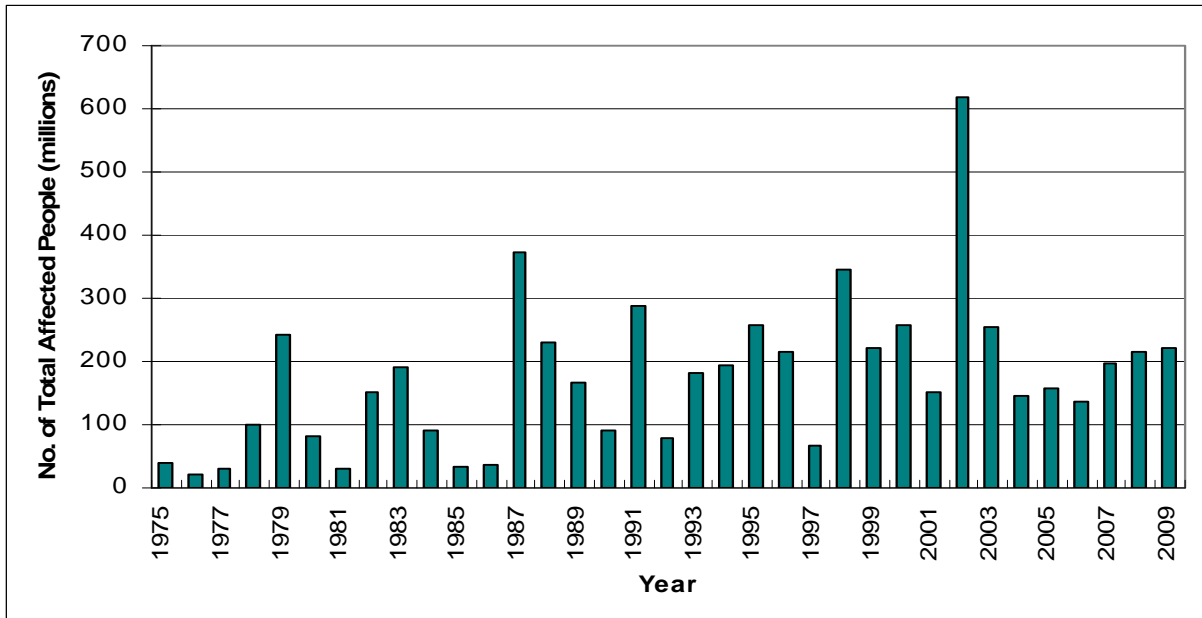


Figure 4-5: Total Number of Affected People, 1975-2009

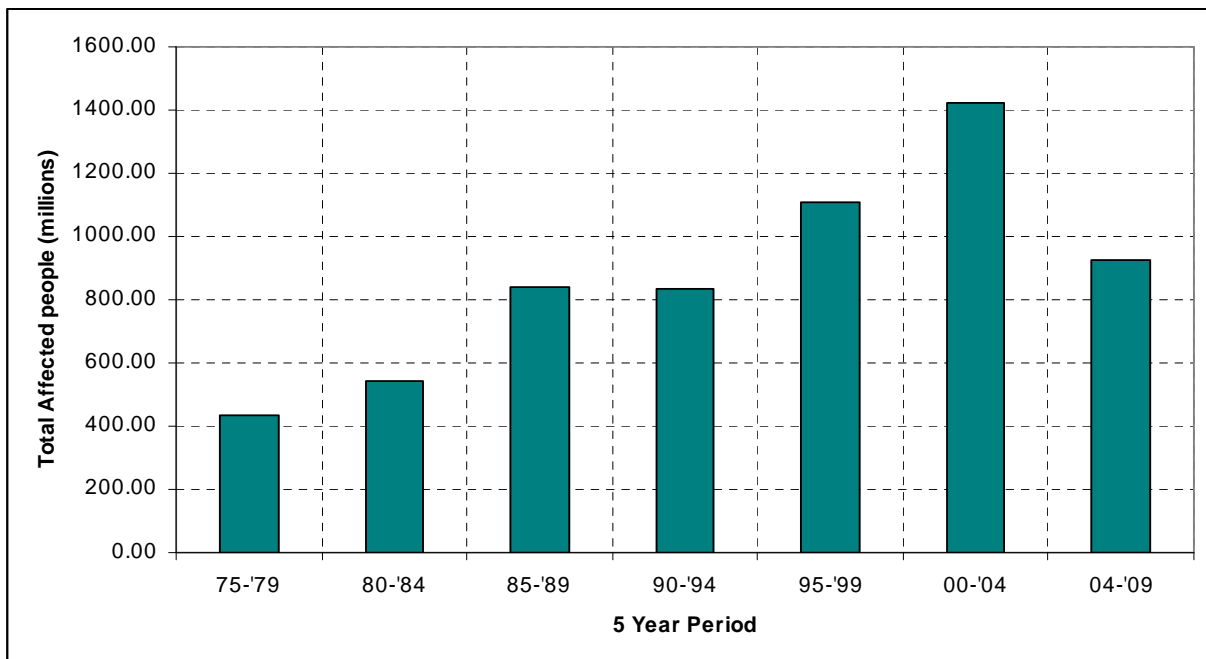


Figure 4-6: Total Number of Affected People (5 year period), 1975-2009

Source:
EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université catholique de Louvain, Brussels (Belgium)

4. Trends of World Natural Disasters, 1975-2009 (continued)

Economic damage caused by natural disasters in 2009 (approximately US\$50 billion) is significantly lower than that in 2008. Three of the worst five years in the period of interest, 1975-2009, can be found in the 21st century (2004, 2005, and 2009). For the 5-year period analysis, the second half of the current decade records the largest amount of damage in the period 1975-2009.

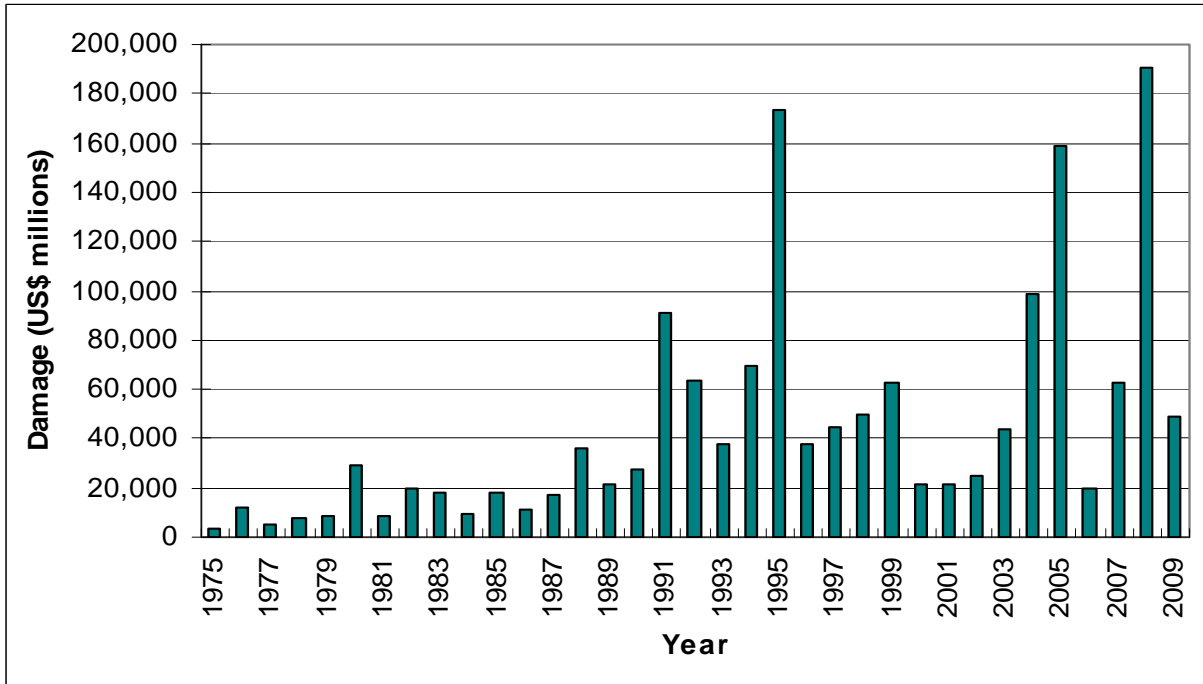


Figure 4-7: Amount of Damage, 1975-2009

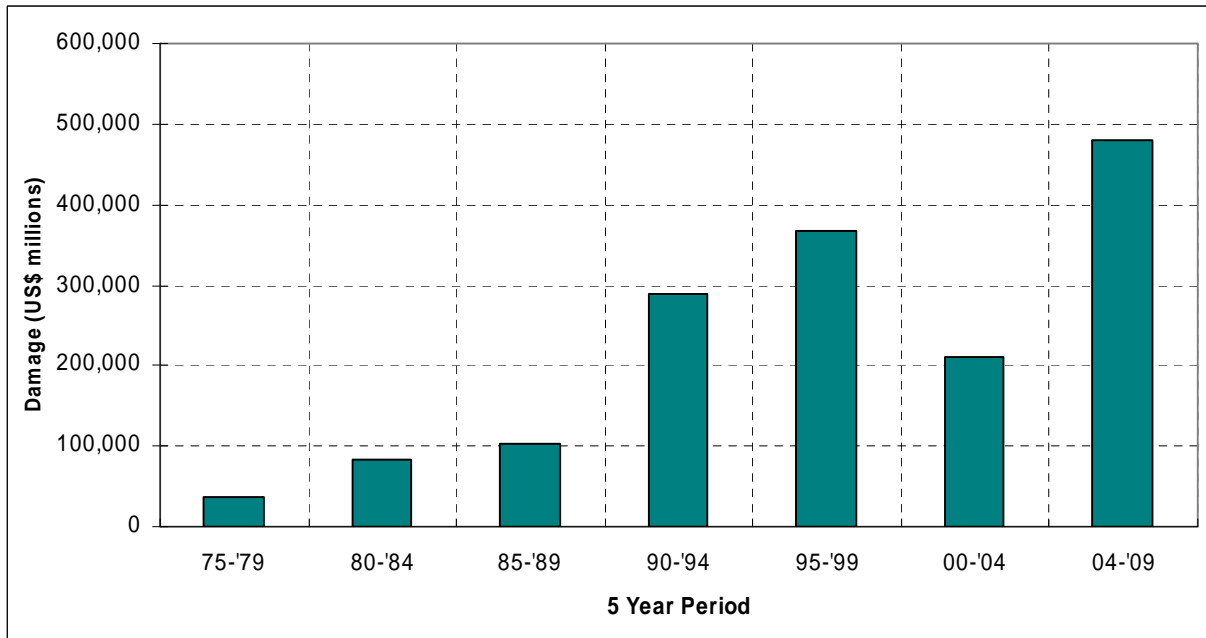


Figure 4-8: Amount of Damage (5-year period), 1975-2009

Source:
 EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be.
 Université Catholique de Louvain, Brussels (Belgium)

5. Impacts of World Natural Disasters by Region, 1975-2009

For the period 1975-2009, Asia dominates and ranks first in all natural disaster's impact categories across regions of the world. This is similar of the trend for 2009.

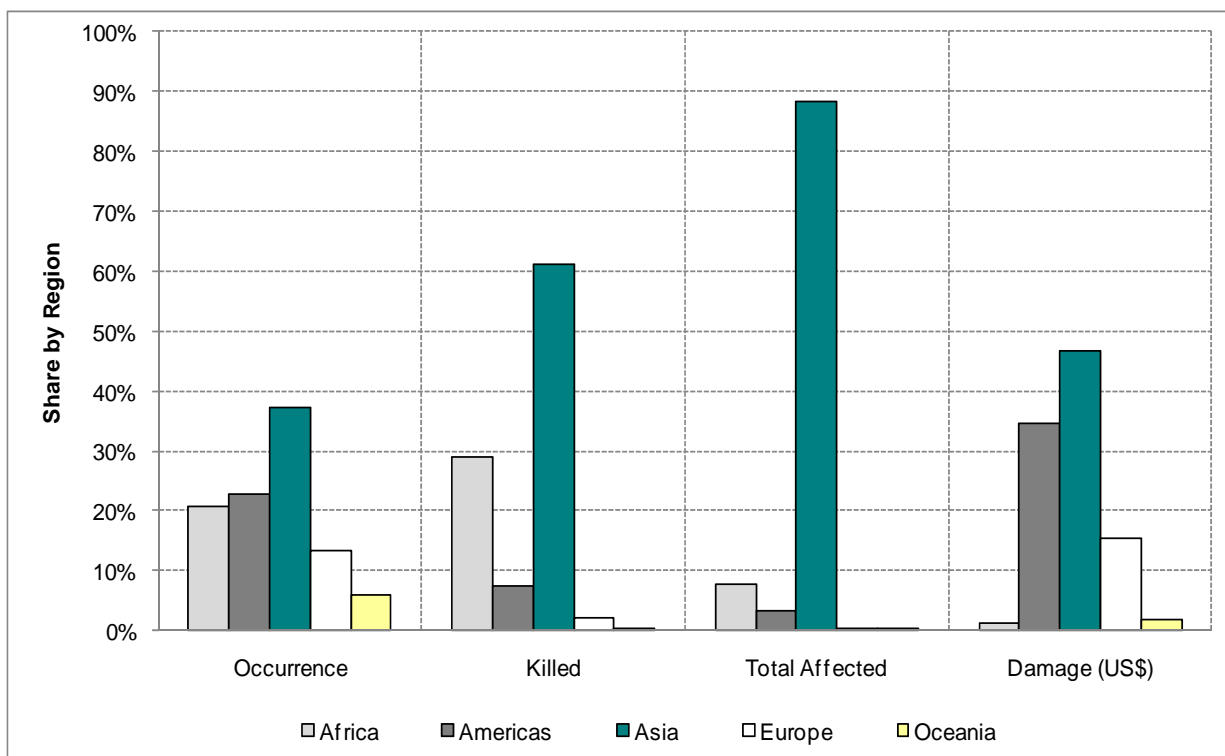


Figure 5: Impacts of World Natural Disasters by Region, 1975-2009

Table 4: Impacts of Natural Disasters by Region, 1975-2009

Region	Impact			
	Occurrence (share in %)	Killed (‘000) (share in %)	Total Affected (in millions) (share in %)	Damage (US\$ millions) (share in %)
Africa	2,062 (20.6)	722 (29.0)	468 (7.7)	20,571 (1.3)
Americas	2,277 (22.8)	187 (7.5)	192 (3.2)	543,509 (34.6)
Asia	3,727 (37.3)	1,522 (61.0)	5,399 (88.3)	734,670 (46.7)
Europe	1,328 (13.3)	56 (2.3)	32 (0.5)	242,208 (15.4)
Oceania	601 (6.0)	6 (0.2)	20 (0.3)	31,988 (2.0)
Total	9,995 (100)	2,493 (100)	6,112 (100)	1,572,946 (100)

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

6. Impacts of Natural Disasters in Asia by Sub-Region in 2009

As shown in Figure 5-1, the number of people killed by floods and storms are relatively high in 2009 in each sub-region of Asia. Many of sub-regions experienced rather large scale of floods and storms, such as Typhoon Morakot in Taiwan (China) and Flood in Mongolia in Eastern Asia, and Flood in India in Southern Asia. Figure 5-2 shows that the number of people affected by storms is comparatively high in South-eastern Asia and Southern Asia. In Eastern Asia, West Asia and Central Asia, the number of people affected by drought is relatively high in 2009.

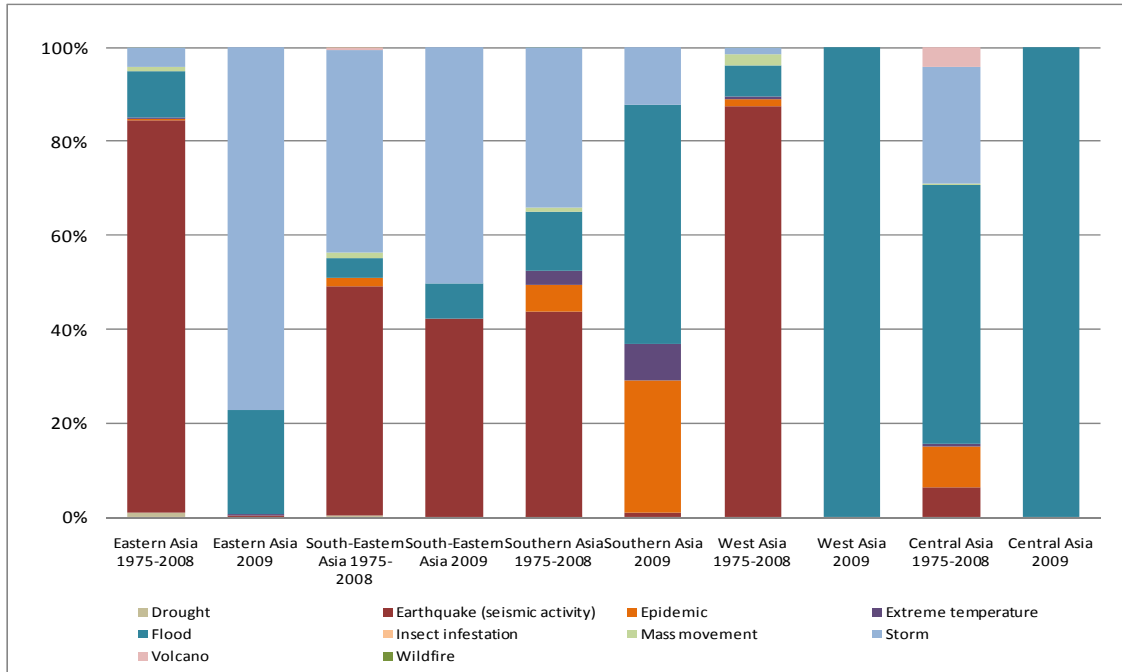


Figure 5-1: Share of Number of Deaths by Disaster Type in Sub-Regions of Asia

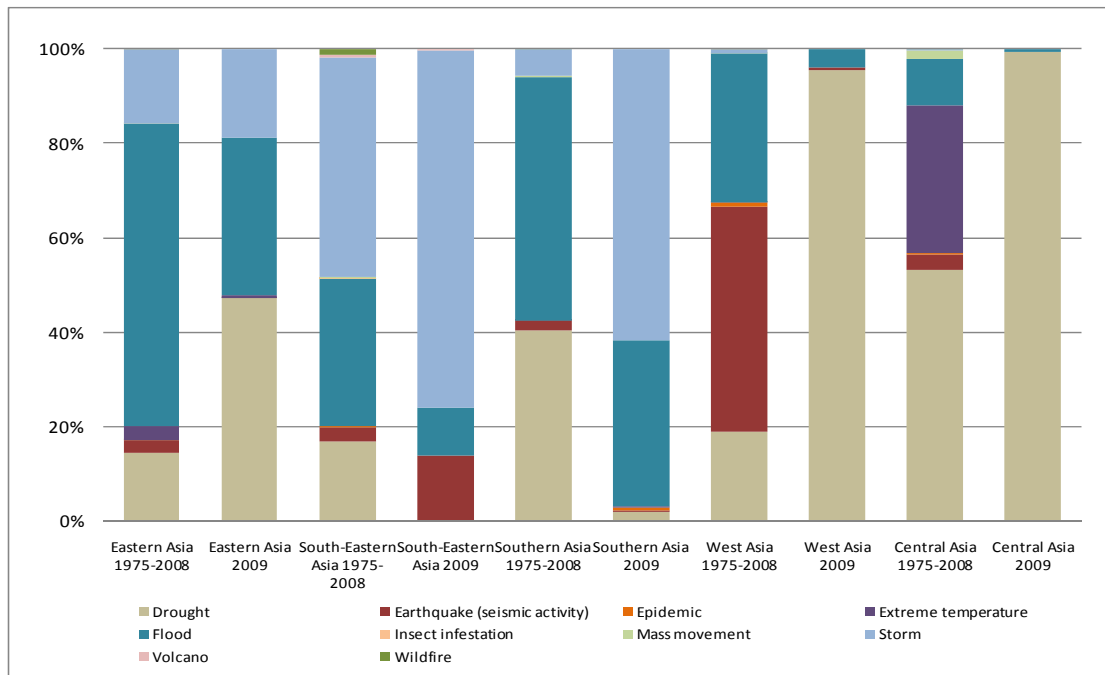


Figure 5-2: Share of Number of Affected by Disaster Type in Sub-Regions of Asia

Source:
 EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
 Université Catholique de Louvain, Brussels (Belgium)

7. The 25 Worst Disasters in Asia by Number of People Killed, 2009

The earthquake that occurred in Sumatra, Indonesia on 30 September tops the list of number of people killed, with 1,195 deaths reported. In a different region (Bandung) of Indonesia, an earthquake also led to fatalities in the same month, taking the rank of 14. The second and third places are occupied by flood in India and storm in Taiwan (China), respectively. From the top 25 list, on the whole, disaster types with the greatest fatality impact are storm and flood. Countries most represented in the list are India, China and the Philippines.

Table 4: The 25 Worst Disasters in Asia by Number of People Killed, 2009

<i>Rank</i>	<i>Disaster Type</i>	<i>Country</i>	<i>Date Started</i>	<i>Killed</i>	<i>Total Affected</i>	<i>Damage (US\$ millions)</i>
1	Earthquake	Indonesia	30-Sep	1,195	2,501,798	2,200
2	Flood	India	Jul	992	1,886,000	220
3	Storm	Taiwan (China)	7-Aug	630	2,307,523	250
4	Storm	Philippines	29-Sep	512	4,478,491	585
5	Storm (Ketsana)	Philippines	24-Sep	501	4,901,763	237
6	Epidemic	Sri Lanka	Jan	346	35,007	0
7	Epidemic	Nepal	1-May	314	58,874	0
8	Epidemic	India	Jan	311	1,521	0
9	Flood	India	25-Sep	300	2,000,000	2,150
10	Storm	Bangladesh	25-May	190	3,935,341	270
11	Storm (Ketsana)	Viet Nam	28-Sep	182	2,477,315	785
12	Flood	Saudi Arabia	24-Nov	161	10,000	900
13	Extreme Temperature	Bangladesh	15-Dec	135	50,000	0
14	Earthquake	Indonesia	2-Sep	128	339,792	160
15	Storm	Viet Nam	2-Nov	124	500,145	280
16	Extreme Temperature	India	14-Apr	120	25	0
17	Storm	India	25-May	96	5,100,000	0
18	Flood	China P. Rep.	1-Jul	90	39,372,000	1,000
19	Flood	Nepal	4-Oct	87	257,786	60
20	Storm	Philippines	7-May	77	401,007	30
21	Flood	India	3-Nov	70	8	64
22	Mass Movement	China P. Rep.	5-June	65	0	0
23	Flood	Indonesia	26-Mar	64	1,600	0
24	Mass Movement	China P. Rep.	14-Jul	54	10,004	139
25	Storm	China P. Rep.	3-June	52	215	625

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

8. The 25 Worst Disasters in Asia by Number of People Killed per Million Population, 2009

Using the index of the ratio of the number of people killed to total country population, Typhoon Morakot, which hit Taiwan (China) in August, takes the first place. In addition, storm dominates the list with 10 incidences in 7 different countries. It is also worth noting that storm fatalities—which occurred in the Philippines on 24 September (9th rank), Viet Nam, 28 September (14th rank), Cambodia, 29 September (20th rank), and Lao People's Democratic Republic, 1 October (13th rank)—were the works of Typhoon Ketsana alone.

Table 5: The 25 Worst Disasters in Asia by Number of People Killed per Million Population, 2009

Rank	Disaster Type	Country	Date Started	Killed	*Population ('000s)	Killed (per million)
1	Storm	Taiwan (China)	7-Aug	630	**23,330	27.00
2	Storm	Bhutan	25-May	12	697	17.21
3	Epidemic	Sri Lanka	Jan	346	20,303	17.04
4	Earthquake	Bhutan	21-Sep	11	697	15.77
5	Epidemic	Nepal	1-May	314	29,331	10.71
6	Flood	Mongolia	16-Jul	26	2,671	9.73
7	Flood	Saudi Arabia	24-Nov	161	25,391	6.34
8	Storm	Philippines	29-Sep	512	91,983	5.57
9	Storm (Ketsana)	Philippines	24-Sep	501	91,983	5.45
10	Earthquake	Indonesia	30-Sep	1,195	229,965	5.20
11	Flood	Tajikistan	21-Apr	21	6,952	3.02
12	Flood	Nepal	4-Oct	87	29,331	2.97
13	Storm (Ketsana)	Lao P. Dem. Rep.	1-Oct	16	6,320	2.53
14	Storm (Ketsana)	Viet Nam	28-Sep	182	87,280	2.09
15	Extreme Temperature	Mongolia	Dec	5	2,671	1.87
16	Flood	Lao P. Dem. Rep.	10-Aug	10	6,320	1.58
17	Storm	Viet Nam	2-Nov	124	87,280	1.42
18	Flood	Afghanistan	25-Mar	39	29,803	1.31
19	Storm	Bangladesh	25-May	190	162,221	1.17
20	Storm (Ketsana)	Cambodia	29-Sep	17	14,805	1.15
21	Flood	Nepal	26-Jul	30	29,331	1.02
22	Flood	India	Jul	992	1,155,348	0.86
23	Storm	Philippines	7-May	77	91,983	0.84
24	Extreme Temperature	Bangladesh	15-Dec	135	162,221	0.83
25	Earthquake	Afghanistan	17-Apr	22	29,803	0.74

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,

Université Catholique de Louvain, Brussels (Belgium)

*Data from World Bank 2008; **Data from IMF World Economy Outlook Database

9. The 25 Worst Disasters in Asia by Total Number of People Affected, 2009

In terms of total number of people affected, the drought in China that occurred in October ranks first with 60 million affected people. China dominates the list with 8 incidences, occupying all the top 5 places. Again, flood and storm are the most dominant in terms of incidence in the list, affecting China, India, the Philippines, Bangladesh, and Viet Nam. The other disaster types that make the list are earthquake in Indonesia (11th rank) and extreme temperature due to cold wave in Mongolia (21st rank).

Table 6: The 25 Worst Disasters in Asia by Total Number of People Affected, 2009

<i>Rank</i>	<i>Disaster Type</i>	<i>Country</i>	<i>Date Started</i>	<i>Killed</i>	<i>Total Affected</i>	<i>Damage (US\$ millions)</i>
1	Drought	China P. Rep.	Oct	0	60,000,000	5,684
2	Flood	China P. Rep.	1-Jul	90	39,372,000	1,000
3	Storm	China P. Rep.	9-Aug	8	11,000,004	1,416
4	Storm	China P. Rep.	9-Nov	41	10,000,096	1,030
5	Flood	China P. Rep.	1-Apr	49	5,630,000	0
6	Storm	India	25-May	96	5,100,000	0
7	Storm (Ketsana)	Philippines	24-Sep	501	4,901,763	237
8	Storm	Philippines	29-Sep	512	4,478,491	585
9	Storm	Bangladesh	25-May	190	3,935,341	270
10	Drought	China P. Rep.	Nov	0	3,700,000	234
11	Earthquake	Indonesia	30-Sep	1,195	2,501,798	2,200
12	Storm (Ketsana)	Viet Nam	28-Sep	182	2,477,315	785
13	Storm	Taiwan (China)	7-Aug	630	2,307,523	250
14	Flood	India	25-Sep	300	2,000,000	2,150
15	Drought	Kyrgyzstan	-	0	2,000,000	0
16	Flood	India	Jul	992	1,886,000	220
17	Drought	Syrian Arab Rep.	-	0	1,300,000	0
18	Storm	China P. Rep.	11-Nov	0	1,197,799	20
19	Storm	China P. Rep.	14-Sep	13	1,000,058	295
20	Storm	Philippines	28-Oct	39	802,175	15
21	Extreme Temperature	Mongolia	Dec	5	769,113	62
22	Flood	Viet Nam	3-Jul	20	700,000	0
23	Flood	Philippines	2-Jan	33	537,991	6
24	Flood	Philippines	4-Jul	22	505,102	23
25	Storm	Viet Nam	2-Nov	124	500,145	280

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

10. The 25 Worst Disasters in Asia by Total Affected People per Thousand Population, 2009

Using the index of total affected people per thousand population, drought in Kyrgyzstan comes first with approximately 375 people affected for every 1,000 people in the country. Three more droughts are found in the table below—one in Syria, one in China and the other in Nepal. Storm, with 11 cases among the top 25, is the most prevalent in terms of incidence. The worst storm in this index is represented by Typhoon Morakot which battered Taiwan (China) on 7 August.

Table 7: The 25 Worst Disasters in Asia by Total Number of People Affected per Thousand Population, 2009

Rank	Disaster Type	Country	Date Started	Total Affected	*Population ('000s)	Total Affected (per '000)
1	Drought	Kyrgyzstan	-	2,000,000	5,321	375.84
2	Extreme Temperature	Mongolia	Dec	769,113	2,671	287.95
3	Storm	Taiwan (China)	7-Aug	2,307,523	**23,330	98.91
4	Drought	Syrian Arab Rep.	-	1,300,000	21,092	61.63
5	Storm (Ketsana)	Philippines	24-Sep	4,901,763	91,983	53.29
6	Storm	Philippines	29-Sep	4,478,491	91,983	48.69
7	Drought	China P. Rep.	Oct	60,000,000	1,331,460	45.06
8	Flood	China P. Rep.	1-Jul	39,372,000	1,331,460	29.57
9	Storm (Ketsana)	Viet Nam	28-Sep	2,477,315	87,280	28.38
10	Storm	Bangladesh	25-May	3,935,341	162,221	24.26
11	Storm (Ketsana)	Lao P. Dem. Rep.	1-Oct	128,887	6,320	20.39
12	Flood	Sri Lanka	14-Dec	300,000	20,303	14.78
13	Storm (Ketsana)	Cambodia	29-Sep	178,091	14,805	12.03
14	Earthquake	Indonesia	30-Sep	2,501,798	229,965	10.88
15	Drought	Nepal	-	303,000	29,331	10.33
16	Flood	Nepal	4-Oct	257,786	29,331	8.79
17	Storm	Philippines	28-Oct	802,175	91,983	8.72
18	Storm	China P. Rep.	9-Aug	11,000,004	1,331,460	8.26
19	Flood	Viet Nam	3-Jul	700,000	87,280	8.02
20	Storm	China P. Rep.	9-Nov	10,000,096	1,331,460	7.51
21	Flood	Philippines	2-Jan	537,991	91,983	5.85
22	Storm	Viet Nam	2-Nov	500,145	87,280	5.73
23	Flood	Mongolia	16-Jul	15,000	2,671	5.62
24	Flood	Philippines	4-Jul	505,102	91,983	5.49
25	Storm	India	25-May	5,100,000	1,155,348	4.41

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be.

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*Data from World Bank 2008; **Data from IMF World Economy Outlook Database

11. The 25 Worst Disasters in Asia by Economic Damage, 2009

In the category of economic damage, the drought in China that took place in October again tops the list with damage amounting to approximately US\$5.68 billion. Taking second place is the earthquake in Indonesia which struck Sumatra on 30 September, bringing about US\$2.2 billion in economic damage. China, with 10 incidences on the list, is the worst affected country in this impact category of economic damage. In terms of disaster type, once more, storm is the most dominant, appearing 12 times on the list and affecting 7 countries. Flood and storm together occupy 18 of the top 25 places. There are a total of 4 incidences of earthquake which occurred in Indonesia, Japan, and China. Mass movement (landslide) in China ranks 25th in this index.

Table 8: The 25 Worst Disasters in Asia by Economic Damage, 2009

<i>Rank</i>	<i>Disaster Type</i>	<i>Country</i>	<i>Date Started</i>	<i>Killed</i>	<i>Total Affected</i>	<i>Damage (US\$ millions)</i>
1	Drought	China P. Rep.	Oct	0	60,000,000	5,684
2	Earthquake	Indonesia	30-Sep	1,195	2,501,798	2,200
3	Flood	India	25-Sep	300	2,000,000	2,150
4	Storm	China P. Rep.	9-Aug	8	11,000,004	1,416
5	Storm	China P. Rep.	9-Nov	41	10,000,096	1,030
6	Flood	China P. Rep.	1-Jul	90	39,372,000	1,000
7	Storm	Japan	7-Oct	4	5,119	1,000
8	Flood	Saudi Arabia	24-Nov	161	10,000	900
9	Storm (Ketsana)	Viet Nam	28-Sep	182	2,477,315	785
10	Storm	China P. Rep.	3-Jun	52	215	625
11	Storm	Philippines	29-Sep	512	4,478,491	585
12	Flood	Turkey	7-Sep	40	35,020	550
13	Earthquake	Japan	11-Aug	1	25,319	400
14	Earthquake	China P. Rep.	9-Jul	1	65,336	315
15	Storm	India	11-Nov	20	0	300
16	Storm	China P. Rep.	14-Sep	13	1,000,058	295
17	Flood	China P. Rep.	7-Jun	16	0	281
18	Storm	Viet Nam	2-Nov	124	500,145	280
19	Storm	Bangladesh	25-May	190	3,935,341	270
20	Storm	Taiwan (China)	7-Aug	630	2,307,523	250
21	Storm (Ketsana)	Philippines	24-Sep	501	4,901,763	237
22	Drought	China P. Rep.	Nov	0	3,700,000	234
23	Flood	India	Jul	992	1,886,000	220
24	Earthquake	Indonesia	2-Sep	128	339,792	160
25	Mass Movement	China P. Rep.	14-Jul	54	10,004	139

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
Université Catholique de Louvain, Brussels (Belgium)

12. The 25 Worst Disasters in Asia by Ratio of Economic Damage to GDP, 2009

In terms of economic damage incurred relative to gross domestic product (GDP), Typhoon Ketsana that hit Lao People's Democratic Republic tops the list, accounting for 1.83 percent of GDP of Laos. In the second place, extreme temperature due to cold wave in Mongolia resulted in damage worth 1.18 percent of its GDP. The rest of the disasters on the top 25 list account for less than 1 percent of the respective country's GDP. The most common form of disaster, which can be found on the list, is again storm, with a total of 13 incidences. With 8 incidences, flood is the second most prevalent.

Table 9: The 25 Worst Disasters in Asia by Ratio of Economic Damage to GDP, 2009

Rank	Disaster Type	Country	Date Started	Damage (US\$ millions)	*GDP (US\$ billions)	Damage (as % of GDP)
1	Storm (Ketsana)	Lao P. Dem. Rep.	1-Oct	100	5.47	1.83
2	Extreme temperature	Mongolia	Dec	62	5.26	1.18
3	Storm (Ketsana)	Viet Nam	28-Sep	785	81.27	0.97
4	Flood	Nepal	4-Oct	60	12.61	0.48
5	Earthquake	Indonesia	30-Sep	2,200	510.50	0.43
6	Storm	Philippines	29-Sep	585	166.60	0.35
7	Storm	Viet Nam	2-Nov	280	81.27	0.34
8	Storm	Bangladesh	25-May	270	79.55	0.34
9	Flood	Saudi Arabia	24-Nov	900	475.09	0.19
10	Flood	Afghanistan	25-Mar	20	1,214.21	0.18
11	Flood	India	25-Sep	2,150	11.76	0.17
12	Storm (Ketsana)	Philippines	24-Sep	237	166.60	0.14
13	Drought	China P. Rep.	Oct	5,684	4,521.83	0.13
14	Flood	Turkey	7-Sep	550	730.34	0.08
15	Storm	Taiwan (China)	7-Aug	250	**402.69	0.06
16	Earthquake	Indonesia	2-Sep	160	510.50	0.03
17	Storm	China P. Rep.	9-Aug	1,416	4,521.83	0.03
18	Storm	India	11-Nov	300	1,214.21	0.02
19	Storm	China P. Rep.	9-Nov	1,030	4,521.83	0.02
20	Flood	China P. Rep.	1-Jul	1,000	4,521.83	0.02
21	Storm	Japan	7-Oct	1,000	4,886.97	0.02
22	Flood	Tajikistan	21-Apr	1	5.13	0.02
23	Storm	Philippines	7-May	30	166.60	0.02
24	Flood	India	Jul	220	1,214.21	0.02
25	Storm	Philippines	29-Apr	26	166.60	0.02

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be.

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*Data from World Bank 2008; **Data from IMF World Economy Outlook Database

13. Disasters in Asia by Country, 2009

Table 10. Disaster in Asia by Country, 2009

Country	Disaster Type	Occurrence	Killed	Total Affected	Damage (US\$ millions)
Afghanistan	Earthquake	1	22	3,309	0
	Flood	3	69	62,516	20.00
	Mass Movement	1	10	32	0
Azerbaijan	Flood	1	0	5,000	0
Bangladesh	Drought	1	0	0	0
	Extreme Temperature	1	135	50,000	0
	Flood	2	16	500,000	0
	Storm	2	197	3,954,550	270.00
Bhutan	Earthquake	1	11	12	0
	Storm	1	12	0	0
Cambodia	Storm	2	19	178,091	0
China P. Rep.	Drought	3	0	63,860,000	5,917.56
	Earthquake	2	1	69,885	318.10
	Flood	7	209	45,226,038	1,373.00
	Mass Movement	5	196	10,022	139.00
	Storm	10	169	23,296,806	3,601.45
Georgia	Earthquake	1	0	7,306	0
Hong Kong (China)	Storm	1	0	350	0
India	Drought	1	0	0	0
	Epidemic	1	311	1,521	0
	Extreme Temperature	1	120	25	0
	Flood	6	1,445	3,886,008	2,434.00
	Mass Movement	2	55	0	0
	Storm	6	218	5,109,085	300.00
Indonesia	Earthquake	5	1,330	2,850,364	2,381.00
	Flood	5	126	26,804	0
	Mass Movement	2	29	5	0
Iran Islam. Rep.	Earthquake	1	0	269	0
Iraq	Flood	1	2	3,000	0
Japan	Earthquake	1	1	25,319	400.00
	Mass Movement	2	44	400	0
	Storm	2	16	7,119	1,000.00
Kyrgyzstan	Drought	1	0	2,000,000	0
Lao P. Dem. Rep.	Flood	1	10	0	0
	Storm	1	16	128,887	100.00
Malaysia	Flood	2	0	10,875	0
Mongolia	Extreme Temperature	1	5	769,113	62.00
	Flood	1	26	15,000	0
Myanmar	Mass Movement	1	24	1,351	0
Nepal	Drought	1	0	303,000	0
	Epidemic	1	314	58,874	0
	Extreme Temperature	1	18	0	0
	Flood	2	117	257,786	60.00
	Mass Movement	1	10	0	0
Pakistan	Flood	3	102	75,080	0
Philippines	Earthquake	1	0	392	0.09
	Flood	8	55	1,083,276	29.31
	Mass Movement	1	10	16	0
	Storm	14	1,242	12,221,663	932.70
	Volcano	1	0	47,137	0
Saudi Arabia	Flood	1	161	10,000	900.00
Sri Lanka	Epidemic	1	346	35,007	0
	Flood	3	3	380,000	0
Syria	Drought	1	0	1,300,000	0
Taiwan (China)	Storm	1	630	2,307,523	250.00
Tajikistan	Flood	1	21	15,000	1.00
Thailand	Flood	1	15	200,000	0
Turkey	Flood	2	47	35,131	550.00
	Mass Movement	2	15	6	0
Viet Nam	Flood	2	37	740,000	0
	Mass Movement	1	13	1	0
	Storm	3	306	2,977,460	1,065.20
Yemen	Mass Movement	1	11	0	0
Grand Total		143	8,317	174,106,414	22,104.51

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be,
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*Data from World Bank 2008; **Data from IMF World Economy Outlook Database

In 2009, China accounts for 19 percent (27 occurrences) of the total number of disasters that hit Asia. The Philippines logged 25 disasters (18%), India 17 disasters (12%), and Indonesia 12 (8%). Bangladesh, Vietnam and Nepal each had 6 disasters (4%).

In other indices, India recorded the most number of disaster-related deaths (2,149 or 26% of the total), followed by Indonesia with 1,485 deaths (18%) and the Philippines with 1,307 (16%).

China leads both the lists of countries with the most number of affected people (76%) and with most economic damage (51%). In the list of affected people, the Philippines came second (8%), followed by India (5%). Next to China in the economic damage is India (12%), followed by Indonesia (11%).

14. Disasters in Asia by Disaster Type, 2009

Table 11. Disasters in Asia by Disaster Type, 2009

Disaster Type	Country	Occurrence	Killed	Total Affected	Damage (US\$ millions)	
Drought	Bangladesh	1	0	0	0	
	China P. Rep.	3	0	63,860,000	5,917.56	
	India	1	0	0	0	
	Kyrgyzstan	1	0	2,000,000	0	
	Nepal	1	0	303,000	0	
	Syrian Arab Rep.	1	0	1,300,000	0	
Earthquake	Afghanistan	1	22	3,309	0	
	Bhutan	1	11	12	0	
	China P. Rep.	2	1	69,885	318.10	
	Georgia	1	0	7,306	0	
	Indonesia	5	1330	2,850,364	2,381.00	
	Iran	1	0	269	0	
	Japan	1	1	25,319	400.00	
	Philippines	1	0	392	0.09	
	India	1	311	1,521	0	
Epidemic	Nepal	1	314	58,874	0	
	Sri Lanka	1	346	35,007	0	
	Bangladesh	1	135	50,000	0	
Extreme Temperature	India	1	120	25	0	
	Mongolia	1	5	769,113	62.00	
	Nepal	1	18	0	0	
	Afghanistan	3	69	62,516	20.00	
Flood	Azerbaijan	1	0	5,000	0	
	Bangladesh	2	16	500,000	0	
	China P. Rep.	7	209	45,226,038	1,373.00	
	India	6	1,445	3,886,008	2,434.00	
	Indonesia	5	126	26,804	0	
	Iraq	1	2	3,000	0	
	Lao P. Dem. Rep.	1	10	0	0	
	Malaysia	2	0	10,875	0	
	Mongolia	1	26	15,000	0.09	
	Nepal	2	117	257,786	60.00	
	Pakistan	3	102	75,080	0	
	Philippines	8	55	1,083,276	29.31	
	Saudi Arabia	1	161	10,000	900.00	
	Sri Lanka	3	3	380,000	0	
	Tajikistan	1	21	15,000	1.00	
	Thailand	1	15	200,000	0	
	Turkey	2	47	35,131	550.00	
	Viet Nam	2	37	740,000	0	
	Mass Movement	Afghanistan	1	10	32	0
		China P. Rep.	5	196	10,022	139.00
India		2	55	0	0	
Indonesia		2	29	5	0	
Japan		2	44	400	0	
Myanmar		1	24	1,351	0	
Nepal		1	10	0	0	
Philippines		1	10	16	0	
Turkey		2	15	6	0	
Viet Nam		1	13	1	0	
Yemen		1	11	0	0	
Storm	Bangladesh	2	197	3,954,550	270.00	
	Bhutan	1	12	0	0	
	Cambodia	2	19	178,091	0	
	China P. Rep.	10	169	23,296,806	3,601.45	
	Hong Kong	1	0	350	0	
	India	6	218	5,109,085	300.00	
	Japan	2	16	7,119	1,000.00	
	Lao P. Dem. Rep.	1	16	128,887	100.00	
	Philippines	14	1,242	12,221,663	932.70	
	Taiwan (China)	1	630	2,307,523	250.00	
	Viet Nam	3	306	2,977,460	1,065.20	
	Philippines	1	0	47,137	0	
	Volcano	Philippines	1	0	47,137	0
Grand Total		143	8317	174,106,414	22,104.51	

Source:

EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be.

Université Catholique de Louvain, Brussels (Belgium)

*Data from World Bank 2008; **Data from IMF World Economy Outlook Database

In Asia, flood accounts for 36 percent (52 incidences) of the total number of disasters in 2009, while storm accounts for 30 percent (43). Floods ravaged the Philippines 8 times, China 7 and India 6, while storms hit the same countries 14, 10 and 6 times, respectively. Mass movement (19) and earthquake (13) account for 13 and 9 percent of the total disasters, respectively, with China (5) and Indonesia (5) receiving the most disasters respectively. The other disasters that hit Asia in 2009 include 9 droughts (3 in China), 4 extreme temperature-related disasters, 3 epidemics, and 1 volcanic eruption (the Philippines).

Storm and flood account for 34 and 30 percent, respectively, of all disaster-related deaths in Asia in 2009. The Philippines and India reported the most number of deaths in these disasters, respectively. Drought, flood and storm are the most pervasive disasters in terms of total affected population (accounting for 39, 30 and 29 percent respectively), with China being the most affected country in all these categories. Storm (34%) is the most destructive disaster in terms of economic damage, followed by drought (27%) and flood (24%). In this index, China was the most affected country in the categories of drought and storm, while India sustained the most economic damage in flood category.

The Asian Disaster Reduction Center was established in Kobe, Japan in 1998 with the mission to enhance disaster resilience of its member-countries, to build safe communities, and to create a society where sustainable development is possible. The Center works to build disaster resilient communities and to establish networks among countries through many programs including personnel exchanges in this field.



Asian Disaster Reduction Center