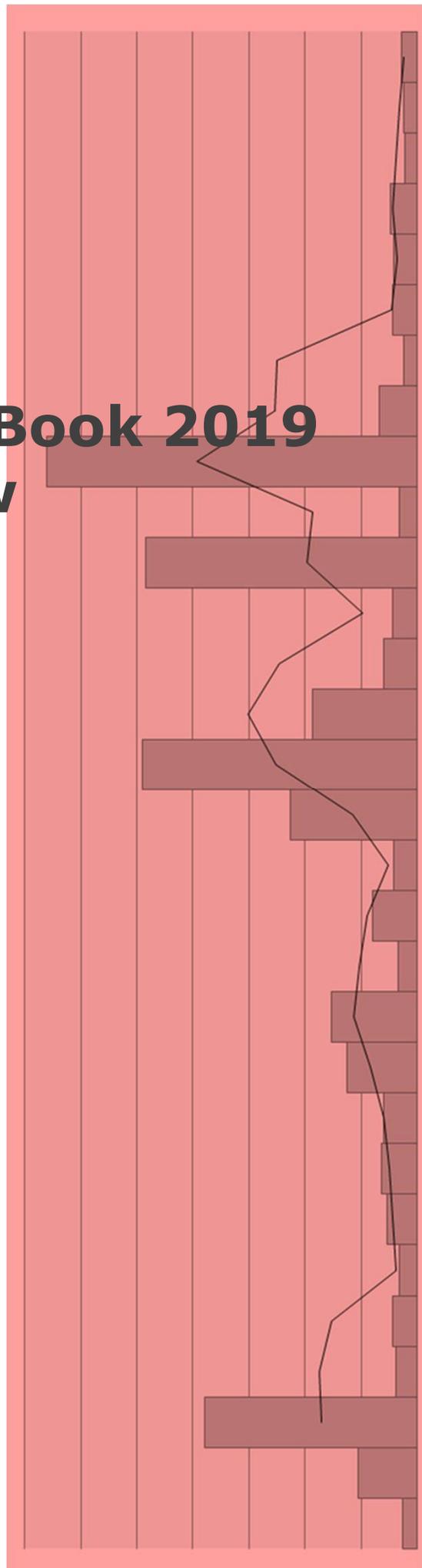


Natural Disaster Data Book 2019

An Analytical Overview



Asian Disaster Reduction Center

Overview

The Asian Disaster Reduction Center (ADRC) Natural Disasters Data Book 2019 provides statistical perspectives in figures and tables for 2019 as well as for the period 1990-2019 based on data obtained by EM-DAT.

According to EM-DAT, 440 natural disasters occurred in 2019 worldwide, killing 24,112 people and affecting approx. 100 million people. The estimated amount of economic damage came over US\$102 billion.

In 2019, the epidemics in the Republic of the Congo and the Democratic Republic of the Congo brought about serious damages to these countries causing 5,400 and 3,559 people killed respectively. India experienced a serious flooding during the monsoon season in this year, causing 1,900 deaths, as well as approx. 3 million people affected. In addition, Europe suffered heat waves in the summer of 2019 and France recorded 868 deaths. The cyclone Idai which brought devastations in the eastern Africa caused 628 and 603 deaths in Zimbabwe and Mozambique respectively, as well as approx. 270,000 and 1.5 million people affected.

The Cyclone Fani caused 20 million people affected in India and the drought in the DPR Korea affected 10.1 million people in 2019.

The Typhoon Hagibis which landed in Japan in October caused great economic damage of 17 billion US dollars on the country.

By region, Asia was ranked the highest in disaster occurrences, number of people affected and amount of economic damage with 38.2 percent in occurrences; number of people affected, 74.4 percent; and amount of economic damage, 60.6 percent. Africa has the largest share in number of people killed with 52.5 percent.

By disaster types, floods and storms accounted for high percentages in the most of indices in 2019. However, epidemic ranked the first in number of people killed in the world with 51.3 percent

Data Book 2019 also contains tables of the 25 worst disasters by number of people killed and affected, economic damage, and their respective ratios to population and gross domestic product (GDP). It also includes tables of 2019 disasters in Asian countries sorted by country and disaster type.

[Notes]

Source:

All disaster data are based on EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Data set was obtained on 20 July 2019, 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.

In this Data Book 2019 “people killed” are defined as persons confirmed as dead and persons missing and presumed dead. “People affected” are the sum of injured, homeless, and affected in EM-DAT. EM-DAT defines people affected as people requiring immediate assistance during the period of emergency; requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance.

Disaster Terms:

“Drought” includes an extended period of unusually low precipitation that produces a shortage of water for people, animals and plants.

“Earthquake” 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.

“Insect Infection” is pervasive influx and development of insects or parasites affecting humans, animals, crops and materials.

“Landslide” includes avalanche, debris, and rockfall.

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

“Volcanic activity” means volcanic eruption.

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

Classification of EM-DAT:

<https://www.emdat.be/classification>

Disclaimer:

Country and region classification used in this book is based on EM-DAT criteria.

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1. IMPACTS OF NATURAL DISASTERS BY REGION, 2019

This section shows the impacts of natural disasters in four indices, occurrence, number of deaths, number of people affected and economic damage that were reported across the world in 2019. As shown in Figure 1, Asia ranks the first among all regions in the categories of disaster occurrence, the number of people affected and the amount of economic damage accounting for 38.2 percent, 74.4 percent and 60.6 percent respectively. It would make sense as Asia has larger amount of land and populations compared to other regions. Asia suffers many floods and storms in 2019, which caused the high number of people affected and the amount of economic damage. Africa is ranked the highest in the number of people killed at 52.5 percent, which is largely attributed to epidemics occurred in the Democratic Republic of the Congo, as well as the Cyclone Idai that devastated 3-4 African nations such as Mozambique and Zimbabwe.

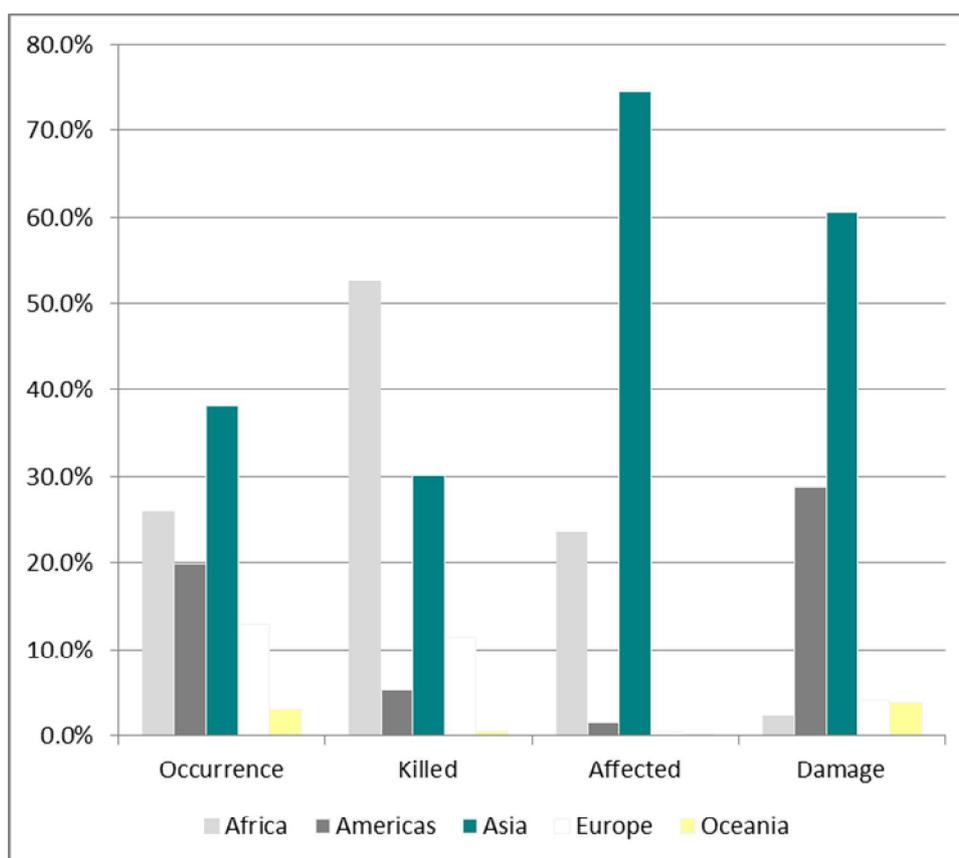


Figure 1: Impacts of Natural Disasters by Region, 2019

Table 1: Impacts of Natural Disasters by Region, 2019

Region	Impact							
	Occurrence (share in %)	Killed (share in %)	Affected (share in %)	Damage (US\$ million) (share in %)				
Africa	114	(25.9%)	12,659	(52.5%)	23,588,362	(23.5%)	2,447	(2.4%)
Americas	87	(19.8%)	1,306	(5.4%)	1,536,965	(1.5%)	29,633	(28.9%)
Asia	168	(38.2%)	7,282	(30.2%)	74,604,093	(74.4%)	62,175	(60.6%)
Europe	57	(13.0%)	2,757	(11.4%)	436,851	(0.4%)	4,310	(4.2%)
Oceania	14	(3.2%)	108	(0.4%)	57,465	(0.1%)	4,000	(3.9%)
Total	440	(100.0%)	24,112	(100.0%)	100,223,736	(100.0%)	102,565	(100.0%)

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

2. IMPACTS OF NATURAL DISASTERS BY DISASTER TYPE, 2019

Regarding the breakdown of impacts of disasters by disaster type, 2019 sees impacts by drought, epidemic, flood, and storm. Storm and flood account for high percentages in all the indices, which shows great impact to human lives and economies in 2019. Flood is the most frequent natural disasters occurred in 2019 so as other years and also shows high percentages of the number of people killed and affected, as well as the amount of economic damage. Storm accounts for 67.7 percent of the amount of economic damage although the number of occurrence is less than half of the one of flood. Epidemic tops at 51.3 percent of the number of people killed, following flood (21.2 percent) and extreme temperature (12.1 percent).

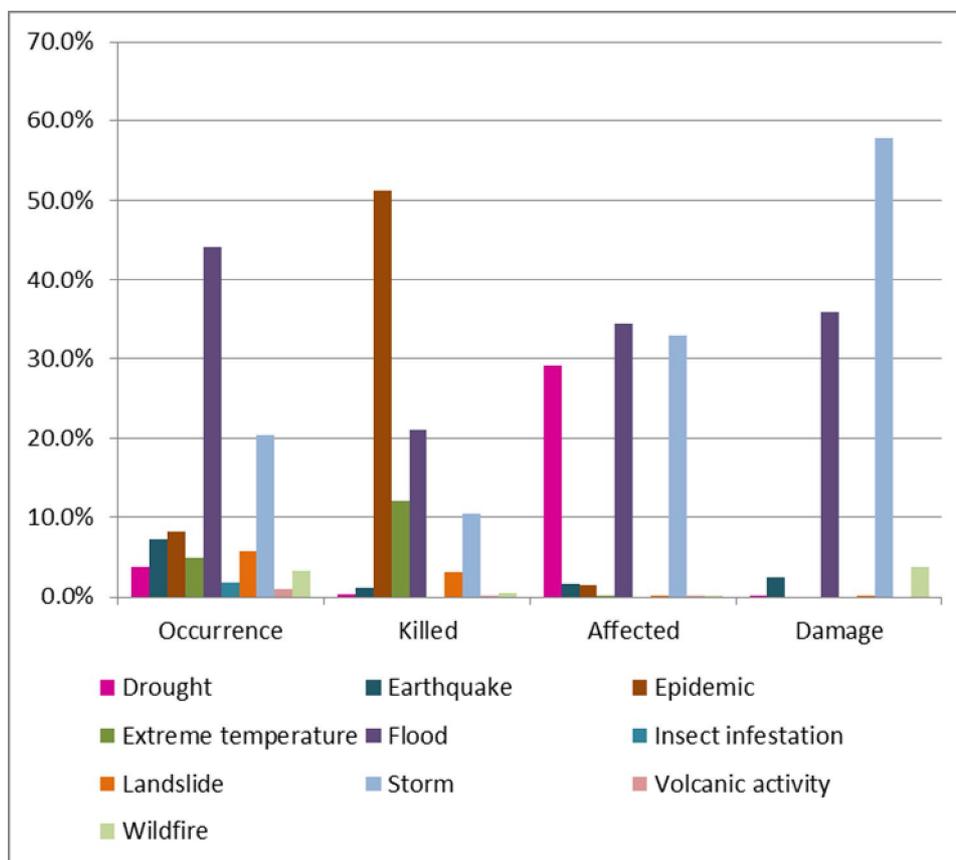


Figure 2: Impacts of Natural Disasters by Disaster Type, 2019

Table 2: Impacts of Natural Disasters by Disaster Type, 2019

Disaster Type	Impact							
	Occurrence (share in %)		Killed (share in %)		Affected (share in %)		Damage (US\$ million) (share in %)	
Drought	16	(3.6%)	85	(0.4%)	29,182,237	(29.1%)	135	(0.1%)
Earthquake	32	(7.3%)	262	(1.1%)	1,657,626	(1.7%)	2,409	(2.3%)
Epidemic	36	(8.2%)	12,362	(51.3%)	1,540,659	(1.5%)	0	(0.0%)
Extreme temperature	21	(4.8%)	2,909	(12.1%)	161,382	(0.2%)	0	(0.0%)
Flood	194	(44.1%)	5,105	(21.2%)	34,606,650	(34.5%)	36,828	(35.9%)
Insect infestation	8	(1.8%)	0	(0.0%)	0	(0.0%)	0	(0.0%)
Landslide	25	(5.7%)	727	(3.0%)	174,099	(0.2%)	200	(0.2%)
Storm	90	(20.5%)	2,525	(10.5%)	32,837,691	(32.8%)	59,262	(57.8%)
Volcanic activity	4	(0.9%)	21	(0.1%)	48,823	(0.0%)	0	(0.0%)
Wildfire	14	(3.2%)	116	(0.5%)	14,569	(0.0%)	3,731	(3.6%)
Total	440	(100.0%)	24,112	(100.0%)	100,223,736	(100.0%)	102,565	(100.0%)

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

3. IMPACTS OF NATURAL DISASTERS IN ASIA BY DISASTER TYPE, 2019

In this section, let's take a look at the overview of impacts of disasters by disaster type in Asia in 2019. Flood tops in occurrence and the number of people killed and affected. Storm is ranked the first in the amount of economic damage with 63.7 percent and the second in occurrence and the number of people affected. These two natural disasters dominate over 60 percent in each indice. Epidemic was counted as second for the number of people killed. Drought also causes the third highest number of the people affected this year.

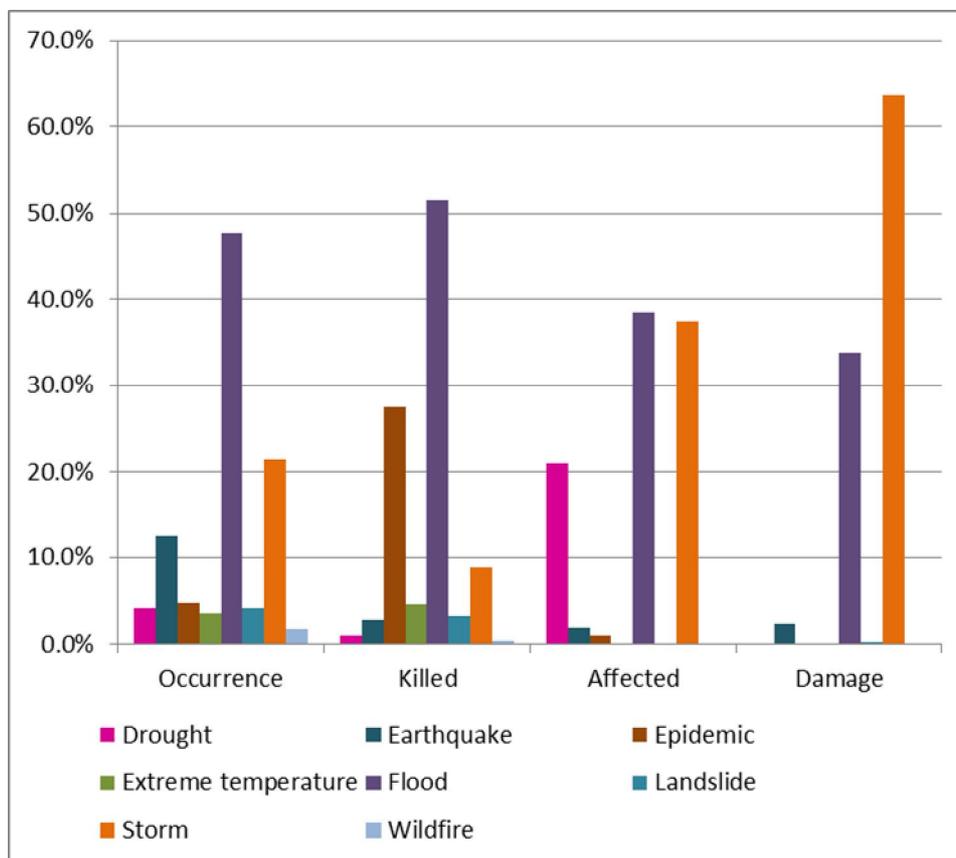


Figure 3: Impacts of Natural Disasters by Disaster Type in Asia, 2019

Table 3: Impacts of Natural Disasters by Disaster Type in Asia, 2019

Disaster Type	Impact							
	Occurrence (share in %)		Killed (share in %)		Affected (share in %)		Damage (US\$ million) (share in %)	
Drought	7	(4.2%)	77	(1.1%)	15,704,561	(21.1%)	0	(0.0%)
Earthquake	21	(12.5%)	206	(2.8%)	1,442,770	(1.9%)	1,464	(2.4%)
Epidemic	8	(4.8%)	2,001	(27.5%)	724,537	(1.0%)	0	(0.0%)
Extreme temperature	6	(3.6%)	335	(4.6%)	30,897	(0.0%)	0	(0.0%)
Flood	80	(47.6%)	3,750	(51.5%)	28,689,777	(38.5%)	20,927	(33.7%)
Landslide	7	(4.2%)	233	(3.2%)	32,165	(0.0%)	200	(0.3%)
Storm	36	(21.4%)	649	(8.9%)	27,976,351	(37.5%)	39,584	(63.7%)
Wildfire	3	(1.8%)	31	(0.4%)	3,035	(0.0%)	0	(0.0%)
Total	168	(100.0%)	7,282	(100.0%)	74,601,058	(100.0%)	62,175	(100.0%)

Source: EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

4. TRENDS OF WORLD NATURAL DISASTERS, 1990-2019

4-1 NUMBER OF DISASTERS IN THE WORLD (1990-2019)

The year 2019 sees an increase from the previous year's 334 to 440 in terms of the occurrence. The number shows almost as high at the years of 1999-2010. In the collective 5-year period representation of data in Figure 4-2, a downward trend could have been observed in the last 15 years starting from 2005-2009 period although 2015-2019 period shows a slight increase compared to 2000-2014 period.

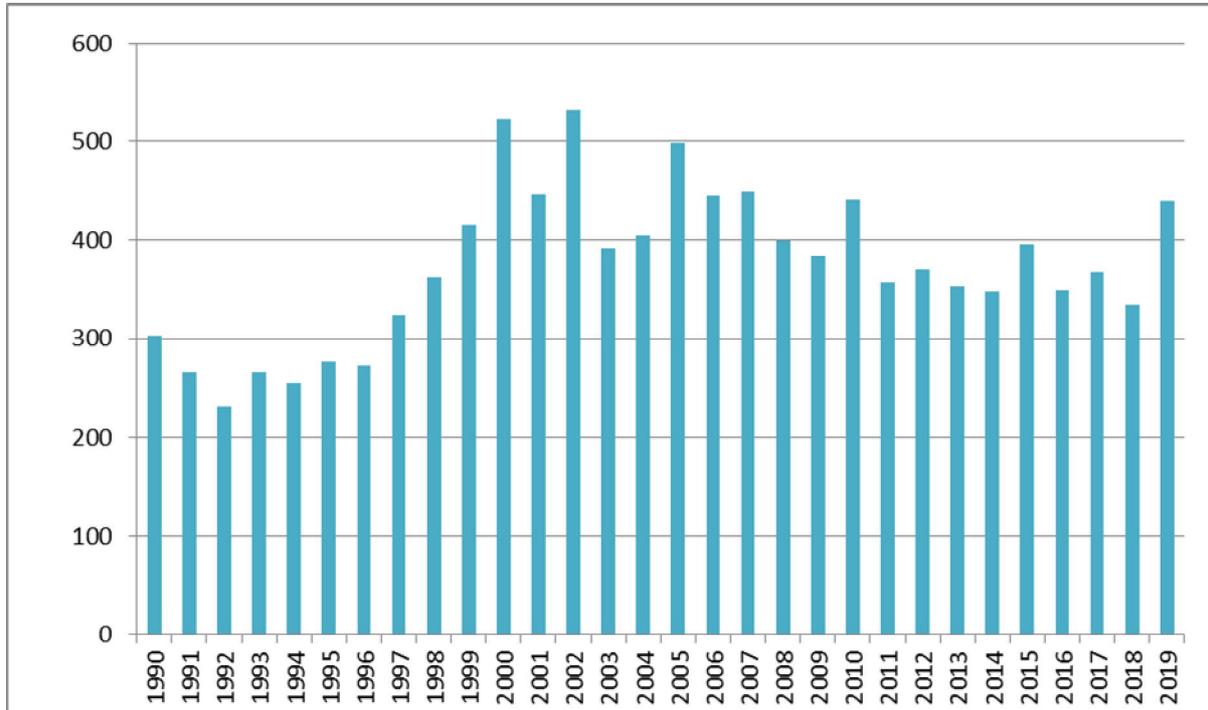


Figure 4-1: Disaster Occurrence, 1990-2019

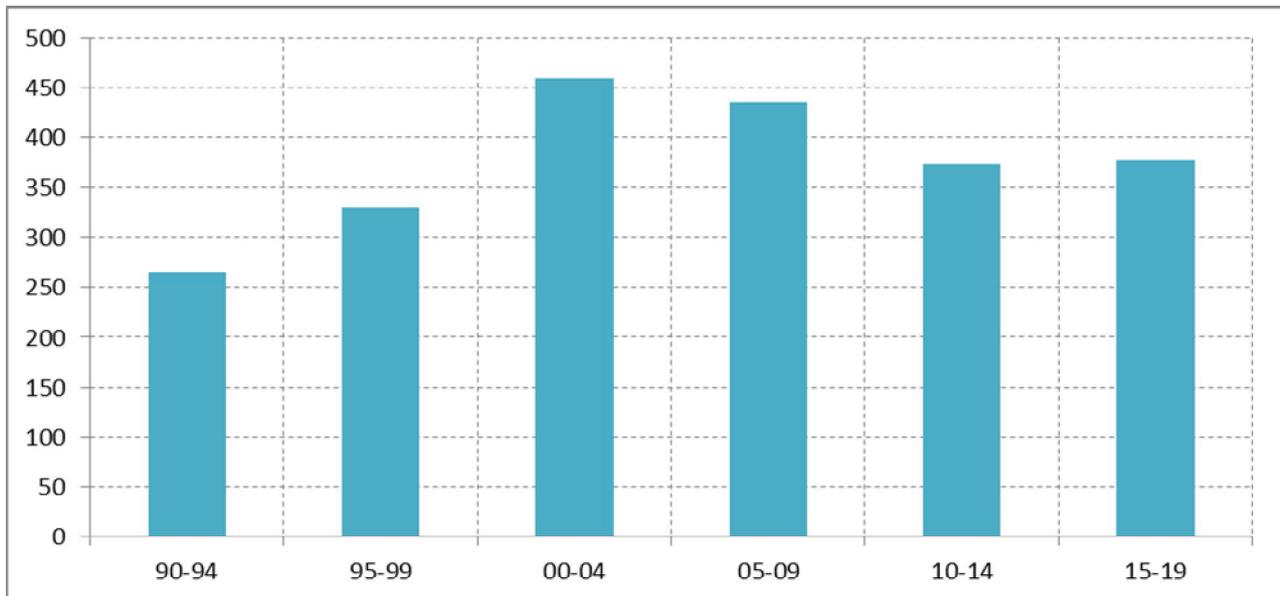


Figure 4-2: Disaster Occurrence (Average of 5-year period), 1990-2019

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

4-2 NUMBER OF PEOPLE KILLED IN THE WORLD (1990-2019)

The death toll in 2019 shows an increase from the previous year's 15,222 to 24,112 although it still shows a decrease trend from 2011. As seen in Figure 4-4 about the trend of the 5-year period average, the number of people killed for the period 2015-2019 shows drastic decrease from 83,738 to 17,234.

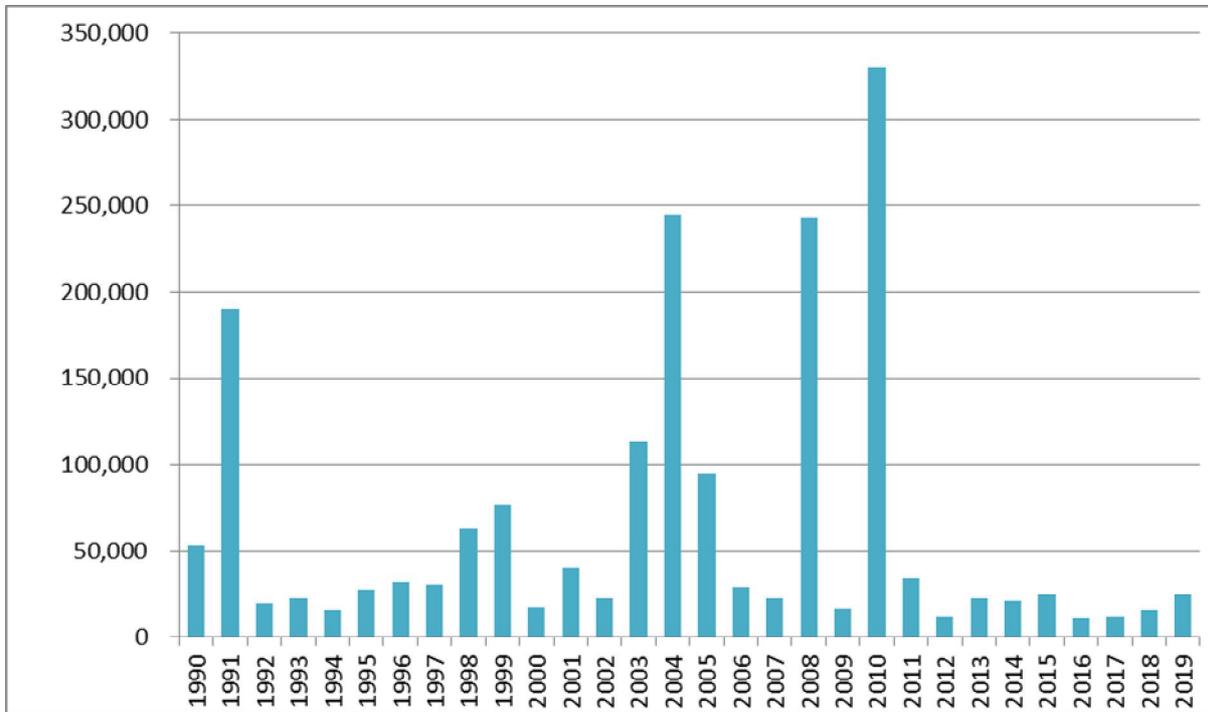


Figure 4-3: Number of People Killed, 1990-2019

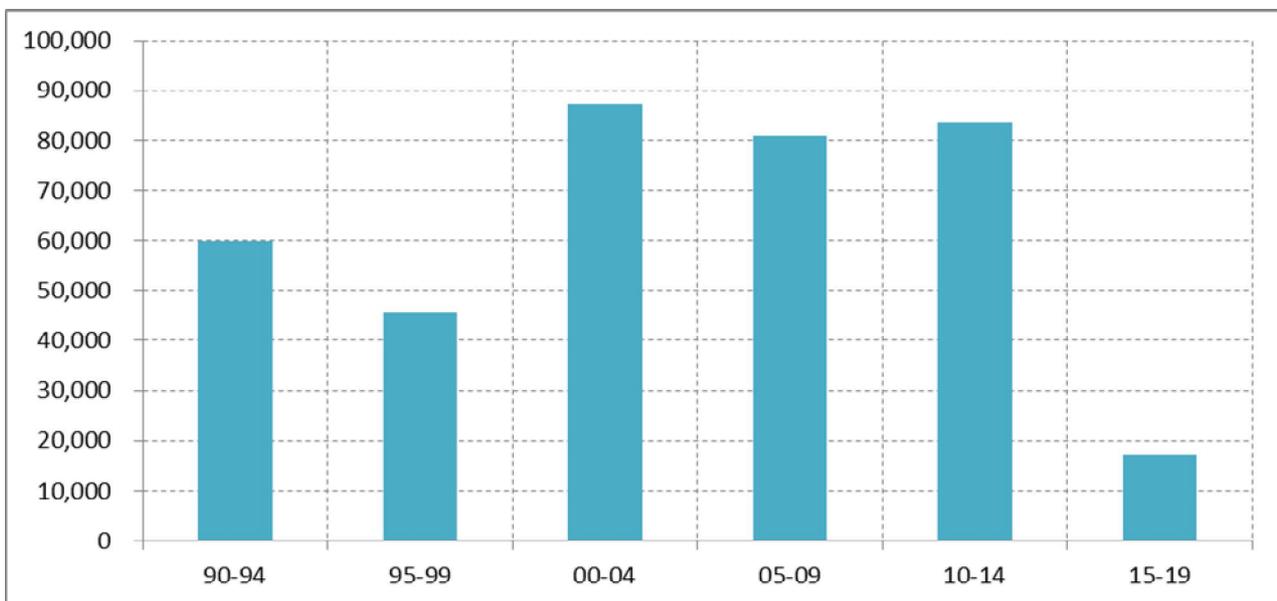


Figure 4-4: Number of People Killed (Average of 5-year period), 1990-2019

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

4-3 NUMBER OF PEOPLE AFFECTED IN THE WORLD (1990-2019)

Regarding the number of people affected, 2019 sees an increase from the previous year's 84,228,172 people to 100,223,736. The 5-year period average representation shows that the number of affected people has not changed much in the last 15 years although there is a decrease trend since the period 2000-2004.

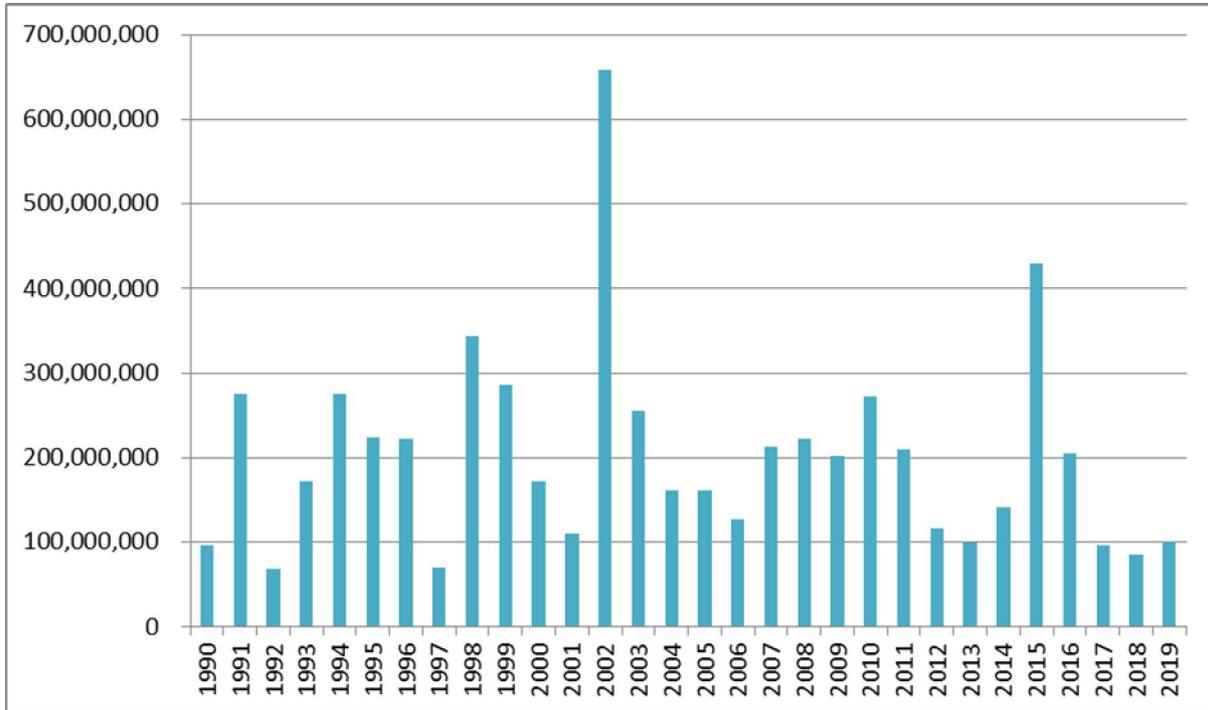


Figure 4-5: Total Number of People Affected, 1990-2019

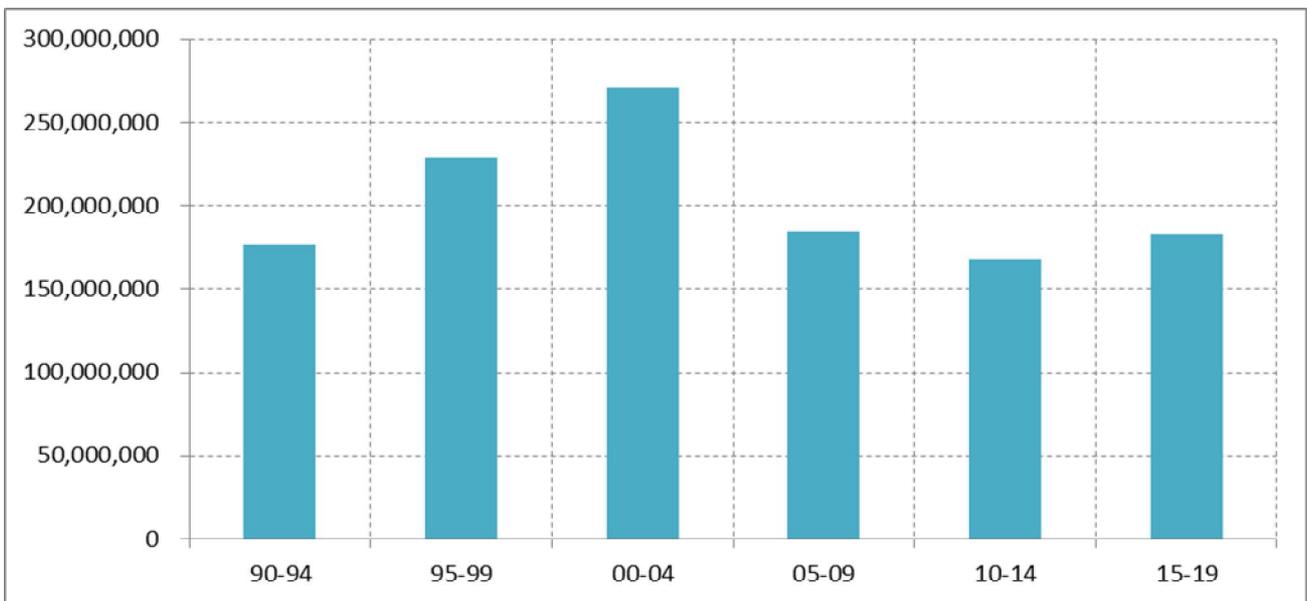


Figure 4-6: Number of People Affected (Average of 5 year period), 1990-2019

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

4-4 ECONOMIC DAMAGE IN THE WORLD (1990-2019)

Economic damage caused by natural disasters declines slightly from approx. US\$131 billion in 2018 to approx. US\$ 103 billion in 2019. However, in the 5-year period average analysis, an upward trend is shown in the last 15 years although the damage in the period 2015-2019 is lower than the one in the period 2010-2014.

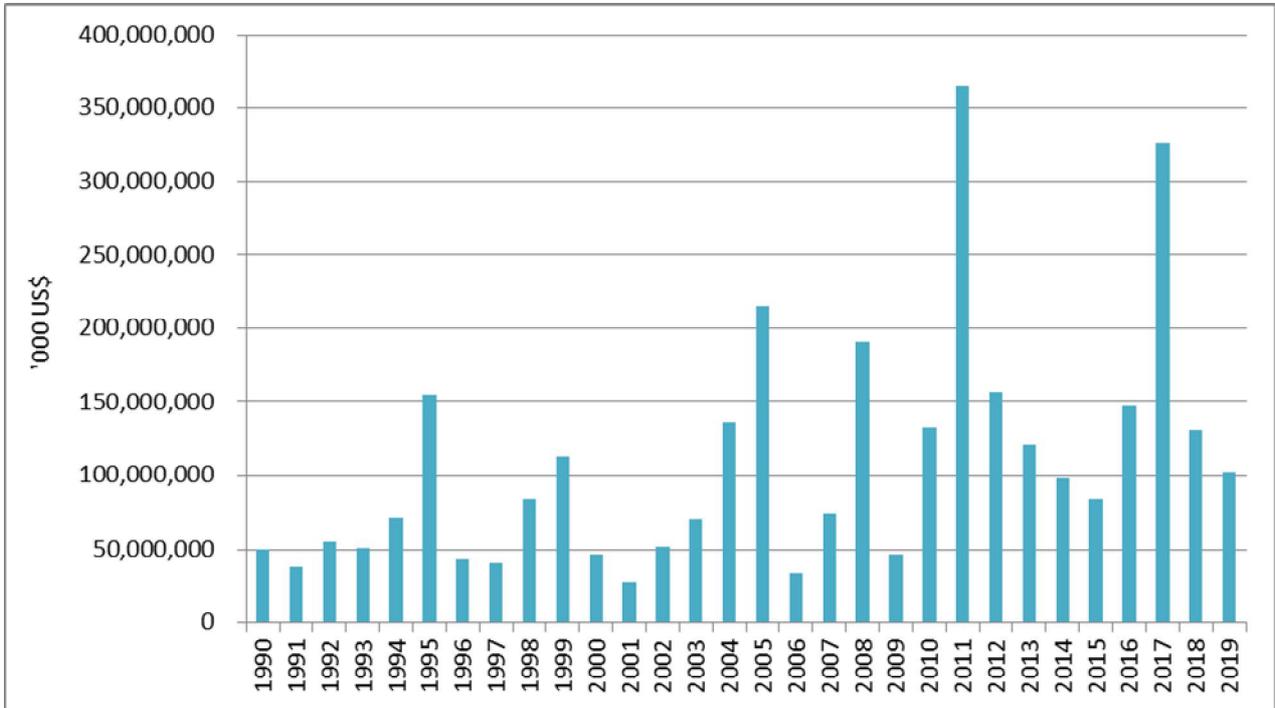


Figure 4-7: Amount of Damage, 1990-2019

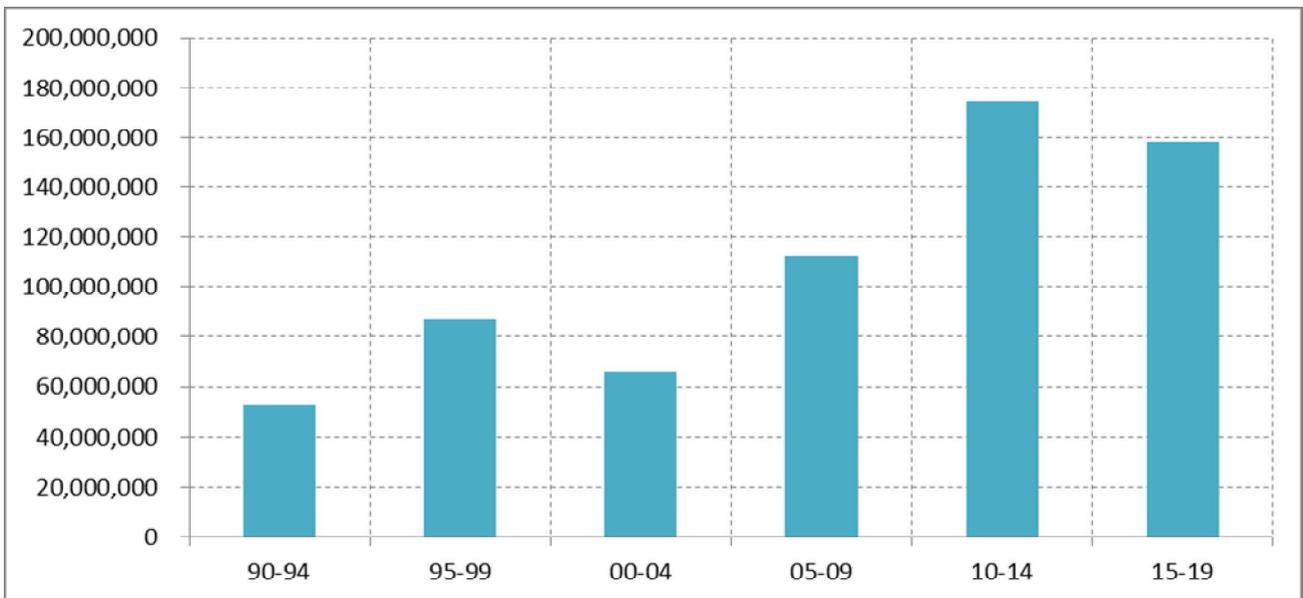


Figure 4-8: Economic Damage (Average of 5-year period), 1990-2019

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

5. IMPACTS OF WORLD NATURAL DISASTERS BY REGION, 1990-2019

For the period 1990-2019, Asia dominates and ranks the first in all natural disaster's impact categories across regions of the world. It would be natural in a way as Asia has larger amount of land and higher number of population compared to other regions. However, approx. 87 percent of the number of people affected in Asia can be considered too high compared to other regions. Americas rank the second in the economic damage with 41.4 percent, following Asia with 45.4 percent.

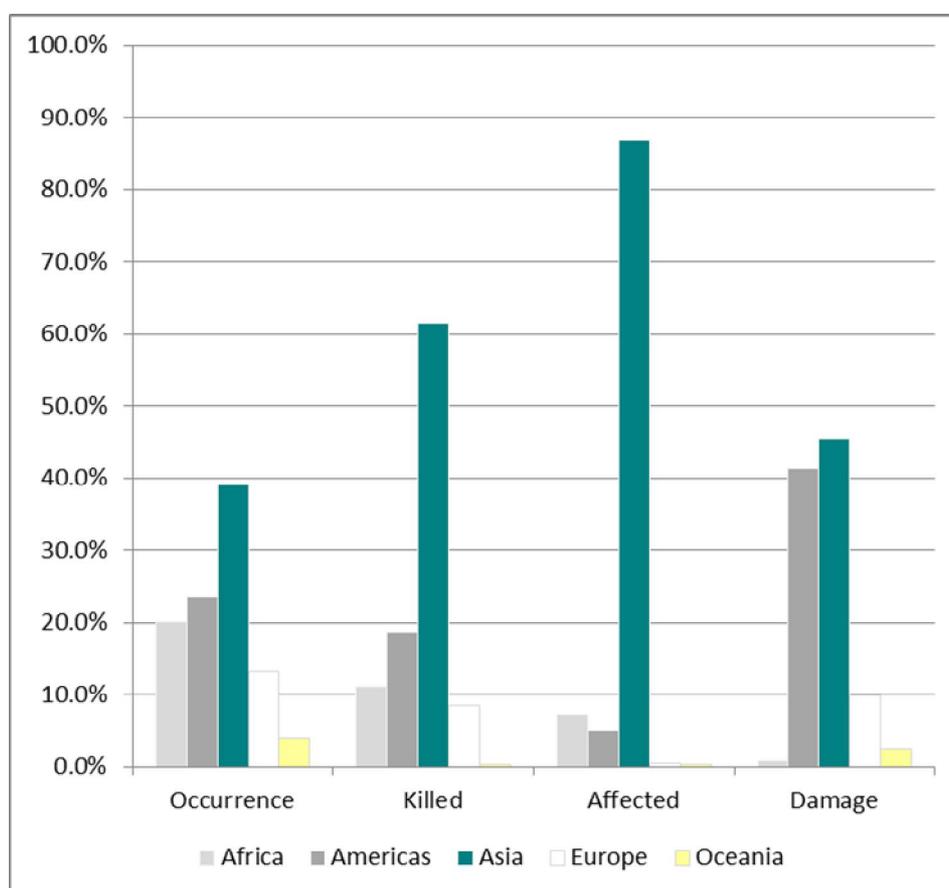


Figure 5: Impacts of World Natural Disasters by Region, 1990-2019

Table 5: Impacts of Natural Disasters by Region, 1990-2019

Region	Impact							
	Occurrence (share in %)		Killed (share in %)		Affected (share in %)		Damage (US\$ million) (share in %)	
Africa	2,261	(20.2%)	209,265	(11.2%)	435,440,592	(7.2%)	27,392	(0.8%)
Americas	2,634	(23.5%)	348,859	(18.6%)	307,919,502	(5.1%)	1,348,552	(41.4%)
Asia	4,382	(39.1%)	1,151,932	(61.5%)	5,259,237,131	(86.8%)	1,475,985	(45.4%)
Europe	1,486	(13.3%)	156,726	(8.4%)	31,766,233	(0.5%)	321,615	(9.9%)
Oceania	443	(4.0%)	5,769	(0.3%)	24,164,875	(0.4%)	80,309	(2.5%)
Total	11,206	(100.0%)	1,872,551	(100.0%)	6,058,528,333	(100.0%)	3,253,853	(100.0%)

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

6. THE 25 WORST DISASTERS IN ASIA 2019

6-1 THE 25 WORST DISASTERS IN ASIA BY NUMBER OF PEOPLE KILLED, 2019

For the number of people killed in Asia in 2019, India is ranked in the first with the flood occurred during the monsoon season from July to September, claiming 1,900 people's lives. In 2019, six epidemic events come into the list showing that it claims many lives of people in Yemen, the Philippines, India and Pakistan. Flood occupies 11 ranks in total out of the 25 worst disaster in Asia by number of people killed in 2019.

Table 6-1: The 25 Worst Disasters in Asia by Number of People Killed, 2019

	Disaster Type	Country	Date	Killed	Affected	Economic Damage (US\$ Million)
1	Flood	India	14/07/2019	1,900	3,000,000	10,000
2	Epidemic	Yemen	01/01/2019	713	461,542	0
3	Epidemic	Philippines	01/01/2019	492	106,630	0
4	Epidemic	Philippines	01/01/2019	333	22,967	0
5	Flood	China	12/06/2019	300	4,500,000	6,200
6	Epidemic	Yemen	01/2019	219	59,486	0
7	Flood	Indonesia	16/03/2019	206	59,540	103
8	Extreme temperature	Japan	29/07/2019	162	18,347	0
9	Epidemic	India	01/01/2019	121	418	0
10	Flood	Nepal	08/07/2019	119	82,541	204
11	Flood	Myanmar	08/08/2019	115	1,875	0
12	Flood	Bangladesh	07/07/2019	114	7,600,000	75
13	Storm	Japan	12/10/2019	99	390,470	17,000
14	Epidemic	Pakistan	01/01/2019	95	53,834	0
15	Extreme temperature	India	06/2019	90		0
16	Landslide	Indonesia	21/01/2019	84	6,643	0
17	Drought	Pakistan	01/2019	77	4,680,912	0
18	Storm	China	10/08/2019	72	108,000	10,000
19	Flood	Iran	19/03/2019	70	10,001,076	2,500
20	Flood	Indonesia	31/12/2019	66	501,110	1,200
21	Flood	Pakistan	16/07/2019	64	871	0
22	Flood	Afghanistan	02/03/2019	63	129,100	0
23	Storm	Philippines	24/12/2019	63	3,297,246	16
24	Flood	India	28/06/2019	52	60	0
25	Landslide	China	23/07/2019	51	40	0

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

6-2 THE 25 WORST DISASTERS IN ASIA BY NUMBER OF PEOPLE KILLED PER MILLION POPULATION, 2019

Using the ratio of the number of people killed to total country population, the epidemics in Yemen (Cholera and Dengue) rank the first and second with 25.02 and 7.68 persons killed per one million respectively. By disaster type, epidemics occupy the top 3 lists although floods did 15 out of the 25 worst disasters in Asia by number of people killed per population in 2019. In this list, epidemics and floods rank 20 out of the 25 lists, followed by three storm events, one extreme temperature and one landslide.

Table 6-2: The 25 Worst Disasters in Asia by Number of People Killed per Million Population, 2019

	Disaster Type	Country	Date	Killed per million	Killed	Population
1	Epidemic	Yemen	01/01/2019	25.02	713	28,498,687
2	Epidemic	Yemen	01/2019	7.68	219	28,498,687
3	Epidemic	Philippines	01/01/2019	4.61	492	106,651,922
4	Flood	Nepal	08/07/2019	4.24	119	28,087,871
5	Flood	Mongolia	15/06/2019	3.79	12	3,170,208
6	Epidemic	Philippines	01/01/2019	3.12	333	106,651,922
7	Flood	Lao PDR	10/09/2019	2.27	16	7,061,507
8	Flood	Myanmar	08/08/2019	2.14	115	53,708,395
9	Flood	Afghanistan	02/03/2019	1.69	63	37,172,386
10	Flood	India	14/07/2019	1.40	1,900	1,352,617,328
11	Epidemic	Sri Lanka	01/2019	1.29	28	21,670,000
12	Extreme temperature	Japan	29/07/2019	1.28	162	126,529,100
13	Flood	Oman	18/05/2019	1.24	6	4,829,483
14	Landslide	Afghanistan	11/12/2019	1.08	40	37,172,386
15	Storm	Nepal	30/03/2019	1.00	28	28,087,871
16	Flood	Afghanistan	18/03/2019	0.94	35	37,172,386
17	Flood	Iran	19/03/2019	0.86	70	81,800,269
18	Flood	Afghanistan	06/01/2019	0.81	30	37,172,386
19	Storm	Japan	12/10/2019	0.78	99	126,529,100
20	Flood	Indonesia	16/03/2019	0.77	206	267,663,435
21	Flood	Cambodia	11/09/2019	0.74	12	16,249,798
22	Flood	Bangladesh	07/07/2019	0.71	114	161,356,039
23	Flood	Afghanistan	22/05/2019	0.65	24	37,172,386
24	Storm	Philippines	24/12/2019	0.59	63	106,651,922
25	Flood	Sri Lanka	29/11/2019	0.55	12	21,670,000

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

Note: Population data is taken from World Bank 2018, with the exception of Taiwan (China) for which the data was extracted from the IMF World Economy Outlook Database 2018.

6-3 THE 25 WORST DISASTERS IN ASIA BY NUMBER OF PEOPLE AFFECTED, 2019

In terms of the number of people affected, the storm in India ranks the first with 20 million people affected, following the drought in DPR Korea with 10.1million people affected and the flood in Iran with approx. 10 million people affected. In 2019, the number of disaster events that affected more than one million amounts to 9. By disaster type, flood events count 10 out of the 25 worst disasters in Asia by number of people affected in 2019, followed by storms with 6.

Table 6-3: The 25 Worst Disasters in Asia by Number of People Affected, 2019

Disaster Type	Country	Date	Killed	Affected	Economic Damage (US\$ Million)
1 Storm	India	03/05/2019	50.00	20,000,000	1,810
2 Drought	DPR Korea	01/2019	0	10,100,000	0
3 Flood	Iran	19/03/2019	70	10,001,076	2,500
4 Flood	Bangladesh	07/07/2019	114	7,600,000	75
5 Drought	Pakistan	01/2019	77	4,680,912	0
6 Flood	China	13/06/2019	300	4,500,000	6,200
7 Storm	Philippines	24/12/2019	63	3,297,246	16
8 Flood	India	14/07/2019	1,900	3,000,000	10,000
9 Storm	Philippines	2/12/2019	4	2,647,558	109
10 Storm	Thailand	04/01/2019	7	720,885	0
11 Drought	Viet Nam	07/2019	0	685,558	0
12 Flood	Indonesia	31/12/2019	66	501,110	1,200
13 Epidemic	Yemen	01/01/2019	713	461,542	0
14 Flood	Cambodia	11/09/2019	12	435,000	0
15 Earthquake	Philippines	15/12/2019	14	394,565	0
16 Storm	Japan	12/10/2019	99	390,470	17,000
17 Flood	China	15/07/2019	17	360,000	0
18 Flood	Lao PDR	10/09/2019	16	309,176	0
19 Earthquake	Philippines	31/10/2019	23	260,703	0
20 Storm	Bangladesh	09/11/2019	40	251,506	6
21 Earthquake	Indonesia	26/09/2019	31	247,418	0
22 Earthquake	China	17/06/2019	13	244,220	1,300
23 Flood	Syria	30/03/2019	2	235,000	0
24 Drought	Sri Lanka	08/2019	0	222,091	0
25 Flood	Indonesia	06/03/2019	9	168,397	0

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

6-4 THE 25 WORST DISASTERS IN ASIA BY NUMBER OF PEOPLE AFFECTED PER THOUSAND POPULATION, 2019

Using the index of the people affected per thousand population, the drought in DPR Korea results in 395 people affected per thousand population following Iran with 122, which are also ranked the second and the third in the previous list (Table 6-3: The Worst Disasters in Asia by Number of People Affected, 2019) on page 12. These two disasters show higher ratios than the rest of disaster events ranked in this list. Among top 25 lists, storm and flood disasters occupy 19 ranks out of the 25 worst disasters in Asia by number of people affected per thousand population in 2019.

Table 6-4: The 25 Worst Disasters in Asia by Number of People Affected per Thousand Population, 2019

	Disaster Type	Country	Date	Affected per thousand	Affected	Population
1	Drought	DPR Korea	01/2019	395.31	10,100,000	25,549,819
2	Flood	Iran	19/03/2019	122.26	10,001,076	81,800,269
3	Flood	Bangladesh	07/07/2019	47.10	7,600,000	161,356,039
4	Flood	Lao PDR	10/09/2019	43.78	309,176	7,061,507
5	Storm	Philippines	24/12/2019	30.92	3,297,246	106,651,922
6	Flood	Cambodia	11/09/2019	26.77	435,000	16,249,798
7	Storm	Philippines	2/12/2019	24.82	2,647,558	106,651,922
8	Drought	Pakistan	01/2019	22.06	4,680,912	212,215,030
9	Epidemic	Yemen	01/01/2019	16.20	461,542	28,498,687
10	Storm	India	03/05/2019	14.79	20,000,000	1,352,617,328
11	Flood	Syria	30/03/2019	13.90	235,000	16,906,283
12	Storm	Thailand	04/01/2019	10.38	720,885	69,428,524
13	Drought	Sri Lanka	08/2019	10.25	222,091	21,670,000
14	Flood	Sri Lanka	02/12/2019	7.73	167,436	21,670,000
15	Drought	Viet Nam	07/2019	7.18	685,558	95,540,395
16	Flood	Sri Lanka	29/11/2019	7.15	155,009	21,670,000
17	Flood	Sri Lanka	23/09/2019	6.30	136,607	21,670,000
18	Storm	Armenia	27/06/2019	3.96	11,700	2,951,776
19	Earthquake	Philippines	15/12/2019	3.70	394,565	106,651,922
20	Flood	Maldives	30/05/2019	3.49	1,800	515,696
21	Flood	Afghanistan	02/03/2019	3.47	129,100	37,172,386
22	Flood	China	13/06/2019	3.23	4,500,000	1,392,730,000
23	Storm	Japan	12/10/2019	3.09	390,470	126,529,100
24	Flood	Sri Lanka	18/12/2019	2.98	64,614	21,670,000
25	Flood	Nepal	08/07/2019	2.94	82,541	28,087,871

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

Note: Population data is taken from World Bank 2018, with the exception of Taiwan (China) for which the data was extracted from the IMF World Economy Outlook Database 2018.

6-5 THE 25 WORST DISASTERS IN ASIA BY ECONOMIC DAMAGE, 2019

According to the EM-DAT database, the storm in Japan tops in the 25 ranks of the worst economic damage in Asia in 2019 with US\$ 17 billion. Another storm in Japan appears as the fourth rank with US\$ 0.9 billion of economic damage. The flood in India ranks second with US\$ 10 billion damage, which also causes not only economic damage, but also extensive human impact in the country. By country, China occupies 9 out of the 25 worst disasters in Asia by economic damage in 2019. By disaster type, flood and storm have the largest shares with 11 and 10 ranks respectively out of the worst 25.

Table 6-5: The 25 Worst Disasters in Asia by Economic Damage, 2019

	Disaster Type	Country	Date	Total deaths	Total affected	Economic Damage (US\$ Million)
1	Storm	Japan	12/10/2019	99	390,470	17,000
2	Flood	India	14/07/2019	1,900	3,000,000	10,000
2	Storm	China	10/08/2019	72	108,000	10,000
4	Storm	Japan	08/10/2019	3	120,150	9,100
5	Flood	China	13/06/2019	300	4,500,000	6,200
6	Flood	Iran	19/03/2019	70	10,001,076	2,500
7	Storm	India	03/05/2019	50	20,000,000	1,810
8	Earthquake	China	17/06/2019	13	244,220	1,300
9	Flood	Indonesia	31/12/2019	66	501,110	1,200
10	Storm	Republic of Korea	02/10/2019	15	1,411	553
11	Storm	Philippines	18/07/2019	4	2,000	377
12	Flood	China	29/07/2019	0	11,400	315
13	Storm	China	02/10/2019	3	0	263
14	Flood	Nepal	08/07/2019	119	82,541	204
15	Landslide	China	19/08/2019	38	6,606	200
16	Storm	China	03/07/2019	6	45,120	145
17	Storm	China	05/09/2019	0	0	131
18	Storm	Philippines	02/12/2019	4	2,647,558	109
19	Flood	Indonesia	16/03/2019	206	59,540	103
20	Flood	Japan	27/08/2019	1	302	100
21	Earthquake	Iran	08/11/2019	6	23,084	90
22	Flood	China	15/10/2019	14	0	90
23	Flood	Iran	09/03/2019	5	20	80
24	Flood	Bangladesh	07/07/2019	114	7,600,000	75
25	Earthquake	Philippines	22/04/2019	25	15,555	50

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

6-6 THE 25 WORST DISASTERS IN ASIA BY RATIO OF ECONOMIC DAMAGE TO GDP, 2019

In terms of economic damage incurred relative to gross domestic product (GDP), the flood in Nepal results in the highest damage with approx. 0.7 percent of the GDP, which ranks 14th in the previous Table 6-5 (The worst disasters in Asia by ratio of economic damage to GDP in 2019). By disaster type, only three disasters, such as flood, storm and earthquake rank in the list with 11, 10 and 4 events, respectively. The Philippines occupy 5 out of the 25 worst disasters in Asia by ratio of economic damage to GDP (Table 6-6), in contrast to 3 out of 25 in the previous list (Table 6-5: The Worst Disasters in Asia by Economic Damage, 2019) on page 14. On contrary, China occupies 4 out of the 25 worst disasters in Asia by ratio of economic damage to GDP (Table 6-6) although it ranks 9 out of the previous list (Table 6-5: The Worst Disasters in Asia by Economic Damage, 2019) on page 14.

Table 6-6: The 25 Worst Disasters in Asia by Ratio of Economic Damage to GDP, 2019

Disaster Type	Country	Date	Economic Damage / GDP (as per cent)	Economic Damage (US\$ Million)	GDP (US\$ Million)
1 Flood	Nepal	08/07/2019	0.6993	204	29,174
2 Flood	Iran	19/03/2019	0.5804	2,500	430,082
3 Flood	India	14/07/2019	0.3686	10,000	2,713,165
4 Storm	Japan	12/10/2019	0.3431	17,000	4,954,807
5 Storm	Japan	08/10/2019	0.1837	9,100	4,954,807
6 Flood	Indonesia	31/12/2019	0.1151	1,200	1,042,240
7 Storm	Philippines	18/07/2019	0.1088	377	346,842
8 Storm	China	10/08/2019	0.0720	10,000	13,894,817
9 Storm	India	03/05/2019	0.0667	1,810	2,713,165
10 Flood	China	13/06/2019	0.0446	6,200	13,894,817
11 Storm	Republic of Korea	02/10/2019	0.0321	553	1,720,579
12 Storm	Philippines	2/12/2019	0.0315	109	346,842
13 Flood	Bangladesh	07/07/2019	0.0274	75	274,039
14 Earthquake	Iran	08/11/2019	0.0209	90	430,082
15 Flood	Iran	09/03/2019	0.0186	80	430,082
16 Flood	Viet Nam	05/08/2019	0.0184	45	245,214
17 Earthquake	Philippines	22/04/2019	0.0144	50	346,842
18 Storm	Philippines	10/11/2019	0.0104	36	346,842
19 Flood	Indonesia	16/03/2019	0.0099	103	1,042,240
20 Earthquake	China	17/06/2019	0.0094	1,300	13,894,817
21 Earthquake	Pakistan	24/09/2019	0.0054	17	314,568
22 Storm	Philippines	24/12/2019	0.0045	16	346,842
23 Flood	China	29/07/2019	0.0023	315	13,894,817
24 Storm	Bangladesh	09/11/2019	0.0021	6	274,039
25 Flood	Japan	27/08/2019	0.0020	100	4,954,807

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

Note: GDP data is taken from World Bank 2018, with the exception of the data for Iran and Taiwan (China), which was extracted from the IMF World Economy Outlook Database 2018. In addition, DPR Korea and Syria were excluded from making this list as data on their GDP is not available either on the World Bank 2018 or the IMF World Economy Outlook Database 2018.

7. DISASTERS IN ASIA BY COUNTRY, 2019

Country	Disaster Type	Occurrence	Total deaths	Total affected	Damage ('000 US\$)
Afghanistan	Flood	6	171	130,942	0
	Landslide	1	40	0	0
Armenia	Storm	1		11,700	0
Bangladesh	Extreme temperature	1	50	4,500	0
	Flood	1	114	7,600,000	75,000
	Landslide	1	2	18,016	0
	Storm	3	94	261,551	5,785
Cambodia	Flood	1	12	435,000	0
China	Earthquake	4	17	308,156	1,302,000
	Flood	6	355	4,887,261	6,605,000
	Landslide	2	89	6,646	200,000
	Storm	4	81	153,120	10,539,000
	Wildfire	1	30	0	0
Georgia	Flood	1		5,088	0
India	Epidemic	2	121	1,318	0
	Extreme temperature	2	112	450	0
	Flood	5	2,023	3,070,060	10,000,000
	Storm	5	172	20,130,000	1,810,000
Indonesia	Earthquake	5	54	264,384	0
	Flood	11	326	928,887	1,318,000
	Landslide	2	89	7,503	0
	Wildfire	1	0	0	0
Iran	Earthquake	2	7	25,184	90,000
	Flood	3	76	10,001,202	2,580,000
Iraq	Flood	1	10	5,865	0
Japan	Earthquake	1	0	460	0
	Extreme temperature	2	173	23,947	0
	Flood	3	13	1,172	100,000
	Storm	4	102	512,641	26,110,000
DPR Korea	Drought	1		10,100,000	0
	Storm	1	5	27,801	24,000
Rep. of Korea	Storm	3	20	84,852	553,000
	Wildfire	1	1	3,035	0
Lao PDR	Drought	1		0	0
	Flood	1	16	309,176	0
Lebanon	Storm	1	3	11,009	0
Malaysia	Flood	4	2	22,477	0
Maldives	Flood	1		1,800	0
Mongolia	Extreme temperature	1		2,000	0
	Flood	1	12	500	0
	Storm	1		500	0
Myanmar	Flood	2	115	8,075	0
	Landslide	1	13	0	0
Nepal	Flood	1	119	82,541	204,000
	Storm	1	28	14,854	0
Oman	Flood	1	6	0	0

Country	Disaster Type	Occurrence	Total deaths	Total affected	Damage ('000 US\$)
Pakistan	Drought	1	77	4,680,912	0
	Earthquake	1	39	130,398	17,000
	Epidemic	1	95	53,834	0
	Flood	8	206	897	0
	Storm	1	39	135	0
Philippines	Drought	1	0	16,000	0
	Earthquake	7	88	712,735	55,258
	Epidemic	2	825	129,597	0
	Flood	1	0	45,000	0
	Storm	7	92	6,025,139	538,313
Saudi Arabia	Flood	3	20	1,418	0
Sri Lanka	Drought	1	0	222,091	0
	Epidemic	1	28	18,760	0
	Flood	5	30	531,866	0
Syria	Flood	1	2	235,000	0
Taiwan (China)	Storm	1	2	0	0
Tajikistan	Flood	1	4	6,750	0
Thailand	Drought	1	0	0	0
	Flood	1	19	158,000	0
	Storm	1	7	720,885	0
Turkey	Earthquake	1	1	1453	0
	Flood	3	18	15290	0
Viet Nam	Drought	1	0	685558	0
	Flood	5	55	125010	45000
	Storm	2	4	22164	4000
Yemen	Epidemic	2	932	521028	0
	Flood	3	26	80500	0
Total		168	7,282	74,604,093	62,175,356

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir – www.emdat.be, Brussels, Belgium

This table shows sum of disaster impacts in Asia in 2019.

In 2019, China, India, Indonesia, Japan, Pakistan and the Philippines are recorded over 10 natural disasters in the year of 2019. India accounts for the highest in the number of people killed by 33.34 percent, followed by the Philippines with 13.80 percent. India is ranked for the most number people affected by 31.10 percent, followed by DPR Korea and Iran with 13.58 percent and 13.44 percent respectively. For economic damage, Japan has the largest share by 42.15 percent, followed by China with 29.99 percent.

8. DISASTERS IN ASIA BY DISASTER TYPE, 2019

Disaster Type	Country	Occurrence	Total deaths	Total affected	Damage ('000 US\$)
Drought	DPR Korea	1	0	10,100,000	0
	Lao PDR	1	0	0	0
	Pakistan	1	77	4,680,912	0
	Philippines	1	0	16,000	0
	Sri Lanka	1	0	222,091	0
	Thailand	1	0	0	0
	Viet Nam	1	0	685,558	0
Earthquake	China	4	17	308,156	1,302,000
	Indonesia	5	54	264,384	0
	Iran	2	7	25,184	90,000
	Japan	1	0	460	0
	Pakistan	1	39	130,398	17,000
	Philippines	7	88	712,735	55,258
	Turkey	1	1	1,453	0
Epidemic	India	2	121	1,318	0
	Pakistan	1	95	53,834	0
	Philippines	2	825	129,597	0
	Sri Lanka	1	28	18,760	0
	Yemen	2	932	521,028	0
Extreme temperature	Bangladesh	1	50	4,500	0
	India	2	112	450	0
	Japan	2	173	23,947	0
	Mongolia	1	0	2,000	0
Flood	Afghanistan	6	171	130,942	0
	Bangladesh	1	114	7,600,000	75,000
	Cambodia	1	12	435,000	0
	China	6	355	4,887,261	6,605,000
	Georgia	1	0	5,088	0
	India	5	2,023	3,070,060	10,000,000
	Indonesia	11	326	928,887	1,318,000
	Iran	3	76	10,001,202	2,580,000
	Iraq	1	10	5,865	0
	Japan	3	13	1,172	100,000
	Lao PDR	1	16	309,176	0
	Malaysia	4	2	22,477	0
	Maldives	1	0	1,800	0
	Mongolia	1	12	500	0
	Myanmar	2	115	8,075	0
	Nepal	1	119	82,541	204,000
	Oman	1	6	0	0
	Pakistan	8	206	897	0
	Philippines	1	0	45,000	0
	Saudi Arabia	3	20	1,418	0
Sri Lanka	5	30	531,866	0	
Syria	1	2	235,000	0	
Tajikistan	1	4	6,750	0	

Disaster Type	Country	Occurrence	Total deaths	Total affected	Damage ('000 US\$)
Flood	Thailand	1	19	158,000	0
	Turkey	3	18	15,290	0
	Viet Nam	5	55	125,010	45,000
	Yemen	3	26	80,500	0
Landslide	Afghanistan	1	40	0	0
	Bangladesh	1	2	18,016	0
	China	2	89	6,646	200,000
	Indonesia	2	89	7,503	0
	Myanmar	1	13	0	0
Storm	Armenia	1	0	11,700	0
	Bangladesh	3	94	261,551	5,785
	China	4	81	153,120	10,539,000
	India	5	172	20,130,000	1,810,000
	Japan	4	102	512,641	26,110,000
	DPR Korea	1	5	27,801	24,000
	Rep. of Korea	3	20	84,852	553,000
	Lebanon	1	3	11,009	0
	Mongolia	1	0	500	0
	Nepal	1	28	14,854	0
	Pakistan	1	39	135	0
	Philippines	7	92	6,025,139	538,313
	Taiwan (China)	1	2	0	0
	Thailand	1	7	720,885	0
	Viet Nam	2	4	22,164	4,000
Wildfire	China	1	30	0	0
	Indonesia	1	0	0	0
	Rep. of Korea	1	1	3,035	0
Total		168	7,282	74,604,093	62,175,356

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir – www.emdat.be, Brussels, Belgium

This table shows disasters in Asia in 2019 by disaster type. You can also refer to the Chapter 3. IMPACTS OF NATURAL DISASTERS IN ASIA BY DISASTER TYPE, 2019 on page 4.

In 2019, flood has the largest impact on 27 countries in Asia and also results in the highest number of occurrence, and people killed and affected by 47.6 percent, 51.5 and 38.5 percent respectively.

Then storm ranks second in occurrence affecting 15 countries by 21.4 percent and also in the number of people affected with 37.5, and ranks the first in the amount of economic damage by 63.7 percent.

Epidemic ranks the second in the number of people killed at 27.5 percent, although the shares of the number of occurrence and people affected are low.

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