

Chapter 4: Overview of Natural Disasters in Asian and ADRC Member Countries

4.1 Types of Disasters and Their Effects on Asian and ADRC Member Countries

This section discusses the disaster patterns in Asian and ADRC member countries, using the 2005 disaster data from 21 of the ADRC's 25 member countries (excluding Armenia, Lao PDR, Mongolia, and Singapore). There are no significant 2005 disasters recorded in the CRED-EM-DAT database for the excluded countries.⁴ We will also be discussing the other Asian countries that reported disasters in 2005. All the ADRC member countries are located in Asia except for Papua New Guinea (in Oceania) and Russia (in Europe). Table 16 shows the disasters that occurred in each member country, by disaster type.

China, which had one of the most disaster-affected populations in the world in 2005, was seriously affected by **drought**. Droughts also affected Cambodia and Vietnam. Droughts did not affect any other countries in Asia aside from these. This stands in contrast to 2004, when droughts only occurred in China, but appears similar to the pattern that occurred in 2003, when droughts posed problems for Indonesia, Pakistan, and Russia.

Earthquakes had a strong impact in countries like Afghanistan, China, Indonesia, India, Iran, Japan, Pakistan, and Papua New Guinea in terms of both the numbers of affected people and the economic ramifications. The South Asian earthquake that hit Pakistan and India was the world's worst disaster in 2005 in terms of human losses and economic damage. Indonesia and Iran also sustained considerable human losses and economic damage due to earthquakes. The South Asian Earthquake produced some of the highest levels of economic damage in the world and accounted for nearly 27% of the total economic damage sustained by the ADRC member countries in 2005. About 90% of the human losses sustained in Asia and the ADRC member countries were due to that quake. Earthquakes also had a considerable impact on Japan, which had just gone through the 2004 Niigata earthquake.

Epidemics occurred in Afghanistan, India, Indonesia, East Timor, China, Pakistan, and Yemen and had a significant impact in terms of total affected people. Also, a high number of people killed and total affected people were attributed to epidemics in India.

Extreme temperatures caused human losses in India, Pakistan, Bangladesh, and Russia.

The most frequent disasters in member countries are **wind storms** and **floods**. While the ADRC member countries accounted for more than 80% of the total human losses in 2003, they accounted for only 2% of the human losses in 2004. In 2005, however, this increased to about 7%, the majority of which were due to wind storms and floods. Furthermore, floods and wind storms accounted for about 90% of the affected population in Asian and ADRC member countries in 2005, in contrast to 2004 when that figure was only 21%. The data also shows that nearly 71% of the total economic losses in member countries were due to floods and wind storms. The most severe damage in terms of human suffering and economic losses

occurred in member countries China, India, Bangladesh, Pakistan, Sri Lanka, Philippines, Thailand, and Vietnam, though most member countries had some disaster impact. **Landslides** caused considerable human suffering in India and Tajikistan.

Volcanic eruptions occurred in Indonesia and Papua New Guinea, causing extensive human suffering in terms of the total affected population. It is noteworthy to mention that these disasters did not result in the loss of any human lives. **Wild fires** also caused human suffering in Korea.

Table 16: Natural Disasters in Asia and the ADRC Member Countries by Disaster Type (2005)

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
Drought	Cambodia	1		600,000	
	China, P Rep	2		7,774,000	
	Thailand	1		0	250,000
	Viet Nam	1		410,000	42,120
Drought Total		5		8,784,000	292,120
Earthquake	Afghanistan	2	6	501	
	China, P Rep	2	16	634,009	
	India	1	1,309	156,622	
	Indonesia	2	916	105,997	
	Iran, Islam Rep	4	625	116,888	80,000
	Japan	2	1	4,430	
	Pakistan	1	73,338	2,869,142	5,000,000
	Papua New Guinea	1	1	200	
Earthquake Total		15	76,212	3,887,789	5,080,000
Epidemic	Afghanistan	1		3,245	
	China, P Rep	1	38	168	
	East Timor	1	22	336	
	India	4	706	2,489	
	Indonesia	1		329	
	Pakistan	2	42	111	
	Yemen	1		179	
Epidemic Total		11	808	6,857	

⁴ See Note 1 on page ii.

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
Extreme temp	Bangladesh	2	100	1,000	
	China, P Rep	1		200	
	India	2	509		
	Pakistan	1	106	200	
	Russia	1	84		
Extreme temp Total		7	799	1,400	
Flood	Afghanistan	9	195	18,315	
	Bangladesh	3	55	1,150,000	
	Cambodia	1	16		
	China, P Rep	11	1,106	35,048,995	3,672,050
	Georgia	1		2,500	
	Hong Kong (China)	1			
	India	17	1,850	25,479,012	5,823,000
	Indonesia	3	154	20,790	
	Iran, Islam Rep	4	109	4,750	
	Japan	1		900	
	Kazakhstan	1		25,000	7,662
	Korea Dem P Rep	1	193	16,298	
	Korea, Rep	1	18	1,500	
	Kyrgyzstan	1	3	2,050	2,660
	Malaysia	2	13	30,600	
	Nepal	2	51	31,600	
	Pakistan	5	624	7,527,023	
	Papua New Guinea	1	1	2,493	
	Philippines	2	5	193,046	515
	Russia	5	22	9,045	23,668
	Saudi Arabia	2	63	67	
	Sri Lanka	1	6	145,000	
	Taiwan (China)	1	16	2,700	62,000
	Tajikistan	2	8	5,112	50,000
Thailand	2	76	251,526	14,900	
Uzbekistan	1		1,500		
Viet Nam	5	184	101,893	34,000	

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
	Yemen	2	22	721	
Flood Total		88	4,790	70,072,436	9,690,455
Slide	India	2	262	5,020	
	Indonesia	2	211	10	
	Myanmar	1	17	16	
	Pakistan	1	25		
	Russia	1	9		
	Tajikistan	1	16	1,953	
	Yemen	1	65	11	
Slide Total		9	605	7,010	
Volcano	Indonesia	1		26,000	
	Papua New Guinea	1		15,000	
Volcano Total		2		41,000	
Wild fire	Indonesia	1			
	Korea, Rep	1		2,140	
	Malaysia	1			
	Thailand	1			
Wild fire Total		4		2,140	
Wind storm	Afghanistan	1	260	22,656	
	Bangladesh	7	164	35,206	
	China, P Rep	14	426	47,702,823	3,480,915
	India	4	82	68,590	
	Iran, Islam Rep	1		8,000	
	Japan	3	130	304,043	36,900
	Korea, Rep	1	5	1,100	
	Pakistan	1	58		
	Philippines	2	18	11	
	Russia	2		2	
	Taiwan (China)	3	13	339	40,000
	Thailand	2	10	3,500	246
	Viet Nam	4	88	344,160	219,250
Wind storm Total		45	1,254	48,490,430	3,777,311
Grand Total		186	84,468	131,293,062	18,839,886

Source: CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2005

4.2 Disaster Profiles of the Asian and ADRC Member Countries

Table 17: Natural Disasters in Asia and the ADRC Member Countries by Country (2005)

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
Afghanistan	Earthquake	2	6	501	
	Epidemic	1		3,245	
	Flood	9	195	18,315	
	Wind storm	1	260	22,656	
Afghanistan Total		13	461	44,717	
Bangladesh	Extreme temp	2	100	1,000	
	Flood	3	55	1,150,000	
	Wind storm	7	164	35,206	
Bangladesh Total		12	319	1,186,206	
Cambodia	Drought	1		600,000	
	Flood	1	16		
Cambodia Total		2	16	600,000	
China, P Rep	Drought	2		7,774,000	
	Earthquake	2	16	634,009	
	Epidemic	1	38	168	
	Extreme temp	1		200	
	Flood	11	1,106	35,048,995	3,672,050
	Wind storm	14	426	47,702,823	3,480,915
China, P Rep Total		31	1,586	91,160,195	7,152,965
East Timor	Epidemic	1	22	336	
East Timor Total		1	22	336	
Georgia	Flood	1		2,500	
Georgia Total		1		2,500	
Hong Kong (China)	Flood	1			
Hong Kong (China) Total		1			
India	Earthquake	1	1,309	156,622	
	Epidemic	4	706	2,489	
	Extreme temp	2	509		
	Flood	17	1,850	25,479,012	5,823,000
	Slide	2	262	5,020	

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
	Wind storm	4	82	68,590	
India Total		30	4,718	25,711,733	5,823,000
Indonesia	Earthquake	2	916	105,997	
	Epidemic	1		329	
	Flood	3	154	20,790	
	Slide	2	211	10	
	Volcano	1		26,000	
	Wild fire	1			
Indonesia Total		10	1,281	153,126	
Iran, Islam Rep	Earthquake	4	625	116,888	80,000
	Flood	4	109	4,750	
	Wind storm	1		8,000	
Iran, Islam Rep Total		9	734	129,638	80,000
Japan	Earthquake	2	1	4,430	
	Flood	1		900	
	Wind storm	3	130	304,043	36,900
Japan Total		6	131	309,373	36,900
Kazakhstan	Flood	1		25,000	7,662
Kazakhstan Total		1		25,000	7,662
Korea Dem P Rep	Flood	1	193	16,298	
Korea Dem P Rep Total		1	193	16,298	
Korea, Rep	Flood	1	18	1,500	
	Wild fire	1		2,140	
	Wind storm	1	5	1,100	
Korea, Rep Total		3	23	4,740	
Kyrgyzstan	Flood	1	3	2,050	2,660
Kyrgyzstan Total		1	3	2,050	2,660
Malaysia	Flood	2	13	30,600	
	Wild fire	1			
Malaysia Total		3	13	30,600	
Myanmar	Slide	1	17	16	
Myanmar Total		1	17	16	
Nepal	Flood	2	51	31,600	
Nepal Total		2	51	31,600	

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
Pakistan	Earthquake	1	73,338	2,869,142	5,000,000
	Epidemic	2	42	111	
	Extreme temp	1	106	200	
	Flood	5	624	7,527,023	
	Slide	1	25		
	Wind storm	1	58		
Pakistan Total		11	74,193	10,396,476	5,000,000
Papua New Guinea	Earthquake	1	1	200	
	Flood	1	1	2,493	
	Volcano	1		15,000	
Papua New Guinea Total		3	2	17,693	
Philippines	Flood	2	5	193,046	515
	Wind storm	2	18	11	
Philippines Total		4	23	193,057	515
Russia	Extreme temp	1	84		
	Flood	5	22	9,045	23,668
	Slide	1	9		
	Wind storm	2		2	
Russia Total		9	115	9,047	23,668
Saudi Arabia	Flood	2	63	67	
Saudi Arabia Total		2	63	67	
Sri Lanka	Flood	1	6	145,000	
Sri Lanka Total		1	6	145,000	
Taiwan (China)	Flood	1	16	2,700	62,000
	Wind storm	3	13	339	40,000
Taiwan (China) Total		4	29	3,039	102,000
Tajikistan	Flood	2	8	5,112	50,000
	Slide	1	16	1,953	
Tajikistan Total		3	24	7,065	50,000
Thailand	Drought	1			250,000
	Flood	2	76	251,526	14,900
	Wild fire	1			
	Wind storm	2	10	3,500	246
Thailand Total		6	86	255,026	265,146

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Totally Affected	Sum of Damage US\$ ('000s)
Uzbekistan	Flood	1		1,500	
Uzbekistan Total		1		1,500	
Viet Nam	Drought	1		410,000	42,120
	Flood	5	184	101,893	34,000
	Wind storm	4	88	344,160	219,250
Viet Nam Total		10	272	856,053	295,370
Yemen	Epidemic	1		179	
	Flood	2	22	721	
	Slide	1	65	11	
Yemen Total		4	87	911	
Grand Total		186	84,468	131,293,062	18,839,886

Source: CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2005

Table 16 shows the effects of the various types of natural disasters that occurred in the affected countries, and Table 17 shows the types of natural disasters that occurred by country.

In **Afghanistan**, wind storms and floods resulted in considerable human suffering. Earthquakes and epidemics also had a moderate impact.

In **Bangladesh**, floods, and wind storms caused considerable human suffering and loss of life. As in 2004, the most destructive disaster type in 2005 was floods. Bangladesh lies along the path of cyclones generated in the Bay of Bengal, making the country particularly prone to hydro-meteorological disasters.

Cambodia recorded heavy human suffering due to drought, though no loss of life was reported. Floods affected Cambodia and loss of life was reported.

China experienced almost every type of disaster, as the country encompasses a vast area with a large population. The most severe disasters in China in 2005 were floods and wind storms, followed by droughts. Earthquakes also had a considerable impact on the population. Floods and wind storms proved to be the largest natural disasters in China in 2005, in terms of the affected population and economic damage.

Epidemics were reported **East Timor** in 2005, though their impact was minor. **Georgia** reported floods, which caused moderate human suffering.

Although 2004 did not bring many disasters for **India**, floods and the tsunami affected more than 33 million people. The Indian Ocean Tsunami was the most destructive disaster in 2004, but 2005 brought even more trouble, with heavy floods and wind storms affecting many parts of the country. The most devastating disaster in 2005, the South Asian Earthquake, has had a tremendous impact on India. These disasters caused almost US\$6 billion damage in India and severely disrupted everyday life. Located in a natural disaster-prone area, India is vulnerable to wind storms spawned in the Bay of Bengal and the Arabian Sea, earthquakes caused by active crustal movement in the Himalayan Mountains, floods brought

by monsoons, and droughts in the country's arid and semi-arid areas. India has also become much more vulnerable to tsunamis in the Indian Ocean since the 2004 Indian Ocean Tsunami struck the coastal areas of Andaman and the Nicobar Islands.

Tsunamis, earthquakes, floods, wind storms, volcanic eruptions, and epidemics were the disasters that most affected **Indonesia** in the year 2004. The year 2005 brought more disasters, including earthquakes, volcanic eruptions, and floods. With seismic belts running throughout the country, Indonesia is prone to earthquakes. It has 129 active volcanoes and experiences volcanic eruptions on a regular basis. The year 2005 was no exception in terms of the occurrence of disasters related to volcanic activity. Moreover, floods tend to occur along with wind storms during the country's rainy season.

The year 2005, like 2004, was devastating for **Iran**, which experienced earthquakes, floods, and wind storms. In 2003, the historic Bam Earthquake destroyed almost the entire historical town of Bam and accounted for the highest number of human lives claimed in a single disaster that year. The year 2005 was better than 2003 or 2004, however, even though earthquakes, floods and wind storms had a considerable impact.

In **Japan**, 2005 was not as bad a year as 2004 in terms of damage and human suffering. The 2004 earthquake in Niigata caused about US\$28 billion in damage and affected more than 62,000 people. This was the highest amount of damage caused by a single disaster in Japan in 2004. Floods and wind storms also had a considerable effect on the population, affecting 350,000 people and causing damage of more than US\$18 billion. Some major wind storms and floods also had a considerable impact on the population in Japan in 2005. The damage caused by disasters was comparatively low in 2005 versus previous years. Since Japan's geographical position makes it highly prone to earthquakes, wind storms, floods, landslides, and tsunamis, it has some of the best disaster management systems and countermeasures in the world. These have proven to be highly effective in reducing human losses and suffering.

Flood affected more than 25,000 people in **Kazakhstan** in 2005.

Most of the natural disasters that occur in **Korea** consist of floods in the rainy season, as well as wind storms. In 2005 there were also wild fires, floods, and wind storms. Human suffering and economic losses were not quite as high in 2005 as in 2004, when typhoons caused damage of more than US\$500 million.

Almost 90% of **Kyrgyzstan** is covered with mountains that are more than 1,000 meters above sea level, and about 40% of those mountains are situated in alpine areas over 3,000 meters in elevation. The distinctive natural disasters of Kyrgyzstan are earthquakes accompanied by active crustal deformations, and floods caused by snowmelt and landslides. As in previous years, Kyrgyzstan reported flood disasters that caused moderate human suffering in 2005.

Malaysia often experiences floods and landslides caused by rainfall during the monsoon season, and rainstorms triggered by tropical low pressure systems. In 2005, the country experienced floods and wild fires. These produced little loss of life and economic damage, in spite of causing high numbers of affected population.

Though landslide disasters affected **Myanmar** in 2005, there were human losses associated with them.

Nepal is located in the Himalayan region where the Indian plate is subsiding under the Eurasia plate. This crustal formation causes frequent earthquakes. Moreover, floods, landslides, and extreme temperatures often pose a threat to Nepal. Table 17 shows that Nepal suffered significant flooding in 2004, which caused heavy human losses and high numbers of total affected population (which includes the numbers of homeless, injured, and affected persons).

Pakistan is often hit by droughts, extreme temperatures, floods, landslides, earthquakes, and wind storms. In the year 2005, the South Asian earthquake caused significant human suffering, with more than 73,000 dead and about three million people affected. This disaster produced the highest death toll in the world in 2005. Pakistan also experienced floods that had a significant impact on the population.

Papua New Guinea is highly vulnerable to all kinds of natural disasters, both the hydro-meteorological and geo-physical, such as earthquakes, tsunamis, volcanic activity, floods, and wind storms. Floods, earthquakes, and volcanic eruptions were the three natural disasters that occurred in 2005 and these disasters caused considerable numbers of total affected people. The affected population figures from these disasters were some of the highest in Oceania in 2005.

The Philippines is located on the Pacific Rim of Fire, making it vulnerable to natural disasters of both the hydro-meteorological and geo-physical types. As in previous years, the damage caused by hydro-meteorological disasters grew in 2005, with very large populations affected by floods and wind storms. Floods also caused extensive economic damage in 2005.

Russia is a vast land where the disaster-affected population and economic losses are noticeable. Floods, landslides, extreme temperature and windstorms affected large numbers of people in 2005. Floods also caused considerable economic losses and affected many people.

Saudi Arabia also suffered from floods in 2005, as in 2003, but the number of people affected by those floods was relatively small.

The year 2005 was not nearly as disastrous as 2004 for **Sri Lanka**, which is located in the Indian Ocean just south of India. Sri Lanka frequently experiences droughts during its dry seasons, and windstorms, floods, and subsequent landslides during its rainy seasons due to cyclones from the Bay of Bengal. These natural disasters have been the country's prime concerns thus far. In 2004, Sri Lanka was devastated by the record-breaking Indian Ocean Tsunami, which caused tremendous human losses and numbers of affected population. The economic damage caused by this tsunami was so huge as to have severely affected the country's economic progress. The scale of the human and economic losses sustained triggered a massive outpouring of international assistance to that country in 2004. This continued in 2005, as tsunami recovery efforts proceeded at a slow pace. Compounding this catastrophe, Sri Lanka also experienced floods in 2005, which affected more than 145,000 people.

Wind storms and floods also affected **Taiwan (China)** in 2005, yielding relatively high numbers of affected people and economic damage.

Tajikistan's prime concerns are earthquakes and floods, as much of the land is mountainous. In 2005, landslides and floods occurred, causing human suffering and economic damage.

Like 2004, the year 2005 was a bad year for flooding in **Thailand**. Floods killed more than 76 people, affected more than 250,000, and caused damage of more than US\$14 million. Most of the country's economic damage (more than US\$ 250 million) came from drought. Thailand is highly prone to natural disasters because of its location and terrain. The northeastern area is prone to floods and droughts, while the south is vulnerable to storms, floods, and landslides. Thailand was hit hard by these disasters in 2005, and the population affected by hydro-meteorological disasters was quite large.

Floods were reported in **Uzbekistan** in 2005, but their impact was small.

Vietnam is located in the southeast monsoon climate area, and the majority of the annual rainfall occurs during the rainy season, which causes heavy human and economic losses every year. Droughts, floods, and wind storms caused severe human suffering and economic losses in Vietnam in 2005. These disasters affected more than 850,000 people and caused more than US\$295 million in damage.

Human suffering in **Yemen** in 2005 was caused primarily by epidemics, floods and landslides.

The tables above show that the majority of Asian and ADRC member countries experienced either hydro-meteorological disasters and/or geo-physical disasters, which inflicted heavy human and economic losses on society and created hurdles for economic development. Furthermore, the heavy effects of these disasters deprived people of opportunities for socio-economic advancement, thereby slowing down the pace of national and regional development. The most severe disasters of 2005 happened in Asia (Pakistan, India, China, Bangladesh, Vietnam, Indonesia, Sri Lanka, Thailand and Philippines) and affected large numbers of people. The South Asian Earthquake and the floods in India, China, and Bangladesh were particularly damaging, causing destruction at home and hindering economic and development progress region wide. It is imperative that efforts be made to design and implement proper disaster mitigation and preparedness plans to reduce human losses, suffering, and economic losses, and to contribute to sustainable development on a global scale.

4.3 Conclusions

The year 2005 witnessed severe natural disasters all over the world. The highest death toll came from the South Asian Earthquake in Pakistan and India, the highest affected population from the floods in Bangladesh, China, and India, and the highest level of economic damage from Hurricanes Katrina and Wilma in the US. Asian region experienced the most severe disaster in many years in the world. Africa also suffered from droughts and floods. Europe experienced floods which claimed heavy losses of human life and caused suffering in the region. Oceania sustained wild fires and windstorms, and was moderately impacted by volcanic eruptions. The US was hit by intense hurricanes that caused the highest levels of economic damage for the year. The long-term disaster data analyses show that low income and low human development countries were affected significantly in terms of their ratios of human losses to population, and damage to GNI. The disaster figures and data for 2005 were consistent with patterns from previous years, but the damage ratio to the economy was higher in the upper middle and high income countries this year. This reinforces the lesson that even developed countries cannot be complacent about disaster reduction strategies and countermeasures. It also highlights the need for continuous review and monitoring of disaster reduction strategies, and underscores the need for effective, practical regional cooperation, and investments in disaster reduction measures.

Although many initiatives have been launched and investments made in developing countries in regions vulnerable to disasters, the increasing frequency and magnitude of natural catastrophes that result in economic loss and human suffering have hindered those initiatives. This book has sought to derive conclusions from analytical evidence in order to integrate disaster risk management initiatives into development objectives. The preceding chapters show that the human development and income levels of a country are crucial determinants for the effective implementation of risk management approaches and post-disaster management initiatives. In addition, the active and effective participation of women in the risk management process has been shown to be crucial to any meaningful disaster countermeasures, especially in the least developed countries.

These general phenomena can be seen not only in ADRC member countries, but also throughout Asia. The obvious vulnerability of this region to geo-physical and hydro-meteorological disasters in terms of demographic, socio-economic, and geo-physical factors justifies the need for prudent development policies and proactive risk management practices, as well as further investments in disaster reduction. This book also advocates for the urgent integration of specific country and regional initiatives into a cohesive disaster management approach with ongoing socio-economic development activities. Since disasters impact every socio-economic aspect of a country, designing development-oriented disaster prevention measures that incorporate the strength of human and economic resources would be an appropriate method of ensuring effective sustainable development.

**Natural Disaster Data Book-2005
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