

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

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

This section discusses the disaster patterns in the ADRC-member and other Asian countries,⁴ using the 2006 disaster data from 19 of the ADRC's 25 member countries (excluding Armenia, Kazakhstan, Lao PDR, Mongolia, Singapore, and Uzbekistan). There were no significant 2006 disasters recorded for the excluded countries in the CRED-EM-DAT database.⁵ It also discusses other non-member Asian countries that reported disasters in 2006. 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 2006, was seriously affected by **drought**. None of the other countries of Asia, except for Afghanistan, suffered droughts. In 2005, droughts occurred in Cambodia, China, Thailand, and Viet Nam, but in 2004, they only occurred in China. In 2003, Indonesia, Pakistan, and Russia experienced droughts.

Earthquakes had a strong impact on countries like Afghanistan, China, Indonesia, Iran, Kyrgyzstan, Russia, Taiwan (China) and Tajikistan in terms of both the number of people affected and the economic ramifications. The earthquake and subsequent **tsunami** that hit Indonesia constitute one of the world's worst disasters in 2006 in terms of loss of life and economic damage. China and Iran also sustained considerable loss of life and economic damage due to earthquakes. The earthquakes that hit Indonesia produced some of the highest levels of economic damage in the world and accounted for nearly 20% of the total economic damage sustained by the ADRC-member and other Asian countries in 2006. About 36% of the human losses sustained in Asia and the ADRC-member countries were attributed to the quakes.

Epidemics occurred in Cambodia, China, India, Indonesia, Iraq, Turkey and Viet Nam and had a significant impact in terms of total numbers of people affected. Also, a large number of those affected by epidemics were concentrated in India.

Extreme temperatures caused human losses in India, Russia, Bangladesh, and Pakistan. Economic damages were particularly serious in Russia and Europe.

As in previous years, the most frequent disasters in member countries in 2006 were **wind storms** and **floods**. While the ADRC member countries accounted for more than 80% of the total human losses in

⁴ The ADRC consists of 25 member countries, five advisory countries (Australia, France, New Zealand, Switzerland and the US) and one observer organization (ADPC). (Visit <http://www.adrc.or.jp> for further details.) The member countries considered here were Armenia, Bangladesh, Cambodia, China, India, Indonesia, Japan, Kazakhstan, Korea (South), Kyrgyz, Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Russia, Singapore, Sri Lanka, Tajikistan, Thailand, Uzbekistan, and Viet Nam.

⁵ See Note 1 on page ii.

2003, they accounted for only 2% of human losses in 2004. In 2005, however, this figure increased to about 7%, the majority of which were due to wind storms and floods. But in 2006 the death toll skyrocketed, with the Asian and ADRC member countries accounting for nearly 46% of all human losses. Furthermore, floods and wind storms accounted for about 80% of the disaster-affected population in the Asian and ADRC member countries in 2006, much as they did in 2005 (90%). This stands in contrast to 2004 when that figure was only 21%. The data also shows that nearly 67% of the total economic losses in member countries were due to floods and wind storms in 2006, similar to the 71% figure in 2005. The most severe damage in terms of human casualties and economic losses occurred in China, India, Thailand, Indonesia, Sri Lanka, the Philippines and Bangladesh, though most member countries were impacted to some degree by floods and wind storms.

Landslides caused considerable human casualties in Afghanistan, Nepal and the Philippines. In fact, the landslides in the Philippines caused more fatalities than any other disaster in 2006.

Volcanic eruptions in the Philippines, Indonesia, and Papua New Guinea affected large numbers of people, but the CRED-EMDAT data show that they did not result in any human or economic losses.

Wild fires also resulted in human casualties in Indonesia.

Table 16: Natural Disasters in the ADRC-member and other Asian Countries by Disaster Type (2006)

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Drought	Afghanistan	1		1,900,000	
	China, P Rep	1		18,000,000	817,000
Drought Total		2		19,900,000	817,000
Earthquake	Afghanistan	1	1	935	
	China, P Rep	6	23	411,548	7,191
	Indonesia	4	5,790	3,180,439	3,100,000
	Iran, Islam Rep	3	63	168,494	42,262
	Kyrgyzstan	1		12,050	
	Russia	1		12,040	55,000
	Taiwan (China)	1	2	42	
	Tajikistan	1	3	15,427	22,000
Earthquake Total		18	5,882	3,800,975	3,226,453

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Epidemic	Cambodia	1	4		
	China, P Rep	1	5	3	
	India	1		153,324	
	Indonesia	1	11		
	Iraq	1			
	Turkey	2	20	222	
	Viet Nam	1	16	83	
Epidemic Total		8	56	153,632	
Extreme Temperature	Bangladesh	1	100	1,000	
	India	2	227		
	Pakistan	1	84	100	
	Russia	1	116	14	1,000,000
Extreme Temperature Total		5	527	1,114	1,000,000
Flood	Afghanistan	7	282	32,970	
	Bangladesh	2		211,775	
	Cambodia	2	5	38,000	
	China, P Rep	19	406	15,003,448	709,400
	Georgia	1		600	
	India	14	858	9,009,065	
	Indonesia	10	735	388,233	102,300
	Iran, Islam Rep	1	14	2,800	16,000
	Iraq	2	20	59,910	1,300
	Japan	2	42	10,532	
	Korea Dem P Rep	2	278	91,824	
	Korea, Rep	1	46	4,630	
	Malaysia	5	15	136,518	22,000
	Myanmar	1	25	10,000	

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
	Nepal	1			
	Pakistan	6	105	2,300	
	Papua New Guinea	3	2	12,700	
	Philippines	6	36	322,891	10,762
	Russia	3		7,720	132,411
	Sri Lanka	1	25	333,002	
	Syrian Arab Rep	1	6		
	Taiwan (China)	1	3	300	116,130
	Tajikistan	1	1	13,000	
	Thailand	4	335	3,257,308	131,940
	Turkey	2	59	63,000	
	Viet Nam	4	118	52,120	9,000
	Yemen	2	30	2,320	
Flood Total		104	3,446	29,066,966	1,251,243
Slide	Afghanistan	2	28	300,000	
	China, P Rep	2	22	5	
	Indonesia	3	103	3,536	10,943
	Nepal	2	157	80,000	
	Pakistan	1	29	5	
	Papua New Guinea	1	13		
	Philippines	3	1,129	12,016	2,203
	Tajikistan	1	21	728	
Slide Total		15	1,502	396,290	13,146
Volcano	Indonesia	1		11,000	
	Papua New Guinea	1		1,221	
	Philippines	1		43,849	
Volcano Total		3		56,070	

Disaster Type	Country	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Wave / Surge	Indonesia	1	802	35,543	2,000
Wave / Surge Total		1	802	35,543	2,000
Wild fire	Indonesia	1		200	14,000
Wild fire Total		1		200	14,000
Wind storm	Afghanistan	2	71		
	Bangladesh	2	119	15,034	
	China, P Rep	7	1,415	55,320,012	6,837,000
	East Timor	1		8,730	
	India	1	114	150,300	
	Japan	3	119	15,327	30,979
	Kyrgyzstan	1	4	9,075	
	Myanmar	1	34	60,106	
	Philippines	10	1,787	7,757,462	974,936
	Taiwan (China)	2	3	800	
	Viet Nam	6	401	3,297,290	1,090,000
Wind storm Total		36	4,067	66,634,136	8,932,915
Grand Total		193	16,282	120,044,926	15,256,757

Source: CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2006

4.2 Disaster Profiles of the ADRC-Member and Other Asian Countries

Table 17: Natural Disasters in the ADRC-Member and Other Asian Countries by Country (2006)

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Afghanistan	Drought	1		1,900,000	
	Earthquake	1	1	935	
	Flood	7	282	32,970	
	Slide	2	28	300,000	
	Wind storm	2	71		
Afghanistan Total		13	382	2,233,905	
Bangladesh	Extreme Temperature	1	100	1,000	
	Flood	2		211,775	
	Wind storm	2	119	15,034	
Bangladesh Total		5	219	227,809	
Cambodia	Epidemic	1	4		
	Flood	2	5	38,000	
Cambodia Total		3	9	38,000	
China, P Rep	Drought	1		18,000,000	817,000
	Earthquake	6	23	411,548	7,191
	Epidemic	1	5	3	
	Flood	19	406	15,003,448	709,400
	Slide	2	22	5	
	Wind storm	7	1,415	55,320,012	6,837,000
China, P Rep Total		36	1,871	88,735,016	8,370,591

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
East Timor	Wind storm	1		8,730	
East Timor Total		1		8,730	
Georgia	Flood	1		600	
Georgia Total		1		600	
India	Epidemic	1		153,324	
	Extreme Temperature	2	227		
	Flood	14	858	9,009,065	
	Wind storm	1	114	150,300	
India Total		18	1,199	9,312,689	
Indonesia	Earthquake	4	5,790	3,180,439	3,100,000
	Epidemic	1	11		
	Flood	10	735	388,233	102,300
	Slide	3	103	3,536	10,943
	Volcano	1		11,000	
	Wave / Surge	1	802	35,543	2,000
	Wild fire	1		200	14,000
Indonesia Total		21	7,441	3,618,951	3,229,243
Iran, Islam Rep	Earthquake	3	63	168,494	42,262
	Flood	1	14	2,800	16,000
Iran, Islam Rep Total		4	77	171,294	58,262
Iraq	Epidemic	1			
	Flood	2	20	59,910	1,300
Iraq Total		3	20	59,910	1,300

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Japan	Flood	2	42	10,532	
	Wind storm	3	119	15,327	30,979
Japan Total		5	161	25,859	30,979
Korea Dem P Rep	Flood	2	278	91,824	
Korea Dem P Rep Total		2	278	91,824	
Korea, Rep	Flood	1	46	4,630	
Korea, Rep Total		1	46	4,630	
Kyrgyzstan	Earthquake	1		12,050	
	Wind storm	1	4	9,075	
Kyrgyzstan Total		2	4	21,125	
Malaysia	Flood	5	15	136,518	22,000
Malaysia Total		5	15	136,518	22,000
Myanmar	Flood	1	25	10,000	
	Wind storm	1	34	60,106	
Myanmar Total		2	59	70,106	
Nepal	Flood	1			
	Slide	2	157	80,000	
Nepal Total		3	157	80,000	
Pakistan	Extreme Temperature	1	84	100	
	Flood	6	105	2,300	
	Slide	1	29	5	
Pakistan Total		8	218	2,405	
Papua New Guinea	Flood	3	2	12,700	

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
	Slide	1	13		
	Volcano	1		1,221	
Papua New Guinea Total		5	15	13,921	
Philippines	Flood	6	36	322,891	10,762
	Slide	3	1,129	12,016	2,203
	Volcano	1		43,849	
	Wind storm	10	1,787	7,757,462	974,936
Philippines Total		20	2,952	8,136,218	987,901
Russia	Earthquake	1		12,040	55,000
	Extreme Temperature	1	116	14	1,000,000
	Flood	3		7,720	132,411
Russia Total		5	116	19,774	1,187,411
Sri Lanka	Flood	1	25	333,002	
Sri Lanka Total		1	25	333,002	
Syrian Arab Rep	Flood	1	6		
Syrian Arab Rep Total		1	6		
Taiwan (China)	Earthquake	1	2	42	
	Flood	1	3	300	116,130
	Wind storm	2	3	800	
Taiwan (China) Total		4	8	1,142	116,130
Tajikistan	Earthquake	1	3	15,427	22,000
	Flood	1	1	13,000	
	Slide	1	21	728	

Country	Disaster Type	Number of Disasters	Sum of Killed	Sum of Total Affected	Sum of Damage US\$ ('000s)
Tajikistan Total		3	25	29,155	22,000
Thailand	Flood	4	335	3,257,308	131,940
Thailand Total		4	335	3,257,308	131,940
Turkey	Epidemic	2	20	222	
	Flood	2	59	63,000	
Turkey Total		4	79	63,222	
Viet Nam	Epidemic	1	16	83	
	Flood	4	118	52,120	9,000
	Wind storm	6	401	3,297,290	1,090,000
Viet Nam Total		11	535	3,349,493	1,099,000
Yemen	Flood	2	30	2,320	
Yemen Total		2	30	2,320	
Grand Total		193	16,282	120,044,926	15,256,757

Source: CRED-EMDAT, Université Catholique de Louvain, Brussels, Belgium, 2006.

Table 17 shows the types of natural disasters that occurred by country. The following country-specific discussions are based on Table 17.

In **Afghanistan**, droughts, floods, and landslides caused considerable human casualties, while an earthquake also had a moderate impact.

In **Bangladesh**, floods and wind storms caused considerable human casualties and loss of life. 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 casualties, including some fatalities, due to floods.

China experienced almost every type of disaster, as the country covers a vast area and has a large population. The most severe disasters in China in 2006 were wind storms and drought, followed by floods. Earthquakes also had a considerable impact on the population. Wind storms, drought, and floods proved to

be the largest natural disasters in China in 2006 in terms of both the affected population and economic damage. These disasters were also among the 25 worst disasters in the world in 2006 in terms of human casualties and economic losses.

Wind storms reported in **East Timor** in 2006 affected many people. **Georgia** reported floods that caused only minor human casualties.

India experienced many severe disasters in 2006. The massive Indian Ocean Tsunami struck 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, had a tremendous impact on India. It caused almost US\$6 billion in damage in India and severely disrupted everyday life. India also experienced some of the world's worst disasters in 2006, mostly floods and wind storms, followed by epidemics. Flooding that resulted in particularly heavy human casualties made this one of world's 25 worst disasters in 2006. 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 about 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.

One of the worst hit countries in 2006 was **Indonesia**. In 2004, Indonesia was significantly affected by tsunamis, earthquakes, floods, wind storms, volcanic eruptions, and epidemics. The year 2005 brought more disasters, including earthquakes, volcanic eruptions, and floods. In 2006, the country experienced one of the world's 25 worst disasters, an earthquake and subsequent tsunami that inflicted heavy casualties and economic damage. This caused the world's highest death toll due to a natural disaster in 2006, and also resulted in the greatest economic damage that year. With seismic belts running throughout the country, Indonesia is prone to earthquakes. It has 129 active volcanoes and regularly experiences volcanic eruptions. As the world's largest archipelago, Indonesia is also prone to seismic upheaval because of its location along the Pacific "Ring of Fire," an arc of volcanoes and fault lines encircling the Pacific Basin. The year 2006 was no exception in terms of disasters related to volcanic activity. Floods and wind storms also tend to occur during the country's rainy season.

The year 2006, like 2004 and 2005, was devastating for **Iran**, which experienced earthquakes and floods. 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. In spite of earthquakes and floods, 2006 was a better year than 2003 or 2004. However, greater damage was sustained in 2006 than in 2005.

Floods affected **Iraq** and inflicted considerable human casualties and economic losses in 2006.

In **Japan**, 2006 was not as bad a year as 2004 in terms of natural disaster damage and human casualties. The 2004 Niigata earthquake caused about US\$28 billion in damage and affected more than 62,000 people. Some major wind storms and floods also had a considerable impact on the population in 2005. The damage caused by disasters was comparatively low in 2006 versus previous years, and was

attributed to wind storms and floods. 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 casualties and losses.

Most of the natural disasters that occur in **Korea (North and South)** consist of floods in the rainy season, as well as wind storms. In 2006 there were also floods but the related human casualties and economic losses were not as high as in 2005 or 2004.

Almost 90% of **Kyrgyzstan** is covered with mountains that are more than 1,000 meters above sea level, and about 40% of those are situated in alpine areas higher than 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. In 2006, unlike previous years, Kyrgyzstan reported an earthquake and wind storm that caused moderate human casualties.

Malaysia often experiences floods and landslides caused by rainfall during the monsoon season and rainstorms triggered by tropical low pressure systems. In 2006, the country experienced floods that resulted in little loss of life and economic damage, in spite of high numbers of affected population.

Though a wind storm and flood occurred in **Myanmar** in 2006, they produced very little human and economic losses.

Nepal is located in the Himalayan region where the Indian plate is subsiding under the Eurasian plate. This crustal formation causes frequent earthquakes. Floods, landslides, and extreme temperatures also often pose a threat to Nepal. Table 17 shows that in 2006, Nepal experienced landslides that caused considerable human losses and a high total affected population (which includes the numbers of homeless, injured, and affected persons).

Pakistan is often hit by drought, extreme temperatures, floods, landslides, earthquakes, and wind storms. In 2005, the South Asian earthquake caused significant human casualties, with more than 73,000 dead and about three million people affected. This disaster produced the highest death toll in the world in 2005. The year 2006 was not as bad a year as 2005, but floods and extreme temperatures still had a significant impact on the population.

Papua New Guinea is highly vulnerable to all kinds of natural disasters, both hydro-meteorological and geo-physical, such as earthquakes, tsunamis, volcanic activity, floods, and wind storms. Floods and volcanic eruptions were the main natural disasters that occurred in 2006. These affected considerable numbers of people, but caused relatively little loss of life. The affected population figures from these disasters were some of the highest in Oceania in 2006.

The Philippines is located along the Pacific "Ring of Fire," making it vulnerable to both hydro-meteorological and geo-physical natural disasters. As in previous years, the damage caused by hydro-meteorological disasters grew in 2006, with very large populations were affected by floods and wind storms. Wind storms and floods once again caused extensive economic damage in 2006. Landslides also significantly affected the population and inflicted heavy human losses, ranking them among the world's 25 worst disasters in terms of human losses in 2006.

Russia is a vast land where the disaster-affected population and economic losses are relatively large. Floods, landslides, extreme temperatures, and wind storms affected large numbers of people in 2005. In 2006, however, an unusual cold wave occurred in Russia, and it was ranked among the worst disasters in Europe. Floods and earthquakes also caused considerable economic losses and affected many people in Russia in 2006.

The year 2006 was not nearly as disastrous as 2004 for **Sri Lanka**, which is located in the Indian Ocean just south of India, but it was worse than 2005. Sri Lanka frequently experiences droughts during its dry seasons, and wind storms, 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 affected untold numbers of people. 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 progressed at a slow pace. Compounding this catastrophe, Sri Lanka also experienced a flood in 2006 that affected more than 330,000 people.

Syria experienced a flood in 2006, but its economic and social impacts were minimal.

Wind storms, a flood, and an earthquake also occurred in **Taiwan (China)** in 2006, yielding relatively high numbers of affected people and economic damage. The most significant economic damage was caused by heavy flooding.

Tajikistan's prime concerns are earthquakes and floods, as much of its terrain is mountainous. Landslides and floods in 2005 resulted in human casualties and economic damage. In 2006, an earthquake caused considerable economic losses, but fewer fatalities than the landslides.

Like 2004 and 2005, the year 2006 was a bad year for flooding in **Thailand**. Floods killed more than 330 people, affected more than three million people, and caused damage of more than US\$132 million. The economic damage to this country was due to flooding. Thailand is highly prone to natural disasters because of its location and terrain. The northeastern area is prone to floods and drought, while the south is vulnerable to storms, floods, and landslides. Of these, floods had the greatest impact on Thailand in 2006. It is important to note that the population affected by hydro-meteorological disasters is quite large every year.

Turkey experienced heavy human casualties due to floods and epidemics.

Viet Nam is located in the southeast monsoon climate area, where the majority of annual rainfall occurs during the rainy season and regularly causes heavy human and economic losses. Wind storms and floods caused severe human casualties and economic losses in Viet Nam in 2006. These disasters affected more than three million people and caused more than US\$1 billion in damage. Figures for 2006 were much higher than in previous years, necessitating the development of countermeasures to prevent a recurrence.

Human casualties in **Yemen** in 2006 were caused primarily by floods.

The tables above show that the majority of ADRC-member and other Asian countries experienced either hydro-meteorological disasters and/or geo-physical disasters that inflicted heavy human

and economic losses on society and created additional hurdles for economic development efforts. Furthermore, the severe impact 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 in 2006 occurred in Asia (China, India, the Philippines, Indonesia, Thailand, Viet Nam and Bangladesh) and affected large numbers of people. The earthquake and tsunami in Indonesia, floods in India, China, and Bangladesh, and wind storms and landslides in the Philippines were particularly damaging, causing destruction at home and hindering economic and development progress region wide. Southeast Asia sustained heavy human and economic damage due to both hydro-meteorological and geo-physical disasters in 2006, once again exposing it as the most disaster-prone region in the world. It is imperative that efforts be made to design and implement proper disaster mitigation and preparedness plans to reduce loss of life, human casualties, and economic losses, and to contribute to sustainable development on a global scale.

4.3 Conclusions

The year 2006 brought severe natural disasters all over the world. The highest death toll resulted from the earthquake and tsunami in Indonesia, the highest affected population from the wind storms and floods in China and the countries of Southeast Asia, and the highest level of economic damage from wind storms and floods in China and the earthquake and tsunami in Indonesia. The year 2006 was one of the most devastating for the Asian region in recent years. Africa also suffered droughts, floods, and epidemics. Europe experienced extreme temperatures (cold wave, heat wave) and floods which claimed many lives and caused casualties throughout the region. Oceania sustained floods and wind storms, and was moderately impacted by volcanic eruptions. Australia and Papua New Guinea were the most severely affected countries of Oceania. The US was also hit by intense floods, which caused the highest levels of economic damage for 2006.

An analysis of the long-term disaster data shows that low-income countries and less developed countries were significantly affected in terms of their ratio of human losses to population, and their ratio of damage to gross national income (GNI). The disaster figures and data for 2006 were consistent with patterns from previous years, but the ratio of damage to the economy was higher in the upper-middle and high-income countries this year. This reinforces the lesson that even the 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 casualties have hindered those initiatives. This book has sought to derive conclusions from the analytical evidence that can be used to integrate disaster risk management initiatives with development objectives. The preceding chapters show that the human development and income levels of a country are crucial determinants of 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 a crucial factor in the development of any meaningful disaster countermeasures, especially in the least developed countries.

These general phenomena can be seen not only in the ADRC-member countries, but also throughout Asia. The obvious vulnerability of this region to geo-physical and hydro-meteorological disasters given its 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 the effective integration of disaster management perspectives into national and regional sustainable development efforts. Disasters have a negative impact on every aspect of a country. To reduce the damage caused by natural disasters, it is essential to promote country-appropriate disaster prevention measures that take advantage of domestic personnel and material resources as well as foreign assistance. The 2006 disaster data lends further support for this argument.

**Natural Disaster Data Book-2006
(An Analytical Overview)**

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Authored and Edited by

Dr. SriGowri SANKER

Mr. Hajime NAKANO

Ms. Yumi SHIOMI

The Asian Disaster Reduction Center

Hitomiraikan 5F

1-5-2 Wakihamakaigan-dori

Chuo-ku, Kobe 651-0073

JAPAN

Tel: +81-78-262-5540 Fax: +81-78-262-5546

Website: [Hhttp://www.adrc.or.jp](http://www.adrc.or.jp)

E-mail: rep@adrc.or.jp

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