

Disasters in Asia and the Pacific: an Overview

1.0 DISASTER IMPACTS IN ASIA

Asia and the Pacific are among the most disaster prone regions in the world. Every year, disasters of all kinds cause huge loss of lives and property in the region causing a severe setback to the development process. The region accounts for only 30% of the world's land-mass but receives disproportionately higher disaster impacts. The annual average numbers of people killed, affected, made homeless and injured by disasters presented in Table 1 indicate that the disaster impacts in the region are significantly higher than the other regions. Statistics for the Pacific island countries may be low due to their much smaller size but the impacts in proportion to the size of national economies is very high.

Table 1
Annual average number of people killed, affected, made homeless and injured by region (1973 to 1997)

	Africa	Americas	Asia	Europe	Oceania	Total
Killed	44,262	6,171	36,914	2,075	124	89,546
% of Total	49%	7%	41%	2%	0%	
Affected	12,039,045	3,792,767	126,751,770	563,177	1,043,992	144,190,752
% of Total	8%	3%	88%	0%	1%	
Homeless	287,541	310,399	4,217,823	42,416	14,600	4,872,778
% of Total	6%	6%	87%	1%	0%	
Injured	2,228	9,830	57,446	3,554	643	73,700
% of Total	3%	13%	78%	5%	1%	
<i>Source: World Disasters Report 1999</i>						

Table 2 shows the trend in average annual number of people reported killed, affected, made homeless or injured in Asia per five-year period from 1973 to 1997. The use of five-year periods reduces the influence of individual years and allows for better trend analysis.

This trend shows that, in general, since early and mid 1980s less individuals have been reported killed by disasters in Asia. The severe cyclone of 1991 in Bangladesh represents a severe disaster with a relatively high return period that may cause heavy casualties. In

contrast to the number of people killed by disasters, the number of people affected by disasters in Asia over the period 1973 to 1997 has remained largely unchanged. This indicates that the disaster preparedness and mitigation programs have been insufficient to counter the effects of other factors that increase vulnerability such as fast population growth, deforestation, and increasing concentrations of people in urban areas. There has been a decline in the number of people rendered homeless over the period 1973 to 1997, which is attributable to better flood preparedness, forecasting and early warning systems. There has been a rapid increase in the number of people injured by disasters. This can be attributed to higher number of earthquakes in the Asian region, which have a relatively high injury-to-death ratio.

Table 2
Annual average number of people killed, affected, made homeless and injured in Asia by period (1973 to 1997)

	1973 to 77	1978 to 82	1983 to 87	1988 to 92	1993 to 97
Killed	68,454	16,529	17,073	63,435	19,078
Affected	62,502,799	127,831,208	137,858,113	154,905,725	150,661,006
Homeless	3,026,946	588,882	2,361,435	16,861,685	4,250,166
Injured	43,507	18,824	30,547	108,510	85,840
<i>Source: World Disasters Report 1999</i>					

2.0 TYPES OF DISASTERS IN ASIA AND THE PACIFIC

Asia and the Pacific are affected by almost every conceivable hazard -- geological hazards such as earthquakes, landslides and volcanoes; hydro-meteorological hazards such as floods, cyclones and droughts; and other hazards such as epidemics, insect infestations, hot and cold waves, and forest fires. The annual average number of reported disasters by region and type for the period 1988 to 1997 presented in Table 3 clearly indicate that the occurrence of disasters from almost all kinds of hazards is among the highest in Asia and the Pacific.

2.1 Hydro-meteorological Hazards

The most common hazards in Asia and the Pacific region are hydro-meteorological.

Windstorms

Windstorms are the most common of all hazards in the region. Of the total of 2,244 disasters that were reported in the last decade in Asia and the Pacific, 398 were by windstorms. In the last decade over 186,001 people were reported killed and over US\$ 6.0 million economic

losses were incurred due to windstorms. (World Disaster Report 2000, EM-DAT, CRED, 1990-99).

Cyclones generating in the Western Pacific basin move westward and sometimes turn northwest and can affect the Philippines, Asia mainland and Japan. Around 15% of the world's tropical cyclones originate in the Bay of Bengal and cause severe flooding and devastating tidal surges to the east coast of India and Bangladesh. The windstorms generated in the Pacific Ocean frequently cause devastation to the island countries of Fiji, Tonga, Vanuatu, Solomon Islands, and Samoa. In the past decade the most costly cyclones were in Bangladesh (1991) and Orissa, India (1999). The cyclone that hit the eastern state of Orissa on 29 October 1999 killed more than 10,000 people and affected more than 10 million people in 12 coastal belt districts. (Disaster Dispatch, Jan 2001). The effects of the disaster were so immense that even after two years, the poor coastal communities are struggling to recover.

Table 3
Annual average number of reported disasters by region and type (1988 to 1997)

	Africa	Americas	Asia	Europe	Oceania	Total
Earthquake	2	6	11	4	2	24
% of Total	8%	24%	44%	16%	8%	
Drought/Famine	8	2	3	1	1	15
% of Total	53%	13%	20%	7%	7%	
Flood	13	22	34	9	4	81
% of Total	16%	27%	41%	11%	5%	
Landslide	1	4	7	1	1	14
% of Total	7%	29%	50%	7%	7%	
High Wind ¹	4	28	34	10	7	83
% of Total	5%	34%	41%	12%	8%	
Volcano	0.2	2	2	0	1	6
% of Total	4%	38%	38%	0%	19%	
Other ²	14	10	14	7	1	46
% of Total	30%	22%	30%	15%	2%	
Total	42	75	106	31	16	269
% of Total	16%	27%	39%	12%	6%	

¹ 'High Wind' consists of hurricanes, cyclones, typhoons, storms and tornadoes.

² 'Other' consists of avalanches, tsunami, hot and cold waves, insect infestations and epidemics, and forest fires.

Floods

Floods account for forty percent of the natural hazards affecting the Asia and Pacific regions. In Asia alone in the last decade more than 83% of the total reported disasters were due to floods (World Disaster Reports 2000). Unlike cyclones, floods are common to all countries causing heavy economic and human losses. Floods include seasonal flooding, flash flooding, urban flooding, and tidal flooding induced by typhoons in the coastal areas. In Bangladesh as many as 80 million people are vulnerable to flooding, In India, 40 million hectares of agricultural land are at risk from flooding and the annual average damage has been estimated at US\$ 240 million. According to CRED data for the last ten years, 377 floods were reported in this region killing more than 55,946 people and incurring economic losses of over US\$ 113,371 million. Recent occurrences of floods in Bangladesh, China, Thailand, Vietnam, Pakistan have brought with them immense losses to life and property.

In 1998, China experienced its worst flooding in 50 years when the Yangtze river swelled and killed 4,150 people in one instance, dislocated 223 million predominantly rural population and inundated 25 million hectares of cropland (Oxfam study on the vulnerability in Southeast Asia 2000).

2.2 Geological Hazards

Hazards of geological origin include earthquakes, landslides and volcanic eruptions.

Earthquake

Over the last decade, earthquakes caused the maximum economic damage in Asia and Pacific regions. About two-third of all large earthquakes are located in the so-called 'ring of fire' around the Pacific. The Himalayan region also represents one of the most seismically active regions in the world. Countries lying in highly seismic region are India, Pakistan, Nepal, Japan, Papua New Guinea, Indonesia, Philippines, China and Afghanistan.

Some of the major earthquakes of the decade occurred in Kobe, Japan in 1995, Turkey in 1998-99, Latur, India in 1993, Chamoli, India in 1999 and Gujarat, India in 2001. The most recent earthquake in Gujarat, India on 26 January 2001, was the worst earthquake of the decade. The impact of the earthquake was felt in the neighboring countries of Pakistan and Afghanistan too. According to the World Bank and ADB estimates, the private loss of assets was \$1.6 billion and public loss was \$0.5 billion. The earthquake killed as many as 20,000 people and injured 167,000.

Volcanoes

The years 1990-99 witnessed over 21 volcanic eruptions in the region (World Disaster Reports 2000). Japan, Philippines and Indonesia are considered most vulnerable to volcanic eruptions. Philippines has more than 200 volcanoes distributed along five volcanic belts. Of these at least 17 are considered active. The 5 most active and destructive are Mayon, Taal, Hibok-Hibok, Bulusan and Canlaon. The 1991 Mt. Pinatubo eruption in Philippines, was one of the most devastating ones. Indonesia has 129 active volcanoes of which 70 are classified as dangerous. Between 1972 and 1991, twenty-nine volcanic eruptions were recorded, mostly in Java.

Droughts

Asia is very vulnerable to droughts. In the last ten years 31 droughts have been recorded. Being a slow onset hazard, its effects are also long lasting. India, Pakistan, Afghanistan, Philippines, Indonesia, the South Pacific, Australia, Northern China, Korea and Bangladesh are the worst affected regions by drought. With prolonged droughts in Afghanistan, Pakistan and India since 1998 the food security has been affected greatly.

South Asia is presently reeling under the impact of droughts. The prolonged dry season in the region has led to famine and food shortages in Afghanistan, Pakistan and India. In the western states of India today 80 million people lack water, and hundreds of thousands of animals are perishing in what is considered to be the worst drought of the century. The World Food Program (WFP) is feeding 40,000 people in Afghanistan's southern provinces of Kandahar, Helmand, Zabul, Uruzgan, and Mimroz (Christian Science Monitor, 2000)

Extreme Climate Events

Extreme climate events such as El Niño and La Niña affect the tropical parts of Asia and the Pacific regions to varying degrees. This also triggers secondary disasters like forest fires. The most recent of these incidences being in Indonesia, 1997-98 destroying forest covers in excess of 9 million hectares. The impact of these fires and associated transboundary haze were felt up to Malaysia, Singapore, Vietnam, Brunei Darussalam and the Philippines.

The following table presents relative intensity of hazards faced by selected countries of Asia and the Pacific.

Table 4
Relative Intensity of Hazards Faced by Some Countries in the Region

Country	T y p h o o	F l o o d	D r o u g h	L a n d s l i d e	Ts u n a m i	E a r t h q u a k e	Vol c a n o e s	C i v i l S	Fir e	E p i d e m i c	D e f o r e s t a t i o n	Fr o s t	A c c i d e n t
Australia	S	S	S			L			S				
Bangladesh	S	S	S	L	L	L		M	L	M	M		L
China	M	S	S	L	L	S			M	L			L
Cook Islands	M	L	S	L	M	L							L
Fiji	S	S	M	S	S	M					M		
Hong Kong	M	L		M				L	M		M		L
India	M	S	S	L		M		M	M	M	M		M
Indonesia	L	M	M	L	L	S	M		M	L			L
Lao PDR		M	L										
Malaysia	M	S*	S	L	M				L		M		
Myanmar	M	M	M	M		S			S				
Nepal	M	L*	M	L		M			M	M			
Pakistan	M	M	M	L	M	S		L	L	L		L	L
Philippines	S	S	L	S	S	S	M	M	S	L	L		L
PNG	L	S	M	S	S	S	S	L	L	L	L	L	L
Sri Lanka	M	S	S	L				S	L	L	L		
Thailand	M	S*	S	L		L			L		S		M
Vietnam	M	S	L	S	S	L			L	L	L		
Solomon Is	S	S	L	S	S	S	S		L	L			
Tonga	S	M	M	L	S	S	S						
Vanuatu	S	S	L	S	S	S	S		L	L			M
West Samoa	L	S	L	S	S	M	L						

Legend: S - Severe; M - Moderate; L - Low

Note: * Coastal Flooding

Source: Whitehouse & Burton, 1999 for water-related hazards; ADB, 1991 for other hazards

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