

III. Disasters and Their Consequences in Less Developed Countries

Conditions vary widely with regard to hazards and the risks to populations in the many countries around the world. This section focuses on those countries and disasters with which the United States, through programs of the Office of Foreign Disaster Assistance (OFDA), has interacted in the past decade. Three characteristics of international hazards—types, human victims, and economic consequences—are reviewed.

DISASTER EVENTS

A wide range of hazard agents are responsible for the disastrous impacts on people and property that have motivated U.S. disaster assistance. As table 1 illustrates, not only the natural disasters of flood, earthquake, and drought strike the less developed countries that receive the bulk of U.S.

aid, but also the manmade hazards prevalent in industrialized nations have been extended to all countries. Thus, transportation disasters on land, on the sea, and in the air, and industrial disasters have joined the traditional natural threats.

The natural hazards identified in table I constitute 82 percent of all disasters to which the United States responded. The 13-year average of manmade disasters consists of more than seven events per year or 18 percent of all events. A trend toward increasing numbers of manmade disasters might logically be expected to accompany whatever development occurred over the 13-year period; however, no such trend exists. In 1965, 34 percent of all disasters were manmade, and in 1977, 13 percent were manmade. In the middle years, the percentage ranged from a low of 10 percent (1974+-75) to a high of 30 percent (1976), as seen in table 2.

Table I.-U.S. Disaster Assistance Types of Events

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Natural													
Cyclone.....	2	1	3	3	3	1	1	3	—	1	3	1	—
Drought.....	6	6	8	3	10	6	14	7	12	8	11	1	2
Earthquake.....	8	3	7	11	4	4	3	3	2	—	2	6	3
Epidemic.....	2	4	1	6	5	10	1	2	—	1	1	1	5
Flood.....	9	16	29	12	11	18	17	8	5	13	11	9	3
Famine/Food shortage.....	—	—	3	—	—	3	1	—	—	—	—	—	1
Hurricane.....	3	1	3	1	—	3	—	1	5	—	14	—	1
Landslide.....	—	1	—	1	—	—	1	—	—	1	1	1	—
Storm.....	1	1	3	2	—	1	2	—	—	—	2	—	—
Tornado.....	1	1	—	—	1	—	—	—	—	—	—	—	—
Typhoon.....	1	1	3	—	4	—	5	—	1	1	—	—	2
Volcano.....	—	2	1	—	1	—	1	1	1	1	1	2	2
Total.....	33	37	61	39	39	46	46	25	26	26	46	21	19
Man-Made													
Accident.....	2	—	1	—	—	—	1	—	—	—	—	1	—
Air disaster.....	—	—	—	—	—	—	—	1	—	—	—	—	1
Civil strife.....	6	1	2	5	2	5	4	6	6	2	4	5	3
Explosion.....	—	—	—	—	—	—	—	1	—	—	—	—	—
Fire.....	8	5	7	2	3	1	—	—	3	1	1	2	—
Mine disaster.....	—	—	—	—	—	—	1	—	—	—	—	1	—
Rail disaster.....	—	1	—	—	1	—	—	—	1	—	—	—	—
Ship disaster.....	1	1	—	—	—	—	—	—	—	—	—	—	—
Truck disaster.....	—	1	—	—	—	—	—	—	—	—	—	—	—
Total.....	17	9	10	7	6	6	6	8	10	3	5	9	4

SOURCE: Tabulations of OFDA computer printout. "Disaster History USG Response... Feb. 13, 1978.

Table 2.-U.S. Response to Natural and Manmade Hazards

		1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Natural	(#)	33	37	61	39	39	47	45	25	26	26	46	21	19
	(%OI)	68	80	66	85	87	89	86	76	72	90	90	70	83
Man-Made	(#;	17	9	10	7	6	6	6	8	10	3	5	9	4
	(%)	34	20	14	15	13	11	12	24	28	10	10	30	13
Total	(#)	50	46	71	46	45	53	51	33	36	29	51	30	23

SOURCE: Tabulations of OFOA computer printout. "Disaster History USG Response," Feb. 13, 1978.

Merely tallying the number of disasters, though useful as a rough index, can be misleading. Disasters vary enormously in magnitude and in disruptive capacity. For example, while OFDA reports 112,000 people killed in all disasters during 1973, this is fewer than half of the final tally of dead in one country alone, Ethiopia, during that same year, according to figures released by the government that took power after the devastating drought and famine.¹ Similarly, OFDA calculated a total of \$16 billion in worldwide damage from 1965 to 1975. This stands in contrast to an estimate of the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD) that typhoon damage in Southeast Asia alone was \$9.96 billion between 1960 and 1970.²

The sources of information and mechanisms for collecting, handling, and analyzing disaster statistics are a response to bureaucratic needs for quantification and have only limited meaning. Recordkeeping in less developed countries and the chaotic atmosphere of disasters contribute to the initial use, and later institutionalization, of guesses and estimates. In the 1972-74 Sahelian Drought, one response to the news media's persistent search for **fatality statistics was: How can you expect a count of the dead in counties where they can't make a count of the living? The U.S. Public Health Service finally estimated that 100,000 people had died. That number has appeared countless times as an authoritative statistic.**

Even as an indicator of magnitude, however, the similarity between U.S. and developing country disaster frequency is marked. In the past 5 years,

according to a recent survey of the Governors of the 50 States, 23 percent of all disasters to which the States responded were manmade. In the past 5 years, 18 percent of the disasters to which OFDA responded were manmade.

One important difference between disaster occurrence in the United States and developing countries is civil strife. In developing country disasters since 1965, 51 percent of all manmade disasters (9 percent of the total) were civil war and civil strife. In the United States, according to the survey of Governors, only seven civil disturbance/terrorism incidents representing less than 0.5 percent were recorded in the last 5 years.

THE IMPACT ON LIFE AND SAFETY

The death toll in developing country disasters is so great as to rival major wars. As a result of disasters to which the United States responded, 3.6 million people died and an estimated 474 million others were seriously affected in some fashion from 1965 through 1977. Table 3 shows the year-by-year statistics. These should be taken as indicators rather than as absolute for they are, at best, approximations.

Statistics fail to illustrate the true sense of human suffering and social disruption from disasters. They can be imagined a little better perhaps by recalling just a few destructive events and their impact:

- The earth in Guatemala shook for several minutes in 1976: 23,000 people are estimated to have died and 1 million others were affected.

¹Stephen Green, *International Disaster Relief* (New York: McGraw-Hill Book Company, 1977), p. 16.

²David Holdsworth, *Present Role of the Red Cross in Assistance*, Background Paper 3, Joint Committee for the Reappraisal of the Red Cross, Geneva, 1975, p. 77.

³Emergency preparedness Project, *Emergency Preparedness and Response in 57 States and Territories* (Washington, D. C.: National Governors Association, 1978).

⁴Ibid.

**Table 3.-Foreign Disaster Statistics
(Fiscal Years 1965=77)**

Year	New disasters	Number killed	Number affected
1977	23	6,602	3,500,143
1976	29	96,589	32,537,675
1975	24	48,000	44,315,000
1974	20	101,000	14,887,000
1973	25	112,000	215,240,000
1972	30	115,000	37,023,000
1971	51	522,000	68,070,000
1970	51	73,000	11,743,000
1969	36	1,019,000	32,482,000
1968	55	4,000	5,456,000
1967	52	1,518,000	14,223,000
1966	48	7,000	4,140,000
1965	50	47,000	5,504,000
Total	452	3,568,000	453,083,000

SOURCE: 1976-77 information was provided by the AID/OFDA and is based on compilations from its historical files. "Disaster History USG Response," Feb. 13, 1978. Information for 1965-75 also from AID/OFDA compiled by the National Academy of Sciences, Committee on International Disaster Assistance. *The U.S. Government Foreign Disaster Assistance Program*, p. 3.

- The Nicaragua earthquake of 1972 killed 11,000 people and affected 300,000.
- The Sahelian region of West Africa drought, which lasted 5 years, is estimated to have killed 100,000 people and affected another 23 million.
- The civil wars of East-West Pakistan and Nigeria-Biafra together resulted in the death

of 1.2 million people and the dislocation of over 30 million people.⁵

ECONOMIC CONSEQUENCES

Table + suggests the scope of the economic impact of disasters; but keep in mind this impact is on less developed countries. U.S. assistance went to 26 of the poorest countries in the world, where per capita annual income hovers around \$200. Thus, direct foreign disaster assistance can produce economic impacts far in excess of some significant international financial indicators. For example:

- Three states affected by the Sahelian drought, Mali, Mauritania, and Chad, had recent (1976.77) international monetary reserves of \$6.9 million, \$76.8 million, and \$11.87 million respectively. The total amount of aid given to these three nations in the 1973-75 period was: Mali—\$90.67 million; Mauri-

⁵ *Review of the U.S. Government Foreign Disaster Assistance Programs* (Washington, D. C.: Committee on International Disaster Assistance, National Academy of Sciences-National Research Council, Commission on Sociotechnical Systems, 1978), p. 1.

Table 4.-Foreign Disaster Statistics and Emergency Relief Costs (Fiscal Years 1965-75)

Year	Estimated property damage (millions of dollars)	Value of assistance in millions of dollars			
		U.S. Government	Voluntary agencies	Other donor nations and international organizations	In-country self-help
1975	\$2,769.775	\$ 200.4	\$14.9	\$270.4	\$74.5
1974	1,040.470	140.3	17.3	152.3	58.8
1973	2,717.400	301.4	15.5	158.9	658.1
1972	492.721	314.9	12.0	582.2	81.0
1971	2,558.860	189.0	16.7	266.6	744.8
1970	1,417.667	48.7	12.2	59.5	96.6
1969	1,978.168	102.6	12.2	16.5	131.0
1968	439.478	32.6	7.9	16.5	607.1
1967	2,720.296	81.4	12.2	173.2	2,964.7
1966	249.869	25.4	1.6	9.6	
1965	411.389	46.3	3.8	3.6	•
Totals	\$16,796.073	\$1,483.0	\$126.3	\$1,788.3	\$5,416.6

* Data not available.

SOURCE: Estimated property damage compiled from OFDA computer printout. "Disaster History USG Response." Feb. 13, 1978. Other data from OFDA compiled by National Academy of Sciences, Committee on International Disaster Assistance. *The U.S. Government Foreign Disaster Assistance Program*, p. 3.

tania—\$61.5 million; and Chad—\$24.57 million.^b

- The 1974 budget revenues of the nation of Cyprus totaled \$135.8 million. The world donor response to the 2-month civil strife in 1974 was over \$26.9 million.⁷

Table 4 shows a decade of U.S. Government assistance totaling nearly \$1.5 billion and other donors contributing nearly \$2 billion. Simply adding these sums to development assistance during those years would have made a positive impact. More important for the long-term economic development of these disaster-prone countries is the last column, in-country self-help. These are funds directly diverted from productive sectors of nations' economies to provide relief assistance for their disaster-stricken citizens. That self-help category is nearly \$5.4 billion.

When the \$16.8 billion of estimated property damage is added to the \$5.4 billion in self-help, a net "outflow" of capital from productive sectors of \$22.2 billion is computed. International donor assistance constitutes \$3.3 billion in lost "development income." The resulting \$25.5 billion is the total direct development "loss" due to disasters in the past decade: that is, a cash loss of funds that could have gone into productive enterprises.

As awesome as these statistics are, the economic dislocation resulting from disasters may have an

^aU.S. Agency for International Development, *Background Notes* for Mali, Mauritania, Chad, and Cyprus (published irregularly) and Office of Foreign Disaster Assistance.
^bIbid.

even longer term effect, substantially offsetting real economic growth. For example, the Office of the United Nations Economic Commission for Latin America has estimated that the countries of the Central American Common Market have sustained disaster damage averaging 2.3 percent of the gross domestic product from 1960 through 1974.⁸ William Dalton, head of the Preparedness section of the AID Office of Foreign Disaster Assistance, said recently that disaster-related losses in less developed countries had averaged \$2 billion a year for the past 12 years. "Now, that may not be much in terms of the global economy," Dalton continued, "but that \$24 billion added to the development efforts of those [less developed] countries could be significant" for progress.⁹

In summary, both similarities and differences exist between developed and developing countries in the nature and effect of disasters. Even in the large-scale losses of life and property, however, lessons may be available. The destructive impact of a disaster on a small national economy maybe a model of the local inflation and subsequent depression found at the site of U.S. domestic disasters. These lessons are likely to be conditioned by several factors discussed in the next chapter relating to the preparation for and response to disasters.

⁸Committee on International Disaster Assistance, op. cit., p. 3.

⁹William Dalton, remarks at the Conference on International Disasters and Discontinuities, Congressional Research Service, Washington, D. C., Feb. 16, 1978.