



DISASTER  
RELIEF

CASE REPORT  
India—Floods  
July—September, 1975

Agency for International Development  
Washington, DC 20523

# INDIA

## Floods

July-September, 1975

Especially strong southwest monsoons (June-September rainy season) caused widespread flooding in India, inundating areas of Arunachal Pradesh, Assam, Bihar, Kerala, Uttar Pradesh, Kashmir, Punjab, Rajasthan, West Bengal, and Orissa States. Nearly 27 million people were affected. An official estimate put the number of people killed at 350, but unofficially, this figure was felt to be low. The reported number of houses damaged or destroyed—480,204—and the estimated dollar value of damage—\$714,259,014—are probably also low figures. Total area flooded in the ten states was about 4,259,630 hectares. Aided by the World Food Program (WFP), Cooperative for American Relief Everywhere (CARE), Church World Service/Lutheran World Relief (CWS/LWR), Catholic Relief Services (CRS), and the United Nations Development Program (UNDP), the Government of India (GOI) and the Indian National Red Cross (INDCROSS) carried out major relief efforts as well as rehabilitation of inundated croplands.

VALUE OF U.S. GOVERNMENT ASSISTANCE .....	US\$	25,000.00
VALUE OF ASSISTANCE FROM U.S. VOLUNTARY AGENCIES .....		97,668.83*
VALUE OF ASSISTANCE FROM THE INTERNATIONAL COMMUNITY .....		12,973,561.58

\* Incomplete figure.

Foreign Disaster Case Reports are publications of the Office of Foreign Disaster Assistance, Agency for International Development. This office has responsibility for coordinating U.S. Government foreign disaster relief responses and for the further coordination of such activities with those of the U.S. private and international disaster relief communities.

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## BACKGROUND

India is no stranger to climatic extremes. Climatic conditions in the State of Uttar Pradesh, for example, range from very hot, almost arid in the south where rainfall is less than 800 mm annually, to temperate in the northern Hill Districts where there are ice-capped mountains and where annual rainfall may exceed 2,000 mm. In the case of the 1975 flooding, rainfall from June to August had been slightly above normal and substantially better than the 1974 monsoon, giving rise to hopes for a record harvest; crop losses from some early floods in July were localized and not at all unexpected. During the week of August 20, however, rainfall was 20-80% lower than normal in areas all over the country—Assam, West Bengal, Bihar, Uttar Pradesh, Haryana, Himachal Pradesh, southeast Maharashtra, north-west and southwest Andhra Pradesh, Tamil Nadu, and south central Karnataka. Yet even while these areas were beginning to fear drought, there was flooding in the Punjab, Rajasthan, Uttar Pradesh, Bihar, Assam, and coastal areas of Orissa.

A changeable climate is not, however, the only cause of yearly, damaging floods in India. Farming practices have done much to upset the ecological balance. Overly extensive farming near the headwaters of rivers, such as the Ganges, clearly contributes to flooding; silt, carried away by erosion of careless farmed lands (or, even if carefully farmed, unsuitable marginal lands), slows and clogs rivers in lowland areas and, during times of heavy rainfall, forces waters over their banks. Irrigation systems, which are designed to control flooding as well as to permit more extensive cultivation, may suffer from the problem of silting and indirectly contribute to flooding. The reservoirs, key parts of the irrigation systems, are frequently and rapidly rendered useless by silt accumulation that eventually reduces reservoir capacity to zero. In surveying some of its irrigation reservoirs, India discovered unhappily that sediment inflow was as much as four times as high as originally calculated

when the reservoirs were built. Irrigation canals also fill up with sediment quickly and must be cleaned regularly.

Irrigation may contribute more directly to the destruction of farmland by raising the ground water table so close to the surface that the soil becomes waterlogged. The effects of any flooding are then correspondingly more severe. If excess water is not drained away, crop roots will rot; or worse, the salinity of the soil will rise as surface and ground water evaporate, leaving harsh minerals close to the surface. Such soil is soon unfit for cultivation. Croplands in the Punjab, Haryana, Uttar Pradesh, Gujarat, Maharashtra, Orissa, and Rajasthan are presently threatened by waterlogging and salinity. An answer to the problems of silting and waterlogging may be the installation of tube wells which provide water for irrigation and, at the same time, draw down (or keep down) the ground water table. What is certain is that India cannot afford to lose land to flooding, waterlogging, or salinization.

## THE DISASTER

As is usual, India's rainy season, or southwest monsoon (June-September), caused flooding in many places. By July 16, 1975, the following states and union territories were reporting flood damage: Arunachal Pradesh—15,000 people in 55 villages affected, 70 square kilometers (Km<sup>2</sup>) flooded by the Lohit, Siang, and Subansiri Rivers; Assam—29,000 in 66 villages affected, 70 Km<sup>2</sup> flooded; Bihar—flooding of the Ganga, Ghagra, Gandak, and Kosi Rivers; Kerala—59,000 people affected by floods; Uttar Pradesh—1.7 million people in 5,200 villages affected, 1.3 million acres flooded, 2.5 million rupees (Rs) (\$311,332.50) worth of property damaged; and Kashmir—flooding of the Jhelum River.

August 14 found the situation worsened; the Punjab, Rajasthan, and West Bengal had been added to the list of states experiencing floods. Punjab reported that the rivers Ravi and Beas had flooded 200,000 acres of cropland, affecting 400,000 people in 550 villages. 31,000 houses had been

damaged, forcing thousands into relief camps. Flood waters of the rivers Banganga and Gambhir killed 21 persons and damaged 3,000 houses in Rajasthan which reported 60,000 victims. West Bengal estimated that 100,000 people were in distress. Meanwhile, in Kashmir, two additional rivers, the Chenab and Ravi, joined the Jhelum in flooding, affecting 50,000 in 184 villages and leaving 32 dead. The number of people suffering in Uttar Pradesh rose to 2 million in 6,000 villages as the Ganga, Jamuna, Ghagra, and Rapti Rivers overflowed their banks. In Assam, the Brahmaputra and Barak Rivers were flooding. Bihar was perhaps most seriously affected with 10 million victims, several dead, some 1,000 cattle killed, several thousand homes damaged, 100,000 evacuees, and 2,000 square miles inundated, costing more than Rs 20 million (\$2,490,660) in crops lost.

The monsoon rains of August 22 were particularly torrential; and several days later, the League of Red Cross Societies (LICROSS) was transmitting the information that 20 million people in 10 states had become the victims of monsoon flooding. INDCROSS set up 20 medical units and 280 supplementary feeding centers for flood victims, which served about 100,000 beneficiaries daily. In addition, INDCROSS helped in the rescue of an estimated one million people marooned in Bihar State and air dropped emergency packets to flood victims in Orissa State. These packets included bread, wheat (100 metric tons), tents, utensils and drugs.

Flood waters everywhere began to recede August 28 and had almost completely done so by September 11. The monsoon floods had destroyed hopes for a record karif cereal crop (based on the summer monsoon, with harvest in the fall/winter) of 69 million metric tons (MT) and threatened the existence of some Indian farmers. Urban dwellers, however, were hit relatively harder by the 1975 flooding than were rural dwellers. Patna City, for example, which is the capital of Bihar State and is located at the confluence of the Ganges and Sone Rivers, suddenly found itself under an unprecedented



*Irrigation brings needed waters to India's farmlands but also threatens to add, indirectly, to the problem of seasonal flooding.*



six to ten feet of water. Though waters began to recede in late August, a stubborn five feet of stagnant water kept residents on their roof tops for several days. It was feared that the lack of drinking water and sanitary facilities would lead to an epidemic of some kind. In fact, 15 deaths in Patna were officially attributed to cholera; unofficial estimates ran to fifty or more deaths from cholera.

Final statistics showed 18 million people in Bihar State to have been affected by the floods, including 10 million in northern Bihar whose homes, crops and livestock were under water for the fourth time that year. 22,631 Km<sup>2</sup> were flooded in the state and 2.9 million acres of crops worth Rs 1,340 million (\$166,874,220) damaged or destroyed. The subsequent reduction in the karif harvest was expected to be about 20% or, to less than 4 million MT. 258,900 dwellings were damaged and a reported 136 people died.

The State of Orissa which, ironically, had been facing a possible drought prior to the August torrents had to contend with 500,000 hectares of inundated cropland and 200,000 hectares of severely damaged crops. The karif harvest was expected to be 15% less than hoped for with losses totaling Rs 540 million (\$67,247,820). Hundreds of cattle were lost and 101 of the 2.9 million affected people died. 176,000 dwellings were damaged.

Uttar Pradesh reported the following losses: 2.8 million acres of farmland flooded causing the loss of Rs 2,000 million (\$249,066,000) worth of crops; flooding of 13,495 villages; 112 dead among the 5 million flood victims; 57,525 dwellings worth Rs 70 million (\$8,717,310) damaged; and total damage of Rs 2,350 million (\$292,652,550). Figures for the Punjab were less severe: 9,500 houses worth Rs 40 million (\$4,981,320) in 300 villages were damaged and 50,800 hectares of crops were badly damaged. West Bengal reported no loss of life, though 400,000 people were ultimately affected and 25,000 hectares of crops lost [worth Rs 29.5

million (\$3,673,723.50)] as 375 square miles flooded. Damage to public utilities in the state was estimated to be Rs 1,476 million (\$183,810,700) and 1,804 homes were destroyed. Rajasthan also reported damage to public property—roads and irrigation works valued at Rs 350 million (\$43,586,550).

#### **ACTION TAKEN BY THE GOVERNMENT OF INDIA AND INDCROSS**

The GOI did not make an international appeal for aid on the occasion of the 1975 monsoon floods but did request assistance from Catholic Relief Services and the United Nations Development Program. Relative to past disasters, the GOI carried out assistance with little aid from external donors. From its own resources, the GOI was able to commit more than Rs 132.4 million (\$16,488,169) for the rescue and relief of marooned persons by army/air force helicopters and boats; for the air dropping of cooked food (largely boiled potatoes); for the distribution of cloth, cooked food, bread (some 450,000 loaves), and drinking water; for emergency medical centers where inoculations against cholera and typhoid were given; and for the distribution of fertilizers, seeds, and pesticides to farmers. Most of the rescue and air drop operations were carried out in Patna where people were still living on rooftops into the month of September. Some 5,000 cans of drinking water dropped to those perched on high places were especially crucial. Even the Prime Minister, Mrs. Gandhi, flew over flooded areas to assess the damage.

West Bengal's state government was able to expend Rs 1,925 million (\$239,726,020) for relief operations. Other state governments requested aid from the GOI central government for reconstruction and rehabilitation. Bihar asked for Rs 1,750 million (\$217,932,750) in aid and received an *ad hoc* financial grant of Rs 100-200 million (\$12,453,300-\$24,906,600) for relief plus 40,000 MT of wheat (value—U.S. Agency for International Development/Office of Foreign Disaster Assistance (OFDA), estimate—

\$6,280,000); rehabilitation needs were to be assessed at a later date. Orissa requested Rs 220 million (\$27,397,260) to rehabilitate its flooded 6,000 Km<sup>2</sup>.

INDCROSS was also very active in aiding flood victims. At Patna, its staff was busy day and night, boating supplies to marooned people. Fortunately, INDCROSS was prepared for the monsoon flooding, having reserved supplies in advance near vulnerable areas. Stores of items such as 22.73 MT of bread totaled Rs 1.9 million (\$236,612.70) in value. And during the crisis itself, INDCROSS distributed Rs 10.7 million (\$1,332,503.10) worth of milk powder, biscuits, medicines, baby food, and clothing. To avoid double counting, it is assumed that this latter amount represents contributions made by other Red Cross societies and voluntary agencies.

**ASSISTANCE PROVIDED BY THE U.S. GOVERNMENT**

The American Ambassador, Mr. Saxbe, exercised his disaster relief authority to donate \$25,000 to the Prime Minister's Relief Fund. This donation, prompted largely by the spectacular inundation of Patna City, was made on September 2, 1975.

USG ASSISTANCE ..... \$25,000

**ASSISTANCE PROVIDED BY U.S. VOLUNTARY AGENCIES**

CARE responded to the GOI request for aid by expanding its Maternal Child Health (MCH) feeding programs already in place, to include flood victims.

CRS donated the following for relief in the Calcutta zone of the country: 2 jet injectors to the Medical Mission Sisters at Kurji for the vaccination of 20,000 people against cholera; Rs 30,000 (\$3,735.99) for the purchase of local foods; Rs 75,000 (\$9,339.98) for the purchase of local clothing for 10,000 people; Rs 50,000 (\$6,226.65) for local administrative and transport costs involved in the rehabilitation of Patna City; 8 MT of bleaching powder worth Rs 19,000 (\$2,366.13); 22.77 MT of rice (value—OFDA

estimate—\$10,407.14); 95 tents for temporary shelter, value not reported; and Rs 4,400 (\$547.95) in logistic funds. CRS also released special funds for emergency feeding of children. These grants were cash and rice transfers to counterparts on site: Raiganj, W. Bengal, Rs 35,000 (\$4,358.66); Krishnanagar Rs 40,000 (\$4,981.32); Balasore, Orissa, Rs 27,000 (\$3,362.39) and 750 bags of rice (34.09 MT, value—OFDA estimate—\$15,579.55); Berhampur Rs 17,000 (\$2,117.06) and 1,000 bags of rice (45.45 MT—\$20,772.73); Cuttack Rs 28,000 (\$3,486.92) and 500 bags of rice (22.73 MT—\$10,386.36).

LWR and CWS honored the GOI request for aid by increasing contributions to their counterpart agency in India, Church's Auxiliary for Social Action (CASA). CASA handles much of the protestant relief effort in India. Material goods distributed by CASA come from the U.S.—generally 40% from LWR and 60% from CWS. Cash contributions to CASA come from the World Council of Churches, representing churches in Europe and East Asia. LWR also works through the Department of World Service at the Lutheran World Federation in Geneva in its relations with India.

LWR/CWS provided rations for meals, used clothing from the U.S., and the services of medical and paramedical personnel during the India flood emergency; however, the value of such assistance was not reported. Neither did CASA report the total value of international aid given, but a partial figure for food, clothing, medicines, and housing repair would be \$277,584.06. (N.B.—CASA contributions are not included in the following figure.)

**U.S. VOLUNTARY AGENCIES**

ASSISTANCE ..... \$97,668.83

**ASSISTANCE PROVIDED BY THE INTERNATIONAL COMMUNITY**

The WFP, at the request of the GOI, agreed to help feed some 1.3 million people in the states of Bihar, Orissa, and Uttar Pradesh for 60 to 90 days. To meet this need, WFP contributed 35,000 MT of wheat, 2,500 MT

of nonfat dry milk (NFDM), and 2,000 MT vegetable oil. The value of this food was put at \$12,074,100 by the United Nations Disaster Relief Office (UNDRO).

U.N. SYSTEM ASSISTANCE . . . \$12,074,100

Oxfam flew £10,000 (\$23,207.24) worth of medical supplies to India to be used by the Indian Medical Association and medical teams from nongovernment hospitals in Bihar. £2,800 (\$6,498.03) and 60 MT of wheat (value—OFDA estimate—\$9,420) were sent to the Orissa Sarvodaya Relief Committee in order to feed 10,000 people for a period of 30 days. In addition, 500 MT of wheat (value—OFDA estimate—\$78,500) went to voluntary agencies in Bihar and a £5,000 (\$11,603.62) discretionary grant was made available to the Oxfam field director.

The World Council of Churches cabled \$25,000 for assistance directly to the Church's Auxiliary for Social Action (CASA), while the Folkekirkens Nodhjaelp (Danish Church Aid) channeled Dkr 150,000 (\$27,277.69) to Lutheran World Service for emergency aid in Bihar. This latter contribution was destined specifically for the purchase of milk powder and medicines to be used by medical teams.

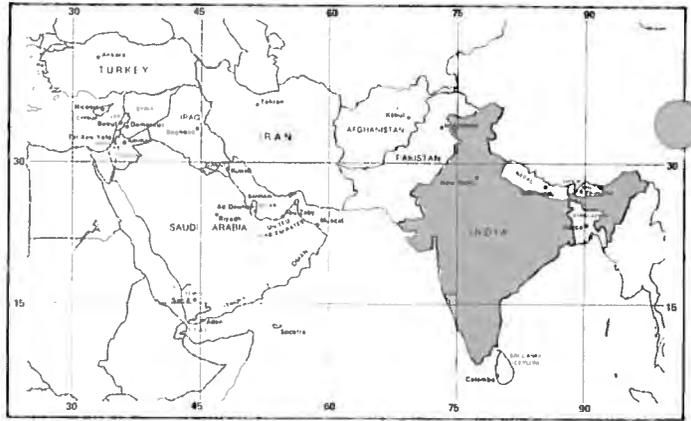
INTERNATIONAL VOLUNTARY  
AGENCIES ASSISTANCE . . . \$181,506.58

LICROSS also acted as an intermediary for donations to assist flood victims. LICROSS announced the following contributions by national Red Cross societies: (N.B.—Gifts of less than 100 Swiss francs are not reported.)

Australia	Cash	\$ 3,255.47
Bahrain	Cash	1,205.79
Canada	Cash	11,521.70
Canada (Government)	Cash	53,456.59
Czechoslovakia	In kind, not specified	12,846.76
German Democratic Republic	Tents, clothing, etc.	436,691.31
Great Britain	Cash	2,262.86
Iran	Cash	27,029.74
Italy	Cash	37.47
Lebanon	Cash	803.86
Luxemburg	Cash	803.86
Monaco	Cash	1,231.91
Poland	In kind, not specified	48,557.51
Turkey	Cash	5,526.53
	<b>TOTAL</b>	
	LICROSS	\$605,231.36

**THIRD COUNTRY DONORS  
(GOVERNMENT TO GOVERNMENT  
ASSISTANCE)**

Canadian International Development Agency— Cash given to INDCROSS	\$ 50,000.00
Federal Republic of Germany —Cash DM 25,000	10,706.64
Great Britain—Vaccines	42,017.00
Japan—Cash	10,000.00
<b>TOTAL</b>	<b>\$112,723.64</b>



INDIA

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