Dynamics of Disasters

Famine

Famines are complex events, both in their causes and in their effects. Most of those which are not directly caused by conflict are closely associated with drought. Conflict can create famine by preventing cultivation or trade, and groups in conflict deliberately create famine conditions to destroy their enemies.

In a drought, unless groundwater supplies can be increased to compensate, the reduction of rainfall reduces the productivity of land, affecting crops, trees, livestock and people. Famines are usually long-term disasters, which occur only after an extended period of increasing poverty when resources, food stocks and coping mechanisms are all used up

Impending famine can be observed and predicted with a range of indicators, depending on whether the famine is due to drought, poverty, lack of waged work, conflict, livestock loss or a combination of these and other factors

Meteorological reports and satellite surveillance may provide indications of drought, but the most reliable famine indicators are rising food prices and falling livestock and labour prices, as the local "terms of trade" shift between food, which increases in value either relatively or absolutely, and other assets or services, such as jewellery, animals, or work, which go down in value, again either relatively or absolutely. Population movements, abandonment of settlements, emptying of food stores and the collection, sale and consumption of nutritionally-poor "famine foods" will occur as hunger deepens.

In conflict-related famines, the trigger to disaster will be the point at which people are unable to grow food, trade is prevented, and civilians can no longer move to areas where food is available. In drought conditions, famine will follow when all possible coping mechanisms and food entitlements have been exhausted. As a long duration emergency, with people enforcing hunger on themselves to conserve their food supplies, that trigger point may be difficult to identify.

Droughts force down agricultural incomes through the reduction or destruction of harvest and livestock losses. Landless labourers will also lose income. As incomes increasingly cannot compensate for lack of home-grown food, health conditions deteriorate and population movements are likely. This may take several years.

In most rural communities without an immediate past history of famine, the loss of one harvest will not be enough to cause famine, as people will have long-standing coping mechanisms (eat less, use up food stocks, sell labour, livestock or personal possessions) and can call on a range of food entitlements, including family or village support networks

Repeated droughts will have a strong impact on livestock through shortages of, or higher prices for, water and fodder. This will have a serious effect on nutrition, especially for nomadic peoples for whom livestock is the main form of capital, to be exchanged for grain when necessary. Prices of livestock will fall while food costs rise, and such a negative shift in the terms of trade can swiftly

impoverish nomadic peoples.

Poor nutrition will lower resistance to disease while the shortages of water may increase the incidence of water-borne diseases as people use more polluted water sources

Long-term droughts have a strong impact on the environment of the area through direct destruction of vegetation, desiccation of soil and wind or rainfall erosion, and through the increasing pressure from livestock and people on what plant material remains, including the destruction of trees for fodder or for sale as firewood, charcoal or building material Of course, on a global scale, removal of tree cover is primarily a result of land clearance to create new arable terrain.

A community facing famine

continued on page 64

Focus 14: Sudan 1985, famine's winners and losers

The drought which peaked in 1984-85 and the famine that accompanied it in Sudan were the worst for many decades but the impact varied enormously between socio-economic groups, and indeed accentuated enormously the growing divisions within Sudan

While two decades of declining rainfall were the most obvious and immediate cause of the food shortages, famine was the product of a complex process which increased the vulnerability of many Sudanese until the disaster took place.

That process included the government's low and late investment in peasant rain-fed agriculture and livestock production, poor infrastructure and limited formal credit, all of which prevented the accumulation of significant surpluses which could have helped people survive the worst years.

The government also failed to maintain adequate food reserves, choosing to allow exports instead, under pressure from Sudanese farmers and merchants, and from international banks wanting loan repayments. As the disaster approached, the government did not switch production in the irrigated sector over to food fast enough, and finally, when many Sudanese were already hungry, the then government refused to admit the disaster in time to secure international food aid.

That failure to invest in traditional agriculture hit the most vulnerable As farmers in the Kordofan and Darfur regions in the west of Sudan became poorer, their only option was to migrate to find work on irrigated farms near the Nile and, when the work became scarce through drought and competition, there were few alternative sources of income.

As forage became harder to find or more expensive, nomadic people, such as the Kabbabish and Baggara, were forced to sell livestock, precipitating a decline in animal prices, and further reducing their ability to buy food. Some even had to give up grazing herds to grow food themselves.

Thus the drought and its mismanagement gradually caused large-scale temporary migrations, which became permanent when the rains completely failed, towards the Nile and the towns and cities, while pastoralists faced pressures to become sedentary farmers As families moved, they lost their land rights, further increasing their vulnerability and, as the movement and impoverishment of people increased, families broke up

While the richest nomads and farmers could survive a bad year or string of years, the poorest and most vulnerable families became a new class, totally without assets, dependent on wage labour if available or food aid if not The depth of the Sudanese famine was indicated by the widespread elimination of traditional coping mechanisms While many gathered famine foods, other mechanisms of food sharing, livestock loans, or the "shayl" crop mortgage system, broke down as incomes declined and assets were sold off.

When large numbers of hungry people began congregating near the capital, Khartoum, as they had around towns across northern Sudan, the insecure government refused to acknowledge the crisis and in some cases drove people back into Kordofan to remove what it perceived as a threat to stability That lack of action created its own instability and the government was ousted at the height of the famine.

While short-term famine relief efforts increased temporarily, long-term efforts to reduce the vulnerability of the poorest peasants have not been put into place and the result has been an exodus from rural areas into towns, widespread hunger and continuing instability.

During the 1984-85 famine, the Sudanese Red Crescent was one of only a limited number of existing indigenous organisations able to react effectively to the challenge. It participated in food delivery services into areas such as the Red Sea Hills and the shanty areas of Port Sudan, and shared its knowledge of country, its people and their needs with the scores of international organisations

In particular, the Sudanese Red Crescent (which is still working to assist both Sudanese and refugees in need years after many of those relief groups left) carried out work in 1984-85 that no other organisation could tackle It delivered food into the remote areas of the arid North Darfur region using the Red Crescent branch network already in place, and conducted a unique village-level information-gathering experiment to help many organisations target their relief supplies and expertise effectively.

Famine: The process of famine drives the most vulnerable people into starvation. As in almost all disasters, self-help by families and communities is the basis upon which national and international relief efforts must be built Sudan, 1991. Chris Steele-Perkins/Magnum.

adopts a wide variety of coping mechanisms. The order over time and combination of such mechanisms will vary from famine to famine, family to family.

The first mechanism will be simply to eat less, while conserving whatever food stocks exist, and those with available resources are likely to travel to more distant markets to find cheaper supplies. Food will be borrowed from wealthier neighbours or relations and old debts will be called in. Alternative crops suitable for drought conditions will be grown, while wild "famine foods" (usually regarded as too poor nutritionally to be worth consuming) will be collected, exchanged and sold.

To obtain money for food purchases (or additional money to pay inflated prices), people will sell their labour rather than work on their

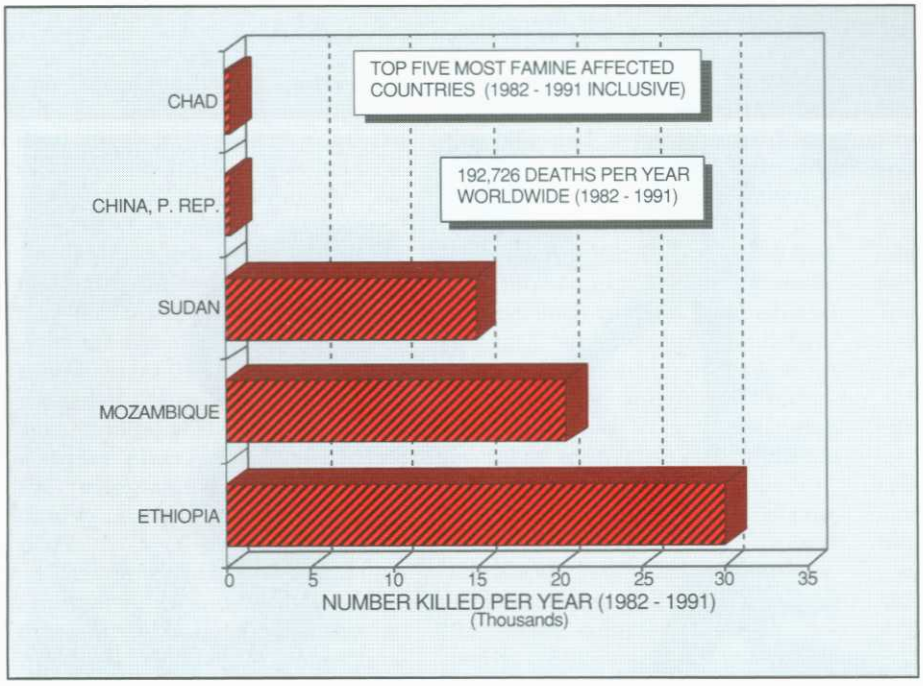

Figure 12a: Top five famine affected countries, numbers killed. On average, famine kills nearly 200,000 people a year.

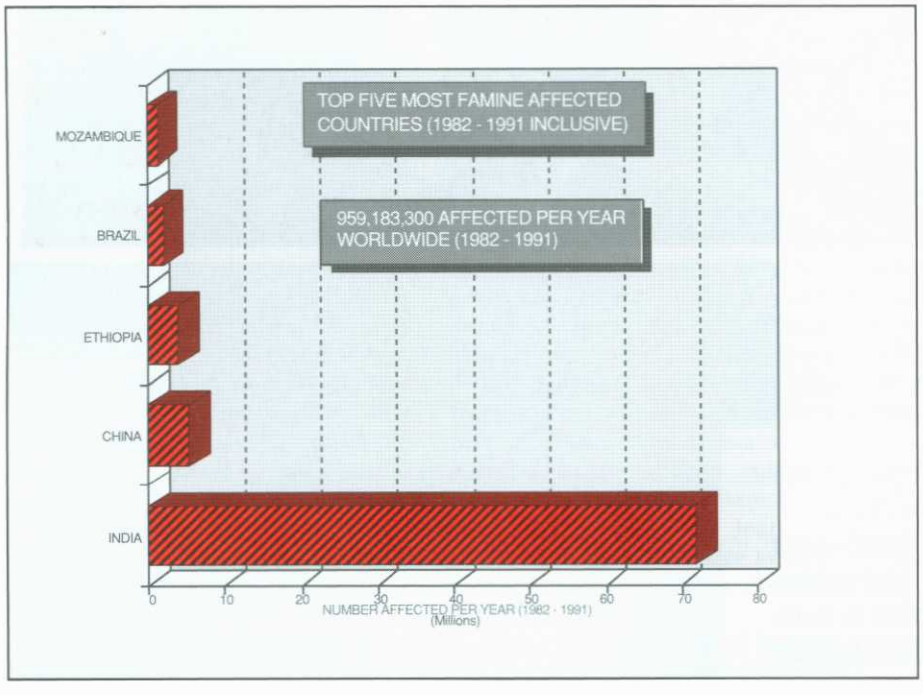

Figure 12b: Top five famine affected countries, numbers affected. Famine affects nearly a million people a year. In India, many are affected but few die of famine as there are well-tested state systems in place to provide assistance in times of food shortage.

own unproductive land, sell family and household possessions, and sell animals. The sequence of animal sales will depend on the perceived long-term value of each breed, so settled farmers will keep ploughing animals as long as possible while nomads will sell "non-core" breeds, such as small stock, rather than cattle or camels.

As extreme conditions are reached or perceived as inevitable, the family will break up, with children being sent to wealthier or distant relatives, male family members travelling to areas where work may be found or into the towns. Finally, when people see no point in staying in an area where they have land rights, entire families may migrate in search of food. As famines deepen, birth rates go down; as soon as people can see an improvement on its way, from a good rainy season to income from a job, the birth rates rise again.

Over the longer term, drought will lead to changes in farming methods, especially the conservation of water, planting of drought-resistant crops, and a greater shift towards low risk strategies. The lack of animals and forage may force pastoralists to reduce their nomadic movement or become completely settled. There will also be a gradual drift of people out of rural areas into towns and cities, especially if government policies and subsidies have kept urban food supplies cheap. ■

Dynamics of Disasters

Flood disasters

Floods, as distinct from sea surges and storms, are situations where either an increase in rainfall (or snow melt) or a decrease in the capacity of river systems to absorb or channel water safely leads to water inundating land. These events may be seasonal, due to the regular annual rise and fall of river water, or flash floods, which are sudden and often very localised events as a result of storms or snow melt

The predisposing factors for floods can be very varied but often include environmental degradation in catchment areas, overgrazing, poor farming techniques and deforestation, which all reduce soil absorption and increase run-off of rain water. Poor national or local weather forecasting and communications can turn predictable and potentially manageable events into disasters.

Floods can also be caused or exacerbated by a lack of protective measures, such as dikes or flood embankments, the sedimentation of river beds and inadequate construction techniques or materials. There are clear risks in siting settlements, industry and agricultural activities in flood plains, close to river courses or valley bottoms.

The availability of water for agriculture, the use of rivers for communication and trade, and the locations of river crossings all make flood plains, estuaries and coastal zones important places for towns, cities, fishing and farming, despite the dangers of flooding. Flood plains provide fertile land, because of the regular deposits of rich silt, and for many, particularly the poor, there is no alternative but to farm the land and accept the risk.

Urbanisation multiplies the potential impact of flooding. Poor people crowded into flimsy homes is marginal slum areas without drainage are obviously vulnerable to floods, especially given the lack of vegetation in towns and cities, and the very high water run off from paved roads or imparted soil. Recent arrivals from rural areas will have little information on flood risks from which to judge their own vulnerability and take steps to reduce it

Floods often give early warning signs, allowing populations to be alerted. River floods from heavy rains or melting snow in catchments areas are predictable. Several days' or even weeks' warning may be possible, especially for seasonal flooding, which will give people time to move livestock and other possessions, including food stocks, to a safer area

The intensity, speed and geographical focus of flash floods make them far more difficult to predict. Warnings will depend on the efficiency of local weather forecasts and communication systems.

In large river basins, flooding is typically seasonal, and water levels generally rise and fall slowly. This allows, especially with early warnings, orderly evacuation of people and animals, and protection of possessions, including their food stores. A major exception will often be those poorest farmers who do not have secure rights to their land and for whom evacuation may mean losing their sole source of livelihood.

Sudden flooding, or flooding in narrow valleys which increases the force of water, can cause great destruction, washing away houses and

crops, drowning people and livestock, eroding soil, including river banks and dikes which are effective in more normal situations, and interrupting communications and transport.

Major floods can cause a large number of deaths from drowning, especially among the young, old and weak, but far fewer serious injuries. Slow flooding causes few deaths or injuries. Flooding can increase public health risks from malaria and other diseases some weeks later. Dead animals, human corpses, or damaged sewerage systems may contaminate ground water supplies when flood waters recede.

Food shortages are likely if a lack of warning has allowed damage to crops, animal fodder and food stocks. Flooding may disrupt logistics and communications, blocking road and rail links, bringing down

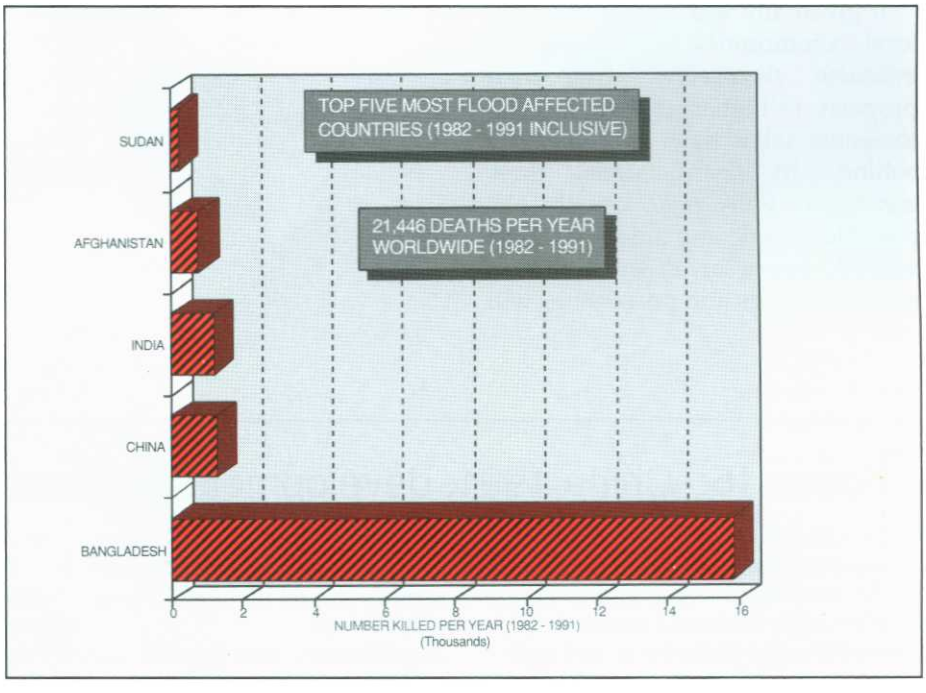

Figure 13a: Top five flood affected countries, numbers killed. Bangladesh is by far the most flood-prone country in the world, with an average of 15,000 people being killed each year.

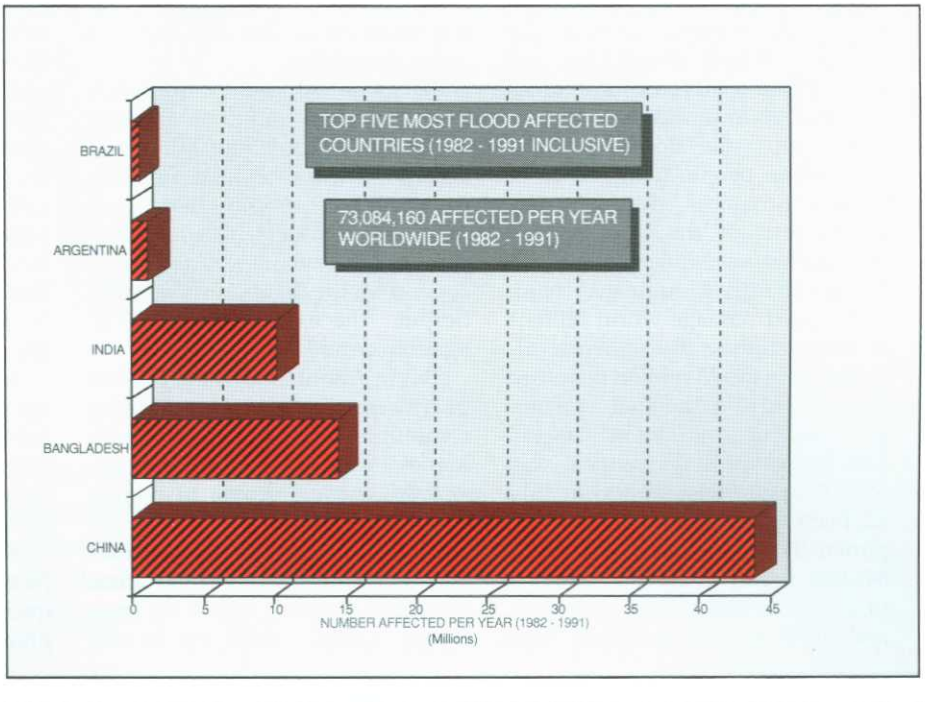

Figure 13b: Top five flood affected countries, numbers affected. Many more people are affected by floods in China than in Bangladesh but fewer die.

telephone lines and radio aerials, and damaging motor vehicles and boats. As flood waters recede, heavy silting and water logging may badly damage the productivity of the land.

The long term impact of floods can be very large, in lowered economic activity, reduced agriculture and loss of capital. Vulnerable people will be further marginalised by the loss of homes or even the loss of land, either through loss of rights by being forced to move, or literally through erosion or landslides

If given any warning of flooding, local communities will attempt to evacuate themselves and their property to higher ground, and try to secure what they have to leave behind. In flash floods, these measures will not usually be possible. People and animals will be injured, swept away or drowned, while buildings and possessions will be damaged or destroyed.

As flood waters recede, there will be short-term needs for food and safe water, temporary shelter and basic sanitation.

Longer-term needs will include reconstruction and control of disease vectors, such as malaria mosquitoes. If food or crops have been lost but tools and seeds are available, immediate replanting may be possible. If boats and nets have not been lost, fish may provide additional food. ■

Focus 15: China 1991, development mitigates disasters

Floods are an expected seasonal event in China and usually peak in the summer Massive efforts have been made to control major rivers, use the water for industry and agriculture, and limit disasters But torrential rain in May, June and July 1991, followed by typhoons in July and August, caused the country's worst floods for 100 years Flood waters in some areas took months to subside.

In all, the floods affected 200 million people living in 18 of China's provinces, destroyed the greater part of the summer and autumn harvest on more than 20% of the country's cultivated land, and caused damage worth billions of Swiss francs Those worst affected were the 73 million people in the densely populated eastern provinces of Anhui and Jiangsu. The Federation's first appeal was for 5,050,000 Swiss francs on July 12. Even at that stage the appeal reported 34,051 villages submerged, 646,000 rooms collapsed, damage to 25,889 factories, 1,805 hospitals and 20,000 schools, and more than 1,000km of road washed away. More than two million people were homeless, several thousand injured and 1,270 dead.

Significantly, even in the two provinces most affected, the disaster showed a variety of impacts which directly reflected pre-existing levels of wealth, development and vulnerability

Jiangsu had more resources, more industry; and even in rural areas many people had brick-built houses which withstood flooding and could be quickly reoccupied once flood waters receded The province as a whole was able to recover from the floods fairly quickly, despite the extensive damage to agriculture and industry.

But in Anhui, one of the poorest provinces affected, many farming communities had mud and earth homes which were totally destroyed, forcing people to remain dependent on outside assistance for far longer. About 800,000 families needed rehousing. In some areas sustained flooding killed all trees except willow, while up to one metre of sand covered farm land

As the situation worsened, the initial Federation appeal was increased to 10,269,000 Swiss francs. Prioritising health and sanitation, the Red Cross Society of China sent 87,000 people in 18,400 medical teams to Anhui, Jiangsu and six other badly-affected provinces. The RCSC worked closely with national and local government, the People's Liberation Army and other organisations to assist evacuation, advise on health, water purification and sanitation, and distribute food, water purification equipment, blankets, clothing and shelter materials. While cases of malaria, typhoid and hepatitis A were reported, epidemics did not occur.

As the emergency eased and operations shifted from relief to rehabilitation, the RCSC resumed work on expanding its organisational base by setting up more local groups countrywide, and focused with the Federation and individual National Societies on building its institutional capacity for disaster preparedness

Flood disasters· Forced to live in flood-prone areas through poverty or circumstance, the vulnerable strive to protect family assets so they can rebuild their lives after the flood Bangladesh, 1989 Chris Steele-Perkins/ Magnum