Flood Statistics

The graphs in figure A, show that floods caused about a third of the 5,370 natural disasters recorded during the ten years 1986 to 1995. Wind storms of all types caused another third, but many of these, such as hurricanes, typhoons and tropical cyclones, are also accompanied by floods. The same data show that floods caused nearly a third of the damages due to natural disasters. The largest losses were incurred as a result of flooding of cities or by large areas of farmland being destroyed by large-scale river flooding. In this same period natural disasters claimed the lives of some 367,000 people, 55 per cent of whom died in a flood. One flood alone, due to a storm surge in Bangladesh in April 1991, claimed the lives of 140,000 people, that is 38 per cent of all deaths due to natural disasters in the period. Insured losses is the only category where floods do not figure at the top; they cause only 8 per cent of insured losses, behind wind storms at 67 per cent and earthquakes 18 per cent. Only about 5 per cent of flood losses were insured. In part this is because the insurance business hardly exists in the developing countries of Asia that suffer so much flood damage. In

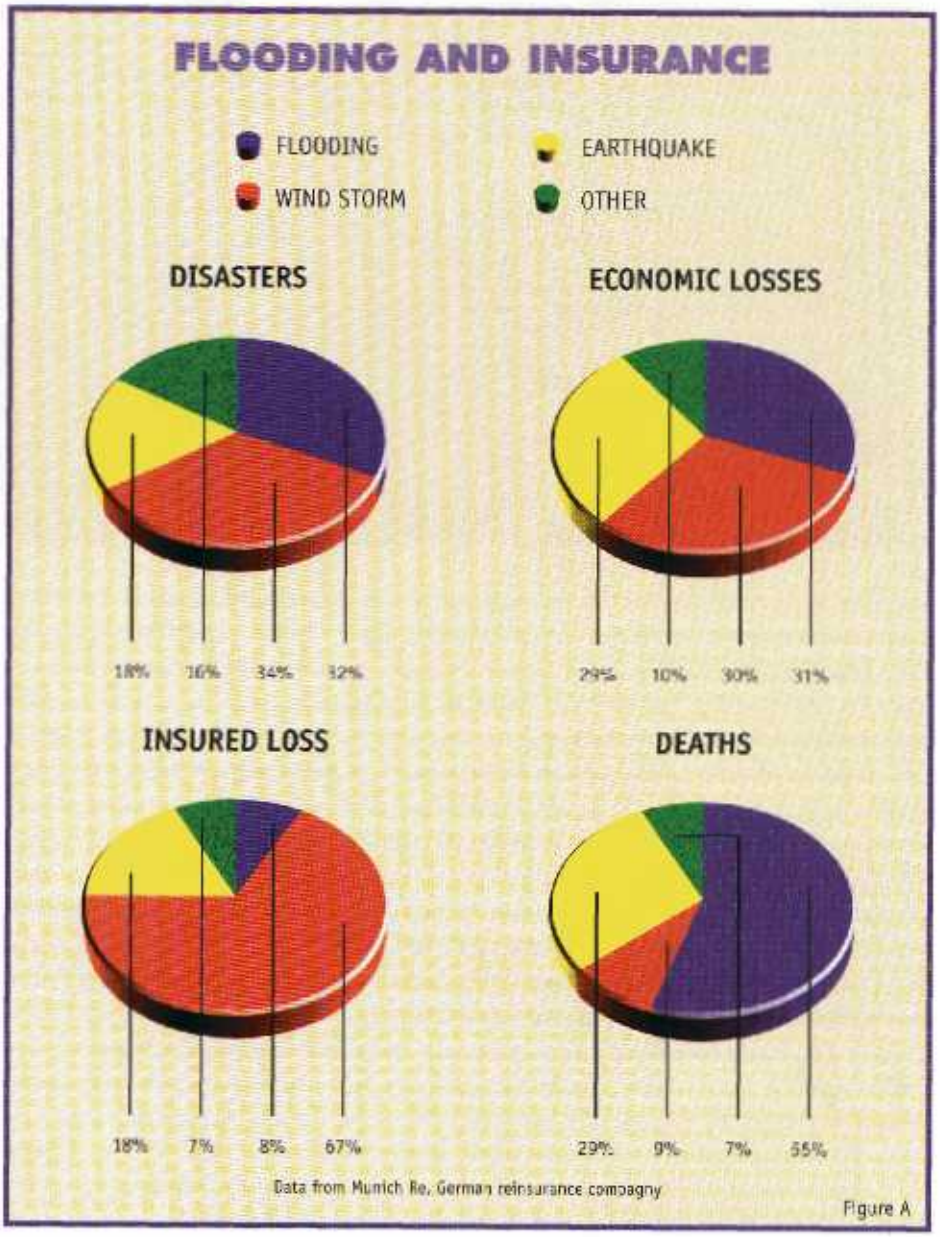
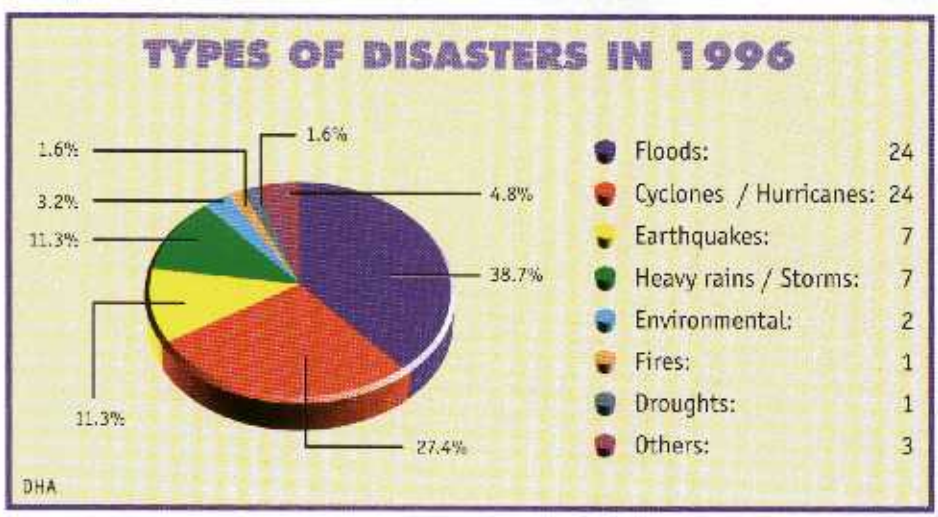


Figure A

addition, in other countries with a well-developed insurance system, insurance companies often refuse to underwrite flood risks. However, even where flood insurance is available the take-up tends to be poor because the danger of floods is often underestimated.

The graphs in figure B show that Asia is the continent that suffers the most from floods. Data from the emdat Database of the Centre for Research in the Epidemiology of Disasters (CRED) in Brussels show that it suffered 44 per cent

Flooded Street, Bangladesh Naogaon City. *Still Pictures, G. Mati*



of all flood disasters and 93 per cent of flood-caused deaths in the period 1987 to 1996. The high death toll is not only due to the dense population in the flood plains of the region, but also the difficulties that the developing countries in Asia face in mounting an effective flood defence. Despite the widespread poverty, Asia suffered 54 per cent of flood-related damage in the period.

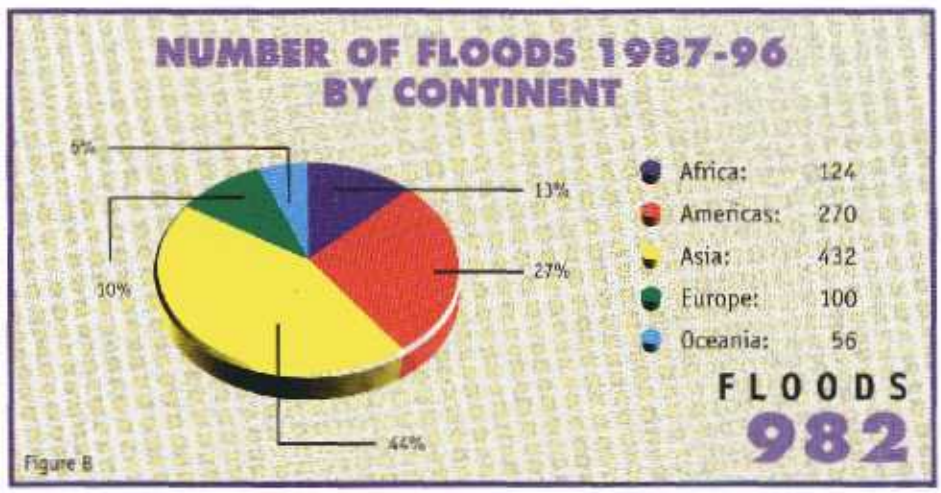


Figure 8

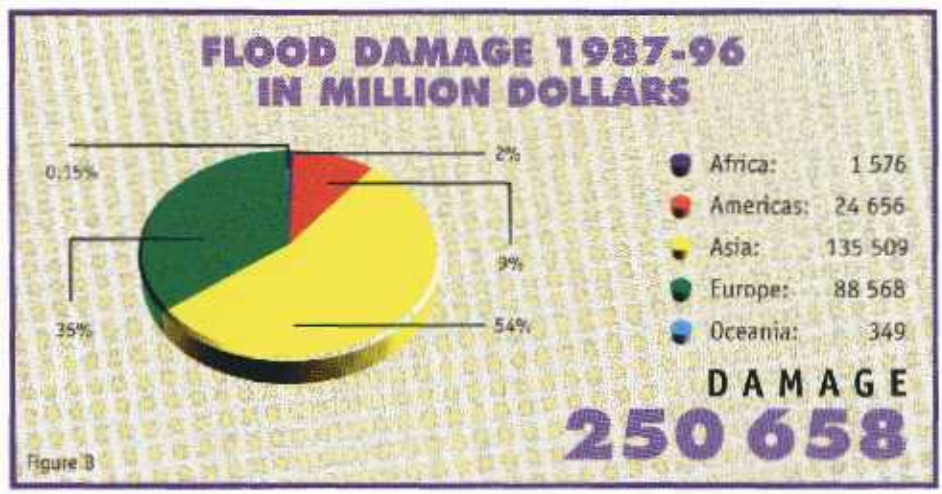


Figure 8

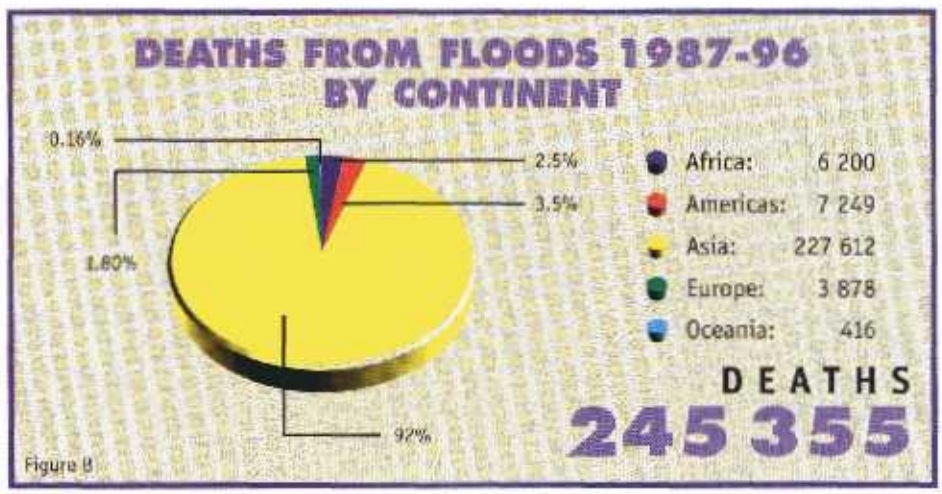


Figure 8

The Great Flood on the Mississippi of 1993

This flood was the most severe experienced in the United States. It surpassed all others in precipitation amounts, record river levels, area of land flooded, persons displaced, crop and property damage and flood duration.

The autumn of 1992 was very wet, resulting in saturated soils, and during the following winter a normal to above normal amount of snow accumulated in the Upper Midwest. The spring rains of 1993 were exceptionally heavy, and in many places higher than previously recorded. They caused rapid melting of the winter snows with spring flooding beginning in March. The weather continued wet with several places recording over double the normal rainfall for the five-month period April to August. As well as the generalized heavy rain, there were many intense, localized storms. Major flooding began on the Minnesota River, a tributary of the Mississippi, after a period of particularly heavy rainfall in mid-June over the States of Minnesota and Iowa. The next heavy rain in late June caused flooding on the Mississippi that coincided with the arrival of the earlier flood wave on the Minnesota at the confluence of the two rivers to form the first major flood crest moving down the Mississippi. More rain in early July added to this flood crest. Rain in late July fell further south and largely after the first flood crest had passed. This led to a double crest in southern regions. The second crest at Saint-Louis, the confluence of the Missouri, occurred 11 days after the first and reached 15.11 m, 1.95 m above the previous record, set 20 years previously. Though the Missouri also flooded, flood control reservoirs in the upper Missouri basin withheld sufficient water to reduce flood peak levels by two to three metres. Further south the Ohio River joins the Mississippi and as this was carrying normal flows, there was adequate channel capacity for the high flows and no further flooding was observed downstream. The floods upstream receded from mid-August 1993, but the very wet state of the river basin gave fears of an increased risk of flooding throughout 1993, until the end of summer 1994.

The impact of the flood was considerable. Some 80,000 km^2 of land was flooded, 54,000 people had to be evacuated and there was widespread disruption of river traffic, roads and rail. River barges carry 15 per cent of United States

Fort Wayne, Indiana. Flooded house and car. *Black Star. J. Stanker*

Mississipi floods, 1993, Farm fields flooded. *Black Star, J. Dexter*

freight and the Mississippi and its tributaries are the major route for this traffic. The river above Saint-Louis was closed to barges for two months, delaying millions of tons of coal, grain and fertilizer. Bridges destroyed by the flood required diversion of road and rail traffic.

At least 75 towns were completely inundated and some may never be rebuilt; others are planned to be rebuilt on higher ground nearby. Initial estimates of the economic impact indicate total losses of US$ 15–20 billion. Fortunately the death toll was small; less than 50 deaths were attributed to the flood.

The flood plains in the Mississippi are protected by dykes, some built privately and others by federal agencies, usually the United States Army Corps of Engineers. About 80 per cent of privately constructed dykes failed during the flood, but the federal dykes, built to withstand at least the 100-year flood, mostly held. In the wake of the flood there was renewed discussion of the wisdom of using dykes to protect farmland on the flood plain. A more natural, unprotected flood plain would absorb the flood better, leading to lower flood peak levels. This would also require removing many existing buildings and even whole towns off the flood plain.