

# An "act of God" or human failure?

By their scale and the sheer destruction left in their wake, some events shook entire generations and remain engrained in people's collective memory. Bhopal, Chernobyl, Hurricanes Katrina and Mitch, the Indian Ocean Tsunami and the South Asian Earthquake: all conjure images of human suffering and environmental annihilation. What part did human failure play in these events? Could better preparedness or the sustainable management of ecosystems as life-support systems have saved thousands of lives? Each one of these events, man-made or natural, tells its own story, with lessons to be learnt from each case and carried into the future as best practice.

### BHOPAL, possibly the world's worst industrial disaster

In the early hours of the 3rd of December 1984, in the city of Bhopal, India, a Union Carbide subsidiary pesticide plant released 40 tonnes of methyl isocyanate gas, immediately killing nearly 3,000 people and ultimately causing at least some 22,000 total deaths.

Bhopal provides one of the most notorious examples of the long-term health consequences of humanmade disasters, with impacts having carried over generations. Not only did the incident cause thousands of deaths and injuries, but its effects are still being recorded today in babies whose parents were exposed to the released gas.

Major industrial accidents, such as this or the Chernobyl nuclear disaster of 1986, can occur in all regions of the world, regardless of income level. Analysis of the location of technological disasters concludes that cities in richer nations are under greatest risk, reflecting the logic of concentration and economies of scale.

Bhopal is also a prime example of urban processes generating disaster risk. On the one hand, foreign investment can bring prosperity and be a resource for risk management. On the other, it can lead to increased vulnerability through the lowering of employment rights and environmental protection legislation. For the city of Bhopal, it was the latter.

Early warning systems are another safety net that can contribute to saving lives. There are four interdependent components of such systems: risk knowledge; monitoring and warning; communication; and response capacity. The gas released from the Union Carbide plant was associated with technical and management failures inside the plant that should have been detected and responded to by such a system.

## Hurricane Katrina - costliest and deadliest hurricane in US history

Hurricane Katrina was born on 23 August 2005 and became the sixth-strongest Atlantic hurricane ever recorded. Katrina killed 1,836 people and caused an estimated US\$ 81.2 billion in damage, devastating much of the north-central Gulf Coast of the United States.

Katrina prompted widespread criticism of the federal, state and local governments' reaction to the storm, whilst the National Hurricane Center and National Weather Service were commended for accurate forecasts and abundant lead time.

1950	1956	1962	1968	1974	1980	1986	1992	1998

Hurricane Katrina illustrates how responsible reporting and coverage of events play a major role in promoting urban security and safety. The media backed the perception of poor governmental response to Katrina and showed the subsequent crime and violence in New Orleans. The media also suggested that the impact of the hurricane had been predicted and disaster could have been largely avoided through better preparedness.

The coverage helped challenge the widespread belief that natural disasters are neither 'human made' nor 'predictable' and also prompted an investigation by the United States Congress and a review of the US Army Corps of Engineers for the failure of New Orleans' levee protection system.

Of all regions, the Americas experience the greatest economic loss from natural disasters. Windstorms, including hurricanes and tornadoes, are the most frequent type of disaster, which affect the greatest number of people and cause the highest total economic costs. Windstorms can also trigger flooding and landslides, the former causing the greatest number of deaths for any disaster type in the region.

Although North America is a wealthy and highly urbanized region, with strong risk reduction capacities, neo-liberal policies have scaled down state responsibilities for risk reduction and response and placed greater emphasis on the role of private citizens and companies. Hurricane Katrina, with its failed state response and poor recovery efforts, illustrates that this shift has had mixed results for urban resilience to hazards.

An effective early warning system for instance could have spared hundreds. In the US, where a mixture of alienation from authority and lack of resources contributed to the high number of people who were neither evacuated nor adequately prepared for the event, a better emergency relief system would have helped reduce the suffering.

#### Hurricane Mitch - environmental degradation exacerbates disasters

In 1998, Hurricane Mitch swept across Honduras, Nicaragua, El Salvador, Guatemala and Belize, killing an estimated 20,000 people and directly affecting more than 3 million.

Many losses occurred in small regional towns smothered by mudslides or flash floods caused by deforestation in adjacent agricultural areas. A disproportionate number of the victims were street children.

The Stockholm Conference in 1999 set out a framework for the US\$9 billion in international reconstruction aid for Central America following Hurricane Mitch, but this has arguably led to little improvement in the region's socio-economic status or environmental security. For instance, a review of legislation in Central America found that while progress was made after Hurricane Mitch in introducing new legislation, urban concerns were not fully addressed. In particular, links between disaster management and urban management were not strong, leading to a missed opportunity to enhance urban planning as a risk reduction tool.

Nonetheless, the disaster offered an opportunity to rethink institutional and social structures. Following the hurricane, women in Guatemala and Honduras were seen building houses, digging wells and ditches, hauling water and building shelters – taking on activities traditionally considered to be "men's work". Beyond increasing the efficiency and equity in disaster reconstruction, this kind of experience can also help in changing society's conceptions of women's capabilities.

Overall, whilst direct human loss is lower for human-made rather than natural disasters, their impacts on ecosystems and human health remain many years after an event and are rarely recorded in official statistics. Asia and Africa are the prime sufferers of human-made disasters: from 1997 to 2006, 1,493 such disasters were recorded in Asia and 952 in Africa, compared with 392 events in the Americas, 284 in Europe and 11 in Oceania.

#### GRHS07/dis/bk/7

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