

# Case study of bangladesh and boscastle floods

[Countries](#), [Bangladesh](#)



1. The flood occurred on Monday, 16 August 2004 in the villages of Boscastle in Cornwall, England, United Kingdom. The village suffered extensive damage after flash floods caused by an exceptional amount of rain that fell over eight hours that afternoon. At midday on the 16th August 2004, heavy thundery showers had developed across the South West; these were the remnants of Hurricane Alex (2004) which had crossed the Atlantic. The flood in Boscastle was filmed and extensively reported. The floods were the worst in local memory. A study commissioned by the Environment Agency from a hydraulics consulting firm concluded that it was among the most extreme ever experienced in Britain.

1. The flood occurred during late July, August and September of 2004 and was widespread across Bangladesh. Although flooding is common, the 2004 was exceptional bad with increased loss of life and livelihood. Bangladesh suffered extensive damage and approximately 38% of the country was submerged in flood water at some point

## Boscastle and Bangladesh Floods 2004

### Causes

#### Boscastle

#### Bangladesh

1. 75mm of rain fell in just 2 hours in the village
2. The village lies in a steep valley which speeded up overland flow of rainwater

3. The village lies at the confluence of two rivers
  4. The natural channel had been walled so the river couldn't adjust to the sudden increase in water
  5. There had never been a major flood in this village so there were no flood prevention methods in place.
  6. The torrential rain led to a 2 m (7 ft) rise in river levels in one hour. A 3 m (10 ft) wave, believed to have been triggered by water pooling behind debris caught under a bridge and then being suddenly released as the bridge collapsed, surged down the main road. Water speed was over 4 m/s (10 mph), more than enough to cause structural damage. It is estimated that 20, 000, 000 cubic metres of water flowed through Boscastle that day alone
  7. Changes in farming practice caused a reduction of trees and hedges higher up the valley causing water to flow through more quickly than would have been the case in the past. The saturated surface also contributed.
  8. Boscastle lies in a valley and the highland encouraged precipitation in the form of orographic rainfall.
1. Bangladesh is a low-lying country with most of its land lying on the delta land of three major rivers, the Ganges, the Brahmaputra and Meghna.
  2. Climate change resulted in melting glaciers in the Himalayas which contribute to water input.

3. Deforestation in the Himalayas for agriculture led to increased soil erosion. This had a negative effect on the rates of interception and evapotranspiration resulting in more water reaching the river.
4. There was an unusual heavy seasonal monsoon rain upstream from May-September which fed into the rivers. This was a large contributing factor.
5. There were also tropical revolving storms (cyclones) that brought exceptional winds, intense precipitation and storm surges. Causing high discharge in the rivers.
6. River management is difficult to implement as Bangladesh is one of the poorest countries with the GDP at around \$300.
7. Increased pressure of rural-urban migration meant that more people lived on the flood plains.
8. The increased sediment in the river is also a contributing factor.

### Immediate Impacts

#### Boscastle

#### Bangladesh

1. A burst sewage mains and damaged buildings made much of Boscastle inaccessible for health & safety reasons for at least a few days. 75 cars, 5 caravans, 6 buildings and several boats were washed into the sea. Large loss of possessions

2. Approximately 100 homes and businesses were destroyed; trees were uprooted and debris were scattered over a large area.
3. A fleet of 7 helicopters rescued about 150 people clinging to trees and the roofs of buildings and cars.
4. No one died.
5. Roads were blocked off by the floodwater, making emergency access difficult except from the air. Even when rescue helicopters arrived, the valley was only big enough for two to operate at any one time, prolonging the operation & putting lives at risk from the still rising flood waters.
6. Property was destroyed by debris such as entire trees & vehicles speeding down the valley at high speed, pulled out towards the sea by the raging torrent. Buildings were smashed, especially in the main street where the river channel flows.
7. People were trapped in buildings by the floodwater & forced to seek refuge on the roofs of the buildings and await rescue. The danger of hypothermia, shock or even being swept away was great.
8. People were left homeless for the night, so emergency accommodation had to be set up. Nearby hotels & guest houses were packed with tourists who had arrived in Boscastle in the morning & had lost their cars, so were unable to return to their accommodation elsewhere.

1. During July and August 2004, approximately 38% of the total land area of the country was flooded, including 800, 000 hectares of agricultural land and the capital city, Dhaka.
2. As well as 1. 5 million acres of crop damage there was the death of 21, 000 livestock. This is a huge loss of income for the families.
3. Nationwide, 36million people (out of a total population of 125 million) were made homeless.
4. By Mid September the death toll had risen to 800. Many of these people died as a result of disease caused by lack of clean water.
5. Raw sewage contaminated much of the flooded areas especially in Dhaka.
6. The flood also caused serious damage to the country's infrastructure, including roads, bridges and embankments, railway lines and irrigation systems
7. Almost a million dwellings were destroyed, more than 3 million damaged and millions of inhabitants temporarily or permanently displaced.
8. Boats were afloat on the main runway at Sylhet Airport and all domestic and internal flights were suspended. Rail and road links into Dhaka and the affected areas were severely damaged. This created a difficulty distributing supplies.
9. The value of the damage was assessed as being in the region of \$2. 2 billion

10. Although the flood affected both the poor and wealthy households, the poor were generally less able to withstand its impacts. Landless labourers and small farmers were the most severely affected in rural areas. In the urban areas it was typical the slum dwellers, squatting on poorly drained land, who suffered the most.

11. 5000 shelters opened to accommodate the homeless.

12. 25, 000 schools were damaged. The undamaged ones were used as emergency shelter and doctors set up clinics in the back of trucks.

13. Loss of export earnings from factories.

### Long Term Impacts

#### Boscastle

#### Bangladesh

1. Floodwater damaged a great deal of properties. Possessions were lost, river water and burst sewage mains spoiled the ground floor of many houses & thousands of pounds worth of damage was done.

2. Repairs had to be made after the damage. This was very time consuming & costly. Some buildings were beyond repair & their owners have had to consider rebuilding from scratch.

3. The damage not only affected the residents, but also insurance companies. It is likely that home insurance will be much costlier in Boscastle from now on.

1. Boscastle's main industry is tourism. The town was effectively closed to tourists after the flood, causing a massive loss of revenue. Tourist attractions such as the witchcraft museum were lost and tourists next season will be wary of visiting the town in case the floods are repeated. Boscastle may never recover its tourist industry fully & many small businesses could go out of business as a result. 90% of Boscastle economy is tourism, the floods caused major loss of tourism. 21 accommodation providers had to close down. 2 of which didn't reopen.

2. Environmental damage to local wildlife habitats

3. Coastal pollution caused as debris and fuel from cars flowed out to sea.

4. People suffered from long term stress and anxiety as a result of been traumatised by the incident.

1. The floods caused 4 environmental impacts: river-bank erosion, especially on embankment areas close to the main channels; soil erosion; water logging particularly in the urban areas; and water contamination, such as raw sewage in Dhaka, and the associated health risks that come with this.

2. As Bangladesh is such a poor country, the short term impacts almost mirror the long term ones as there's little money to alter them.

3. The 36 million that were homeless up to 70% of them will remain that way for up to 5 years.

4. Factories continued to have a loss of earnings as there was a loss of export.



5. Roads, houses, other infrastructure, railway lines and embankments remained damaged.

6. Charities and other NGO have continued to provide aid and help distribute supplies

7. People undoubtedly will have suffered from long term stress and anxiety as a result of been traumatised by the incident.

8. Many small businesses and many peoples income (through farming or rearing animals) will have been lost and will never recover.

9. The absence of money in the country will inevitably mean certain amenities won't get repaired.

Immediate responses

Boscastle

Bangladesh

1. Buildings that were damaged were secured by building inspectors. This took 7 days, after which homeowners could retrieve there possessions.

2. People were relocated.

3. Power and water supplies were repaired

4. Local GP surgery acted as an emergency centre

5. Prince Charles made a large donation to rebuild parts of Boscastle.

6. Cars and debris was removed as well as the demolition of damaged buildings.
7. Environment agency removed debris upstream and burned vegetation away from the river.
8. Roads and sewage works were restored.
9. Nearby hotels welcomed anyone affected by the floods to stay. Especially tourists.
10. Tourists were given food and amenities and transport free of charge and helped to recover any of their possession before been helped to return home
11. The entire region was inspected & the probability of a recurrence calculated. The Environment Agency has recommended that construction in the area in the future should not include facilities for those most vulnerable to flash-flooding, such as the elderly & young children. Effectively, this means that the local Council will reject any planning applications for residential homes or schools in the valley.
1. Government organised a large scale search and rescue mission, with help from NGO's and volunteers.
2. Sewage in the capital city was drained.
3. The government, working with non-governmental organisations (NGO's) provided emergency relief in the form of rice, clothing, water, medicines and blankets.

4. An international appeal was launched with over \$50 million donated.
5. The UN activated a disaster management team to coordinate the activities of the various UN agencies. They supplied critical emergency supplies and conducted a “ damage and needs assessment” in the affected areas.
6. Bilateral aid from individual countries was directed to the UN team.
7. The charity WaterAid affected many areas that WaterAid works in, and so WaterAid and its partners actively engaged and assisted in water and sanitation issues, by rehabilitating existing work and through hygieneeducation. WaterAid's initial response included supplying oral saline and water purification tablets, providing transportation for emergency patients, disinfecting water points affected by flood water and raising awareness of hygiene risks through posters.
8. Many other charities such as the Red Cross provided volunteers who distributed food and essential relief items like kitchen sets, lighting, clothing, shelter materials and water purification tablets. They also provided healthcare and supported search and rescue operations.

### Long Term Responses

#### Boscastle

#### Bangladesh

1. 2004: Buildings searched, buried cars removed from harbour, trees removed, roads cleared, B3263 bridge temporary concrete parapets

installed. Completed an Overflow culvert work and hard sticks were inserted into the ground so barrier against the flood water would be created. The museum and shops were demolished. All power and water supplies were restored. The Boscastle power system was also renewed

2. 2005: Most shops and restaurants re-open with new customers. The flood defences were increased and improved strongly with an £800, 000 flood defense scheme been completed by April 2005. The rest of Boscastle got rebuilt.

3. 2006: Two underground pumping stations for the sewage treatment scheme began and work to widen and lower the river channel to increase capacity began. The car park level was raised, and extended, reducing the risk of cars being washed away if it flooded again.

4. 2007: A 'gateway building" was built and work started on rebuilding an old culvert at the top of the village, to allow more water to flow through in periods of heavy rain. Work started on installing the pipes for the new sewage treatments works, in the harbour area (between the Lower and Upper bridges). Traffic lights were reinstalled and the new lower bridge was installed.

5. 2008: Work on rebuilding the culvert next to the petrol station completed as well as a culvert in Dunn Street. The harbour was resurfaced and the Old Lower Bridge was demolished, and the new Lower Bridge was brought into use.

1. Self help schemes were put in place, such as growing pumpkins on ground thought to be infertile, “ Superducks”, Site and service and core housing.
2. WaterAid repaired tubewells, constructed mobile latrines and gave house to house counselling to families.
3. Charities continued donating money and continued their work with distributing supplies, improving living conditions and treating disease
4. Australia donated food supplies, consequently been the largest food aid donor to Bangladesh with the total worth contribution to over \$27. 6 million
5. With aid and government funding infrastructure was rebuilt along with some roads. All traces of sewage were removed from the capital city.
6. Flood shelters and early-warning systems have been successfully put in place.
7. Small scaled community projects have been put in place resulting in lives been saved
8. Following the floods, additional financial aid was granted for a period of 5 years. This was mainly in the form of a loan from the World Bank, to pay for, in the first instance, repairs to infrastructure, water resource management, health care and education.
9. Disaster-preparedness is a key priority for the future. This includes flood management and improved water resources. It is also planned that, in

future, flood-resistant designs should be used in all social and economical infrastructure projects.