

What issues can arise from the development of river basins?

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The pressure to develop river basins can make them increasingly vulnerable to flooding.

The study of a river basin or basins, including practical research and out-of-classroom work – fieldwork, to illustrate:

- why some river basins are naturally vulnerable to flooding;
- how development can increase the risk of flooding;
- the social, economic and environmental impacts of flooding.

# Factors promoting flooding

- Seasonal snow melt
- Prolonged heavy rain
- Areas of intense convectional rainfall
- Basins with large areas of impermeable surfaces due to urbanisation and industrial development
- Areas where the natural vegetation has been replaced
- Steep slopes which lead to rapid overland flow
- Small basins in which run-off is rapid

# How development can increased the risk of flooding

- Deforestation (reduces interception)
- Urbanisation (increases impermeable surfaces)
- Poor management

# River Severn 2007

- Intense rainfall over several days in June/July 2007 due to the unusual position of the floodstream
- Some areas received a month's rainfall in a day or even an hour
- Water overwhelmed drains

# Economic Impacts

- Average cost of flooding was £23,000 to £30,000 per flooded home but a quarter of householders were not covered by insurance.
- The average cost incurred per flooded business was between **£75,000 and £112,000**, with 95 per cent of companies covered by insurance.
- The flooding of Mythe water treatment works in Tewkesbury created one of the **UK's worst post-World War II emergencies**, leading to the loss of piped water supply to 350,000 customers in over 138,000 properties in the Gloucester area from 22 July 2007 for over two weeks.

# Social impacts

- 13 people died
- 350,000 people were without water for up to 16 days
- 150,000 properties lost electricity for an average of 15 hours
- Seven motorways were shut, including the M5 which left 10,000 vehicles stranded overnight
- 70% of people surveyed said their health had been affected

# Bangladesh

## Natural Causes

- Confluence of three rivers: Ganges, Brahmaputra, Meghna
- Half country is less than 5m above sea level
- Monsoon
- Also subject to coastal flooding
- Snow melt from Himalayas

## Human causes

- Deforestation in Himalayan uplands
- River diversion for irrigation
- Corruption
- Lack of international investment
- Fresh water wells
- International loans
- Overseas pressure
- Inadequate overseas aid

# Impacts of 1998 floods

Economic	Social	Environmental
<ul style="list-style-type: none"><li>• Income of two of the largest industries, textiles and shrimping, were 20% below their normal earnings</li><li>• 400 textile factories forced to close, leaving 166000 workers jobless</li><li>• Over 11,000km road damaged and communications were destroyed</li><li>• 130,000 cattle killed</li><li>• 660,000ha crops badly damaged (entire stock of rice wiped out)</li></ul>	<ul style="list-style-type: none"><li>• 23 million people made homeless</li><li>• ¼ children under 5 malnourished</li><li>• Widespread starvation forecast</li><li>• Sewage system collapsed leading to disease (diarrhoea and dysentery)</li></ul>	<ul style="list-style-type: none"><li>• Sewage system collapsed</li><li>• 660,000ha crops badly damaged (entire stock of rice wiped out)</li><li>• 2007: 565,000ha farmland submerged</li></ul>