

In this unit you'll find out how people and places are increasingly vulnerable to extreme weather.

Living on the edge – 1

One in ten people worldwide (and one in eight city dwellers) lives less than 10 metres above sea level and near the coast (the **at-risk zone**). Low coastal cities attract large populations to areas that are at risk from worsening storms, floods and also rising sea levels. As cities develop, the surrounding ecosystems suffer, e.g. mangroves in Asia and the wetlands around New Orleans (see page 153). These can provide natural barriers against storm surges and floods.

- Asia has about 75% of the people living in coastal areas 'at risk'. The ten countries with the largest numbers of people living in the at-risk zone, are: China, India, Bangladesh, Vietnam, Indonesia, Japan, Egypt, the USA, Thailand, and the Philippines. The map shows that much of Bangladesh is at-risk, and that population density is high within the at-risk zone.
- 21 nations (mostly small islands) have more than half their population in the at-risk zone, e.g. The Maldives.
- In China, people are moving to coastal cities at a rapid rate, and large populations are put at risk.

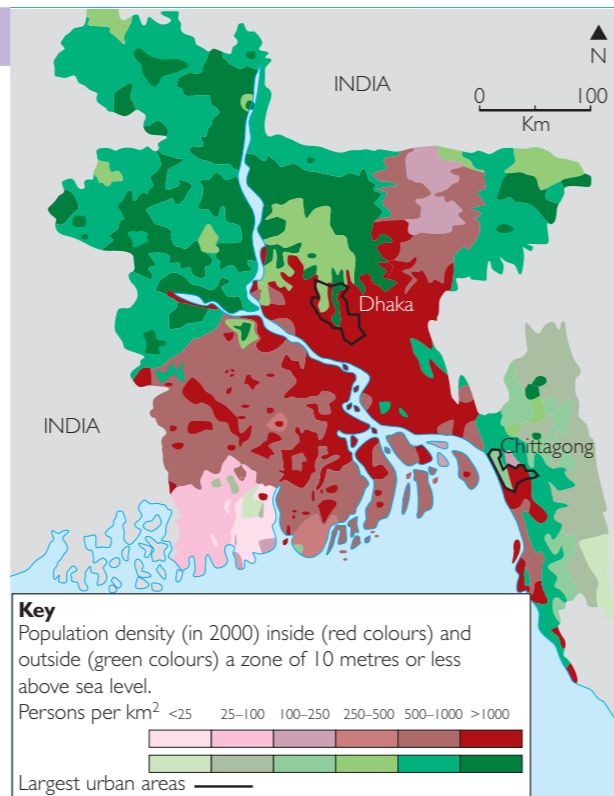
In England and Wales, 5 million people in 2 million homes live in flood-prone areas. In some areas, the rate of development on floodplains has more than doubled in the past 50 years, putting increasing numbers of people at risk.

In Europe, an increasing number of people are living in flood risk areas, and the number of businesses and industries locating in flood risk areas continues to grow.

Living on the edge – 2

Rapid population growth in LEDCS, together with **urbanisation**, means that cities are growing rapidly.

People leave rural areas for the cities for a number of reasons: 'pushes' include landlessness, drought, famine, civil war; 'pulls' include employment, the possibility of education, and a better standard of living. But life in the cities does not always meet expectations, and migrants often end up living in **shanty towns**. Shanty towns usually develop in parts of the city where no-one else wants to live, e.g. on steep hillsides or in swampy areas. Homes are built from any materials that are available – wood, cardboard, metal, plastic sheeting. These settlements are vulnerable to heavy rain, mudflows, landslides, etc.



▲ Population density in Bangladesh's at-risk zone

Floodplains are called floodplains for a reason – they flood!
Professor Bob Spicer, Open University

Building houses on floodplains – does that sound like a good idea?

What do you think?

▼ Shanty dwellings in São Paulo, Brazil



In 2005, at least five people died in São Paulo's shanty towns (or favelas) after southern Brazil experienced some of its heaviest rainfall and flooding on record. The rain caused fatal mudslides. In 2007, flooding devastated South Asia. Residents from Karachi's shanty towns were evacuated as the badly built homes collapsed or were washed away by torrential rain. 200 people died.

Deforestation

The most common reasons for **deforestation** are clearing land for farming, or when the wood is used for fuel. Whatever the reason, the effects are the same. Lack of forest cover means:

- more rapid runoff of rainfall
- increased soil erosion, risk of flooding and risk of mud and landslides.

In Honduras, 30% of the forest has been lost since 1960 – with more than 800 km² lost every year for ranches, banana plantations, small farms and **fuelwood**. The expansion of fruit plantations is partly due to the country's need to earn foreign money to repay **debt**. 20% of the export earnings of Honduras is spent on debt repayment every year.

Clearing the hillsides for farming in Honduras meant that when Hurricane Mitch roared into Central America in October 1998, the slopes were vulnerable to landslides.

Vulnerability

Are we all equally vulnerable to extreme weather events, or are some people more vulnerable than others? Some people live in dangerous places because they have no choice; others do things which make them more vulnerable.

Ultimately, it is today's children (like Ziaul, Raul, and Luke) who will pay the price of extreme weather in the future, whether or not it is linked to climate change.

● Over to you

- 1 Look at all the ways in which people become increasingly vulnerable to extreme weather events. Draw a Venn diagram with three overlapping circles labelled Social factors, Economic factors and Environmental factors. Put the reasons in the circles. Compare your diagram with a partner and explain any differences.
- 2 Draw a diagram to show the links between physical and human factors, extreme weather events and vulnerability.



▲ Rebuilding a hut destroyed by floods in a Karachi shanty town in July 2007

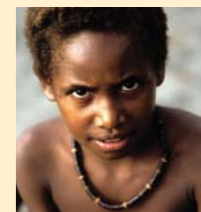
Ziaul



Raul



Luke



Ziaul, Bangladesh – catastrophic flooding is likely to feature frequently in his life.

Raul, Nicaragua – hurricanes such as Hurricane Mitch, which devastated Nicaragua's capital Tegucigalpa in 1998, may become an increasingly regular and hazardous fact of life for him.

Luke, Solomon Islands – the sea will feature large in his life, as small islands are threatened with bigger storm surges.

● On your own

- 3 Define these terms from the text: at-risk zone, urbanisation, shanty towns, deforestation, fuelwood, debt, vulnerability.
 - 4 Explain the link between debt, deforestation and landslides.
- Exam question:** Using examples, explain how people and places can be at risk from extreme weather. (10 marks)