

BANGLADESH AND GLOBAL WARMING

Bangladesh lies within the global climatic zone that experiences the tropical wet monsoon climate (Figure 4.12). With a population estimated by the United Nations to have been in excess of 150 million in 2008, it is one of the most densely populated countries in the world, with some 1102 people per km². As one of the poorest nations in the world it is also one of the most ill prepared to face the challenges presented by climate change and is likely to be one of the worst affected by global warming. Predicted effects include the following:

- As a result of warmer sea temperatures in the Bay of Bengal, there will be 10–15% more precipitation annually by 2050 and an increase in the frequency and severity of cyclones during the wet season.
- There will be a 20% increase in river discharge, due in part to the predicted increase in precipitation but also as a result of glacier melt in the Himalayas, where the rivers Brahmaputra, Meghna and Ganges have their sources.
- There will be a significant rise in sea level along the coastline and inland along the countless tidal inlets. In 2001, the World Bank reported rising sea levels of some 3 mm y⁻¹ (compared with the world average of 2 mm) and predicted that by 2050 a 1 m rise in sea level is possible if no preventative action is taken. This would result in some 15% of the total land area of Bangladesh being inundated by salt water, as much of the land is close to sea level.

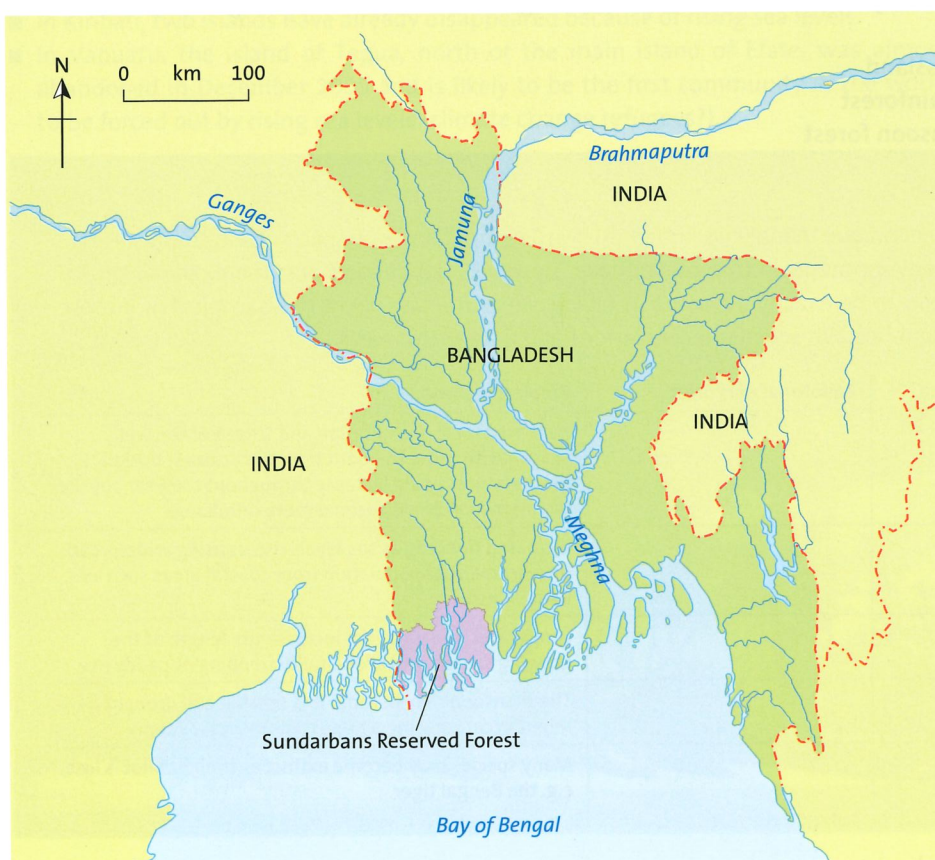


Figure 4.12
The location of
Bangladesh and the
Sundarbans

- An estimated 13–30 million people could be displaced from their homes by permanent flooding and the total annual crop of rice is likely to fall by at least 30% because of the loss of paddy fields. In a report published by the World Bank and the United Nations Climate Change Secretariat in 2001, the conclusion was that: 'Bangladesh is used to coping, but rising sea levels pose new dangers.' Loss of land on such a large scale is likely to result in mass migration into northeast India and there is likely to be increased international tension between the two countries, in addition to internal political instability.
- Coral reefs will become irreparably damaged by severe storms and this will have a knock-on effect on rare marine species, such as dolphins and turtles.
- The Sundarbans is a cluster of islands along the coast, with a total area of about 10 000 km². It stretches from Bangladesh into India. It is home to the world's largest natural mangrove forest and was declared a UNESCO World Heritage Site in 1997. The Sundarbans is Asia's largest natural 'carbon sink' and is the home to many species, including the endangered royal Bengal tiger, the Indian python and the estuarine crocodile. Climate change is likely to be partially responsible for the loss of this unique area and will lead to complete flooding of low-lying 'char' islands, retreat of shorelines, salinisation of the soil and a rise in the water table.

Question

Tabulate a summary of the effects of climate change on each of the following tropical regions:

- savanna grassland
- equatorial rainforest
- tropical monsoon forest

Guidance

This is a simple technique that allows straightforward comparison of impacts. Case studies 9, 10 and 11 refer to environments in tropical latitudes. However, the impacts of climate change on them are not likely to be exactly the same. A table such as the one below (with tropical monsoon completed for you) helps in seeing the similarities and differences easily.

| Savanna grassland | Equatorial rainforest | Tropical monsoon |
|-------------------|-----------------------|---|
| | | Increased total precipitation and length of the wet season with more frequent tropical cyclones; overall temperatures could increase throughout the year but the wet monsoon could become more unreliable |
| | | Increased flooding as sea levels rise, causing widespread displacement of population from coastal areas such as Bangladesh |
| | | Longer wet season might increase the length of the growing season and allow multi-cropping of paddy rice |
| | | The monsoon may become less reliable and drought might occur, causing a huge crisis in water supply |
| | | Many species may become extinct as their habitat is lost, e.g. the Bengal tiger |