Desertification: fact or fiction?

Case Study 7

e mid-1970s, desertification, not global ming, was perceived as the world's or environmental issue. Since then nature, extent, causes and effects of rtification have become shrouded in troversy. Taken literally, desertification ans 'the making of a desert'. More help- y, it has been defined as 'the turning of land, often through physical processes human mismanagement, into desert'. n so, although the term has been in use over half a century, few can agree on actly what it means. The diversity of defi- tions – there are over 100 – is due largely uncertainty over its causes.

Goudie says that 'the question has been asked whether this process is caused by temporary drought periods of high magnitude, is due to longer-term climatic change towards aridity, is caused by man-induced climatic change, or is the result of human action through man's degradation of the biological environments in arid zones. Most people now believe that it is produced by a combination of increasing human and animal populations, which cause the effects of drought years to become progressively more severe so that the vegetation is placed under increasing stress.'

Those places perceived to be at greatest risk from desertification are shown in Figure 7.28. In 2005 the UN claimed that desertification directly affected over 250 million people and threatened another 1 billion living in at-risk countries. It is generally agreed that the desert is encroaching into semi-arid, desert margins, especially in the Sahel – a broad belt of land on the southern side of the Sahara (**2**–**4** in Figure 7.28).

Some of the main interrelationships between the believed causes of desertification are shown in Figure 7.29.

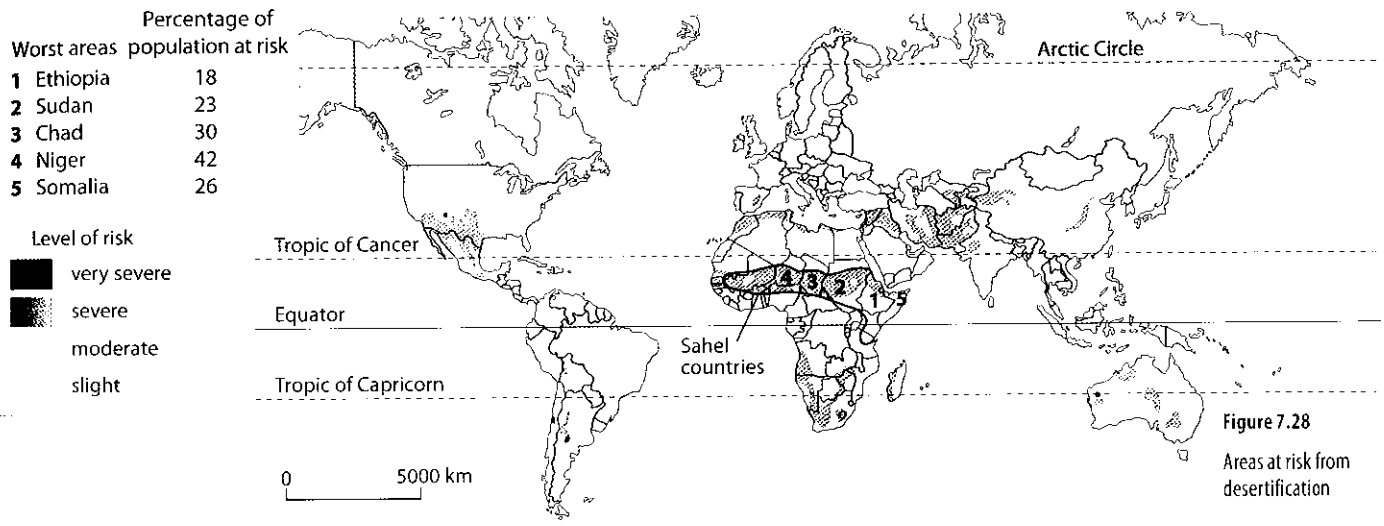

Figure 7.28
Areas at risk from desertification

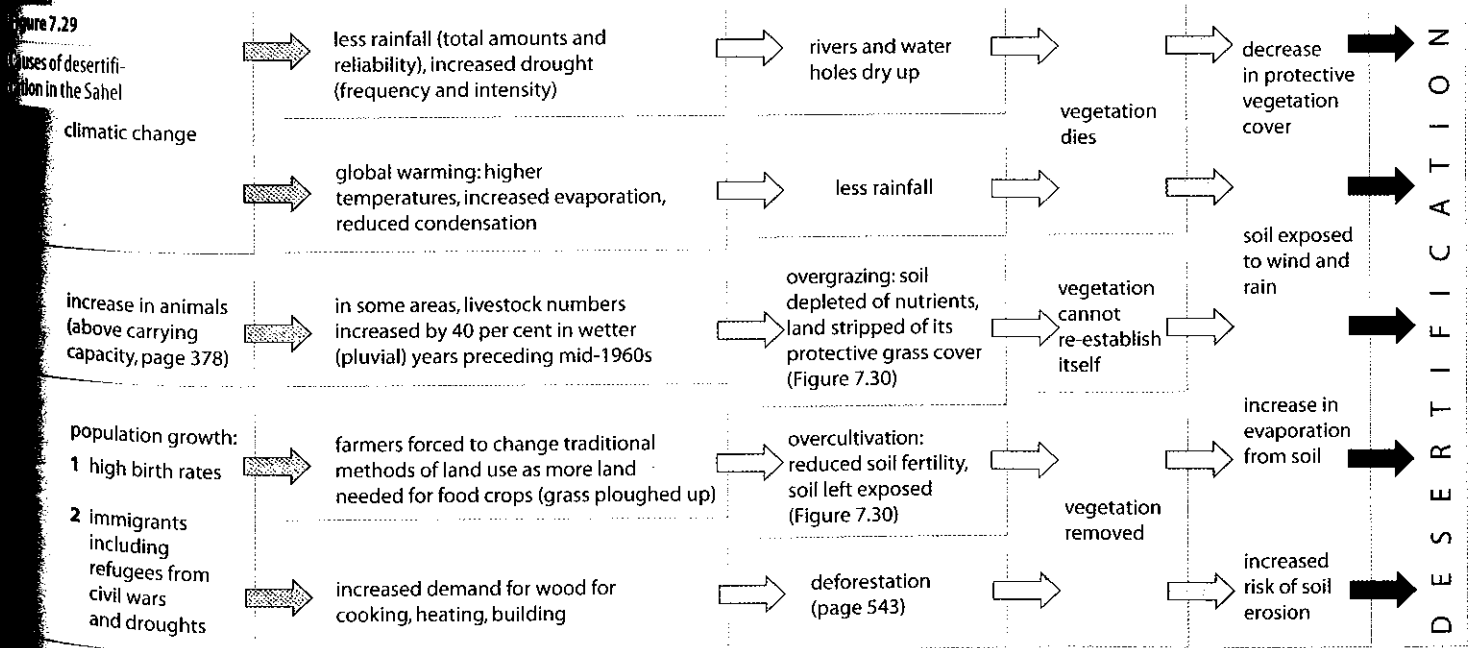

Figure 7.29
Causes of desertification in the Sahel

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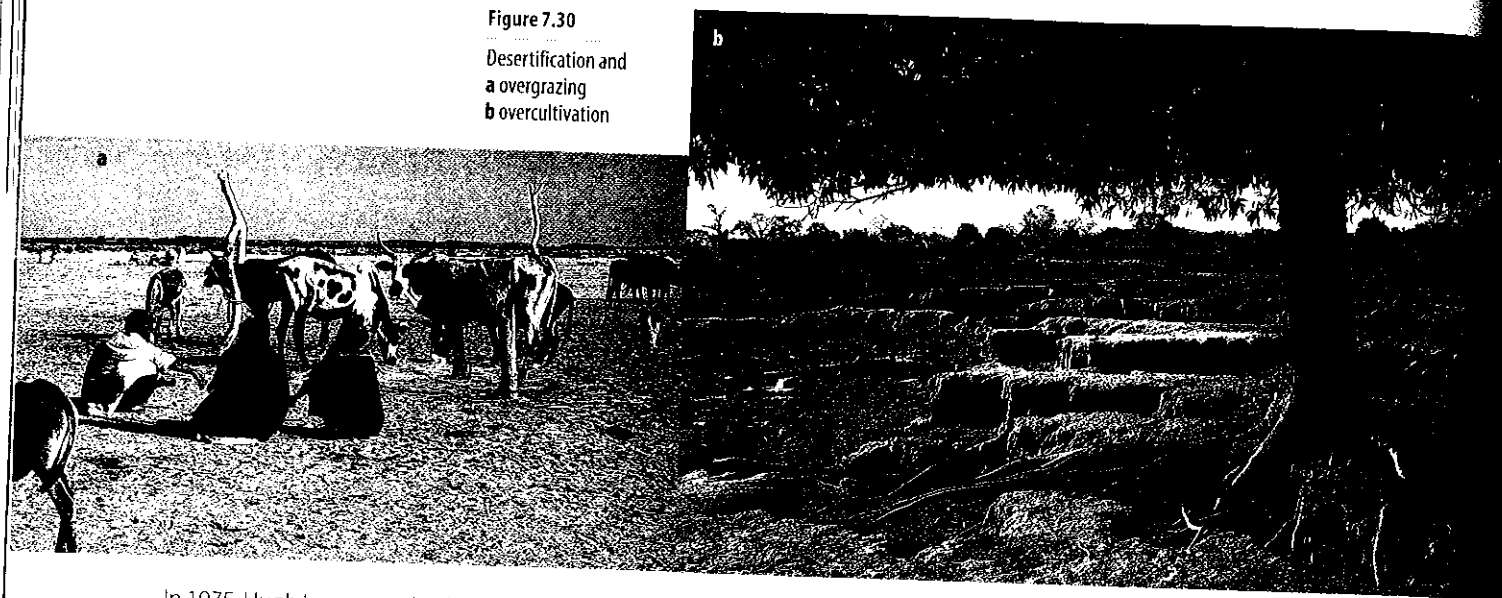

Figure 7.30
Desertification and
a overgrazing
b overcultivation

In 1975, Hugh Lamprey, a bush pilot and environmentalist, claimed that, since his previous study 17 years earlier, the desert in the Sudan had advanced southwards by 90–100 km. In 1982 and at the height of one of Africa's worst-ever recorded droughts, UNEP (United Nations Environmental Programme) claimed that the Sahara was advancing southwards by 6–10 km a year and that, globally, 21 million hectares of once-productive soil were being reduced each year to zero productivity, that 850 million people were being affected, and 35 per cent of the world's surface was at risk (figures quoted by UNEP at the 1992 Rio Earth Summit). Since then scientific studies using satellite imagery and more detailed fieldwork (Figure 7.31) have thrown considerable doubt on the causes, effects and extent of desertification. Today, certain early statistics regarding its advance have proven to be unreliable. It is believed that overgrazing is no longer considered so important, fuelwood has not become exhausted as previously predicted, while famine and drought are more likely to result from poverty, poor farming techniques, civil unrest and war than from natural causes (page 503). In contrast, the extent and effects of salinisation (page 27 and Figure 16.53) appear to have increased.

The semi-arid lands are a fragile environment whose boundaries change due to variations in rainfall and land use. It is often difficult to separate natural causes from human ones and short-term fluctuations from long-term trends (Figure 7.32). The effects of global warming are as yet an unknown factor, although computer models suggest that the climate will get even drier.

Figure 7.31
Scientific evaluation in the mid-1990s

Researchers at the University of Lund, in Sweden, carried out field surveys and examined satellite pictures of Sudan in an attempt to confirm Lamprey's findings. In a report published in the mid-1990s they stated 'no major shifts in the northern cultivation limit, no major sand dune transformation, no major changes in vegetation cover beyond the dramatic but short-term effects of variable rainfall'. A belt of sand dunes that Lamprey said formed the advancing front of the Sahara had shown no sign of movement since 1962, nor was there any evidence of patches of desert growing around wells, waterholes or villages – a phenomenon frequently claimed to be the result of overgrazing by herds of cattle [Places 65]. The report ended by stressing the need for recordings of a high scientific standard.

Figure 7.32
a Desert retreat or
b desert advance?

a

The southern Sahara Desert is in retreat, making farming again viable in parts of the Sahel. Satellite images taken this summer show that sand dunes are retreating the whole 6000 km across the Sahel region between Mauritania to Eritrea. Nor does it appear to be a short-term trend – analysts claim it has been happening unnoticed since the mid-1980s. In parts of Burkina Faso, devastated by the droughts of the 1980s, some of the landscape is now showing green, with more trees for firewood and more grassland for livestock. Farmers also claim their yields of sorghum and millet have nearly doubled, though this may partly be due to improved farming methods [Figure 10.40].

Adapted from *New Scientist*, 2002

b

Our 21st-century civilisation is being squeezed between advancing desert and rising seas, leaving less land to support a growing human population. This is illustrated by the heavy losses of land to advancing deserts in Nigeria and China, the most populous countries in Africa and Asia respectively. Nigeria is losing 3500 km² a year, whereas China, which lost on average 1500 km² a year between 1950 and 1975, has been losing 3600 km² a year since 2000. Satellite images have shown two deserts in Inner Mongolia and Gansu provinces expanding and merging, as are two larger ones to the west in Xinjiang province. To the east the Gobi Desert has advanced to within 250 km of Beijing. Chinese scientists report that some 24 000 villages in the north and west of the country have been abandoned or partly depopulated as they were overrun by drifting sand.

Adapted from *Earth Policy Institute*, 2006