

2.16 Changing vegetation

Farmers make many changes to the natural environment in order to grow crops and raise farm animals. The greatest changes are made to the natural vegetation. Forests are cut down, burnt and replaced with a single plant species; wetlands and swamps are drained; and vast areas of native grasses are replaced with crops such as wheat and rice.

Changes to forests

Around the world about 5 million hectares of forest is converted for agricultural use every year: an area about two-thirds the size of Tasmania. Most of this change takes place in tropical forests, particularly in South America and Africa. Few forests in regions such as North America and Australia have been converted to farmland in recent years, largely because most of the forest has already disappeared. In Australia, for example, around 50 million hectares of forests and woodland have been cleared for farming or affected by logging since European settlement began.

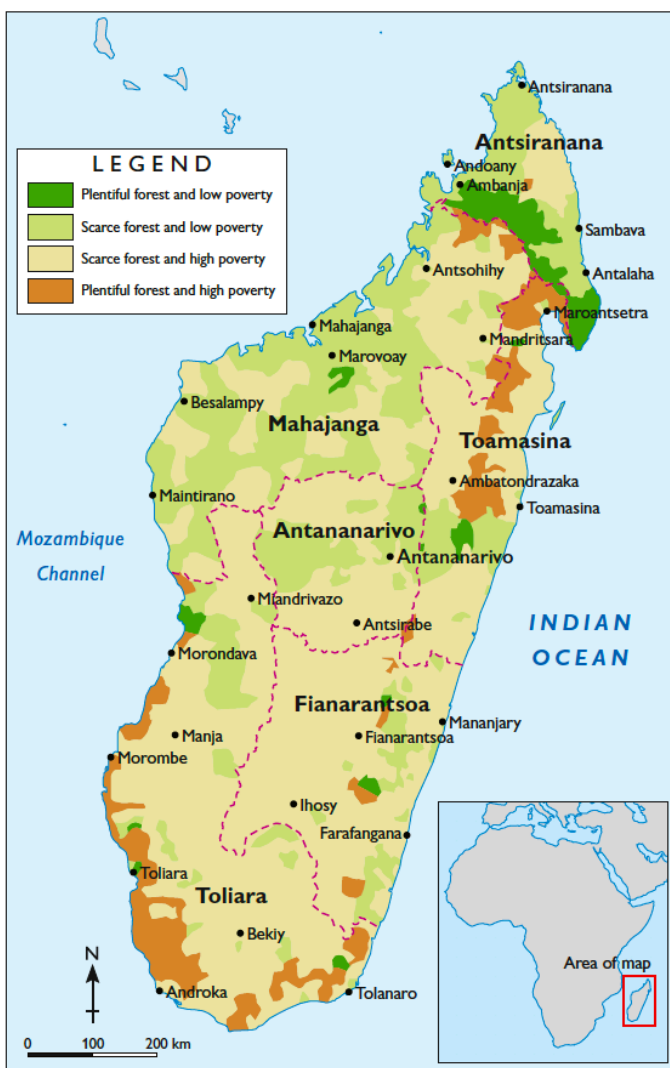
In the developing world, there is a strong link between deforestation and poverty. Millions of people who live below the poverty line and struggle to meet their daily food requirements are becoming small-scale slash-and-burn farmers. They use a machete to slash the undergrowth in forests and then set it alight to clear the land.



Source 1 A woman in Madagascar plants a food crop on a burnt hillside.

Seeds are thrown into the warm ashes and in this way a forest has been converted into a farm. The types of farm animals that small-scale farmers raise, such as goats and dogs, push deeper into nearby forest areas to forage for food. Over time as soil fertility declines, the farmers and their animals move into a new patch of forest and begin the process again. In Madagascar, for example, where 80 per cent of the population lives in poverty, only 10 per cent of the natural forest remains.

MADAGASCAR: DEFORESTATION AND POVERTY LEVELS



Source 2

Source: Oxford University Press

Changes to grasslands

Because the world's most important food crops – rice, wheat and corn – are grasses, they grow best in the world's grasslands biome. However, clearing of native grasses to plant these crops can have devastating effects on the natural environment. Across much of Australia, North and South America, Asia and Africa, native grasses have been cleared and replaced by these three crops to provide food.

This farming then has a further impact on the biome. Because the rice, wheat and corn crops are harvested for human consumption, none of the nutrients from the plant material are returned to the soil. As a result, the soil fertility falls. This means farmers need to add chemical fertilisers to the soil, which further changes its composition. This can impact on the ability of the soil to hold water and can pollute waterways and coasts. Pesticides used to control weeds



Source 3 Fields of wheat have replaced native grasslands across much of central USA.

and insects also pollute the air, soil and water and may kill native plants and animals. Exposed soil becomes vulnerable to erosion by wind and rain and is washed away. Clearing of native grasses to make way for farming has many flow-on effects.

Source 4 Conversion of the world's natural grasslands.

Case study regions	Existing grasslands (% of natural cover)	Estimated conversion of natural grasslands (%)		
		Crops	Cities	Other
North American prairie	9.4	71.2	18.7	0.7
South American savanna	21	71	5	3
Asian steppe	71.7	19.9	1.5	6.9
Sub-Saharan African grasslands	73.3	19.1	0.4	7.2
South-west Australian grasslands	56.7	37.2	1.8	4.3

Check your learning 2.16

Remember and understand

- Describe the link between poverty and deforestation in your own words.
- Is the scene in Source 3 a natural or human environment? Give evidence from the source for your answer.

Apply and analyse

- Carefully examine Source 1.
 - List the changes that you can see to the soil, vegetation and water that have taken place in this environment.
 - Add changes that are likely to have occurred that you cannot see.
 - Why has this farmer made these changes to the landscape? What are her likely motivations? Compare these to the likely motivations of

the farmer who has changed the grasslands environment shown in Source 3.

- Examine Source 2. Describe the variations in forest cover between regions of low poverty and regions of high poverty.
- Examine Source 3.
 - What is the most common land use that replaces grasslands around the world?
 - Which region has converted the most grassland? Suggest a reason for this.

Evaluate and create

- Use an ICT chart tool, such as Microsoft Excel, to construct pie graphs for the conversion of grasslands in Australia, North America and Sub-Saharan Africa. Describe the differences between these three regions as shown in your completed pie graphs.