

# 3.6

## Living for the future

Learn about  
• Sustainability

### Boom and bust

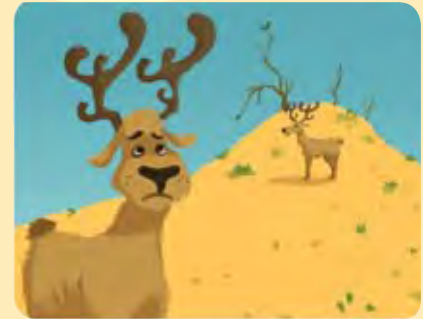
**1** What killed off the reindeer?



In 1944, some reindeer were taken to an uninhabited island.



20 years later there were 6000 animals.



Then one winter most of them died.

Eventually, there were so many animals that the plants could not grow fast enough to feed them all.

### More people, more problems

These newborn babies will all want good food, water, clothing, heating, electricity, transport and manufactured goods.

To avoid the same fate as the reindeer we need to make sure we don't run out of food, water, energy or materials. We also need to prevent our environment from becoming polluted with our waste products.

Giving growing populations everything they need without damaging the environment is called **sustainable development**.



**2** All living things need food and water. What extra resources do we use?

**3** Explain what sustainable development is.

### Using more biomass

At the moment a lot of our energy and materials comes from fossil fuels like oil. As these run out we could replace them with fuels made from plants. This field of rape will be turned into **biodiesel** to save oil.

But growing **biofuels** leaves less land for food crops, so grasslands and forests are being cleared to make space. More than half the world's species live in forests. Removing trees damages food webs and makes species extinct, so it is not sustainable.



**4** Why is it an advantage to replace oil with biomass?

**5** What disadvantages do biofuels have?

## Are we being greedy?

We can't use more biomass than plants can store. We already use a quarter of the total produced on land. Millions of other species share what's left.

If we could make plants grow faster, the cake would get bigger.

- 6** Why do some people argue that we should use fewer plant products?
- 7** How could we get more without taking it from other animals?



## Using small plants

Algae aren't popular. Some are toxic and they spoil lakes and ponds. But given the right conditions, algae absorb 10 times as much sunlight as land plants and grow much faster. They can use artificial light, recycled waste water and carbon dioxide from power stations. Humans can't eat them but they can be used to make biofuels and animal feed.

- 8** List three advantages of growing algae instead of rape.



## Future foods

Half of the world's population live in cities and the number is rising. Some scientists think we should develop high rise greenhouses and chicken farms for city centres. Then we could give more land back to nature.



Growing food indoors has lots of advantages. Plants grow faster because they aren't damaged by bad weather or pests, and less water is used because it can be recycled. Fewer pesticides are needed so there is less pollution. But energy is needed to provide extra light.

## Summing up

- 9** How could you get lots of different crops to grow in a high rise greenhouse?
- 10** What would you miss if most food was produced in local greenhouses?
- 11** What would some of the disadvantages of high rise farming be?

## Get this

- Species like humans with no predators can reproduce fast, use up their food supply and then die out.
- Sustainable development would stop this happening to humans and preserve other species.