Royal Society of Biology

Global Food Security
Sustainable, healthy food for all

Where does your food come from?

By the end of the lesson you should be able to…

- Locate where your food comes from.
- Describe what the term ‘food miles’ means.
- Explain why some foods are sourced from abroad.
- Propose solutions to the environmental and social impacts of global food production.
- Assess possible solutions and determine the role of consumers, farmers, retailers and scientists.

Where does your food come from?

Food miles: The distance food items travel from where they are grown to where they are eaten.

Broccoli and Cauliflower

Top producers: China, India, Spain, Mexico, USA, Italy

UK Broccoli mostly comes from Spain or Italy. How far away is that?

Spain: 800 miles Italy: 900 miles

Oranges

Top producers: Brazil, USA, China, India, Mexico, Spain

UK oranges mostly come from Spain. How far away is that? 800 miles

Bananas

Top banana producers: India, China, Philippines, Ecuador, Brazil

UK bananas mostly come from the Caribbean. How far away is that? 4600 miles!

What goes in to making a Chocolate Bar?

Cocoa

Sugar

Calcium sulphate

Wheat

Palm oil

Soya

Salt

Yeast

Milk

Where do the ingredients come from?

Cocoa:	West Africa	Milk:	EU	Palm oil:	SE Asia
Sugar:	Caribbean	Yeast:	Europe	Soya:	Brazil/Argentina
Wheat:	East Anglia	Salt:	China	Calcium Sulphate:	India

How far have the ingredients travelled?

Cocoa:	3100 miles	Milk:	500* miles	Palm oil:	6500 miles
Sugar:	4600 miles	Yeast:	500* miles	Soya:	5600 miles
Wheat:	200* miles	Salt:	4700 miles	Calcium Sulphate:	4700 miles

Total food miles: ~30,400

What might increase the food miles even further?

- Transport routes: sometimes transport stops at other countries on the way
- Processing and packaging are sometimes done in other countries… more miles!

Why do we source our food from so many different countries?

- Climate – we can't grow them here
  - Many ingredients need to be grown in particular climates
  - Soya can only handle a 1.4 degree temperature change so climate change would affect production
- Space
  - Agriculture needs a lot of land
- Expertise
- Cost of production
  - Countries with a lower cost of living can produce food more cheaply

Can you think of any environmental or social issues associated with the ingredients for our chocolate bar?

Carbon footprint

The total greenhouse gas (GHGs) emissions caused directly and indirectly by a person, organisation, event or product.

Greenhouse gasses include carbon dioxide and methane.

Environmental impacts of food production

- Increasing land use for agriculture involves destroying important natural habitats such as the rainforest.
- Some rare species lose their habitats, e.g. the Sumatran tiger.
- Agriculture also contributes to climate change.
- Agriculture uses a lot of water.
- Transport of food throughout the world burns fuel, increasing food's carbon footprint.

Social and economic impacts of food production

- Not everyone is the world has enough to eat – as the world's population increases we are struggling to produce enough food to feed everyone
- Food produced in the developing world is sold to the developed world – but they can't feed themselves

- Working conditions are often poor in developing countries
- Indigenous people have been displaced as plantation spread into their lands
- Large plantations require fewer workers, increasing the rich/poor divide

Social and economic impacts of food production

- Agriculture is often central to the economy of developing nations
- In many developing countries a high proportion of the labour force have jobs in agriculture
- Improvements to local infrastructure, such as roads for transporting food for export, have benefits beyond the farming community

Match issues to ingredients - answers

Carbon footprint of transport	Cocoa, Sugar, Salt, Palm oil, Soya
Deforestation	Palm oil, Soya
Land use for western products in developing countries	Cocoa, Palm oil
Habitat destruction	Palm oil, Soya
Displacement of indigenous people	Palm oil, Soya
Carbon footprint of farming	Cocoa, Sugar, Wheat, Milk, Palm oil, Soya
Dangerous working conditions	Palm oil
Use of illegal immigrant workers	Palm oil
Threat to endangered species	Palm oil, Soya
Encourages rich/poor divide	Palm oil, Soya

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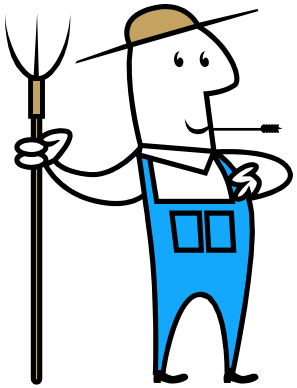
Can you think of possible solutions?

Can you think of possible solutions?

- Conservation projects
- Restriction on land use
- Optimise efficient farming methods
- Crop improvement. Research into high-yield or resistant crops
- Develop less damaging pesticides and herbicides
- Use renewable energy
- Look for/develop alternatives to palm oil or soya (often labelled vegetable oil or fat) in food such as chocolate
- Advertise accurately where food comes from
- Buy food from countries closer to the UK to reduce food miles

Who is involved in delivering the solutions?

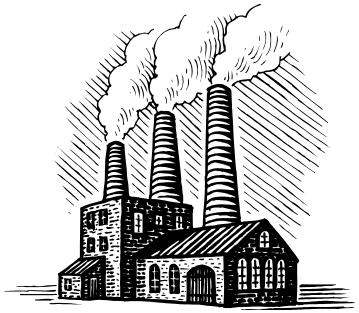
Scientists



Farmers

Consumers

Supermarkets



Factories

Government

Who is involved in delivering the solutions?

Develop alternatives to palm oil	Scientists, Manufacturers
Advertise accurately where food comes from	Manufacturers, Supermarkets
Buy food from countries closer to the UK to reduce food miles	Supermarkets, Consumers
Optimise efficient farming methods	Farmers, Scientists, Government
Crop improvement. Research into high-yield or drought resistant crops	Farmers, Scientists, Government
Environmentally friendly pesticide and herbicide development	Scientists
Conservation projects	Government, Consumers (Charities)
Restrictions on land use for farming	Government
Development of renewable fuels	Scientists

Summary

- The food that finds its way into our kitchen comes from all over the world .
- Where food is produced depends on climate, space, expertise and cost of production .
- The biggest producers are Brazil, India and China (BRIC nations).
- Production and transport of food results in carbon emissions and often has environment and social/economic implications.
- Solutions to these issues are being developed by scientists, farmers, supermarkets, manufacturers, government, consumers .

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