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
- Wheat
- Palm oil
- Soya
- Salt
- Yeast
- Milk
- Calcium sulphate

Milk chocolate (66%): Sugar, dried whole milk, cocoa butter, cocoa mass, lactose, whey proteins, whey powder, vegetable fat, emulsifier (sunflower lecithin), butterfat, natural vanilla flavourings.

Total ingredient list: Wheat flour, Sugar, Vegetable fat (Palm oil), Cocoa mass, Yeast, Raising agent (Sodium bicarbonate), Salt, Emulsifier (Soya lecithin), Natural flavourings.
Where do the ingredients come from?

Cocoa: West Africa
Sugar: Caribbean
Wheat: East Anglia
Milk: EU
Yeast: Europe
Salt: China
Palm oil: SE Asia
Soya: Brazil/Argentina
Calcium Sulphate: India
How far have the ingredients travelled?

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

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>People Involved</th>
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</thead>
<tbody>
<tr>
<td>Develop alternatives to palm oil</td>
<td>Scientists, Manufacturers</td>
</tr>
<tr>
<td>Advertise accurately where food comes from</td>
<td>Manufacturers, Supermarkets</td>
</tr>
<tr>
<td>Buy food from countries closer to the UK</td>
<td>Supermarkets, Consumers</td>
</tr>
<tr>
<td>to reduce food miles</td>
<td></td>
</tr>
<tr>
<td>Optimise efficient farming methods</td>
<td>Farmers, Scientists, Government</td>
</tr>
<tr>
<td>Crop improvement. Research into high-yield</td>
<td>Farmers, Scientists, Government</td>
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<tr>
<td>or drought resistant crops</td>
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<tr>
<td>Environmentally friendly pesticide and</td>
<td>Scientists</td>
</tr>
<tr>
<td>herbicide development</td>
<td></td>
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<tr>
<td>Conservation projects</td>
<td>Government, Consumers (Charities)</td>
</tr>
<tr>
<td>Restrictions on land use for farming</td>
<td>Government</td>
</tr>
<tr>
<td>Development of renewable fuels</td>
<td>Scientists</td>
</tr>
</tbody>
</table>
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 environmental and social/economic implications.
- Solutions to these issues are being developed by scientists, farmers, supermarkets, manufacturers, government, consumers.
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