Food and Sustainability

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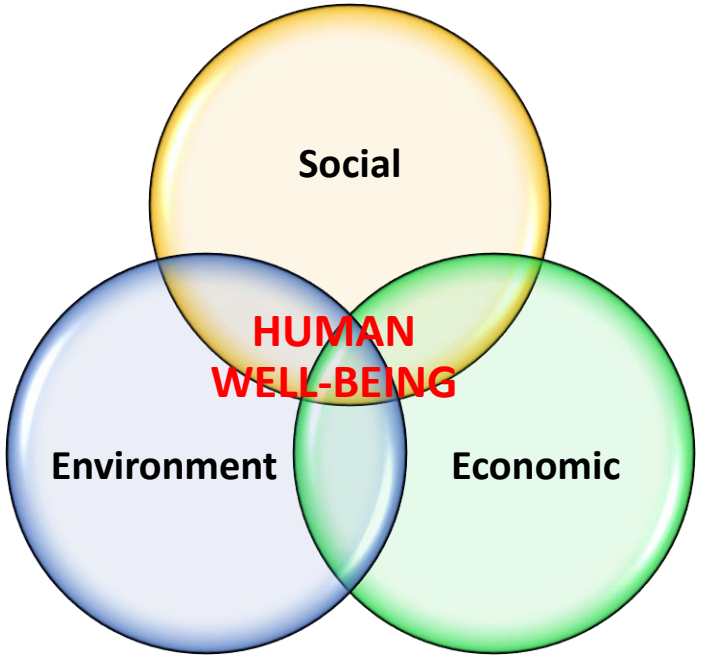
What is Sustainable Development?

World Commission on Environment and Development:-

‘Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987).

3 elements:

- **Social**
- **Environmental**
- **Economic**



National Progression Award in Food Manufacture: Sustainability Unit

Outcome 1

Evaluate the sustainability of raw materials for the food and drink manufacturing industry.

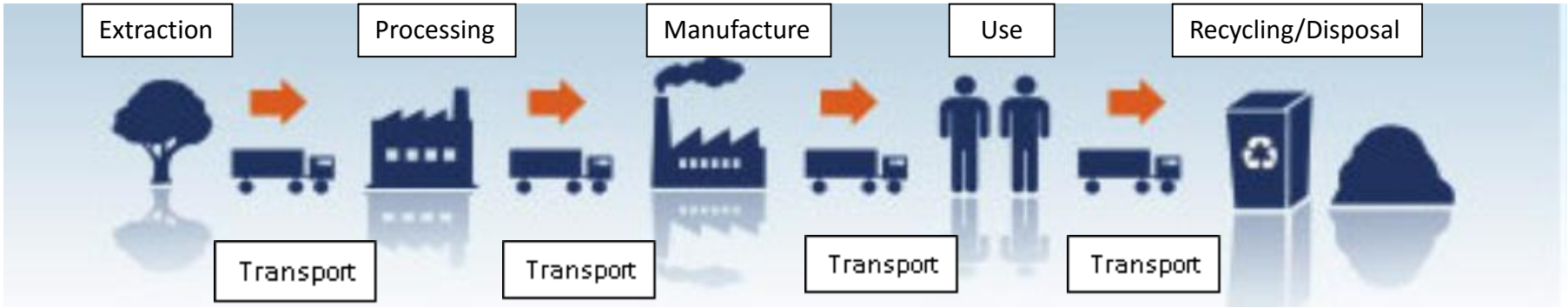
Outcome 2

Evaluate the sustainability of manufacturing techniques used in the food and drink manufacturing industry.

Outcome 3

Evaluate the sustainability of end products of the food and drink manufacturing industry.

Finite Resources – Life Cycle Analysis



Stage 1
- **Raw Materials** - such as extraction from the ground or farming. Therefore for farming you would need to consider land use change and fertiliser use.

Stage 2
- **Manufacturing** - all of the production processes and the waste this generates. This would include site related energy use within the factory.

Stage 3
- **Distributing** - all stages of transport and storage.

Stage 4
- **Retail** - storage at the retailers and display within retails units. Therefore you would need to consider the energy use within warehouses and shops.

Stage 5
- **Use** - consumer travel to take the product home and then use of the product. Using the product may require energy use and water for example.

Stage 6
- **Disposal** - all of the steps in the disposal of the good from transport to landfill or the energy required to recyle it.

Food and Sustainability

EATING LOCALLY THINKING GLOBALLY

Environmental Impacts – Land Clearance

- Land clearance, especially rainforests for
  - Cattle ranches
  - Palm oil

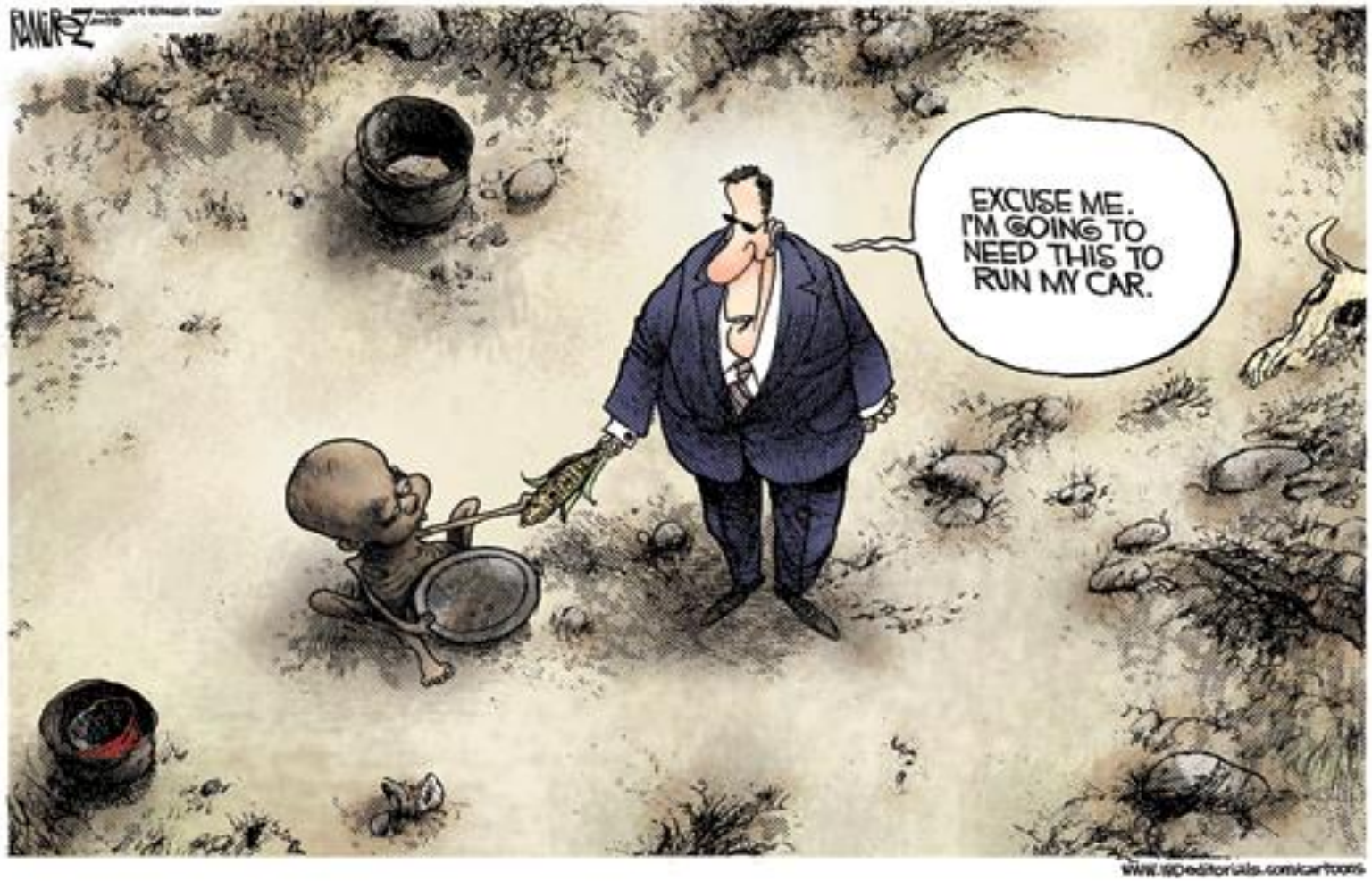
Reduce meat consumption
(part-time carnivore and vegetarian cooking)

Think about products palm oil is in – buy sustainably sourced

Environmental Impacts – Air Miles

- UK is a net importer of food
- Greenhouse gas (GHG) emissions from transport outside UK not included within UK figures
- Consumer demand for ethically sourced food, the trade-off is often air miles
- Anomalies:
  - May be less energy intensive to air freight tomatoes than grow in hot houses here
  - May be less energy intensive to ship apples from New Zealand than hold in cold storage here

Environmental Impacts – Biofuels



- Rich countries buying land in developing countries
- Loss of biodiversity – large scale monoculture

Carbon Footprints

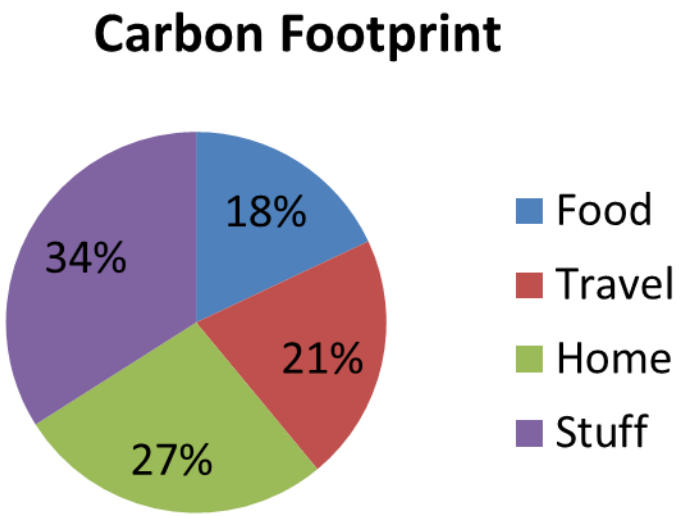
A carbon footprint is the total set of GHG emissions caused by an individual, organisation, event or product (Carbon Trust, 2009).

The areas of our lives that generate most of our individual GHG emissions are as a result of:

- Electricity use
- Travel
- **Food production**
- Buildings use
- Waste

http://footprint.wwf.org.uk/

Your footprint is 2.79 planets



Activity – Environmental Impacts of Food

Choose your favourite meal, for example burger and chips

Record what you think some of the environmental impacts of the ingredients in your meal could be.

Source: Adapted from Schools Global Footprint (WWF Scotland, 2006)

Activity - Environmental Impacts of Food Production

Decide what your favourite meal is, whether this is a burger, a curry, or fish and chips. Think about what the environmental impacts could be of producing that meal. Use the internet to search for the effects that producing the individual ingredients in your meal has upon the environment. Think about where and how the ingredients are grown and how they reach the supplier you have purchased them from.

My favourite meal is:

_____

The ingredients include:

-
-
-

Record here what you think some of the environmental impacts of your meal could be:

-
-
-

Carbon Footprints – Food Products

Innocent Smoothies

This example refers to the amount of CO_2 per bottle of mangoes and passion fruits smoothie.

<u>Activity - Plan a low carbon menu</u>

- **Choose the ingredients**
- **Determine the amount of CO_2 in each ingredient**
- **Calculate the total**
- **Make comparisons**
    - **Organic versus non-organic**
    - **Local versus air freight**
    - **Luxury brands versus value**

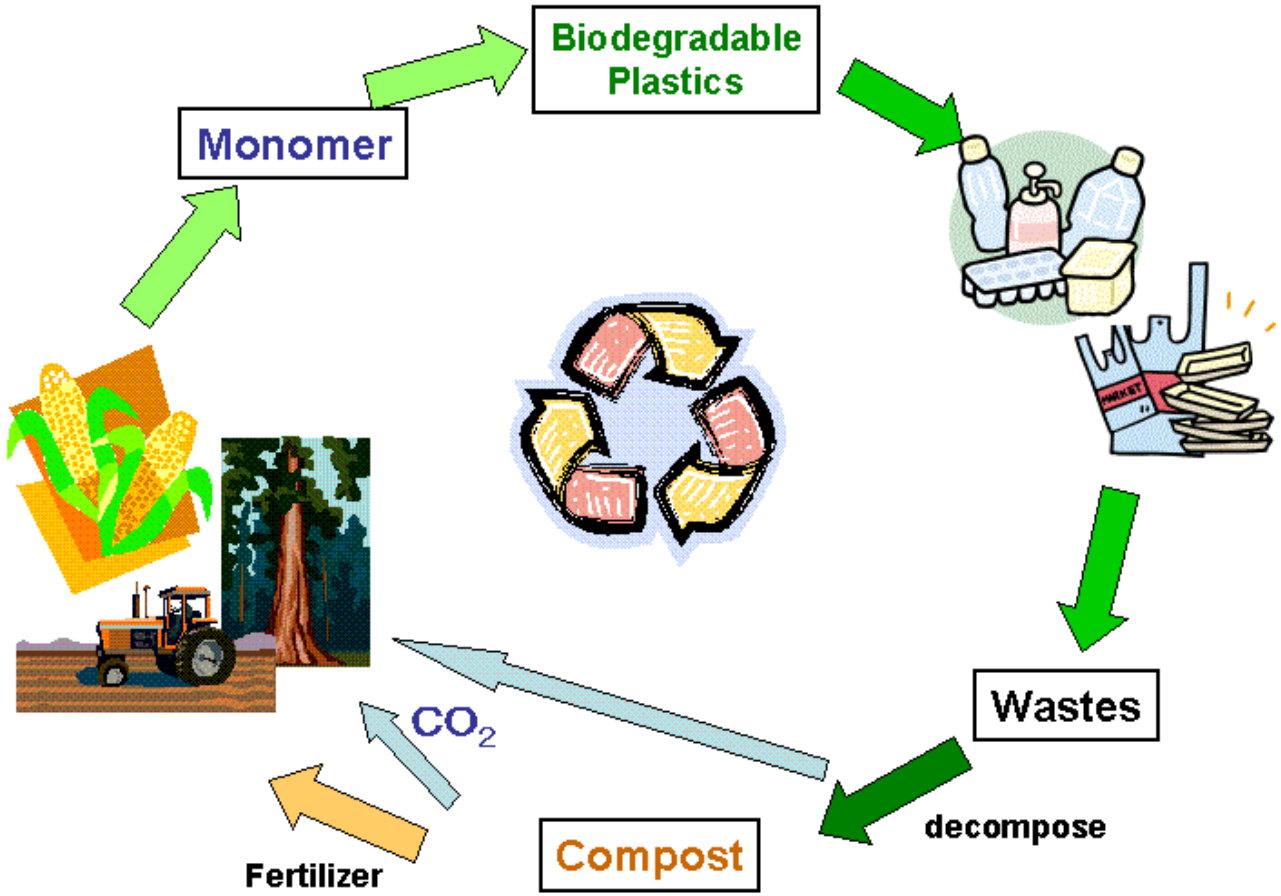
Environmental Impact of Food

As we have seen, everything we eat has an impact upon the environment however there are steps we can take to help reduce the environmental impact of food, including the following:

- Shop locally and if possible, leave the car at home.
- Plan one big trip if using a large supermarket instead of going two or more times per week.
- Buy locally grown produce when it is in season.
- Avoid food which is over packaged whenever possible.
- Buy organic produce.
- Buy fair-trade goods which support third world communities and are usually transported by sea.

The big one! – Don't throw food away!

Bioplastic



Bioplastics - a type of biodegradable plastic derived from biological substances rather than petroleum

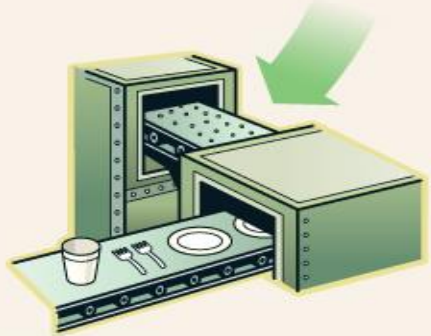
The Life Cycle of Bioplastics

Some bioplastics decompose in a fairly short period of time, and the full life cycle of such products is shown here. Other bioplastics aren't biodegradable. But even in those cases, the use of plant-based raw materials means that pollution is being removed from the atmosphere while the plants grow, giving bioplastics a green appeal.

Raw Materials
The process typically starts with growing plants such as sugar cane, corn and potatoes that are high in starches, the raw materials that replace petroleum products in bioplastics.

Extraction
The plant materials are harvested and processed to extract their starches.

Refining
The starches are processed further in bio-refineries through the use of special enzymes or fermentation (much as biofuels are made) to produce the chemical compounds that react to make plastics. The compounds can be refined to fit the specifications manufacturers need for different products.



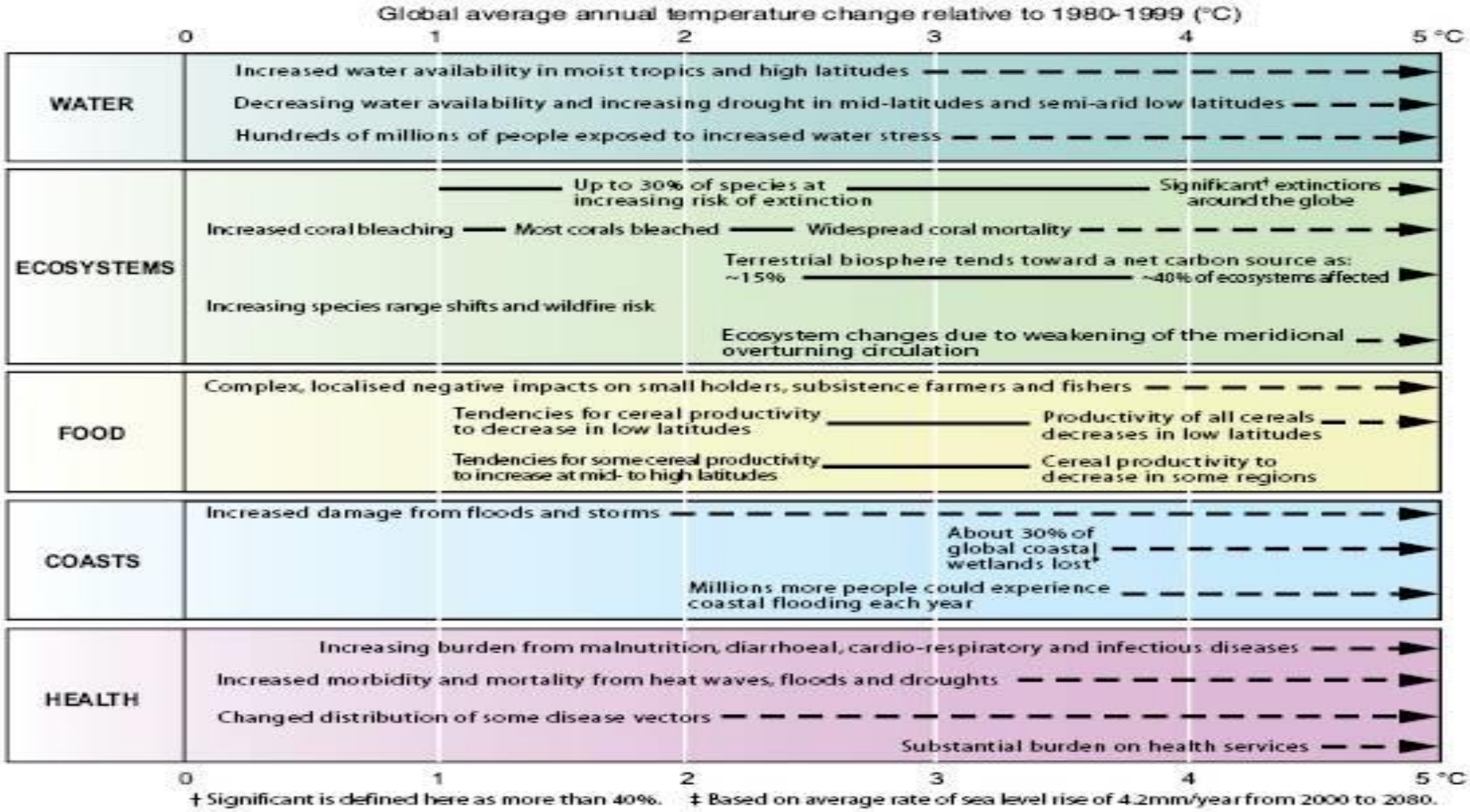
Manufacturing
Bioplastics manufacturers use pellets or granules of the compounds to make utensils, plates, cup linings, carpeting and other products.

Disposal
When disposing of a bioplastic product that is fully biodegradable, consumers can place it in an organic-waste collection bin.

Compost and Renewal
The organic waste will compost and return to the earth as mulch to help new crops grow, completing the cycle.

Sources: CTC Clean Tech Consulting GmbH; WSJ reporting

Climate Change and Food Production



Cross-Campus

- Cooking demonstrations: Local/seasonal produce
- Food Waste / Love Food Hate Waste
  http://scotland.lovefoodhatewaste.com/
- Plastic bottle greenhouse
- Seed to soup
- Fairtrade

Would you like to save 20p every time you buy a hot drink?

Save 20p of the cost of your hot drink at Costa Coffee by using your own re-usable mug (save 10p in the Canteen)

Save paper cups being sent to landfill and the trees and water needed to make the paper cups

Save energy and stop harmful greenhouse gas emissions going into the atmosphere

Reusable travel mugs on sale for £3

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