

THE CHALLENGE OF RESOURCE MANAGEMENT: UK OVERVIEW

UK FOOD IMPORTS



The UK imports 40% of its food because:

- Imported food may be cheaper
- People want a choice of exotic food
- People want seasonal food all year round, e.g. strawberries

Food miles:



How far food travels from field to plate (e.g. green beans from Kenya travel over 7,000 km to reach the UK).

Carbon footprint: How much carbon dioxide is produced during food production and transportation.

Impacts: Creates jobs for LIC farmers, UK farmers can't compete with low prices, reliance on overseas produce.

DEMAND FOR WATER



50% of UK water is domestic use, e.g. baths/showers, flushing toilets, water-intensive appliances, etc. On average we each use 150 litres of water a day. 1/5 of all UK water is wasted through leakage. Water also used for agriculture, industry and leisure.

WATER CONSERVATION

Water use is being managed by encouraging people to:

- Have water meters in their homes so they can see just how much they are using
- Use water efficient appliances
- Use grey water to water plants (water recycling)



Hosepipe ban: During times of drought water companies can temporarily stop unnecessary water use, e.g. watering gardens, washing cars.

WATER QUALITY MANAGEMENT

Environment Agency manages UK water quality:

- monitor river water
- regulate use of water and restrict recreational use
- prosecute those who are polluting water sources, e.g. Southern Water fined £90 million in 2021 for illegal sewage dumping



WATER TRANSFER SCHEMES

Water is transferred through network of canals/ rivers/pipes from areas of surplus, e.g. north-west, to areas of deficit, e.g. south-east – expensive!



UK ENERGY MIX



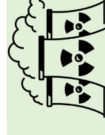
Shift from **fossil fuels** to **nuclear** and **renewable energy** – reduced fossil fuel supplies and climate change targets to meet (government target to phase out coal-fired energy by 2025). **F fracking:** Could be used to extract shale gas from underground, although is controversial!

IMPACTS OF FOSSIL FUELS



Economic: Often inaccessible so costly to extract (cheaper to import); NHS cost of treating respiratory illnesses of workers. **Environmental:** CO2, dust, noise, landscape scars.

IMPACTS OF NUCLEAR ENERGY



Economic: Huge cost of construction, transportation/storing, and decommissioning. **Environmental:** Risk of radiation leaks, e.g. Chernobyl (Ukraine, 1986).

IMPACTS OF RENEWABLE



Economic: Initial cost is high, solar farms take up farmland, turbines can deter tourists. **Environmental:** Visual/noise pollution, solar panels and turbines can endanger wildlife.



SMALL-SCALE VS LARGE-SCALE FARMING

Organic farming: Food produced without using

chemicals such as fertilisers and pesticides – small-scale and expensive.

Agri-business: Food produced intensively using chemicals and technology, e.g. heat and light – farms run as large-scale businesses.



THE CHALLENGE OF RESOURCE MANAGEMENT: FOOD (OPTION)

KEY TERMS



Food security: When all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life.

Food deficit: Where the demand for food exceeds the supply of food in an area.

Undernutrition: When people do not eat enough nutrients to cover their needs for energy and growth, making them vulnerable to sickness and disease.

Malnutrition: Serious condition that happens when your diet does not contain the right amount of nutrients (too many/too few).

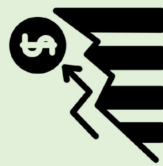
Famine: A widespread shortage of food, usually as a result of a period of drought, resulting in malnutrition, starvation and increased mortality.

Food riots: Social unrest in response to increases in the price of food, which may occur due to crop failure.

GLOBAL DEMAND FOR FOOD

Population growth: 8 billion people (est. 9 billion in 2037). Countries with the highest growth already lack food security.

Economic development: Increased wealth leads to diets similar to those in HICs – more protein/less grain, and more processed/ convenience foods.



CAUSES OF FOOD INSECURITY

When people are without reliable access to a sufficient quantity of affordable, nutritious food...

Climate: Too hot/too cold/too/wet/too dry – all limit what can be grown; drought and desertification (made worse by climate change).

Pests and diseases: Can destroy entire crops, can also make workers sick so less productive.

Lack of technology: LIC farmers can't afford better seeds/tools, fertilisers, machinery, irrigation systems, etc, which would all make farming more productive.

Conflict: Farmers are recruited as soldiers, disrupting food production; food supplies can be targeted by soldiers to weaken population.



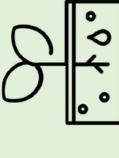
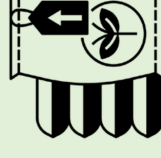
IMPACTS OF FOOD INSECURITY

Famine, undernourishment and starvation: Leads to stunted growth, weakened immune system, and possibly death. Weaker workers also leads to lower food production.

Rising food prices: Supply and demand – less food available means food becomes more expensive – many families will struggle to afford it. Less food to sell/export = less income.

Social unrest and conflict: Increased competition for food and rising prices can make people become desperate – also linked to dispute over access to water.

Soil erosion and desertification: Caused by over-grazing (too many animals) and over-cultivation (too many crops) – exhausts the land and makes it infertile.

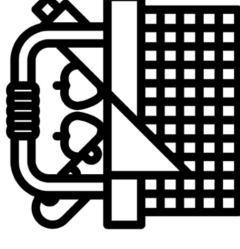


FOOD WASTE

Food loss: Thrown out before it reaches the supermarket, e.g. poorly stored, bruised or 'ugly'.

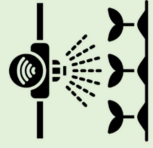
Food waste: Thrown out as it has reached 'best before date. 1/3 of all food around the globe is wasted (higher in HICs).

UK: Each household wastes £700 of per year on average (9.5 million tonnes in total).



THE CHALLENGE OF RESOURCE MANAGEMENT: FOOD (OPTION)

INCREASING FOOD SUPPLY



Irrigation: Artificial watering of crops (large-scale, sprinkler systems, drip irrigation). Increases crop yield but

large-scale systems are expensive and can lead to over-abstraction and evaporation.

Aeroponics: Uses air not soil to grow plants – nutrients sprayed directing onto roots.

Hydroponics: Plants grown in nutrient-rich water not soil – maintains freshness.

Both systems lead to year-round quick crop growth and takes up little space (can be stacked), but they are very expensive (need heat and light and high-tech equipment).



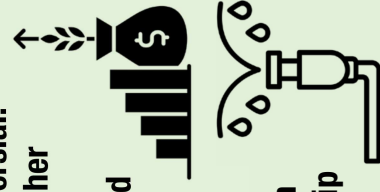
Biotechnology: Genetic modification of plants and animals, e.g. injecting the genes from one plant to another – to make resistant to drought/certain chemicals, to increase nutrients/shelf

life, or to improve flavour, but controversial.

Green Revolution: Development of higher yielding varieties and new chemicals to increase food production (increased food supply in India by 40%).

Appropriate (immediate) technology:

Low-tech projects that are cheap and maintained by local community (often supported by NGOs), e.g. installing drip irrigation.



SUSTAINABLE FOOD PRODUCTION

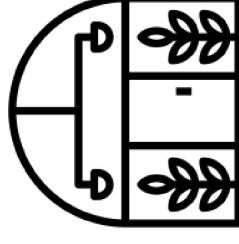
Organic farming: Produced locally without chemicals – good for environment but lower yields so labour/production costs are higher – so produce is more expensive.

Seasonal food: Only eating what can be grown locally at certain times of the year – reduces food miles/carbon footprint.

Permaculture: Follows patterns/features of natural ecosystems, e.g. rainwater harvesting, composting waste, crop rotation, keeping animals, using natural fertilisers and pesticides.

Urban farming: Producing food in towns/cities, e.g. allotments, but also vertical farming in office spaces, and using old tunnels.

Sustainable meat/fish: Only eating animals that have been grazed outdoors (free-range farming); Only eating fish from ground that can be maintained forever, or using fish farms, e.g. salmon and trout).



EXAMPLE: LARGE-SCALE AGRICULTURE

Almeria greenhouses (Southern Spain):

- Largest concentration of greenhouses in the world
- Very arid – 200m rain per year, 3000 hours of sun, average 20°C – no heating needed
- Supplies 1/2 of Europe's fruit and veg – most of UK's out-of-season produce
- Uses hydroponics (conserves water)
- Creates jobs – multiplier effect
- Exploitation of migrant workers

EXAMPLE: SMALL-SCALE SUSTAINABLE FARMING

Rice-fish farming in Jamalpur (Bangladesh):

- Small local fish put into rice paddy fields with ditches placed around
- Fish are a natural fertiliser for rice and eat insect pests, and help to circulate oxygen
- 4-5 months – rice is harvested and paddy fields drained to collect fish in ditches
- Fish is a source of protein – better health
- Increased rice yields – surplus to sell, so more money to improve quality of life