

Year 9 - Topic 1 - Will we run out of resources?

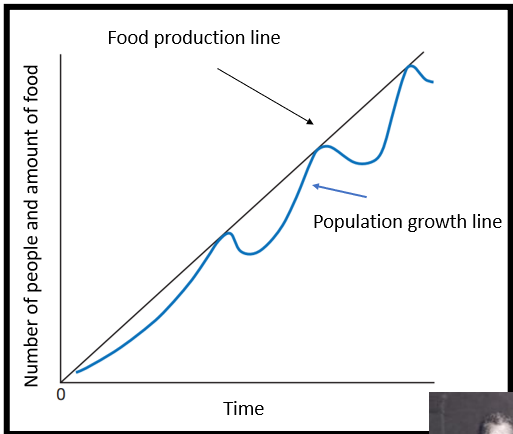
A Population and resources

Over population - Having too many people for the amount of food, materials, and space available there

Resources - Any physical material constituting part of Earth that people need and value

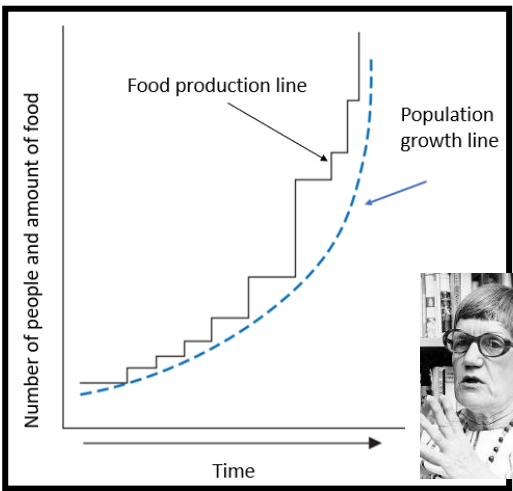
Optimum population - The population is such that it can maximise the benefits from the resources available.

Population resources equation



Thomas Malthus (1766-1834)
Malthusian view

A future where there are not enough resources for the global population. This will lead to massive starvation, and ultimately a fall in population. As population approaches the food production limits, famine, war and disease increase, leading to a sudden fall in the population.

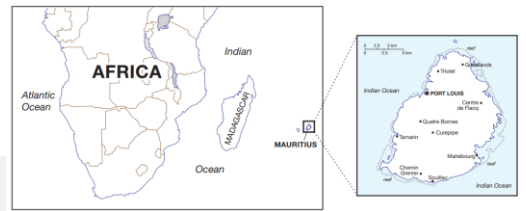


Ester Böserup (1910-1999) Böserupian view
A future in which people successfully use technology in order to provide resources for the growing population.

Increases in the food supply are stimulated by rises in the population as new technologies are developed to feed the growing population. Her famous phrase was 'necessity is the mother of all invention' which meant that if we need something we will find a way to get it (i.e. develop the technology)

B Mauritius and managing optimum population

Natural increase - The difference between the number of births and the number of deaths recorded over a period.



- Mauritius is a small island in the Indian Ocean, east of Madagascar.
- It became an independent state within the Commonwealth on March 12, 1968.
- **Overpopulation** became a serious problem after the eradication of malaria by the early 1950s led to a sharp increase in population.
- Mauritius has one of the highest population densities of any sovereign territory in the world (**presently about 590 persons/km2 with a population of 1.1 million**).
- Government policy and assisted by the rapid pace of economic growth has led to a reduction in the rate of natural increase. It has dropped rapidly in the last decades of the 20th century, and it is now below the world average.
- The Mauritius government needed to have a greater balance between the population size and the amount of resources available to support them.
- Whilst a larger population may provide a larger workforce and increase GDP and pay taxes, there is also pressure on resources.
- The three parts of the government plan was:

<p>Reducing population growth - The government organised a family planning programme</p>	<p>Changing status of women - Improved educational opportunities for women and encouraging women to get married later in life</p>	<p>Other influencing factors – Attracting TNCs (Transnational Corporations) to invest and to diversify from agriculture (farming)</p>
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Sustainability - Meeting the needs of the present without compromising the ability of future generations to meet their own needs

Social = anything to do with people and their quality of life

Economic = anything to do with money and the impacts on people and businesses

Environmental = anything to do with natural or physical resources



C Impacts of resource over-consumption on humans

- 77% of the world's fish stocks are either overfished or fished out completely.
- More than a billion people do not have access to fresh, drinkable water.
- The demand for water is likely to triple in the next 50 years. In 2004, UK farmers used 2.4kg of pesticides per hectare compared to 0.5kg in 1961.
- Between 15% and 37% of living species are predicted to disappear by 2050.
- In the past 25 years, 20% of the world's mangrove swamps have been destroyed, leaving the coast more and more vulnerable.
- In Europe, more than 40% of bird species and 30% of amphibians are threatened with extinction.
- Six billion people depend on wood for heating and cooking and, as pressure mounts in rural areas, much of this fuel is not replaced by replanting.

D Use of renewable and non renewable resource to make energy

Finite resource - A natural resource that cannot be readily replaced naturally at a quick enough pace to keep up with the rate at which it is being used.

Non-renewable resource – This is a natural resource that cannot be readily replaced by natural means at a pace quick enough to keep up with consumption.

Fossil fuel - These are fuels such as coal, natural gas and oil. All of these contain carbon and were formed as a result of geologic processes over millions of years.

Ecological footprint - The impact of a person or community on the environment, expressed as the amount of land required to sustain their use of natural resources.

Energy Mix - This is a measurement of the different primary energy sources (renewable and non-renewable sources) from which secondary energy for direct use - such as electricity - is produced. For example, coal might be used to produce electricity.

Infinite - This means that something that is boundless or endless.

Renewable energy – this is a source of energy that is constantly replenishing itself, including power harnessed from the sun, wind, moving water, and geothermal sources. These sources that will not be used up in our lifetime.

E How technology can help to ensure we have resource for the future

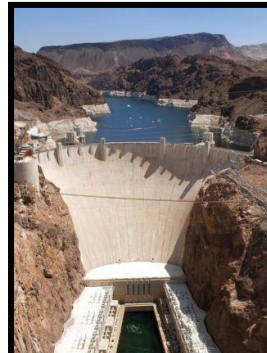
Green energy revolution - this means switching from burning fossil fuels - oil, coal and gas – to producing clean energy from renewable sources



Solar panels



Tidal power



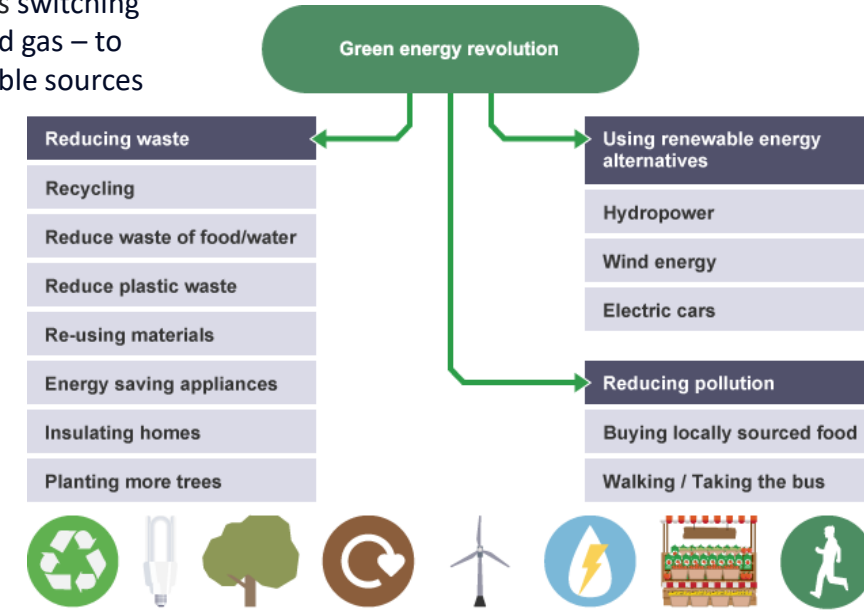
Hydro electric power (HEP) from a Dam



Wind power



Geothermal power



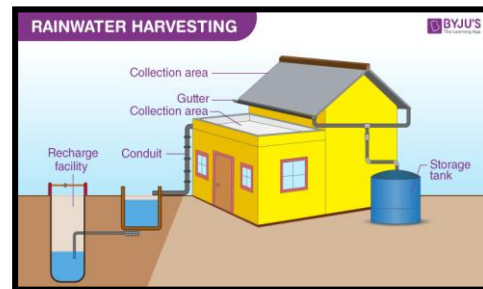
Environmental activism - This is when individual or groups seek to raise awareness of environmental issues and to campaign for change



Greta Thunberg's activism began in 2018 when she was 15 with a protest held outside the Swedish parliament with a sign that read "Skolstrejk för klimatet" ("School strike for climate").

F Different approaches to be sustainable

Global strategies	The Kyoto Protocol which was agreed in 1997 by 191 countries and the European Union to reduce the amount of greenhouse gases produced, especially carbon dioxide.
	The Paris Agreement signed in 2016 was the first of its kind in history This deal unites all the world's nations in a single agreement on tackling climate change
National strategies	The UK government has decided to ban the sale of new petrol and diesel cars by 2035. They will invest £500 million in charging points for electric cars and fund research into battery technology.
	In March 2021 the Welsh Government approved a target of net zero emissions by 2050. 43,000 hectares of woodland must be planted by 2030 to help play a vital part in removing CO ₂ from the atmosphere.
Local strategies	BedZED (Beddington Zero Energy Developments) - a carbon neutral housing complex in Hackbridge, London
	Councils have introduced recycling schemes to reduce the amount of new products needed, save energy it would have required to create them and reduce landfill which releases methane.
Individual strategies	We consume foods from all over the world. By buying more locally grown produce , we can reduce the amount of fossil fuels used to transport food.
	Travelling by car is much more polluting than walking, cycling and using public transport. Cutting down air travel would also have huge benefits as global aviation was responsible for emitting 1.04 billion tonnes of CO ₂ in 2018 – which was 2.5 per cent of global CO ₂ emissions that year.



BEDZed – Beddington Zero Energy Development

BedZed (Beddington Zero Energy Development) is an environmentally friendly housing development which is situated in Hackbridge, London. The community is a settlement of houses and offices which aims to create no carbon emissions and have an extremely low eco-footprint.

Homes are insulated with 300mm of insulation to make them energy efficient, as well as triple glazing. Finally wind cows can be opened to naturally ventilate homes in the summer without the need of air conditioning

Electric cars

- Electric cars don't produce carbon emissions or local air pollution themselves. If they are charged with electricity from renewable sources, that cuts down on emissions too.
- Electric cars can be expensive to buy but they are cheaper to run.
- Lithium is needed for the battery of an electric car and is typically found in compound form with other minerals in igneous rock or oceans and salt lakes

Afforestation

- Encouraging afforestation, means that there will be more trees to absorb the carbon dioxide in the atmosphere during the process of photosynthesis.
- It remains one of the most effective means of tackling climate change

Rainwater Harvesting

- Households can harvest rainwater in water butts and use it to water gardens.
- This can be linked to the idea of 'Grey water' - water that is not pure. It has either been used previously or it is untreated rainwater.

G The Middle East – How important is oil to the region?



Region - An area that has certain characteristics in common to make it unique.

The Middle East is a region. There is no single agreed upon definition of what makes up the Middle East. Defining the Middle East through ethnicity, religion or national identities is difficult, as the region is so diverse.

The term 'Middle East' was first used by European colonialist in the nineteenth century to distinguish the area from India and the Far East (South East Asia and China). After World War Two the Middle East became the dominant term of the whole region. Therefore it is an outsiders term defined neither by its geography or culture.

Production - The action of making or manufacturing. This can be refining oil so it can be made into petrol

Consumption - The action of using up a resource. This can be as a fuel but also as part of other items such as plastic products.

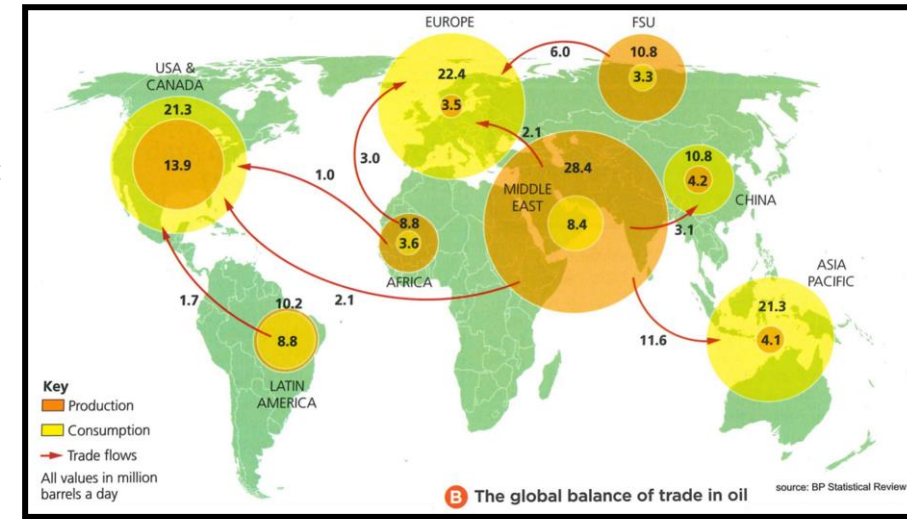
The UAE was formed in 1971. It is a group, or federation, of seven emirates- land ruled by a monarch called an emir.

Abu Dhabi, the largest and most important emirate, covers 85% of the country. Dubai is the most populated making up 35% of UAEs population. Since its formation the economy has grown 231 times. Since 1971 the UAE had been very successful at diversifying the economy to reduce the dependence on oil exports. Dubai has been particularly successful at this. Oil revenue has been invested in modern container port, airports and airlines, turning Dubai into a world communication hub.

In 2021, the UAE was the first country in the MENA (Middle East / North Africa) region to commit to achieving net-zero by 2050 through its UAE Net Zero 2050 Strategy.

Masdar city in Dubai is helping to accelerate the UAE's progress towards this goal through innovative architecture, reduction in energy and water use, harnessing renewable energy and offsetting carbon emissions.

Net Zero - A target of completely reducing the amount of greenhouse gases produced by human activity. This can be achieved by reducing emissions and implementing methods of absorbing carbon dioxide from the atmosphere.



PERSONAL RAPID TRANSIT (PRT) SYSTEM



SOLAR POWER FOR ENERGY



MASDAR BUILDING DESIGN



MASDAR CITY FREE ZONE

