Biodiversity and waste management

Biodiversity

"Biodiversity is the **variety of different species** of organisms on **Earth**, or within an **ecosystem"**

Importance of biodiversity

➤ Different species depend on each other for:

1. **Food**
2. **Shelter** (eg. birds nesting in trees)
3. **Maintenance of the physical environment** (eg. tree roots provide stability for soils, ensuring they do not get washed away. This in turn provides a stable habitat for other plant species)

➤ A high biodiversity ensures the stability of ecosystems by **reducing** the **dependence** of one species on another for these three things.
➤ Many **human activities**, or consequences for human activities, are **reducing biodiversity** in individual ecosystems and on a global level. These include:

1. **Producing waste** (destruction of habitats to make space for **landfill** and **toxic chemicals** from landfill waste can leach into the soil).
2. **Deforestation** (destruction of **forest habitats** that contain high biodiversity).
3. **Global warming** (disruption of ecosystems and reduced biodiversity due to **flooding** of coastal habitats, **coral bleaching**, increased frequency of **extreme weather events** and many other factors caused by increasing global temperatures)

Maintaining Biodiversity

➤ The future of the human species on Earth relies on us maintaining a good level of biodiversity.
➤ Just like any other species in an ecosystem, **humans rely on many other species to survive**.
➤ For example:

　①　We rely on photosynthetic organisms to produce **oxygen**, without which we cannot **respire.**
　②　We rely on **pollinator** species such as bees to pollinate our **food crops.**
　③　We rely on many plant species for **medicine**

Human population is increasing

➤ The human population is increasing at a very fast rate. This is due to the introduction of modern medicine and farming.
➤ Since less people are dying from disease and famine, people live longer and can have more children. Since these children can also have more children (and so on)
➤ It means that there is an exponential growth.This graph is slightly out of date, since there are now around 7.7 Billion people in the world.
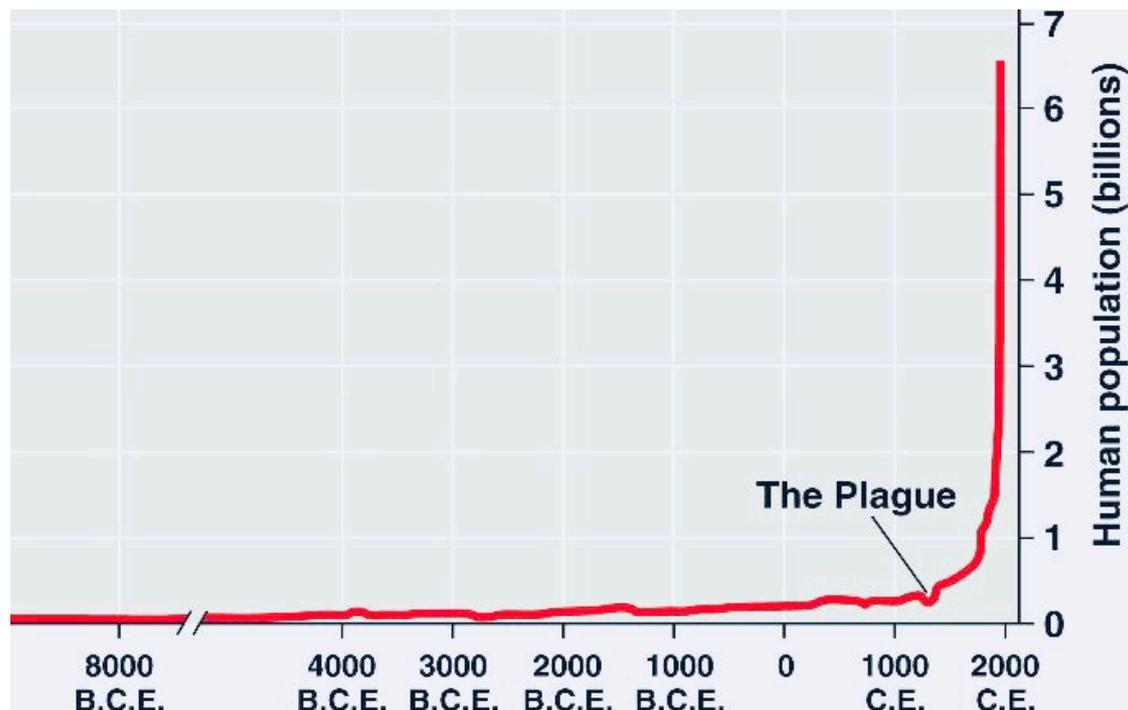
Demands on the environment

➤ Since the human population is so large, it means that our actions have a huge effect on the environment.

➤ People are also demanding a higher standard of living, which means digging up more natural resources and using more energy! Raw materials are being used up much quicker than they are being replaced, so at some point we are going to run out.

Waste management:

➤ The human population has rapidly expanded in recent decades. Resource use has increased accordingly. This has led to to huge amounts of industrial waste and pollution, which is affecting:
1. Water
2. Land
3. Air

1. **Water:** Sewage and toxic chemicals, which are produced by industrial practices, as well as excess fertiliser from agriculture, all find their way into the Earth's water sources.
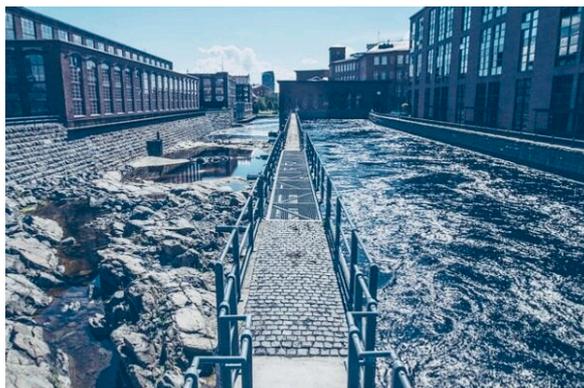
2. **Land:** Toxic herbicides and pesticides used in farming, buried nuclear waste and household waste in landfill sites are all land pollutants.

3. **Air:** Smoke and gases are being added into the atmosphere constantly, particularly by power stations and cars.

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