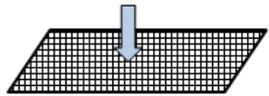


## C12: The Earth's Resources

### Potable Water

This is water you can drink. Levels of dissolved salts mustn't be too high, the pH must be between 6.5 and 8.5 and no harmful microbes.

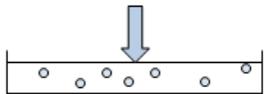
Most water comes from groundwater – rain that has been trapped underground.



Water is **filtered** through a **mesh** then **sand** and **gravel** to remove solids.



It is **sterilised** with chlorine gas or UV light to kill bacteria.



If there is a lack of surface water sea water can be used but must be desalinated first:

- neutralise the pH
- distil the water to remove the salt
- test for sodium chloride to check it has been removed.

**REQUIRED PRACTICAL**  
SEE PRACTICAL SHEET FOR DETAIL

### Renewable and Finite Resources

**Renewable** resources are made at a similar (or faster) rate than we use them.

**Finite** resources are being used up more quickly than they are formed. So They can be replaced and improved by man-made processes.

Eg. rubber is extracted from tree sap. Man-made polymers can be used instead.

### Waste Water Treatment

Comes from domestic, agricultural and industrial waste. Treated in sewers:

- **Screened**: large material removed (eg. plastic)
- **Sedimentation**: water allowed to stand in a tank so heavier solids sink to the bottom. The sludge gets broken down by anaerobic respiration and used as fertiliser.
- **Aerobic digestion**: air pumped through the effluent (liquid). Aerobic bacteria break down organic matter. Water is then safe to release into the environment.
- If toxic substances present it must be treated with chemicals, UV radiation or using membranes.

### Sustainability

Taking into account the needs of the **current generation** but not damaging lives of **future generations**.

It is unsustainable to continue to use non-renewable resources. We can't stop using them completely but reduce the amount we use by adapting industrial processes, eg. use of catalysts to lower energy costs.

**Recycling** improves sustainability. It uses less energy than extracting new resources. Metals and glass can be recycled by **melting** them down then **recasting** into a new shape.

### Difficulties with LCAs

Difficult to **quantify** waste.

Not objective as they can be **biased** – take into account the values of the person carrying out the LCA.

Selective LCAs may be biased.

### Life Cycle Assessments

A LCA looks at each stage of a products life to assess its environmental impact.

1. **The raw material** – extracting materials can damage the environment. Processing to purify them also uses large amounts of energy.
2. **Manufacturing and Packaging** – can use lots of energy leading to pollution. Waste products may be made that need to be disposed of. Turning waste into useful products minimises the effect on the environment.
3. **Using the product** – product may require energy to use and burning fossil fuels contributes to climate change. The life span of a product is important – something used for a very long time may mean less waste long term.
4. **Disposal** – may increase landfill and contain pollutants that leaches into the environment. Energy is needed to transport the product to disposal sites and air pollution is made if the product is incinerated.