

# Finite and Renewable

What do the words mean??

**Finite** = Will run out eventually  
**Renewable** = We can replace them as we use them

**Sustainable** = meets the needs of the current generation without compromising the ability of future generations to meet their needs.



What do we use the earth's resources for?

- Warmth
- Shelter
- Food
- Transport

We can use them as natural resources or process them.

'Natural resources' + agriculture provides

- Food
- Timber
- Clothes

Finite resources are processed to get us

- Energy
- materials



e.g. Coal, oil and gas are used for energy.  
 e.g. metal ores are mined to get metals.

e.g. Cotton is natural and we grow cotton plants. OR we can use synthetic materials e.g. nylon



# Treating water

Potable water must have low levels of SALTS and MICROBES (it isn't PURE water)

Rainwater in lakes, rivers and reservoirs

Filter

Why? To remove insoluble solids

Sterilise – chlorine, ozone, or UV light

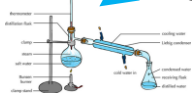


Why? To kill microbes

Industrial and agricultural waste water – remove organic matter and harmful chemicals

Salt water

Desalination



Distillation

☹ Both use a lot of energy

Sewage

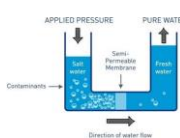
Screening and grit removal

Sedimentation

Anaerobic digestion of sludge

Aerobic treatment of effluent

Reverse osmosis



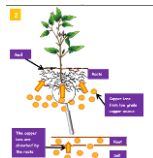
Direction of water flow

# C14 The Earth's Resources

## HT ONLY: Alternative Metal Extraction

Why bother?  
 Running out of metal ores

### Phytomining



Plants take in copper

- BURN plants
- React ASH with sulphuric acid



### Bioleaching



Bacteria feed on metal ore

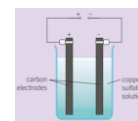
- 'leachate solution' contains copper compounds

## How to get the copper from the compound

Displacement using scrap iron

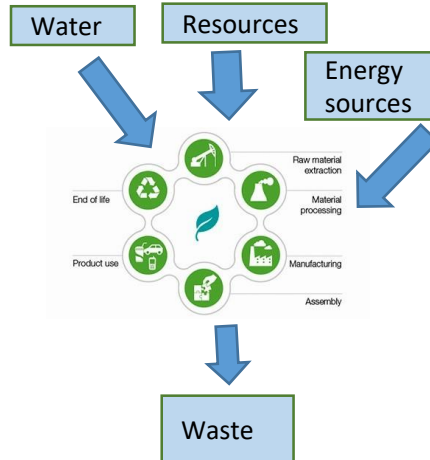


Electrolysis



# LCA and RRR

## Life Cycle Assessments



## Reducing use of resources

Why bother?  
 Reduce...use of limited resources



Why bother?  
 Reduce...use of energy resources



Why bother?  
 Reduce...waste and environmental impacts



landfill