

# Advantages & Disadvantages of Energy Resources

## Bio-fuels

Produced from plants or animal dung.  
Are used in the same way as fossil fuels – burned to produce electricity or run vehicles.

Where plants are used they take in CO<sub>2</sub> through photosynthesis during their lifetime. When burned this CO<sub>2</sub> is released again so no net change in the amount of CO<sub>2</sub> in the atmosphere.

- + Carbon neutral (if plants are grown at the same rate as being burned).
- + Reliable as crops grow quickly
- High costs to refine the fuel
- Space for growing food taken up
- Forests cleared to make space – decay and burned vegetation release CO<sub>2</sub> and methane.

## Wind Power

The blades turn a generator which produces electricity.

- + No atmospheric pollution
- + No fuel costs and minimal running costs
- + No permanent damage to the landscape when removed
- Visual and noise pollution
- Cannot increase supply to match demand
- High initial costs
- Cannot generate electricity if there is too little wind

## Hydro-electric Power

Water flows out of a dam through turbines, producing electricity.

- + Can respond immediately to increased demand
- + Reliable (except if there is a drought)
- + No fuel costs and minimal running costs
- Requires land to be flooded to create a dam
- Loss of habitats
- Look unsightly when the reservoir dries up

## Atmospheric pollution

includes CO<sub>2</sub> which contributes to global warming and SO<sub>2</sub> which causes acid rain.

## Solar Cells

Generate electricity from sunlight.

- + No atmospheric pollution
- + In sunny countries there are reliable (during the day)
- + Useful for remote places not supplied by the national grid.
- + No fuel costs and minimal running costs
- Cannot increase supply to match demand
- High initial costs

## Non-renewable

- + Reliable
- + Easy to increase supply to match demand
- + Fairly low fuel extraction costs
- + high energy output
- Running out
- Release CO<sub>2</sub> which contributes to global warming
- Release SO<sub>2</sub> which causes acid rain
- Coal mines spoil the landscape
- Oil spills
- Nuclear waste difficult to dispose of

## Geothermal Power

Radioactive decay in the core heats rocks near the surface. This can be used to generate electricity or heat buildings directly.

- + Reliable
- + No atmospheric pollution
- Few suitable locations (only possible in volcanic areas)
- High cost to build power station

## Tidal Barrages

A large dam built across an estuary that allows the water back out to sea at a controlled speed through turbines.

- + No atmospheric pollution
- + No fuel costs and minimal running costs
- Visual pollution
- Difficulty providing access for boats
- Initial costs are high