Your notes

GCSE Physics: revision notes

Energy resources

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Energy resources

- The main energy resources are **fossil fuels** (coal, oil and gas), nuclear fuel, **biofuel**, wind, **hydroelectricity**, geothermal, the tides, the Sun and water waves.
- **Non-renewable resources** (**fossil fuels** and nuclear fuel) will run out. **Renewable resources** are being, or can be, replenished as they are used.

Uses

- Transport: petrol and diesel from oil, **biofuels**, and electricity for electric vehicles.
- Electricity generation: **fossil fuels**, nuclear, wind, hydroelectric, tidal, wave, solar and geothermal.
- Heating: gas, oil, electric heaters, solar water heating and **geothermal energy**.

Reliability

- **Fossil fuel** and nuclear power stations are reliable: they can produce electricity at any time and can be run to match demand (although nuclear is slow to start).
- Wind and solar power are unreliable: they depend on the weather and time of day.
- Tides are predictable; hydroelectric power can respond quickly to demand; geothermal is reliable but only available in some places.

Environmental impact

- Burning **fossil fuels** releases carbon dioxide (contributing to global warming), sulfur dioxide (acid rain) and particulates.
- Nuclear power releases no carbon dioxide while running, but produces radioactive waste that must be stored safely, and there is a risk of accidents.

- Renewables produce little pollution when running, but have other impacts: wind turbines can be noisy and change the landscape; hydroelectric dams flood valleys and destroy habitats; tidal barrages affect estuary habitats.
- **Biofuels** are said to be **carbon neutral**, but growing the crops uses land that could grow food.

Changing patterns

- The UK is using less coal and more renewable energy to reduce carbon dioxide emissions.
- Science can identify environmental issues, but whether to act also depends on political, social, ethical and economic factors, such as cost, reliability and public opinion.

Key terms

Non-renewable resource	An energy resource that will run out, such as coal or nuclear fuel.
Renewable resource	An energy resource that is replenished as it is used, such as wind or solar.
Fossil fuel	A fuel formed from the remains of ancient organisms: coal, oil or gas.
Biofuel	A fuel made from plants or animal waste.
Hydroelectricity	Electricity generated by water falling through turbines from a dam.
Geothermal energy	Energy from hot rocks underground.
Tidal power	Electricity generated using the rise and fall of the tides.
Carbon neutral	Releasing no more carbon dioxide than is absorbed.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. Which of these is a renewable energy resource?
2. Which of these is non-renewable?
3. Why is solar power unreliable?
4. Which pollutant from burning fossil fuels causes acid rain?
5. What is the main disadvantage of nuclear power?
6. Which renewable resource is predictable?
7. What is an environmental impact of hydroelectric dams?
8. Why are biofuels described as carbon neutral?

Answers

1. Wind

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2. Nuclear fuel
3. It depends on the weather and time of day
4. Sulfur dioxide
5. It produces radioactive waste
6. Tidal power
7. Valleys are flooded, destroying habitats
8. The plants absorbed the carbon dioxide released when the fuel is burned

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

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