

WJEC Wales Physics GCSE

1.2 - Generating Electricity

Flashcards

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What is a renewable energy resource?



What is a renewable energy resource?

An energy source which can be replenished as it is being used up.



Give **four** examples of renewable energy resources.



Give **four** examples of renewable energy resources.

1. Wind Energy
2. Hydro-Electricity
3. Tidal Energy
4. Solar Energy



Give an example of a non-renewable energy resource.



Give an example of a non-renewable energy resource.

Fossil fuels (for example coal, oil and gas).



What are the advantages of generating power using gas rather than coal?



What are the advantages of generating power using gas rather than coal?

- Flexible Generation: Gas power stations have short start-up times so can be switched on/off more readily.
- Lower emissions of carbon dioxide.



State **two** disadvantages of using renewable energy resources to generate power.



State **two** disadvantages of using renewable energy resources to generate power.

- Output often determined by external factors (like wind speed), so supply is uncertain.
- Generating power through other means is often more efficient and economically beneficial (often renewable sources produce less energy per kg of fuel).



Explain the environmental impacts of burning fossil fuels.



Explain the environmental impacts of burning fossil fuels.

- Carbon Dioxide contributes to the greenhouse effect, and causes global warming.
- Sulphur Dioxide leads to acid rain, which can damage buildings and crops.



State **three** advantages of fossil fuels as an energy resource.



State **three** advantages of fossil fuels as an energy resource.

1. Reliable: Not dependent on external factors so can generate power anytime.
2. Can produce large amounts of energy for a given quantity.
3. Still relatively abundant, so cost-effective.



State **three** advantages of nuclear power.



State **three** advantages of nuclear power.

1. Very large quantity of energy for relatively small quantity of fuel (lots of energy per kg).
2. Doesn't release greenhouse gases and so doesn't contribute to climate change.
3. Low fuel costs.



State **three** disadvantages of nuclear power.



State **three** disadvantages of nuclear power.

1. Produces nuclear waste which is harmful to humans & must be safely stored for centuries.
2. Nuclear fuel is a non-Renewable energy source.
3. Risk of nuclear accidents - fatal consequences on humans and the environment.



Give examples of social factors which may act as deterrents for certain types of energy production.



Give an example of a social factor which may act as a deterrent for certain types of energy production.

- Visual Pollution
- Sound Pollution

(both of these are disadvantages of wind farms)



What are the two types of transformers?



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1. Step-Up Transformers
2. Step-Down Transformers



Where are step-up transformers found in the National Grid? What do they do?



Where are step-up transformers found in the National Grid? What do they do?

- Step-Up Transformers are used when connecting power stations to transmission cables.
- They increase the potential difference (decreasing current).



Where are step-down transformers found in the National Grid? What do they do?



Where are step-down transformers found in the National Grid? What do they do?

- Step-Down Transformers are used when connecting transmission cables to domestic buildings (like houses).
- They decrease the potential difference (increasing current).



Why do transmission lines transfer electricity at high potentials?



Why do transmission lines transfer electricity at high potentials?

- A high potential difference results in a low current.
- The lower the current, the less energy is dissipated as heat.
- Therefore transport is more efficient.



Why does the potential need to be decreased between transmission lines and houses?



Why does the potential need to be decreased between transmission lines and houses?

- Lower potentials are safer for domestic use and reduces the likelihood of severe electrocution.
- Household appliances are designed for 230V.



State **two** equations to calculate efficiency.



State **two** equations to calculate efficiency.

= Useful Output Energy / Total Input Energy

= Useful Power Output / Total Power Output

