

Using Renewable energy Resources

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Q1 Explain what 'renewable' means, in terms of energy resources.

Renewable means that the energy is being constantly replaced by natural means and will not run out.

Be careful NOT to say it can be 'used again' - once you have 'used' a ray of sunlight that ray can never be used again!

Q2 People often object to wind turbines being put up near to where they live.



a) List three reasons why they might object.

- 1) They are noisy, they spoil the view, they kill birds, they only work when it is windy, the electricity they generate is relatively expensive to existing sources, lots of turbines are needed to replace one big power station
- 2) ANY three of the above
- 3)

b) List three arguments in favour of using wind turbines to generate electricity.

- 1) Once running they do not cause any pollution, once running the maintenance costs are low and they need no fuel - the energy is then 'free' from a renewable source.
- 2) They do not contribute to global warming as they do not emit greenhouse gases. They do not permanently spoil the landscape.
- 3)

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Q3 Geoff wanted to find out how much electricity he could generate using a small wind turbine. Each night he used a wind-powered generator to charge a battery. On each following day, he timed how long the battery could keep a lamp lit. His results are shown in the table below.

Day	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Time lamp stays lit (mins)	45	50	2	25	60	35	42

a) Why did Geoff time how long the lamp stayed lit?

So he could compare how much energy had been stored each night.

b) Suggest a reason why the lamp only stayed lit for 2 minutes on Wednesday.

There hadn't been much wind the night before - it had been calm weather.

Q4 Explain the advantages and disadvantages of using solar cells to generate electricity.



Advantages

- They use a renewable free source of energy - there are no fuel costs.
- They are a good way to provide energy in remote places.
- They produce no pollution (if used with batteries to store the energy that is not the case).
- When they are more widely used the initial costs will reduce because of economies of scale.
- When they are more widely used they will become more efficient as firms compete to corner the world market.

Disadvantages

- They produce energy dependent on the light intensity so they do not work as well when it is cloudy.
- At the moment initial costs (purchase of them) is high and they are not very efficient.

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