Grade 7 Natural Science Worksheet

Assessment Task: Energy: Wind

Wind energy

Part One: Wind energy in ancient times

Complete the notes by filling in the missing words.

Since ancient times, people have used the (a)_____ from wind. The ancient (b)_____ used the wind to sail their (c)_____. Hundreds of years later, the people of (d)_____ improved the basic design of the windmill. This country is famous for its (e)_____ . Windmills were used to (f)_____ underground water and to (g)_____ wheat and corn. Windmills are still used (h)_____ to pump underground water.(i)_____ and paragliding are two sports which use the wind's energy. Wind energy is not always useful. Sometimes it can be very destructive. We see this when (j) _____and tornadoes pass over an area.

[10 marks]

ships	yachting	windmills	hurricanes	Egyptians	today
energy	pump	Holland	grind		

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Part Two: Research on wind energy

You will have to do some research in order to answer the questions below.

1. How is wind used to make electricity? Write a paragraph explaining your answer. [10]
2. Give two advantages and two disadvantage of using wind energy as a source of electricity. [4]
3. Who could make good use of wind energy? [6]

[20 marks]

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Suggested Solutions

Question number	Possible marks	Solution
1	10	Since ancient times people have used the energy from wind. The ancient Egyptians used the wind to sail their ships. Hundreds of years later, the people of Holland improved the basic design of the windmill. Holland is famous for its windmills. Windmills were used to pump underground water and to grind wheat and corn. Windmills are still used today to pump underground water. Yachting and paragliding are two sports which use the wind's energy. Wind energy is not always useful. Sometimes it can be very destructive. We see this when hurricanes and tornadoes pass over an area.
2.1	10	Wind can produce electricity if the kinetic or movement energy✓ of the wind is converted ✓into electrical energy. ✓ For this, we need a wind machine. Wind is moving air. ✓ When the wind blows, its kinetic energy turns the blades of giant windmills. ✓ As the blades turn, they drive the turbine, ✓ which is connected to a generator.✓ The generator then makes electricity. ✓ A cable from the windmill carries the electricity to where it is needed. ✓ A computer is programmed to sense the direction of the strongest wind, ✓ and it can swivel the head of the wind machine to catch the strongest winds. The computer can also change the direction that the blades turn in. ✓ When lots of wind machines are grouped together, they are called a wind farm. ✓ The electricity they generate is fed into the National Grid. ✓
2.2	4	Advantages: No water or air pollution; ✓ economical as wind is 'free'. ✓ Disadvantages: Wind machines are noisy ✓ – a whole wind farm is a very noisy place! Also, it is an unreliable source of energy because the wind doesn't always blow in a particular area. ✓
2.3	6	In order for wind machines to work, strong winds of 40 kilometres per hour are needed. ✓ Many farms are not connected to the National Grid and those farmers have to generate their own electricity. ✓ If they are in an area where there are often strong enough winds, they could put up one or more windmills to generate their electricity. ✓ Communities in rural areas that do not have electricity ✓ could also use wind machines to generate their electricity. In South Africa the western and eastern coasts ✓ are the only places with enough wind to make this kind of electricity generation worthwhile. Anybody living along these coastlines can install a wind machine ✓ – they would then not be reliant

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		on getting their electricity from ESKOM through the National Grid, and they could save on their electricity account.