Comprehension story 24

Read the passage below and answer the questions that follow, using your owr words wherever possible.

Prompted by the oil crisis of the 1970's, a wind-power industry flourished briefly in United States. But then oil prices dropped and the funding for research into renewable energy was cut. By the mid-1980s America's interest in wind energy as large-scale source of energy had almost disappeared. The development of the wind power at this time suffered not only from badly designed equipment, but also from poor long-term planning, economic projections that were too optimistic and difficulty of finding suitable location for the wind turbines.

Only now are technological advances beginning to offer hope that wind power will come to be accepted as reliable and important source of electricity. There has been significant success in California, in particular where wind farms now have a capacity of 1500megawatts, comparable to a large nuclear fossil-fuelled power station and produce 1.5 percent of the state's electricity.

Nevertheless, in the US, the image of wind power is still distorted by early failure. One of the most persistent criticisms is that wind power is not a significant energy source.

Researchers at the Battelle Northwest Laboratory, however, estimate that today wind turbine technology could supply 20% of the

electric power the country needs, as wind power has even greater potential.

Minnesota's energy commission calculates that a wind farm on one of the states in the south-western ridges could supply almost all the country's electricity. North Dakota alone has enough sites suitable for wind farms to supply more than a third of electricity consumed in continental US.

The prevailing notion that wind power is too costly results largely from early research, which focused on turbines with which focused on turbines with huge blades that stood hundreds of meters high. These machines were not designed for ease of production or maintenance and they were enormously expensive, because the major factor influencing the overall cost of wind power are cost of the turbine and its supporting system, including land as well as operating and maintenance cost, it is hardly surprising that it was thought at the time that wind energy could not be supplied at a commercially-competitive price.

More recent developments, such as those on California wind farms, have dramatically changed the economic picture for wind energy. 'These' systems, like installations in Hawaii and several European countries, have benefited from the economics of scale that come through standardized manufacturing and purchasing. The result has been a dramatic drop in capital costs: the installation cost of new wind turbines stood at $4,000per kilowatt in1980and continues to fall. Design improvements and more efficient maintenance Programmes for large number of turbines have reduced operating cost as well. The costs of electricity delivered by wind turbines has decreased from about 30 cents per kilowatts-hour to 7 and 9 cents, which is generally less than electricity from convectional power stations.

Reliability has also improved drastically, the latest turbine run more than 95% of the time, compared with around 60% in the early 1980s. Another miss-conception is that improved designs are need to

make wind power feasible. Out of the numerous wind turbines designs proposed or built by investors or developers, the propeller blades type which is best on detailed analytical models as well as extensive experimental data, has emerged as predominant among the more than 20,000 machines now in commercial operation worldwide.

Like the gas-driven turbine that power jet aircraft, these are sophisticated pieces of rotating pieces of rotating machinery. They are already highly efficient and there is no reason to believe that other configurations will produce major benefits. Like other forms of electricity generation. Convectional power stations impose hidden costs on society, such as the control of air pollution, the management of nuclear wastes and global warming. As wind power has been ignored in the US over the past few years, expertise and commercial exploitation in the field have shifted to Europe.

The European Union spends 10 times as much as the US government on research and development of wind energy. It estimates that at least 10% of Europe's electrical power could be supplied by land based wind turbines using current technology. Indeed, according to the America Wind Energy Associations, an independent organization based in Washington, Denmark, Britain, Spain and the Netherlands will each surpass the US in the generating capacity of wind turbines installed during the rest of the decade.

Questions

(a) Suggest a suitable title for the passage (02marks)

(b) What the author mean by the following phrases:

(i) "… fossil- fuelled power station."
(Line 09) (04marks)

(ii) " the image of the wind power is still distorted by early failures."(line 13)
(04marks)

(c) In not more than 100 words, Identify the benefits and challenges of developing the wind power industry
(10marks)

(d) Explain the meaning of the following words and phrases as used in the passage, using you own words wherever possible

(i) Persistent crisis (line 14) (02 marks)
(ii) Prevailing notion (line 24) (02marks)
(iii) Commercial competitive (line 32) (02 marks)
(iv) standardized (line 35) (02marks)
(v) Drastically (line 43) (02marks)
(vi) Feasible (line 47) (02marks)
(vii) Predominant(line 49) (02 marks)
(viii) sophisticated (line 52) (02 marks)
(ix) Other configurations (line 54) (02marks)
(x) Expertise (line 57) (02marks)
(20 marks)

Spellings, Punctuation and Grammatical Expression (SPGE) (10 marks)

Suggested answers

(a) Suggest a suitable title for the passage (02marks)

Wind power in US

Challenges of wind power

(b) What the author mean by the following phrases:

(iii) "… fossil- fuelled power station."

(Line 09) (04marks)

Generation of electricity using coal and petroleum products such as oil and gas

(iv) " the image of the wind power is still distorted by early failures."(line 13)

(04marks)

Initial failures of power generation from wind discouraged further attempts

(c) In not more than 100 words, Identify the benefits and challenges of developing the wind power industry

(10marks)

<u>BENEFITS AND CHALLENGES OF DEVELOPING WIND POWER</u>

The benefits of developing wind power are that in the long run it is feasible, cheap, reliable, low environmental pollution and renewable. While the challenges are the high initial cost of installations and operating cost, destruction of ecological systems, destruction of natural habitat, displacement wildlife and environmental pollution.

(d) Explain the meaning of the following words and phrases as used in the passage, using you own words wherever possible

(i) Persistent crisis (line 14) (02 marks)

refers to a prolonged, ongoing situation of instability or distress that continues over an extended period of time without resolution

(ii) Prevailing notion (line 24) (02marks)

Existent or widely accepted idea/belief/opinion

(iii) Commercial competitive (line 32) (02 marks)

Being the cheapest alternative

(iv) standardized (line 35) (02marks)
consistent with accepted values

(v) Drastically (line 43) (02marks)
significant

(vi) Feasible (line 47) (02marks)
Possible/viable/achievable

(vii) Predominant(line 49) (02 marks)
Major/main/principal/

(viii) sophisticated (line 52) (02 marks)
complex

(ix) Other configurations (line 54) (02marks)
Other forms/types /structure

(x) Expertise (line 57) (02marks)
Skills/know-how

(20 marks)

Spellings, Punctuation and Grammatical Expression (SPGE) (10 marks)

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Thanks

Dr. Bbosa Science