Earth's Energy and Mineral Resources

What are the advantages of alternative energy sources?

Energy is the ability to do work. If an object can exert a force or move something, it has energy. The energy for everyday activities, such as driving a car, turning on a light, or controlling the temperature of a classroom, comes from resources. The three categories of energy resources are nonrenewable, inexhaustible, and renewable.

Most energy resources used to generate electricity are nonrenewable. Nonrenewable energy sources are used faster than they can be replaced by natural Earth processes. Fossil fuels such as coal, oil, and natural gas are examples of nonrenewable resources. Nonrenewable energy sources are common because the technology to use them is well-developed and they are less expensive than other energy sources. These energy sources are, however, limited in supply and can be very polluting. For these reasons, alternative energy sources are constantly being explored.

Alternative energy sources are sometimes classified as inexhaustible or renewable. Inexhaustible energy resources are sources of energy that are constant and will not run out in the future. Renewable energy sources are resources that can be replaced by nature or by humans within a relatively short period of time, the life span of humans. Examples of alternative energy sources include wind, solar, hydroelectric, geothermal, and biomass energy. In comparison to nonrenewable energy sources, alternative energy sources are less polluting but generally more costly. Cost is a very important factor that must be considered when determining what type of energy to use in an area.

The cost of implementing alternative energy sources is related to the environmental factors of the location in question. In this Virtual Lab, you will examine alternative energy sources and the settings in which they are most advantageous.

Objectives:

- Differentiate between nonrenewable, inexhaustible, and renewable energy resources.
- Describe the advantages and disadvantages of alternative energy resources, specifically wind, hydroelectric, solar, geothermal, and biomass energy.

Procedure:

1. Click Energy Sources.

2. Click an alternative energy source to test it. Open the Reference Tool to read more info

rmation about the energy source.

3. Select an option under Daily Precipitation, Winds, and Topography to build the city.

4. Click Generate to test the energy source with the settings you chose.

5. Record your findings in the Table.

6. To build a new city, click Reset and repeat steps 1 - 4.

7. Complete the Journal questions.

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Question 1 : What are the differences between nonrenewable, renewable and inexhaustible energy resources? Give an example for each.

Question 2 : Energy resources other than non-renewable energy sources are generally refered to as alternate energy sources. Why is it important to develop alternate energy sources?

Question 3 : Based on the results of the experiment, what type of settings are most suitable for each of the following five energy sources. Explain your answer?

* Hydroelectric

* Wind

* Solar

* Geothermal

* Biomass

Question 4 : Given an isolated desert city with little wind and long dry days, throughout the year, what would you consider before recommending an alternative energy source? What alternative energy source would you recommend? Explain your answer.

Question 5 : Currently only about 10% of energy in the United States comes from the alternative energy sources. The remaining energy comes from non-renewable energy sources like coal, oil and natural gas. Why do you think this might be?

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Energy Source	Option Selected	Level of Energy Produced	Expense