Lesson 11

WHAT RESOURCES ARE RENEWABLE AND NONRENEWABLE?

SC.4.E.6.3, SC.4.E.6.6

WORDS TO KNOW

environment
natural resource
renewable resource
nonrenewable resource
fossil fuel
solar energy
conservation
recycling

INTRODUCTION

Key Concept

Renewable and nonrenewable resources are classified based on the ability to replace or renew them naturally over time. Resources are considered nonrenewable because the natural processes that create them are incredibly slow, happening over millions or even billions of years. Human use of these resources impact Earth.

What I Am Going to Learn

- How humans need and use resources
- How long it takes for some resources to renew

Scientific Vocabulary

As you read, it is important to understand the scientific vocabulary in this lesson.

The **environment** refers to the complex physical, chemical, and biological factors that surround organisms and ecological communities. It is the surroundings or conditions in which people, animals, and plants live and operate.

THINK ABOUT IT

What are the things in your environment? See if you can list them.

A **natural resource** is a substance found in nature that is not manmade.

A **renewable resource** is a natural resource that easily replenishes.

A **nonrenewable resource** takes millions of years to form.

Fossil fuels are nonrenewable resources that take millions of years to form.

Solar energy is the radial heat and light from the sun that is a plentiful renewable natural resource.

Conservation is the practice of protecting and managing natural resources.

Recycling is the processing of certain used materials in order to create new products and reuse them again rather than put them into the waste stream. It is a way to conserve resources.

GUIDED INSTRUCTION

The environment is the complex surroundings of physical, chemical, and biological factors all around you. It is the surroundings or conditions in which people, animals, and plants live and operate. Within this environment are resources that humans and all organisms need to live and grow. Humans need natural resources such as heat, sunshine, water, and food, to survive. These resources are either renewable or nonrenewable. Renewable and nonrenewable resources are the building blocks of the world. How we use them makes a big difference because some of them may not last forever.

Renewable resources can be replenished naturally at a rate comparable to their use. In other words, they will not run out anytime soon. Examples of these renewable natural resources are sunshine, wind, water, forests, and geothermal energy (heat from the Earth's interior).

Renewable resources provide clean energy. Solar panels capture sunlight and convert it into electricity. Wind turbines use wind power to generate electricity. Hydropower plants use moving water to create electricity. Geothermal energy can heat buildings or generate electricity.

Nonrenewable resources form over extremely long periods and cannot be readily replaced. Once they are gone, they could take millions of years to replace. They are finite, which means they have an end or a limit. Examples of nonrenewable resources are fossil fuels (oil, natural gas, coal), minerals (metals like gold and copper), and some types of soil. Fossil fuels are the main source of energy for transportation and electricity generation in many parts of the world. They also provide materials for various products. Minerals are used in construction, electronics, and many other applications.

The big difference to remember is that renewable resources can be used sustainably, meaning we can use them without depleting them for future generations. On the other hand, we need to use nonrenewable resources carefully because they have a limited supply.

Conservation is key. That means we need to protect and manage natural resources. Even with renewable resources, it is important to conserve them to avoid using them up faster than they can be replenished. As technology advances, renewable resources are becoming more efficient and cost-effective, making them a more attractive alternative to nonrenewable resources. Nonrenewable resources often have a negative impact on the environment when extracted and used. Renewable resources generally have a smaller environmental footprint. An environmental footprint is a metric that measures the impact of each person, organization, or product on the environment. It tracks how much nature we use to support our way of life.

Environmental Footprint

MODEL IT

Trace the image of the foot, and model your own environmental footprint by drawing in the image all the renewable and nonrenewable resources you use on a daily basis. To get you started in drawing, think about the way you use them.

Florida is rich with resources, but like everyone else, Floridians must conserve. Florida has abundant sunshine. It is a prime place to generate solar energy. Solar panels are used in homes and businesses to convert sunlight into electricity. Florida's coastal areas have enough wind to generate electricity using wind turbines. While water is seemingly abundant, freshwater resources are limited in Florida. Florida has a large portion of the world's phosphate reserves, but phosphate mining has environmental drawbacks. There are limited oil reserves in Florida. There is significant limestone in Florida, but that has environmental drawbacks, too. Silicon is a mineral found in sand and has technological uses such as computer chips, but sand mining can have environmental consequences for beaches and marine ecosystems. Finding a balance between resource use and environmental protection is an ongoing challenge. By understanding Florida's resources, you can make informed decisions on using them and promoting a more sustainable future for the state and for the planet.

1. Why is it important to conserve all resources, even renewable ones?

2. Why is Florida a prime location for generating solar energy?

3. Phosphate is abundant in Florida. It is a chemical compound derived from phosphoric acid. It is often used as a fertilizer. Fertilizers tend to travel through runoff. What would be the environmental consequences of using too much phosphate?

INDEPENDENT PRACTICE

DIRECTIONS

Read each question carefully. Decide which choice is the best answer. Mark your answer.

1. Which of the following resources can be naturally replaced in a short amount of time?

   A. coal
   B. water
   C. diamonds
   D. iron ore

2. Sunlight generates electricity through solar panels. What kind of resource is sunlight?

   F. nonrenewable
   G. renewable
   H. manufactured
   I. limited

3. Florida has beautiful beaches with an abundance of sand. Sand is an example of which resource?

   A. renewable
   B. refillable
   C. nonrenewable
   D. recyclable

4. Wind turbines use the power of wind to create electricity. Wind is a type of what resource?

   F. human made
   G. renewable
   H. fossil fuel
   I. limited resource

5. Most of the electricity in Florida comes from burning fossil fuels. What happens to fossil fuels once they are burned?

   A. You can replant them.
   B. You can easily replace them.
   C. You can wait millions of years for them to form again.
   D. You can recycle them infinitely.

6. Orange trees are a source of food for people in Florida. What kind of resource are orange trees?

   F. nonrenewable
   G. renewable
   H. manufactured
   I. limited

7 Recycling helps to conserve resources. Which of these resources can you recycle?

A. coal
B. limestone
C. aluminum cans
D. natural gas

8 Which fits the definition of recycling?

F. throwing trash away
G. reusing something in its original form
H. burning trash to create energy
I. processing waste materials to create new products

9 Which of the following resources is **most likely** to be nonrenewable?

A. sunlight
B. coal
C. wood
D. water

10 Wind turbines are becoming a more common sight in Florida. They use the power of wind to generate electricity. When compared to burning fossil fuels to create electricity, which of the following is a benefit of using wind turbines?

F. Wind turbines are cheap to build.
G. Wind turbines produce more electricity.
H. Wind is a renewable resource.
I. Wind turbines require less maintenance.

EXIT TICKET

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Match the resource in the left column to its type in the right column.

Resource	Renewable or Nonrenewable?
Solar Energy	
Steel	
Wind Power	
Plastic Bottle	
Fuel Oil	
Diamonds	
Paper Products	

Identify 2 nonrenewable resources in Florida.

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