

Getting to Know: Renewable and Nonrenewable Resources

Natural resources are an important topic in our world. News reports are filled with stories about energy costs and some cities have even gone so far as to ban plastic bags. Television shows and commercials urge viewers to recycle or use fewer resources. In all of these topics, we sometimes overlook the basic ideas. What are resources? What's the difference between renewable and nonrenewable resources? What are some of the advantages and disadvantages of both? This concept will help you take a closer look at these issues.



Recycling can help us use fewer natural resources.

What are renewable and nonrenewable energy resources?

Natural resources include anything we use that comes from Earth. They include the wood we use for building homes, the soil we use for growing crops, and the resources that help us meet our energy needs. All natural resources can be classified into two groups: renewable and nonrenewable. *Renewable resources* are those that can be easily replenished, or whose supply is nearly limitless. Renewable energy resources include solar power, wind power, hydroelectric and geothermal power. They also include tidal power and biofuels. *Nonrenewable resources* are those with a limited supply. After we use nonrenewable resources, they are gone. Nonrenewable resources include fossil fuels like coal, oil, and natural gas. Fossil fuels form gradually, over millions of years. Because they form so slowly, we are using fossil fuels at a much faster rate than they are naturally replenished.

Most of our energy needs are met using nonrenewable resources. Renewable resources are considered alternative energy resources because they are not used for the majority of our energy needs.

What are some advantages and disadvantages of nonrenewable resources?

Nonrenewable resources have advantages and disadvantages. Nonrenewable resources are often easily obtained. Because of this, they can cost less than some other sources of energy. We also have technology developed to extract these resources from the Earth, utilize the stored energy, and distribute that energy. These resources also tend to be energy dense, which means they contain a lot of stored energy.

There are disadvantages as well to nonrenewable resources. The first disadvantage is that these energy sources are limited. Also, the burning of fossil fuels releases emissions that can lead to global warming. Nonrenewable resources are also associated with conflicts between nations.



Misconception 1: *People talk about energy like it's a thing. Can we touch energy?*

Energy is defined as “the ability to do work.” It isn’t a thing. It’s not a material substance that we can touch or feel, like a tree or a piece of coal. However, we can measure the amount of energy that is stored in different resources. Common units of measurement for energy include the BTU (British Thermal Unit), joule, and watt-hour.

What are some advantages and disadvantages of renewable resources?

Unlike nonrenewable resources, renewable resources have a vast supply. Many resources, like solar energy, are virtually unlimited. Using renewable resources is usually less harmful to the environment than using nonrenewable resources. Many renewable sources of energy are available on a local level. This reduces the need for shipping them great distances.

Although renewable resources have many promising applications, they do have some disadvantages. First, because they are not as widely used, they tend to be more expensive. Also, most renewable energy sources cannot be transported like fossil fuels. Therefore, renewable energy sources must be converted into other forms of energy, such as electrical energy. Then, the electrical energy can be stored in batteries, or distributed in the electrical grid. This can be less convenient and more expensive than using fossil fuels.



Misconception 2: *Is it true that we can use all of the energy stored in natural resources?*

We can’t use all of the energy stored in natural resources. For example, when a fuel is burned it changes form. It can change multiple times, and each time, some useable energy is converted into an unusable form. Energy isn’t lost during energy transformations. However, the system is not completely efficient.

Is there a connection between science, technology, and resources?

There is a link between science, technology, and our resource use. As our energy needs continue to grow, we continue to look for other sources of energy. Technology helps develop ways to use alternative sources of energy. Over time, new technologies become more widespread, and less expensive. Technology makes a huge difference in the ways we use natural resources. A few decades ago, large-scale wind farms were virtually nonexistent. Now they are becoming commonplace. What do you think the future of human energy use might hold?



Science and technology can help make renewable sources of energy more widespread.