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That being said, it can take some time to restore usable levels of renewable energy after depleting a certain amount of it. One of the greatest benefits of renewable energy sources is that they're much better for the environment than nonrenewable resources like gas and coal. Most produce no greenhouse gas emissions, the primary driver of climate change. They can also reduce certain kinds of air and water pollution, which is better for our health and the health of our planet overall. There are six major sources of renewable energy: solar, wind, hydroelectric, geothermal, biomass and ocean (or tidal) energy. They're all inexhaustible sources of energy because they rely on weather and other natural phenomena. Developing them throughout the world has the potential to create millions of jobs while saving the planet at the same time. In the long run, they're also much more cost-effective than using nonrenewable resources. Solar Energy Solar power is a renewable energy resource that comes from the sun. It works by capturing the sun's energy with solar cells on solar panels and turning it into electricity or heat. When solar panels gather light from the sun and turn it into energy, they store this energy in batteries that people can use to power appliances and other systems in their homes. Photo Courtesy: Jasmin Merdan/Getty Images Sunlight is functionally never-ending, so there's no limit to its potential for generating energy. Solar power does not produce carbon dioxide or other air pollutants, making it very beneficial for the environment. In the long term, switching to solar energy also saves people money on their utility costs. There are some limitations to solar energy, however. We have no control over the amount of sunlight that we receive or when we receive it. The sunlight a solar panel can receive depends on time, location, seasons and weather. Furthermore, absorbing a useful quantity of sunlight takes a large surface area. Not everyone has space at home or in their yards to set up a network of solar panels that's large enough to produce a sufficient quantity of energy. Thanks to the fact that the sun heats the earth in an uneven manner, we have wind. Wind power is a renewable energy source that we collect via turbines — machines that look like giant, modern windmills. Turbines can reach the same height as skyscrapers, and the diameters of their blades are almost as wide as one of these buildings, too. The blades spin when the wind hits them, which creates electricity by feeding the energy from the turning blades into a generator. In windy locations, wind power can cost less than any other energy source. Photo Courtesy: Yuhan Liao/Getty Images Turbines are effective anywhere wind speeds are high. Open plains, hilltops and open water are ideal locations for these machines. Producing energy with turbines doesn't generate air pollution or carbon dioxide, making it a clean source of energy. The primary disadvantages of wind energy are inconsistency (many areas don't receive constant wind), noise disturbances from the sounds the turbines make, the large amount of space the turbines take up and the fact that they can only be used in certain geographic locations. Hydroelectric Energy If you've learned about hydroelectric energy (also called hydropower), you might associate it with dams like the Hoover Dam. Hydroelectric power is generated by moving water. In the case of a dam, water runs through the structure's turbines to spin them, which creates energy for electricity. This is another clean energy source because it doesn't pollute the air. Photo Courtesy: Ascent Xmedia/Getty Images Among the top benefits of hydropower plants is their ability to accumulate reservoirs of energy for later use. This makes it possible to utilize less-reliable renewable energy sources, such as solar and wind power, as the energy from hydroelectric power plants can be available as a backup when those others aren't. To create a hydroelectric power plant, engineers have to dam a source of running water, such as a river. This can have negative effects on fish populations in the area, which can then affect the other animals that rely on those fish as a food source. Disrupting the food chain can have a lot of negative outcomes. Additionally, if there is a drought, hydroelectric power plants can become less reliable because they need large quantities of water to function properly. Geothermal Energy The inner core of the earth is very hot — nearly as hot as the surface of the sun. Because of this, heat continually rises up out of the earth's surface. The heat beneath the surface of the planet is called geothermal heat. The earth continuously produces this heat, which is what makes geothermal energy renewable. Photo Courtesy: Arctic-Images/Getty Images To use geothermal energy, engineers drill wells several miles down into the earth, and hot water or steam rise up through these wells. The steam turns a turbine, which generates electricity, and the steam cools back into water so it can repeat this process again. The pollution created from collecting geothermal energy is minimal. Like hydropower, geothermal energy is a stable and virtually endless energy source. The greatest disadvantage of geothermal energy is that it can only be used in places where drilling deep into the earth is possible. In a lot of locations this isn't feasible, so engineers and companies have no access to this renewable energy resource. Geothermal power plants are often located in areas where there are lots of volcanoes, geysers or hot springs because the heat is more accessible there. Also, geothermal energy can cause earthquakes, because digging the wells to access the energy changes the earth's structure and creates cracks. Biomass Energy Biomass is material that comes naturally from plants and animals. It includes trees, plants, waste from crops, animal manure, human sewage and organic solid waste like cotton, paper, food, wool and wood scraps. We convert biomass into energy in various ways. This can include burning the materials to produce heat or using chemical, thermochemical and biological conversion to produce different kinds of fuels. Combustion, or directly burning biomass, is the most common way to turn biomass into energy. Usually, this involves burning biomass to heat water and generate steam, which then creates electricity. Photo Courtesy: Schon/Getty Images Because humans, animals and plants are always creating waste, we'll likely never run out of biomass from which to produce energy. Plus, when we use waste, it doesn't go into a landfill. However, there are some downsides to energy made from biomass: Burning these materials releases carbon dioxide, a greenhouse gas, into the air. It also pollutes the air with carbon monoxide. What's more, when we clear land to grow crops specifically for the purpose of creating biomass, a lot of energy and space are wasted. Cutting down trees to use for biomass is harmful to the environment, too. Ocean or Tidal Energy Generating energy from the tides, waves and heat in the ocean is still a work in progress, but it can be done effectively in two ways. The first type is called ocean thermal energy. This uses warm water on the surface of the ocean to generate power. The second is ocean mechanical energy, which uses the force of the tides and waves to create power. It's a consistent form of renewable energy that can fill in where the less-consistent renewable energy sources fail us. Photo Courtesy: Miguel Navarro/Getty Images One of the most beneficial aspects of ocean energy is its huge potential. For example, one mile's worth of wave crests along a coastline creates enough energy to power about 40,000 homes. One of the disadvantages of ocean energy is that there aren't many locations around the world where people can build tidal barrages — the names of the structures that store ocean energy — to collect that energy. Also, the patterns of the tides dictate that ocean energy can only provide power for around 10 hours each day. Especially intense waves might damage or destroy the tidal barrages as well. MORE FROM REFERENCE.COM

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