RENEWABLE AND NON-RENEWABLE ENERGY

There are nine major areas of energy resources. They fall into two categories: nonrenewable and renewable. Nonrenewable energy resources, like coal, nuclear, oil, and natural gas, are available in limited supplies. This is usually due to the long time it takes for them to be replenished. Renewable resources are replenished naturally and over relatively short periods of time. The five major renewable energy resources are solar, wind, water (hydro), biomass, and geothermal.

Since the dawn of humanity people have used renewable sources of energy to survive -- wood for cooking and heating, wind and water for milling grain, and solar for lighting fires. A little more than 150 years ago people created the technology to extract energy from the ancient fossilized remains of plants and animals. These super-rich but limited sources of energy (coal, oil, and natural gas) quickly replaced wood, wind, solar, and water as the main sources of fuel.

Fossil fuels make up a large portion of today’s energy market, although promising new renewable technologies are emerging. Careers in both the renewable and nonrenewable energy industries are growing; however, there are differences between the two sectors. They each have benefits and challenges, and relate to unique technologies that play a role in our current energy system. For a range of reasons, from the limited amount of fossil fuels available to their effects on the environment, there is increased interest in using renewable forms of energy and developing technologies to increase their efficiency. This growing industry calls for a new workforce.

**Difference between renewable and nonrenewable resources**

A resource is considered renewable or nonrenewable based on their environmental impact, their costs and the rate of exhaustion.

Renewable resources are defined as such when they can be regained or renewed. Experimentation with wind, solar and [tidal energy](https://www.engineerlive.com/content/game-changing-tidal-energy-project-approved-channel-regions) along with other renewable resources are on-going..

Unlike renewable resources, nonrenewable energy is finite. It cannot be renewed or regained once consumed.

**Why is biomass considered a renewable resource?**

By burning plant matter, we are able to generate heat or create electricity through the running of turbines.

Biomass energy is considered a renewable resource due to the ability to plant new trees, replacing those that are cut down or die naturally.

**Is tidal energy a renewable resource?**

Whilst tidal energy is one of the youngest types of energy, it is considered a major renewable resource. The movement of water naturally creates kinetic energy, which can be turned into electricity.

Tidal energy is considered a renewable resource because the Earth’s tides are inexhaustible and do not release any greenhouse gasses. Although the full environmental impact has not been fully determined, there are some clear advantages in favour of harnessing this type of energy.

**How is solar energy a renewable resource?**

Solar energy is a popular renewable resource as it is inexhaustible and does not emit any pollution or greenhouse gasses.

Just a few technologies being used to harness solar energy are photovoltaics, solar architecture, solar thermal energy and artificial photosynthesis.

Unlike nonrenewable resources, there is an abundance of solar energy available to us. The amount of solar energy that hits Earth in one year amounts to twice as much as that which can be obtained from nonrenewable resources.

**Is wind energy a renewable resource?**

Similar to solar energy, wind energy is also clean and in abundance. With the use of turbines, wind can generate electricity in a sustainable way.

Other advantages of this type of renewable resource include cost-effectiveness. There are still areas where other energy sources are cheaper, however, research is being carried out to reduce the LCOE (levelized cost of electricity) of wind power both onshore and offshore.

Wind power also counters the negative impact of climate change. According to The Global Wind Energy Outlook, by 2030 2.5 billion tons of carbon will be offset each year thanks to wind energy.

**Geothermal energy is a renewable resource**

Geothermal energy is generated by heat from the Earth’s subsurface. It is found in fluids and rocks located below the Earth’s crust and reaches as far down as magma.

This energy is harnessed by wells being dug into underground reservoirs, where hot water and steam can be gathered and used to generate electricity.

The fact that geothermal energy stems from heat generated by the Earth makes this type of energy renewable. Emissions created by the geothermal energy process are low and any salts and dissolved minerals that are collected within the geothermal fluids can be injected back into the reservoirs.

**Is nuclear energy a renewable resource?**

Nuclear energy is renewable, however, it is the materials that are utilised within nuclear power plants that make the resource nonrenewable.

The process where nuclear energy is harnessed is called nuclear fission and happens when energy is released by the nucleus of an atom splitting.

Nuclear power plants don’t emit greenhouse gases or assist in air pollution, however, nuclear energy does produce materials that are radioactive. Waste that stems from radioactive materials are significantly toxic.

**Why is oil a nonrenewable resource?**

Oil can be extracted both on land and at sea. It is inexpensive, however, the process does cause a large amount of pollution. Also, the environmental impact of an oil spill can cause damage to local ecosystems that are almost irremediable.

Oil is nonrenewable as formation takes millions of years. Therefore, there is no way to replenish the oil at the same rate it is currently being consumed.

**Why is natural gas considered a nonrenewable resource?**

The process of finding natural gas involves examining rocks, analysing sound waves (created from small explosions or heavy weights being dropped on the Earth's surface), measuring the gravitational pull of rock masses and finally drilling down into the rock in search of natural gas deposits.

The amount of time required to make natural gas from fossil fuels, compared with the rate in which it is consumed makes it a nonrenewable resource.

**How is coal a nonrenewable resource?**

Coal consists of dead plant matter that accumulated at the bottom of swamps millions of years ago and was eventually covered by layers of water, rock and dirt. The pressure and heat limited the oxygen content of the plant matter, which resulted in deposits of rich hydrocarbon, which eventually became coal.

Similar to natural gas, coal is considered a nonrenewable resource due to the amount of time required to create the fossil fuel.

**Is uranium a nonrenewable resource?**

A very specific and rare type of uranium (U-235) is utilised in power plants as part of the nuclear energy creation process. Uranium-235 is only found in extremely small amounts (0.7% of uranium is U-235) and requires enrichment, making it a nonrenewable resource.

As nonrenewable resources become more limited, ongoing research must be carried out to make the most of our renewable energy supplies.

 Task to do:make your own list of technical words from the text with adequate definitions and translations, and translate two passages from the text of your own choice. Make your ESP (English for Specific Purposes) folder, where you will save all the homework you do. You will be asked to send this material to me for inspection before the exam.