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What is energy and sources of energy

It is what we use in almost everything we do. Whether this is a walk to the bus stop, cooking instant noodles over the stove or firing up our computers, energy is essential to our everyday lives.



There are different kinds of energy:

- Walking requires **kinetic energy**
- Cooking requires heat which is **thermal energy**
- Computers need **electrical energy**

Besides kinetic, thermal and electrical energy, there are several other types of energy we may encounter:

- **Light (radiant energy)** from the sun's rays is absorbed by plants and used for photosynthesis to sustain their growth.
- **Chemical energy** can be in the form of materials in a battery that combine and

release electricity needed by watches, toys and computers.

- **Nuclear energy** comes from the splitting of atoms (via a process called nuclear fission) to release energy. Nuclear power plants use this energy to produce electricity.
- **Gravitational energy** comes from the pull of the Earth's core, and is what keeps everything, including your desk, grounded.

We get the energy needed every day from a number of ways, whether this is from traditional sources such as fossil fuels or via relatively newly-tapped-on sources such as solar or wind energy.

Sources of energy

Oil, coal and natural gas

Much of the energy used today in the world depends on three traditional sources of energy that are found buried deep in the earth's crust, produced through a process that took millions of years to form.

Oil, coal and natural gas are fossil fuels that were formed hundreds of millions of years ago from the bodies of dead plants and animals that were buried underground by rock, sand and silt. Here, they came under tremendous pressure as the surface material built up.

Oil is in liquid form, while coal is solid in the shape of rocks and natural gas is in a gaseous state, escaping to the surface when geologists detect and drill wells to extract them.

Burning of fossil fuels emit carbon dioxide and greenhouse gases that may lead to global warming. Nevertheless, they are currently the dominant source of the energy in most countries for producing electricity.

Energy from splitting atoms

Some countries have turned to nuclear energy, which involves splitting a tiny atom and taking that tremendous heat released to turn steam turbines that in turn produce electricity for entire cities.

This process requires usually uranium – a metal found in rocks – as a fuel to start the nuclear reaction. Compared to fossil fuels, nuclear energy does not produce harmful emissions like carbon dioxide, but the by-products of the nuclear reaction have to be carefully and safely disposed of.

Newer sources of energy

Newer sources of energy include biomass, wind, hydro, geothermal as well as solar energy.

Sun as a source of energy

Solar energy comes from taking the sun's radiation and converting it into other forms of energy, such as electricity and heat. This involves absorbing the sunlight, using solar panels or cells, and producing the energy needed by households.

The converted energy can then be used to heat up water or rooms, or to produce electricity for electrical devices at home.

What's good about solar energy is that it does not produce any emissions. The downside is that

sunlight is not available at night. Even in the daytime, solar energy is intermittent in nature due to weather changes and cloud cover, and can destabilize the grid and cause power disruption.

Organic waste as a source of energy

Many countries have produced electricity by burning the waste collected, including food that is discarded. The waste is crushed into small pieces and will then be fed into the incinerator. The heat is used to generate steam in boilers which will then drive turbo-generators to produce electricity.

Wind, Hydro and Geothermal Energy

Wind, Hydro and Geothermal energy are types of kinetic energy that can be converted to electrical energy.

In some countries, large wind farms made up of sometimes hundreds of **wind turbines** – the modern version of good, old windmills – dot the rural landscape and harness the wind's kinetic energy.



In other places, **hydro power**, usually, from fast-moving rivers or tide water, is harnessed to the

same effect. The kinetic energy from moving water is tapped on, much like the wind, to move electric generators to create power.

Meanwhile, **geothermal energy** is heat from the planet's core, which is as hot as the sun's surface. The heat escapes to the Earth's surface, often through volcanoes, geysers and hot springs, and is tapped on to heat up homes or produce electricity.



Find out more:

<http://www.energyportal.sg/Energy101/types-of-energy.html>