

The word 'Energy' defines the capacity or ability to do work. Energy exists in many forms, including [Kinetic Energy](#), Electrical Energy, Thermal Energy, Potential Energy, Chemical Energy, Nuclear Energy, etc. Motion is associated with all [forms of energy](#). For example – any object or body in motion has Kinetic Energy associated with it. According to the principle of Conservation of Energy or the first law of Thermodynamics, energy can neither be created nor destroyed but can only be changed from one form to another. There are two prime sources of energy, namely, the Conventional Sources of Energy, and the Non-conventional Sources of Energy.

Understanding the Conventional Sources of Energy

The Conventional Sources of Energy are also known as the non-renewable sources of energy, which are present in a limited quantity and are being consumed by human beings for many years now. These non-renewable sources of energy are the decaying matters, which take over hundreds of years to form, example: coal, petroleum, etc. So, if they are depleted once, they can never be generated at a speed or pace, which could sustain their rate of consumption.

The conventional sources of energy can be further classified into two types, namely, the commercial energy sources and the non-commercial energy sources.

What are Commercial Energy Sources?

The commercial energy sources are those energy sources for which the consumer needs to pay the price for the consumption. For instance - coal, petroleum, oil, natural gas, and [electricity](#).

Coal: Without any second thoughts, coal is indeed the most vital [source of energy](#). The formation of coal takes place when dead plant matter decays into peat (accumulation of partially decayed organic matter or vegetation) which is converted into coal by pressure and heat over millions of years. Coal is mostly composed of Carbon. It has variable amounts of other elements also, like Hydrogen, Nitrogen, Sulphur, and Oxygen.

Natural Gas and Oil:

Natural gas is one of the most crucial sources of energy in the world whereas oil is considered to be liquid gold. Oil is formed from a large number of tiny animals and plants, which when die, get trapped at the bottom of the sea under multiple layers of sand and mud, and get exposed to heat and pressure. It is widely used in trains, ships, automobiles, and planes. Natural gas is formed when several layers of decomposing animal and plant matter are exposed to intense pressure and heat over millions of years under the surface of Earth. It is used for various purposes, including cooking, heating, and electricity generation.

Electricity: Electricity is a form of energy, in which there is a flow of electrons ([electric charge](#)) in one direction. Electricity can be produced using [fossil fuels \(coal and petroleum\)](#), nuclear [power](#), and renewable alternatives (solar, wind, or hydropower). As a common source of energy, electricity is commonly used for commercial and domestic purposes. The electricity primarily utilized in electrical appliances, including refrigerator, air conditioner (AC), TV, and washing machine.

The Prime Sources of Power Generation are as Follows:

- Nuclear Power
- Hydro-[electric Power](#)
- Thermal Power

Thermal Power: By utilizing coal and oil, thermal power is generated at several power stations. Production of thermal power is the conversion of fuel into heat. It is generated using thermal generators and specifically designed furnaces. A thermal power plant burns fuels for boiling water and making steam. The steam produced then spins a turbine connected to a generator that weaves electricity.

Hydroelectric Power: The hydroelectric power is generated or produced with the help of constructing dams above the flowing rivers, for example, Bhakra Nangal Project and Damodar Valley Project. Flowing water creates energy that can be further captured and eventually turned into electricity. Water is released from the reservoir and then flows through a turbine. The turbine spins the water and activates a generator, which produces electricity.

Nuclear Power:

Nuclear power plants use uranium and plutonium as fuel, which is less expensive than coal. The vast majority of electricity from Nuclear Power is produced via [nuclear fission](#), [nuclear fusion](#), and nuclear decay reactions.

Understanding the Non-Conventional Sources of Energy

Also referred to as the renewable sources of energy, the non-conventional sources of energy refer to those energy sources, which are replenished by natural processes, that too continuously. The non-conventional sources of energy can't be exhausted easily and can be generated at a constant rate for their use over and over again. Furthermore, these energy sources do not pollute the environment and natural surroundings and require less expenditure. A few examples of non-conventional sources of energy include wind energy, [tidal energy](#), solar energy, [geothermal energy](#), and biomass energy. The reason why they are also called renewable sources of energy lies in the fact that they can be produced or generated through natural processes, at a rate greater than or equal to the rate of their consumption.

What are Non-Commercial Energy Sources?

In general, non-commercial energy sources are those energy sources that are freely available, and the consumers don't need to pay the price for their consumption. A few examples of non-commercial energy sources include firewood, straw, dried dung, etc.

Solar Energy: Solar energy is the energy produced or generated by the sunlight. Based on the form of energy that needs to be produced or generated, the photovoltaic cells are exposed to sunlight. The solar energy is widely utilized for the distillation of water and cooking purposes.

Wind Energy: Wind energy is the energy generated or produced by harnessing the power of the wind. It is widely utilized in the operation of water pumps for irrigation purposes. India is the second-largest producer of wind power in the world.

Tidal Energy: Tidal energy is the energy produced or generated by exploiting the tidal waves of the sea. As a non-conventional source of energy, tidal energy is still left to be tapped due to the lack of cost-effective technology.