

# Energy Sources, Forms and Uses

- Most of the energy that we use comes directly or indirectly from our **main source of energy, the sun**.
- The sun is our main source of light and heat energy.
- Other common examples of **sources of energy** are **fuels, running water** and **wind**.
- **Fuels** are **non-renewable sources of energy**.
- **Solar energy, running water** and **wind** are **renewable sources of energy**.
- **Fossil fuels have chemical energy in them**. They are used to generate electrical energy and heat energy for domestic and industrial uses.
- Hydroelectric power stations and wave power stations harness the **kinetic energy present in moving water** to generate electricity from generators.
- **Wind has kinetic energy** that can be used to grind grains. It can also be used to produce electricity.
- Energy is the ability to do work.
- **Energy cannot be destroyed or created**.
- Energy **can be converted from one form to another**.
- Energy **can be stored for later use**.
- There are various forms of energy:

## **Kinetic Energy**

Kinetic energy is the energy possessed by an object due to its motion or the energy possessed by a moving object. The faster the movement of an object, the greater its kinetic energy. For example, the wind is a source of kinetic energy.

## **Potential Energy**

Potential energy is the energy possessed by an object due to its position or condition.

## **Light Energy**

Light energy is the energy that enables us to see things. We can see an object only if it gives off light or reflects light into our eyes. The sun is our main source of light energy.

## **Electrical Energy**

Electrical energy is the energy possessed by an object when electricity passes through it. Power stations are our main sources of electrical energy.

## **Sound Energy**

Sound energy is the energy produced by a vibrating object.

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## Heat Energy

Heat energy is the energy possessed by hot objects. The sun is our main source of heat energy. Other sources of heat energy include fires and burning fuels. Most sources of heat energy also produce light energy.

**More!**

## Gravitational Potential Energy

Gravitational potential energy is the energy possessed by an object due to its height above the ground.

Gravitational potential energy exists because the force of the earth's gravity acts on all objects.

The higher above the ground an object is placed, the greater its gravitational potential energy.

## Elastic Potential Energy

Elastic potential energy is the potential energy stored in an object that can be deformed and then returned to its original shape. A stretched rubber band or wound-up spring has elastic potential energy.

For example, a wind-up toy car stores elastic potential energy when it is wound.

## Chemical Potential Energy

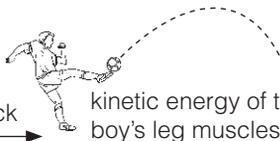
Chemical potential energy is the energy stored in food, fuels or batteries.

For example, when a ball is kicked,

chemical potential energy (present in the food the boy ate)



kick



kinetic energy of the boy's leg muscles as he kicks the ball



kinetic energy of ball as it moves + gravitational potential energy of the ball as it moves up above the ground level

The chemical potential energy present in fuels and batteries is converted into electrical energy to power up electrical appliances.

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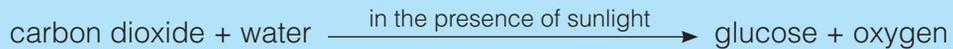
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- All living things need energy to carry out life processes.
- Plants are the only organisms that are able to make their own food by the process called **photosynthesis**. They are called primary producers.
- **Light, carbon dioxide** and **water** must be present for **photosynthesis to take place in plants**.
- Glucose, a type of sugar, and oxygen are products of photosynthesis.
- The process of photosynthesis can be represented in an equation:



- Excess glucose in plants is stored as starch in different plant parts.
- The food produced by plants becomes the source of energy for animals.
- In a food chain, energy is transferred from one organism to another.
- In an ecological pyramid, the higher the level an organism is at, the energy transfer it receives after consuming the food becomes lesser.