

Work and Energy

Work :

When a force displaces a body in the direction of applied force then the product of the force and displacement is called the work done by the force on the body.

Work done depends on :

- Force applied
- Displacement

Conditions for work to be done ?

1. A force must be applied on the object

Work done	No Work done
boy kicking a football	pushing a wall
squeezing a rubber ball	reading a book
climbing the stairs	porter standing still with heavy luggage

Work done or not ?

Types of Energy

Mechanical Energy

Kinetic Energy

- Energy possessed by a body due to its motion
- $K.E = \frac{1}{2} mv^2$
- Unit - joule

Potential Energy

- the stored up energy of a body due to its position which has potential to do work.
- $P.E = m \times g \times h$
- Unit – joule
- Ex : compressed spring,

Gravitational Potential Energy

- A stone kept at some height from ground

Elastic Potential Energy

- Wound up watch spring

Energy in Action

- Light Energy
- Sound Energy
- Heat (Thermal) Energy
- Electrical Energy

Stored Energy

- Chemical Energy
- Magnetic Energy
- Nuclear Energy

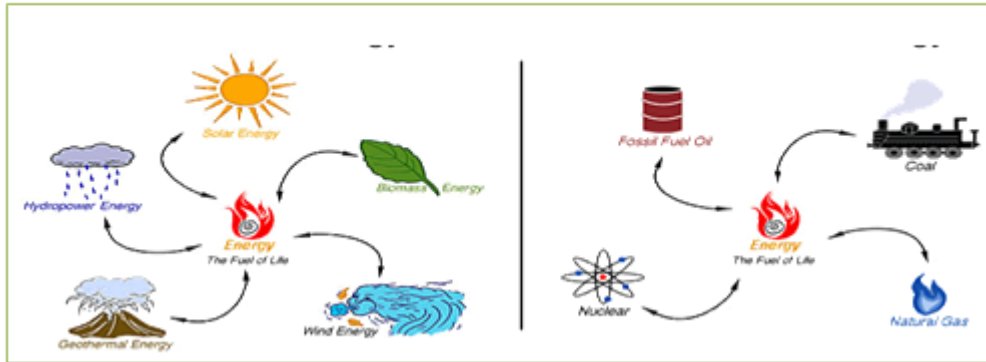
Energy :

It is the ability or capacity to do work.

Energy is the cause - *Work is its*

Non-Conventional sources of Energy

Conventional sources of Energy



Transformation of Energy:

- *Electric bulb*: electrical -> light and heat
- *Table fan & electric motor*: electrical -> kinetic
- *Generator*: kinetic -> electrical
- *Door bell & loudspeaker*: electrical -> sound
- *Pendulum*: between kinetic and potential
- *Microphone*: sound -> electrical
- *Hydroelectric power station*: P.E of water -> K.E -> electrical
- *Cell or battery*: chemical -> electrical
- *Stem engine*: chemical -> heat -> K.E

Save Energy :

- use solar cookers
- do not waste water
- switch off fans , lights and other electrical devices when not in use