

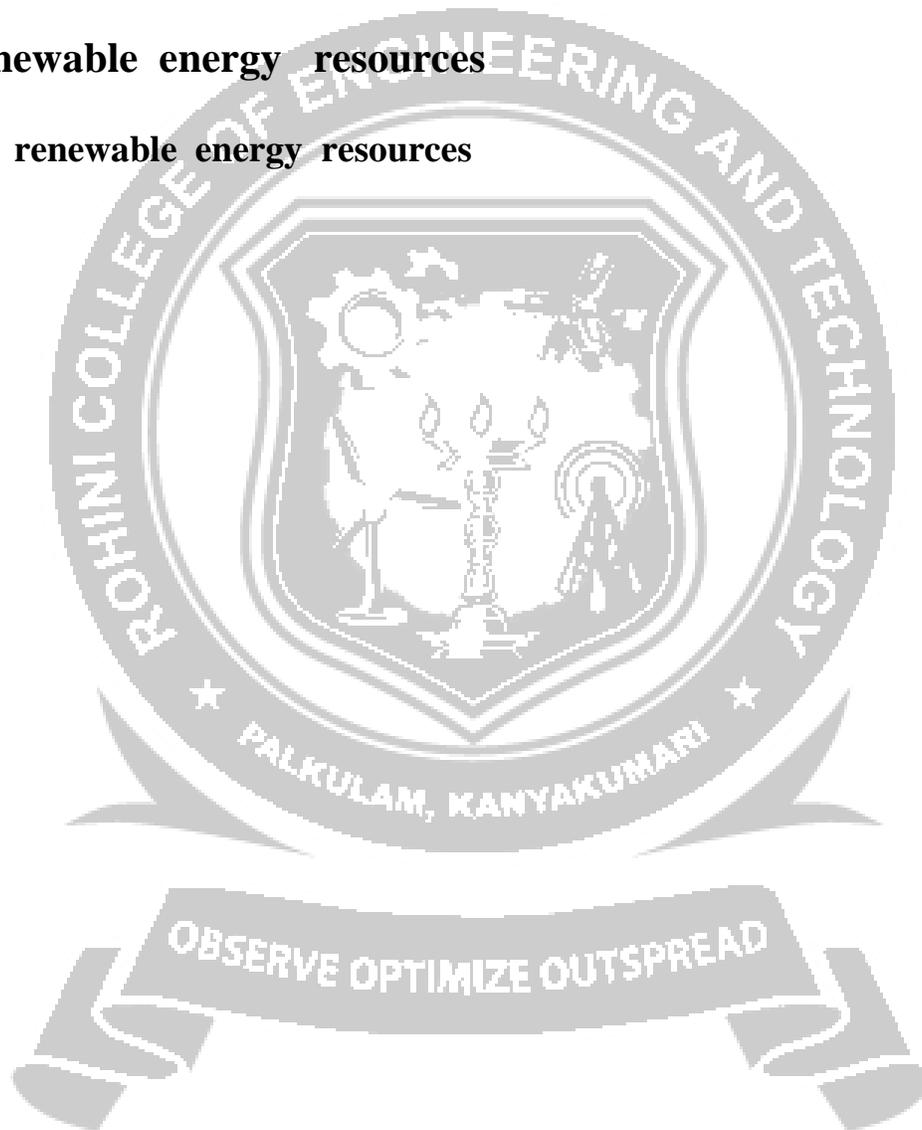
MODULE III

NATURAL RESOURCES

3.5 Energy Resources

3.5.1 Renewable energy resources

3.5.2 Non renewable energy resources



3.5 Energy Resources

Energy is defined as, “the capacity to do work”.

Growing energy needs

Energy is essential to all. All industrial process like mining, transport, lighting, heating and cooling in buildings all require energy .Due to overpopulation the world is facing further energy deficit.

Our style is changing from a simple way of life to a luxurious life style. At present 95% of the commercial energy is available only from the fossil fuels like coal, oil & natural gas and are not going to last for many more years. It would be really ironic if fuel become more expensive than food.

3.5.1 Renewable energy resources

It is a natural resources which can be generated continuously and are inexhaustible.

It can be used again & again in an endless manner.

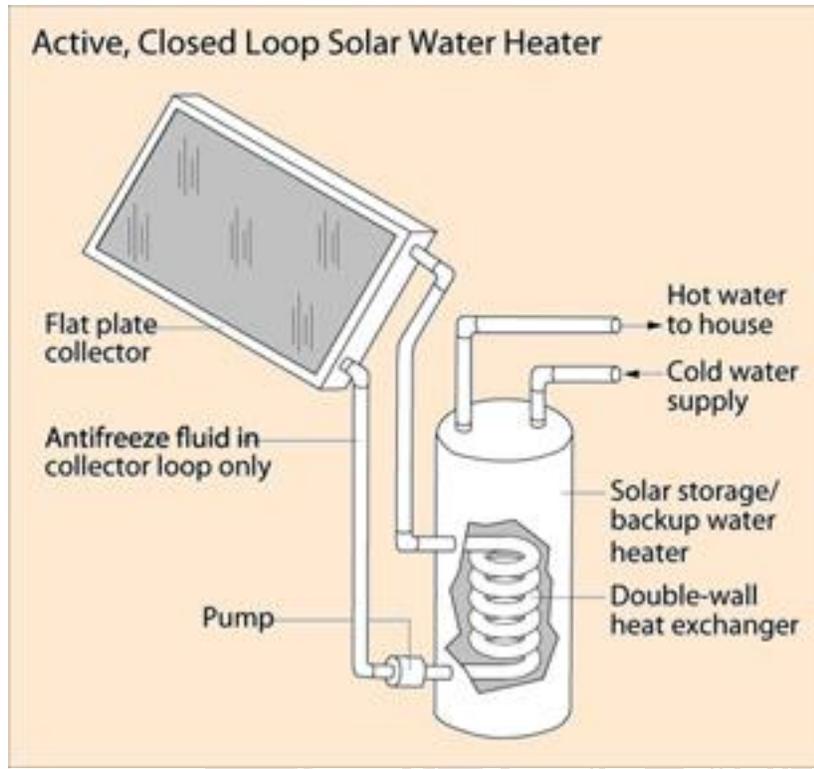
Ex. Solar energy, wind energy, tidal energy

1. Solar energy

The energy that we get directly from the sun is called solar energy. Enormous amount of heat energy is coming from the sun. That heat energy is collected & converted into electrical energy.

Ex. Solar cells, Solar battery, Solar Water battery.

Solar Water Heater

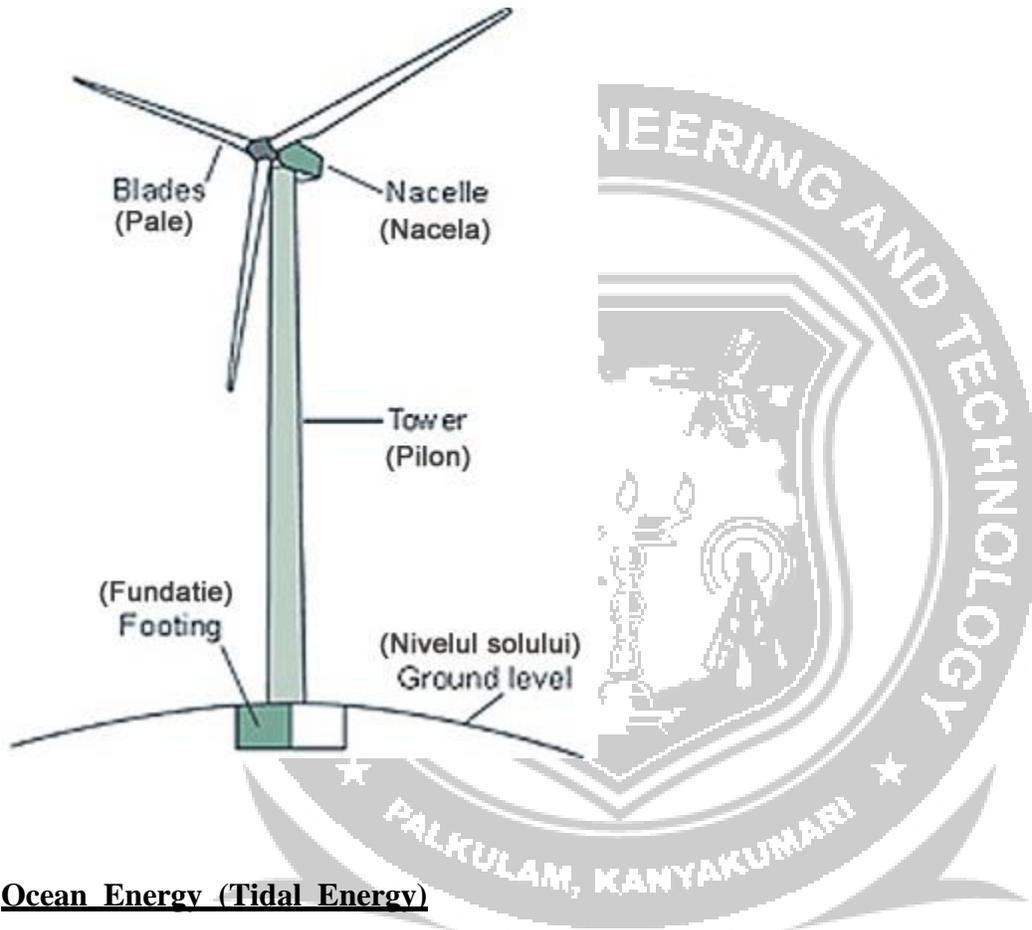


Wind energy

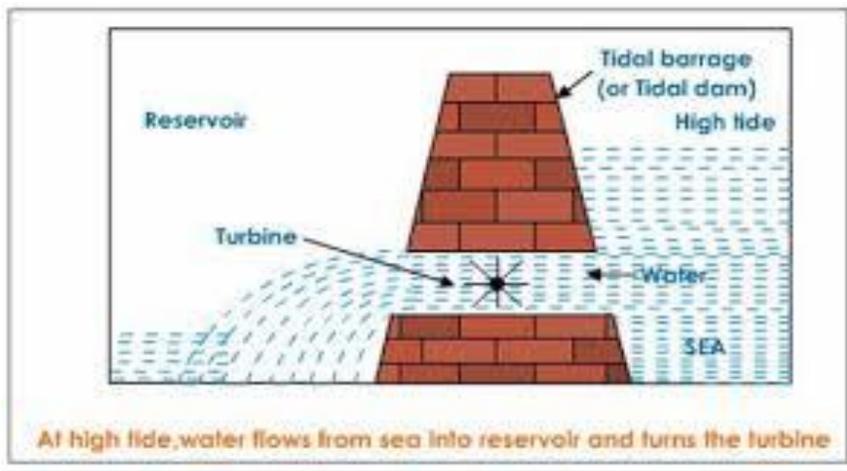
Energy recovered from the force of the wind is called wind energy. The wind energy is converted into electrical energy with the help of wind mills.

A blowing wind strike on the blades of the windmill make it rotating continuously. The rotational motion of the blade drives a no. of machines like water pump, flour mills & electric generators.

Wind Mill



Ocean Energy (Tidal Energy)



Ocean tides produced by gravitational forces of sun & moon, contain enormous amount of energy. The high tide & low tide refers to the rise & fall of water in the oceans.

During high tide, the sea water is allowed to flow into the reservoir of the barrage and rotates the turbine, which produces electricity by rotating the generators.

During low tide, when the sea level is low, sea water stored in the barrage reservoir is allowed to flow into the sea and again rotates the turbine.

3.5.2 Non renewable energy resources

Non renewable energy resources are natural resources which cannot be regenerated once they are exhausted. They cannot be used again.

(Ex) Coal, petroleum, natural gas, nuclear fuels.

1. Coal

Coal is a solid fossil fuel, formed in several stages as buried remains of land plants that lived 300 – 400 million years ago, were subjected to intense heat & pressure over millions of years.

2. Petroleum

Petroleum (or) crude oil is a thick liquid formed by the decomposition of dead animals & plants that were buried under lake & ocean at high temp & pressure for millions of years.

3. Nuclear energy

Nuclear energy can be produced by two types of reactions.

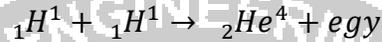
1. Nuclear fission Reaction
2. Nuclear Fusion Reaction

Nuclear Fission Reaction :

The release of neutrons once again hit with U^{235} to produce energy with neutrons. So this reaction is continuously takes place. This is called nuclear chain reaction.

Nuclear Fusion

Two (or) more smaller nuclei combine to form a heavier nuclei is called nuclear fusion.



Nuclear Power plant in India

1. Kudangulam (TN)
2. Kalpakkam (TN)
3. Narora (UP)
4. Tarapur (Maharashtra)
5. RanapratapSagar (Rajasthan)

