

ATOMIC ENERGY CENTRAL SCHOOL, KUDANKULAM

CLASS: VIII

SUB: SOCIAL SCIENCE

CHAPTER 3 MINERAL AND POWER RESOURCES

MODULE (2)

POWER RESOURCES

- (1) Power or energy plays a vital role in our lives. We also need power for industry, agriculture, transport, communication and defense.
- (2) Power resources may be broadly categorized as conventional and non-conventional resources.

A. Conventional Sources

- (1) Conventional sources of energy are those which have been in common use for a long time.
- (2) Firewood and fossil fuels are the two main conventional energy sources.

1. Firewood

- (1) It is widely used for cooking and heating.
- (2) In our country more than fifty per cent of the energy used by villagers comes from fire wood.

2. Fossil fuel

- (1) Remains of plants and animals which were buried under the earth for millions of years got converted by the heat and pressure into fossil fuels.
- (2) **Fossil fuel** such as coal, petroleum and natural gas are the main sources of conventional energy.
- (3) The reserves of these minerals are limited. The rate at which the growing world population is consuming them is far greater than the rate of their formation. So, these are likely to be exhausted soon.

3. Coal

- (1) This is the most abundantly found fossil fuel.
- (2) It is used as a domestic fuel, in industries such as iron and steel, steam engines and to generate electricity.

4. Thermal power

- (1) Electricity from coal is called thermal power.
- (2) The coal which we are using today was formed millions of years ago when giant ferns and swamps got buried under the layers of earth.
- (3) Coal is therefore referred to as Buried Sunshine.
- (4) The leading coal producers of the world are China, USA, Germany, Russia, South Africa and France.
- (5) The coal producing areas of India are Raniganj, Jharia, Dhanbad and Bokaro in Jharkhand.

5. Petroleum

- (1) The petrol that keeps your car running as well as the oil that keeps your cycle from squeaking, both began as a thick black liquid called Petroleum.
- (2) It is found between the layers of rocks and is drilled from oil fields located in off-shore and coastal areas.
- (3) This is then sent to refineries which process the crude oil and produce a variety of products like diesel, petrol, kerosene, wax, plastics and lubricants. Petroleum and its derivatives are called Black Gold as they are very valuable.
- (4) The chief petroleum producing countries are Iran, Iraq, Saudi Arabia and Qatar. The other major producers are USA, Russia, Venezuela, and Algeria.
- (5) The leading producers in India are Digboi in Assam, Bombay High in Mumbai and the deltas of Krishna and Godavari rivers.

6. Natural Gas

- (1) Natural gas is found with petroleum deposits and is released when crude oil is brought to the surface.
- (2) It can be used as a domestic and industrial fuel. Russia, Norway, UK and the Netherlands are the major producers of natural gas. In India Jaisalmer, Krishna Godavari delta, Tripura and some areas off shore in Mumbai have natural gas resources.
- (3) Very few countries in the world have sufficient natural gas reserves of their own. The sharp increase in our consumption of fossil fuels has led to their depletion at an alarming rate.
- (4) The toxic pollutants released from burning these fuels are also a cause for concern. Unchecked burning of fossil fuel is like an unchecked dripping tap which will eventually run dry.
- (5) This has led to the tapping of various nonconventional sources of energy that are cleaner alternatives to fossil fuels.

7. Hydel Power

- (1) Rain water or river water stored in dams is made to fall from heights. The falling water flows through pipes inside the dam over turbine blades placed at the bottom of the dam.
- (2) The moving blades then turn the generator to produce electricity. This is called hydro electricity. The water discharged after the generation of electricity is used for irrigation.
- (3) One fourth of the world's electricity is produced by hydel power.
- (4) The leading producers of hydel power in the world are Paraguay, Norway, Brazil, and China.
- (5) Some important hydel power stations in India are Bhakra Nangal, Gandhi Sagar, Nagarjunsagar and Damodar valley projects.

B. NON-CONVENTIONAL SOURCES OF ENERGY

- (1) The increasing use of fossil fuels is leading to its shortage.
- (2) It is estimated that if the present rate of consumption continues, the reserves of these fuel will get exhausted.
- (3) Moreover, their use also causes environmental pollution.
- (4) Therefore, there is need for using non-conventional sources such as solar energy, wind energy, tidal energy which are renewable.

1 . Solar energy

- (1) Sun's heat and light energy can be felt by us every day.
- (2) Solar energy trapped from the sun can be used in solar cells to produce electricity.
- (3) Many of these cells are joined into solar panels to generate power for heating and lighting purpose.
- (4) The technology of utilising solar energy benefits a lot of tropical countries that are blessed with abundant sun shine.
- (5) Solar energy is also used in solar heaters, solar cookers, solar dryers besides being used for community lighting and traffic signals.

2. Wind Energy

- (1) Wind is an inexhaustible source of energy.
- (2) Wind mills have been used for grinding grain and lifting water since times immemorial. In modern time wind mills, the high speed winds rotate the wind mill which is connected to a generator to produce electricity.

(3) Wind farms having clusters of such wind mills are located in coastal regions and in mountain passes where strong and steady winds blow. Wind farms are found in Netherlands, Germany, Denmark, UK, USA and Spain are noted for their wind energy production.

3. Nuclear Power

(1) Nuclear power is obtained from energy stored in the nuclei of atoms of naturally occurring radioactive elements like uranium and thorium.

(2) These fuels undergo nuclear fission in nuclear reactors and emit power. The greatest producers of nuclear power are USA and Europe. In India Rajasthan and Jharkhand have large deposits of Uranium.

(3) Thorium is found in large quantities in the Monozite sands of Kerala.

(4) The nuclear power stations in India are located in Kalpakkam in Tamilnadu, Tarapur in Maharashtra, Ranapratap Sagar near Kota in Rajasthan, Narora in Uttar Pradesh and Kaiga in Karnataka.

4. Geothermal Energy

(1) Heat energy obtained from the earth is called geothermal energy.

(2) The temperature in the interior of the earth rises steadily as we go deeper. Some times this heat energy may surface itself in the form of hot springs.

(3) This heat energy can be used to generate power.

(4) Geothermal energy in the form of hot springs has been used for cooking, heating and bathing for several years.

(5) USA has the world's largest geothermal power plants followed by New Zealand, Iceland, Philippines and Central America.

(6) In India, geothermal plants are located in Manikaran in Himachal Pradesh and Puga Valley in Ladakh.

5. TIDAL ENERGY

(1) Energy generated from tides is called **tidal energy**.

(2) Tidal energy can be harnessed by building dams at narrow openings of the sea.

(3) During high tide the energy of the tides is used to turn the turbine installed in the dam to produce electricity.

(4) Russia, France and the Gulf of Kachchh in India have huge tidal mill farms.

6. BIOGAS

(1) Organic waste such as dead plant and animal material, animal dung and kitchen waste can be converted into a gaseous fuel called biogas.

(2) The organic waste is decomposed by bacteria in biogas digesters to emit biogas which is essentially a mixture of methane and carbon dioxide.

(3) Biogas is an excellent fuel for cooking and lighting and produces huge amount of organic manure each year.

C. ENERGY SAVED IS ENERGY GENERATED

Energy is everywhere but we can see that harnessing this energy is both difficult as well as costly.

Each one of us can make a difference by not wasting energy.

Energy saved is energy generated.

Act now and make brighter energy future.