Chapter - 2

Coal and Petroleum

Resources:

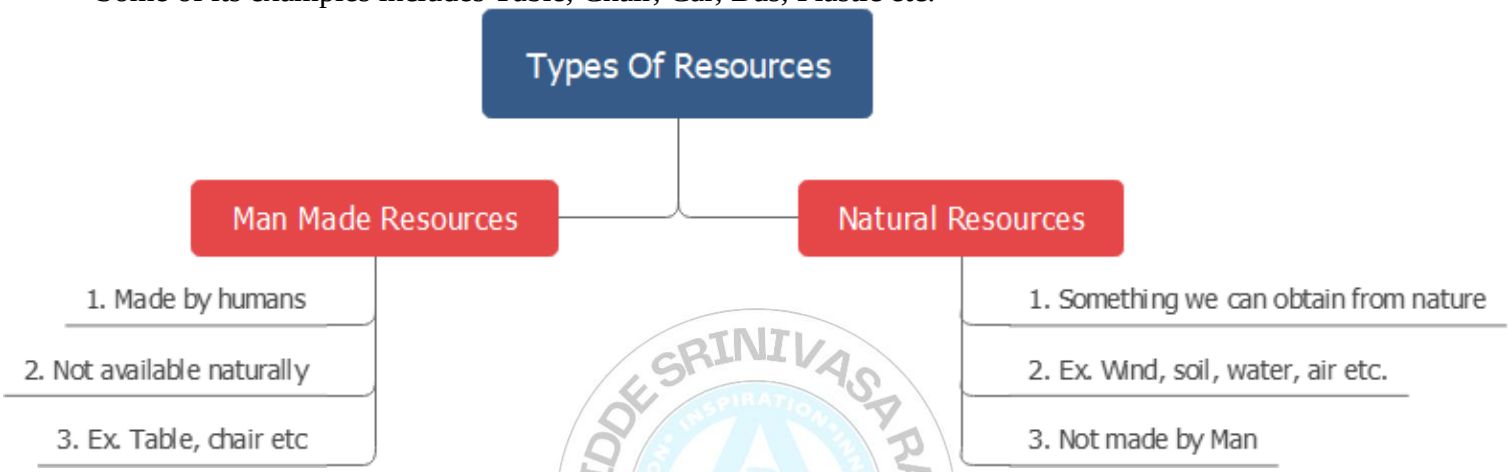
- Various materials which are used to fulfil or accomplish needs of a human. In other words, we can say that A 'resource' is anything in the environment that can be used.
- Resources can be broadly divided into following two categories

1. Natural Resources

- Natural gas which can be obtained naturally.
- Some of the examples of natural resources includes Air, Soil, Water, Sunlight, Coal etc.

2.Man-made Resources

- These are the resources which are made by man.
- Some of its examples includes Table, Chair, Car, Bus, Plastic etc.



Classification of Natural Resources

Depending upon the availability of resources, they can be classified into two types which are as follows-

A. Inexhaustible Natural Resources

- This type of resources is also known as Renewable source of energy.
- These are resources which are not exhausted by human activities.
- They can be used over and over again. They last forever.
- Air, Water, Sunlight are the examples of this type of resources.

B. Exhaustible Natural Resources

- This type of resources is also known as Non-renewable source of energy.
- Resources which can be exhausted by human activities and will deplete after a few hundred years.
- So, the exhaustible natural resources do not last forever.
- Forests, Wildlife, Mineral, Coal, Petroleum, Natural gas are the examples of this type of resources.

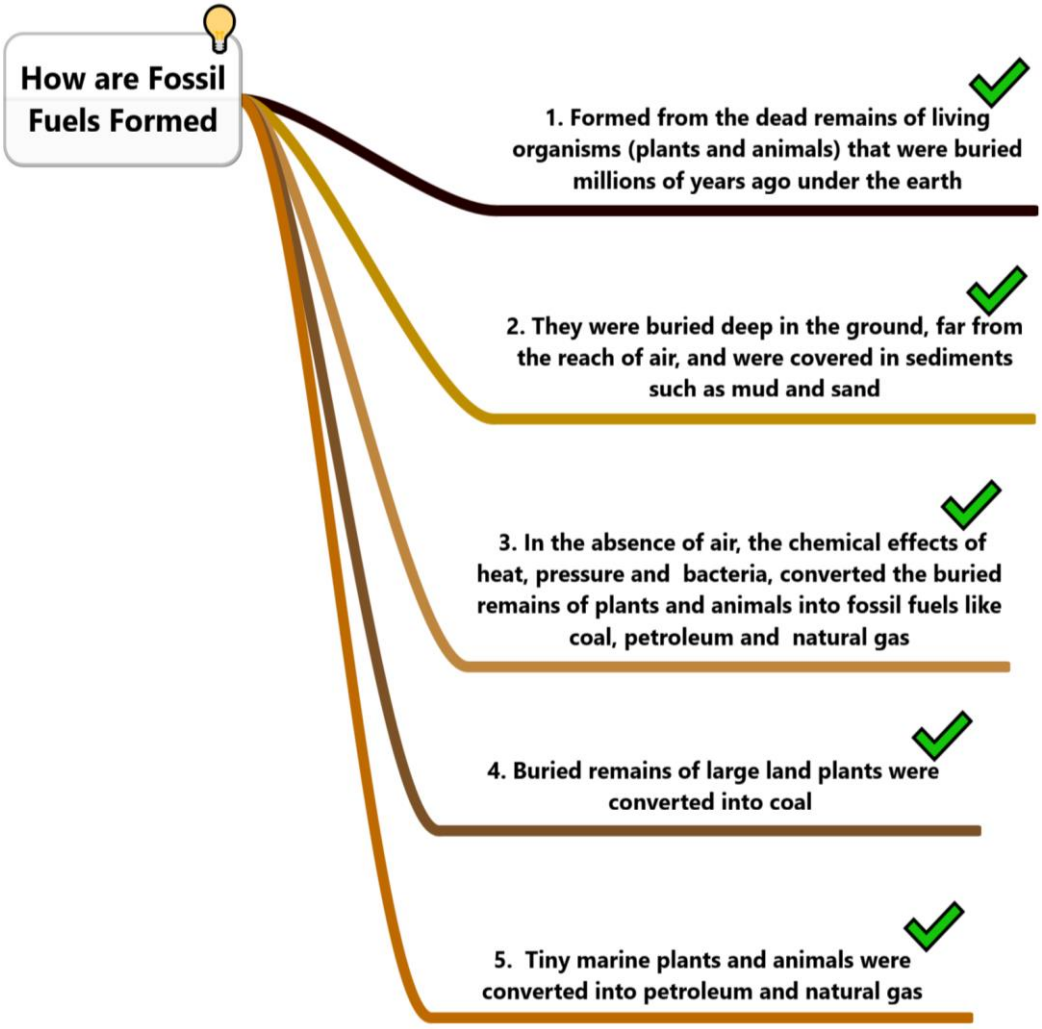
Difference between exhaustible and inexhaustible resources

Exhaustible Natural Resources	Inexhaustible Natural Resources
Available in limited quantity in nature	These are abundent in nature
Formed over a large period of time.	These are formed almost everyday
They can not be used over and over again. They do not last forever	They can be used over and over again. They last forever.
Example:- Coal, petroleum, natural gas etc.	Example:- Sunlight, wind, water etc.

Fossil Fuels

- Fossil fuels are renewable fuels produced from the remains of long-dead living organisms buried beneath the earth.
- Coal, petroleum, and natural gas are examples of fossil fuels.
- They were created by the decomposition of prehistoric plant and animal remains (fossils) which were buried under the earth a long time ago.
- These are exhaustible natural resources.

How Fossil Fuels were Formed



Coal: It is a fossil fuels which is hard solid and black in colour.

Fig. 3.1: Coal

Story of Coal

- Due to natural processes, the dense forests got buried under the soil.
- Under high temperature and high pressure, dead plants got slowly converted to coal.
- The slow process of conversion of dead vegetation into coal is called carbonisation.

Uses of Coal

- It is used as fuel to cook food. Earlier, it was used in railway engines to produce steam.
- It is used in thermal power stations to generate electricity.
- Coke, coal tar, and coal gas are the products of coal.

Carbonisation:

As coal contains mainly carbon, the slow process of conversion of dead vegetation into coal is called carbonisation.

Products from coal

Coke: It is a tough, porous and black substance.
It is the pure form of carbon and is used in the extraction of steel and many other metals.

Coal tar

Fig. 3.3: Coal tar

- It is black, thick liquid with unpleasant smell.
- It is the mixture of about 200 substances.
- The products obtained from coal tar are used as starting materials for dyes, drugs, paints, perfumes, etc.

Coal gas

- It is obtained during the processing of coal to obtain coke.
- It is used as a fuel in many industries situated near the coal processing plants.

Petroleum

- Petrol and diesel are obtained from a natural resource called petroleum.
- The word petroleum is derived from petra (rock) and oleum (oil).
- Petroleum was formed from organisms living in the sea. As these organisms died, their bodies settled at the bottom of the sea and got covered with layers of sand and clay.
- Over millions of years, absence of air, high temperature and high pressure transformed the dead organisms into petroleum and natural gas.

Refining of Petroleum:

- Petroleum is a dark oily liquid. It has an unpleasant odour.
- Petrol, diesel, kerosene, paraffin wax, lubricating oil, and petroleum gas are the products of petroleum.
- The process of separating various constituents of petroleum is known as refining.
- Refining of petroleum is done in fractionating column.
- Components with higher boiling points are collected at the bottom of the fractionating column.
- Components with lower boiling points are collected at the top of the column.

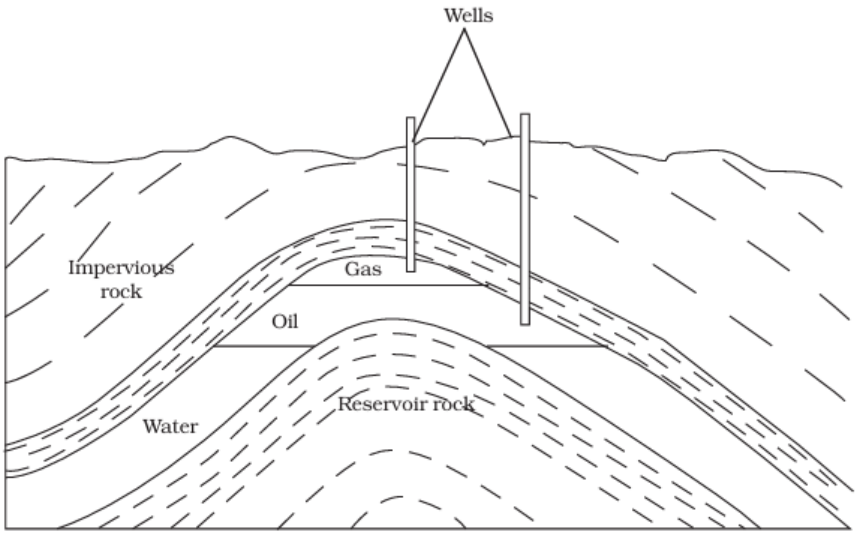


Fig. 3.4 : Petroleum and natural gas deposits

Petroleum and its uses

S.No.	Constituents of Petroleum	Uses
1.	Petroleum Gas in Liquid form (LPG)	Fuel for home and industry
2.	Petrol	Motor fuel, aviation fuel, solvent for dry cleaning
3.	Kerosene	Fuel for stoves, lamps and for jet aircrafts
4.	Diesel	Fuel for heavy motor vehicles, electric generators
5.	Lubricating oil	Lubrication
6.	Paraffin wax	Ointments, candles, vaseline etc.
7.	Bitumen	Paints, road surfacing

Natural gas:

- Natural gas is stored under high pressure as compressed natural gas (CNG).
- CNG is used for power generation.
- It is now being used as a fuel for transport vehicles.
- It is a cleaner fuel.
- It is also used as a starting material for the manufacture of a number of chemicals and fertilisers.

Conservation of Resources

Conservation is the sustainable use and protection of natural resources. The main aim of conservation is to maintain an adequate supply of these resources so that they are available in the future also.

PCRA (Petroleum Conservation Research Association) is an agency which helps in the conservation and preservation of fossil fuels. This agency suggested some ways to save diesel or petrol.

- Avoid excessive braking.
- Turn off the engine when not in use.
  Vehicle should be checked and serviced regular.

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