



Program – CIVIL ENGINEERING
Program Code – CE

Course- ENVIRONMENTAL STUDIES
Course Code – 22447

08/07/2020

MSBTEs e-content

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Unit II: Energy Resources

CO 2: Select alternative energy resources for Engineering Practices

UO 2b: Describe Renewable, Nonrenewable and Cyclic resources.

08/07/2020

Written by _____

**Topic: Types
of Natural
Resources**

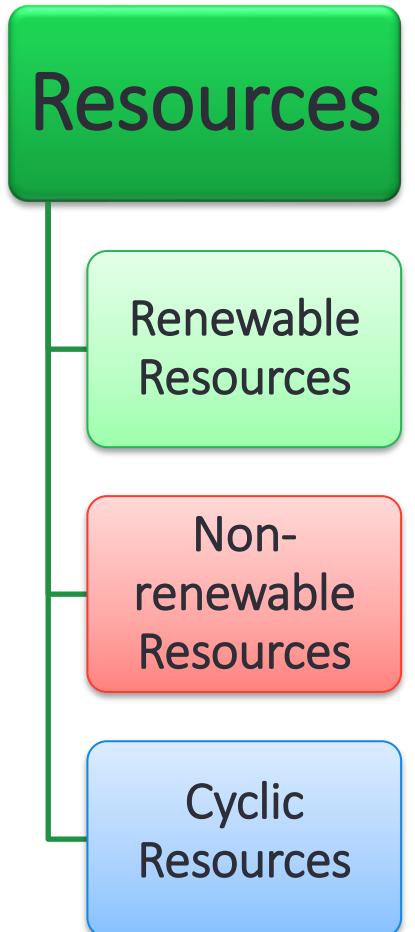


Learning Objective/ Key takeaways:

- Information about various Renewable, Nonrenewable & Cyclic Resources

Contents: 2.2

- 1 Renewable Resources
- 2 Nonrenewable Resources
- 3 Cyclic Resources



Renewable Resources

- ▶ Resources that can be replenished naturally in the course of time are called Renewable Resources.
 - ▶ These energy sources are continuously replenished at a constant rate.
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- ▶ Examples of Renewable Resources
 1. Solar power
 2. Hydro power
 3. Wind energy
 4. Tidal energy
 5. Geothermal energy
 6. Biogas



1. Solar power

- ▶ The Sun is a powerful source of energy that provides the Earth with as much energy every hour as we collectively use in a year worldwide
- ▶ 2,000 millionth unit of solar energy does the earth intercept
- ▶ Solar energy is obtained from the sun by capturing the solar radiation and converting it into another form of energy for performing various activities
- ▶ Uses:
 1. Solar Cooker
 2. Solar water heater
 3. Solar electricity generator



Solar Paneled Station

2. Hydro power

- ▶ Hydro power is the energy derived from the falling water or running water.
 - ▶ Falling water is channeled through water turbines which rotates a shaft and drives an electrical generator, converting the motion into electrical energy.
 - ▶ Dams are constructed across the river is used for generating Hydro electricity
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- ▶ Uses :
 1. **Hydropower plants** can generate **power** to the grid immediately, they provide essential back-up **power** during major **electricity** outages or disruptions.
 2. **Hydropower** efforts produce a number of benefits, such as flood control, irrigation, and water supply.



3. Wind energy

- ▶ Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and rotation of the earth.
- ▶ Large wind farms consist of hundreds of individual wind turbines which are connected to the electric power transmission network.
- ▶ Uses:
 1. The wind energy can be converted into mechanical and electrical energies to generate electricity using wind mills.



4. Tidal energy

- The energy derived from the rise and fall of the sea tide is converted into electricity at Sea shore.

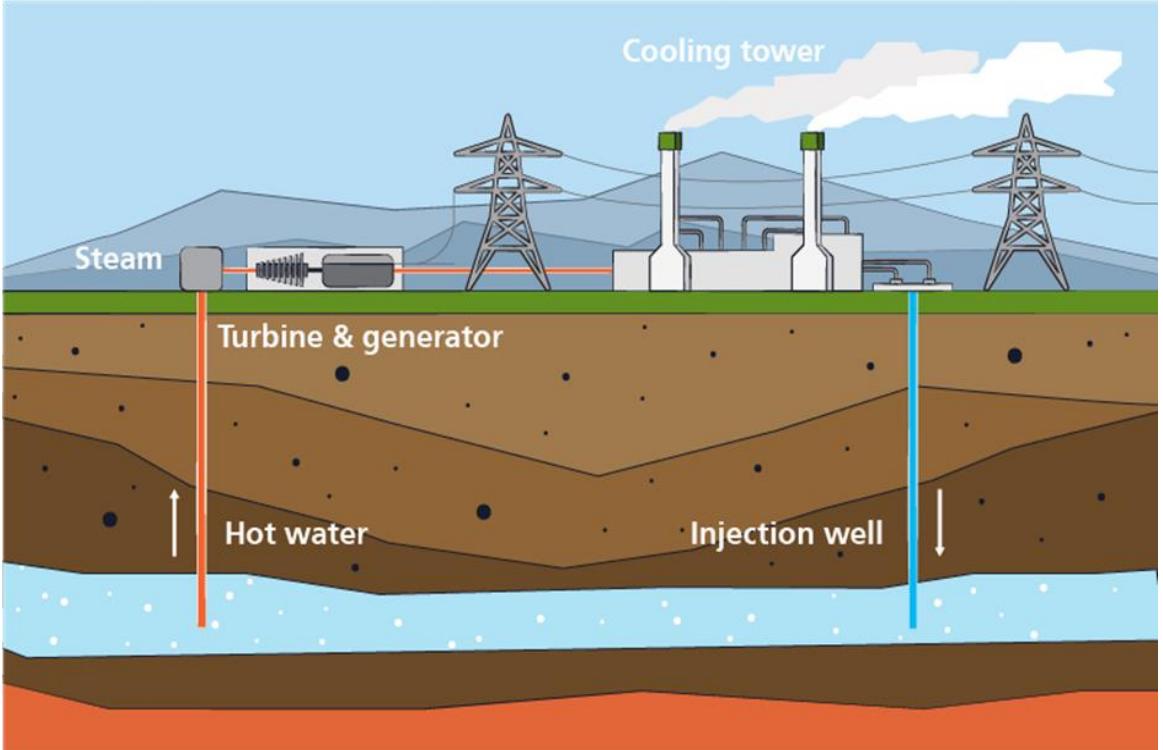
- Uses:
 1. Tidal energy is used to rotate turbines and generate electricity.
 2. Energy Storage – Tidal Energy can also be used as a store of Energy.



Source: www.detini.gov.uk

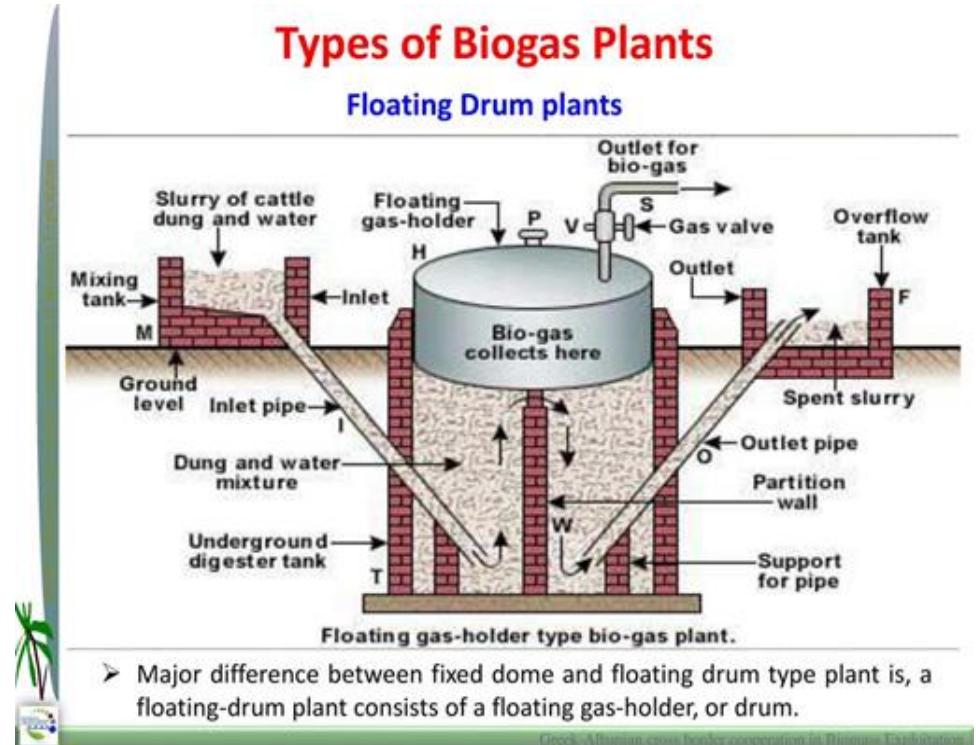
5. Geothermal energy

- Geothermal energy is thermal energy generated and stored in the Earth.
- This is the heat of the interior of the earth present at volcanic regions, geysers or hot springs.
- Uses:
 1. It is utilized to generate electricity.
 2. It is used for heating building, raising plants in greenhouses, drying crops, heating water at fish farms, and several industrial processes, such as pasteurizing milk.



6. Biogas

- Gobar Gas is a smokeless domestic fuel. It can be produced from cattle dung and other farm organic matters.
- The methane gas is generated from Gobar Gas Plant which having high Calorific value.
- Uses:
 1. It is used for cooking purpose as well as for lighting the out door street lamp.



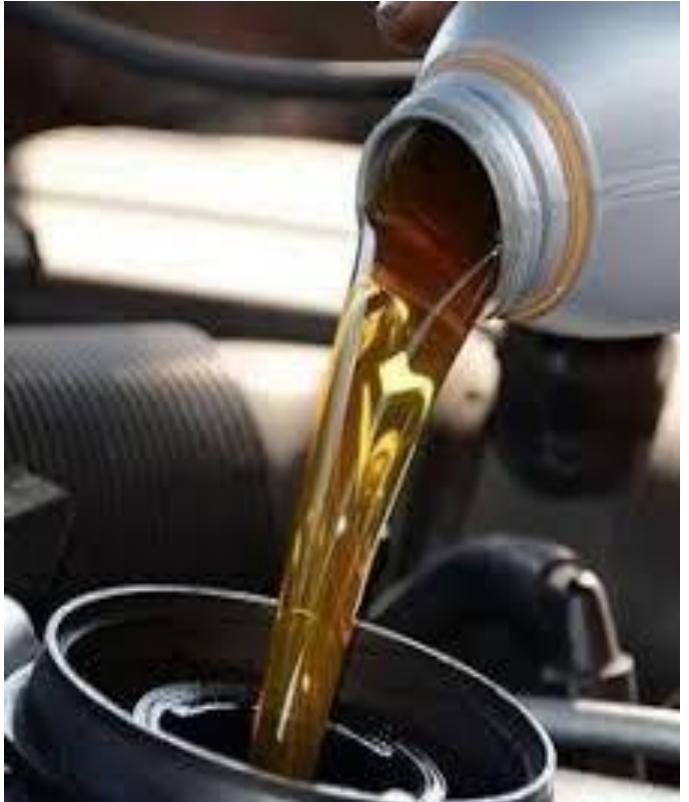
Nonrenewable Resources

- ▶ Resources that exist in limited supply and can not be replaced if they are used up are called Non-renewable Resources.
- ▶ These energy sources are Exhaustible
- ▶ Examples of Non-renewable Resources
 1. Oil
 2. Natural gas
 3. Coal
 4. Nuclear fuels



1. Oil

- ▶ Liquid petroleum -crude oil- is the only nonrenewable resource in fluid form.
- ▶ Industrial nations, with the U.S. far in the lead, are the biggest consumers of crude oil.
- ▶ Uses:
 1. For Getting Gasoline, heating oil, and diesel fuel.
 2. Manufacturers utilize oil as the base for Some products like plastics and industrial chemicals.



2. Natural gas

- ▶ Natural gas is a fossil fuel formed when layers of buried plants, gases, and animals are exposed to intense heat and pressure over thousands of years.

- ▶ Once drillers extract natural gas, processing plants remove the propane and butane to obtain liquefied petroleum gas (LPG)

- ▶ Uses:
 1. LPG is used as a household and industrial fuel
 2. LPG is also used as a fuel in Vehicles.



3. Coal

- ▶ Coal is the product of millions of years of pressure on original plants organic matter buried underground.
- ▶ It is a combustible black or brownish-black sedimentary rock.
- ▶ Uses:
 1. At the power plant, coal is commonly burned in a boiler to produce steam. The steam is run through a turbine to generate electricity.
 2. It is also used for metallurgical, industrial and domestic purposes.



4. Nuclear fuels

- ▶ Nuclear power, or nuclear energy, is the use of exothermic nuclear processes, to generate useful heat and electricity.
- ▶ The term includes nuclear fission, nuclear decay and nuclear fusion.
- ▶ Uses: Nuclear fuel is used in nuclear power stations to produce heat to power turbines for electricity generation.



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Cyclic Resources

- ▶ The resources which can be used again and again after passing through some processes are known as cyclic resources.
- ▶ For example, water used in industry and domestic ways can be cleaned and used again for similar or other purpose. Such resources are given the name of Cyclic Resources.





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Types of Natural Resources

Renewable Resources



NonrenewableResources



Cyclic Resources



The knowledge of Natural resources is very essential to understand its applications, Global need, and future demands

Once you understand the importance of natural resources, you will understand the need of its conservation

Summary

We have studied :

- ▶ Renewable Resources
- ▶ Nonrenewable Resources
- ▶ Cyclic Resources





THANK YOU ALL
HAVE A NICE DAY

Now let's have a Quiz.....