OGUN DIGICLASS

SUBJECT: BASIC SCIENCE & TECHNOLOGY

CLASS: JUNIOR SECONDARY SCHOOL

TOPIC: ALTERNATIVE SOURCES OF ENERGY

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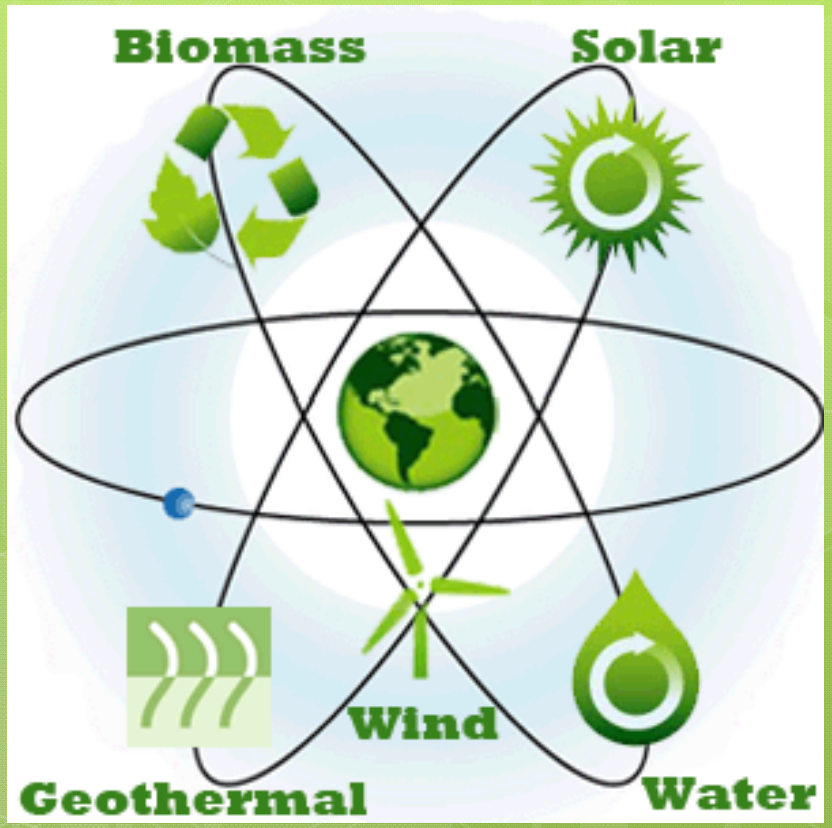


Alternative Sources of Energy

Learning Objectives

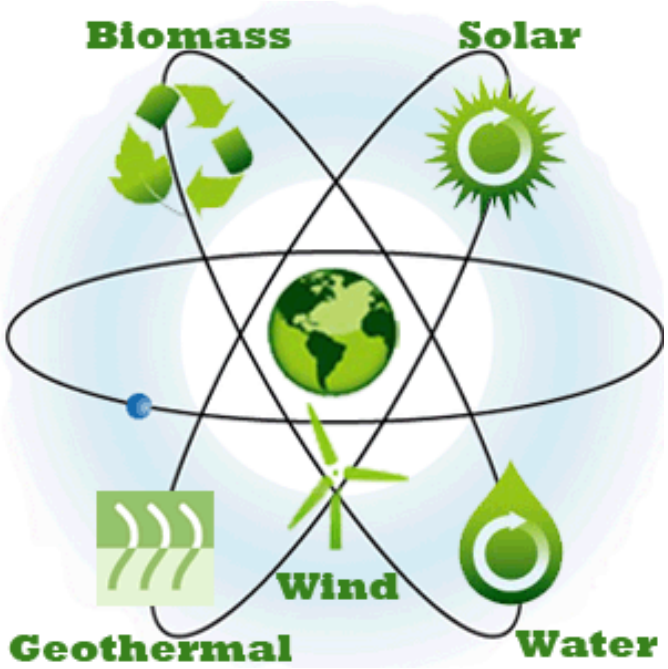
- Define alternative sources of energy
- State two categories of alternative sources of energy
- List the types of alternative sources of energy

What is Energy?

- **ENERGY** is the ability to do work. We have (1) Renewable energy and (2) Non Renewable energy.
- **Renewable** energy can be replenished e.g Solar, wind, water, biomass etc
- **Non Renewable** are energy available in limited resources. E.g coal, petroleum, gas

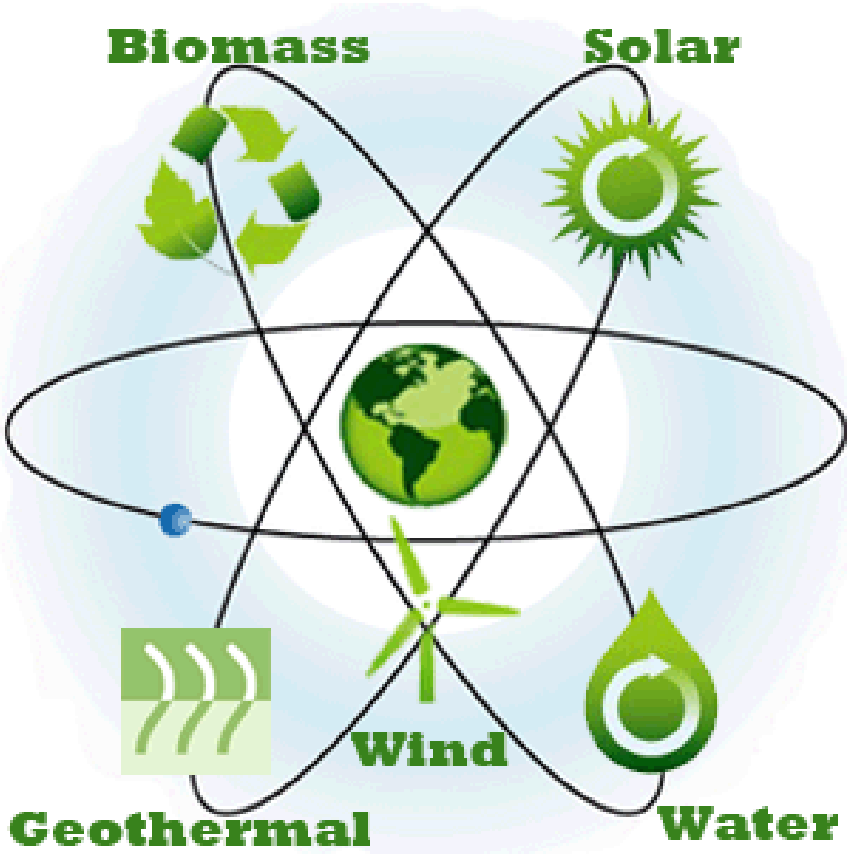
Defining Alternative sources of Energy

Alternative sources of energy are those sources of energy which are used to save and conserve natural resources for future use.



Some Types of Alternative Sources of Energy

- Solar Energy
- Wind Energy
- Biomass
- Hydro Energy
- Geothermal Energy
- Nuclear Energy



Solar Energy

- Solar energy is energy that is present in sunlight. The photovoltaic solar panel capture sun rays and directly convert them into electrical energy. It has been used for thousands of years in many different ways by people all over the world. It is used today to make electricity where other power supplies are absent, such as in remote places and in our homes.

- It is becoming cheaper to make electricity from solar energy and in many situations it is now competitive with energy from coal or oil.

Wind Energy

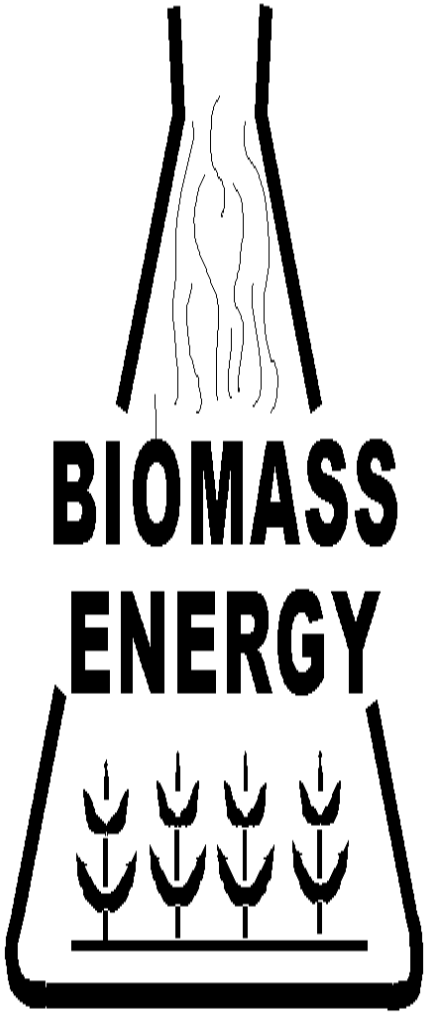
Wind is a clean, renewable resource that is good for the environment. Wind machines, called turbines, create energy without burning fuel, so it makes for a pollution-free alternative to oil. Turbines are used today mostly to generate electricity.

Hydro Energy

- **Hydroelectricity** is electricity that is made by the movement of water. It is usually made with dams that block a river or collect water that is pumped there. When the water is "let go" the huge pressure behind the dam forces the water down shafts that lead to a turbine, this causes the turbine to turn, and electricity is produced.

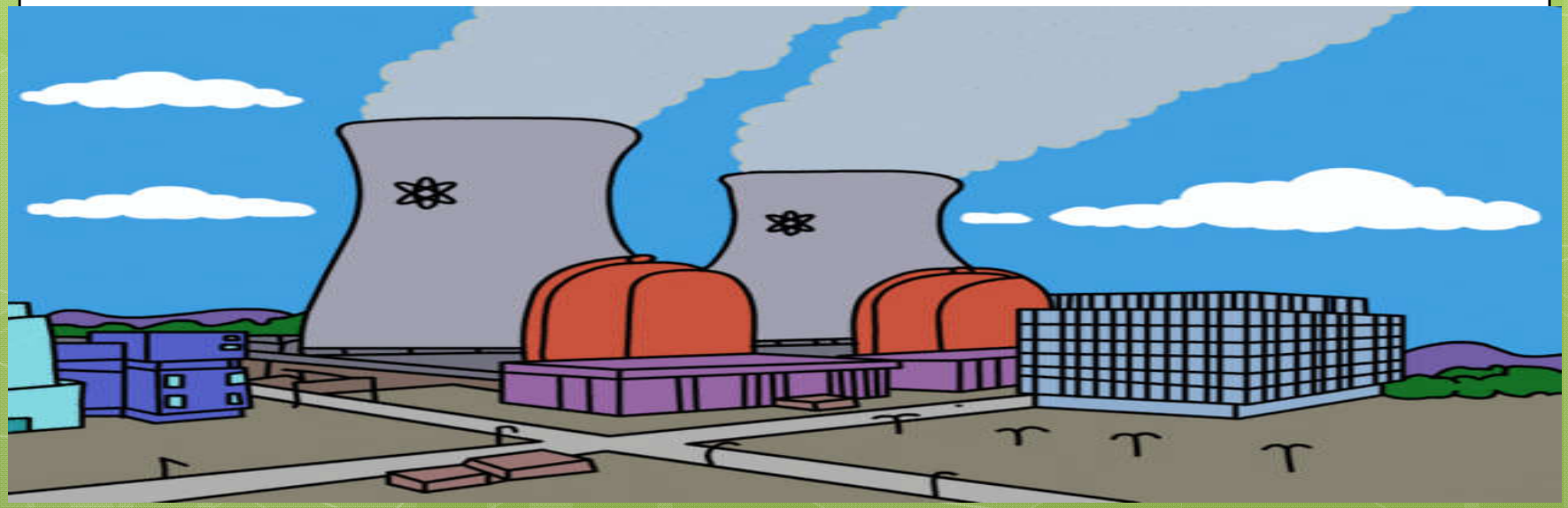
Biomass Energy

- Biomass is a clean renewable energy resource derived from plant or animal material used for energy production. when biomass is burned, the chemical energy in biomass is released as heat energy. It excludes organic material which has been transformed by geological processes into substances such as coal or petroleum.
- Nowadays biodiesel is being used to run vehicles. This is derived from different plants like corn.



Nuclear Energy

Nuclear power is an alternative power source that uses the nuclear fission of uranium to create heat and, thereby, through a heat transfer mechanism and turbines, create electricity.



Tidal Energy

- Tidal Power is the generation of electrical power by making use of the rising and falling of the tides.
- Tidal energy is clean, renewable and pollution free but fairly expensive.

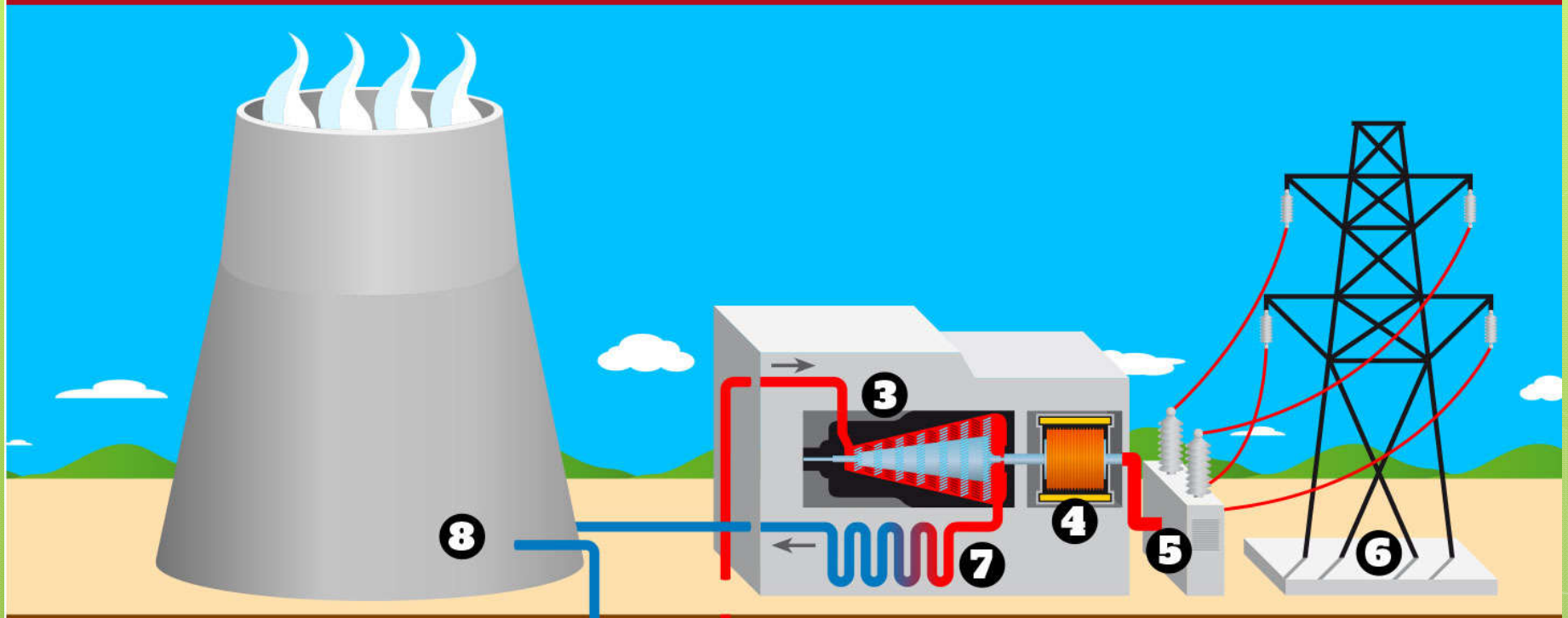
Geothermal Energy

- "**Geo**" means "from the earth," and "**thermal**" means "heat," so this type of energy is found under the earth. Geothermal energy is energy obtained by tapping the heat of the earth, usually from kilometres deep into the earth's crust. we can use this same type of energy in our homes.

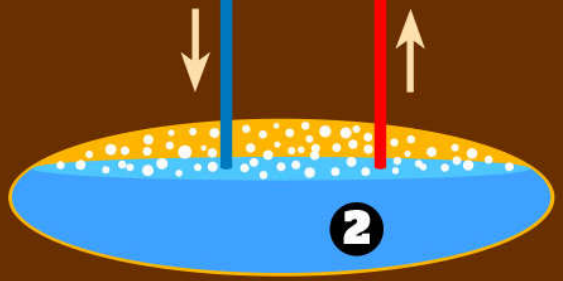
How geothermal energy system works

Geothermal energy uses the heat energy present underneath the Earth. Two wells are drilled. One well injects water into the ground to provide water. The hot rocks heat the water to produce steam. The steam that shoots back up the other hole(s) is purified and is used to drive turbines, which power electric generators.

How geothermal energy works



1. Magma
2. Reservoir
3. Turbine
4. Generator
5. Transformer
6. Electric mains
7. Condenser
8. Cooling tower



Cooled water is pumped into heated rocks where it is coverted to steam, which then rises up to power the turbines and generate electricity. Excess water is cooled and the process starts again.

Conclusion

Efforts towards embracing technological developments in terms of energy development is gradually gaining grounds in Nigeria, particularly in Ogun State.

Thank You