CLASSIFICATION OF NATURAL RESOURCES

What are resources?

Any material which is part of earth and **satisfy human need** and add value is called as resource.

Materials occurring in the environment thus are nothing more than 'neutral matter' until people recognize their presence, attach great importance to them, and develop means to capitalize on them. Then the natural materials **fulfill a function**

Example: rocks, minerals, soil, rivers, plants & animal.

Human is a resource because developing his skill, he can develop other resource by adding value to the physical material .

- Resources are commonly classified with respect to their exhaustibility.

- The differentiation between exhaustible and inexhaustible resources only focuses on their quantitative availability and not on their potential for natural growth and recycling.

- **Renewable** and **non-renewable** resources. This differentiation is by no means identical to the exhaustibility classes.

- Renewable resources (animals, tree species) **are exhaustible**

- **Non-renewable** resources (stones, different metals) **are**, economically speaking, **inexhaustible**.

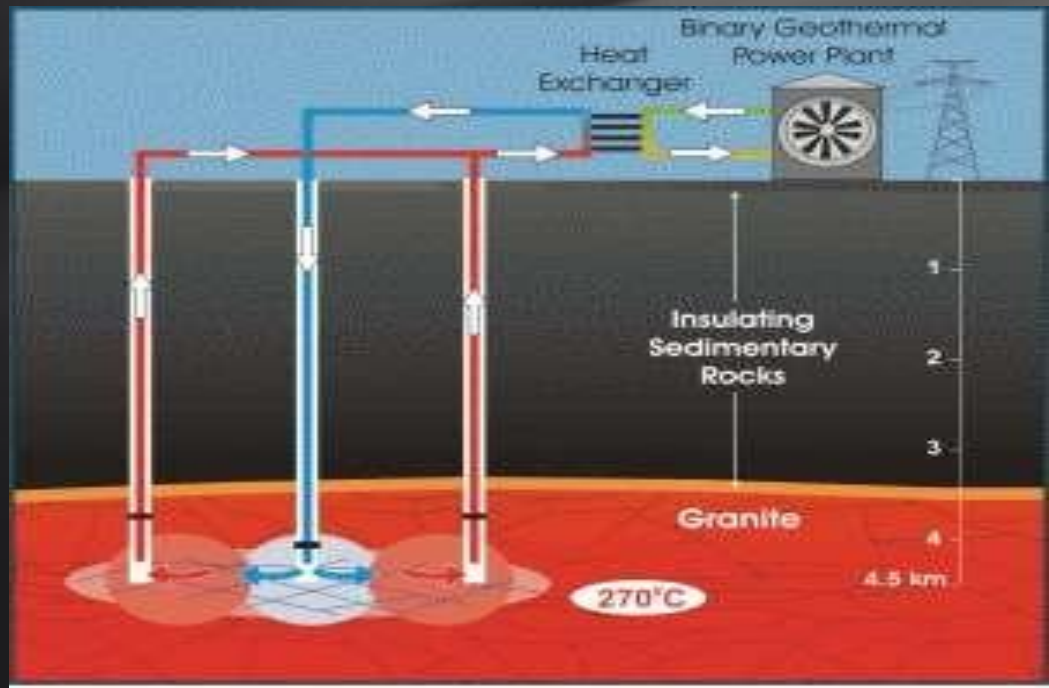
Inexhaustible Resources

Inexhaustible resources are resources that will never run out.

Non-renewable resources (stones, different metals) are, economically speaking, inexhaustible.

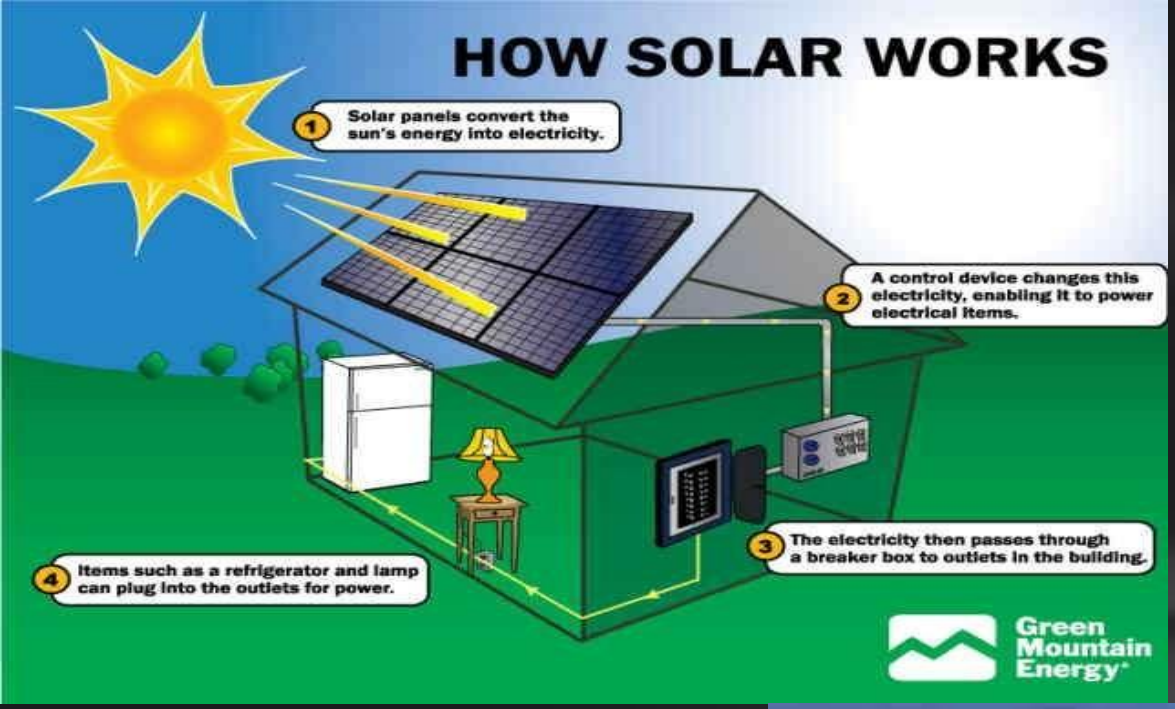
Examples:

geothermal sources



Tidal energy

Wind



Solar Energy

Running Water

Types Of Resources

Natural Resources

Human Resources

Man-made Resources

Natural Resources

All of Earth's organisms, air, water and soil as well as oil, gas and ores that are removed from the ground

List of Natural Resources

Forest resources (pertaining to plant and tree life)

Aquatic / Marine resources

Hydro geological resources (water bodies of all kinds)

Animal resources (domesticated animals, or those that can be easily approached by humans)

Microbial resources (organisms that aren't visible to the naked eye)

Human resources (the population at large)

Atmospheric resources (anything that humans cannot control - rainfall, sunlight, temperature, and the like)

Crop resources (agricultural growth)

Geological resources (naturally occurring formations - rocks, valleys, minerals, precious metals, and the like)

Edaphic resources (anything related to the soil and its properties)

Wildlife resources

Category Of Natural Resource

Renewable

non-Renewable

Renewable Resource

- are resources that have a continuing process of renewal and supply in nature
- commonly named "flow resources", as it is possible to maintain use indefinitely, provided the production (the flow) continues.

Example: solar energy crops (food and fiber)

water soil

air wind

biomass organic matter

wood geothermal energy

Food and Fiber

- Crops grown for human and livestock consumption
- Wild and planted forest crops
- Wild and domesticated animals

Have to be careful not to use these faster than we can replenish them

Soil

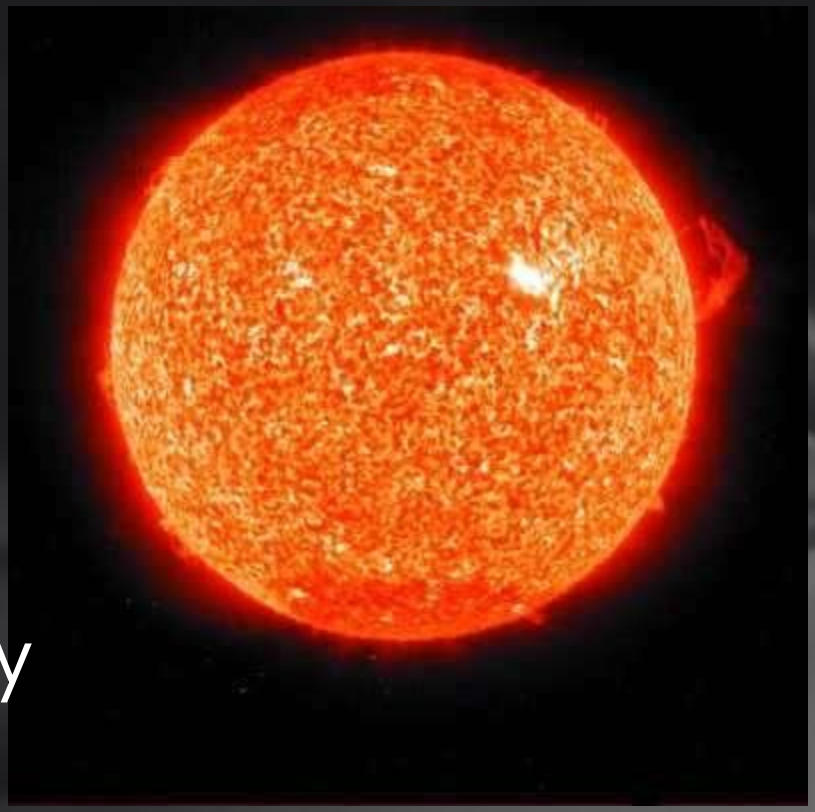
Mixture of living and nonliving things (tiny rocks, minerals, organic matter, water and air) that provides habitat for plants and organisms.

Takes thousands of years to form

- Hot, humid climates form larger amounts more quickly
- Dry climates form small amount over longer periods

Soil only "renewable" as long as living organic matter stays fertile.

Sun



- **Solar energy**
  - **Provides heat and light**

- Provides energy needed by autotrophs (producers) to produce their own food

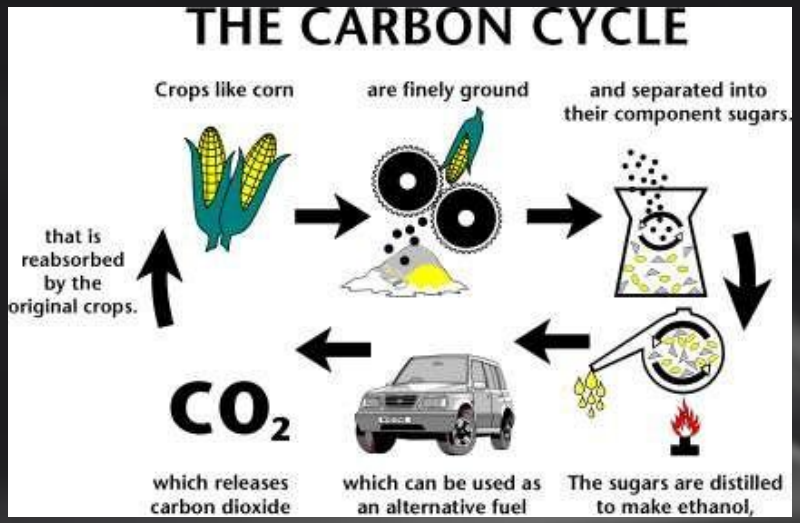
- **Essentially inexhaustible; estimated that it can continue to provide energy for 5 billion years**

Water

- Amount of water on Earth today is same as when Earth was formed
- Constantly cycles and changes form
- Only 3 percent is fresh water for use
- In many parts of world, clean, unpolluted water becoming scarce

- **Water used to generate energy**

Biomass Fuels

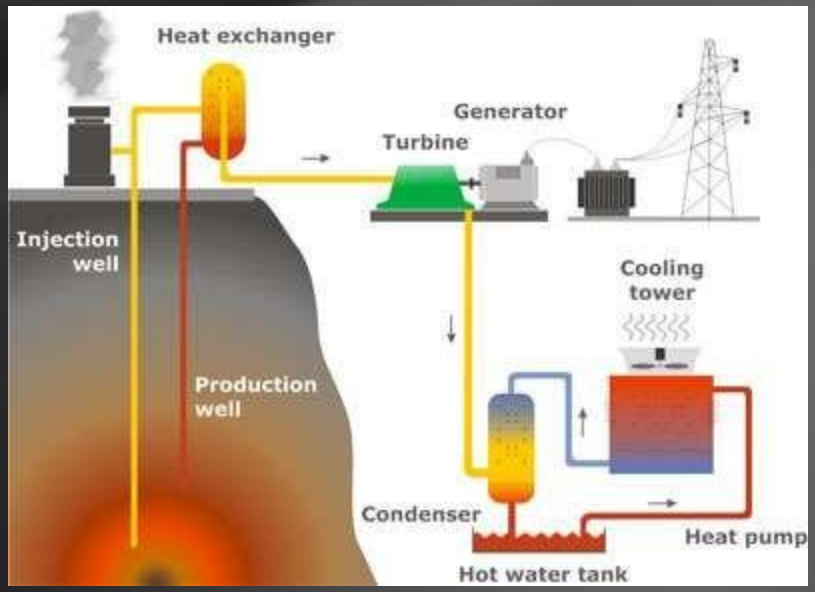


- Organic matter that contain stored solar energy
  - Mostly plant parts; wood, dried vegetation, crop residues and aquatic plants
  - Some derived from animal wastes
- Become one of the most commonly used and renewable energy sources

Geothermal Energy

- Heat generated deep within the Earth
- Fueled by the decay of radioactive elements

- Heat is transferred by water that absorbs heat from center of Earth
- Used to drive electric generators and heat buildings
- Inexhaustible energy source



Non-Renewable

- types of resources whose physical quantity does not increase significantly with time
- the rate of renewal is so slow as to be negligible
- The non-renewable resources are often defined as "stock resources". The total supply of the resource is limited in quantity, and each rate of use diminishes some future rate of use.
- Most developed nations are dependent on *non-renewable* energy sources such as fossil fuels (coal and oil) and nuclear power.
- Industrialized societies depend on non-renewable energy sources.

Example Of Non-Renewable Resource

COAL

OIL

NATURAL GAS

OIL SHALE ANDTAR SANDS

NUCLEAR POWER

Ores

Rocks

Petroleum and Natural Gas

Ores

- Mineral deposits from which valuable metals and nonmetals can be recovered at a profit

- Metallic Ores:

iron, aluminum, copper, zinc, lead, silver, gold, manganese and others

- Non metallic Ores:

fluorite, salt, clay, sand, gravel, quartz, diamonds, gypsum, sulfur, talc and others

Rocks

- Mixtures of one or more minerals
  - Marble, sandstone, granite, limestone shale and slate
  - Mostly used as ornamental stones in buildings and the grounds around them

Fossil Fuels

- **Fossil fuels do NOT come from dinosaurs! They come from decayed plant and animal remains from the ocean. From the TIME of the dinosaurs!**

Coal

- Fossil fuel that forms when wetland plants die, become buried, and undergo physical and chemical changes over millions of years
- Starts out as peat~50% carbon
- Over time peat becomes lignite ~ 70 % carbon

- Lignite becomes bituminous coal (soft coal) ~ 85 % carbon
- Bituminous coal becomes anthracite (hard coal) > 90% carbon… burns very cleanly

Petroleum and Natural Gas

- Fossil fuels that are the remains of plants, bacteria, algae, and other microscopic marine organisms

- Oil well drilled in Titusville PA in 1859 marked the beginning of the oil boom in US

- Source rocks: rocks in which oil and gas form

- Reservoir rocks: rocks that collect flowing oil and gas

OIL

Crude oil or liquid petroleum, is a fossil fuel that is refined into many different energy products

e.g., gasoline, diesel fuel, jet fuel, heating oil

NATURAL GAS

Natural gas is a mixture of gases *methane ethane propane butane*.

It is cleanest burning fossil fuel

propane and butane are removed from the natural gas and made into *liquefied petroleum gas* (*LPG*)

methane

Natural gas is highly flammable and is odorless

natural gas is used primarily for heating, cooking, and powering vehicles

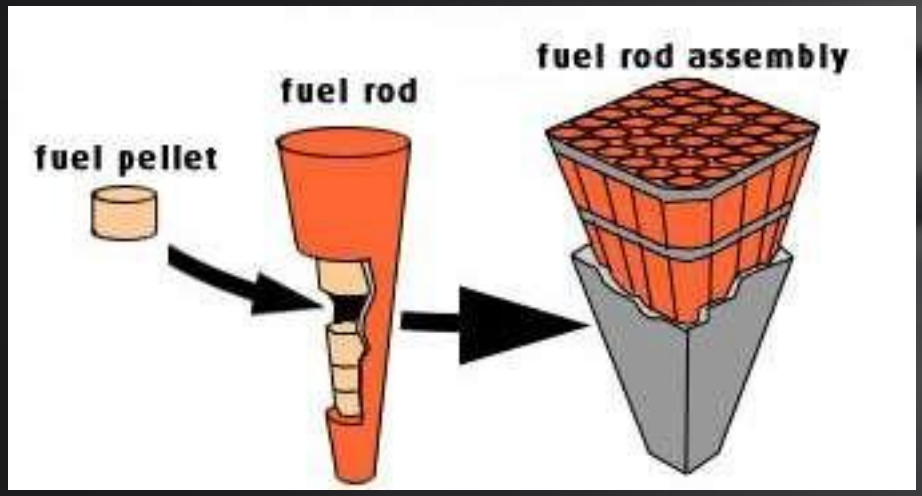
OIL SHALE ANDTAR SANDS

Oil shale and tar sands are the least utilized fossil fuel sources. *Oil shale* is sedimentary rock with very fine pores that contain *kerogen*, a carbon-based, waxy substance.

If shale is heated to 490° C, the kerogen vaporizes and can then be condensed as shale oil, a thick viscous liquid

Tar sand is a type of sedimentary rock that is impregnated with a very thick crude oil

NUCLEAR POWER



Citation

http://inexhaustibleresources.org/

http://www.geo.fu-berlin.de/fb/e-learning/geolearning/en/glossary/natural_resources/index.html

http://www.buzzle.com/articles/different-types-of-natural-resources.html

http://en.wikipedia.org/wiki/Non-renewable_resource

http://en.wikipedia.org/wiki/Renewable_resource