Introduction to -
- Energy Sources
- Non-Renewable Sources
- Renewable Sources

Lesson Aims:
1. Summarize different sources of energy.
2. Identity of non-renewable and renewable.
3. Classify Different Energy Resources.

What do you mean by different sources of energy?

What is the conversation of energy?

What do you mean by the word renewable and non-renewable?

Brainstorming

Energy exists freely in nature, some of them are infinitely available, called renewable, and some are called non-renewable. It is our responsibility to ensure the proper use of renewable and non-renewable energy. Non-renewable energy is limited resources that will eventually run out over the time frame. Non-renewable energy is one that does not renew itself at a sufficient rate for sustainable economic extraction in meaningful human time-frames.

Non-renewable energy is energy from fossil fuels such as coal, crude oil, natural gas, and uranium. Unlike renewable energy, non-renewable energy needs human intervention to make it suitable for consumption. Fossil fuels are mainly made up of Carbon. It is believed that fossil fuels were formed over 300 million years ago when the earth was a lot different in its landscape.

Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.

Fossil fuels - coal, oil, and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide.

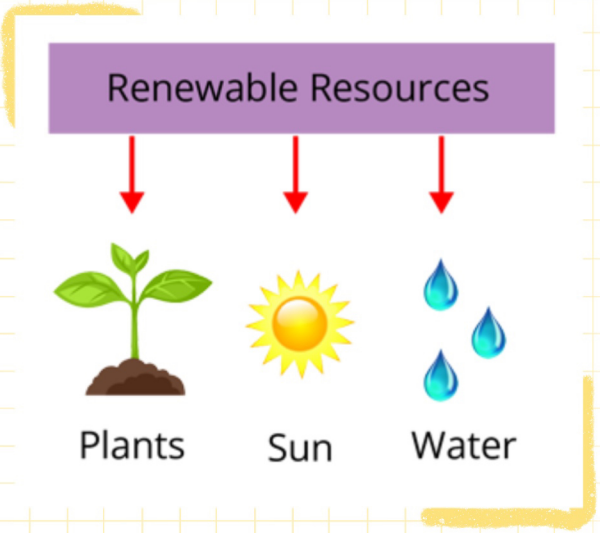
Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion's share of emissions, to renewable energy is key to addressing the climate crisis.

Types of Energy Sources:

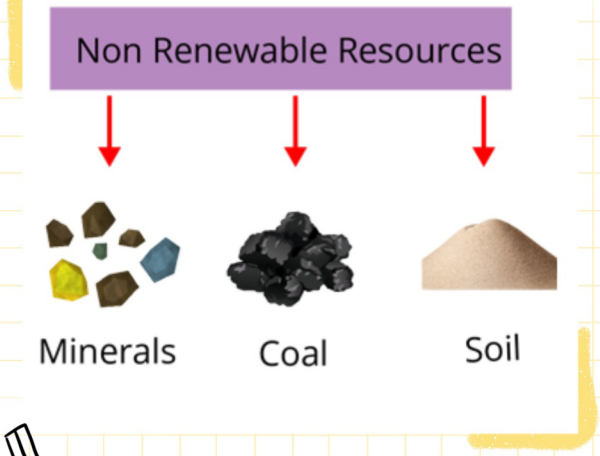
Sources of energy can be classified into
- Renewable Sources
- Non-renewable Sources

Renewable sources of energy are plentiful and sustainable. These resources of energy can be naturally replenished and are safe for the environment.

Examples of renewable energy sources are Solar energy, Geothermal Energy, Wind Energy, Biomass, Hydropower, and Tidal Energy.



A non-renewable resource is a natural resource that is found underneath the earth. These type of energy resources do not replenish at the same speed at which it is used. They take millions of years to replenish. The main examples of non-renewable resources are Coal, Oil, and Natural gas.



Natural Sources of Energy

During the stone age, it was wood. During the iron age, we had coal. In the modern age, we have fossil fuels like petroleum and natural gas. So how do we choose the source of energy?

Good sources of energy should have the following qualities:
- Optimum heat production per unit of volume/ mass used
- Ease to transport
- Least Polluting
- Economical
- Types of Natural Sources of Energy

Activity

The class will be divided into groups of 4.
Each group will need a bag with 16 pieces of popcorn, 4 paper towels, and a pencil and paper.
Teacher will need the bag with leftover popcorn to replenish the "used resources."

Part 1: Renewable Resources:
Each team begins with 16 pieces of popcorn. Each student must take at least 1 piece of popcorn per round to survive, and may take as many as he/she likes.
One student per team records the number of pieces each team member takes per round, and the number of pieces remaining for the team.
The resource is then "renewed" by half (if there are 8 remaining pieces after round 1, the teacher will add 4 more pieces to the bag for round 2).
6 rounds are played in this manner. The object of the game is to have the most pieces of popcorn per team member after the final round.

At the end of the game, discuss different strategies used by teams:

Some may die because they'll consume too much of the resource early on
Others may take one piece at a time and build up a store by the end
Others may take more throughout but will always keep enough in reserve to be sufficiently renewed

Part 2: non-Renewable Resources:
Students each pick up a slip of paper from a bag (there are 4 "1st generation", 6 "2nd generation", 9 "3rd generation," and 14 "4th generation" slips)
Teacher goes to the front of the classroom with a bag of popcorn and leads a brief discussion of what it means when one generation finds a resource and how future generations are affected by it.
1st generation students then come up and take as much popcorn as they want back to their seats. 2nd generation students then do the same, followed by 3rd and 4th generations.

Reflection

1) What is the main source of energy in India?
2) Can any source of energy be Pollution-free?
3) What are the advantages and disadvantages of wind power?
4) What is renewable and non-renewable energy?
5) What is the difference between renewable and non-renewable energy?
6) Can a renewable resource be used over and over again?
7) How can we save non-renewable resources?
8) What sources of energy are renewable?
9) What are energy resources?
10) What are the main types of energy res

Scan QR code for information -