

Overview: Renewable energy comes from natural resources that replenish themselves over short periods of time. These sources of energy include sunlight, wind, rain, tides, waves, and geothermal heat. Renewable energy sources differ from fossil fuels, which are finite and contribute significantly to climate change.

1. Solar Power: Solar energy is derived from the sun's radiation. Solar panels convert sunlight into electricity. They are used for residential and commercial applications. Solar energy is becoming more affordable as technology improves and governments offer incentives.

Benefits:

- It's a clean and inexhaustible source.
- Low maintenance costs.
- Reduces electricity bills.

2. Wind Energy: Wind turbines convert the kinetic energy from wind into mechanical power, which can be used to generate electricity. Wind farms can be located onshore or offshore.

Advantages:

- Wind power is abundant in windy regions.
- Does not emit pollutants.

3. Hydropower: Hydropower generates electricity using the flow of water. Dams are commonly used to store water, and when released, it spins turbines to generate electricity.

Key Points:

- Hydropower is highly reliable.
- It accounts for a large percentage of renewable energy generation globally.

4. Geothermal Energy: Geothermal energy uses the heat from the Earth's core to generate electricity. It's primarily used in regions with volcanic activity or hot springs.

Key Characteristics:

- It provides a constant power supply.
- Has a small environmental footprint.