

PART - II
(SECTION - A)

- Q. 2. (a) What do you know about Volcanoes? Discuss the causes and effects of volcanic eruptions. (5)
- (b) Differentiate between renewable and non-renewable sources of energy. Briefly explain wind energy, solar energy and biofuels. (5)
- (c) What is a Tornado? How is it formed? (5)

Question

Introduction:

Energy is the ability of body to do work, which can exert a force for displacement of body. Energy can be produced from a sources, renewable and non-renewable.

Renewable Energy

Renewable energy derived from natural sources that are replenished at higher rate than they consumed. Sunlight and wind, for example are sources that are constantly replenished.

Non-Renewable Energy

Non-Renewable energy is also derived from natural sources but not replenished. For example gas, coal and petroleum.

Wind Energy:

Wind energy is the source of renewable energy that can be replenished at higher rate. Wind energy harnesses kinetic energy from moving air by using large wind turbines located in land (onshore) or in sea or freshwater (offshore). Wind energy has been used for millennia, but onshore and offshore. Wind energy ^{technologies} has evolved last few years to maximize the electricity.

Pakistan aimed to increased renewable energy with wind and solar from 4 percent to 20 percent by 2025 (International Finance Corporation) -

Solar Energy:

Solar energy is the most abundant of all energy resources and ^{even} can be harnessed during cloudy weather. The rate at which the solar energy intercepted by ~~the~~ earth is 10,000 times greater than ~~that~~ rate at humankind consumes energy.

Solar technologies can deliver heat, electricity, cooling and fuels for the host of applications.

Solar technologies used to convert solar energy

into electrical energy through photovoltaic panels or through mirrors that concentrate solar radiation.

Total solar power installed capacity in Pakistan was only 568 MW_{AC} in 2022.

Biofuel Energy:

Biofuel energy is the energy derived from biomass that is plants, or algae, or animal waste. (Encyclopedia Britannica)

Since such feedstock material can be replenished readily, Biofuel commonly advocated as a cost-effective and environmentally benign alternative within the context of rising petroleum prices and increased concern over the contributions made by fossil fuel to global warming.

United States, Canada, Brazil, Indonesia and India make 80% of global expansion in biofuel use.