

**Q1:**

**Answer:**

There are different sources of energy used in Pakistan are:

- Coal
- Hydroelectric
- Natural gas
- Nuclear
- Solar
- Wind
- Coal:

Coal is a combustible black or brownish-black sedimentary rock with a high amount of carbon and hydrocarbons. Coal is classified as a nonrenewable energy source because it takes millions of years to form. Coal contains the energy stored by plants that lived hundreds of millions of years ago in swampy forests.

Steam coal, also known as thermal coal, is used in power stations to generate electricity. ... The hot gases and heat energy produced converts water – in tubes lining the boiler – into steam. The high pressure steam is passed into a turbine containing thousands of propeller-like blades.

- Hydroelectric:

Hydropower or hydroelectricity refers to the conversion of energy from flowing water into electricity. It is considered a renewable energy source because the water cycle is constantly renewed by the sun. Historically, one of the first uses of hydro power was for mechanical milling, such as grinding grains.

- Wind:

Wind power or wind energy is the use of wind to provide the mechanical power through wind turbines to turn electric generators and traditionally to do other work, like milling or pumping.

Natural gases:

Natural gas can be used to generate electricity in a variety of ways. The most basic natural gas-fired electric generation consists of a steam generation unit, where fossil fuels are burned in a boiler to heat water and produce steam that then turns a turbine to generate electricity.

- **Nuclear :**

Nuclear power is the use of nuclear reactions that release nuclear energy to generate heat, which most frequently is then used in steam turbines to produce electricity in a nuclear power plant. Nuclear power can be obtained from nuclear fission, nuclear decay and nuclear fusion reactions.

Nuclear power is a clean and efficient way of boiling water to make steam, which turns turbines to produce electricity. Nuclear power plants use low-enriched uranium fuel to produce electricity through a process called fission—the splitting of uranium atoms in a nuclear reactor.

Solar:

Solar energy refers to capturing the energy from the Sun and subsequently converting it into electricity. ... We can also use the term solar power with the same meaning. The Sun's energy is in the form of solar radiation. Solar radiation makes the production of solar electricity possible.

Energy source	Advantages	disadvantages
Wind energy	<ul style="list-style-type: none"> <li>• No air or water pollution.</li> <li>• Free source of energy.</li> <li>• The land of the wind farms can be used for other purposes.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires constant and significant amount of air.</li> <li>• Requires significant amount of space</li> <li>• Have visual impact on landscapes.</li> </ul>
Solar energy	<ul style="list-style-type: none"> <li>• Infinite source of energy supply.</li> <li>• No air and water pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacture and implementation of solar panels are costly</li> <li>• Storages and back up is mandatory.</li> <li>• Workability depends on the availability of sun light.</li> </ul>
Hydro power energy	<ul style="list-style-type: none"> <li>• Sources are abundant, clear and safe.</li> <li>• No standby losses</li> <li>• Relatively inexpensive</li> </ul>	<ul style="list-style-type: none"> <li>• Costly to build.</li> <li>• Can causes flood.</li> <li>• uncertainty of availability of water.</li> </ul>
Bio energy	<ul style="list-style-type: none"> <li>• Cheap to construct</li> <li>• Burns waste products</li> </ul>	<ul style="list-style-type: none"> <li>• When burns it gives of atmospheric pollution.</li> </ul>
Geothermal /nuclear energy	<ul style="list-style-type: none"> <li>• Potentially infinitive energy supply.</li> </ul>	<ul style="list-style-type: none"> <li>• Set up and development cost can be expensive.</li> </ul>

**Q2:**

**Answer:**

➤ **Conventional sources**

Conventional sources of energy are the natural energy resources which are present in a limited quantity and are being used for a long time. They are called non-renewable sources as once they are depleted, they cannot be generated at the speed which can sustain its consumption rate. They are formed from decaying matter over hundreds of millions of years. These resources have been depleted to a great extent due to their continuous exploitation. It is believed that the deposits of petroleum in our country will be exhausted within few decades and the coal reserves can last for a hundred more years. Some common examples of conventional sources of energy include coal, petroleum, natural gas and electricity.

➤ **Non-conventional sources**

Non-conventional sources of energy are the energy sources which are continuously replenished by natural processes. These cannot be exhausted easily, can be generated constantly so can be used again and again, e.g. solar energy, wind energy, tidal energy, biomass energy and geothermal energy etc. The energy obtained from non-conventional sources is known as non-conventional energy. These sources do not pollute the environment and do not require heavy expenditure. They are called renewable resources as they can be replaced through natural processes at a rate equal to or greater than the rate at which they are consumed.

- Differences between conventional and non-conventional sources of energy are as follows:

<b>Conventional sources of energy</b>	<b>Non-conventional sources of energy</b>
These sources of energy are not abundant, present in limited quantity, e.g. coal, petroleum, natural gas.	These sources of energy are abundant in nature, e.g. solar energy, wind energy, tidal energy, biogas from biomass etc.
They have been in use for a long time.	they are yet in development phase over the past few years.
They are not replenished continuously. They are formed over a million years.	They are replenished continuously by natural processes.
They are called non-renewable sources of energy	They are called renewable sources of energy.
They pollute the environment by emitting harmful gases and also contribute to global warming.	They are environment-friendly, do not pollute the environment.
They are commonly used for industrial and commercial purposes.	They are used commonly used for household purposes.

They can be exhausted completely due to over-consumption except for hydel power.	They cannot be exhausted completely.
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Mostly non-conventional source are utilized in Pakistan because most of them are used for households and industries.

**Q3:****Answer:**

I will prefer solar energy because the climatic conditions of Pakistan is more favorable for solar energy. Pakistan is among those countries in which sun warms the surface throughout the year and has a strong potential for power generation. Solar PV possesses almost infinite potential on the other hand to generate electricity in Pakistan.

Solar power advantages:

- Polluted free
- Renewable clean power that is available everyday of the year, even cloudy days produce some power.
- Return on investment unlike paying for utility bills
- Ability to live grid free if all power generated provides enough for the home/building.
- Can be installed anywhere.
- Use batteries to store extra power for use at night.