

Assignment

Course title: Power Generation

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Q1: Pakistan uses different types of energy sources to overcome the energy crisis briefly explain those sources and also explain either they are able to meet the demand of consumers?

Ans- **ENERGY CRISIS IN PAKISTAN:**

"Crisis" is one word which has become part of ordinary Pakistani's vocabulary like nothing else. First we have sugar crisis, then wheat followed by electricity and to add more fuel to the fire now we are going through the worst gas shortage in our history. In Punjab this crisis has hurt the most with every person suffering its consequences. Thousands of daily waged workers have become jobless in industrial areas like Faisalabad, in homes women folk is suffering to feed their children, passengers wait for hours as the public transport has no CNG while those having personal transport wait for hours in order

NAME: M. HAROON

ID: 16216

to obtain much required CNG refilling. Our innocent executives like their predecessor have a bucket full of excuses in order to justify this mismanagement. For price hike and declining economy they have the common tag line of "market mechanism" and "global slowdown" to justify this phenomena. In case of electricity and gas load shedding they can find no good reason but to curse increasing demand.

The reality which they never accept is the fact that this shortfall is depriving our state from billions of rupees by not availing this opportunity of earning revenue, instead of wasting time on IMF imposed RGST and much more. Some conspiracy theories have floated for quite some time blaming this shortfall as a dirty mean to maximize their benefits. Like in electricity crisis they have managed to pull out the much debated Rental power projects while in case of gas shortage they are earning billions from taxes imposed on petroleum products and LPG. In short this recklessness can only be justified by only one reason, which is that our plans on day to day basis rather than planning in years as done in the developed countries.

Energy resources have depleted! Whatever resources are available are simply too

NAME: M. HAROON

ID: 16216

expensive to buy or already acquired by countries which had planned and acted along time ago. Delayed efforts in the exploration sector have not been able to find sufficient amounts of energy resources. Nations of the world which have their own reserves are not supplying energy resources anymore; only the old contracts made decades ago are active. Airplanes, trains, cars, motorbikes, buses and trucks, all modes of transportation are coming to the standstill. Many industries have closed due to insufficient power supply. price of oil has gone above the ceiling. At domestic level, alternate methods like solar, biogas and other methods are being tried for mere survival.



Q2: The energy sources is categorized in Conventional and non-conventional sources. Which type of sources is mostly utilize in Pakistan?

Ans: Pakistan has wide spectrum of high potential of renewable energy sources, conventional and non-conventional as well, which have not been adequately explored, exploited or developed. As a result, the primary energy supplies today are not enough

Name: M. HAROON ID: 16216

to meet even the present demand. Moreover, a very large part of the rural areas does not have the electrification facilities because they are either too remote and/or too expensive to connect to the national grid. So, Pakistan, like other developing countries of the region, is facing a serious challenge of energy deficit. Only 55% and 20% of Pakistan's population has access to electricity and natural gas respectively. Moreover, about 80% country's population lives in rural areas and most of them have no access of to electricity. In Pakistan, per capita primary energy supply is only 0.33 million oil equivalent while per capita electricity supply is about 520 kWh compared to world's average 2,500 kWh. At present people are facing severe load shedding (about 10 hours a day) due to shortage of 3 GW power supply. Pakistan has very low indigenous fossil fuel resource base and with present rate of production, the indigenous recoverable reserves of oil and gas will exhausted in 14 and 21 respectively. Though there is enormous coal reservoir (185 billion tons) in the country but has not utilized so far due to variety of reasons. The prospect of nuclear energy is bright in Pakistan but

Name: M. HAROON ID: 16216

high cost, technology barriers and international embargoes are the big hurdles in its course. This shows that conventional non renewable resources are grossly inadequate for meeting the future energy needs of the country. Therefore, development of the renewable energy sources can play an important role in meeting this challenge.



Q3: Hydro power and Solar power is widely used in Pakistan. Which energy source you will prefer write proper arguments either you prefer Hydro power or Solar power?

Ans: Hydropower and solar power are some inexhaustible energy origin that offer chief good to the situation, when comparison to non-renewable origin of energy. Each comes with its sharp set of asset and potential but, at the same time, thin concerns.

Solar power support out as the process of converting the sunlight through solar panel and into electrical energy. Whereas hydropower is simply the power nonheritable from the energy of oncoming water with the help of rotary engine.

Hydropower, or sometimes called water power

Name: M. HAROON

FD: 16216

is one of the old energy source that people have been winning advantage of for time period.

The kinetic energy of the smooth river twist the wheels and is reborn into mechanical energy which, as a result, runs the plant. Present, hydropower technology is utilize to harness the energy of moving water to bring forth electricity, often referred as hydroelectricity attained in a hydro power plant.

A typical hydro plant system has essentially three main parts:

- An electric plant - where electricity is make
- A dam - with the intention of dominant the water flow
- A reservoir - used to regulate the energy natural process when needful

Advantages of Hydropower

- It's a cleanable fuel source, which is revived yearly by snowfall and rainfall.
- Hydropower plants are utilized to produce caseload electricity and adjust the amount of it, afterwards meeting the displace in supply.
- Hydroelectric apparatus can immediately

Name: M. HAROON

ID: 16216

switch off and on, hence, being one of the most antiphonal energy source during the modification in demand, particularly in the peak season.

Disadvantages of Hydropower

- Hydro power technology is geographic dependent, due to resource insufficiency.
- It has several situtation consequences: damming the water and controlling the water flowing brings great damage on the river ecosystems, migratory obstacles for the marine species, namely fish and somewhat fabrication of carbon dioxide during the building of supply.
- Upfront costs - building a hydropower plant is costly.
- As the electricity bring forth from hydro sources depends on the water accessibility it may be uneffective during times of drought.

