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Q no 2 (d): What are the advantages and limitations of renewable energy resources? Briefly explain the prospects of non-conventional energy resources in Pakistan.

Ans

Advantages of renewable energy resources:

(a) Reducing CO₂ emissions:

Renewable energy resources like ~~sea~~ solar and wind produce negligible CO₂ or greenhouse gases as compared to traditional fossil fuels which can benefit climate and public health.

(b) Enhancing economic stability:

The increasing fossil fuel costs left the countries with only the option of renewable energy which is economically less expensive ~~and~~ than fossil fuels.

(c) Improving public health:

Non renewable energy causes burn of fossil fuels which are dangerous for health. So ~~renewable~~ these form of energy can cause health problems like asthma, cancer and heart diseases. By switching to renewable energy resources, Pakistan could reduce these health problems as well.

(d) Supporting local business:

Renewable energy projects often create jobs in the engineering and construction industries. By supporting local businesses and renewable ~~proj~~ energy projects can help ~~be~~ boost to socioeconomic development in Pakistan.

(e) Protecting environmental resources:

Renewable energy projects use minimum land for implementation of project. Renewable energy helps in reduction of global warming and in result glaciers are less melted.

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Limitations of renewable energy resources:

(a) Lack of investment:

One of the biggest limitation is lack of investment and government cannot fund it due to economic conditions.

(b) Lack of infrastructure:

Pakistan's energy infrastructure is not well developed such as the lack of transmission lines and grid infrastructure makes it difficult to distribute electricity from renewable resources to remote areas.

(c) Political instability:

Political instability is another challenge in Pakistan that affects the development of renewable energy. It creates uncertainty and makes it difficult to attract investment and implement long term plans.

Prospects for the non conventional energy resources in Pakistan:

Solar energy:

Pakistan has tremendous potential ~~for~~ to generate renewable energy. According to World Bank, utilizing just 0.071 percent of the country's area for solar photovoltaic (solar PV) power generation would meet Pakistan's current electricity demand.

Wind energy:

Pakistan has significant potential for wind energy, particularly in the coastal areas of Sindh and Balochistan.

Hydro power:

Pakistan has several large rivers, including the Indus river which provide significant potential for hydro power.

Biomass:

Pakistan has significant potential for biomass energy, particularly in the agriculture sector. It can be used to generate electricity.

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(5) Marks
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Q: What is "Water pollution", Discuss its causes and measurement methods. Name the countries with the highest and lowest percentage of it.

Ans:

Water Pollution:

Water pollution can be defined as the contamination of water bodies. Water pollution is caused when water bodies such as rivers, lakes, oceans, groundwater and aquifers get contaminated with industrial and agricultural effluents.

Causes of water pollution:

1- Sewage and wastewater:

Many households dump waste directly into water bodies. Moreover, households which are not served by municipal treatment plant uses septic tanks, which eventually infiltrates into the soil, causing pollution.

of groundwater.

2- Industrial effluents:

Some industries directly pump their untreated wastes into water bodies. It poses a danger to water quality because industrial waste contains hazardous chemicals. These highly toxic chemicals may harm aquatic animals and human beings. e.g

3- Eutrophication:

Eutrophication is caused when large quantities of nutrients are introduced into a body of water causing the rapid growth of algae. The excess algae decompose and produces large amounts of carbon dioxide. This lowers the PH of sea water, a process known as ocean acidification.

4. Agricultural run-offs:

Agricultural run-offs include Pesticides, fertilizers and other chemicals that can make

the water toxic. Moreover, some of these fertilizers can induce eutrophication.

Measurement Methods of Water Pollution:

1- Measurement of Presence of Algae:

Algae thrives in ponds and lakes when the surface water is rich in minerals like phosphorus and Nitrogen. The algal taximeter reflects the percentage of algae in the water. This is the practical way to measure the presence of algae in water.

2- Dissolved oxygen amount:

The amount of oxygen available to living aquatic creatures is known as dissolved oxygen. The high water polluted bodies have low level of dissolved oxygen. So, it is another method to measure water pollution.

3- PH level of water:

The ecosystem of the water body is threatened by the

1-1-20
rising PH levels. An acceptable PH range for a pond or lake is 6.0 to 8.0. So many variables causes the change in PH levels.

Countries with ~~the~~ Good water Quality:

- (i) Finland
- (ii) Iceland
- (iii) Netherlands
- (iv) Norway
- (v) Switzerland.

Countries with Bad water Quality:

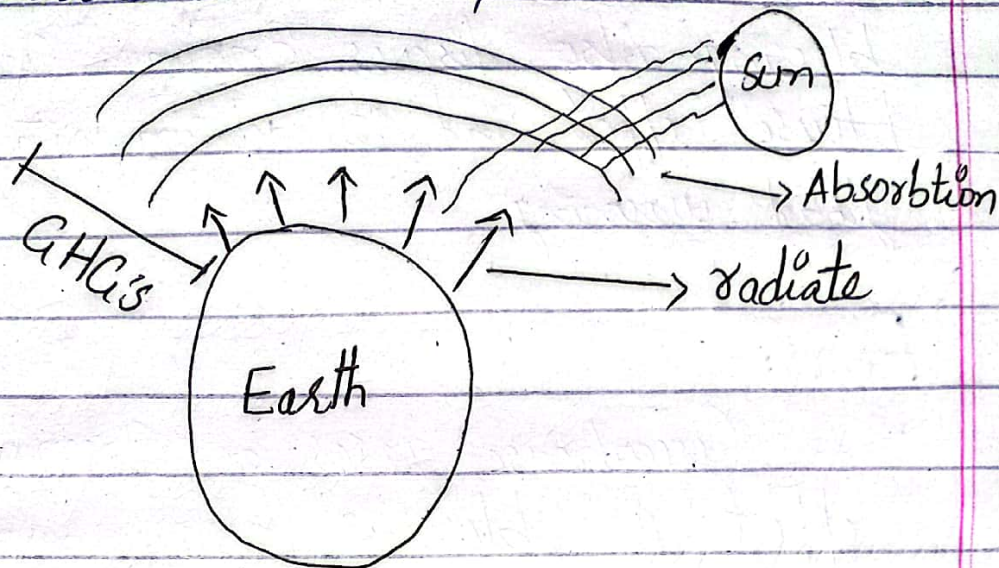
- (i) Lesotho
- (ii) Guinea-Bissau
- (iii) Eritrea
- (iv) Madagascar
- (v) Burundi

Q: Comment. Green house effect is a blessing. Also discuss Enhanced Green House effect and its relation with global warming.

Ans:

Greenhouse gases or Greenhouse effect is a blessing because many chemical compounds in the atmosphere act as a green house gases. These gases allow sunlight to enter the earth's atmosphere and heat the land and oceans. The warmed earth releases this heat in the form of Infrared light. Some infrared light released by earth passes through atmosphere they absorb and radiate it back down to earth. This process keeps the earth's surface warm and without the greenhouse effect the earth's average surface temperature would be 60° Fahrenheit, and our current way of life would be impossible. Some prominent greenhouse gases are CO_2 , CH_4 , and N_2O which

absorb the atmospheric heat.



Enhanced Greenhouse effect:

It is a thermal process in which the additional heat gets trapped into the atmosphere and this additional heat is due to the increased amount of carbon dioxide and other greenhouse gases that humans have released into the earth's atmosphere since industrial revolution.

Enhanced green house effect leading to Global warming:

It is the phenomenon of a gradual increase in the average temperature of the Earth's atmosphere. The main cause for this environmental issue is the

Increased volume of greenhouse gases such as carbon dioxide and methane released by the burning of fossil fuels, emissions from vehicles, industries and other human activities.