

Question No 1

Water is the most crucial resource especially in the populated and water source countries. How is water distributed on land? How does uneven distribution of water on land effect the nations? Being a response citizen, what efforts can we make reduce wastage of water and ensure its covention? As the last part of your discussion briefly describe the cycling of water that is responsible to keep water balance on earth intact.

Answer

The distribution of water on the Earth's surface is extremely uneven. Only 3% of water on the surface is fresh; the remaining 97% resides in the ocean. Of freshwater, 69% resides in glaciers, 30% underground, and less than 1% is located in lakes, rivers, and swamps. Looked at another way, only one percent of the water on the Earth's surface is usable by humans, and 99% of the usable quantity is situated underground.

All one needs to do is study rainfall maps to appreciate how uneven the distribution of water really is. The white areas on the map below had annual rainfall under 400 mm for the last year, which makes them semi-arid or arid. And, remember, projections are for significant aridification

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to occur in many dry regions and for more severe rainfall events to characterize wet regions.

Water is unevenly distributed around the world. Large portions of the world receive very little water from rainfall or rivers relative to their population. This includes much of northern Africa and central Asia. Over time, there will be less water per person within many river basins as the population grows and global temperatures increase so that some water sources are lost. Over time, many nations, even developed nations, are projected to have less water per person than now.

Global warming will change patterns of rainfall and water distribution. As the Earth warms, regions that currently receive an adequate supply of rain may shift. Regions that rely on snow melt may find that there is less snow and the melt comes earlier and faster in the spring, causing the water to run off and not be available through the dry summers. A change in temperature and precipitation would completely change the types of plants and animals that can live successfully in that region.

Water conservation has become essential in all regions, even where water seems abundant. That's because our water resources are finite, and they are getting smaller every year. Use our guide to save more water, both indoors and in your garden and yard.

1. Check your toilet for leaks.

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Put a few drops of food coloring in your toilet tank. If, without flushing, the coloring begins to appear in the bowl., you have a leak that may be wasting more than 100 gallons of water a day.

2. Stop using your toilet as an ashtray or wastebasket

Every cigarette butt or tissue you flush away also flushes away five to seven gallons of water.

3. Put a plastic bottle in your toilet tank

Put an inch or two of sand or pebbles in the bottom of a one liter bottle to weigh it down. Fill the rest of the bottle with water and put it in your toilet tank, safely away from the operating mechanism. In an average home, the bottle may save five gallons or more of water every day without harming the efficiency of the toilet. If your tank is big enough, you may even be able to put in two bottles.

4. Take shorter showers

A typical shower uses five to ten gallons of water a minute. Limit your showers to the time it takes to soap up, wash down and rise off.

5. Install water-saving shower heads or flow restrictors

Your hardware or plumbing supply store stocks inexpensive shower heads or flow restrictors that will cut your shower flow to about three gallons a minute instead of five to ten. They are easy to install, and your showers will still be cleansing and refreshing.

6. Take baths

A partially filled tub uses less water than all but the shortest showers.

7. Turn off the water while brushing your teeth

Before brushing, wet your brush and fill a glass for rinsing your mouth

Where does all the Earth's water come from? Primordial Earth was an incandescent globe made of magma, but all magmas contain water. Water set free by magma began to cool down the Earth's atmosphere, until it could stay on the surface as a liquid. Volcanic activity kept and still keeps introducing water in the atmosphere, thus increasing the surface- and groundwater volume of the Earth.

The water cycle has no starting point. But, we'll begin in the oceans, since that is where most of Earth's water exists. The sun, which drives the water cycle, heats water in the oceans. Some of it evaporates as vapor into the air. Ice and snow can sublime directly into water vapor. Rising air currents take the vapor up into the atmosphere, along with water from evapotranspiration, which is water transpired from plants and

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evaporated from the soil. The vapor rises into the air where cooler temperatures cause it to condense into clouds. Air currents move clouds around the globe, cloud particles collide, grow, and fall out of the sky as precipitation. Some precipitation falls as snow and can accumulate as ice caps and glaciers, which can store frozen water for thousands of years. Snowpacks in warmer climates often thaw and melt when spring arrives, and the melted water flows overland as snowmelt.

Most precipitation falls back into the oceans or onto land, where, due to gravity, the precipitation flows over the ground as surface runoff. A portion of runoff enters rivers in valleys in the landscape, with streamflow moving water towards the oceans. Runoff, and groundwater seepage, accumulate and are stored as freshwater in lakes. Not all runoff flows into rivers, though. Much of it soaks into the ground as infiltration. Some water infiltrates deep into the ground and replenishes aquifers (saturated subsurface rock), which store huge amounts of freshwater for long periods of time. Some infiltration stays close to the land surface and can seep back into surface-water bodies (and the ocean) as groundwater discharge, and some groundwater finds openings in the land surface and emerges as freshwater springs. Over time, though, all of this water keeps moving, some to reenter the ocean where the water cycle "ends" ... oops - I mean, where it "begins."

Question No 2

The term biodiversity refers to the entire variety of life on Earth including all plants, animals, fungi, bacteria, viruses as well as communities that perform habitats who live in. These living beings quite social biological technological and Economic Services to us. Discuss how biodiversity is inevitable to sustain life on earth. Also mention how and why would the system collapse if there had been used biodiversity. Give at least two suitable examples.

Answer

The variety of life on Earth, its biological diversity is commonly referred to as biodiversity. The number of species of plants, animals, and microorganisms, the enormous diversity of genes in these species, the different ecosystems on the planet, such as deserts, rainforests and coral reefs are all part of a biologically diverse Earth. Appropriate conservation and sustainable development strategies attempt to recognize this as being integral to any approach to preserving biodiversity. Almost all cultures have their roots in our biological diversity in some way or form. Declining biodiversity is therefore a concern for many reasons.

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Biodiversity is a term used to describe the enormous variety of life on Earth. It can be used more specifically to refer to all of the species in one region or ecosystem. Biodiversity refers to every living thing, including plants, bacteria, animals, and humans. Scientists have estimated that there are around 8.7 million species of plants and animals in existence. However, only around 1.2 million species have been identified and described so far, most of which are insects. This means that millions of other organisms remain a complete mystery.

Over generations, all of the species that are currently alive today have evolved unique traits that make them distinct from other species. These differences are what scientists use to tell one species from another. Organisms that have evolved to be so different from one another that they can no longer reproduce with each other are considered different species. All organisms that can reproduce with each other fall into one species.

Scientists are interested in how much biodiversity there is on a global scale, given that there is still so much biodiversity to discover. They also study how many species exist in single

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ecosystems, such as a forest, grassland, tundra, or lake. A single grassland can contain a wide range of species, from beetles to snakes to antelopes. Ecosystems that host the most biodiversity tend to have ideal environmental conditions for plant growth, like the warm and wet climate of tropical regions. Ecosystems can also contain species too small to see with the naked eye. Looking at samples of soil or water through a microscope reveals a whole world of bacteria and other tiny organisms.

Some areas in the world, such as areas of Mexico, South Africa, Brazil, the southwestern United States, and Madagascar, have more biodiversity than others. Areas with extremely high levels of biodiversity are called hotspots. Endemic species—species that are only found in one particular location—are also found in hotspots.

All of the Earth's species work together to survive and maintain their ecosystems. For example, the grass in pastures feeds cattle. Cattle then produce manure that returns nutrients to the soil, which helps to grow more grass. This manure can also be used to

fertilize cropland. Many species provide important benefits to humans, including food, clothing, and medicine.

Much of the Earth's biodiversity, however, is in jeopardy due to human consumption and other activities that disturb and even destroy ecosystems. Pollution, climate change, and population growth are all threats to biodiversity. These threats have caused an unprecedented rise in the rate of species extinction. Some scientists estimate that half of all species on Earth will be wiped out within the next century. Conservation efforts are necessary to preserve biodiversity and protect endangered species and their habitats.

✓ *Why is Biodiversity Important?*

Biodiversity boosts ecosystem productivity where each species, no matter how small, all have an important role to play.

For example

A larger number of plant species means a greater variety of crops Greater species diversity ensures natural sustainability for all life forms Healthy ecosystems can better withstand and recover from a variety of disasters. And so, while we dominate this planet, we still need to preserve the diversity in wildlife.

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Question No 3

According to UN Pakistan population exceed to 2.83% of the world total population million and makes up to 50% of world total population. With large number of people as huge part of natural resources consume to release food in basic goods. Total production of country cost alot in terms of environmental issues. Discuss the major environmental concern of Pakistan with special emphasis on the problem is the agricultural industry. Suggest method that can adopted as an individual and a nation to combat and environmental issues in Pakistan.

Answer

Environmental concern of Pakistan with special emphasis on the problem is the agricultural industry.

- **Agriculture**

Agriculture is considered the backbone of Pakistan's economy, which relies heavily on its major crops. There are vast gaps between the acquired and actual output of produce, which suffers due to a lack of appropriate

technology, use of inputs at improper times, unavailability of water and land use and inadequate education about insect pest control, which not only negatively affects the produce but also significantly reduces the amount of produce. Farmers mainly use synthetic chemicals for the control of insect pests, but these are used unwisely. To emphasize the major shortfalls and actual performance of major field crops, this study investigated the relationship between agricultural GDP and the output of major crops, including wheat, rice, sugarcane, maize and cotton, in Pakistan over a period of 65 years from 1950 to 2015. Time series data were collected from the Economic Survey of Pakistan (various publications). Crop data were analyzed using the ordinary least square method and the Augmented Dickey Fuller (ADF) test, and the results were interpreted using Johansen's co-integration test. Our study finds that the output of wheat, rice and cotton has a positive and significant relationship with the agricultural GDP of Pakistan, while the output of sugarcane has a negative and non-significant relationship with the agricultural GDP of Pakistan. Therefore, this study recommends that the government of Pakistan should launch new funding programmes for the development of the agricultural sector.

Agriculture is an important sector of Pakistan's economy. This sector directly supports the country's population and accounts for 26 percent of gross domestic product (GDP). The major agricultural crops include cotton, wheat, rice, sugarcane, fruits and vegetables. The irrigation system of Pakistan belongs to one of the world's largest systems to support agricultural production. There are two main seasons in Pakistan for

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production of crops: crops such as cotton, rice and sugarcane start in May and are harvested in November, whereas the wheat crop extends from November to April. A key urgent need to improve agricultural production is to use resources, mainly land and water, more efficiently. However, the change is mainly dependent on large landowners, who own 40 percent of arable land and control most of the irrigation systems, making it difficult to pass wide-ranging reforms. Pakistan is a net importer of agricultural products, with total annual imports of approximately 2 billion USD, including wheat, edible oils, pulses and food additives.

In the wheat production system, Punjab, which is Pakistan's irrigated province, has had a historical focus on a green revolution in wheat. During the 1960s, the Green Revolution in Pakistan also involved public investment in irrigation canals and market development. The rural society and wheat production were transformed; the anticipation of starvation retreated. Despite this applauded improvement, the sustainable production of wheat remained the primary focus of Pakistan's population. The government of Pakistan still needed improvements for the production of wheat in different varieties. Previous research on the wheat crop has shown a slow growth rate of crop variety replacement by farmers in promoting new varieties of wheat in Pakistan. In 1997, an estimated area of one million ha was used for wheat production, which was 51 percent of the entire wheat area in Pakistan.

Pakistan plays a major role worldwide as a rice exporter, and it annually exports approximately 2 million tons, which is 10 percent of the world's trade. In Basmati rice, approximately 25 percent of exports is Pakistan's

share. Rice exports are the second highest source of income in Pakistan. Rice grains fulfil approximately 60 percent of the population of Pakistan's food needs, and rice is a potential source of food worldwide for animals during the winter, . Rice is an important food for Pakistan. The usage of pesticides increased after the 1950s, when 250 metric tons of pesticides were imported for greater improvement of production. Its usage increased by 2158.6 percent from 1952 to 2004.

Cotton is another cash crop of Pakistan, and Pakistan is the world's largest producer of raw cotton. In 2011–2012, Pakistan ranked as the 4th largest cotton producer, with a 9.81 percent share in global cotton. In the same period, Pakistan's yarn exports contributed 26.1 percent and 14.3 percent to the global market. Cotton exports accounted for 46 percent of Pakistan's total exports and provided 35 percent employment to the labour force .According to current agricultural policy, the Pakistan Central Cotton Committee has aimed to increase the production of cotton from 40 percent to 60 percent .However, some evidence has shown that insufficient irrigation water is one of major problems in agricultural production in Pakistan. Farmers commonly apply water to furrowed fields by flood irrigation, resulting in low agriculture water productivity.

Maize is another cash and food crop of Pakistan, serving as feed as well as silage, and it is a high yielding cereal crop globally. After wheat, rice and cotton, maize is the fourth chief cereal crop of Pakistan, it is mainly sown in two seasons: spring and autumn. In spring, it is planted from February to March, while for autumn, maize is grown from July to August. The maize life cycle depends upon the availability of water; the

water discrepancy at any phonological stage, i.e., reproductive and maturity stages, has several retorts and can damage the grain yield, and previous research has shown that drought stress also causes grain yield damage when it occurs in the reproductive stage of the crop's life cycle.

Sugarcane is a high-value cash crop of Pakistan and is quite important for sugar-related production. It accounts for 3.4 percent of additional agricultural value and 0.7 percent of the gross domestic product (GDP). As a sugar crop, sugarcane is the chief biofuel crop worldwide. The slow growth rate of sugarcane in the early stage provides space and resources for intercropping in the field. Many studies have shown that sugarcane intercropping with other crops, such as peas, watermelon and onions, could decrease the yield of sugarcane and could increase economic income significantly.

● Industry

As Pakistan's cities suffer from the effects of air pollution and unplanned development has caused degradation, environmental issues have become more salient. Safeguarding public health, as well as preserving Pakistan's natural wonders, has made environmental protection increasingly important. In an attempt to redress the previous inattention to the nation's mounting environmental problems, in 1992 the government issued its National Conservation Strategy Report (NCSR) outlining Pakistan's state of environmental health, its sustainable goals, and viable program options for the future with the National Conservation Goals

Building on the Pakistan Environmental Protection Ordinance of 1983, the NCSR stipulated three goals for the country's environmental protection efforts: conservation of natural resources; promotion of sustainable development; and improvement of efficiency in the use and management of resources.

Energy Consumption

Pakistan's energy consumption has nearly tripled in the last 20 years. From 0.6 quadrillion Btu in 1980, Pakistan's total energy consumption in 1998 stood at 1.7 quads. Still, Pakistan accounts for only 0.5% of total world energy consumption. In terms of per capita energy consumption, Pakistan's level of 12.3 million Btu in 1998 is higher than Bangladesh's (3.3 million Btu) but virtually on par with India's (12.9 million). In comparison, China's per capita energy consumption in 1998 was 27.0 million Btu, Iran's was 72.4 million Btu, and Russia's was 177.3 million Btu, while U.S. per capita consumption was 350.7 million Btu.