

## Chapter 3: Water Resources

NCERT · Class 10 · Social Science · Geography

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### Textbook exercises

#### Question 1

##### Multiple Choice Questions.

(i) Based on the information given below, classify each of the situations as 'suffering from water scarcity' or 'not suffering from water scarcity'.

(a) A region with high annual rainfall.

(b) A region having high annual rainfall and a large population.

(c) A region having high annual rainfall but water is highly polluted.

(d) A region having low rainfall and low population.

(d) Multi-purpose projects generate electricity for our industries and our homes.

(d) Today in Rajasthan, the practice of rooftop rainwater water harvesting has gained popularity despite high water availability due to the Indira Gandhi Canal.

#### Solution

Ans: (a) An area with heavy yearly precipitation that does not experience a shortage of water

(a) An area with a lot of people and heavy annual rainfall that experiences water scarcity

(c) An area with heavy yearly rainfall but extremely contaminated water—a region with a shortage of water

(d) An area with little population density and little rainfall that does not experience water scarcity

(ii) Which one of the following statements is not an argument in favour of multipurpose river projects?

(a) Multi-purpose projects bring water to those areas which suffer from water scarcity.

(b) Multi-purpose projects by regulating water flow help to control floods.

(c) Multi-purpose projects lead to large-scale displacements and loss of livelihood.

Ans: (b) Multipurpose initiatives result in widespread evictions and loss of livelihood

(iii) Here are some false statements. Identify the mistakes and rewrite them correctly.

(a) Multiplying urban centres with large and dense populations and urban lifestyles have helped in the proper utilisation of water resources.

(b) Regulating and damming of rivers does not affect the river's natural flow and its sediment flow.

(c) In Gujarat, the Sabarmati basin farmers were not agitated when higher priority was given to water supply in urban areas, particularly during droughts.

Ans: (a) The multiplicity of densely populated metropolitan areas and urban lifestyles has led to the inappropriate use of water resources.

(b) River regulation and dam construction do have an impact on the sediment flow and natural flow of the river.

(c) When water delivery in urban areas, especially during droughts, was given precedence, farmers in Gujarat's Sabarmati basin became agitated.

(d) Because there is an abundance of water available from the Indira Gandhi Canal, rooftop rainwater collection is becoming less common in Rajasthan.

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## Question 2

Answer the following questions in about 30 words.

(i) Explain how water becomes a renewable resource.

(ii) What is water scarcity and what are its main causes?

(iii) Compare the advantages and disadvantages of multi-purpose river projects.

## Solution

Ans: Since there will always be rain and three processes that make up the hydrological cycle, groundwater, and surface water will constantly be replenished, making water a renewable resource. The hydrological cycle consists of three processes:

1. Evaporations
2. The Process of Condensation
3. Rainfall

Ans: Numerous cities in our country serve as such. Therefore, a big and expanding population may lead to increased demands for water and uneven access to it, potentially resulting in water scarcity. More water is needed in a large population, both for home usage and for food production. Water resources are therefore being overused to increase the area under irrigation for dry-season agriculture to enable higher food-grain output. Water use in agriculture is mostly driven by irrigation. To improve productivity, the majority of farmers have their own wells and tube wells on their properties. The people's access to water and food security have suffered as a result.

Ans:

Advantages:

1. Watering/ Irrigation
2. Production of Electricity
3. Control of Flooding
4. Provision of Water for Rural Commercial uses
5. Point of Interest for Tourists
6. Navigation within Inland Areas

Disadvantages:

1. Water's Natural Flow is Impacted
2. It Impacts Aquatic Life.
3. Land in the Nearby areas Sinking

4. Ecological Repercussions
5. large-scale Local Population Relocation

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### Question 3

Answer the following questions in about 120 words.

- (i) Discuss how rainwater harvesting in semi-arid regions of Rajasthan is carried out.
- (ii) Describe how modern adaptations of traditional rainwater harvesting methods are being carried out to conserve and store water.

### Solution

Ans: Nearly every home in Rajasthan's semi-arid and desert regions—especially in Bikaner, Phalodi, and Barmer—has historically included an underground tank, or tanka, to hold drinking water. One family in Phalodi had a tank that measured 6.1 metres deep, 4.27 metres long, and 2.44 metres wide—the size of a huge room. The tankas were constructed inside the main house or the courtyard and were a part of the sophisticated rooftop rainwater gathering system. They had a hose connecting them to the dwellings' sloping roofs.

Rain that fell on the rooftops would pass through the pipe and accumulate in these "tanks" below ground. Usually, the initial round of rain was not collected since the pipes and roofing would be cleaned. After that, rainwater from the next showers was gathered. When all other supplies of drinking water run dry, especially during the summer, the rainwater may be kept in the tankas until the next downpour. This makes it an incredibly dependable source of water. Rainwater, or "palar pani" as it is known locally, is regarded as the purest type of natural water.

Ans: A practical substitute in terms of the environment and socioeconomics is a water harvesting system. In addition to highly developed hydraulic systems, ancient India had a remarkable water-harvesting system legacy. By the local ecological conditions and their water demands, people created a wide range of strategies to extract rainwater, groundwater, river water, and floodwater. They also had an extensive understanding of rainfall regimes and soil types. For agricultural purposes, people in hilly and mountainous areas constructed diversion channels similar to the Western Himalayan "guls" or "kuls." In Rajasthan in particular, "Rooftop rainwater harvesting" was a popular method of storing drinking water.

To irrigate their fields, inhabitants in Bengal's flood plains created inundation channels. Agricultural fields were transformed into rain-fed storage structures, known as "khadins" in Jaisalmer and "Johads" in other areas of Rajasthan, in arid and semi-arid regions so that the water could stand and hydrate the soil. To meet their water demands, the people of Gendathur, a remote, underdeveloped village near Mysore, Karnataka, have erected rainwater harvesting systems on the roofs of their homes. With the installation of this system in close to 200 homes, the community has gained the unique distinction of having an abundance of rainwater. In Shillong, Meghalaya, rooftop rainwater collecting is the most popular method. The 55-kilometre distance between Cherrapunji and Mawsynram makes it intriguing.

The world's highest rainfall originates from Shillong. However, Shillong, the state capital, is severely short on water. In the city, almost every home has a rooftop rainwater collection system. Rooftop water harvesting provides the household with roughly 15–25% of its overall water needs. The state of Tamil Nadu is the first in India to mandate rooftop rainwater harvesting systems for every home in the region.

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