

- **Atal Bhujal Yojana (Atal Jal)** Key aspect is to bring in behavioural changes in the community, from consumption to conservation.
- The Goal of **Jal Jeevan Mission (Har Ghar Jal, JJM)** is to provide every rural household a tap connection and supply potable water of 55 liters per day.
- **Pradhan Mantri Krishi Sinchae Yojana** is to enhance access of water on the farm, under assured irrigation (**har khet ko pani**), water saving technologies (**per drop more crop**).
- The troubles faced by people owing to the flooding of Damodar River have given this river a name as the **river of sorrow**.
- Jawaharlal Nehru proudly announced the dams as the '**temples of modern India**'.
- Today, in western Rajasthan, the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due to the perennial Rajasthan Canal.
- In Shillong nearly every household in the city has a roof top rain water harvesting structure.
- In Gendathur, a village in Mysore, Karnataka, villagers have installed in their household's rooftop rainwater harvesting system to meet their water needs.
- Tamil Nadu is the first and the only state in India which has made roof top rainwater harvesting structure compulsory to all the houses across the state.
- In Meghalaya, a 200-year-old system of tapping stream and spring water by using bamboo pipes is common.

Q.1 Explain reasons water scarcity in our country. OR Is it possible that an area or region may have ample water resources but is still facing water scarcity?

Ans.

- i. **Large and growing population:** Water scarcity is an outcome of growing population due to greater demands for water, and unequal access to it. We need more water for domestic use and also to produce more food (which require lot of irrigation). New solutions like drought resistant crops and dry farming techniques are required.
- ii. **Industrialization:** The growing number of industries put pressure as they require large amount of water and also require hydropower to run. Much of this energy comes from dams which affects natural flow of water.
- iii. **Urbanization:** Multiplying urban centres with large and dense populations and urban lifestyles need more water and energy requirements. Housing societies rely on groundwater pumping, leading to overexploitation and depletion in many urban areas.
- iv. **Poor quality of water:** This scarcity may be due to bad quality of water. Much of it may be polluted by domestic and industrial wastes, chemicals, pesticides and fertilisers used in agriculture, thus, making it hazardous for human use.

Q.2 Examine the reasons for conservation of water resource in India.

Ans. The conservation and management of our water resources is necessary for:

- i. To safeguard ourselves from health hazards,
- ii. To ensure food security, continuation of our livelihoods and productive activities
- iii. To prevent degradation of our natural ecosystems.
- iv. Over exploitation and mismanagement of water resources will deplete water resource and cause ecological crisis.

Q.3 Analyse and infer how the Multipurpose projects are supporting the requirement of water in India.

Ans. Dams were built under integrated water resources management approach which means that they have many uses of impounded water which are integrated with one another.

- i. Dams were traditionally built to impound rivers and rainwater that could be used later to irrigate agricultural fields.
- ii. Today, dams are built not just for irrigation but for electricity generation, water supply for domestic and industrial uses, flood control, recreation, inland navigation and fish breeding.
- iii. For example, in the Sutluj-Beas river basin, the Bhakra – Nangal project water is being used both for hydel power production and irrigation. Similarly, the Hirakud project in the Mahanadi basin integrates conservation of water with flood control.

Q.4 Why the Multi-purpose projects and large dams face criticism?

Ans. The reasons are:

**a. Affect natural flow of running water:**

- i. Hence, it causes excessive sedimentation at the bottom of the reservoir. Whereas downstream beds become rockier.
- ii. They also fragment rivers making it difficult for aquatic fauna to migrate, especially for breeding.

**b. Affect natural vegetation and soil:**

- i. The reservoirs submerge the existing vegetation and soil leading to its decomposition over a period of time.
- ii. The flood plains are deprived of silt, a natural fertiliser, further adding on to the problem of land degradation.

**c. Cause of many conflicts and social movements:**

- i. Inter-state water disputes are also becoming common with regard to sharing the costs and benefits of the multi-purpose project.
- ii. They have been a cause of many new social movements like the 'Narmada Bachao Andolan' and the 'Tehri Dam Andolan' etc.

**d. Displacement of people:**

- i. They results in the large-scale displacement of local communities.
- ii. Local people often had to give up their land, livelihood for the nation. The local people are not benefiting from such projects.

**e. Change in cropping pattern:**

- i. Farmers have shifted to water intensive and commercial crops.
- ii. This has great ecological consequences like salinisation of the soil.
- iii. It has increased the social gap between the richer landowners and the landless poor.

**f. Failure to control flood:**

- i. The dams that were constructed to control floods have triggered floods due to sedimentation in the reservoir and at the time of excessive rainfall.
- ii. It was also observed that the multi-purpose projects induced earthquakes,

Q.5 Give examples of traditional water harvesting systems developed in ancient India.

Ans. In ancient India, people had in-depth knowledge of rainfall regimes and soil types. Thus they developed many techniques to harvest rainwater.

- a. In **hill and mountainous regions**, people built diversion channels like the 'guls' or 'kuls' of the Western Himalayas for agriculture. A kul leads to a circular village tank from which water is released as and when required.
- b. 'Rooftop rain water harvesting' was commonly practised to store drinking water, particularly **in Rajasthan**.
- c. **In the flood plains of Bengal**, people developed inundation channels to irrigate their fields.
- d. **In arid and semi-arid regions**, agricultural fields were converted into rain fed storage structures that allowed the water to stand and moisten the soil like the 'khadins' in Jaisalmer and 'Johads' in other parts of Rajasthan.