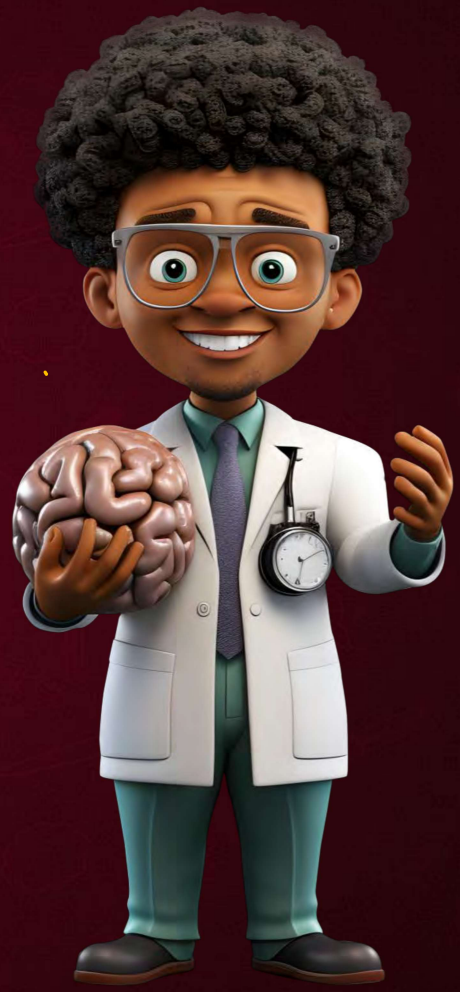
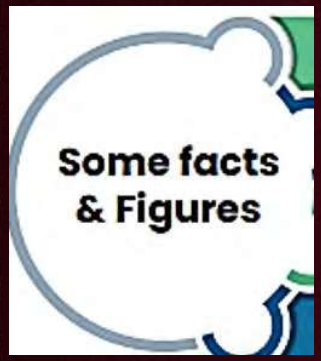
Topics *to be covered*

1. Water Scarcity
2. Multipurpose Projects
3. Rainwater Harvesting
4. Bamboo Drip Irrigation



- Water : A renewable resource covers 3/4th of the earth's surface but only a small proportion of it accounts for freshwater fit for use.



96.5 % of the total volume of world's water exist as oceans.

Only 2.5 per cent as freshwater

India receives nearly 4% of the global precipitation and ranks 133 in the world in terms of water availability per person per annum

By 2025 it is predicted that large parts of India will join countries or regions having absolute water scarcity

2. WATER SCARCITY AND NEED FOR WATER CONSERVATION AND MANAGEMENT

The lack sufficient water as compared to its demand in a region is known as → Water Scarcity.

Causes of Water Scarcity

01 Over- exploitation and mismanagement of water resources

02 Excessive use and unequal access to water among different social groups

03 Large & growing population

04 Irrigated agriculture is the largest consumer of water → so there is a need to revolutionise the agriculture through developing drought resistant crops and dry farming techniques

05 More wells and tube-wells in farms → for irrigation to increase their produce → But may lead to falling groundwater levels → adversely affecting water availability and food security of the people

06 Intensive industrialisation and urbanisation → exerts pressure on existing freshwater resources

07 Today, in India hydroelectric power contributes approximately 22 per cent of the total electricity produced.

08 More urban areas and dense populations → have further aggravated the problem

Another situation

water is sufficiently available to meet the needs of the people→but the area still suffers from water scarcity→ Reasons may be due to→bad quality of water due to domestic and industrial wastes, chemicals, pesticides and fertilisers used in agriculture, thus, making it hazardous for human use Government of India has announced the Jal Jeevan Mission (JJM) → to improve the quality of life and enhance ease of living of people in rural areas.

The Goal of JJM

to enable every rural household get assured supply of potable piped water at a service level of 55 litres per capita per day regularly on long-term basis by ensuring functionality of the tap water connections.

Har Ghar Jal
Jal Jeevan Mission

3. MULTI-PURPOSE RIVER PROJECTS AND INTEGRATED WATER RESOURCES MANAGEMENT

1 From ancient times, sophisticated hydraulic structures like →dams built of stone rubble, reservoirs or lakes, embankments and canals for irrigation

2 Evidences of sophisticated irrigation works found in → Kalinga, (Odisha), Nagarjunakonda (Andhra Pradesh), Bennur (Karnataka), Kolhapur (Maharashtra) etc.

In the first century B.C.

Sringaverapura near Allahabad had sophisticated water harvesting system channelling the flood water of the river Ganga.

In the 11th Century

Bhopal Lake, one of the largest artificial lakes of its time was built.

In the 14th Century

the tank in Hauz Khas, Delhi was constructed by Iltutmish for supplying water to Siri Fort area.

During the time of Chandragupta Maurya

Dams, lakes and irrigation systems were extensively built.

Dams

traditionally built to impound rivers and rainwater that could be used later to irrigate agricultural fields → 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 → Hence, dams are now referred to as multi-purpose projects.

01

The Sutluj-Beas river basin, the Bhakra–Nangal project → used both for hydel power production and irrigation

02

Hirakud project in the Mahanadi basin → integrates conservation of water with flood control.

4 Advantages & Disadvantages of Multi-purpose river projects

Advantages 1

- → Electricity generation
- → Irrigation
- → Water supply for domestic and industrial ses
- → Flood control
- → Recreation
- → Inland navigation
- → Fish breeding

Disadvantages 2

- → affects the natural flow of river causing poor sediment flow and excessive sedimentation at the bottom of the reservoir.
- → destroys the habitats for the rivers' aquatic life.
- → submerges the existing vegetation and soil if created on the floodplains.
- → Unsuccessful in controlling floods at the time of excessive rainfall.
- → These projects induced earthquakes, caused water- borne diseases and pests and pollution resulting from excessive use of water.

5 Movements against Multi-purpose river projects

These projects cause of many new social movements like→the 'Narmada BachaoAndolan' and the 'Tehri Dam Andolan' etc.→due to the large-scale displacement of local communities.

Inter-state water disputes are also becoming common with regard to sharing the costs and benefits of the multi-purpose project.

Rainwater Harvesting

- Rainwater harvesting is a simple method by which rainfall is collected for future usage.
- The collected rainwater may be stored, utilised in different ways or directly used for recharge purposes.

Rainwater Harvesting –Techniques

1. In hill and mountainous regions, people have built diversion channels like the ‘guls’ or ‘kuls’ of the Western Himalayas for agriculture.

2. Rooftop rainwater harvesting is commonly practised to store drinking water, particularly in Rajasthan.

3. In the flood plains of Bengal, people developed inundation channels to irrigate their fields.

4. 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 such as ‘khadins’ in Jaisalmer and ‘Johads’ in other parts of Rajasthan.

Rainwater Harvesting –Techniques

5. The tankas are part of the well-developed rooftop rainwater harvesting system and are built inside the main house or the courtyard.

6. This is mainly practised in Rajasthan, particularly in Bikaner, Phalodi and Barmer areas for saving rainwater.

7. Many houses have constructed underground rooms adjoining the ‘tanka’ to beat the summer heat as it would keep the room cool.

8. The first shower of rain is not collected as it is dirty.

9. Rainwater is known as Palar Pani in Rajasthan

Super Fact

- Tamil Nadu is the first state in India which has made rooftop rainwater harvesting structures compulsory for all houses across the state.
- There are legal provisions to punish defaulters.

Gendathur

- In Gendathur, a remote backward village in Mysuru, Karnataka, villagers have installed, in their household's rooftop, a rainwater harvesting system to meet their water needs.

- Nearly 200 households have installed this system and the village has earned the rare distinction of being rich in rainwater.

Gendathur

- Gendathur receives an annual precipitation of 1,000 mm, and with 80 per cent of collection efficiency and of about 10 fillings, every house can collect and use about 50,000 litres of water annually.

- From the 200 houses, the net amount of rainwater harvested annually amounts to 1,00,000 litres

8 'Bamboo drip irrigation ' in Meghalaya

- a 200-year-old system of tapping stream and spring water by using bamboo pipes

- About 18-20 litres of water enters the bamboo pipe system, gets transported over hundreds of metres, and finally reduces to 20-80 drops per minute at the site of the plant.

Do you know?

Atal Bhujal Yojana (Atal Jal) is being implemented in 8220 water stressed Gram Panchayats of 229 administrative blocks/ talukas in 80 districts of seven states, viz. Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh. The selected States account for about 37 per cent of the total number of water— stressed (over-exploited, critical and semi-critical) blocks in India. One of the key aspects of Atal Jal is to bring in behavioural changes in the community, from the prevailing attitude of consumption to conservation and smart water management.

Source: *Annual Report, Ministry of Jal Shakti, Government of India 2022–23*

Do you know?

Sardar Sarovar Dam has been built over the Narmada River in Gujarat. This is one of the largest water resource projects of India covering four states—Maharashtra, Madhya Pradesh, Gujarat and Rajasthan. The Sardar Sarovar project would meet the requirement of water in drought-prone and desert areas. Sardar Sarovar Project will provide irrigation facilities to 18.45 lakh hectare of land, covering 3112 villages in 15 districts of Gujarat. It will also irrigate 2,46,000 hectare of land in the strategic desert districts of Barmer and Jalore in Rajasthan and 37,500 hectare in the tribal hilly tract of Maharashtra through lift. About 75 per cent of the command area in Gujarat is drought prone while entire command in Rajasthan is drought prone. Assured water supply will soon make this area drought proof.

Source: Sardar Sarovar Narmada Nigam Ltd. *https://www.sardarsarovardam.org/*

Do you know?

Do you know that the Krishna-Godavari dispute is due to the objections raised by Karnataka and Andhra Pradesh governments? It is regarding the diversion of more water at Koyna by the Maharashtra government for a multipurpose project. This would reduce downstream flow in their states with adverse consequences for agriculture and industry.


INDIA
MAJOR RIVERS AND DAMS
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
SRI LANKA
LAKSHADWEEP (INDIA)
ANDAMAN & NICOBAR ISLANDS (INDIA)
Tropic of Cancer
Indus R.
Jhelum R.
Chenab R.
Ravi R.
Satluj R.
Beas R.
Salal Project
Bhakra Nangal
Tehri
Naraura
Ganga R.
Yamuna R.
Sarda R.
Ghaghara R.
Gandak R.
Kosi R.
Son R.
Tsangpo R.
Dihang R.
Lohit R.
Brahmaputra R.
Chambal R.
Kota Barrage
Rana Pratap Sagar
Gandhi Sagar
Banas R.
Rihand
Tilaiya
Konar
Maithon
Panchet
Barakar R.
Sardar Sarovar
Narmada R.
Tapi R.
Hirakud
Mahanadi R.
Penganga R.
Godavari R.
Pravara
Koyna
Krishna R.
Nagarjuna Sagar
Tungabhadra
Tungabhadra R.
Ponnaiyar
Mettur
Kaveri R.
Periyar
0 200 400 600 km
68°E 72° 76° 80° 84° 88° 92° 96°E
36°N 32° 28° 24° 20° 16° 12° 8°N

Type Heading Here

Question

What is Jal Jeevan Mission?