

# TOPICS to be covered

## 1 Water Resources



# WATER RESOURCES





## Introduction



- Three-fourth of the earth's surface is covered with water but only a small proportion of it accounts for freshwater, that can be put to use. Water is a renewable resource.
- How is it that countries and regions around the globe suffer from water scarcity?
- Why is it predicted that by 2025, nearly two billion people will live in absolute water scarcity?





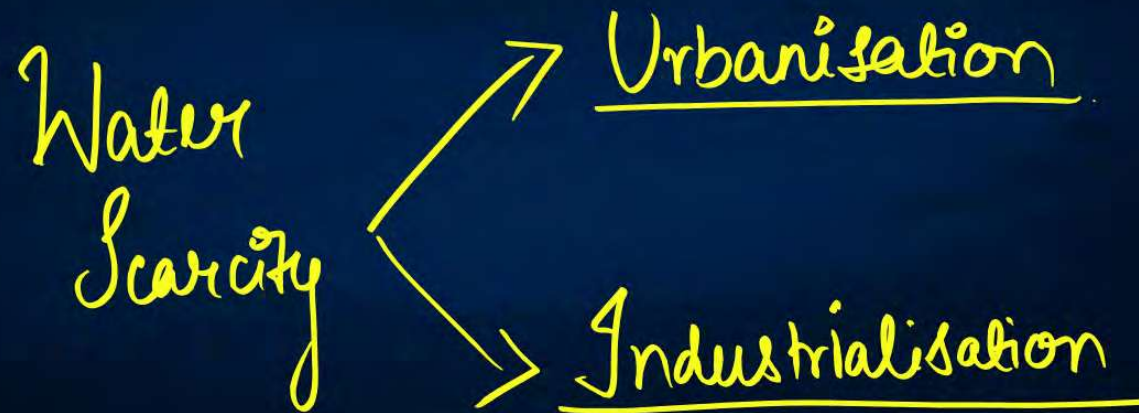
## Water Scarcity and the Need for Water Conservation and Management



- ❖ The availability of water resources varies over space and time.
- ❖ BUT IN MOST CASES - Water scarcity is caused by over-exploitation, excessive use and unequal access to water among different social groups.
- ❖ Water resources are being over-exploited to expand irrigated areas for dry-season agriculture.
- ❖ In some areas, water is sufficiently available to meet the needs of the people. But, those areas still suffer from water scarcity due to bad quality of water.



- Post-independent India witnessed intensive industrialisation and urbanisation, creating vast opportunities for us.
- Today, large industrial houses are as commonplace as the industrial units of many MNCs.





- The need of the hour is to conserve and manage our water resources:
- To safeguard ourselves from health hazards.
- To ensure food security, continuation of our livelihoods and productive activities.
- To prevent degradation of our natural ecosystems.

Need for Conservation  
& Management





## Dams

### (Multipurpose River Project)

- A dam is a barrier across flowing water that obstructs, directs or retards the flow, often creating a reservoir, lake or impoundment.
- "Dam" refers to the reservoir rather than the structure.

Hydraulic Structures in Ancient India







"Temples of Modern India"

↳ Jawaharlal Nehru



## Dams are Built

- To impound rivers and rainwater that can be used later to irrigate agricultural fields.
- **For electricity generation.**
- Water supply for domestic and industrial uses.
- **Flood control.**
- Recreation, inland navigation and fish breeding.

*Advantages / Multiple  
Purposes  
for which dams  
are built.*







## Opposition to Multi-Purpose Projects



(Disadvantages)

- Regulating and damming of rivers affect their natural flow.
- Poorer the habitats for the rivers' aquatic life
- Fragment rivers make it difficult for aquatic fauna to migrate.
- Dams created on the floodplains submerge the existing vegetation and soil leading to its decomposition over a period of time.
- Creating of large dams has been the cause of many new environmental movements like the 'Narmada Bachao Andolan' and the 'Tehri Dam Andolan' etc.
- Many times local people had to give up their land, livelihood and their control over resources for the construction of the dam.

Env. &  
soil-impact

\* Excessive  
sedimentation  
at bottom of reservoir

\* Rocky stream bed





- Most of the dams were constructed to control floods but, **these dams have triggered floods**. Dams have also caused extensive soil erosion. **Excessive use of water has resulted in earthquakes**, **caused water-borne diseases and pests and pollution**.

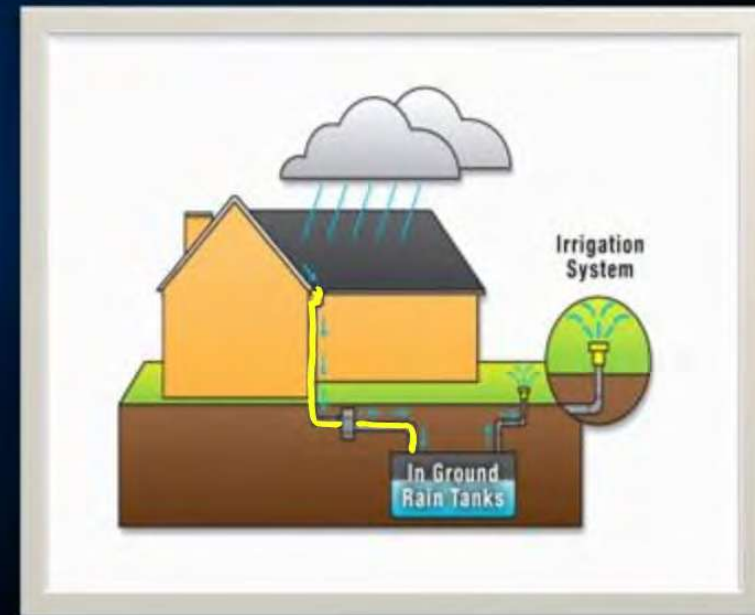




## Different Methods Of Rainwater Harvesting

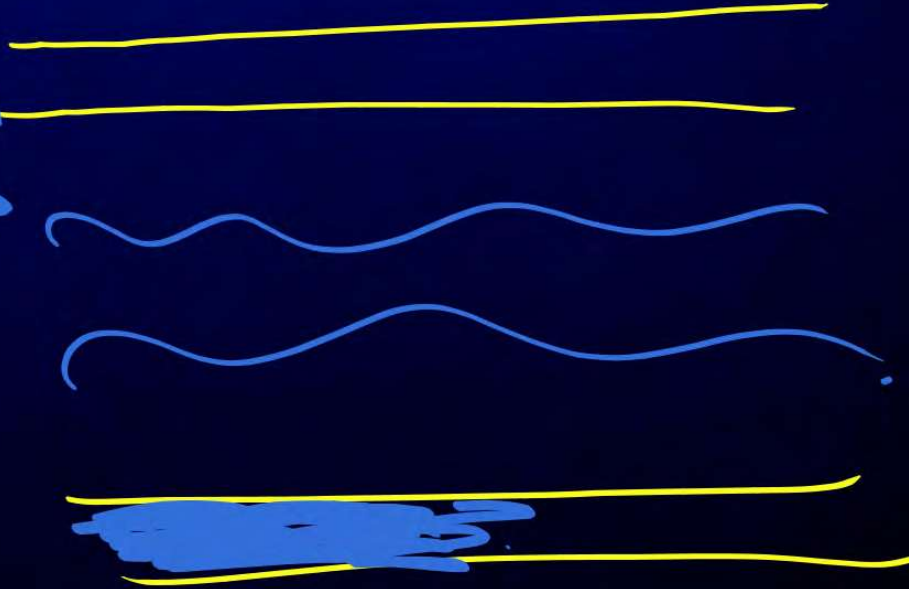


1. In hill and mountainous regions, people built diversion channels like the 'guls' or 'kuls' of the Western Himalayas for agriculture.
2. "Rooftop rainwater harvesting" is commonly practised to store drinking water, particularly in Rajasthan.
3. In the flood plains of Bengal, people developed inundation channels to irrigate their fields.





Floodplains of Bengal  
↑  
Inundation  
channels



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.
5. The **tankas** are part of the well-developed rooftop rainwater harvesting system and are built inside the main house or the courtyard. This is mainly practised in Rajasthan, particularly in Bikaner, Phalodi and Barmer areas for saving the rainwater. Many houses constructed underground rooms adjoining the 'tanka' to beat the summer heat as it would keep the room cool.





- ❖ Rainwater, or **Palar Pani**, as commonly referred to in these parts, is considered the purest form of natural water.
- ❖ Today, in western Rajasthan, sadly the practice of rooftop rainwater harvesting is on the decline as plenty of water is available due to the perennial Rajasthan Canal, though some houses still maintain the tankas since they do not like the taste of tap water.

Palar Pani





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





## Bamboo Drip Irrigation System



- In Meghalaya, a 200-year-old system of tapping stream and spring water by using bamboo pipes, is prevalent. 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.

