CLASS- 10TH
GEOGRAPHY
CHAPTER- 3
[WATER RESOURCES]

This chapter covers all about 💧🚰resources ; causes of water scarcity; advantages & disadvantages of Multipurpose projects & RAIN 🌧WATER HARVESTING as the alternate of our problems.

TERMS –

1. WATER SCARCITY- water scarcity is the lack of sufficient available water resources to meet water needs within a region more than 1.2 billion people lag asses to clean drinking water.
- LACK OF FRESH /UNPOLLUTED/CLEAN water for basic needs

2.WATER CRISIS- it is a situation where the available potable and unpolluted water within a region is less than that region's demand.

3. DAM - it is a barrier across flowing water that controls and directs the flow, often creating a reservoir , lake or impoundment.

4. WATER CONSERVATION- It stands for the wise use of water.

FACTS –

1. Water is renewable through hydrological cycle.
2. 3/4th of earth's surface is covered with water that's why we call EARTH - THE BLUE PLANET
3. Just 2.5% fresh 💧
4. 70% of this freshwater occurs as Ice sheets; glaciers in Antarctica; Greenland and the mountainous regions of the world and a little less than 30% as groundwater;
5. The sources of almost all freshwater is precipitation;
6. Availability of water resources varies over space and time because of variations in seasonal and annual precipitation

CAUSES/REASONS OF WATER SCARCITY

1. Over-exploitation of water
2. Water Pollution
3. Growing population
4. Increasing demands
5. Unequal access
6. Green Revolution/ Agricultural modernisation
7. Urbanization & urban lifestyle
8. Erratic & uneven rainfall
9. Environmental imbalance
10. Floods
11. Global warming
12. Intensive Industrialization- Industries use water , uses hydroelectric power & also causes water pollution

EFFECTS OF WATER SCARCITY: 1. Lack of access to drinking water
2. Starvation for both people & animals
3. Diseases because of consumption of unclean water
4. Sanitation issues

5. Poverty
6. Hunger
7. Increased Global conflict to get more access to water
8. Food shortages
9. Economic slow down
10. Energy shortages

NECESSITY OF WATER CONSERVATION & MANAGEMENT

A. To overcome erratic & uneven rainfall pattern in India
B. To proper utilisation of existing water resources
C. To tackle with flood conditions
D. To tackle with drought conditions
E. To fulfil the needs of growing population
F. To ensure food security

METHODS OF WATER CONSERVATION-

A. Construction of dams
B. Linking of rivers
C. Rainwater harvesting
D. Creation of awareness

DAMS / MULTIPURPOSE PROJECTS

Jawaharlal Nehru said ," Dams are the temples of modern India".

Q: Why do we call Dams 'MULTIPURPOSE PROJECTS' ?
Ans- A multipurpose project is a large scale hydro project often including dams for water retention , canals for irrigation, water processing and pipelines to supply water to cities and power generation. These often include transportation improvements and industrial growth. They are also developed to reduce the dangers of flooding.

ADVANTAGES-

1. For irrigation
2. For electricity generation
3. Water supply for domestic and industrial uses
4. Flood control
5. Recreational
6. Inland navigation
7. Fish breeding
8. It solves the problem of water scarcity in droughts

DISADVANTAGES/ CAUSES OF OPPOSITION

1. Displaces people
2. Cause of flood
3. Destroys prime agricultural lands
4. Destroys historic sites
5. Destroys aquatic life
6. It effects natural flow causing poor sedimentation & flow and excessive sedimentation at the bottom of the reservoir
7. cause of conflict and movements

8. cause of interstate disputes
9. it creates ecological imbalance
10. increasing gap between the richer land Lords and the landless people
11. soil erosion
12. Land Degradation
13. It induced earthquakes, caused water borne diseases & pest and pollution resulting from excessive use of water

Important Multipurpose Projects in India

S.No.	Multipurpose Project	River	State
1.	Bhakra-Nangal Project	Sutlej River	Punjab → Highest in India. 226 m. Reservoir → Gobind Sagar Lake.
2.	Mandi Project	Beas River	Himachal Pradesh
3.	Damodar Valley Project	Damodar River	Bihar → Based on Tennessee Valley Project USA.
4.	Chambal Valley Project	Chambal River	Madhya Pradesh & Rajasthan (a) Gandhi Sagar Dam (b) Rana Pratap Sagar Dam (c) Jawahar Sagar Dam
5.	Hirakund dam	Mahanadi	Odisha → World's longest Dam → 4801 m
6.	Rihand Project	Son River	Mirzapur-Uttar Pradesh
7.	Kosi Project	Kosi River	North Bihar
8.	Mayurkashi Project	Mayurkashi River	West Bengal
9.	Kakrapara Project	Tapi River	Gujarat
10	Nizam Sagar Project	Manjra River	Andhra Pradesh
11.	Nagarjuna Sagar Project	Krishna River	Andhra Pradesh
12.	Tungabhadra Project	Tungabhadra River	Andhra Pradesh & Karnataka
13.	Shivasamudra Project	Cauvery River	Karnataka → Older River Valley Project in India
14.	Tehri Dam	Bhagirathi River	Uttarakhand
15.	Sardar Sarovar Project	Narmada River	Madhya Pradesh and Gujarat
16.	Mettur Project	Kaveri or Cauvery River	Tamil Nadu

RAIN WATER HARVESTING

- Viable , environmentally & socio-economically better alternative of Multipurpose projects
- our country already had its tradition
- In hilly & mountainous regions : Diversion channels for agriculture are called 'guls' & 'kuls' (Western Himalayas)
- In Rajasthan : 'Rooftop Rain Water Harvesting ' is used to store drinking water
- In arid & semi-arid regions : agricultural fields as rainfed storage structures to moisten the soil

Eg. KHADIN in Jaisalmer & JOHADS in Rajasthan

UNDERGROUND TANKS IN RAJASTHAN

☆ USES - a. For storing water
b. To beat the summer heat
c. To keep the room cool

○ Rainwater or Palar Pani is the purest form of natural water but the first spell isn't collected as it cleans the roof

ROOFTOP RAINWATER HARVESTING

- rooftop rainwater is collected using a PVC pipe; then it is filtered using sand and bricks ; underground Pipe takes water to Sump for immediate usage; excess water from the sump is taken to the well ;water from the well recharges the underground water level; water from the well can be used later on and its commonly practiced in SHILLING and MEGHALYA

BAMBOO DRIP IRRIGATION SYSTEM, MEGHALYA

☆ 200 Year old system

☆ water gets transported over 100S of metres

☆ divert water is distributed into branches, again made and lay out with different forms of bamboo pipes

☆ the flow of water into the pipes is controlled by manipulating the pipe positions

NOTE - TAMIL NADU is the first and only state in India where roof top rainwater harvesting is compulsory and there are legal provisions to punish the defaulters.