Class-X ch-3 [Geography] * Water Resources

• Introduction

→ $\frac{3}{4}$ of Earth Surface is Coverd with water [But only a small part is usable] ??

→ usable part : * Surface Run off * Groundwater

• Renewed by Hydrological Cycle.

Q. Then why water is Scarce ?? 😟??

→ 96.5% of total volume of water is in Oceans and only 2.5% is fresh water.

→ 70% fresh water occurs as ice sheet and glaciers.

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

→ Total renewable water Resources of India are estimated at 1897 sq/km per annum.

→ By 2025, large part will face absolute water scarcity.

Class-X ch-3 [Geography] * Water Resources

- **Water Scarcity - I**

→ Abundance and Renewability of water ⇒ How Can it be Scarce??

⇓

We think - [• It May be in areas of desert and drought affected regions. [x]]

- **Caused Mainly due to**

→ over exploitation, Excessive use and unequal access to water among different group.

^

Talken Marks

Water stress occurs when availibility of water is between 1,000 and 1,600 Cubic Meter per person per year

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- **Water Scarcity** = II

→ quantitative aspect

Cities → Population ↑ → Demand for water ↑ ⊕ food ↑ → More irrigation ↑ ⇓

- Exploitation of water Resources and falling ground water levels.

Urbanisation and Industrialisation

Housing Society !! having their own ground water pumping device !!

Heavy use of water ⊕ Power Consumer [Hydro electricity]

★ 22% of electricity required is produced by Hydroelectric plant.

→ qualitative aspect

quantity is Sufficient but area still suffer from water Scarcity ??

Due to **Bad** quality of water

Polluted due to Domestic and Industrial wastes, chemicals Pesticide and fertilisers used. !!

Hazardous for Human use

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Need for Water Conservation and Managment

→ To safeguard ourselves from :

- Health hazards [qualitative aspect]
- Ensure food security [Growing population]
- Degradation of natural ecosystem
- Water Scarcity will degrade natural resources and Cause Ecological Crisis, effecting our lives negatively.

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· Multi Purpose River Project and Integrated Water Resources Managment - I

→ How do we Conserve and Manage ??

• Historical and Archaeological records of water Conservation :

(i). First Century B.C Sringaverapura had Sophisticated water harvesting System channelling flood water of river ganga.

(ii). Dams, lakes and irrigation System were Extensively built during Chandragupta maurya.

(iii). Evidences of Sophisticated irrigation works have also been found in Kalinga (orissa), Nagarjunakonda (A.P) Bemnur (Karnataka), Kolhapur (Maharasthra)

(iv). In the 11th Century, Bhopal lake one of the largest artifical lakes of its time was built

(v). In 14th Century, the tank in Hauz Khas, Delhi was Constructed by Iltutmish for Supplying water to Siri fort area.

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· Multi-purpose River Project and Intergated Water Resoure Mangement.

→ Dam = It is a barrier across flowing water that obstructs, directs or retards the flow of water, often Creating a reservoir lake or impoundments.

· Based on structure ex: Timber dam · Based on Heights ex: Small scale

→ Why MPP ??

- Irrigation
- Electricity generation
- Flood Control
- Recreation
- Inland navigation
- Fish breeding

= Integrated use of Impounded water

"Temples of Modern India"

- J. L Nehru

· Development of agriculture and village economy.

· Rapid Industrialisation and growth of urban economy.

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· Opposition of Multipurpose projects - I

→ Geographical Reason

- Regulating or damming rivers affect natural flows.
- Excessive Sedimentation at the bottom. Resulting rockier stream beds
- poorer habitats for aquatic life, Submergance of existing vegetation and Soil.

Induced earthquakes

- Unsuccesful in Controlling floods at the time of rainfall.

Ex: Realse of water from dams

- Destruction of property, Soil erosion and land degradation Caused water borne diseases and pests

Class - X ch- 3 [Geography] · Water Resources

· Opposition of Multipurpose projects - II

→ Social Impact

· large Scale Displacement unfair share of Sacrifice

· Irrigation → changed Cropping pattern

- Salinisation of Soil
- Transformed Social landscape
  → [Gap among Rich and Poor↑]

· Social Movement against MPP's,
"Narmada Bachao Andolan" and "Tehri Dam Andolan."

· Same water Resources different use. ?? ☹ ??

→ Agitation by farmers in Gujrat, Sabarmati basin. over water supply priority given to urban areas.

→ Inter State water dispute.

Class - X ch-3 [Geography] · Water Resources

· Rain water Harvesting

→ Economically and Environmentally viable alternative in period of resistance against MPP.

→ Variation in water harvesting system, keeping the local ecological Conditions and their Wanter needs in Mind.

(i). Gul's and Kuls
→ In montanious region of western Himalayas
Impoundment on hill tops.

(ii). khadins and Johads
→ Jaisalmer and Rajasthan
→ In arid area agricultural field were Converted into Rain fed storage structures

(iii). Bamboo drip irrigation System
→ In Meghalaya, 200 year old System of using bamboo pipe to transport water.
→ 18-20 liters of water enters the bamboo pipes and 20-80 drop reachs at the site of plants.

(iv). Inundation channels in flood plains of Bengal.
(v). Roof top Rain water Harvesting.

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· Roof top Rain water Harvesting

→ In arid and semi - arid area of Rajasthan [Bikaner, Phalodhi]

↓

· Had Tankas [underground]

↓

· Connected with Rooftop Rainwater Harvesting.

↓

· Through pipes water is transported to tankas.

Tanka System

⊕ Reliable Source of Drinking water.

⊕ Beat the Summer Heat.

Grendathur Model

→ In, Mysore Karnataka 200 Household have installed Rooftop Rain water Harvesting System.

→ 1,000 mm annual precipitation with 80% Collection efficiency, 50000 liters of water is collected by every household annually.

★ Tamil Nadu is the first state having Compulsory legal provision for Rooftop rain water harvesting.

Class-X ch-3 [Geography] Water Resources

- **Frequently asked Questions**

(i). Water Scarcity ? Causes of it ? Specific Cause ? Need for Conservation and Managment of water resources ?

(ii). Ancient water resource managment System ?

(iii). what is Dam ? Why it is known MPP ? Advantages of it ?

(iv). Reasons for opposition of MPP's ? Problems arised due to MPP's ? [specific]

(v). Various Methods of Rain water harvesting ?

(vi). Rooftop rainwater harvesting ? Grendathur model ?

(vii). Define : Dam, Guls and kuls , khadin and Johads, Bamboo drip irrigation. etc