💧 Chapter 3: Water Resources – CBSE Notes

🔹 1. **Water – A Renewable Resource**

✅ **CBSE Repeated Question**: *How is water a renewable resource?*

- **Water cycle** (hydrological cycle) renews water through evaporation, condensation, and precipitation.
- **Freshwater** comes from rainfall, rivers, lakes, and groundwater.
- Only **2.5% of Earth's water is freshwater**, and most is locked in glaciers or underground.

🔹 2. **Water Scarcity**

✅ **Frequently Asked**: *What is water scarcity? Mention its causes.*

What is it?

- Water scarcity means **shortage of usable freshwater** in an area.
- Can happen **even in areas with high rainfall** if water is **polluted, wasted, or overused**.

Causes:

1. **Over-extraction** of groundwater
2. **High population pressure**
3. **Urbanisation & industrialisation**
4. **Water pollution** from chemicals and waste
5. **Unequal access** between social groups

🔹 3. **Need for Conservation and Management**

✅ **Board Focus**: *Why should we conserve water?*

- Ensure **food and livelihood security**
- Prevent **water conflicts**
- Protect **ecosystems**
- Combat **climate-induced crises**
- Support **health, hygiene, agriculture, and industries**

🔹 4. **Multi-Purpose River Projects**

Fig. 3.2: Hirakud Dam

✅ **Common CBSE Topic**: *What are multi-purpose river projects?*

Definition:

- Dams built for **irrigation, electricity, drinking water, flood control, recreation**, etc.
- Example: **Bhakra Nangal Project** on Satluj → irrigation + hydel power.

Benefits:

- Hydroelectricity generation
- Water supply for agriculture and urban use
- Control floods and droughts
- Boost inland navigation and fisheries

Criticism:

✅ **Board Repeated Focus**: *Disadvantages of large dams*

- Disrupt natural river flow → **loss of aquatic life**
- **Submerges land, forests, and settlements**
- Induces **earthquakes and water-borne diseases**
- **Displacement** of tribal and rural populations
- Affects **sediment flow** → loss of fertile soil

Famous Projects:

- **Sardar Sarovar Dam** on Narmada – covers Gujarat, MP, Maharashtra, Rajasthan
- **Hirakud Dam** – Mahanadi basin (flood control + irrigation)

🔹 5. **Water Disputes in India**

✅ **Often Asked in Map or Descriptive Questions**

- **Krishna-Godavari dispute** (Maharashtra, Andhra Pradesh, Karnataka)
- Due to **water sharing and reduced downstream flow**

🔹 6. **Rainwater Harvesting**

✅ **Long Answer Topic in CBSE**: *Traditional and modern methods of water conservation*

Definition:

- Collection of rainwater from rooftops or ground surface for **reuse or storage**.

Traditional Methods in India:

Region	Method
Rajasthan (Jaisalmer, Barmer)	**Tankas**, **Johads**, **Khadins**
Western Himalayas	**Kuls**, **Guls** (diversion channels)
Bengal	**Inundation channels**
Maharashtra	Lakes & check dams
Delhi (14th century)	**Hauz Khas tank**
Meghalaya	**Bamboo drip irrigation** (200+ year-old method)
Mysuru (Karnataka)	Rooftop harvesting in **Gendathur village** – 50,000 litres/house/year

Rooftop Harvesting:

- Rainwater flows from sloping roof → pipe → underground storage **(Tanka)**.
- First rainfall is discarded to clean dust.
- Widely practiced in **Shillong (Meghalaya)** and **Tamil Nadu** (first state to make it compulsory).

✅ CBSE Focus: Summary of Repeated Topics

Repeated Question Topic	Explanation
Water scarcity causes	Overuse, pollution, unequal access
Dams – Pros & Cons	Multipurpose benefits vs displacement, ecological harm
Rainwater harvesting	Traditional & modern methods in arid/semi-arid regions
Hydrological cycle	Makes water a renewable resource
Water disputes	Krishna-Godavari, Narmada, etc.