



# WARRIOR ONE SHOT SERIES

*Class 10<sup>th</sup> Board*

Geography

Water Resources

By- Aasim Sir



# TOPICS *to be covered*



1 Theory in One Shot

2 Map Work

PyQs

3

4

Water Resources

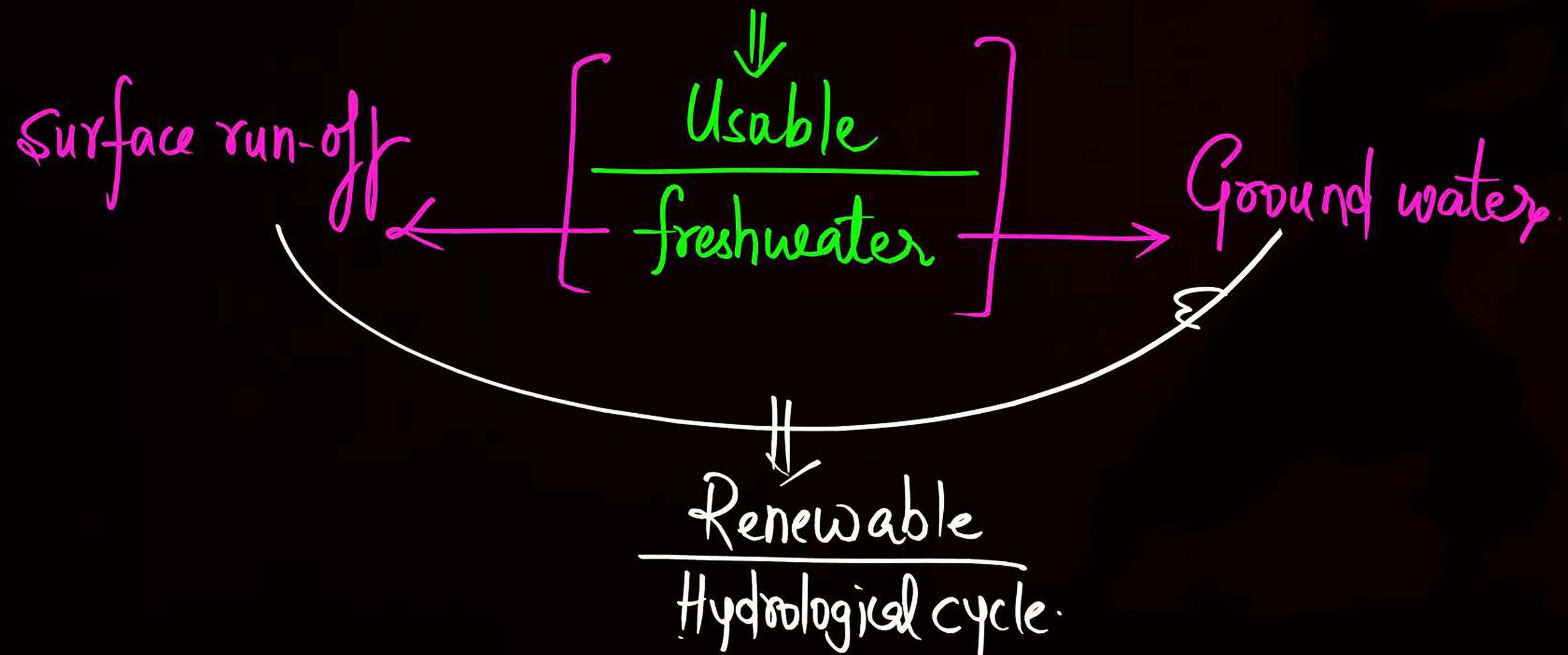
## Locating and Labelling:

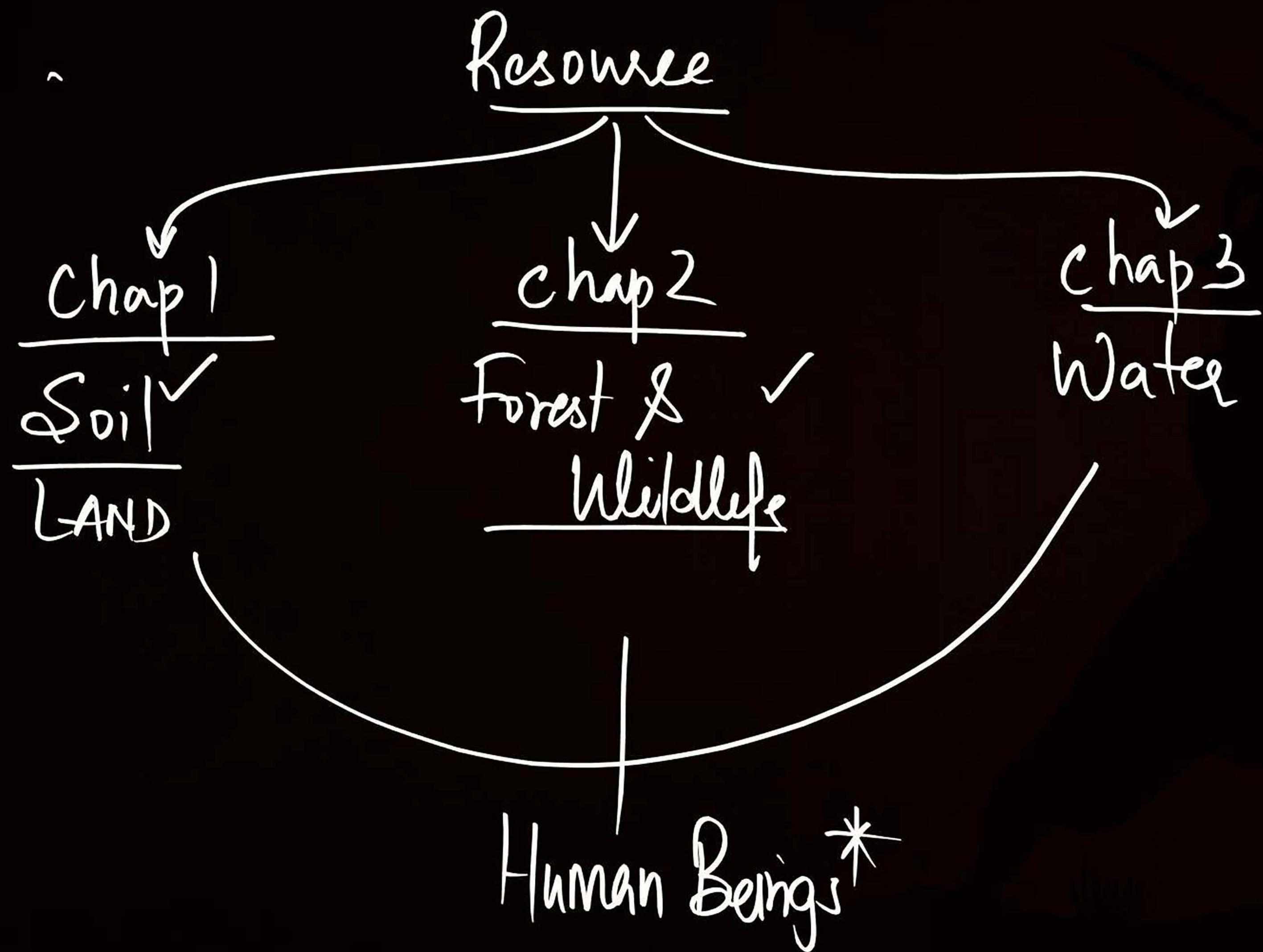
- Salal
- Bhakra Nangal
- Tehri
- Rana Pratap Sagar
- Sardar Sarovar
- Hirakud
- Nagarjuna Sagar
- Tungabhadra



Earth's surface

$\frac{3}{4}^{\text{th}}$  water





# Why is water scarce? (ठोस्टी)

~ 2.5% = freshwater

~ 96.5% = Oceans

1897 km<sup>2</sup>/year

④ Renewable\*  
water in  
India

Ice sheets  
freshwater = 70% [SNOW]  
Glaciers

World

precipitation  
(rainfall) = 9% - India.

Rank = 133

a

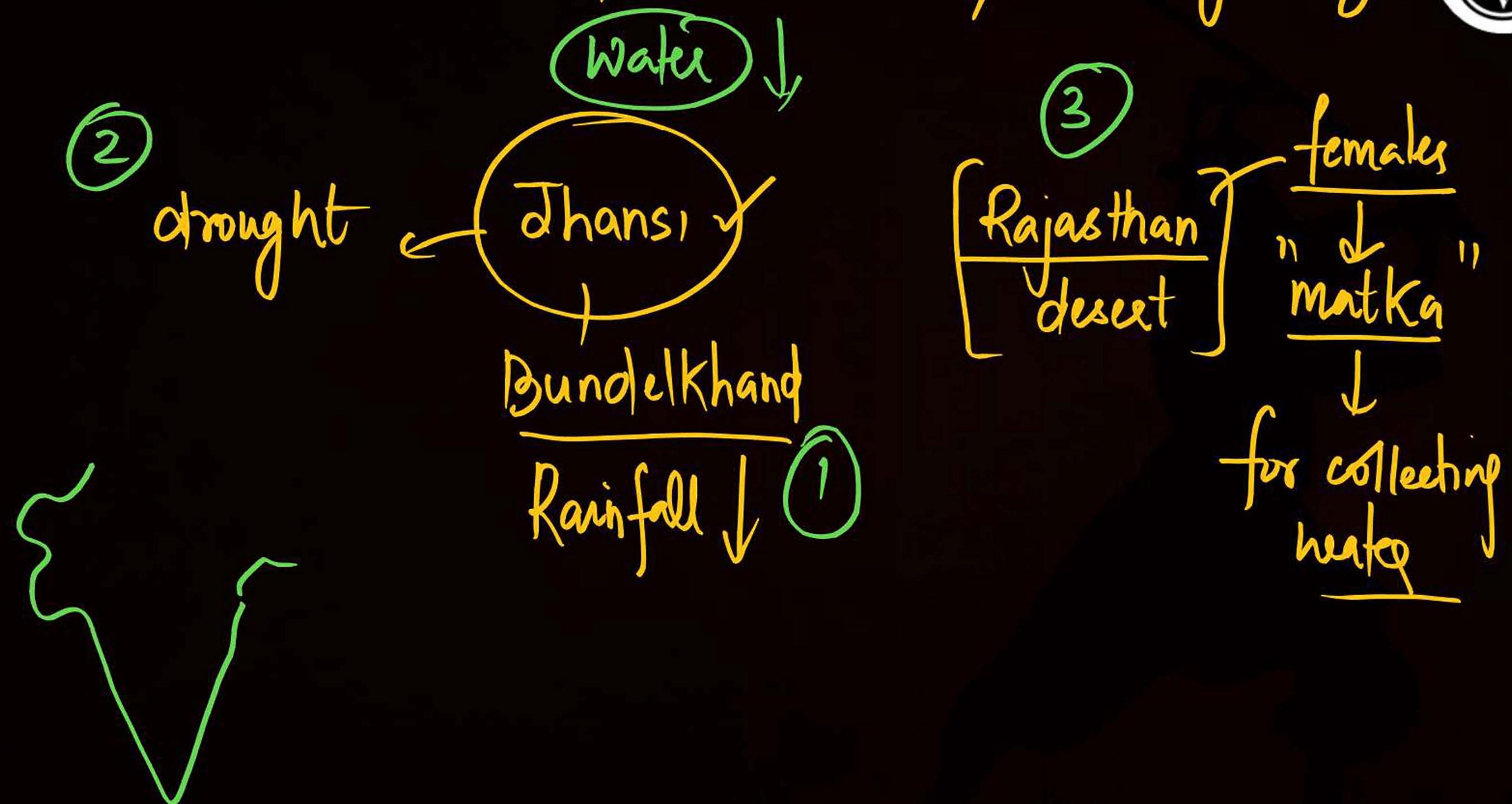
c

b

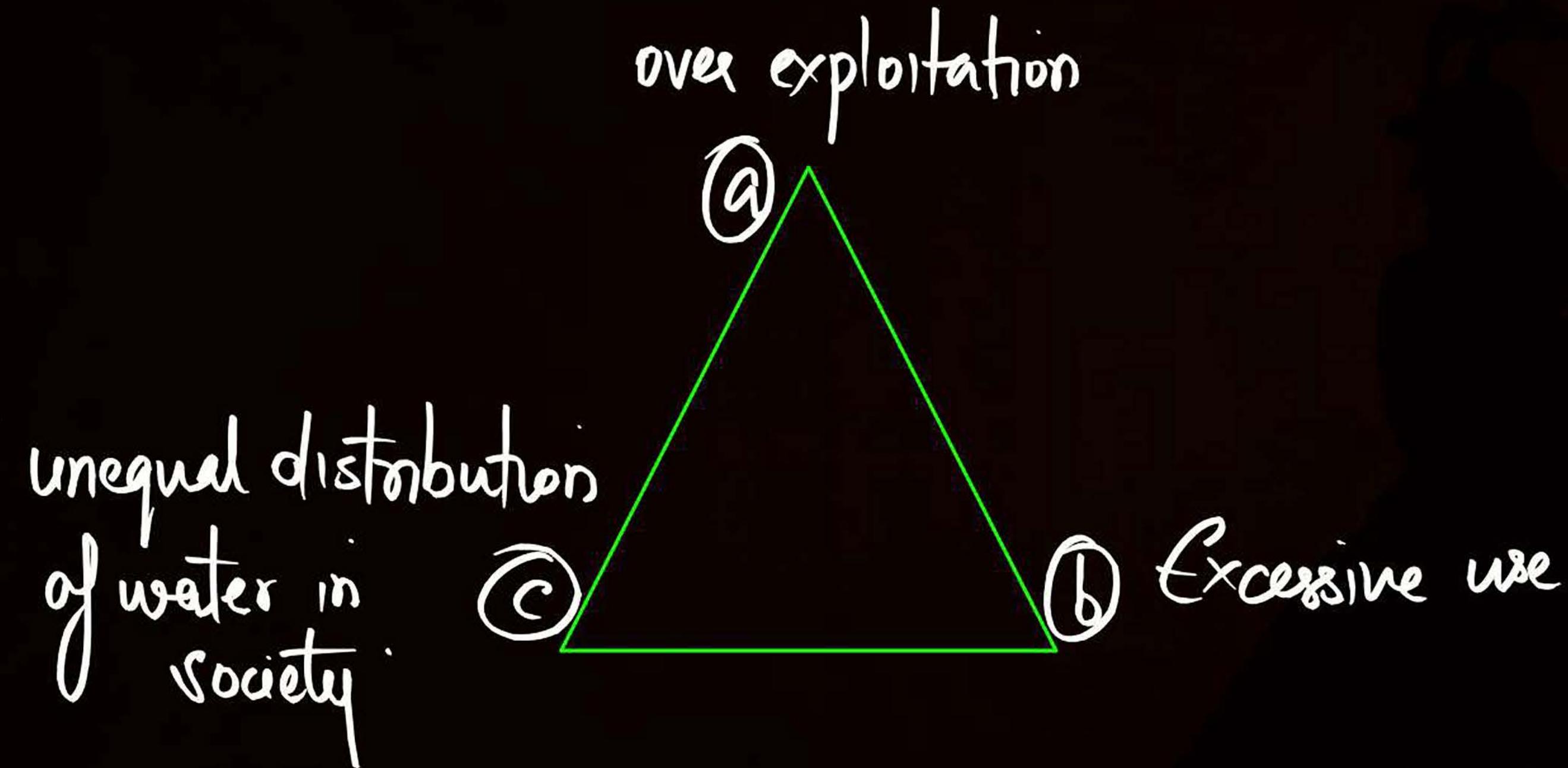
f

Q025 = India: Water scarcity

# WATER SCARCITY & Need for conservation & management of H<sub>2</sub>O



# Why water scarcity?





AMPLE AMOUNT OF WATER — THEN WHY SCARCITY?



### Quantitative Aspect

Paani ↑ → Exploitation ↑

Population ↑ Demand ↑

Domestic ↑ Agriculture ↑  
Irrigation ↑

farmers → Well

↓ Tubewell

Ground Water level ↓

### Qualitative Aspect

Paani ↑ Quality ↓

→ Population ↑, More activities

↓ Industries ↑

Wastes ↑

↓ Dumping in water ↓

→ Chemicals

→ fertilizers

→ pesticides.

### Post Independence

#### Industrialization

factories | Industry

↓ Electricity || Water ↓

#### Urbanization

Society || Colonies

↓ Personal Water Pump

↓ Water Exploit↑

## Need to conserve water

for continuance of  
livelihood.

to protect marine  
life.

to ensure  
food security

to ensure  
better agriculture

to safeguard ourselves  
Health Hazards.

for protecting water to  
degenerate.

safeguarding ecosystem

# MULTI PURPOSE RIVER PROJECTS AND INTEGRATED WATER RESOURCE MANAGEMENT



Flood management = channelling system.

Sophisticated

if 1<sup>st</sup> Century BC  
Allahabad → Singaverapura

\*  
1<sup>0</sup>th century  
Bhopal lake

How to conserve?

ANCIENT RECORDS

dams, lakes

Chandragupta Maurya

⑤  
↓  
embankments.

\* 14<sup>th</sup> century  
Hauz Khas || Iltutmish

Irrigation works

⑥  
⑦  
⑧  
Kalinga (Orissa)  
Nagarjunkonda (A-P)  
Bennur (Karnataka)  
Kolhapur (Maha)

## How we conserve?

### Ancient times

- \* Dams
- \* Reservoir
- \* Lakes
- \* Embankments
- \* Canal for irrigation

### Today

#### \* Multi-Purpose Projects.

used for many purposes



\* Electricity generation

\* Irrigation

\* flood control

\* Recreation

\* fish breeding.

\* water supply  
for domestic

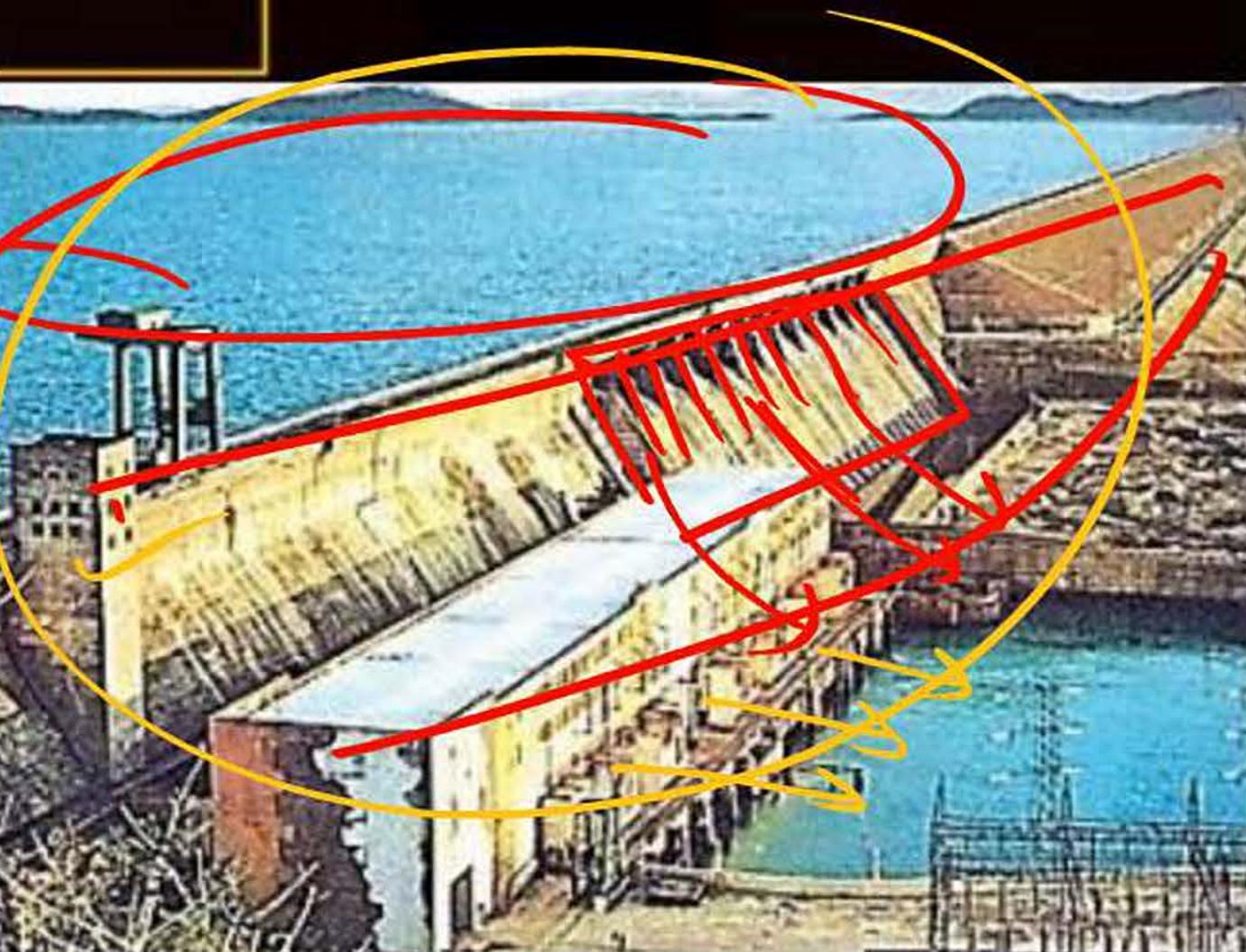
&

Industrial Use

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**.

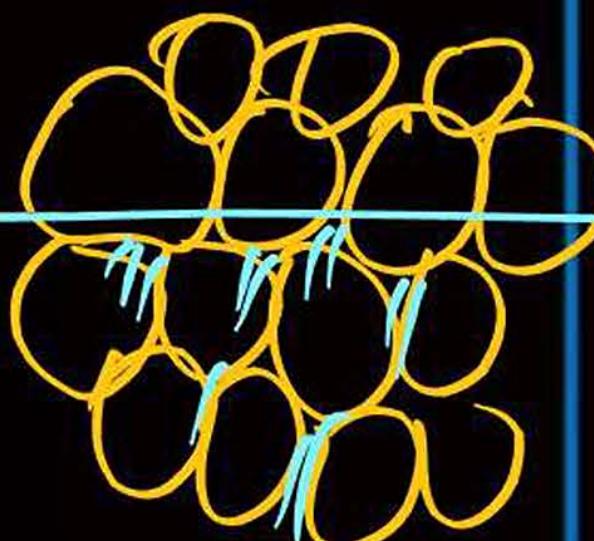
Most **dams** have a section called a **spillway** or **weir** over **which or through which it is intended that water will flow** either intermittently or continuously.

Reservoir  
Dam



Temples of  
Modern India

Jawahar Lal Nehru



Dams are classified according to structure, intended purpose or height.

Small  
low

Large

Irrigation

Hydroelectric Project

Power

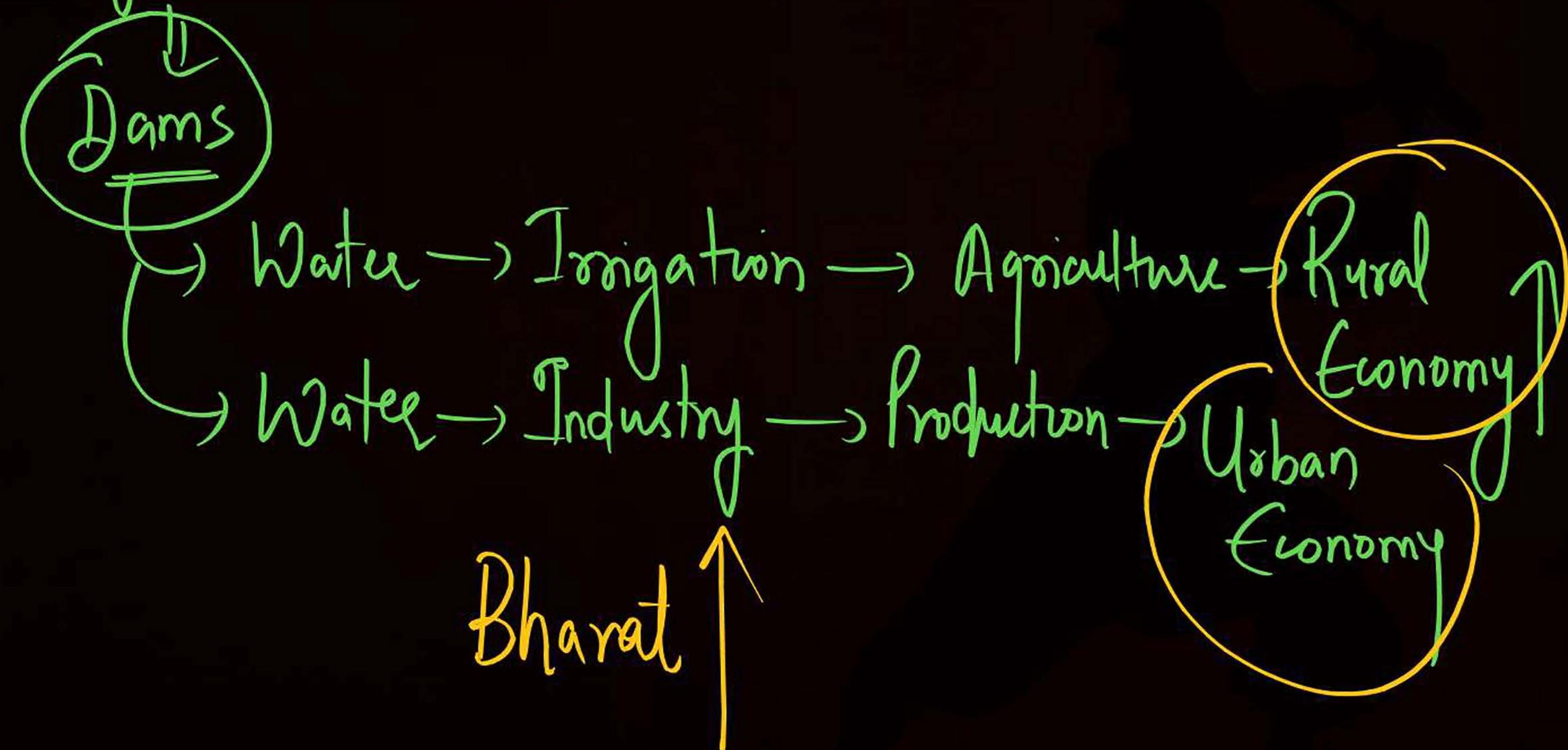
Based on structure and the materials used, dams are classified as timber dams, embankment dams or masonry dams, with several subtypes.

Based on height, dams can be categorized as large dams and major dams or alternatively as low dams, medium height dams and high dams.

- DAMS → Multi-Purpose Projects

Structure Purpose Height  $< \frac{m}{H}$

# Nehru → Temples of Modern India



# Multi-Purpose Projects → Scrutiny: Criticism || Opposition of MPP



1. Flow of River gets effected —
  - (a) excessive sedimentation
  - (b) rockier stream beds
2. Poorer Aquatic life.
3. Submergence of vegetation & soil
4. Large displacement of People (Land owner = Rich ↑, displaced people = poor, divide)  
social

5. changing crop pattern.

6. Salination of Soil

7. Environmental Movements.

e.g. Narmada Bachao Andolan ||

e.g. Tehri Dam.

8. Purpose not fulfilled  
flood control  
Still floods coming.

## Narmada River

↓  
Sardar Sarovar Dam

↓  
Against voice raised  
→ People, farmers

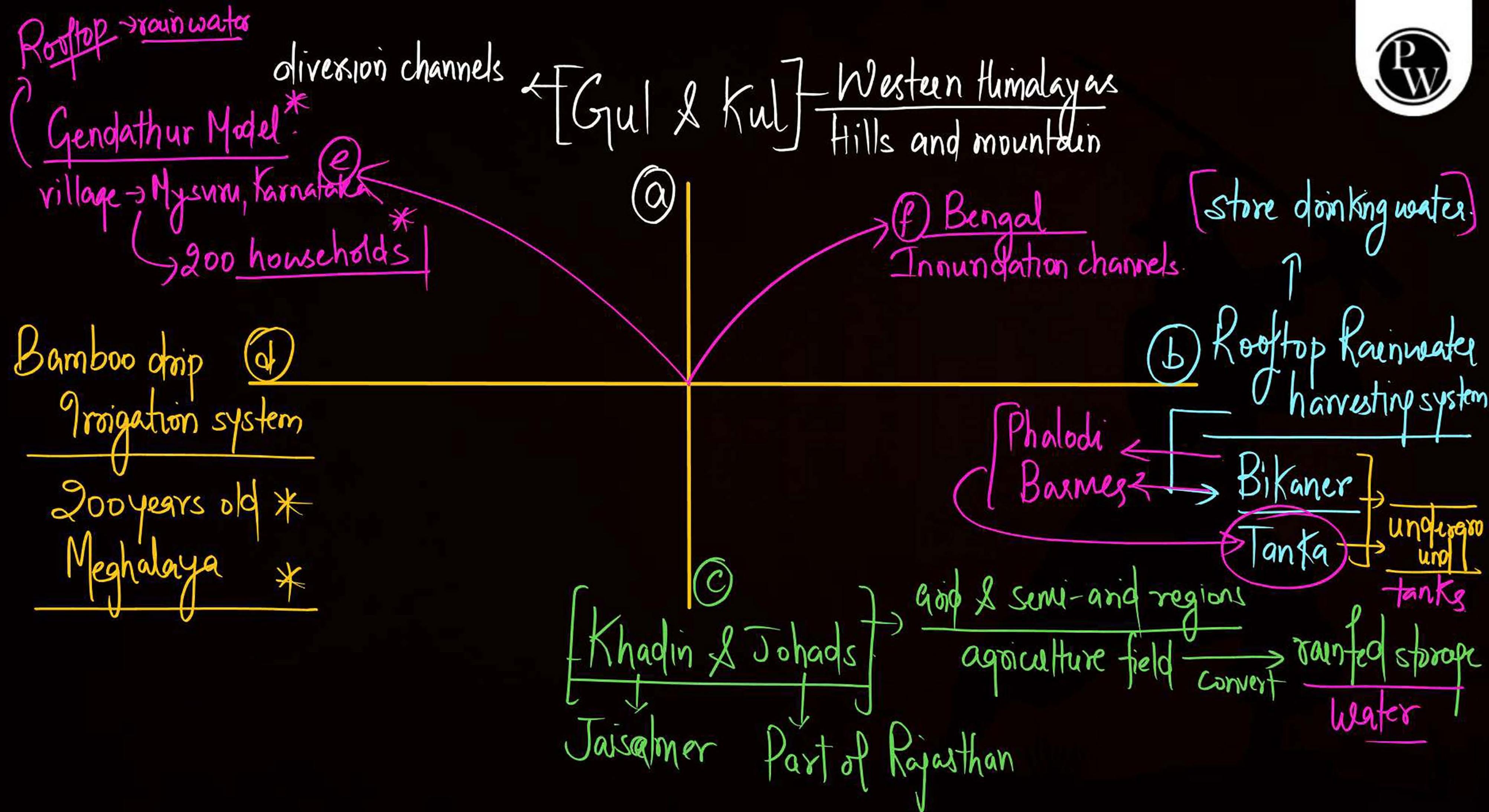
[Narmada Bachao Andolan] or Save Narmada Movement is a Non Governmental Organisation [NGO] that mobilised tribal people, farmers, environmentalists and human rights activists against the Sardar Sarovar Dam being built across the Narmada river in Gujarat. It originally focused on the environmental issues related to trees that would be submerged under the dam water. Recently it has re-focused the aim to enable poor citizens, especially the oustees (displaced people) to get full rehabilitation facilities from the government.

People felt that their suffering would not be in vain... accepted the trauma of displacement believing in the promise of irrigated fields and plentiful harvests. So, often the survivors of Rihand told us that they accepted their sufferings as sacrifice for the sake of their nation. But now, after thirty bitter years of being adrift, their livelihood having even being more precarious, they keep asking: Are we the only ones chosen to make sacrifices for the nation?"

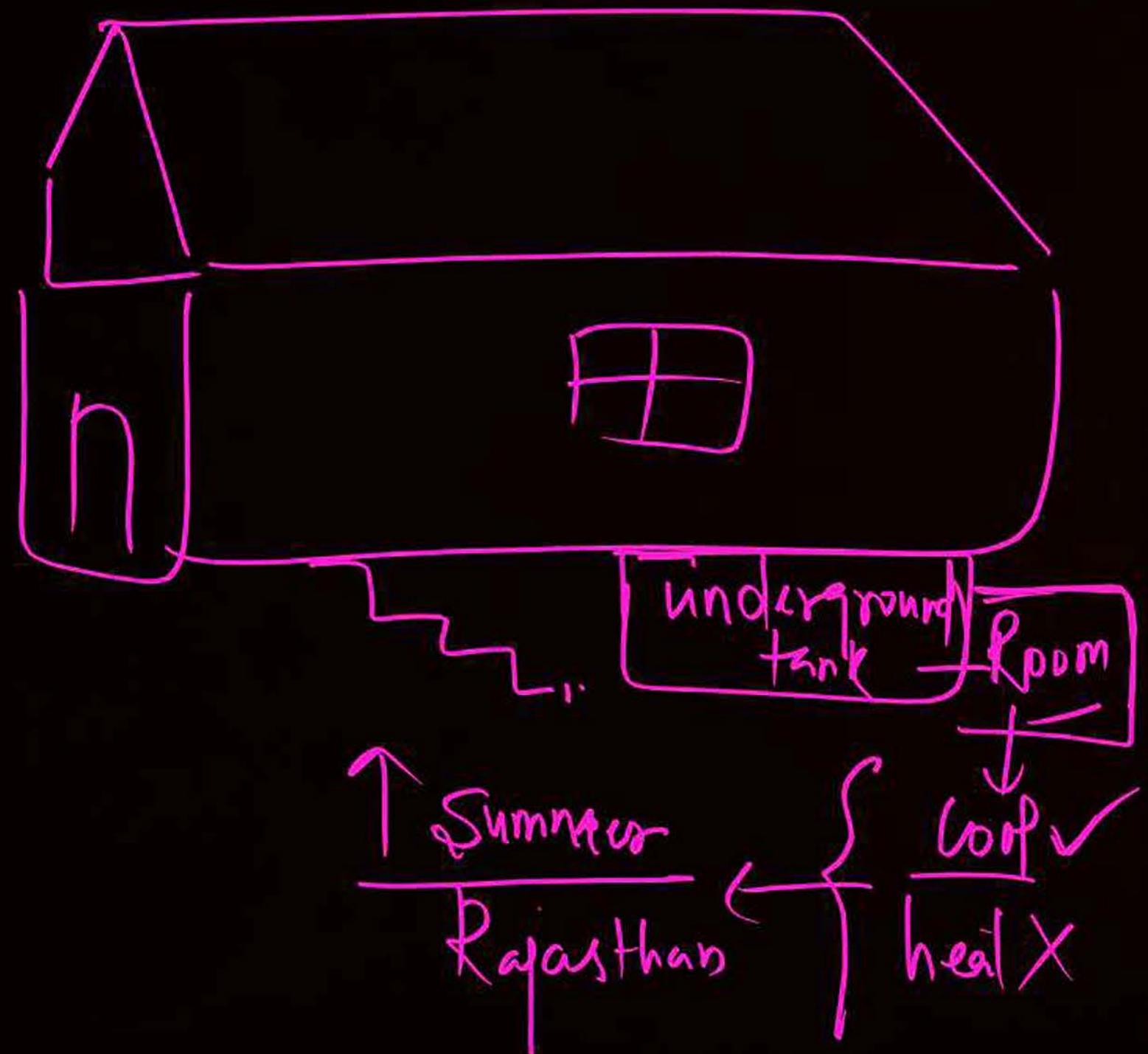
# Rainwater Harvesting

↓  
Why RWH?

- ① Economically Viable
- ② Environment friendly
- ③ Feasible alternative of MPP (Multi-Purpose Project)



'Palar Pani': 'Rainwater'



Fact :-

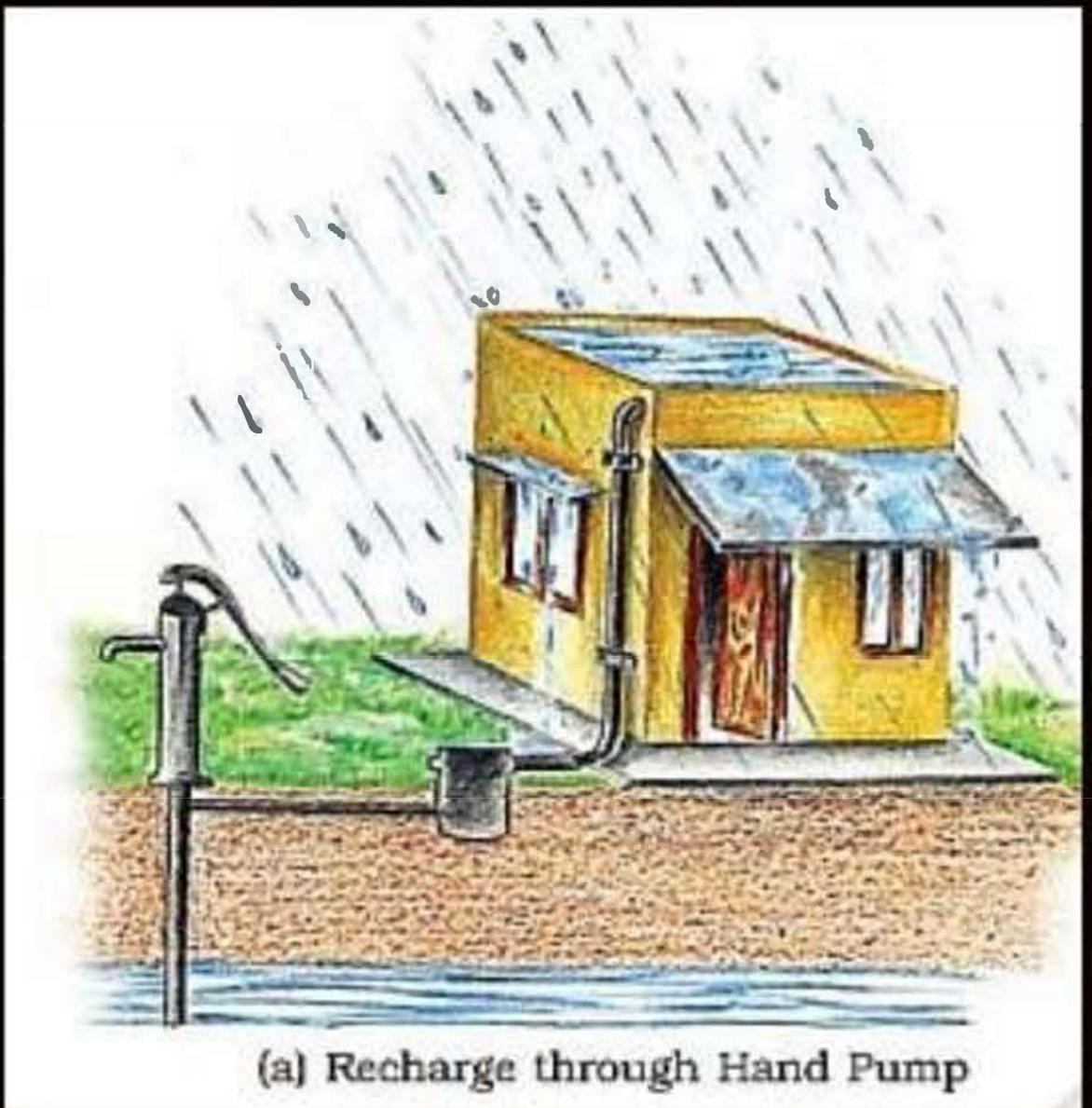
T.N → 1<sup>st</sup> state: compulsory

Rooftop Rainwater  
Harvesting



A kul leads to a circular village tank, as the above in the Kaza village, from which water is released as and when required.

kul



(b) Recharge through Abandoned Dugwell

- ~~Rooftop rainwater is collected using a PVC pipe~~
- ~~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
- Take water from the well (later)

Fig 3.3: Rooftop Rainwater Harvesting

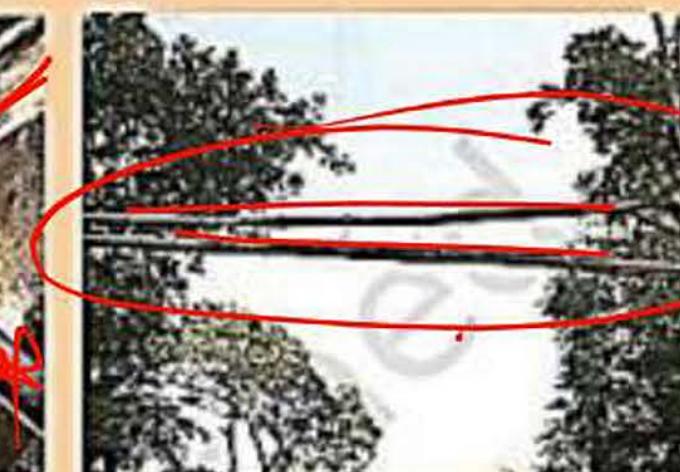
## BAMBOO DRIP IRRIGATION SYSTEM

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.

18-20 — 100's meters



Picture 1: Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches by gravity.



Picture 2 and 3: The channel sections, made of bamboo, divert water to the plant site where it is distributed into branches, again made and laid out with different forms of bamboo pipes. The flow of water into the pipes is controlled by manipulating the pipe positions.

Picture 4: If the pipes pass a road, they are taken high above the land.



Picture 5 and 6  
Reduced channel sections and diversion units are used at the last stage of water application. The last channel section enables water to be dropped near the roots of the plant.

Rainfall

\* Salal dam = Chenab  
(J&K)

\* Bhakra Nangal = Sutlej  
(H.P.)

\* Tehri = Bhagirathi (U.K.)

\* Rana Pratap Sagar = Chambal  
(Raj.)

\* Sardar Sarovar dam =  
Narmada (Guj.)

\* Hirakud = Mahanadi (Odisha)

\* Nagarjunasagar = Krishna  
(A.P. & Telangana)



Tungabhadra dam =  
Tungabhadra  
(Karnataka)  
(Wlice)

JJM(R)

JJM(U)

2021-22

## Jal Jeevan Mission (JJM)

Enable

Goal:-  
↓  
(अर्थ)

\* Every household (Rural) (आश्रमी)

tap connection

assured:- Potable water

: - Piped water (सिल्वर connection)

\* 55 liters / per capita (per person) / per day.  
water

जल ही जीवन है

दृष्टि  
(Turban) X

**QUESTION- 01**

Why do some people oppose dams?

**ANSWER**

Some people oppose dams because this may submerge the land for cultivation and disrupt the lives of the displaced people.

**QUESTION- 02**

Which multipurpose project is built on River Satluj? How this project has led to the development of the country?

**ANSWER**

- ↳ Irrigation
- ↳ Electricity

The multipurpose project built over River Satluj is Bhakra Nangal.

**This project has led to the development of the country in the following ways.**

- The area under irrigation is increased as ample amount of water is released from the dam.
- It has also been successful in harnessing electricity at a large scale.

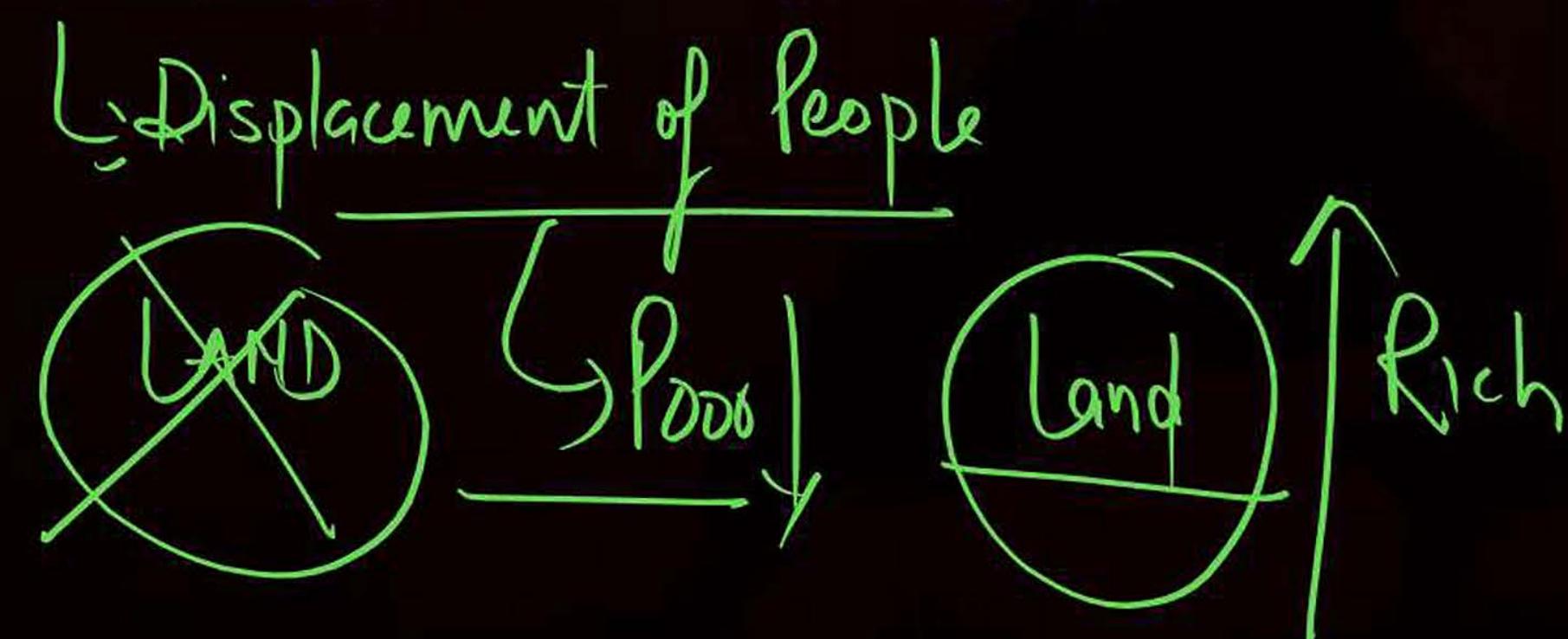
**QUESTION- 03**

Explain any two consequences of changing crop pattern due to irrigation.

**ANSWER**

The following are the two consequences of changing crop pattern due to irrigation.

- It has resulted in ecological problems like salinisation of the soil.
- It has also transformed the social landscape by increasing the gap between the rich landowners and landless poor.



**QUESTION- 04**

Describe the procedure for rooftop rainwater harvesting

**ANSWER**

- Picture

Rooftop rainwater harvesting involves a number of steps as follows.

- Rooftop rainwater is collected using a PVC pipe.
- The collected water is filtered by using sand and bricks.
- Water is taken to the sump through underground pipes for immediate use.
- Excess water is taken from the sump to the well.
- Water in the well recharges the underground water.

**QUESTION- 05**

Explain any three reasons due to which large dams have come under great opposition in recent years.

8 reasons

**ANSWER**

In recent times the dams have come under great opposition because of the following reasons.

- The construction of dams resulted in problems like excessive sedimentation, waterlogging, soil erosion, sudden floods, large-scale deforestation, extinction of species, displacement of communities and loss of livelihood of tribal communities.
- Dams also fragment rivers, making it difficult for aquatic fauna to migrate especially for spawning. Dams that were built to control floods have triggered floods due to sedimentation in the reservoir. Big dams have been unsuccessful in controlling floods at the time of excessive rainfall. The release of water from the dams during heavy rainfall, worsens the situation.
- Multi-purpose projects cause earthquakes, water-borne diseases and pollution due to the excessive use of water.

**QUESTION- 06**

Examine the ill effects of industrialization and urbanization on water resources.

**ANSWER**

After independence, India witnessed intensive industrialisation and urbanization. It posed great pressure on existing fresh water resources in the following ways.

- Large industrial houses and multinational corporations use large quantities of water. They also require power to run themselves. Much of this energy comes from hydroelectric power.
- Urban centres with large and growing population have added to water and energy requirements. The housing societies have underground pumping devices to draw water and meet their water needs.
- A large population not only needs more water but also more food. Hence water resources are overexploited to expand irrigated areas.

**QUESTION- 07**

How have intensive **industrialization** and **urbanization** posed a great pressure on existing freshwater resources in India? Explain.

**ANSWER**

After independence, India witnessed intensive industrialisation and urbanization. It posed great pressure on existing fresh water resources in the following ways.

- Large industrial houses and multinational corporations use large quantities of water. They also require power to run themselves. Much of this energy comes from hydroelectric power.
- Urban centres with large and growing population have added to water and energy requirements. The housing societies have underground pumping devices to draw water and meet their water needs.
- A large population not only needs more water but also more food. Hence water resources are overexploited to expand irrigated areas.

**QUESTION- 08**

Water resources are depleting fast in India and water is a necessity for life. Suggest three measures to conserve water.

**ANSWER**

Water is a resource of utmost importance and waterbodies should not be polluted. Given the present scenario, even the multi-purpose projects are under objection. Three ways to conserve water are as follows.

- Rainwater Harvesting: Rainwater, groundwater and river water can be harvested and used for agriculture purposes and moisten the soil.
- Do not let the faucet run while brushing teeth, bathing or cleaning vegetables.
- Check for leaks in pipes, hoses, faucets and couplings.

**QUESTION- 09**

Why is rooftop rainwater harvesting important in Rajasthan? Explain.

**ANSWER**

Rooftop rainwater harvesting is important in Rajasthan because of the following reasons.

- The rainwater stored in tankas is an extremely reliable source of drinking water when all other sources are dried up.
- Rainwater is considered the purest form of natural water.
- Many houses have constructed underground rooms adjoining the tankas to beat the summer heat as it would keep the room cool.
- There is a lack of perennial rivers in Rajasthan.
- The rainfall is not reliable in this region.

**QUESTION- 10**

"Water is a very important and critical resource in India." Support the statement by explaining any three points.

=

**ANSWER**

Water is a very important and critical resource in India. The following points support this statement.

- Water resources are a significant part of the ecological cycle, which enable the existence of all living beings on the earth.
- Water resources help to carry out several agricultural and agriculture-related activities, thus playing a major role in the development of agricultural production.
- Water also contributes significantly to the development of industry as it supplies water to various water-based and power-based industries.

**QUESTION- 11**

What is palar ~~parti~~? What is its significance in the arid regions of Rajasthan?

Pani

**ANSWER**

The rainwater which is stored in underground tanks is potable water. It is a reliable source of drinking water. It is called palar pani. ✓

In the arid regions of Rajasthan, it is important in the following ways.

- It is the main source of drinking water, when all other sources have dried up.
- It is considered the purest form of drinking water.
- In summer, these tanks would keep the underground rooms, adjoining them, clean.

**QUESTION- 12**

Analyse three major causes of water scarcity in India

**ANSWER**

The following are the reasons for water scarcity in India.

- **Increased demand for water:** The growing population needs more water for domestic purposes and to produce more food. Agricultural purposes: For agricultural purposes, water resources are being over-exploited. More food needs to be grown for the increasing population. Intensive industrialisation and urbanisation: The increasing number of industries need more water and power to run the machinery. Hydroelectric power contributes twenty-two per cent of the electricity produced. The urban centres with large population and modern lifestyles have added to the problem of water scarcity. Over-exploitation of water resources: In some cities, housing societies have their own groundwater pumping devices to meet their needs. This has caused the depletion of water resources in several areas.
- **Bad quality of water:** The water is getting polluted by domestic and industrial wastes, chemical pesticides and fertilizers.

### QUESTION- 13

Describe any three different rainwater harvesting systems practised in India.

### ANSWER

The rainwater harvesting systems practised in India are as follows.

- In hills and mountainous regions, people built diversion channels like guls or kuls for agriculture.
- Inundation canals were built in the floodplains of Bengal, to irrigate the fields.
- In arid and semi-arid regions of Rajasthan, agricultural fields were converted into roomfed
- storage structures that allowed the water to stand and moisten the soil.

## QUESTION- 14

What is a multipurpose river valley project? Give any four objectives of the multi-purpose

## ANSWER

Multipurpose river valley projects generally refer to large dams that serve several purposes in addition to impounding the water of a river. The water blocked is used for various purposes.

The following are the four objectives of multi-purpose river valley projects.

- Irrigation of water deficit areas
- Electricity generation
- Flood control
- Water supply for domestic and industrial uses
- Recreation
- Inland navigation
- Fish breeding

**QUESTION- 15**

Explain three traditional methods of rainwater harvesting in India.

**ANSWER**

The rainwater harvesting systems practised India are as follows.

In hills and mountainous regions, people built diversion channels like guls or kuls for agriculture.

- Inundation canals were built in the floodplains of Bengal, to irrigate the fields.
- In arid and semi-arid regions of Rajasthan, agricultural fields were converted into roomfed
- storage structures that allowed the water to stand and moisten the soil.

**QUESTION- 16**

Why are different water harvesting systems considered a viable alternative in a country like India.

**ANSWER**

Different water harvesting systems are considered a viable alternative in a country like India because of the following reasons.

- In ancient India, along with sophisticated hydraulic structures, there existed an extraordinary tradition of rainwater harvesting system.
- People had in-depth knowledge of rainfall regimes and soil types and developed a wide range of rainwater harvesting techniques to harvest groundwater, rainwater, river water and flood water in keeping with the local ecological conditions and their water needs.
- For example, in the hilly and mountainous regions, people built diversion channels like guls or 'kuls' of western Himalayas for agriculture. Rooftop harvesting is practised in Rajasthan to store drinking water. In West Bengal, people developed inundation channels to divert flood waters to irrigate their fields. In semi-arid and arid regions of Rajasthan, agricultural lands were converted into rain-fed storage structures that allowed the water to stand and moisten the soil like the khadins in Jaisalmer and Johads in other parts of Rajasthan.

**QUESTION- 17**

Why is the need for water increasing day by day? Explain three reasons.

**ANSWER**

The need for water is increasing day by day due to growing population, intensive industrialisation and urbanisation.

- A large population means more water is required not only for domestic use but also for increasing food production. To increase food production, water resources are overexploited to increase the area under irrigation and dry season agriculture. Some of the rich farmers have their own wells in their farms for irrigation to increase food production. This in turn has resulted in lowering of groundwater levels, which affects water availability.
- Multinational companies are the heavy users of freshwater for power, which puts tremendous pressure on water resources. Moreover, multiplying urban centres with large and dense populations and urban lifestyles have not only added to water and energy needs but have further aggravated the problem.
- In cities or housing colonies, they have their own groundwater pumping devices to meet their water needs, resulting in over-exploitation and depletion of water resources in many cities.

**QUESTION- 18**

On which river is the Nagarjunsagar dam built?

**ANSWER**

The Nagarjunsagar Dam is built on the Krishna

**QUESTION- 19**

What is the traditional system of rainwater harvesting?

**ANSWER**

The traditional system of rainwater harvesting is to build underground tanks or tankas for storing drinking water. This system is mainly practised in the arid and semi-arid regions of Rajasthan.

**QUESTION- 20**

Name the river on which Sardar Sarovar dam is built.

**ANSWER**

Sardar Sarovar dam is built on the Narmada.

**QUESTION- 21**

Name the river on which Nagarjunsagar dam is constructed.

**ANSWER**

The Nagarjunsagar Dam is built on the Krishna.

**QUESTION- 22**

Name the river on which Mettur dam has been built.

**ANSWER**

Mettur dam has been built the Kaveri.

**QUESTION- 23**

Explain any four reasons responsible for water scarcity in India.

**ANSWER**

The following are the reasons for water scarcity in India.

- **Increased demand for water:** The growing population needs more water for domestic purposes and to produce more food.
- Agricultural purposes: For agricultural purposes, water resources are being overexploited. More food needs to be grown for the increasing population.
- **Intensive industrialisation and urbanisation:** The increasing number of industries' need more water and power to run the machinery. Hydroelectric power contributes twenty-two per cent of the electricity produced. The urban centres with large population and modern lifestyles have added to the problem of water scarcity.
- **Over-exploitation of water resources:** In some cities, housing societies have their own groundwater pumping devices to meet their needs. This has caused the depletion of water resources in several areas.
- **Bad quality of water:** The water is getting polluted by domestic and industrial wastes, chemical pesticides and fertilizers.

**QUESTION- 24**

What was the main purpose of launching multi-purpose projects in India after independence?

**ANSWER**

Industrialization  
Urbanization

The main purpose of launching multi-purpose projects after independence was that they would integrate development of agriculture with rapid industrialization.

**QUESTION- 25**

Name two techniques of rooftop rainwater harvesting.

**ANSWER**

- Construction of tanks so as to store the rainwater
- Collection of excess rainwater in the dugwell

**QUESTION- 26**

What is the need of rainwater harvesting?

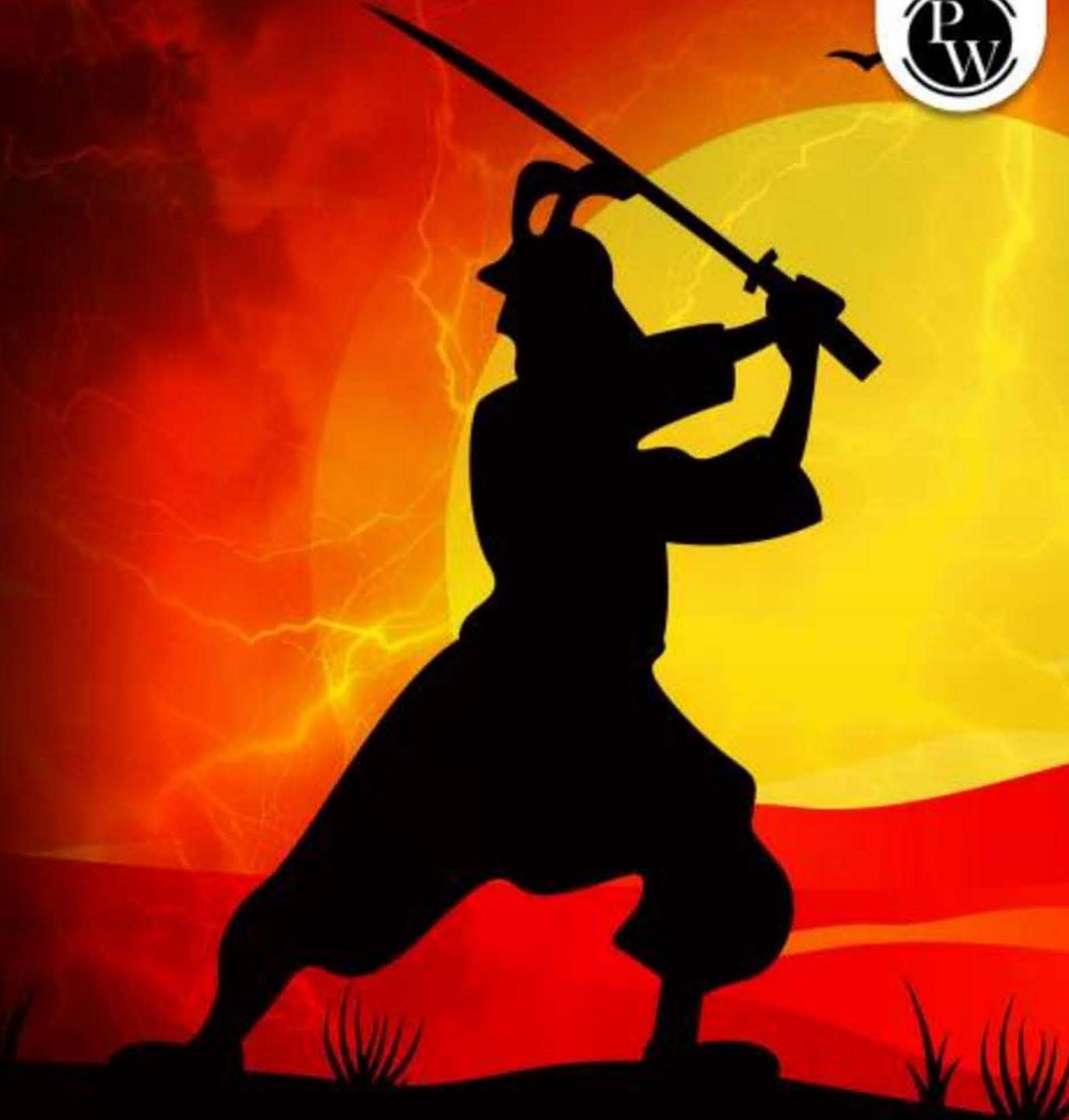
**ANSWER**

Rainwater harvesting is needed to provide it for agriculture, collect drinking water,  
irrigate the fields and to moisten the soil.





Thank  
You



---

Keep Fighting Warriors...