# Geography · GS - I

**What is water stress? How and why does it differ regionally in India?**

| EXAM YEAR | PAPER | SUBJECT |
|---|---|---|
| 2019 | GS - I | Geography |

| MARKS | WORD LIMIT |
|---|---|
| 15 | ~250 words |

## Answer Hint

**Water availability; demand–supply imbalance; rainfall variability; groundwater depletion; population density; agricultural demand; urbanisation; river-basin differences; climate change; water governance**

## Model Answer

### Introduction

Water stress occurs when demand for water approaches or exceeds the quantity or quality of available freshwater, or when access to water becomes unreliable. It may result from physical scarcity, inadequate infrastructure, pollution or unequal distribution.

### Regional Differences in India

#### 1. Arid and Semi-Arid Regions

Rajasthan and parts of Gujarat face low and irregular rainfall, high evaporation and limited surface-water availability. Communities often depend heavily on groundwater and traditional water-harvesting systems.

#### 2. Indo-Gangetic Plains

Punjab, Haryana and western Uttar Pradesh have relatively extensive irrigation infrastructure, but intensive cultivation of water-demanding crops has caused groundwater depletion in many areas.

#### 3. Peninsular India

Parts of Karnataka, Telangana, Maharashtra and Tamil Nadu experience seasonal rainfall, variable river flows and recurrent droughts. Water availability can also be affected by inter-state river disputes.

**4. Himalayan and North-Eastern Regions**

These regions receive substantial precipitation in many areas, but steep terrain, seasonal variability, limited storage and inadequate distribution infrastructure can create local shortages. Glacial changes and extreme weather add uncertainty.

**5. Urban Centres**

Cities such as Bengaluru and Chennai face pressure from population growth, groundwater extraction, pollution and inadequate wastewater reuse. Water stress may occur even where regional rainfall is substantial.

**Reasons for Variation**

Water stress differs because of variations in rainfall, geology, population density, cropping patterns, industrial demand, urbanisation, storage infrastructure and governance. Climate change is increasing uncertainty through heatwaves, droughts and intense rainfall events.

**Conclusion**

India requires region-specific water management, including efficient irrigation, aquifer recharge, rainwater harvesting, wastewater recycling and crop diversification. Equitable access and integrated river-basin planning are essential for long-term water security.

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