Indian Economy · GS - III

Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario.

EXAM YEAR	PAPER	SUBJECT
2020	GS - III	Indian Economy

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Groundwater depletion; rainwater harvesting; watershed management; irrigation efficiency; micro-irrigation; tank restoration; groundwater governance; participatory irrigation; crop diversification; integrated water management

Model Answer

Introduction

Growing demand, irregular rainfall and unsustainable groundwater extraction have increased water stress in India. Improving storage and irrigation efficiency is essential to secure agricultural productivity while protecting water resources.

Measures to improve water storage

- **Rainwater harvesting:** Promote rooftop harvesting, farm ponds and community-level storage structures.
- **Watershed development:** Restore catchments, check dams and contour bunds to slow runoff and improve groundwater recharge.
- **Traditional water bodies:** Desilt and rehabilitate tanks, ponds and stepwells while protecting their catchments.
- **Groundwater recharge:** Use scientifically planned recharge structures based on local hydrogeology.

- **Reservoir management:** Improve sediment management, storage operations and coordination among reservoirs within river basins.

Measures to improve irrigation

- **Micro-irrigation:** Expand drip and sprinkler systems, particularly for suitable crops and water-stressed regions.
- **Efficient conveyance:** Line canals where appropriate, repair leaks and improve field channels.
- **Participatory irrigation management:** Empower Water User Associations to manage distribution and maintain infrastructure.
- **Crop diversification:** Encourage less water-intensive crops in areas where current cropping patterns exceed sustainable water availability.
- **Scientific scheduling:** Use soil-moisture monitoring, weather information and irrigation advisories to avoid unnecessary watering.
- **Groundwater governance:** Monitor extraction, improve aquifer mapping and encourage community-based water budgeting.

Institutional and policy measures

Coordinate surface water and groundwater planning, strengthen local institutions, promote wastewater reuse where safe and ensure equitable distribution. Water pricing and electricity reforms should encourage efficiency without undermining small farmers' access to essential irrigation.

Conclusion

Water security requires both greater storage and more judicious use. Integrated watershed management, efficient irrigation, sustainable cropping patterns and community participation can improve agricultural resilience under conditions of water scarcity.