Environment & Ecology · GS - III

What are the major challenges faced by Indian irrigation system in recent times? State the measures taken by the government for efficient irrigation management.

EXAM YEAR	PAPER	SUBJECT
2024	GS - III	Environment & Ecology

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Irrigation challenges, groundwater depletion, water-use efficiency, climate change, fragmented holdings, canal inefficiency, PMKSY, micro-irrigation, watershed management

Model Answer

Introduction

Irrigation is crucial for India's agricultural productivity, food security and resilience to monsoon variability. Yet India's irrigation system faces serious challenges of resource depletion, inefficient distribution and climate-induced uncertainty.

Body

1. Major Challenges

Water-resource stress: Excessive groundwater extraction has resulted in declining water tables in several agricultural regions.

Low water-use efficiency: Conventional flood irrigation causes substantial conveyance and application losses through seepage, evaporation and runoff.

Ageing infrastructure: Many canals, distributaries and irrigation structures suffer from inadequate maintenance and poor last-mile delivery.

Regional disparity: Irrigation availability remains much higher in some regions than in rain-fed areas.

Climate change: Erratic rainfall, droughts, floods and rising temperatures complicate irrigation planning.

Fragmented holdings: Small and fragmented farms make efficient irrigation infrastructure and mechanisation difficult.

2. Government Measures

- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** promotes expansion of irrigation coverage and improved water-use efficiency.
- **Per Drop More Crop** encourages drip and sprinkler irrigation.
- Watershed-development programmes promote rainwater harvesting, soil conservation and groundwater recharge.
- Canal modernisation and participatory irrigation management improve distribution efficiency.
- Groundwater regulation, aquifer mapping and recharge interventions seek sustainable groundwater management.
- Promotion of crop diversification and water-efficient crops can reduce pressure on stressed aquifers.

Conclusion

Efficient irrigation requires a shift from merely expanding irrigated area towards **“more crop per drop.”** Integrated watershed management, micro-irrigation, groundwater governance, modernised infrastructure and climate-resilient cropping systems are essential for sustainable agricultural water security.

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