

4. Water Crisis and Groundwater Crisis- Geography

India's status as world's rice leader augurs water crisis. India has emerged as the world's largest rice producer and exporter, accounting for 40% of global trade, but this agricultural success is heavily reliant on unsustainable groundwater extraction in states like Punjab and Haryana. To counter the critical depletion of water tables caused by water-intensive paddy cultivation, governments are incentivizing crop diversification through schemes like *Mera Pani Meri Virasat*.

India's Rice Export Boom and the Groundwater Crisis

Introduction

India has achieved a paradoxical milestone- while establishing itself as the world's agricultural powerhouse in rice production, it is simultaneously depleting the vital groundwater resources upon which its future food security depends.

India's Rise in Rice Production and Exports

Global Leadership- In 2025, India overtook China to become the world's largest rice producer.

Export Growth- Rice exports have nearly doubled over the past decade. Exports exceeded 20 million metric tons in the latest fiscal year.

Market Dominance- India currently accounts for approximately 40% of the global rice trade, playing a pivotal role in international food security.

Surplus Production- The nation produces significantly more rice than is required for its domestic population of 1.4 billion, creating a massive surplus available for export.

Groundwater Depletion in Key Rice-Growing States

The cost of this agricultural success is most visible in the "breadbasket" states of Punjab and Haryana, which rely heavily on groundwater irrigation.

Plummeting Water Tables

Past- Approximately 10 years ago, the water table was at ~30 feet.

Present- The water table has dropped drastically to depths of 80-200 feet.

Economic Burden on Farmers- Farmers are forced to incur rising costs for digging deeper borewells and installing more powerful pumps and pipes. This has led to heavy borrowing and increased debt among the farming community.

Critical Status- Large areas now have aquifers classified as "over-exploited" or "critical," where the annual water extraction exceeds the natural recharge rate by 35-57% (2024-2025 data).

Role of Rice Production in Water Scarcity

High Water Footprint- Rice is an extremely "thirsty" crop, requiring 3,000-5,000 liters of water to produce just one kilogram of grain. This is significantly higher than alternative crops like millets.

Green Revolution Legacy- The shift to water-intensive rice-wheat systems in non-traditional rice-growing areas (like Punjab and Haryana) during the Green Revolution has driven massive groundwater extraction.

Groundwater Extraction Rates (2024-2025)

State	Extraction Rate (% of Recharge)	Status
Punjab	156%	Highest in India; Critical over-exploitation.
Haryana	137%	Severe over-exploitation.

Role of Government Policies

Government interventions, while originally intended for food security, now inadvertently incentivize groundwater depletion.

Subsidies and Support

Minimum Support Price (MSP)- MSP for rice has increased by approximately 70% in the last decade, making rice financially attractive.

Input Subsidies- The provision of free or subsidized electricity lowers the cost of pumping water, encouraging farmers to grow water-intensive rice over less thirsty crops.

Policy Inertia- Policies designed during eras of food scarcity are now promoting overproduction for export markets rather than domestic sustainability.

Efforts to Promote Crop Diversification

To counter these challenges, India is actively promoting diversification to improve soil health, conserve water, and enhance farmer incomes.

Crop Diversification Programme (CDP)

Origin- A sub-scheme under the Rashtriya Krishi Vikas Yojana (RKVY) since 2013-14.

Target Areas- Punjab, Haryana, and Western Uttar Pradesh.

Goal- To divert land from paddy (rice) cultivation to alternative crops like pulses, oilseeds, maize, cotton, and nutri-cereals.

National Food Security Mission (NFSM)- Focuses on boosting the production of pulses, coarse cereals, and nutri-cereals to encourage farmers to shift away from rice monoculture.

Mera Pani Meri Virasat Scheme (Haryana)

Objective- A flagship initiative by the Haryana Government to reduce water consumption.

Incentives- Farmers switching from paddy to crops like maize, pulses, cotton, millets, and vegetables receive financial support.

Financial Update (2025)- The incentive amount was increased from ₹7,000 to ₹8,000 per acre in the 2025 budget.

Limitation- The incentive is currently short-term (valid for one season), which limits widespread and long-term adoption by farmers.

Source- <https://www.thehindu.com/sci-tech/energy-and-environment/indias-status-as-worlds-rice-leader-augurs-water-crisis/article70456310.ece>

