

9th INDIA INTERNATIONAL WATER WEEK · 22–26 SEPTEMBER 2026

Global Water Leaders' Plenary · Session GWLPLN-1

One Resource, Three Securities

Theme: Integrated Management of Water, Food and Energy

An address for the international water community on India's nexus pathway — from sectoral silos to climate-resilient, basin-scale integration.

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The question before Global Water Leaders

Water, food and energy are no longer three policy files. They are one operating system for national security, climate resilience and rural livelihoods.



A global conversation

This issue is not restricted to any one basin, country or continent. We all have to come forward to share methods that work across basins, climates and governance systems.



From trade-offs to design

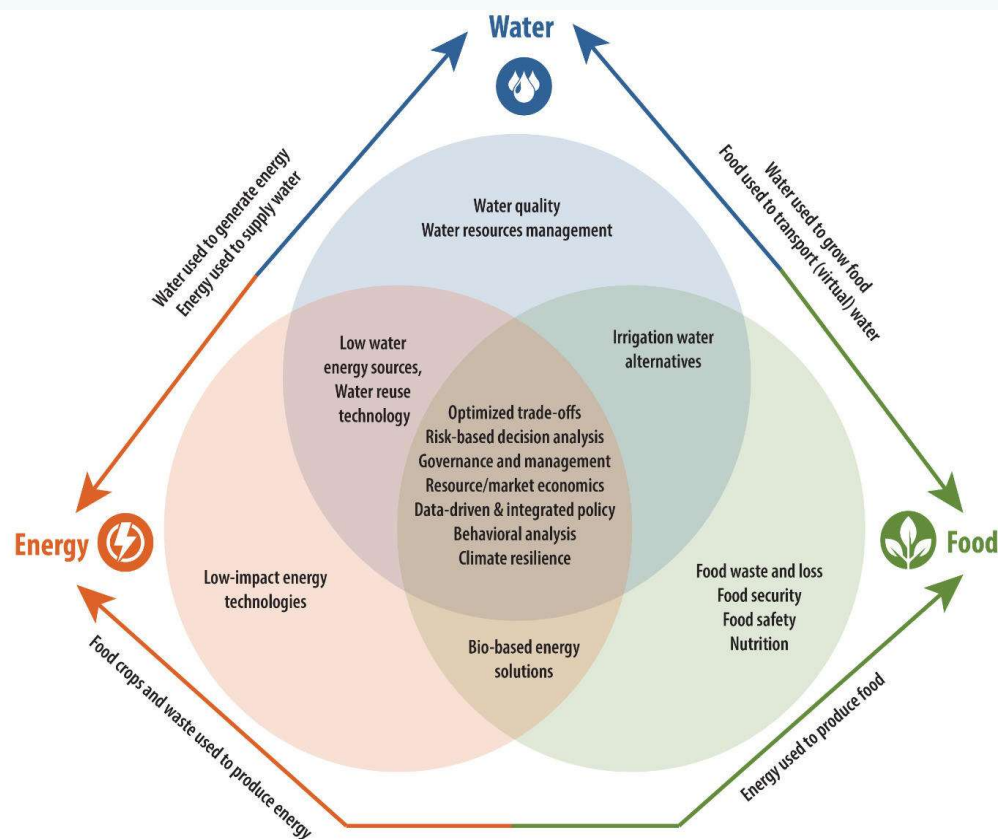
Every extra tonne of grain, every extra megawatt, and every extra litre of drinking water now competes for the same drop.



India's dual mandate

Feed 1.4 billion people, power a growing economy, and stay within a stressed hydrological envelope — simultaneously.

Water · Food · Energy — one loop, three missions



Water → Food

Irrigation takes ~80% of India's freshwater. Rice, wheat and sugarcane dominate the water budget.

Energy → Water

Pumps lift groundwater; treatment plants and canals consume power. Agriculture uses ~16% of electricity.

Water → Energy

Hydropower, cooling of thermal plants, and future pumped storage all depend on reliable water.

Food → Energy

Crop residues and biofuels close the loop — and can compete with food and land if poorly designed.

The operating envelope — latest picture

1,587 m³

**Per capita water
availability (2025)**

Stress threshold: 1,700 m³

~80%

**Freshwater used
by agriculture**

Rice alone ~341 BCM

611 → 807

**Irrigation demand
BCM (2025 → 2050 high)**

NCIWRD / Jal Shakti

~260 TWh

**Agri electricity
(FY 2024–25)**

~16% of national use

50%+

**Non-fossil share of
installed capacity**

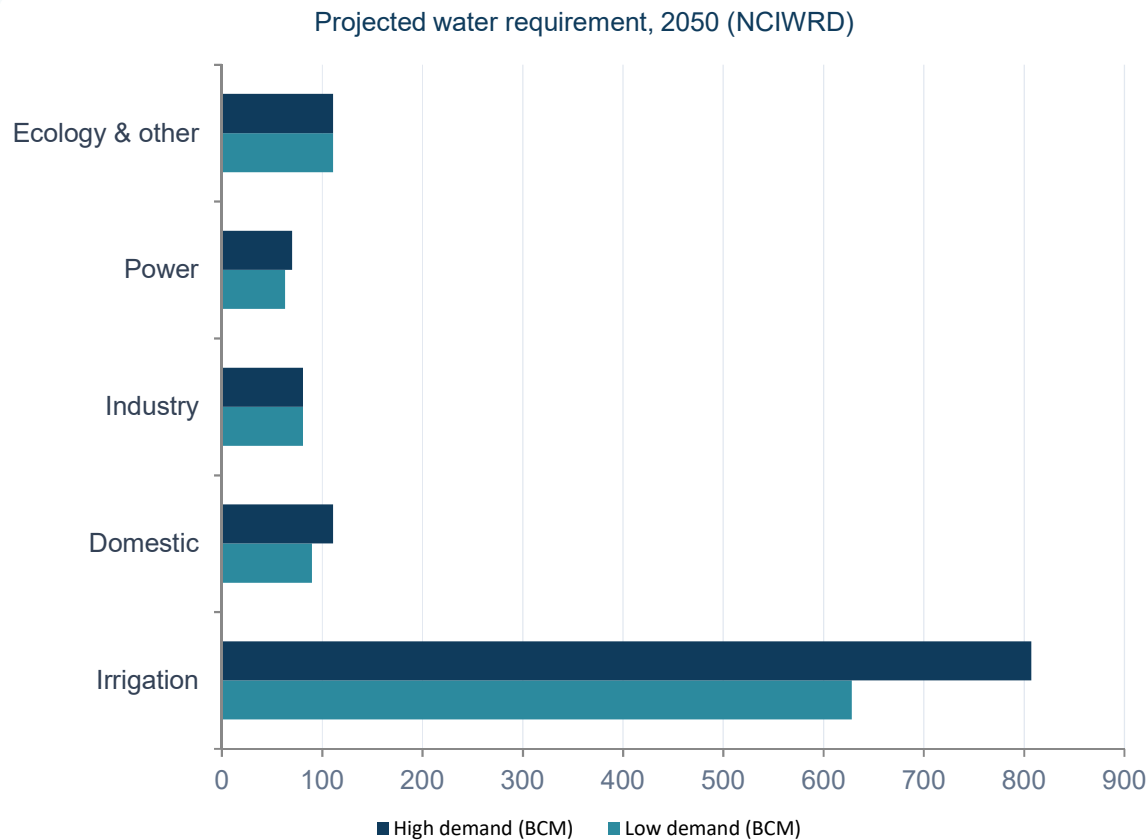
550+ GW total (2025)

81.5%

**Rural tap-water
households (Dec 2025)**

Jal Jeevan Mission

Where the water goes — and where pressure will rise



What the numbers imply

Create appropriate water-storage infrastructure first — new, off-stream and groundwater storage, and reoperation of existing reservoirs — so seasonal surplus can serve lean months.

Agriculture remains the swing variable. A 10% gain in irrigation efficiency then multiplies what storage can deliver.

Power-sector water demand rises with thermal cooling and pumped storage — even as renewables grow.

Domestic demand will grow with urbanisation and Jal Jeevan Mission service levels (55+ LPCD).

Per capita availability falls toward 1,338 m³ by 2050 — still inside the water-stress band.

Two missions that both drink from the same well

~330+ MT



Recent foodgrain production

Record harvests rest on irrigation reliability and groundwater.

2,059 TWh



Generation, FY 2024–25

Third-largest electricity system in the world.

402 MT



Foodgrain demand, 2047–48 (BAU)

NITI Working Group — higher if incomes grow faster.

270 GW



Peak demand (May 2026 heatwave)

Cooling load now collides with irrigation season.

3 crops



Rice, wheat, sugarcane

Together they dominate both calories and the water budget.

PM-KUSUM



Solarising the pump set

Cuts diesel and grid stress — but can raise pumping if unmetered.

The monsoon is no longer a reliable timetable



More extremes, same annual mean

Fewer rainy days, heavier bursts, longer dry spells. Storage and soil moisture must do more work.



Heat meets the pump

May 2026 peak of 270 GW showed cooling and irrigation competing on the same grid in the same week.



Glacier and snowpack risk

Western Himalayan and Indus–Ganga headwaters face shifting seasonal flows that planning models must now treat as non-stationary.



Crop calendars under stress

Sowing windows, pest pressure and evapotranspiration rise together — raising both water and energy intensity of food.

Why integration is still the exception



Siloed mandates

Water, power and agriculture ministries optimise locally. The basin pays the residual cost.



Over-exploited aquifers

CGWB assessments continue to flag the north-western belt; 59% of districts face scarcity conditions.



Data that arrives too late

Real-time soil moisture, canal discharge and pump load are still not one shared picture.



Under-priced electricity for pumps

Flat or free power is a food-security instrument — and a groundwater depletion instrument.



Storage that is not flexible enough

Many reservoirs were designed for a different climate and a different crop mix.



Solar without a water cap

Decoupling energy cost from pumping can increase abstraction unless paired with metering and crop advice.

Programmes that touch more than one node of the nexus



Solar irrigation on the farm — the energy–water hinge.



PM-KUSUM

Solar pumps and feeder solarisation — energy security for irrigation.



PMKSY / micro-irrigation

More crop per drop; the shortest path to a smaller water bill.



Jal Jeevan Mission

Household tap water raises the political value of reliable source sustainability.



Namami Gange & basin missions

Quality, ecology and reuse — the missing half of the water budget.



River interlinking & storage

Spatial and seasonal rebalancing, with environmental due diligence.



Aquifer management

Community water budgets where groundwater is the real reservoir.

Five operating principles for basin managers



One water account

Surface, ground, return flow and reuse on a single ledger — before any new allocation.



Energy as a water instrument

Tariffs, solar hours and feeder scheduling are groundwater policy, not just power policy.



Crop choice is infrastructure

Shifting a district from paddy to less thirsty staples can free more water than a new dam.



Storage with multiple duties

Flood moderation, irrigation, hydropower and environmental flow planned as a portfolio.



Decide at basin scale

River Basin Organisations and inter-state forums must own the trade-offs, not just the minutes.

Co-benefits of treating the nexus as one system



Water saved is water created

Efficiency, reuse and crop shift expand the usable envelope without waiting for new storage.



Lower peak and diesel bills

Solarised, scheduled pumping flattens the evening peak and cuts farm energy subsidies.



More stable harvests

Assured but not wasteful irrigation is the cheapest climate-adaptation tool for food security.



Less conflict at the tail-end

Transparent basin accounts reduce inter-sector and inter-state friction before it becomes a dispute.

A compact agenda this plenary can carry forward



Make the nexus a planning unit

Every major irrigation, hydropower and solar-pump proposal should carry a joint water–food–energy impact sheet.



Price signals with social protection

Move from free power to targeted support plus metered, scheduled supply — protect the smallholder, not the aquifer leak.



Pair solar with water governance

PM-KUSUM-class programmes need mandatory water accounting, crop advisory and community ceilings.



Invest in flexible storage

Review operation of existing reservoirs; add off-stream and groundwater storage where new dams are not the first option.



Share data as infrastructure

A common operating picture: rainfall nowcast, canal flow, groundwater, pump load and crop stage.



Learn across basins and borders

IIWW should seed a standing leaders' working group on nexus metrics, not only a once-a-year conversation.

A CLOSING THOUGHT

**Food security is water security.
Energy security is water security.
Climate security is the discipline
to manage all three as one.**

Thank you.
I look forward to the discussion.

Anupam Prasad · Chairman, Central Water Commission
Ministry of Jal Shakti · Government of India