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Solar on Water: PM Surya Sarovar Yojana and the Land Constraint India Cannot Solve

1 August 2026 ·

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Solar on Water: PM Surya Sarovar Yojana and the Land Constraint India Cannot Solve

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✓ Every fact web-verified against primary sources

The Union Cabinet approved the Pradhan Mantri Surya Sarovar Yojana (PM-SSY) on July 31, 2026, India's first dedicated floating solar photovoltaic scheme, with an outlay of Rs 5,070 crore for 5,000 MW of capacity on reservoirs and industrial ponds.

THE SCHEME, IN NUMBERS

PARAMETER	DETAIL
Name	Pradhan Mantri Surya Sarovar Yojana (PM-SSY)
Outlay	Rs 5,070 crore
Capacity target	5,000 MW floating solar photovoltaic (FSPV)
Storage mandate	Minimum 2-hour storage per project; 10,000 MWh aggregate
Central financial assistance	Rs 1 crore per MW , post-commissioning
Feasibility study support	Up to Rs 50 lakh
Sanctioning window	FY2026-27 to FY2030-31
Disbursement window	Up to FY2032-33
Approved	31 July 2026

WHY FLOATING SOLAR, SPECIFICALLY

Ground-mounted solar in India no longer faces a technology or cost constraint; it faces a **land** constraint. Utility-scale solar requires large, **contiguous**, relatively flat parcels, and acquiring such parcels increasingly runs into competing agricultural use, local resistance, and rising land prices in exactly the high-irradiance regions where solar performs best.

Floating solar sidesteps this by using water surfaces that are already under public or institutional control, typically reservoirs behind existing dams, and industrial ponds.

ADVANTAGE	MECHANISM
No land acquisition	Uses existing water bodies, avoiding the single biggest bottleneck for ground-mounted solar
Reduced evaporation	Panel cover over a reservoir surface cuts evaporative water loss, a genuine co-benefit in water-stressed regions
Higher panel efficiency	Water's cooling effect improves photovoltaic performance relative to hot ground-mounted installations
Existing grid connection	Reservoirs behind hydroelectric dams often already have transmission infrastructure, partly addressing the evacuation bottleneck that plagues remote ground-mounted solar

CONCERN	WHY IT NEEDS STUDY
Aquatic ecology	Reduced light penetration affects photosynthesis in the water column, with unclear consequences for fish populations and reservoir food webs
Thermal regime	Panel cover changes the reservoir's surface heat exchange, with under-researched effects on stratification
Fishing livelihoods	Reservoirs frequently support local fishing communities whose access may be constrained by large floating installations
Maintenance in monsoon conditions	Anchoring and mooring systems face loads that ground-mounted structures do not

THE STORAGE MANDATE IS THE REAL REFORM

The headline is 5,000 MW. The more consequential provision is the requirement that **every project include a minimum of two hours of energy storage**, aggregating to 10,000 MWh.

India's renewable-capacity story has, for a decade, been told in installed-megawatt terms, a metric that systematically overstates real contribution because solar generates only during daylight hours and its output profile does not match demand. The resulting "duck curve" problem, a steep evening ramp when solar drops off precisely as residential demand peaks, is now the binding operational constraint on further solar penetration, not capacity itself.

Mandating storage at the scheme-design stage, rather than treating it as a separate later problem, signals a shift from chasing capacity headlines to addressing grid firmness. It also directly complements the transmission-curtailment problem visible elsewhere in the system, since storage at the point of generation can absorb output that transmission cannot immediately evacuate.

UPSC RELEVANCE

GS Paper 3: Infrastructure: energy; conservation, environmental pollution and degradation; science and technology developments and applications.

Prelims pointers:

- **PM Surya Sarovar Yojana (PM-SSY):** Rs 5,070 crore, **5,000 MW** floating solar photovoltaic (FSPV).
- Mandatory minimum **2-hour storage** per project; **10,000 MWh** aggregate.
- Central financial assistance: **Rs 1 crore per MW** post-commissioning; feasibility support up to **Rs 50 lakh**.
- Sanctioning FY2026-27 to FY2030-31; disbursement up to FY2032-33.
- India's assessed floating-solar potential: approximately **102 GWp** (National Institute of Solar Energy estimate).

★ FACTS CORNER, KNOWLEDGE PEDIA

PM SURYA SAROVAR YOJANA:

Approved 31 July 2026; Rs 5,070 crore; 5,000 MW floating solar.

Mandatory minimum 2-hour storage per project, 10,000 MWh aggregate.

CFA Rs 1 crore/MW post-commissioning; up to Rs 50 lakh for feasibility studies.

WHY FLOATING SOLAR:

Avoids land acquisition, the main bottleneck for ground-mounted solar.

Reduces reservoir evaporation; water cooling improves panel efficiency.

Reservoirs behind dams often have existing grid connections.

OPEN QUESTIONS: AQUATIC ECOLOGY, RESERVOIR THERMAL REGIME, FISHING LIVELIHOODS, MONSOON-SEASON ANCHORING LOADS.

NATIONAL INSTITUTE OF SOLAR ENERGY (NISE) ASSESSES INDIA'S FLOATING-SOLAR POTENTIAL AT APPROXIMATELY 102 GWP.

Sources: Press Information Bureau, Ministry of New and Renewable Energy, National Institute of Solar Energy

Source: Solar on Water: PM Surya Sarovar Yojana and the Land Constraint India Cannot Solve — Ujiyari.com |
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