Redesigning PM-Kusum 2.0

What we must get right

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PM-KUSUM at a glance

Launch March 8, 2019
Objective De-dieselise agriculture, improve energy and water security, increase farmer incomes, and reduce the financial burden of agricultural electricity supply.

THREE COMPONENTS

A **Component A · Decentralised solar power plants**
10 GW of decentralised, grid-connected solar power plants

B **Component B · Standalone solar pumps**
Off-grid pumps, principally replacing diesel pumps

C **Component C · Solarisation of grid-connected pumps**
Individual pump solarisation (IPS) and feeder-level solarisation (FLS)

Overall ambition

~34.8 GW
solar capacity

35 lakh
agricultural pumps

₹34,422 cr
central financial assistance

Under the revised scheme architecture

PHASE I STATUS

Significant progress, uneven delivery

Component A — Weak commissioning — **≈ 22–24% of target**



≈ 2.4 GW installed against the 10 GW target

Component B — Strongest delivery — **≈ 90% of sanctioned**



≈ 11.9 lakh standalone pumps installed against 13.07 lakh sanctioned

Component C — Uneven progress — **Varies by state**

FLS has emerged as a scalable model, but delivery varies widely across states and between IPS and FLS

Geographical concentration: Deployment is concentrated in a few states, particularly Maharashtra, Rajasthan, Haryana and Gujarat, while several other states have struggled to operationalize specific scheme components.

Policy transition

Phase I main period ended 31 Mar 2026; eligible ongoing projects extended.

What the numbers tell us

- Subsidized pump procurement and installation deliver results faster when beneficiary selection, financing and implementation processes are straightforward.
- Distributed generation requires coordination among DISCOMs, regulators, banks, landowners and developers.
- The gap between sanctioned and commissioned projects highlights persistent barriers related to land availability, grid connectivity, financial closure and payment security.
- Differences in state-level performance show that implementation capacity, clear accountability and timely approvals are as important as subsidy support.

What worked, what did not

Component B: a simple model delivered

Pumps became a direct farmer asset: lower diesel costs, daytime irrigation and clear subsidy support up front.

Implication: *Keep a simple, farmer-facing channel for standalone pumps where off-grid irrigation needs justify it.*

FLS: a scalable route on the grid

One plant serves many farmers at lower transaction cost, with professional O&M and better daytime supply and DISCOM visibility.

Implication: *Make FLS a principal pathway where demand, land and grid allow, without assuming it suits every feeder.*

Component A: limits of land-and-PPA

Viability needs land near substations, feasible evacuation, timely approvals, bankable PPAs and realistic tariffs.

Implication: *Move from allocating capacity to preparing investment-ready projects with land, grid, procurement and payment security.*

State execution is as decisive as policy

States differ in subsidy commitments, administrative capacity, DISCOM finances, land systems and regulation.

A uniform central framework cannot compensate for weak implementation institutions.

Core takeaway Preserve the simplicity of Component B, scale well-designed FLS, and redesign the delivery architecture for Component A.

The systemic lessons

Subsidy alone cannot ensure bankability

Project viability depends on realistic tariffs, timely DISCOM payments, credible PPAs and access to affordable finance. Weak payment security increases financing costs and deters investment.

Farmer inclusion requires practical delivery models

Upfront contributions, collateral, paperwork and land-title requirements can exclude smallholders and tenant farmers. FPO-led aggregation, community models and irrigation-as-a-service can widen participation.

Grid readiness must precede deployment

Transformer capacity, network upgrades, metering and power evacuation must be assessed and funded before projects are allocated to avoid commissioning delays.

Long-term services determine agricultural outcomes

Installation is the output; reliable irrigation is the outcome. Weak after-sales service and unclear warranties erode trust.

WHAT SHOULD CHANGE IN PM-KUSUM 2.0?

Shift from allocation-driven to readiness-led, outcome-linked delivery.

- Verify site, grid capacity and approvals before allocation.
- Align tariffs, PPAs, finance and payment security.
- Name one accountable owner for end-to-end delivery.
- Enable smallholders through accessible finance and group models.
- Track uptime, farmer benefits and sustainable water use.

Overall learning PM-KUSUM must integrate project economics, grid readiness, inclusive delivery and long-term agricultural outcomes to translate solar deployment into lasting benefits for farmers

Treat O&M as essential infrastructure through enforceable warranties, service-level agreements, local service networks and accessible grievance-redress mechanisms

A proposed programme architecture

PILLAR 1

Standalone and IPS pumps

- Retain Component B for farms without grid access or with unreliable electricity supply
- Tailor support to farm size, irrigation needs and local grid conditions; promote micro-irrigation where suitable
- Assess groundwater availability and monitor changes in pumping behaviour to ensure sustainable water use

PILLAR 2

Agriculture convergence

- Integrate solar irrigation with micro-irrigation, water conservation and suitable crops, in coordination with agriculture and irrigation departments
- Promote shared ownership, FPO participation and pay-per-use models to improve farmer access
- Reduce documentation and collateral barriers, with suitable participation options for tenant farmers

PILLAR 3

Inclusive participation

- Enable FPOs, cooperatives, panchayats and trusted aggregators to organise farmers and promote shared solar pumps and irrigation-as-a-service models
- Ensure transparent land-lease agreements, fair revenue-sharing and clear allocation of project benefits
- Protect farmers through informed consent, clear contractual terms and accessible grievance-redress mechanisms

PILLAR 4

Storage and flexible use

- Deploy batteries only where evening demand or grid constraints justify them
- Compare storage costs with pump scheduling and demand management; avoid a blanket storage requirement

PILLAR 5

Feeder-level solarisation

- Prioritize farm feeders with suitable grid-connectivity conditions
- Use standard contracts covering grid upgrades, metering arrangements and payment security

PILLAR 6

Agrivoltaics

- Dedicated agrivoltaics component with a proposed 5 GW target
- Support crop cultivation under solar panels through compatible designs, land-rights safeguards, and yield monitoring

Financing, tariffs and bankability

Minimum standard for payment security

Use escrow or dedicated collection accounts, set clear billing and payment deadlines, establish a process for overdue payments, and require firm commitments from state governments and DISCOMs

Transparent project economics

Use competitive bidding based on realistic project costs, including land, structures, grid connectivity, financing, operations, maintenance and insurance. Set tariffs that support project viability and enable financial closure

Access to long-tenure finance

Link PM-KUSUM financing to the Agriculture Infrastructure Fund and provide credit guarantees, pooled finance and standardized loan documents for FPOs and small developers. Track actual loan disbursements to measure access to finance.

Predictable subsidy disbursement

Set clear timelines for eligibility checks, verification, commissioning and payments. Use a digital, time-bound process to prevent payment delays and reduce working-capital pressure

Private capital, fair risk for farmers

Use standardized PPAs, land leases and risk-sharing frameworks. Clearly define responsibilities for land, construction, operations and maintenance, and defaults, while ensuring fair sharing of project benefits

Differentiated support

Provide higher subsidies for smallholders, tenant-farmer groups, remote areas and higher-cost agrivoltaics projects. Tailor subsidy levels to local costs and benefits rather than applying a uniform rate

Five stages, from readiness to scale

STAGE 1

Prepare

- Identify priority states, districts, substations and farm feeders
- Assess land, grid capacity, feeder demand and water conditions
- Publish state implementation plans and readiness criteria

STAGE 2

Standardise

- Establish guidelines for agrivoltaics, feeder solarization, pumps and storage
- Standardize contracts and define implementation responsibilities
- Set financing, subsidy and payment milestones

STAGE 3

Pilot and validate

- Test agrivoltaics across agro-climatic zones and crop types
- Pilot storage where its system value can be demonstrated
- Test FPO-led and irrigation-as-a-service models

STAGE 4

Scale on evidence

- Expand projects meeting technical, financial, farmer and service standards
- Refine project-cost benchmarks using pilot results
- Provide targeted implementation support to weaker states

STAGE 5

Publish dashboard

- Publish a unified performance dashboard
- Review results periodically and revise implementation guidelines based on evidence

Performance dashboard and accountability

DELIVERY: sanctioned, tendered, contracted, commissioned and operational capacity

FINANCE: Programme spending, loan disbursements, subsidy payments and payment delays

Energy: Generation, utilization, grid availability, curtailment and system downtime

FARMERS: Participation by farm size and farmer category, realized savings, additional income and grievance resolution

AGRICULTURE & ENVIRONMENT: Crop yields, groundwater impacts, diesel displacement and independently assessed emissions benefits

Actor	Responsibility
MNRE	Programme design, central support, national reporting
State governments and nodal agencies	Project preparation coordination and implementation
DISCOMs and regulators	Procurement, grid readiness, tariff frameworks, payment discipline
Banks and financial institutions	Time-bound credit assessment and loan disbursement
Developers and vendors	Project delivery, equipment performance, warranties and maintenance
Farmer institutions and independent evaluators	Farmer participation, benefit verification and independent assessment of outcomes

FINAL RECOMMENDATION

Make delivery the measure of success for PM-KUSUM 2.0

Success should be measured by

- **Commissioned and functioning assets**
- **Reliable agricultural energy**
- **Equitable farmer benefits**
- **Financially sustainable delivery**

Set ambitious targets. Build implementation readiness. Measure real outcomes.

THANK YOU

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Adapting proven delivery mechanisms from PM-SGMBY

Digital Architecture

The SGMBY Blueprint: Unified National Portal for end-to-end consumer applications.

KUSUM 2.0 Adaptation: Move from fragmented state nodal sites to a single-window national clearinghouse for developer approvals, land verification, and grid feasibility.

Financing Access

The SGMBY Blueprint: Frictionless, embedded collateral-free loans (~7%) built directly into the application journey.

KUSUM 2.0 Adaptation: Formally link the Agriculture Infrastructure Fund (AIF) to bypass traditional commercial banking bottlenecks for smallholder farmers and FPOs.

Subsidy & Economics

The SGMBY Blueprint: Fixed-rupee subsidy slabs providing immediate financial predictability.

KUSUM 2.0 Adaptation: Establish standardized, transparent project cost benchmarks (including land, grid connectivity, and O&M) to accelerate financial closure for EPCs.