

Implementation Report

Institutional Innovations for PM KUSUM Implementation: A Case of Citizen Service Centers in Uttar Pradesh, India

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October 2026



Acknowledgments

This work was undertaken as part of the **CGIAR Scaling for Impact (S4I) Program**. We gratefully acknowledge the support and funding provided by the **CGIAR Trust Fund** (www.cgiar.org/funders/).

This work was also supported by the Solar Energy for Agricultural Resilience (SoLAR) project funded by the Swiss Agency for Development and Cooperation (SDC). We would also like to thank all the Citizen Service Center operators who attended the training workshop and shared their views, which helped improve this document. We would also like to thank K C Shukla and Laxman Singh for implementation support.

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SUGGESTED CITATION

Khan, Ramsha, Deepak Varshney, Anurag Banerjee, Darshini Ravindranath, Maha Al-Zu'bi, and Inga Jacobs-Mata. 2026. *Institutional Innovations for PM KUSUM Implementation: A Case of Citizen Service Centers in Uttar Pradesh, India*. International Water Management Institute (IWMI).

Front cover photo: Primary Survey Organization

Back cover photo: Primary Survey Organization

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Summary

This report presents evidence from an institutional innovation piloted by the International Water Management Institute (IWMI) under the CGIAR Scaling for Impact (S4I) Program to improve farmer access to subsidized solar irrigation pumps (SIPs) under the *Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan* (PM KUSUM) scheme. Implemented across 32 villages in Uttar Pradesh, the intervention tested whether embedding application facilitation within existing Citizen Service Centers (CSCs) could reduce procedural barriers and translate scheme awareness into concrete farmer uptake.

The intervention focused on components B and C1 of PM KUSUM, which primarily target individual farmers. IWMI designed and delivered a structured capacity-building program for CSC operators, followed by village-level facilitation camps that combined awareness generation with hands-on application support. The approach deliberately leveraged existing digital service infrastructure rather than creating parallel delivery mechanisms.

Across the 32 villages, pre-camp awareness activities reached 6,555 farmers through pamphlets, banners, and village briefings. During the facilitation camps, 844 farmers—including 41 women and 803 men—actively engaged with CSC operators to seek information and clarifications on SIPs and PM KUSUM. Outreach efforts included pamphlet distribution to 603 women and 5,952 men, suggesting that localized, trusted facilitation through CSCs helped reduce access barriers, particularly for groups traditionally underrepresented in scheme uptake.

Beyond awareness, the intervention supported direct application facilitation. CSC operators assisted farmers with document verification, navigation of online portals, and completion of application steps. As a result, 34 PM KUSUM applications were submitted during the implementation period. These outcomes are directly attributable to IWMI's intervention, as PM KUSUM implementation does not include structured village-level application support or capacity building of CSC operators.

In addition to quantitative outputs, early outcome signals included increased farmer confidence in engaging with PM KUSUM, improved trust in institutional processes, and strengthened role clarity and credibility of CSC operators. The report demonstrates that CSC-based facilitation is a low-cost, scalable institutional pathway that can enhance inclusivity and effectiveness in large public programs. The findings contribute to S4I objectives by providing operational evidence on how embedding facilitation within existing service delivery systems can improve scheme access and uptake.

1. Introduction

India's *Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan* (PM KUSUM) scheme represents one of the world's largest public investments in decentralized renewable energy for agriculture, with a target of deploying 4.9 million solar irrigation pumps (SIPs) by 2026. Since the launch of the scheme in 2019, solar irrigation adoption has accelerated rapidly, reaching nearly 2 million farmers by December 2025. Smallholder, marginal, and women farmers continue to face persistent barriers, including limited access to reliable information, low digital literacy, procedural complexity, and high transaction costs associated with application and verification processes.

These barriers are not primarily technological, but institutional. While subsidy and digital portals exist, farmers often lack trusted, localized support systems that can help them navigate eligibility rules, documentation requirements, and multi-stage application procedures. As a result, access to PM KUSUM benefits is shaped not only by scheme design, but by the presence (or absence) of effective last-mile facilitation mechanisms.

Within this context, the International Water Management Institute (IWMI), under the CGIAR-Scaling for Impact (S4I) Program (AoW2) and the Solar Energy for Agriculture Resilience (SoLAR), designed and tested an institutional innovation aimed at reducing these access barriers: embedding PM KUSUM application facilitation within existing grassroots service delivery institutions. Specifically, IWMI piloted a Citizen Service Centre (CSC)-based facilitation model across 32 villages in Uttar Pradesh, training CSC operators to provide structured information support, application guidance, and procedural navigation for farmers interested in accessing subsidized SIPs under PM KUSUM components B and C1.

This intervention moved beyond awareness generation to operational support. CSC operators were trained to assist farmers with document verification, online application submission, and navigation of offline verification steps-directly addressing the procedural and transaction barriers that limit scheme access.

CSCs-established under the National e-Governance Plan-were created to extend last-mile digital access to public services. They deliver a wide range of services, including identity documentation, banking and financial inclusion, welfare schemes, and agriculture-related applications. Although PM KUSUM applications are not yet formally routed through CSCs, their scale and reach-4,45,338 operational centers covering nearly every village or gram panchayat-position them as a critical interface between government digital systems and rural communities (MeitY, GoI, 2026). CSC operators, functioning as village-level entrepreneurs, routinely support farmers with information, documentation, and online processes, making them well suited to facilitate scheme access.

This report documents not only the implementation process, but the measurable outcomes and institutional contributions of this intervention. It focuses on what changed because of IWMI's S4I-supported action, including farmer reach, level of engagement, application facilitation, institutional capacity creation, and the development of a scalable facilitation model embedded within existing public service systems.

The report therefore contributes to S4I objectives by demonstrating how institutional innovations-rather than parallel delivery mechanisms-can improve access, inclusion, and uptake of large-scale public programs. It provides operational evidence on how embedded facilitation models can enhance scheme performance, equity, and scalability within existing governance and service delivery structures.

2. Implementation approach

IWMI designed the intervention around the hypothesis that embedding application support within existing grassroots institutions can improve farmer access to complex, subsidy-based programs more effectively than stand-alone awareness campaigns (Varshney et al., 2026). CSCs were selected as the institutional anchors due to their proximity to farming households, familiarity with government portals, and established trust within rural communities. In addition to facilitating access to government documents and digital services, CSC operators routinely address farmers' queries, positioning them well to support scheme navigation and application facilitation. Operational guidance for implementation is documented in the CSC training manual.

The intervention focused on PM KUSUM components B (off-grid pump solarization) and C1 (individual grid-connected pump solarization), which primarily target individual farmers. The theory of change was that the targeted training of CSC operators, combined with structured village-level facilitation camps, would reduce information asymmetries, lower transaction costs, and increase the likelihood of successful application submission by eligible farmers.

2.1 Selection of villages and CSC operators

The pilot was implemented in 32 treatment villages, randomly selected from a total of 96 villages as part of an ongoing impact evaluation in Uttar Pradesh. CSC operators serving these villages—either located within the village or operating at the gram panchayat level—were identified for participation. CSC identification involved systematic field verification. In each selected village, 10-15 farmers were consulted to identify the CSCs most used for accessing government services. Based on these farmer-identified leads, CSC centers were visited to verify their presence, operational status, and functionality, ensuring that only active and accessible centers were included in the intervention.

2.2 Capacity building of CSC operators

IWMI developed a structured training module to equip CSC operators with the knowledge and skills required to support PM KUSUM applications. The training covered:

- (i) technical features and benefits of solar irrigation pumps;
- (ii) eligibility criteria, subsidy structures, and institutional roles under PM KUSUM Components B and C1;
- (iii) step-by-step application procedures and documentation requirements; and
- (iv) basic operation and maintenance guidance and grievance redressal pathways.

Training was delivered through an in-person workshop on 13 November 2025, attended by CSC operators from 24 of the 32 selected villages. This was followed by a pilot field interaction on 14 November 2025 at a CSC center in *Barabanki*, where operators engaged directly with farmers to understand common queries and application challenges. The sessions emphasized understanding of the solar irrigation technology, the PM KUSUM scheme, and the limits of CSC facilitation, to avoid unrealistic expectations regarding subsidy disbursement, installation, or warranty responsibilities (*Figure 1*).



Figure 1: CSC operators' training in Lucknow and field visit in Barabanki
Left- Training session held for CSC operators in Lucknow on November 13, 2025.
Right- Field visit held in Barabanki on November 14, 2025

2.3 Village-level facilitation camps

Following the training, CSC-led facilitation camps were organized in the 32 selected villages. Prior approval of the village head/sarpanch was taken for organizing camps in the selected villages. Camps were held at village locations (e.g. gram panchayat office facility) and combined awareness activities with hands-on application support. The process followed a series of structured steps:

2.3.1: Camp set-up: Existing digital infrastructure (e.g.: laptop and internet) at the centers, combined with the provision of basic seating arrangements, facilitated farmers' access to the service (*Figure 2*).



Figure 2: Camp set-up at the CSC centers

2.3.2: Farmer engagement and awareness generation: Prior to the scheduled day of the camp, pamphlets were distributed to spread awareness and invite farmers to apply for the scheme (*Figure 4*). Banners were also displayed at a few places in the villages (at least 4) displaying information on the purpose, time and venue of the camp (*Figure 3*). Further, briefing sessions especially with progressive farmers were held for a wider outreach (*Figure 5* and *Figure 6*).

A) BANNER DISPLAY



Figure 3: Display of banners in the villages and at the CSC centers

B) PAMPHLET DISTRIBUTION

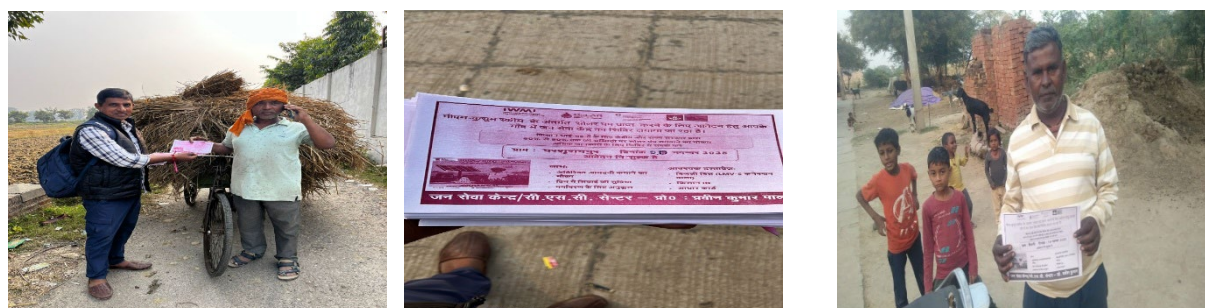


Figure 4: Pamphlet distribution to raise awareness on PMKUSUM and inviting farmers to the camp

C) BRIEFING SESSION FOR FARMERS



Figure 5: Briefing sessions on PM KUSUM for farmers conducted at the CSC centers

D) APPLICATION ASSISTANCE



Figure 6: Application assistance for PM KUSUM B and C1 being provided to farmers at the CSC centers

3.3 Attribution to IWMI's intervention

The outcomes observed are directly attributable to IWMI's S4I-supported intervention. Routine PM KUSUM implementation does not include structured village-level application facilitation or systematic capacity building of CSC operators. Baseline surveys conducted in the study villages under the SDC-SoLAR project indicated that only 4% of farmers were aware of component C1 of the scheme prior to the intervention.

IWMI introduced additional institutional inputs beyond business-as-usual scheme rollout by training CSC operators, designing and operationalizing village-level facilitation camps, and embedding application support within existing service centers. These efforts led to a substantial improvement in farmers' awareness and engagement. Awareness generation activities resulted in approximately 13% of farmers attending the camps (Table 2).

By providing trusted, localized support, the intervention reduced farmers' reliance on informal information intermediaries and helped them navigate procedural requirements. IWMI's facilitative role was therefore central to increasing awareness, enabling farmer engagement, and supporting application completion across the pilot villages.

3.4 Early signals of impact

Beyond quantitative outputs, the intervention generated several early outcomes. CSC operators demonstrated improved clarity in responding to farmer queries, managing expectations related to eligibility, subsidies, and installation timelines. Farmers reported increased confidence in their understanding of PM KUSUM, supported by the availability of a trusted, local facilitation point. Additionally, word-of-mouth dissemination about the camps attracted farmers from nearby villages as well.

These outcomes indicate that embedding application support within CSCs not only improved immediate access to PM KUSUM but also strengthened institutional trust and farmer willingness to engage with digitally mediated public programs.

Table 1: Gender-disaggregated farmer's outreach

Activity	Women farmers (#)	Male farmers (#)	All farmers (#)
Farmer outreach via pamphlet distribution	603	5,952	6555
Attended CSC camps (PM KUSUM and application facilitation)	41	803	844

Table 2: Farmer outreach and turnout in the selected villages

District	Gram Panchayat	Village	Farmer outreach (#)	Farmer turnout (#)
Agra	Changoli	Changoli	246	39
Aligarh	Udaipur	Udaipur	122	28
Aligarh	Jakhauta	Jakhauta	248	25
Amethi	Mawai Alampur	Mawai Alampur	180	18
Bara Banki	Mallawan	Mallawa	200	30
Bara Banki	Khinjhana	Khinjhna	346	28
Bhadohi	Nathaipur	Nathaipur	91	24
Bhadohi	Shripur	Shripur	129	36
Bhadohi	Kusauli	Kusauli	106	30
Bhadohi	Parashurampur N. Umarao	Parashurampur N. Umarao	82	24
Etawah	Bahuri	Bahuri	115	8
Etawah	Rai Nagar	Rai Nagar	234	26
Farrukhabad	Dhir Pur	Dhir Pur	303	12
Farrukhabad	Nibkarori	Nibkarori	509	30
Ghaziabad	Amrala	Amrala	273	30
Ghaziabad	Bhatjan	Bhatjan	177	30
Hamirpur	Siwni	Shivni	270	25
Hamirpur	Pachkhura	Pachkhura	85	27
Kannauj	Phulwari	Anandi Purwa Kalyanpur	195	22
Kanpur Nagar	Agapur	Agapur	161	43
Lucknow	Usarana	Usarna	108	30
Mathura	Gantholi	Gantholi	240	37
Meerut	Pabla	Pabla	215	30
Mirzapur	Ramnagar Sikari	Ramnagar Sikari	236	34
Muzaffarnagar	Kutba	Kutba	220	24
Muzaffarnagar	Mukundpur	Makundpur	199	30
Prayagraj	Auta	Auta	388	21
Saharanpur	Bhataul	Bhataul	289	30
Shamli	Mawi Ahatmal Timali	Mawi Timali Hall	218	25
Sultanpur	Hinduaabad	Hinduaabad	89	31
Sultanpur	Gudra	Gudara	143	12
Sultanpur	Shodhanpur	Shodhanpur	138	5
Total			6,555	844

4. Operational challenges

The implementation of CSC-led PM KUSUM facilitation camps revealed several operational challenges that influenced the pace and management of outreach and application support. One key challenge was high farmer turnout from neighboring villages, particularly in locations serving as the gram panchayat headquarters. While this reflected strong demand for SIPs, it required careful on-site coordination and clear communication to manage expectations and prioritize support for farmers from the selected villages.

A related implementation challenge concerned misperceptions among farmers regarding the role of CSC operators. In several instances, CSC operators were perceived as being responsible for subsidy disbursement, system installation, maintenance, or warranty services-functions that fall within the mandate of implementing agencies. Addressing these expectations required systematic clarification of the CSCs' role as application facilitators, while ensuring continued farmer trust and engagement.

Technical and procedural constraints also affected implementation. Intermittent downtime of the UPNEDA portal for component C1 slowed online submissions and, in some cases, required multiple attempts to complete applications. These disruptions underscored the importance of system reliability and the need for contingency planning when application processes rely heavily on digital platforms.

A further challenge concerned disparities in awareness among farmers. While some farmers arrived with prior knowledge of PM KUSUM and SIPs, many lacked clarity on eligibility conditions, benefits, and procedural steps. CSC operators therefore devoted substantial time to sensitization and explanation, which occasionally slowed application processing but was essential to ensure informed and equitable participation.

These challenges highlight the operational realities of delivering digitally mediated public programs at the village level and reinforce the importance of flexible implementation design, clear role communication, and sustained facilitation support.

5. Implications for scaling and institutionalization

This study demonstrates that institutional barriers-rather than technological limitations-remain a primary constraint to equitable access under large-scale public programs such as PM KUSUM. The IWMI-led intervention shows that embedding structured application support within existing grassroots institutions can effectively address these barriers and translate farmer interest into uptake without creating parallel systems or increasing administrative complexity.

The pilot confirms that CSC-based application facilitation is a scalable and low-cost institutional innovation, well aligned with the objectives of the CGIAR-S4I program. By leveraging existing service delivery infrastructure, the approach improves inclusivity and access while minimizing administrative burden. The results-measured in terms of farmer reach, active engagement, and application submissions-are directly attributable to IWMI's S4I-supported activities and reflect the value added by these targeted interventions in strengthening PM KUSUM implementation.

A key contribution of this work will be the generation of quantitative empirical evidence on the effects of integrating CSCs into the PM KUSUM delivery ecosystem. The ongoing randomized controlled trial (RCT) framework is designed to measure changes in farmer demand for SIPs and the actual uptake attributable to CSC-led facilitation. This evidence will allow IWMI to move beyond descriptive insights and engage policymakers with credible, outcome-oriented estimates of institutional impact.

The findings provide a strong basis for institutionalizing CSCs within the PM KUSUM ecosystem. With 4,45,338 operational CSCs across rural India (MeitY, GOI, 2026) covering nearly every village or gram panchayat and serving up to 150 million farmers, formal integration would allow PM KUSUM to leverage existing outreach channels, local trust, and routine farmer engagement at scale. Even modest improvements in facilitation efficiency could therefore generate system-wide impacts.

The training manual developed by IWMI offers a ready-to-deploy resource for building CSC operator capacity, enabling rapid and consistent rollout of application support without significant additional investment. Together, institutional integration, standard operating procedures, and targeted capacity building provide a practical and scalable pathway for strengthening PM KUSUM delivery.

While this pilot was implemented in Uttar Pradesh, the underlying approach has relevance beyond the state and beyond India. Any context characterized by digitally mediated subsidies, procedural complexity, and existing local service providers can adapt the core principles demonstrated here. Embedding facilitation within trusted institutions offers a pragmatic pathway for improving inclusion, accountability, and impact in public program delivery.



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