

PM-KUSUM Scheme and Sustainable Development in Rajasthan: An Assessment of Renewable Energy and Rural Entrepreneurship

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ABSTRACT

The present study assesses the implementation of the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) in Rajasthan with particular reference to renewable energy, sustainable development and rural entrepreneurship. The study uses secondary data reported by the Government of India as on 30 November 2025. Rajasthan had 5,250 MW sanctioned and 466.75 MW installed under Component A; 1,44,752 pumps sanctioned and 1,15,584 installed under Component B; and 4,02,138 units sanctioned under the reported individual and feeder-level Component C categories, against 1,19,978 solarised pumps. The calculated implementation ratios are 8.89%, 79.85% and 29.83%, respectively. Rajasthan had 2,35,924 beneficiaries and ranked second among States/UTs on beneficiary count in the cited state-wise data, after Maharashtra. Funds released to Rajasthan across 2022–23 to 2025–26 up to 30 November 2025 totalled ₹678.00 crore. The findings indicate substantial reach and implementation in Rajasthan, while also highlighting gaps between sanctioned and installed/solarised capacity and the importance of finance, awareness, infrastructure and technical support.

Keywords: PM-KUSUM, Rajasthan, Renewable Energy, Sustainable Development, Solar Pumps, Rural Entrepreneurship, Farmers.

Introduction

PM-KUSUM connects renewable-energy development with agricultural activity through decentralised solar generation and solarisation of agricultural pumps. Rajasthan is an appropriate state-level context because the state has substantial solar potential and a large agricultural base. A Rajasthan-focused analysis can examine the relationship between sanctioned capacity, actual implementation, beneficiaries and financial releases while also placing Rajasthan's beneficiary reach in the national context.

Objectives of the Study

- To examine the role of PM-KUSUM in promoting renewable energy and sustainable development in Rajasthan.
- To analyse the contribution of PM-KUSUM towards rural entrepreneurship and economic opportunities for farmers in Rajasthan.

Research Methodology

The study is descriptive and analytical and is based on secondary data. The principal quantitative source is the Government of India's state-wise PM-KUSUM progress reported by State Implementing Agencies as on 30 November 2025. Financial data are taken from the Government's state-wise fund-release statement for 2022–23, 2023–24, 2024–25 and 2025–26 up to 30 November 2025. Implementation ratios are calculated by dividing installed/solarised units by sanctioned units and multiplying by 100. The beneficiary ranking is based specifically on the number of reported beneficiaries, and is not an overall performance ranking.

Rajasthan's Position in India

As on 30 November 2025, Rajasthan had 2,35,924 PM-KUSUM beneficiaries in the cited state-wise Government of India data. On the basis of beneficiary count, Rajasthan occupied the second position among the States/UTs shown in the official state-wise figures, after Maharashtra. Gujarat followed Rajasthan with 2,28,504 beneficiaries. This comparison provides national context for the Rajasthan-focused analysis.

Rank	State	PM-KUSUM Beneficiaries
1	Maharashtra	11,21,416
2	Rajasthan	2,35,924
3	Gujarat	2,28,504
4	Haryana	1,80,582
5	Uttar Pradesh	72,417

Source: Government of India, state-wise PM-KUSUM progress as reported on 30 November 2025. Ranking is by beneficiary count only.

Analysis: Rajasthan's 2,35,924 beneficiaries were only slightly above Gujarat's 2,28,504, a difference of 7,420 beneficiaries. This indicates that Rajasthan and Gujarat had broadly comparable beneficiary reach in the cited data, while Maharashtra was substantially higher. The ranking should not be interpreted as an overall ranking of PM-KUSUM performance because beneficiary count does not capture installed capacity, financial efficiency, energy generation, farmer income or environmental outcomes.

Component-wise Implementation in Rajasthan

Indicator	Component A	Component B	Component C
Sanctioned	5,250 MW	1,44,752 pumps	4,02,138 units*
Installed / Solarised	466.75 MW	1,15,584 pumps	1,19,978 pumps
Implementation ratio	8.89%	79.85%	29.84%
Gap	4,783.25 MW	29,168 pumps	2,82,160 units*

*Component C denominator combines the 2,138 sanctioned IPS and 4,00,000 sanctioned FLS figures reported in the official table; therefore the calculated ratio is used only as a broad analytical indicator.

Analysis of Component-wise Progress

- Component A: Against 5,250 MW sanctioned, 466.75 MW had been installed, giving a calculated implementation ratio of 8.89%. The gap of 4,783.25 MW indicates that a large proportion of sanctioned capacity had not yet been installed by the reporting date.
- Component B: Out of 1,44,752 sanctioned pumps, 1,15,584 were installed. The calculated ratio of 79.85% is considerably higher than the corresponding ratios for Components A and C. This indicates comparatively extensive physical implementation of standalone solar pumps in Rajasthan.
- Component C: Against 4,02,138 combined sanctioned units in the reported IPS and FLS categories, 1,19,978 were solarised. The calculated ratio is 29.84%. Because IPS and FLS are distinct implementation models, the ratio should be read as a broad combined indicator.

Financial Analysis

The reported funds released total ₹678.00 crore. The largest release was ₹295.20 crore in 2024–25, representing 43.54% of the four-period total. The 2023–24 release was the lowest at ₹49.41 crore (7.29%). The variation indicates that releases were uneven across years. Since the scheme is

demand-driven and releases depend on demand and implementation conditions, annual variation should not by itself be interpreted as a performance ranking.

Beneficiary Analysis

The reported 2,35,924 beneficiaries place Rajasthan second in the cited state-wise beneficiary comparison. However, beneficiary count is a reach indicator rather than a direct measure of economic impact. A farmer receiving a solar pump, participating in solarisation or being associated with a project may experience different levels of benefit. Future analysis should therefore combine beneficiary counts with capacity, energy savings, income effects and system performance.

Rural Entrepreneurship and Economic Opportunities

PM-KUSUM can create rural entrepreneurial opportunities through decentralised solar generation, solar-pump use, maintenance services and applicable land-leasing arrangements. Component A can create opportunities connected with renewable-energy generation; Component B can reduce dependence on diesel irrigation; and Component C can support solarisation and associated technical services. These mechanisms can strengthen the connection between agriculture and rural renewable-energy enterprise. Government-stated potential income or savings figures should be treated as illustrative or conditional, not as guaranteed returns for every Rajasthan farmer.

Sustainable Development Analysis

The scheme can be linked to the environmental, economic and social dimensions of sustainable development. Environmentally, solarisation can reduce dependence on conventional energy sources. Economically, farmers may experience energy-cost savings and, under applicable arrangements, income opportunities. Socially, wider access to renewable-energy infrastructure can support participation of rural agricultural stakeholders. The long-term sustainability of these outcomes depends on installation quality, operation, maintenance, finance and technical support.

Key Findings

Rajasthan ranked second by reported PM-KUSUM beneficiary count in the cited state-wise data, after Maharashtra.

- Component B recorded the highest calculated implementation ratio at 79.85%.
- Component A recorded an 8.89% installed-to-sanctioned ratio, leaving a large capacity gap.
- Component C recorded a broad combined implementation ratio of 29.83%.
- Rajasthan had 2,35,924 reported beneficiaries as on 30 November 2025.
- Reported funds released across the four stated periods totalled ₹678 crore, with the largest annual release in 2024–25.
- PM-KUSUM has potential to support sustainable agricultural energy use and rural economic opportunities, but secondary data do not establish individual farmer income effects.

Suggestions

- District-wise monitoring should separately track sanctioned, installed and operational capacity.
- The sanctioned-to-installed gap under Components A and C should be examined through project-level monitoring.
- Farmer facilitation should focus on awareness, financing, documentation and technical support.
- Future studies should measure actual energy savings, irrigation reliability and farmer income effects.
- Local maintenance and after-sales service networks should be strengthened.
- Regular state-wise and district-wise publication of component-level outcomes would improve transparency and research quality.

Limitations

The study uses secondary official data and does not include a primary survey. It therefore cannot directly estimate farmer-level income, satisfaction or behavioural outcomes. The beneficiary ranking is limited to beneficiary count and should not be interpreted as an overall scheme-performance

ranking. Component C combines different implementation models in the official reporting, so its calculated combined ratio is only a broad analytical indicator.

Conclusion

PM-KUSUM has achieved substantial reach in Rajasthan, with the state occupying the second position by reported beneficiary count in the cited national comparison. The component-wise analysis shows that implementation is strongest for standalone solar pumps, while significant sanctioned-to-installed gaps remain in Components A and C. The scheme therefore provides both an established implementation base and substantial scope for further deployment. From a sustainable-development perspective, it can support cleaner agricultural energy use; from a rural-entrepreneurship perspective, it can create potential income, cost-saving and service opportunities. Future research should move beyond beneficiary and installation counts towards measurable farmer-level economic and environmental outcomes.

References

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