Waiting To Take Off-The PM-KUSUM Story

By Saur News Bureau / Updated On Thu, Apr 20th, 2

Highlights :

India's most ambitious scheme for solar energy in rural India is beset with delays and misses

Satveer Singh is a 51-year-old wheat farmer based at Mohanpura village in the Sri Ganganagar district of Rajasthan. Around a year ago, he enrolled online with the state government under the Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM-KUSUM) scheme. As a result, the solar developers installed a seven-Horse Power (HP) solar irrigation pump within the next few months on his agricultural land. Singh told Saur Energy that his cumbersome task of irrigating his fields has become less arduous since then.

“Earlier, I used to use a diesel-operated irrigation pump for which I had to depend on the local market and shell out hard cash every month to irrigate my land. It was the tale of many of the farmers here. Many were also dependent on erratic grid-based electricity, which did not allow them to irrigate their land at their preferred time. The solar pump under PM-KUSUM has tackled all these bottlenecks in irrigation. We are now neither dependent on the grid nor diesel but irrigate our land at any time during the day,” he said.

Singh said that around 35 percent of the farmers in his village have opted for the solar pumps under the scheme, and the numbers are only expected to escalate in the coming days. However, the spread of the scheme has not been very successful in many other Indian states, with certain states like Bihar and other northeastern states yet to jump onto its bandwagon.

The Indian government in 2019 rolled out the ambitious PM-KUSUM scheme. The scheme, tailor-made for the farmers, was envisioned to increase farmers’ income, reduce dependency on diesel to run irrigation pumps, ensure water security for the farmers by leveraging solar energy, solarise the grid-

connected pumps and increase the adoption of solar energy in the sector.

The government made a cumulative target of adding a new solar capacity of 25,750 MW by 2022. It was planned to be done through three different components–Component A, Component B, and Component C.

Component A was designed to use farmers' barren, fallow, pasture and marshy lands to install decentralised ground or stilt-mounted solar power plants with a 10,000 MW target. On the other hand, under the Component B of the scheme, the Ministry of New and Renewable Agency (MNRE) planned to install 20 lakh standalone solar pumps in an off-grid mode without storage where the farmers can use the same during daytime to irrigate their land.

Under Component C of the scheme, the ministry planned the solarisation of 15 lakh grid-connected agricultural pumps. The government planned to do it with individual pump solarisation and feeder-level solarisation. While Component B was meant to be used and managed by the farmers alone after setup, Component A and Component C required the participation of farmers with the local electricity distribution companies (discoms).

In what seems like a flight of fancy now, in November 2020, the scheme target was increased to 30,800 MW of solar power capacity. By the end of March 2023, the

scheme's components had achieved 2%, 23% and 1% of sanctioned capacity. Even accounting for the slow pace of government bureaucracy and technical requirements, this is abysmal.

Under Component A, 99.95 MW solar capacity was installed out of a sanctioned capacity of 4913 MW. Around 2.18 lakh pumps were installed/ solarized under Component-B out of a sanctioned 9.5 lakhs. In Component-C just 1476 individual pumps out of 1,45,930 sanctioned have been installed. Not surprisingly, the government has extended the deadline from 2022 to March 31, 2026.

Component A Fails To Move

PM-KUSUM is a story of misses on several accounts. And of all the failures, Component A is the most prominent as the numbers reported under Component A have been dismally and consistently low.

Rajasthan has 62.5 MW of solar energy installed under Category A of the scheme, which is still a non-starter in most other states. The only nearby states included Himachal Pradesh (19.7MW), Haryana (2.25MW), and Madhya Pradesh (4 MW). Thus, these four states are the only states with functional installed capacity, while the majority of the other states are yet to have any solar functional solar capacity under this Component.

Mradul

Mradul Gupta, General Manager – Sales, Solar Business, Jakson Group

Gupta, General Manager – Sales, Solar Business, Jakson Group, explains why this particular component has been a non-starter. “The implementation of Component A is a complex procedure. It involves numerous stakeholders such as the state governments, distribution companies, and renewable energy developers. The complexity has resulted in delays and delayed implementation. In addition, factors such as land acquisition, lack of knowledge, and funding constraints have led to the slow and poor performance of the Component.”

The way out of this situation, he suggests, is to address these concerns, “The government may need to simplify the implementation process, offer incentives for farmers to lease their land, provide technical training, and ensure sufficient funding for Component A implementation,” he said.

Many experts and professionals pointed out that this was the tip of the iceberg, as myriad reasons slowed down the overall progress of this specific scheme component. One of the significant reasons Component A could not elicit ample interest was the low tariffs in some states, which proved commercially

unviable for many players. Additionally, there was a ceiling of 2 MW on it. Experts pointed out that the cost per MW increases with the decrease in the capacity of the solar plants as mega-scale projects often reduce overall costs for the developers.

Besides, there were also increased costs for distributed small-scale plants. Several factors contribute to the greater costs for smaller plants than larger ones. For instance, the operation and maintenance for a smaller plant are significantly higher.

Leading States With Highest Number Of Farmers Onboard For PM-KUSUM

STATES	NOs. OF FARMERS REGISTERED UNDER PM-KUSUM*
Rajasthan	57,692
Maharashtra	47,978
Haryana	44,325
Uttar Pradesh	17,614
Punjab	12,459
All India Total	2.08 lakh

*By Feb 28, 2023 **Source:** Lok Sabha

The number of participants in this particular scheme was therefore eliminated because it was often the small and medium-scale solar developers and big farmers who showed interest in it. On the other hand, bigger developers didn't show interest in distributed solar power space.

Why few states like Rajasthan and others fared well in

this Component?

Anas Rahman, Policy Adviser (Energy), IISD

Anas Rahman, a Policy Adviser (Energy) at the International Institute of Sustainable Development (IISD), a global think-tank, told Saur Energy, “The success of PM-KUSUM depends largely on the pro-activeness of the states. States like Rajasthan and Haryana invested in publicizing scheme benefits and facilitated farmers to achieve a good number of solar pump deployments. To enable farmers to set up power plants on their lands, Rajasthan and Maharashtra started online platforms to bring them under one roof for better coordination. These states also increased awareness among farmers and bankers to boost financing. Rajasthan even extended the benefit of another MSME-based scheme to give loans to farmers at lower interest rates to expedite the technology uptake.”

Regional Disparities

As per the information shared by the Union government, till now, only 20 states are part of the critical components of PM-KUSUM. The MNRE claimed that the scheme is demand-driven; the states must first furnish their demands to get the sanctions and funds. States like Bihar, West Bengal, and Puducherry are still not part of Component B, while Bihar, Karnataka, Manipur, Mizoram,

Manipur, and Uttarakhand are not part of Component A.

On the other hand, Arunachal Pradesh, Himachal Pradesh, Ladakh, Manipur, Mizoram, Nagaland, and Puducherry are not part of Component C of the Scheme. Experts also point to similar schemes that exist in some states, while many states have been tardy in sending their requirements to the centre.

Similarly, under Component C (solarisation of grid-connected irrigation pumps), Rajasthan (1,375 MW) and Kerala (74 MW) are the only two states in India that have some installed capacity to show.

STATES	INSTALLED SOLAR CAPACITY UNDER COMPONENT A*
Rajasthan	74 MW
Himachal Pradesh	19.7 MW
Madhya Pradesh	4 MW
Haryana	2.25 MW
All India Total	99.95 MW

*By March 31, 2023 **Source:** PM-KUSUM Dashboard

Addressing the regional disparities surrounding the take-off of PM KUSUM, Patidar from Shakti Pumps says, “Several factors have affected the implementation of this policy in some states. The scheme faces several obstacles and bottlenecks across some states. Each state has a different scenario and set of challenges that it needs. The states need to decide on their preferred mode of agricultural solarization between off-grid and on-grid and cooperate with the central government to install solar pumps.

Nevertheless, several states where Shakti Pumps works (Rajasthan/Maharashtra/Punjab/Haryana) have successfully implemented the scheme."

Delayed Payments

With the market dependent on smaller developers and farmers, both capital starved categories, delayed payments can be an especially major drag for growth.

It doesn't help that projects requiring grid connectivity run up against India's poor grid infrastructure in rural areas, further pulling developers away from participating in them.

The record of projects under the scheme has not exactly been impressive, with discoms not honouring the PPA terms. Moreover, other than discoms in Karnataka, Maharashtra, and Gujarat, many norms have been relaxed when it comes to payment, leading to delayed payments over a while- thus creating uncertainty in developers, who hold back and choose to work with government bodies instead where they are less likely to face the issue of delayed payments.

Components B & C: Not a Success Story Either

Before PM-KUSUM, many states also had their own solar pump schemes. Rahman from IISD highlighted that under Component B, unlike the state-based existing solar pump schemes, PM-KUSUM favoured big national-level vendors which may have exacerbated

logistical problems leading to significant delays. Doubts on after-sales and repair are also persistent. Rahman batted for boosting local enterprises to resolve the issues here.

Talking about Component C, he pointed out that most tenders released by the states could not evoke a good response, mainly due to unviable tariff. “Under this component, the states are empowered to set tariffs, but the tariffs set by them were low. Big players did not want to participate probably due the logistics of managing multiple small projects. SME and rooftop developers wanted to participate but found the tariffs unattractive and not commensurate with the investment risks. Thus, despite tenders, it could not succeed in the last few years and many tenders went without bids, and there were very few takers from the developers’ side.”

Abhishek Jain, Director (Powering Livelihoods) at CEEW

Abhishek Jain, Director (Powering Livelihoods) at the Council on Energy, Environment and Water (CEEW), told Saur Energy that financing has been one of the main bottlenecks in the faster adoption of the scheme among farmers.

“While the scheme is centrally-sponsored, the states have to bear 30 percent of the subsidy burden. Unless the states have enough money and are willing to invest in the scheme, it is tough to set and achieve targets. Even when the states bring their 30 per cent, the farmers have to contribute the remaining 40 per cent, which is a lot for many farmers to pay in one go. Lack of financing support to farmers, hence, has become a major issue. Sensing such issues, few states also increased their share of subsidy or tried to give them relief through other schemes to reduce the burden of the upfront cost of farmers,” Jain said.

Opportunity For Local Enterprises

The scheme does offer a strong opportunity for local enterprises that has not been exploited fully yet. Gautam Solar is one of the solar module manufacturing companies that has supplied more than 100 MW+ of solar modules under the scheme and worked as a solar developer in Component B of the scheme.

Fighting competition from Chinese imports as well as limited demand in the rooftop

segments, PM-KUSUM was supposed to be a massive opportunity with its DCR (domestic content requirements) conditions.

Gautam Mohanka, CEO, Gautam Solar

Gautam Mohanka, CEO, Gautam Solar, is clear about the reasons for the success of Component B. "In Component B, the (central and state) nodal agencies drove the project. The primary demand came from the farmers as they were highly dependent on the erratic power supply and needed such a solution. The dependency of farmers on diesel and their escalating prices pushed the farmers to go for this option. It was also well executed by the MNRE and the nodal state agencies. In this case, most of the solar parts the project needed were manufactured in-house in India itself. So it helped in giving a push to local manufacturing too."

The Pandemic & Post-Pandemic Fiasco

Many developers and experts have blamed COVID for holding back the scheme. In their responses as furnished before the Parliament, the government also blamed COVID pandemic for the poor progress of the scheme, citing the hurdles in ground-level

works during the period.

Gupta from Jakson shares, “The government has decided to extend the timeline primarily due to the challenges faced in implementing the scheme at the ground level due to the pandemic outbreak, which disrupted the supply chain and impacted the installation and commissioning of solar projects, funding constraints among others.”

Other experts claimed that although COVID-19 did make an impact in delaying the coverage, some post-COVID cost-related issues added fuel to the fire.

Mandvi Singh, Programme Director at iFOREST

Post COVID, there was a significant price rise of solar products due to the increase in Goods and Services Tax (GST) and imposition of Basic Customs Duty (BCD) on the imported solar modules and cells, which made it tough for the developers and vendors to do the same work at earlier prices,” **Mandvi Singh**, Programme Director at New Delhi-based think-tank International Forum for Environment, Sustainability & Technology (iFOREST).

However, Singh claimed the government could achieve its 2026 target if significant supply-side challenges do not crop up. “For any scheme to succeed on the ground, it takes some time to fight the imbibed challenges it faces. Earlier, due to a lack of capacity to serve in rural areas and other issues, discoms were reluctant to enter into the picture. Now they are ready and find promoting solar water pumps a better option, considering the subsidies and other supply leakages in agriculture sector. Many discoms are now eager to invest in solar with such support rather than bearing the brunt of becoming a part of the overburdened, stressed, non-profitable agricultural feeders in rural areas,” she said.

She adds that nodal agencies under PM-KUSUM require close and deep collaboration with the agricultural department. These typically have the workforce and frontline workers who can work with the farmers in increasing awareness, upkeep, and teach the habit among them on the rational usage of the solar pumps based on the local crops and status of groundwater in such places.

Are the benefits percolating to the smaller farmers?

Despite the many drawbacks, Rajasthan and Karnataka have fared well on the scheme since many adopted the self-investment route in the power plant. Again, this points to another pitfall of the scheme: only the wealthier farmers can benefit from Component A of the Scheme.

However, PM-KUSUM intends to bring the smaller and marginalized farmers under its ambit. Separate budgetary allocations are made under the scheme for the beneficiaries belonging to Scheduled Castes & Scheduled Tribes and also those living in the Northeastern States.

PM-KUSUM claims it has been introduced to give a push to smaller solar pumps and plants and the solarisation of feeders. But, while this has been the underlined goal, has PM KUSUM benefited the smaller, not-so-wealthy farmers?

Gupta from Jakson says, “In addition to solar pumps, the project aims to solarize feeders, which will help reduce the loss of power during transmission and distribution; and can make power supply more reliable in rural areas. The scheme’s success in meeting these goals will be determined by its continued implementation and by resolving the challenges encountered during its execution.”

Patidar adds that, “Most of the installations under Component B of the Scheme, which is focused on installing solar pumps for

agricultural purposes, have been focused on pumps (5,7.5,10 horsepower or more). The uptake of smaller solar pumps, which are more suitable for smaller farms, has been limited for several reasons, including high upfront costs."

He added, "MNRE also announced that the technical specifications of solar pumps would be up to 25HP. Earlier this was up to 10 HP. The government is more focused on larger pumps going forwards." Perhaps indicating the push to show bigger numbers, fast.

He suggests in the same breath to fix these follies that will help farmers, "Currently, there is no subsidy on pump-part in component-C of the scheme. The mandatory replacement of the pump during the implementation of the grid-connected solar pumps instead of solarization of the existing pump shall provide the success path on technical and commercial grounds. The on-grid solar pump should have the facility to run the pump in off-grid mode during grid failure/unavailability. Solarization of existing pumps does not allow farmers to meet irrigation requirements during peak demand," he said.

Has Domestic Solar Manufacturing Got an Impetus?

The scheme includes a provision for the domestic content requirement (DCR), thereby mandating that a percentage of solar cells and modules that are employed in the projects are manufactured in India. This provision is mandatory for all three

Components.

Patidar reflects, “The solar pump sets, controllers, and system balance mandated in the scheme have boosted domestic manufacturing. Domestic solar PV Module/Pump manufacturers have seen an increase in demand for solar cells and modules which, in turn, has resulted in increased investments in the domestic solar manufacturing industry and the creation of new job opportunities.”

Gupta agrees, but adds a note of caution. “However, there is still a long way to go, and India remains highly reliant on imported solar equipment. To promote domestic solar manufacturing, it is critical to handle domestic manufacturers’ challenges, such as funding constraints, technical know-how, ensuring quality, and competition from foreign manufacturers.”

Way forward

Component B largely depends on farmers’ willingness to shift to cleaner sources based on their needs, interest, and affordability. Meanwhile, the other components, A and C, are linked with discoms’ participation. Under Component A, discoms are mandated to distribute clean energy or develop these projects.

In Component C, several small and local developers are waiting for support, be it incentives for discoms, or better targeted subsidies.

All that's wrong with Component-A: A case in point

A case brought last year before the PSERC (Punjab State Electricity Regulatory Commission) indicates everything that was not right with Component A.

Punjab Energy Development Agency (PEDA) filed a case against Punjab State Power Corporation Limited (PSPCL). PEDA informed the regulator that only three applications for 1 MW capacity each were received against the allocated target of 220 MW.

Low participation in the scheme was mainly due to the lower tariff of Rs 2.7/KWh approved by the State Regulator. In contrast, in the neighbouring States of Himachal Pradesh, this tariff was Rs. 3.98/Kwh, and in Haryana, it was Rs. 3.11/Kwh. In Rajasthan, where solar irradiation is the highest, it was Rs. 3.14/Kwh.

In Punjab, mainly an agricultural state, the land cost is very high, and solar irradiation is also comparatively low. Therefore, the tariff of 2.7/kwh was not financially viable for the farmers.

It echoes Mradul Gupta's point of view shared earlier. Thus, in many cases, the tariff does not factor in the cost of land, or solar irradiation, which can deprive farmers of the benefits under the scheme,

thereby causing apprehension.

Dinesh Patidar, Chairman of Shakti Pumps

Shakti Pumps is one of the developers working with farmers under the PM-KUSUM scheme. **Dinesh Patidar**, Chairman of Shakti Pumps, told Saur Energy, "The first reason behind this is the difference in irrigation needs in different regions. The places with higher irrigation needs and water availability, like Punjab and Tamil Nadu, have higher demand and implementation than those with lower irrigation levels, like Chhattisgarh or Rajasthan. Solar irradiance in different regions also contributes to these variations as the regions with higher solar irradiance see a better performance of the scheme."

And then of course, you have the elephant in the room. Component A requires a high engagement with the local discom, and much like rooftop solar, the story is repeated here with apathetic discoms even working actively to dissuade participation by creating hurdles.

Written By Namrata Gulati Sapra & Manish Kumar

Tags: Abhishek Jain, anas rahman, CEEW, Gautam Mohanka, Gautam Solar, iFOREST, IISD, Jakson Group, Mandvi Singh, Mradul Gupta, PM-KUSUM, Rajasthan, solar electricity, Solar Energy, Solar Power, solar pump

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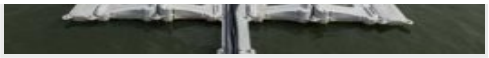

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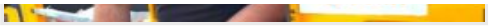

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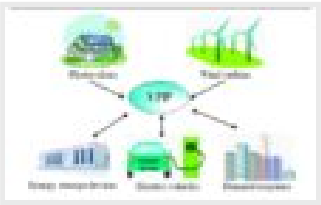

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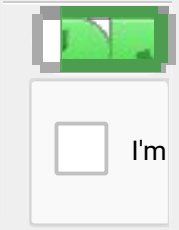

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