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Constraints faced and suggestions given by beneficiary of PM-Kusum Scheme

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Abstract
The Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme, launched by the Government of India in March 2019, aims to ensure energy security for farmers while contributing to India's commitment to enhance the share of electric power from non-fossil-fuel sources. This initiative focuses on promoting the development of solar irrigation pumps and renewable energy facilities, facilitating sustainable irrigation solutions, and reducing reliance on diesel in agriculture. While the scheme offers substantial subsidies to beneficiaries, its successful implementation relies on addressing the constraints faced by farmers in adopting this technology. The present study was conducted in 3 talukas viz., Nanded, Kinwat, and Ardhapur with an objective to find out the constraints faced and suggestions given by the beneficiaries of the PM KUSUM Scheme. Data revealed that majority of respondents (76.67%) reported issues with solar panel functionality during adverse weather conditions, while 60% noted delays in application processing. Security concerns, including theft of solar panels (31.67%) and damage from wildlife (41.67%), further complicate beneficiaries' experiences. Issues related to the quality of water pumping systems and the complexity of the registration process exacerbate the challenges faced by farmers. These factors highlight the urgent need for improved protective measures, timely approvals, and efficient maintenance services to enhance the overall effectiveness of the PM-KUSUM initiative.
In response to these challenges, beneficiaries have provided various suggestions aimed at overcoming the identified constraints. A majority (58.33%) emphasized the importance of timely supply of solar panels and water pumping systems, while 39.17% advocated for enhanced irrigation infrastructure through increased provision of pipelines for deep borewells. Other notable recommendations include the need for awareness campaigns to combat online fraud (33.33%) and ensuring the standard quality of supplies (30.83%). Furthermore, beneficiaries expressed the necessity for increased subsidies (35.83%) to improve scheme accessibility. Overall, these insights underscore the importance of addressing supply chain issues, enhancing awareness, and reinforcing quality standards to optimize the benefits of the PM-KUSUM scheme for farmers, thereby facilitating their transition to sustainable energy solutions.

Keywords: PM-KUSUM Scheme, solar energy, constraints, suggestions, beneficiaries

Introduction
The Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme was launched by the Government of India in March 2019 with the objectives of ensuring energy security for farmers and fulfilling India's commitment to enhance the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030, as part of the Intended Nationally Determined Contributions (INDCs). This initiative, spearheaded by the Ministry of New and Renewable Energy (MNRE), aims to promote the development of solar pumps and other renewable energy facilities across the country. By facilitating the installation of solar irrigation pumps, the PM-KUSUM scheme seeks to provide sustainable irrigation solutions, reduce reliance on diesel in the agricultural sector and increase farmers' income.
Under this scheme, farmers are eligible for a substantial subsidy of 60% of the total cost of solar irrigation pumps. Applications can be submitted not only by individual farmers but also by farmer organizations, panchayats, and cooperative societies, thereby fostering wider participation. Farmers are required to contribute a mere 10% of the project's total cost, making solar energy more accessible. Furthermore, the electricity generated by these solar panels can be sold, allowing farmers to generate additional income, which can be reinvested into

their agricultural practices or used to start new ventures.

The successful implementation of the PM-KUSUM scheme hinges on addressing the various constraints faced by farmers in adopting this technology. Therefore, this research aims to assess the constraints faced by beneficiaries of the PM-KUSUM scheme and gather suggestions for overcoming these constraints. By understanding these aspects, the study seeks to provide valuable insights that can enhance the effectiveness of the scheme and contribute to the sustainable development of the agricultural sector in India.

Materials and Methods

The present study was conducted in the purposively selected Nanded district of the Marathwada region, which has a considerable number of beneficiaries. Three talukas viz., Nanded, Kinwat, and Ardhapur were purposively selected for having the maximum number of PM-KUSUM scheme beneficiaries from the Nanded district. From each selected taluka, four villages were selected randomly, resulting in a total of twelve villages. From each selected village, ten farmers who are beneficiaries of the PM-KUSUM scheme were randomly selected, leading to a total of 120 respondents as a sample for the study. Data regarding the constraints faced by beneficiaries and their suggestions were collected using an interview schedule. Statistical tools such as frequency, percentage, mean, standard deviation, and Karl Pearson's coefficient of correlation were employed for data analysis.

Results and Discussion

1. Constraints faced by the beneficiaries of PM KUSUM scheme

Table 1: Constraints faced by beneficiaries about PM-KUSUM scheme

Sr. No.	Statements	Frequency	Percentage	Rank
1	Solar panel are stolen	38	31.67	V
2	The solar panel is damaged by monkeys and other animals	50	41.67	III
3	Registration process is more complicated	23	19.17	VIII
4	Fraud cases found in registration process	22	18.33	IX
5	Many farmers are getting fraud messages or calls regarding this scheme	24	20.00	VII
6	After registration in PM-KUSUM there is delay in further process	72	60.00	II
7	Some farmers do not get approval in time	44	36.67	IV
8	Solar panel not working properly in cloudy / winter/rainy days	92	76.67	I
9	Inferior quality of Solar panels	16	13.33	XI
10	Inferior quality of water pumping system	25	20.83	VI
11	Companies not provided proper maintenance services for solar panels and water pumping irrigation system.	20	16.67	X

Table 1 presents an insightful analysis of the constraints faced by beneficiaries of the PM-KUSUM scheme, highlighting various challenges encountered in their experience. The most significant issue reported is the functionality of solar panels, with a striking 76.67% of respondents indicating that the panels do not work properly during cloudy, winter, or rainy days. Another prominent concern is the delay in processing following registration in the PM-KUSUM scheme, noted by 60% of beneficiaries. Delays can frustrate beneficiaries, impacting their trust in the program and their willingness to invest in solar technologies. Whereas 41.67% of respondents reported that solar panels are damaged by monkeys and other animals. This highlights the need for improved protective measures around solar installations to safeguard these investments. Another significant issue, reported by 36.67% of the beneficiaries, is the lack of timely approval for some applicants, which could further complicate access to the benefits of the scheme.

Security concerns are also notable, as 31.67% of beneficiaries indicated that solar panels are stolen. Other constraints include quality issues related to the water pumping system and a lack of maintenance services. 20.83% of respondents reported inferior quality of the water pumping system, while 16.67% expressed concerns about the lack of proper maintenance services for both solar panels and water pumping irrigation systems. These factors could diminish the overall effectiveness of the PM-KUSUM scheme and necessitate better support for beneficiaries.

The registration process appeared to be complicated reported by 19.17% of the beneficiaries. Issues related to fraud, including receiving fraudulent messages or calls regarding the scheme, were expressed by 20% of beneficiaries, pointing to the need for stronger protective measures against such practices.

In summary, the analysis of the data reveals challenges faced by beneficiaries of the PM-KUSUM scheme. Addressing the most significant constraints, particularly those related to the functionality of solar panels during adverse weather, processing delays, and security concerns, will be essential for enhancing the effectiveness of the scheme. Implementing targeted interventions to tackle these issues can better support farmers in their transition to sustainable energy solutions and improve their overall experience with the PM-KUSUM initiative.

2. Suggestions given by beneficiaries of PM KUSUM scheme

Table 2: Suggestions given by beneficiaries to overcome the constraints

Sr. No.	Statements	Frequency	Percentage	Rank
1	Creation of awareness of scheme through campaign, exhibition, newspaper etc.	23	19.17	VI
2	Special awareness campaign should organize to avoid online fraud	40	33.33	IV
3	Timely supply of solar panels and water pumping System	70	58.33	I
4	Government agency should take precaution about supply of standard quality of water pumping and solar panel system	37	30.83	V
5	Company should provide regular maintenance facility	20	16.67	VII
6	Government should make provision of supply of more pipeline for deep borewell under the scheme.	47	39.17	II
7	The amount of subsidy should be increased	43	35.83	III

Suggestions given by beneficiaries of PM-KUSUM scheme to overcome the constraints are presented in Table 2. Majority of respondents (58.33%) were expressed the suggestion that timely supply of solar panels and water pumping systems, highlighting this as a critical concern for the effective implementation of the scheme, followed 39.17% of them advocate for the government to provide more pipelines for deep borewells, indicating a strong desire for enhanced irrigation infrastructure. Other notable suggestions include the need for a special awareness campaign to prevent online fraud given by 33.33% of the respondents while 30.83% of them suggested the government to ensure standard quality supplies of water pumping systems and solar panels.

Beneficiaries expressed the importance of increasing subsidies, with 35.83% endorsing this suggestion, reflecting a need for greater financial assistance to make the scheme more accessible. While 19.17% of respondents suggested creating awareness through campaigns and media, indicating the necessity for better information dissemination. Only 16.67% emphasized the need for regular maintenance services from companies, suggesting that maintenance is a lesser priority compared to supply and quality issues. Overall, the data illustrate a clear focus on improving the timely availability and quality of resources, alongside addressing awareness and fraud, to enhance the overall effectiveness of the PM-KUSUM scheme for beneficiaries.

Conclusion

In conclusion, the analysis of the constraints faced by beneficiaries of the PM-KUSUM scheme reveals significant challenges that hinder the effective implementation of this initiative. Key issues include the functionality of solar panels during adverse weather conditions, delays in processing applications, security concerns related to theft, and quality issues with the water pumping systems. These constraints not only affect beneficiaries' trust in the program but also their willingness to invest in solar technologies.

To address these challenges, beneficiaries have provided valuable suggestions, such as ensuring the timely supply of solar panels and water pumping systems, enhancing irrigation infrastructure, and increasing awareness campaigns to combat fraud. Additionally, the need for improved quality control and increased subsidies reflects a desire for greater support and accessibility within the scheme. By prioritizing these suggestions and implementing targeted interventions, policymakers can significantly enhance the effectiveness of the PM-KUSUM scheme, ultimately supporting farmers in their transition to sustainable energy solutions and improving their overall experience.

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