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A Study on Awareness and Adoption of Green Energy Subsidy Among Rural Regions

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ABSTRACT

This study examines the awareness and adoption of green energy subsidies among rural households, with a focus on their role in promoting sustainable rural development. Although renewable energy technologies such as solar, wind, and biogas offer reliable and eco-friendly alternatives to traditional energy sources, their adoption in rural areas remains uneven. Government initiatives and subsidy schemes have been introduced to reduce the financial burden of installing such technologies, yet many households are either unaware of these benefits or face barriers in accessing them. The study explores the level of awareness regarding subsidy programmes, the extent of adoption, and the key factors influencing household decisions, including financial capacity, perceived reliability, social influence, and access to information. By identifying gaps in awareness and challenges in implementation, the study aims to provide insights for policymakers to improve the effectiveness of subsidy schemes and encourage wider adoption of green energy solutions in rural areas.

KEYWORDS Green energy subsidies, renewable energy adoption, rural households, sustainable rural development, awareness of subsidy schemes, financial barriers, and energy accessibility.

INTRODUCTION

Energy is a key driver of economic and social development, especially in rural areas where reliable and affordable power improves agriculture, income, education, healthcare, and overall living standards. Despite efforts to expand electricity access, many rural households still depend on traditional energy sources like firewood and kerosene, which are inefficient and harmful. Green energy—derived from renewable sources such as solar, wind, and biogas—offers a sustainable solution, with solar energy being particularly suitable for rural regions due to its availability and cost-effectiveness. To promote its adoption, governments provide subsidies that reduce installation costs of technologies like solar panels and biogas plants. In India, initiatives such as the Jawaharlal Nehru National Solar Mission and the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan aim to support renewable energy use in rural areas. However, adoption remains uneven, largely due to limited awareness, financial constraints, and social factors. Therefore, this study examines the awareness and adoption of green energy subsidies among rural households to identify gaps and suggest improvements for enhancing sustainable rural development.

STATEMENT OF THE PROBLEM

- Limited awareness of green energy subsidies in rural areas
- Low adoption of renewable energy technologies
- Continued dependence on conventional energy sources
- or infrastructure affects implementation
- Lack of technical knowledge among rural households
- Gap between government policies and actual adoption

SCOPE OF THE STUDY

- Examines impact of government subsidies on green energy adoption in rural areas
- Encourages shift from traditional fuels to renewable sources like solar and biogas
- Evaluates awareness of subsidy programs among rural households
- Assesses impact on energy costs and living standards
- Studies accessibility of subsidy schemes
- Identifies challenges (infrastructure and technical knowledge)
- Evaluates effectiveness of government initiatives
- Highlights benefit like environmental protection and better health
- Suggests improvements to enhance implementation and reach of subsidy programs

OBJECTIVES

- To examine the level of awareness about green energy subsidies among households in rural regions.
- To identify the major factors influencing the adoption or non-adoption of green energy subsidies among rural households.
- To analyse the problems and challenges faced by rural households in accessing and utilizing green energy subsidies.
- To suggest suitable measures for improving the reach and effectiveness of green energy subsidy programs in rural areas.

TOOLS AND DATE ANALYSIS

- PERCENTAGE ANALYSIS
- RANKING METHOD
- CHI-SQUARE TEST

REVIEW OF LITERATURE

1. Kavitha Iyer (2022) Studies show that decentralized renewable energy (DRE) helps reduce energy poverty and supports rural development in India. It improves income and productivity by enabling small businesses and agro-based activities. Research also highlights its role in empowering women and marginalized groups. While government policies promote renewable energy adoption, challenges like low awareness and financial barriers still exist. Overall, DRE is important for inclusive growth and sustainable development.

2. Shankar Singh Bhakuni, Sachin Kumar Srivastava and Shephali Mathur This study examine rural customers' intention to adopt green energy in Uttar Pradesh using models like Theory of Planned Behaviour, Technology Acceptance Model, Unified Theory of Acceptance and Use of Technology, and Theory of Reasoned Action. Based on 300+ responses, the findings show that perceived benefits and hedonic motivation significantly influence customer attitude and purchase intention. However, existing theories do not fully account for location-specific and activity-based factors in rural contexts.

3. **Swadhina Shikha Swain and Pulak Mishra** This study analyzes the impact of Pradhan Mantri Ujjwala Yojana in rural Odisha. It finds that education and subsidy levels positively influence LPG adoption, while kerosene availability and social category reduce usage. Household income shows no significant effect. The study suggests improving awareness, pricing, and delivery systems to promote clean energy adoption in rural areas.

DATA ANALYSIS AND INTERPRETATION:

PERCENTAGE ANALYSIS

TABLE 1

GENDER

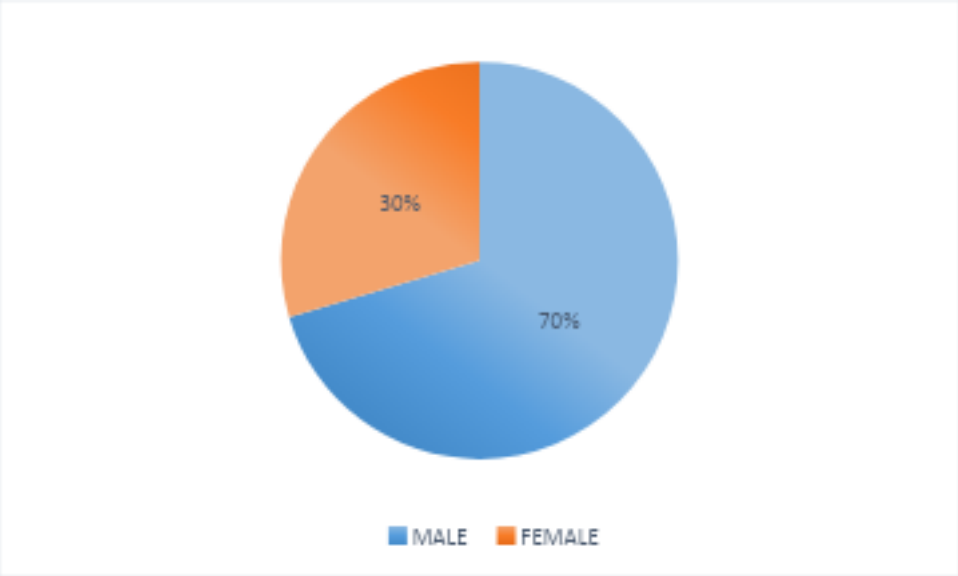
	FREQUENCY	VALID PERCENTAGE
MALE	138	70.4%
FEMALE	58	29.6%
TOTAL	196	100

INTERPRETATION

From the table, it is found that 70.4% (138 respondents) are male, while 29.6% (58 respondents) are female

INFERENCE

A majority of respondents (70.4%) are male, whereas a minority (29.6%) are female. This indicates that male participation is higher in the study compared to female respondents.



CHI-SQUARE
ASSOCIATION BETWEEN GENDER AND FINANCIAL BENEFIT AWARENESS

Null Hypothesis (H_0):

There is no significant association between the gender of the respondents and their awareness of financial benefits of green energy subsidies in rural regions.

TABLE 2
CROSS TABULATION:

	Crosstab						
Count		**How well you are aware about the financial benefits offered under green energy subsidy schemes?**					
		Detailed knowledge of all benefits	**Aware of some financial benefits but not all**	**Know that financial support exists but unsure of it**	**Have only heard about the subsidy without any understanding**	**Not aware at all**	**Total**
Gender	Male	28	41	22	31	14	136
	Female	7	13	17	16	7	60
Total		35	54	39	47	21	196

Chi Square Tests

	Chi-Square Tests			
	Value	**Df**	**Table Value**	**Result**
Pearson Chi- Square	6.368	4	9.488	H_0 (Supported)

INTERPRETATION:

The Chi-Square test was conducted to examine whether there is a significant relationship between the gender of respondents and their awareness level about the financial benefits offered under green energy subsidy schemes. The calculated Chi-Square value (6.368) is less than the table value (9.488) at 4 degrees of freedom. Hence, the null hypothesis (H_0) is accepted. This indicates that there is no significant association between gender and awareness level

of financial benefits of green energy subsidies. In other words, both male and female respondents have similar levels of awareness regarding the financial benefits provided under green energy subsidy schemes.

Source: Computed from Primary Data
DEGREE OF FREEDOM = (Rows – 1) × (Columns – 1)
= (3 – 1) × (3 – 1) *(or based on your table structure)*
= 4
DF = 4
TABLE VALUE = 9.488
CALCULATED VALUE = 6.368

RANK ANALYSIS

RANK ANALYSIS

SOURCES OF INFORMATION ABOUT GREEN ENERGY SUBSIDY

	1	2	3	4	5	Total	Average	Rank
Government officials /Local offices	50	22	36	61	27	581	2.96	3
Television / Radio	12	77	46	33	28	576	2.94	4
Social media / Internet	16	31	65	40	44	653	3.33	1
Friends , Neighbours or relatives	24	33	52	55	32	626	3.19	2
Non – Governmental organisation or village awareness programs	57	23	39	38	39	567	2.89	5

INTERPRETATION

The rank analysis clearly highlights the effectiveness of different sources of information about green energy subsidy among respondents. Social Media / Internet secured the first rank with the highest average score of 3.33 and total score of 653**,** indicating that digital platforms are the most influential and widely used source of information in the present scenario.

Friends, neighbours or relatives ranked second with an average score of 3.19 and total score of 626, showing that personal communication and social networks play a significant role in spreading awareness.

Government officials / Local offices secured the third rank with an average score of 2.96 and total score of 581, indicating that official sources have a moderate level of influence among respondents.

Television / Radio ranked fourth with an average score of 2.94 and total score of 576**,** suggesting that traditional electronic media has a relatively lower impact compared to digital and interpersonal sources.

Finally, Non-Governmental Organisations or village awareness programs ranked fifth with the lowest average score of 2.89 and total score of 567, indicating that they are the least influential source among the respondents.

Overall, the analysis reveals that modern digital platforms are more effective in spreading awareness about green energy subsidies compared to traditional and institutional channels, highlighting the growing importance of online media in information dissemination.

INFERENCE:

Social Media/Internet is the major source of information on green energy subsidy, securing the first rank

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FINDINGS

- A majority of respondents (70.4%) are male, whereas a minority (29.6%) are female. This indicates that male participation is higher in the study compared to female respondents.
- There is no significant association between the gender of the respondents and their awareness of financial benefits of green energy subsidies in rural regions.
- Social Media/Internet is the major source of information on green energy subsidy, securing the first rank

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SUGGESTIONS

- The government should conduct more awareness campaigns to educate people about green energy subsidy schemes and their benefits. Information regarding eligibility criteria and available schemes should be communicated clearly in simple and local languages. Awareness programs through Gram Sabha meetings, community campaigns, and local events can significantly improve public understanding.
- The subsidy application process should be simplified so that people can apply easily without confusion. A single and clear application form should be introduced to make the procedure more user-friendly. Guidance centers at the village or local level can help applicants with documentation and application procedures.
- The government should consider increasing the subsidy amount to make green energy systems more affordable for households. Providing subsidies before installation could reduce the financial burden on people. Banks and financial institutions should also provide easy loan facilities or low-interest loans to support installation costs.

CONCLUSION

The study on awareness and adoption of green energy subsidies shows that while many people are aware of such schemes, their understanding of eligibility, procedures, and benefits is only moderate. Among the initiatives, the solar rooftop subsidy is the most recognized, and financial benefits like reduced electricity costs motivate adoption. However, lack of proper information and incomplete awareness prevent many households from utilizing these schemes effectively.

The study also identifies challenges such as complex application procedures, delays in subsidy disbursement, and financial constraints. It highlights the importance of awareness programs, local communication, and community

participation in improving adoption. Overall, better information, simplified processes, and stronger administrative support can increase the use of green energy and promote sustainable development.

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