

Consumer Behaviour Towards Solar Energy Equipments In Salem City

D. Valarmthi

Department of Commerce, Trinity College for Women,
Sanyasikaradu, Mohanur Road, Namakkal – 637 002, Tamil Nadu, India

R. Yuvarani

Department of Commerce, Kailash Women's College,
Nangavalli, Salem – 636 502, Tamil Nadu, India

Abstract

Within the earlier decade, solar energy industries have experienced quicker growth rates than most other industries. Continued growth of solar energy has the potential to meet many of the nation's economic, environmental and social goals. This has policymakers, investors, and economic developers thoughtful how best to support the sustained growth of solar energy. Globalization leads the modern world towards solar sources of energy. Solar energy is clean sources of energy that have a lower environmental impact compared to conventional energy technology. Solar energy plays a significant role in the strategic energy planning process for any country. Regarding energy resources, India plays an important part on the world scene.

Keywords: Solar Energy, Economic Development, Environmental Sustainability

I. INTRODUCTION

The world is currently facing the environmental sustainability problems and environmental issues influencing and changing the patterns of human life and activities on this planet. Fossil fuels, the conventional energy sources, are not only running out at a dangerous pace but also give off tons of pollution. In order to meet the growing energy demands and save the planet from being spoiled and poisoned, nations all over the worlds are seriously turning towards natural renewable energy systems. Solar energy is, thus, considered an extremely important aspect in safeguarding the planet as convenient for the future generations. Retail competition in energy market will allow the consumer to choose the energy company, some researchers suggest that the consumer will make decision in purchasing the energy, probably depends on environmental products. With the rapid change in the consumer behavior resulting from the green movement towards the sustainability of the environment, the green energy will replace the traditional energy considering the environmental benefits, if this phenomenon continues to rise, and consumers are willing to pay for the green energy, then it will create a new market for solar energy products. Since environmental concern is arising, it may help to emerge solar marketing as a successful tool in the energy market.

The solar energy practices offers opportunity to engage people and promote green life styles. From the other side there is also an opportunity to innovate in providing business solutions and achieve profit targets and at the same time build the customer trust on a solar energy. Growing human populations and rising levels of consumption have elevated energy demands, placing increasing burdens on the environment – particularly on the global climate.

In a transition to clean sources of energy, much energy growth will come from solar energy. Global attention has largely focused on the environmental impacts of conventional energy sources, particularly fossil fuels. However, some recent reviews have compared the impacts among different renewable energy sources. While solar energy sources generally have low carbon emissions, they are often more land-use intensive than conventional energy sources, thereby creating potential conflicts with the conservation of terrestrial biodiversity and ecological services. Solar energy is unlimited, as supplies are continually replenished through natural processes.

II. IMPORTANCE OF THE STUDY

Our aim in this study is to help decision-makers understand solar energy's potential future importance, the obstacles that may prevent solar technologies from realizing that potential, and the elements of sound public policies that could reduce current obstacles. To reduce emissions while providing the energy services necessary to accommodate global economic growth, the ratio of CO₂ emissions to global energy use must be reduced substantially. The International Energy Agency (IEA) recently modeled several scenarios in which, as part of a worldwide response to the risks of climate change, global energy-related CO₂ emissions are cut to less than half of 2011 levels by 2050. IEA assumed that emissions reductions would be implemented at least cost, but in perhaps the most interesting scenario, growth of nuclear power is constrained by non-economic factors [1]. This study will contribute to the existing knowledge and will try to find factors that may play a role on consumer choice towards the adoption of solar energy equipments.

III. OBJECTIVE OF THE STUDY

- To assess the consumer awareness about solar energy equipments.
- To analyses factor influencing the solar energy equipments.
- To examine the level of satisfaction of consumer towards solar energy equipments.

IV. UNDERSTANDING THE SOLAR ENERGY TRENDS IN INDIA

The solar energy sector in India is growing rapidly due to government's resolution on increasing the generation of electricity through solar power. The Indian Government is taking steps to implement solar panels wherever possible and even encouraging people to opt for solar panels by providing subsidies, tax exemption and invoking Net Metering System (NMS). The Government's focus is on achieving 'Power for all' mission through boosting solar energy enforcement. Total solar power generation capacity of India in 2011 was 461 MW. which increased to 6.763 MW in 2019.

India is rapidly increasing its solar capacity in terms of energy to decrease its dependency on coal fossil fuel. In the year 2018, India produced 11.6 billion Units of electricity through solar energy while in the year 2019, it jumped to 21.5 billion units [2]. According to Mercorn India Research, India has achieved the target of generating 20,000MW of electricity through solar power by the end of 2019. Solar energy trends in India will have to be seen in this situation.

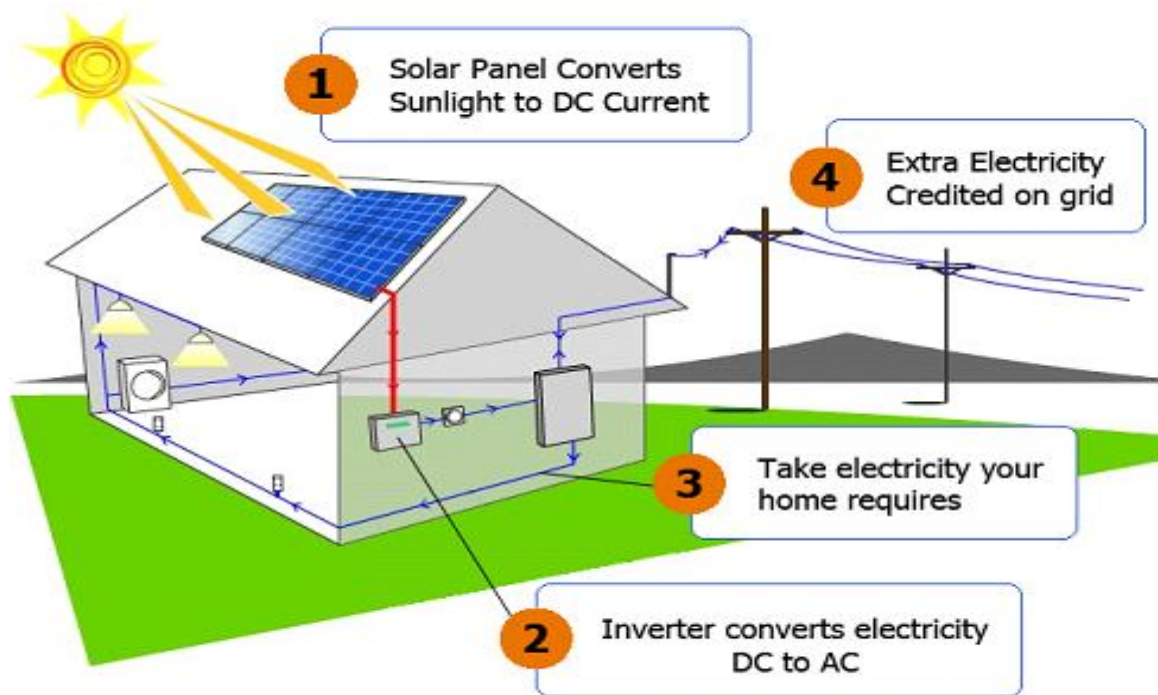


Figure.1 Solar energy converted to Home Electricity

V. LATEST TRENDS IN SOLAR ENERGY

1. **Using unproductive land** – There is an insufficient amount of land in many states of India to generate solar energy so as to meet the country's current target of land-based energy. To tackle this issue, the ministry is allowing the state governments to allocate unproductive land for solar energy projects resulting in low costs and minimal use of private lands.
2. **Emergence of distributed generation** – This is the best way to narrow down the gap between supply and demand. The trend towards distributed generation has been noticed in the past years and has played a key role in electrifying villages and helping meet the latent demands in the system. Distributed generation also helps in overcoming the shortfalls in the transmission, mitigating the apprehensions of the solar energy suppliers to some extent.
3. **Government's Policies** – The government is executing two national level programs to promote installation of solar roof tops. The Jawaharlal Nehru National Solar Mission (JNNSM) was launched in 2010 and had set an ambitious target of 20 GW solar by 2022. This target was further revised in 2015 under Narendra Modi Government to 100 GW solar by 2022 [3]. Another web-based initiative, namely Solar Guidelines, has been adopted under Indo German Energy Programme (IGEP) to encourage rapid development of the solar sector in India by disseminating policy and technology related information. Moreover, State Bank of India has also signed an agreement with the World Bank for debt financing of Rs.4,200 crore towards grid-

connected solar projects in India. The government is making efforts to achieve its targets and enable widespread adoption of solar [4].

4. **Off-Grid Solar Application** – The Government of India has also incorporated off-grid renewable energy policy to boost the use of renewable energy through stand-alone systems in remote areas. The policy aims to increase the use of green energy and curb the growing issue of waste disposal. It expects the use of more solar products, bio gas and fertilizer plants in housing societies, private offices, and establishments.
5. **Long-time partnerships** – Partnerships and investments in the solar sector have been at an all-time high lately. The Government of India and the Government of the United Kingdom have signed an agreement to work together in the field of solar energy. This partnership is expected to produce high-quality products that are of industrial relevance and are targeted towards addressing local needs. Because of the increasing share of renewable in India's energy mix, the government of India has decided to operate on a different power trading platform. The proposed platform would help states buy, sell and trade renewable-based power [5].

VI. RESEARCH METHODOLOGY

The present paper consists of both primary and secondary data. The primary data were collected by a survey method with a structured questionnaire. The questionnaire was designed to know the awareness and consumer behaviour towards solar energy equipments in Salem city. The consumers were selected through convenience sampling technique and the sample size considered for the study is 50 respondents. The secondary data were taken from published journals, magazines and other relevant academic resources. This study was conducted for a period of three months. The collected data were analyzed using statistical package for social science (SPSS). The statistical tools are percentage analysis and chi-square test.

VII. DATA ANALYSIS

Table1: Consumer Awareness about Solar Energy Equipments

S.No	Awareness	Aware	Not Aware	Total
1.	Eco-friendly	21(84%)	4(16%)	50(100%)
2.	Pollution free	19(76%)	6(24%)	50(100%)
3.	Technology development	14(56%)	11(44%)	50(100%)
4.	Percentage of subsidy	17(68%)	8(32%)	50(100%)
5.	Concern for social status	18(72%)	7(28%)	50(100%)

Table 1 exhibits that the majority (84%) of the respondents are aware of eco-friendly, the majority (76%) of the respondents are aware of pollution free, the majority (56%) of the respondents are aware of technology development, the majority (68%) of the respondents are aware of subsidy and the majority (72%) of the respondents are aware of concern for social status in regarding to solar energy equipments.

Table 2: Factors Influencing of Solar Energy Equipments

S.No.	Factors	Rank
1.	Reducing Environmental Distortion	26(54%)
2.	Health Benefits	16(32%)
3.	Perform consistently	22(44%)
4.	Social Approval	4(8%)
	Total	50(100%)

Table 2 demonstrates that the majority of the respondents are providing the first rank goes to reducing environment distortion by save earth, the second rank goes to health benefit by extent their life time, third rank goes to performance consistently by replenish resources and the last rank goes to social approval by adoption of innovative technology.

Table 3: Level of Satisfaction on Solar Energy Equipments

S.No	Features	Highly Satisfied	Satisfied	Dis Satisfied	Total
1.	Feel good	18(36%)	30(60%)	2(4%)	50(100%)
2.	Reducing electricity bill	32(64%)	14(28%)	4(8%)	50(100%)
3.	Save earth	38(56%)	10(40%)	2(4%)	50(100%)
4.	Improve standard of living	26(52%)	18(36%)	6(12%)	50(100%)

Table 3 elucidates that the majority of the respondents are reveals that satisfied by feel good with the adoption of solar energy equipments. In this connection of the majority of the respondents are reveals that highly satisfied by reduce the electricity bill with the adoption of solar energy equipments. The above table depicts of the majority of the respondents are reveals that highly satisfied by save earth with the adoption of solar energy equipments. In this analysis the majority of the respondents are reveals that highly satisfied by improve standard of living with the adoption of solar energy equipments.

In order to understand the relationship between made the age and awareness about solar energy equipments, the following hypotheses have been framed and tested:

H0: There is no significance relationship between age and awareness about solar energy equipments.

H1: There is a significance relationship between age and awareness about solar energy equipments.

Table 4: Age and Awareness of Solar Energy Equipment

Variables	Chi square value	Degree of freedom	P value	Result
Age and awareness about solar energy equipment	12.752	6	0.000	Significant @ 1%

It could be understood from Table 4, the computed value of chi square stating the relationship between age and awareness about solar energy equipments was found to be 12.752 while the p value was 0.000. Since the p value is less than 0.01, it falls in the rejection region. Hence, the null hypothesis is rejected age and awareness about solar energy equipments at 1 percent level of significance.

In order to understand the relationship between made the gender and satisfaction level of solar energy equipments, the following hypotheses have been framed and tested:

H0: There is no significance difference between gender and satisfaction level solar energy equipments.

H1: There is significance difference between gender and satisfaction level solar energy equipments.

Table5: Gender and Satisfaction of Solar Energy Equipment

Variables	Values	Degree of freedom	P value	Result
Gender and awareness about solar energy equipment	1.348	4	0.247	Significant @ 5%

It could be indicate from Table 5, that the computed value of chi square stating the relationship between gender and satisfaction level solar energy equipments was found to be 1.384 while the p value was 0.247. Since the p value is more than 0.05, it falls in the accepted region. Hence, the null hypothesis is accepted and it is concluded that there is no significant relationship between gender and satisfaction level solar energy equipments.

VIII. RESULT ANALYSIS

- Majority of the respondents are aware of eco-friendly in regarding to solar energy equipments.
- Highest numbers of the respondents are providing first rank to reducing environment distortion by save earth.
- Most of the respondents are reveals that satisfied by feel good with the adoption of solar energy equipments.
- Majority of the respondents reveals that highly satisfied by reducing electricity bill with the utilization of solar energy equipments.
- Most of the respondents are reveals that highly satisfied by save earth with the consumption of solar energy equipments.
- Highest of the respondents are reveals that highly satisfied by improve standard of living with the usage of solar energy equipments.
- The research examines the knowledge, satisfaction, motive and awareness are the key factors that influences the consumer's behaviour in purchasing of solar energy equipments.

- This study finds that most of the solar energy equipments products fulfills the need of the consumers.
- From the study it examines that majority of the people buying the solar energy equipments products because it concerns for health and save earth & environment.

IX. CONCLUSION

After the analysis of the study, we can conclude that the majority of consumers supported solar energy and moreover our survey result shows that consumers are willing to pay extra for the solar energy if they see some benefit of their money in terms of good quality, services, taking care of customers and society. We find that many consumers are aware of the environmental issues and they feel their concern about the environment, particularly the young consumers and to participate for sustainability of the environment. The study results that reducing environmental distortion, health benefit and social responsiveness, are most important factors in decision making. Finally the consumers are highly satisfied with adoption of solar energy equipments.

References

- [1]. REN21 (2017) Renewables 2017 Global Status Report, REN21 Secretariat.
- [2]. Jump up to "Physical Progress (Achievements)". Ministry of New & Renewable Energy. Retrieved 18 July 2018.
- [3]. Renewable Energy in India: Growth and Targets Ministry of New and Renewable Energy(MNRE), Government of India. 2018.
- [4]. National Action Plan on Climate Change (NAPCC). Prime Minister's Council on ClimateChange, Government of India.
- [5]. Renewable Energy Provisions in revised tariff policy. Ministry of New and RenewableEnergy. Government of India; February 2016.