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## The Study On Awareness Of Solar Energy Products In House Holds, Coimbatore

\* Dr. M. Dhanabhakym \*\* T. Sumathi

**Keywords : Solar Energy, Alternative Source of Energy, House Hold**

### Introduction

Solar energy can be used for several applications. It can be used for home lighting, garden lighting, water heating, and in lanterns and power plants.

Solar energy is environmentally friendly as it has zero emissions while generating electricity or heat. From an energy security perspective, solar is the most secure of all sources, since it is abundantly available. Theoretically, a small fraction of the total incident solar energy (if captured effectively) can meet the entire country's power requirements. It is also clear that given the large proportion of poor and energy un-served population in the country. The Sun is a massive reservoir of clean energy. We enable people to access this incredible resource.

### Statement Of The Problem

In today's modern world, where new technologies are introduced every day, Electrical energy use is increasing quickly. Fossil fuel particularly petroleum fuel is the major contributor to electrical production. Quickly depleting reserve of petroleum and decreasing air quality raise question about the future. Solar is the only source can fulfill the energy needs of the nation.

### Scope Of The Study

- The study says about importance of solar energy.
- It helps to find about the solar energy products.
- The study also reveals the Current status of solar energy in India.

### Objectives Of The Study

- 1) To study about the solar energy products & it's important.
- 2) To find out the awareness of the solar energy products in Coimbatore.
- 3) To offer the suggestions to improve the awareness on solar energy products.

### Limitations Of The Study

- This study area covers only Coimbatore city.
- The findings and suggestions are based on the information given by the respondents.
- The analysis based on some statistical tools which has its own limitation.

### Research Methodology

Coimbatore city was purposively selected for the study. Based on discussions with Solar Energy product dealers & companies, four regions in Coimbatore city where solar energy products like Solar water heater was used to a larger extent than other areas were identified. Thus the total size of sample respondents was 300. The required primary data were collected through a questioners. The sample

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respondents were interviewed personally at the house. The secondary data such as physical, social, economical and other related aspects of the study area were collected by surfing the website and published report. Here the researcher used the Chi-square and ANOVA test for this study.

### Sampling Technique

Sampling is the process of selecting a sufficient number of elements from the population. So that a study of the sample and an understanding of its properties and characteristics. It is possible for us to generalize such properties or characteristics. In this study purpose of sampling technique was used.

### Sampling Design

The researcher has select 300 respondents for this study.

### Source Of Data

Primary Data:

The research was done with the help of questionnaire that proved to be effective in collecting the relevant information.

Secondary Data:

Secondary data was collected from websites, books, etc.

### Statistical Tools Used

The tools used for the study are:

1. Chi - Square Test
2. ANOVA test

### Review Of Literature

S.Praveena , K.Kumares (2011) in their study titled "A Study On Usage And Consumer Satisfaction Towards Solar Water Heaters In Coimbatore District Of Tamilnadu" stated that "Both the users and non-users have positive attitude towards SWH and they felt that awareness about SWH was less. Non users think that SWH was conducive for usage only in own houses and not in rented houses." (1)

Ahmad Asyraf Bin Ramli (2010) in his study titled "Theoretical Analysis Of Solar Water Heating System" found that "Solar can be use as a clean alternative energy to reduce electrical production and is promising in the effect to establish environmentally friendly for electrical system. So far, many extensive studies investigated solar water heating system and become the famous application for home and building." (2)

Rathore and Panwar (2007) defined non conventional energy as the energy obtained from natural resources, which can be easily be trapped in useful form such as solar energy, wind energy, geothermal energy and bio energy. (3)

According to Goetzberger, Luther, & Willeke, (2002) "The primary material used in the modern collection of solar energy is silicon. Even though it takes 100 times more surface area of silicon than that of other solid-state materials to collect the same amount of energy, silicon was already developed and in mass production when solar energy collection technology was developed, and so it was the practical choice" (4)

According to Staff, D., and Campbell, S (1978) Energy application from the sun to heat water is nothing new. Solar water heaters have been use since the 1800s. What's difference is configuration is most modern solar water heaters are placing in the roof with resembles to sky. Solar water heaters are an environmentally and to reduce energy bills. (5)

1. S.Praveena , K.Kumaresh (2011) "A Study On Usage And Consumer Satisfaction Towards Solar Water Heaters In Coimbatore District Of Tamilnadu"
2. Ahmad Asyraf Bin Ramli (2010) "Theoretical Analysis Of Solar Water Heating System"
3. Rathore and Panwar (2007)
4. Goetzberger, Luther, & Willeke, (2002)
5. Staff, D., and Campbell, S (1978)

### Analysis & Interpretation

#### Chi-square Analysis

The Chi Square (2) test is undoubtedly the most important and most used member of the nonparametric family of statistical tests. Chi square is employed to test the difference between an actual sample and another hypothetical or previously established distribution such as that which may be expected due to changes of probability. Chi Square can also be used to test differences between two or more actual samples. The chi-square test is mainly used to test the significance of one factor over the other. In this study the factors are classified under two group's namely personal factor and study factors

- Product awareness on solar product
- Age
- Gender
- Educational qualification

This study finds out whether there is any association between the above groups and the awareness level on solar energy products.

#### 1. Product Awareness On Solar Products And Awareness Level

Null Hypothesis: There is no significant relationship between Product awareness on Solar energy products and Awareness level

Table -1.1 Product awareness on Solar Products And Awareness Level

Product Awareness	Awareness level on Solar energy products				
	High Level	Medium Level	Low Level	Nil Awareness	Total
Yes	13	27	16	64	120
No	27	53	43	57	180
<b>Total</b>	<b>40</b>	<b>80</b>	<b>59</b>	<b>121</b>	<b>300</b>

Table- 1.2 Chi-Square

Factor	Y Value	df	P Value at 5% level	Remark
Product Awareness	14.69	3	7.81	Significant

#### Interpretation

From the above table the calculated value of  $\chi^2 = 14.69$ , which is higher than the table value of 7.81, the null hypothesis is rejected. Hence we concluded that there is significant relationship between Product Awareness & awareness level on solar energy products.

#### 2. Age And Awareness On Solar Energy Products

Null Hypothesis: There is no significant relationship between age of the respondents and the awareness level on solar energy products.

Table -2.1 Age group and Awareness level

Age Group	Awareness level on Solar energy products				Total
	High Level	Medium Level	Low Level	Nil Awareness	
Less Than 25 Years	12	13	17	3	45
26-35	12	39	22	47	120
36-45	15	19	20	36	90
46-55	1	9	0	35	45
Above-55	0	0	0	0	0
<b>Total</b>	<b>40</b>	<b>80</b>	<b>59</b>	<b>121</b>	<b>300</b>

Table-2.2 Chi-Square test

Factor	$\chi^2$ value	df	P Value at 5% level	Remark
Age Group	60.41	12	21.02	Significant

#### Interpretation

From the above table the calculated value of  $\chi^2 = 60.41$ , which is higher than the table value of 21.02, the null hypothesis is rejected. Hence we concluded that there is significant relationship between age group & awareness level.

#### 3. Gender And Awareness On Solar Energy Products

Null Hypothesis: There is no significant relationship between Gender of the respondents and the awareness level on solar energy products.

Table -3.1 Gender group and Awareness level

Gender	Awareness level on Solar energy products				Total
	High Level	Medium Level	Low Level	Nil Awareness	
Male	30	60	47	113	250
Female	10	20	12	8	50
<b>Total</b>	<b>40</b>	<b>80</b>	<b>59</b>	<b>121</b>	<b>300</b>

Table- 3.2 Chi-Square test

Factor	$\chi^2$ value	df	P Value at 5% level	Remark
Gender Group	15.38	3	7.81	Significant

#### Interpretation

From the above table the calculated value of  $\chi^2 = 15.38$ , which is higher than the table value of 7.81, the null hypothesis is rejected. Hence we concluded that there is significant relationship between Gender group & awareness level.

#### 4. Education And Awareness On Solar Energy Products

Null Hypothesis: There is no significant relationship between education of the respondents and the awareness level on solar energy products.

Table -4.1 Education group and Awareness level

Education Group	Awareness level on Solar energy products				Total
	High Level	Medium Level	Low Level	Nil Awareness	
Un educated	12	8	15	14	49
School level	8	13	18	22	61
Graduate level	11	30	26	30	97
Others	9	29	0	55	93
<b>Total</b>	<b>40</b>	<b>80</b>	<b>59</b>	<b>121</b>	<b>300</b>

Table-4.2 Chi-Square test

Factor	$\chi^2$ value	df	P Value at 5% level	Remark
Education Group	48.82	9	16.9	Significant

**Interpretation**

From the above table the calculated value of  $\chi^2 = 48.82$ , which is higher than the table value of 16.9, the null hypothesis is rejected. Hence we concluded that there is significant relationship between Education group & awareness level.

**Analysis Of Variance (anova)**

When the three or more groups are to be compared in ANOVA Techniques is appropriate one. By analysis of variance it is meant separation of the interest is to compare the Awareness Level of the respondents on the basis of Age, Gender, and Education.

**Findings****CHI-SQUARE**

- Product Awareness of the respondents has significant influence of the source of Awareness level. In this study finds that the majority of the respondents has no aware of this product.
- The Age of the respondent has significant influence of the source of Awareness level.
- The Gender of the respondent has significant influence of the source of Awareness level.
- Education of the respondent has significant influence of the source of Job stress level.

**ANOVA**

- The Age of the respondents has no significant influence of the source of Awareness level.

In this study finds that the majority of the middle age people are aware of this product.

- The Gender of the respondent has no significant influence of the source of Awareness level. In this study finds that the majority of the male respondents are aware of this products.

- Education of the respondent has no significant influence of the source of Awareness level. In this study finds that the majority of the educated respondents are aware of this product.

**Suggestions**

- Every citizen of the country should think about the installation of solar energy products in their premises,
- Create awareness among public at large level through workshops, print and electronic media; for use of solar water heaters.
- Strict and strategic policies should be formulated by the government.
- Govt & non govt organizations should provide the intermediate agencies to implement the procedures between the organization and public.
- The builders should build apartments with the solar energy panel roofs.
- The government of India should make a law that new buildings should have compulsory Solar tiles or panels be installed otherwise the building will be considered illegal.
- After that slowly this rule is applied to all old buildings in each city.

**Conclusion**

Answer to India's Electricity Problem: Solar Energy a new Vision Today world as well as India is facing power, electricity problems. Solar energy is a one energy which can help us humans to solve these problems which today we are facing. In India this solar energy can become a boon for us. As in India normally we have sun for all 12 months in the sky. In a rainy season also we can see sun for few hours daily. We just need to make a one law and our power problem will be reduced. More ever solar energy is freely available, good for environment. Solar energy Products are easy to repair, they are reliable they can be used for more than 20 years. To install the solar energy products in the building is very easy and simple process any one can do it with little experience.

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