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CONSERVATION OF ENERGY CONSUMPTION THROUGH GREEN ENERGY IN MYSORE DISTRICT

Economics

Dr. Savitha C Post Doctoral Fellow, Dos in Economics & Co-operation, University of Mysore, Manasagangothri, Mysore, Karnataka

ABSTRACT

Conservation of energy is important in the modern day world. Now a day's conventional energy consumption is increased, very high cost and insufficient energy in the long run and also creates environmental problems. So the green energy products (in this study purpose taken solar water heater only) are made use to protect environment, benefits to consumers, reduced the cost, time saving, solve the problem of electricity demand. This paper tries to analyze the conservation of energy consumption through green energy product in Mysore city of Karnataka. The methodology is based on primary data. Primary data is being collected from household's survey method and used statistical techniques like pair sample't' test. The major findings of the study reveal that the SWHs to positive reduction of energy consumption after installation of SWHs. So, it is manage the demand and supply in Mysore city.

KEYWORDS

Energy, Energy cost, Energy units, Solar energy

Introduction:

The Conservation of Energy consumption means reduced through using Green energy products. Green energy means inexhaustible resources. It is also called as renewable energy resources like solar energy, wind energy, biomass energy, tidal energy etc. In this study purpose selected only solar energy, particularly solar water heater. The Solar water heater has many applications. In the domestic category, it is typically used for bathing while commercial and institutional category, hot water is used for variety of purposes such as bathing, cooking and washing etc. all these hot water users have been influenced for the installation of the SWH system. Therefore, SWH usage is based on location, climate and economic status. The study has used segmentation analysis for the usage of SWHs consumers. Domestic Urban Consumers category primarily consists of middle and high class population residing in ever-expanding urban areas in the Mysore city. This population is typically using electrical geysers, SWHs and fuel wood for their hot water requirement. While maximum share of the current usage of SWHs is held by this category of consumers because, this category operated during morning period causing demand to hot water. Therefore, if consumers use SWHs the energy can be reduced to a greater extend and also reduced is cost. That fact needs to be taken into account while quantifying demand side management benefits of the SWHs.

Mysore is a historical and heritage city in the state of Karnataka, and Karnataka is the 7th largest state in the Indian union. Mysore is the administrative seat of Mysore district and one of the larger districts in Karnataka. Mysore was the former capital of the kingdom of Mysore. Mysore is located at 770mtr above sea level at N12°.18′, E 76°.42′ and is 135 km from Bangalore, is the state capital. The challenge for Mysore is to absorb and encourage growth, without compromising on its heritage, culture and pleasant life-style. The population of Mysore city in 2001 census was 2,641,027 persons which became 3,001,127 persons by 2011 as per census 2011. The temperature ranges from 11ºC to 38ºC, thus the climate of Mysore district is moderate variations in temperature in different seasons. The total area for Mysore city as per Mysore Urban Development Authority (MUDA) has shown an increase to 16789 hectares in 2011 from 9221 hectares in 2001. The city's growth in the recent years has been skewed towards southern part of Mysore i.e. the industrial areas located in Nanjangud. MUDA/private developers have developed areas like Vijayanagar and J.P. nagar. At the side of, the residential layout the private developers have lined up to develop malls, convention center and golf course. Electricity consumption scenario in Mysore comes under the area of Chamundeshwari Electricity Supply Corporation Limited (CESC). In the year 2005, CESC carved out of MESCOM and is managing distribution of electric power for the five districts. The five districts under CESC controlled in Mysore, Chamarajanagar, Mandya, Hassan and Madakeri. CESC caters power to the world renowned industries viz., Infosys Technologies, TVS Motors, Nestle, Reid and Taylors, J.K Tyres etc. The major electricity consumption categories are residential, commercial/institutional, municipal services, industrial. Karnataka Renewable Energy Development Limited (KREDL) was established in 1996 as a nodal agency of the Government of Karnataka to facilitate the development of Non-conventional / Renewable Energy sources in the state. KREDL is the designated Agency for Implementation of Energy Conservation Act in the state that regulates and enforces the provision contained in the Energy Conservation Act. KREDL is also a designated Agency for Clean Development Mechanism (CDM). KREDL recently established a new branch in Mysore city in 2012. Because, Mysore intends to develop Mysore city as **Solar City** as per the guidelines laid by MNRE recently announced scheme for development of solar cities, with aim to achieve minimum 10% reduction in projected demand of conventional energy.

- **Consumers using Electricity for Water Heating:**

The important requirement for hot water in domestic urban met by using electricity. This demand forms part of the morning peak hour requirement for distribution Utility. If, they installation SWHs there will be in the reduction in demand on electricity network. The electricity saved due to installation on SWHs would benefit into the following consequences depending upon the demand-supply scenario of the utility.

- Reduction in load shedding by a utility during morning peak demand hours
- Reduction of energy demand – supply gap
- Reduction in costlier power purchase if the utility is self – sufficient
- SWHs Consumers are benefited the cost reduction

- **Consumers using Non-electric for water heating:**

Most of the domestic – urban, consumers meet their hot water requirement using non-electricity means such as fuel oil, gas coal , biomass, fuel wood etc,. They do not use electricity for water heating, for various reasons such as high cost of electrical systems non-availability of electricity easy availability of biomass etc., while most of the domestic consumers consume kerosene, biomass and wood waste. Installation of SWHs would free compare to other technology, while avoid consumer looking into electrical geysers and improve health conditions, especially in case of women and children. There is no doubt that, from broad environmental standpoint, it makes imminent sense to convert all water heating technology from other fuels to solar. Therefore, it makes imminent sense to promote solar water heaters among domestic consumers.

However, since these consumers are currently not drawing electricity from the grid for hot water purposes, the distribution utility will not benefit due to installation of SWHs by these consumers. Therefore, it is necessary to identify suitable scheme for promoting of solar water heating systems among these consumer categories.

- **Rebate Scheme:**

The rebate scheme is reduction of cost by consumers. If, consumer's installed SWHs Government has given rebate scheme the electricity bill is some extent, which would enhance financial viability of

installation of SWHs. Therefore, the government benefited to promotion for solar water system utility is helps in reducing the high cost of energy purchased from other states, to manage the little bit gap between demand and supply. However, consumers and Government are benefited by this scheme.

Objectives of the Study

1. To understand the cost related and energy utility in Mysore city.
2. To Examine Solar Water Heater(SWH) Consumption to Reduce the Energy Consumption in Mysore city

Methodology:

The study is based on primary data only. The study has made used pair sample t test. This paper has focused conservation of conventional energy through solar water heater in mysore city only. SWH consumers were selected Domestic –Urban households. In respect of household's four areas such as Jayaprakash nagar, Siddaratha layout, Bogadhi and Vijayanagar In household's category respondents were aged between18-65 years from all the 217 households in the four areas in Mysore city of Mysore district. This analysis is calculated based on technology is suitable for energy conservation and how much cost and electricity units reduced after installation of SWHs. This analysis has made use of variables such as seasonal cost and monthly cost of energy usage of consumers per month in Mysore city.

Results and Discussion:

Information on Cost related and Energy Utility and Save in Households

Sl.no.	Cost and Energy Unit	Category	Frequency	Percent
1	Before Electricity Bill(cost)	Up to Rs.500	53	24
	(Before installation of SWH)	Rs. 501-1000	127	59
		More than 1000	37	17
2	Before Energy Utilization (Units)	Up to 200units	60	28
	(Before installation of SWH)	201-500units	121	56
		More than 500units	36	16
3	After Electricity Cost Reduction from SWHs	Up to Rs.300	43	20
	(After installation of SWH)	Rs.301-500	135	62
		More than 500	39	18
4	After Electricity Unit reduction from SWHs	Up to 100units	45	21
	(After installation of SWH)	101-200units	138	64
		More than 200units	34	15
5	Seasonal cost per month	Less than Rs.300	88	41
		Rs. 301 - Rs. 800	129	59

Sources: Primary survey data

Note: Households respondents no. 217(n= 217), only electricity consumers

The information on before energy utilization usage for households, 56percent of respondents to used electricity of the group is 201-500units per month, 28percent respondents to used group of up to 200units per month, 16percent respondents to used electricity more than 500units per month.

But after the SWHs installation, 64percentage of respondents reduced the electricity is the group of 101-200 units per month, 21percentage respondents reduced in the group of up to 100units per month, 15percent reduced electricity more than 200 units per month. Therefore, the energy conservation and cost reduction after the solar water heater installation.

To Examine Solar Water Heater Consumption to Reduce the Energy Consumption in Mysore city

H0: There is insignificant/equal reduction in the Energy Consumption
H1: Installation of SWHs consumption has significantly reduced Energy Consumption

This hypothesis testing is comparing EWH and SWH only for two related samples of usage of energy unit of before and after installation of solar water heater. The test used paired sample test and observed that positive. If these is reduction in electricity or not in households and it is possible to solve the problem of gap between demand and supply.

Paired Samples Test of Energy Consumption(Electricity Unit)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before Electricity unit - After Electricity unit	-0.060	0.274	0.019	-0.097	-0.023	-3.220	216	0.001

Note: significance level at 5% and 2-tailed

Above the Table shows that, the paired samples test before and after electricity units. This table clearly understands that, Calculated 't' value is -3.220 is significant at 5% level and 2-tailed test. Therefore, it rejects the null hypothesis at 5% level of significant and accepts the alternative hypothesis. Therefore, electricity units will be reduced after installation of SWHs technology. In other words after installation of SWHs there is reduction in the electricity unit. There is significantly (positive) reduced in electricity unit after installation of SWHs and it has also helped to manage the gap between demand and supply in Mysore city.

Conclusion:

The study of solar water heater is positive reduction is Energy consumption after installation of SWHs to manage the Demand and supply in Mysore city. Before electricity units is reduced the after installation of SWHs technology. SWH has positive impact on economic viability it is cost effectiveness when compared to the conventional energy. Results of paired samples test is before and after electricity cost. Before electricity bill of cost is impact on after installation of SWHs technology. It means, after installation of SWHs was reduced the electricity cost.

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