

Acceptance of Solar Energy Reduces CO₂ Emissions: An Evidence from Seraikela Kharsawa District, Jharkhand

Neetu Singh¹, Binod Kumar Choudhary²

¹Department of Environmental Science, HNB Garhwal University, Uttarakhand, India

²Department of Engineering, School of Engineering IT, ARKA JAIN University, Jharkhand, India

ABSTRACT

As the world showing concern towards reducing CO₂ emission and moving towards utilization of renewable energy, Solar Energy emerges as one of best replacement for non-renewable energy resources. In this particular study, investigation is carried out on how the utilization of solar power in household activities reduces the impact of CO₂ emission in Seraikela Kharsawa District, Jharkhand. Primary and Secondary data has been collected from authentic sources and statistical analysis was performed based on collected data to study the impact of using solar energy. Result showed that 17 % of resident totally depend on solar energy, 48% were partially depend on solar power and 20% increase in the use of solar power systems from 2019 to 2021 showed that impact of CO₂ emission reduction. The change in behaviour of residents for adopting renewable energy i.e. solar energy will reduce CO₂ emission not ultimately but slowly.

KEYWORDS: Solar Energy; CO₂ emission; Jharkhand

INTRODUCTION

Currently, 940 million people do not have access to electricity globally [1]. United Nations declared 2014–2024, the decade as the year of Sustainable Energy for All. To provide energy services to the every corner of world is a major challenge [2]. Rural areas always face the challenges to meet the demand of electricity for both economical services and household services [3]. Grid electricity based on fossil fuels can be utilized for this purpose, but it involves huge investment as well as emits greenhouse gases. Therefore, renewable energy sources have catch the potential attention [4,5]. In renewable energy, Solar Power Systems are popularly accepted due to sufficient sunshine availability and it is based on photovoltaic technology, which is environment-friendly. Therefore, this study conducted to examine the understanding of renewable energy, acceptance and adaptation of Solar Power Systems and reduction in carbon emission.

METHODOLOGY:

The study conducted through survey method using questionnaire. This study based on both primary and secondary type of data. For this purpose, a survey questionnaire was circulated among the permanent residents of Seraikela Kharsawa District. Especially, grocery stores considered as meeting centre for this study. The survey was completed between January-March 2021. The questionnaire was made simple and in both languages (English/Hindi) with just few technical terms so that respondents with a different living background, education and employment can easily understand the questionnaire and knows the importance of solar power. In the sample design of the survey, most important aspect was considered that the respondent should be 18 and above years of age. Before collecting answers, some general questions were asked about difference between non-renewable and renewable; understanding of renewable energy, global warming and climate change. Hence, those

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respondents who replied somehow positively towards understanding of renewable energy were considered as sample. The sample size was taken only 250.

Moreover, the survey is only a baseline data for Seraikela Kharsawa District (Fig.1).

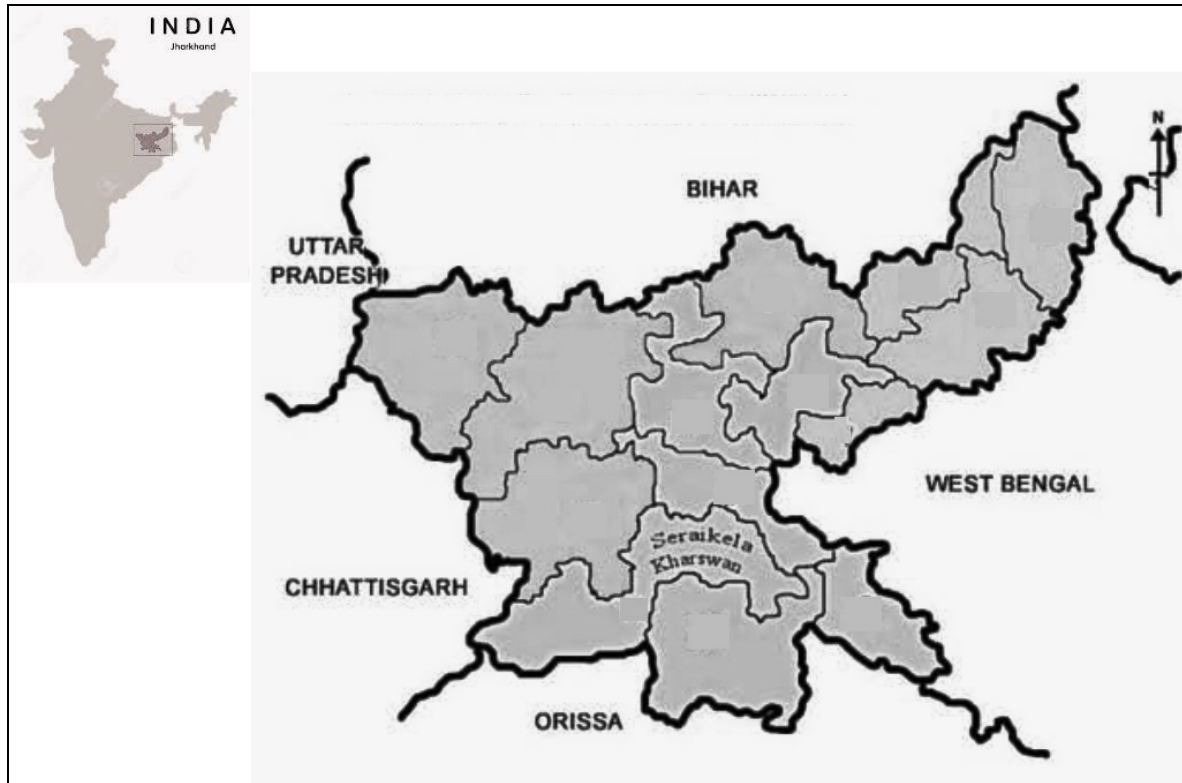


Fig.1: Location Map of Study Area

RESULTS:

1. Demographic Profile of respondents:

The respondents between age group 18-64 were considered for sample classified into six groups (Fig.2). Both male and female were actively participated in the survey. Higher participants were in between age group 33-40. 40 % male and 35% female were belongs to this group during survey. Older people above the age 57 were not very much interested in responding. Only 20 % Male and 18% Female were participated in the age group 57-64. The major participants are from age 33 – 48. 75% Male and 65% Female were participated from this age group. Mostly, the members are in this age group are decision maker in the home.

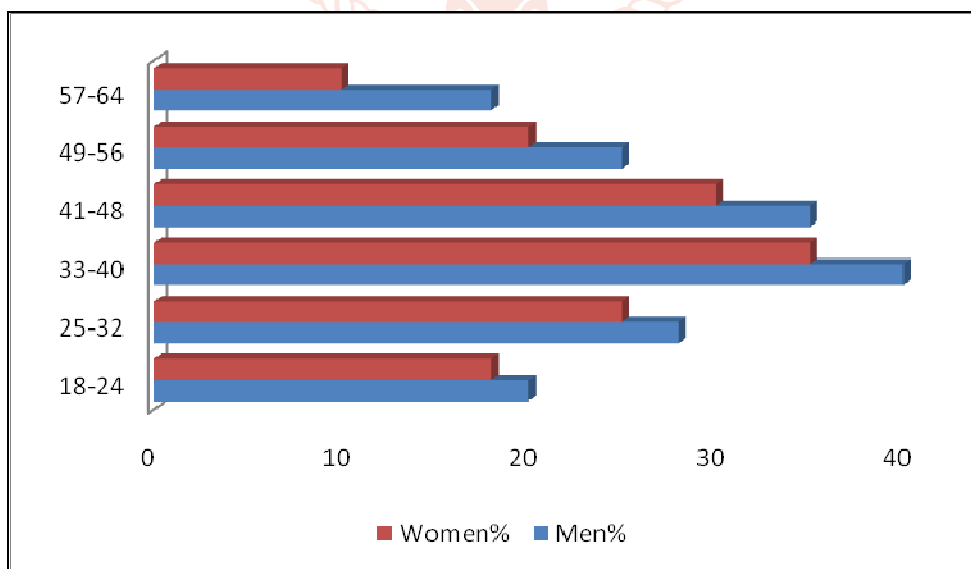


Fig.2: Demographic Profile of Respondent

2. Educational Profile of Respondents:

Education is considered as key point to understand the concept of renewable energy easily. Women respondents were higher in percentage at primary level of education but at higher education level their number decreases. Only few of them completed their degrees (Fig. 3). This may be due to marriage and pregnancy factor.

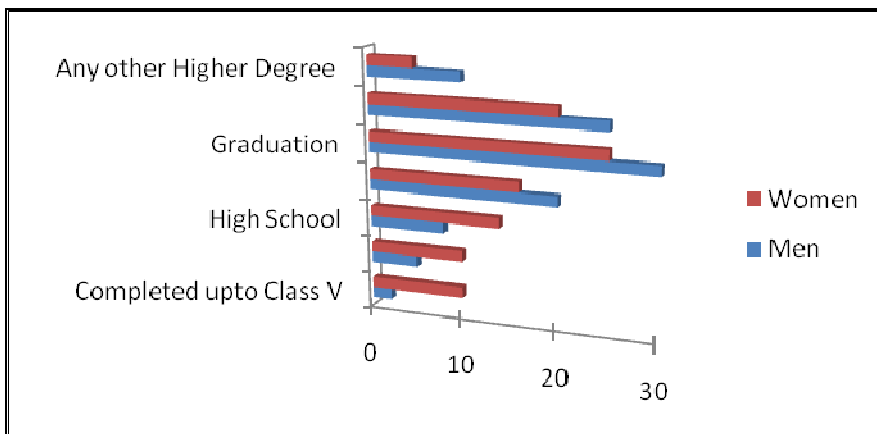


Fig.3: Education level of Respondent

3. Solar Power Utilization

17% respondents were fully depending on Solar Power Systems. 48% were partially dependent on solar power and uses other form of non-renewable energy (Fig. 4). 28% respondent shows keen interest towards using solar energy in future but at present they are not using it. Only 5% were not in favour of using solar energy. Therefore, almost 85% sample surveyed was in favour of using solar power systems. This will makes a huge change in the coming future in reduction of carbon emissions.

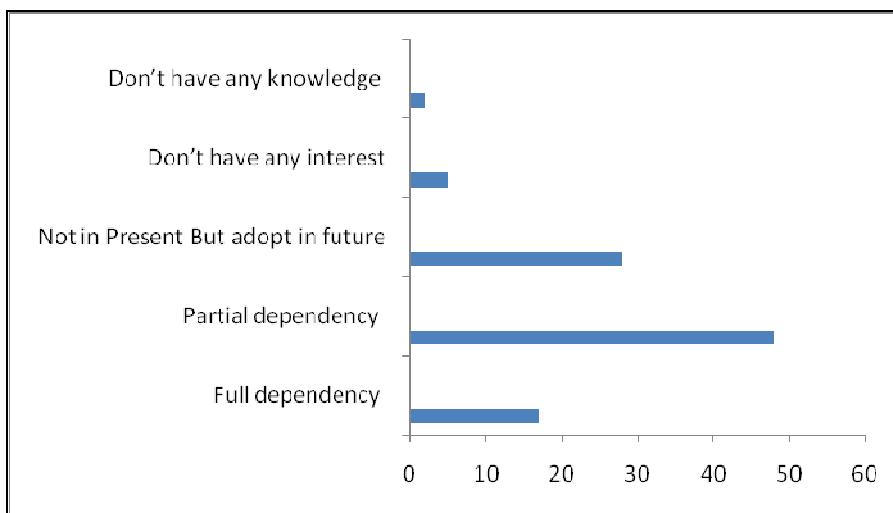


Fig.4: Understanding of Solar Power Systems

4. Reduction in CO₂ emission

A major change was noticed during the study was use of solar power systems for household activities increased from 5% to 20% from 2019 -2021. There is huge reduction in the use of wood as fuel during the period. It may be due to COVID 19 and lockdown periods. This helps in reduction of CO₂ emissions because wood burnt causes CO₂ emission. About 1900g CO₂ releases in atmosphere from each 1kg of Wood burnt.

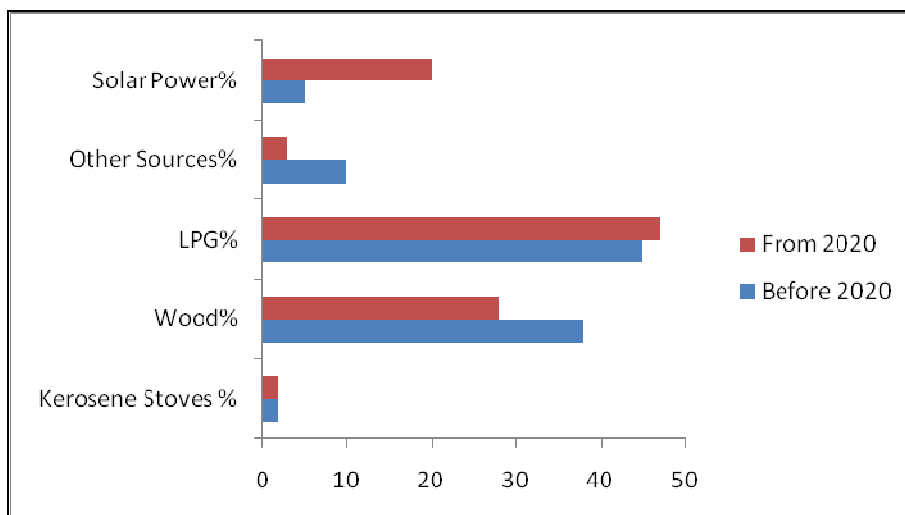


Fig. 5: Energy utilization Before 2020 Vs After 2020

CONCLUSION

This article has examined the interest, utilization and awareness of Solar Power System analyzed awareness and interest in Seraikela Kharsawa District, Jharkhand. We found total 85% respondent fully or partially were aware of Solar Power Systems and benefits of using renewable energy. The change in the behaviour of acceptance towards Solar Power Systems plays a major role in CO₂ emission reduction in coming future.

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