Impact of Solar Park Establishment on Socio-Economic Status of beneficiaries - A Study

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Abstract

The Indian government reported multiple plans and guidelines indicating the need and need for improvement of RES for power age. India leads in wind, hydro, and solar RES. Sun-oriented development is a national public action plan. Government of India has advanced Jawaharlal Nehru National Solar Mission (JNNSM, 2010) with solid goals to achieve 20,000 MW through network-associated and 2000 MW off matrix sun-oriented energy establishments by 2022.India's National Action Plan on Climate Change prioritizes solar energy with the National Solar Mission. NSM debuted on January 11, 2010. India's energy security and sustainable growth are supported by NSM. India will also make a major contribution to global climate change efforts. The present study focus on changes in socio-economic status of people of Pavagada Taluk after the establishment of solar park based on primary sources of data collection.

Keywords: Solar Park, Government of India, Socio-economic status

Introduction

Employment is crucial to any nation's social, economic, and natural processes. . The solar park is one of India's and states' efforts to create jobs. Solar energy is the future for India and the globe. Thus, sustainable growth increasingly depends on solar energy technology and innovation. The solar park is a concentrated zone for solar power production project development, providing developers with well-built infrastructure, access to amenities, and minimal paperwork. Large solar ventures may reduce costs. India planned 500 MW or more Ultra Mega Solar power plants. So far, there are 34 approved solar parks in India, situated at various states namely; Andrapradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Rajasthan, Telangana, Uttar Pradesh, Uttarakhand, West Bengal and Tamil Nadu. The solar park will give a tremendous catalyst to solar energy generated demonstration facility to energize project developers and investors, provoking extra projects of comparative nature, setting off economics of scale for cost-reductions, specialized upgrades and accomplishing huge scopes decrease in GHG emissions.

Unless the implementing body owns land, the state government chooses the solar park site. To quickly acquire such a large tract of contiguous land with adequate isolation levels, the state government may use government waste or non-agricultural land. Solar Power Park Developers (SPDD) help build solar parks. They performed essential responsibilities like acquisition of land, getting land related cleaners, developing approach road to each plot, developing internal transmission system and maintaining it, making arrange to connect to the grid i.e., ISTS or State Transmission Network, providing basic draining and providing water supply (Guidelines for Development of Solar Park, Government of India, Ministry of New Renewable Energy, October, 2015). Shakti Sthala, the world's biggest solar park, is in Pavagada Taluk, Tumkur District, Karnataka. 20, 50 MV in 13000 acres. Building 20, 50 MV of power costs 14,800 Crore (US$2.3 billion). The Karnataka Solar Park Development Corporation Limited (KSPDCL), a joint venture between SECI and KRE, developed it. (KREDL). This solar farm leases drought-stricken land for 25–35 years. Landowners receive US$290 per acre. Pavagada taluk's solar park is one of the most powerful efforts to improve livelihoods. The state government allocates 20% to 30% of the works to locals to aid local creation.

Background

India emits the third most CO2 from coal thermal units after China and the US, according to the World Bank (2013). Indian coal plants emit 70% of CO2 (CO2 per head > 1.84%). By 2035,

DOI: 10.48047/INTJECSE/V14I4.399

India's CO2 emissions will rise 2.7%, twice the global average, according to the World Energy Council (2012). China, India, Brazil, and other developing states face climate change. . India has pledged to increase solar power production and set Nationally Determined Contributions (INDCs) to reduce GHG emissions at international forums.

The Mission's aim is to make India a global leader in solar energy by accelerating solar innovation nationwide. 100 GW network-associated solar-oriented grid-connected power units are planned by 2022. India's Intended Nationally Determined Contributions (INDCs) aim to achieve around 40% total electric power installed limit from non-petroleum derivative-based energy assets and to reduce GDP discharge power by 33 to 35% from 2005 level by 2030.

Objectives

- Examine the socioeconomic status of individuals before and after the establishment of a solar park;
- Analyse the opportunities and challenges faced by those employed at a solar park;
- Determine the impact of the solar park on the local community.

Methodology

The empirical research utilized both primary and secondary sources of information. Interviews will be conducted to gather primary data. Secondary data will be gathered from published books, scholarly journals, periodicals, reports, and websites.

Review of the literature

In their study ***"Environmentally friendly power As A Tool For Sustainable Growth of Rural India,"*****Alam and Khan (2016)** noted that 60–70% of Indians live in rural areas, where they face many issues. Energy shortage is one. India's government tried several energy plans but failed. They also face health risks from Chullas smoke. Authors has concocted a legitimate thought based on survey of writing (auxiliary information) to take care of this issue, that if the creation of energy is done through sustainable power sources then the energy request can without much of a stretch be fulfilled and it will secure the provincial populace from the perilous impacts of the chullas' gases . The creators stated that ecologically friendly power would last longer than electric energy.

"**Preeti Joshi**, a businesswoman from Haligal, Karnataka, who started a small catering company after losing her husband, is the only flour processing and roti business in her town. The sun-oriented controlled roti moving machine increased her efficiency and allowed her to focus on improving her company, according to SELCO.

Oorja Development Solutions, an off-network sunlight-based supplier, told Mercom it has also succeeded in giving nation economies a social and financial boost. It has paid 150 smallholder ranchers in eastern Uttar Pradesh and western Assam as costs grow for local sun-based siphons. Oorja noted that at least two regular positions are made in the neighborhood cultivating area for each clump of six siphons.

Data Analysis and Interpretation

Table No 1: Age of the Respondents

Sl.No	Age of the Respondents	Frequency	Percentage
	Below 25 years	6	13.3
	26 to 35 years	18	40
	36 to 45 years	12	26
	46 to 55 years	7	15.6
	56 and above years	2	4.4
Total		**45**	**100**

Source: **Field survey**

From the Table No 1, it can be noticed that for the sake of research analysis 45 beneficiaries or people who know about the solar park establishment were interviewed. It is seen from above table, among the respondents 18 (40%) belong to age group 26 to 35 years, followed by 12 (26%) belongs to age group 36 to 45 years, 7 (15.6%) belongs to age group 46 to 55 years, 6 (13.3%) belongs to age group below 25 years and rest of the 2 (4.4%) belongs to age group 56 and above years.

The majority of the respondents are in the age group of 26 to 35 years.

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Table No 2: Caste of the Respondents

Sl.No	Caste of the Respondents	Frequency	Percentage
	GM	6	13.3
	OBC	16	35.6
	SC	12	26.7
	ST	10	22.2
	Minorities	1	2.2
Total		**45**	**100**

Source: Field survey

The above table 2 shows the information regarding caste of the respondents in which 16 (35.6%) of the respondents belongs to OBCs, followed by 12 (26.7%) belong to SC, 10 (22.2%) belong to ST, 6 (13.3%) belong to GM and lastly 1 (2.2%) belong to minorities.

Majority of the respondents are from OBCs.

Table No 3: Education level of the Respondents

Sl.No	Education level of the Respondents	Frequency	Percentage
	Illiterate	2	4.4
	Below 10^{th} Standard	10	22.2
	10^{th} to12th Standard	16	35.6
	Diploma	5	11.1
	Bachelor degree	8	17.8
	Post-graduation	2	4.4
	Others	2	4.4
Total		**45**	**100**

Source: Field survey

It is seen from above Table No 3, among the respondents 16 (35.6%) have studied 10^{th} to 12^{th} standard, followed by 10 (22.2%) have studied below 10^{th} standard, 8 (17.8%) of them are bachelor degree holder, 5 (11.1%) are diploma holder 2(4.4%) are post-graduates respectively and 2 (4.4%) are illiterates.

Majority of the respondents have educational level of 10^{th} to 12^{th} standard.

Table No 4: Marital status of the Respondents

Sl.No	Marital status of the Respondents	Frequency	Percentage
	Married	27	60
	Unmarried	18	40
	Widow	0	0
	Divorce	0	0
	Separated	0	0
	Any other	0	0
Total		**45**	**100**

Source: Field survey

Table No 4 talks about the marital status of the respondents, in which 27 (60%) of the respondents are married and 18 (40%) are unmarried. Hence the majority of the respondents are married.

Table No 5: Occupation of the Respondents

Sl.No	Occupation of the Respondents	Frequency	Percentage
	Job at Solar Park	7	15.6
	Farmers	9	20
	Agriculture labour	6	13.3
	Non agriculture labour	4	8.9
	Business	7	15.6
	Any other	12	26.7
Total		**45**	**100**

Source: Field survey

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Table No.5 discusses about the occupation status of the respondents. The study found that 12 (26.7%) of the respondents are housewives and doing job which is not mentioned in above list. 9 (20%) are farmers followed by 7 (15.6) are doing job at solar park and business respectively, 6 (13.3%) are agriculture labour and the rest 4 (8.9%) are non-agriculture labour.

Table No 6: Type of family

Sl.No	Type of family	Frequency	Percentage
	Nuclear	20	44.4
	Joint	20	44.4
	Single parent family	5	11.1
Total		**45**	**100**

Source: Field survey

It is seen from Table No 6, among the respondents 20 (44.4%) both equally belong to the nuclear and joint families and the rest 5(11.1%) belong to single parent family.

Table No 7: Income levels of the household

Sl.No	Income levels of the household	Frequency	Percentage
	Below 10,000	14	31.1
	10000 to 30000	22	48.9
	30000 to 60000	5	11.1
	Above 60000	4	8.9
Total		**45**	**100**

Source: Field survey

Table No 7 explains about the income level of the households of the respondents. It is showed that 22 (48.9%) earn family income earn Rs.10000 to 30000, followed by 14 (31.1%) earn below Rs.10,000, 5 (11.1%) earn between Rs.30000 to 60000 and remaining 4 (8.9%) earn above 60000.

Hence the majority of the respondents earn family income between Rs.10000 to 30000.

Table No 8: Land Possess

Sl.No	Land Possess	Frequency	Percentage
	Yes	40	88.9
	No	5	11.1
Total		**45**	**100**

Source: Field survey

Table No 8 represents land possession of the respondents. Among the respondents 40 (88.9%) are land holders and rest 5 (11.1%) does not possess any kind of land.

Hence, the majority of the respondents are possessed certain amount of land.

Table No 9: if yes what is the land holding status

Sl.No	If yes what is the land holding status	Frequency	Percentage
	Below 1 acre	14	31.1
	1 to 2.5 acres	22	48.9
	2.5 to 5 acres	5	11.1
	5.0 to 10 acres	15	35.7
	Above 10 acres	4	8.9
Total		**45**	**100**

Source: Field survey

Table 9 shows land holding status of the respondents. Among the respondents 22 (48.9%) holds 1 to 2.5 acres of land followed by 15 (35.7%) holds land between 2.5 to 5 acres, 14(31.1%) holds land below 1 acre, and rest of 4(8.9%) holds land above 10 acres .

Majority of the respondents holds land between 1 to 2.5 acres.

Table No 10:**Are you beneficiary of solar park establishment?**

Sl.No	Are you beneficiary of solar park establishment	Frequency	Percentage
	Yes	39	86.6

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	No	6	14.3
Total		**45**	**100**

Source: Field survey

As seen in table 10, among the respondents 39(86.6%) are the beneficiaries of the solar park establishment and the rest 6 (14.3%) are not the beneficiaries of the solar park establishment.

Majority of the respondents are the beneficiaries of solar park establishment.

Table No 11: If yes, how was the quantum of benefits?

Sl.No	If yes, how was the quantum of benefits	Frequency	Percentage
	High	8	18.6
	Medium	28	65.1
	Low	7	16.3
	Not applicable	2	4.4
Total		**45**	**100**

Source: Field survey

Among the respondents 28 (65.1%) are getting medium quantum of benefits of the solar park establishment, followed by 8 (18.6%) high quantum of benefits and rest 7(16.3%) getting low quantum of benefits.

Majority of the beneficiaries are getting benefits of the solar park establishment in medium quantum.

Table No 12 Did you submit your land for solar park establishment?

Sl.No	Did you submit your land for solar park establishment	Frequency	Percentage
	Yes	40	88.9
	No	5	11.1
Total		**45**	**100**

Source: Field survey

Table 12 reveals the information pertaining land submitted by beneficiaries for the cause of establishment of solar park. In this regard, 40(88.9%) of the respondents submitted their land and rest of the 5 (11.1%) does not the submitted.

Majority of the respondents submitted their land for the purpose of solar park establishment.

Table No 13: If yes, how many acres of land submitted?

Sl.No	If yes, how many acres of land submitted	Frequency	Percentage
	Below 2 acre	3	8.1
	2 acre	12	32.4
	4 acre	10	27
	6 acre	9	24.3
	More than 6 acre	3	8.1
Total		**45**	**100**

Source: Field survey

The above table 13 discusses the amount of land in acres submitted by the beneficiaries for the solar park establishment. Among the respondents 12(32.4%) of the respondents submitted 2 acres of land, followed by 10(27%) submitted 4 acres of land, 9(24.3%) submitted 6 acres of land, 3(8.1%) submitted below 3 acres and more than 6 acres of land respectively.

Majority of the respondents submitted 2 acres of land for solar park establishment.

Table No 14: Is this created panic among the people during proposal of solar park establishment in your region?

Sl.No	Is this created panic among the people during proposal of solar park establishment in your region?	Frequency	Percentage
	Yes	37	86
	No	6	14

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	Not applicable	2	4.4
Total		**45**	**100**

Table 14 states the attitude of the people during the proposal of solar park establishment in their locale. Among the respondents 37(86%) opine that there was panic among the during government proposal of establishment of solar park in their region and rest of the 6(14%) does not felt panic for the same. This is due to assumptions of the local people that solar park establishment may harm their locale and lives of the natives.

Majority of the respondents felt panic during the proposal of solar park establishment in their region.

Table No 15: Things possessed after the Solar Park establishment?

Sl.No	Things possessed after the Solar Park establishment?	Frequency	Percentage
	Mobile phone	18	60
	Vehicle	11	36.7
	Refrigerator	6	20
	Electric stove	5	16.7
	Electric heater	5	16.7
	Television	10	33
	Any other	3	6.6

Source: Field survey

Table No. 15 represents data related to things possessed by the beneficiaries because of the solar park establishment in their region by the means of enhancing their income generating level. Among the respondents 18(60%) told they purchased mobile phone, followed by 11(36.7%) purchased vehicle, 10(33%) purchased television, 6(20%) purchased refrigerator, 5(16.7%) purchased electric stove and electric heater respectively and 3(6.6%) purchased other than above mentioned things one respondent informed that he built new house also. Hence the solar park establishment enhanced the purchasing power of the beneficiaries.

Table No 16:What are the reasons for submitting your land for solar park establishment?

Sl.No	What are the reasons for submitting your land for solar park establishment?	Frequency	Percentage
	Problem of sufficient agriculture activity	10	26.3
	Migration	16	42.1
	Lack of skills	5	13.2
	Drought	8	21.1
	Lack of continuous work	6	15.8
	Other reasons	2	4.4

Source: Field survey

Table 16 reveals about the reasons for submitting land for solar park establishment by the respondents. Among the respondents 16(42.1%) thought migration as a reason for submitting their land for the establishment of the solar park, followed by 10(26.3%) thought problem of sufficient agriculture activity in their region, 8(21.1%) respondents found that drought as a reason, 6(15.8%) lack of continuous work, 5(13.2%) thought lack of skills and the 2(4.4%) found other reasons. These are all reasons causing the respondents to submit their land to solar park establishment.

Table No 17: Do you think solar park establishment has enhanced the job opportunities in your region?

Sl.No	Do you think solar park establishment has enhanced the job opportunities in your region?	Frequency	Percentage
	Yes	43	95.6

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	No	2	4.4
Total		**45**	**100**

Source: Field survey

The above table No 17 shows that, out of 45 respondents 43(95.6%) respondents thought that the solar park establishment is helpful in enhancing the job opportunities in their region and the rest 2(4.4%) disagree for the same. Hence the majority of the respondents getting benefits of the solar park establishment.

Suggestions

The following recommendations are derived from the aforementioned findings and could assist in empowering beneficiaries of the establishment of a solar park by means of improved employment opportunities in the local area and, consequently, greater participation.

It is suggested that more employment opportunities be made available to locals. More emphasis should be placed on the education of the beneficiaries' offspring. Beneficiaries should be provided with health benefits as a priority. Priority should be given to female personnel at the Solar Park establishment in terms of the implementation of additional initiatives. It is suggested that the amount paid for land utilized for the establishment of a solar park be increased. Beneficiaries should be made aware of the appropriate utilization of the amount paid for their land. The government should take initiative for the beneficiaries' welfare after the project's completion.

Conclusion

In the process of evaluating the most important discoveries and recommendations made by the present study, we came across the following: According to the findings of the research, the establishment of the solar park in Pavagada Taluk of Tumkur District has both beneficial and detrimental effects on the people who live in the surrounding area. The establishment of a solar park in the area is one of the essential steps that the government has taken, and it is one of the steps that helps in analysing the various changes that occurred in the wellbeing of the people who reside in the area, both as direct beneficiaries of the scheme and as indirect beneficiaries of the scheme. It has had an effect on the way they raise their families, the job possibilities available to them, the education they receive, their culture, the state of their health, the economic conditions, and many other aspects of their lives. At the same time, adverse changes in the environment that may have an effect on the health of the people, the alienation of the farmers from the land that they possessed, and anxiety among the beneficiaries about their conditions after the vacant of the project after the prescribed period were some of the negative effects that occurred.

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DOI: 10.48047/INTJECSE/V14I4.399