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Economic Impact of Green Energy on Local Communities: Analysis of Job Creation, Income Generation, and Economic Multipliers in the Renewable Energy Industry

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Abstract

Research Objective: This study investigates the economic impacts of green energy projects on local communities in Nigeria, focusing on job creation, income generation, and economic multipliers.

Methodology: A descriptive survey design was utilised to assess the economic effects of green energy projects. Data were analysed to determine the significance of variables such as job creation, income generation, and economic multipliers on local communities.

Findings: The study found that job creation ($\beta = 0.455$, $t = 0.504$, $p > 0.05$), income generation ($\beta = 0.550$, $t = 3.826$, $p > 0.05$), and economic multipliers ($\beta = 0.341$, $t = 0.624$, $p > 0.05$) have a significant effect on local communities. The transition to renewable energy has notably enhanced local economic outcomes, including increased income and job creation.

Conclusion: Green energy projects are contributing to significant economic improvements in Nigerian local communities. The transition from traditional energy sources to renewable alternatives is fostering strong local economic growth and aiding in achieving environmental sustainability goals.

Recommendations: The study recommends that the government support local entrepreneurs and small businesses in the renewable energy sector to further boost income generation. Additionally, it is advised that the government regularly monitor and evaluate the economic impacts of green energy initiatives to ensure their effectiveness and make necessary adjustments.

Key words: *Green Energy, Economic Multiplier, Income Generation, Job Creation.*

1.0 Introduction

Hydrocarbons, particularly coal, natural gas, and petroleum, have been the primary energy source for humans for the last century. But given the ongoing threat that climate change poses to human health and wellbeing, the need for alternative energy sources has increased dramatically. Still, more than 80% of the energy produced in the globe comes from

hydrocarbons. Moreover, a sizable amount (89%) of the world's greenhouse gas emissions, including carbon dioxide, are caused by the production and consumption of fossil fuels (Farghali et al. 2022). Furthermore, energy security is jeopardised by a reliance on imported fossil fuels (Chen et al. 2022; Garba et al. 2021). Renewable energy-based technologies are essential for attaining a sustainable energy future in order to solve these issues. Numerous renewable energy sources have the potential to make a substantial contribution to the world's energy mix. According to estimates, there is a growing trend toward using more renewable energy sources; by 2050, the percentage of renewable energy in the world's energy output is expected to increase from 14% in 2018 to 74% (Osman et al. 2022). Between 2000 and 2021, hybrid renewable energy's power capacity climbed from 700 to 3100 gigawatts globally (Rathod & Subramanian 2022).

Despite rising global energy consumption, particularly in emerging nations, there is growing worry about the continuing availability of fossil fuel sources such as oil, natural gas, and coal (Sari & Akkaya, 2016). As a result, in certain nations, demand for power exceeds supply, leaving many people without access to energy. Although it has been observed that developed economies are defined by continuous power supply, and any nation whose energy needs are epileptic in supply risks delaying growth and losing prospective investors (Avila, et al., 2017), Nigeria's energy needs are still unmet. It is reported that electrical demand exceeds supply, with the latter aggravated by its epileptic nature (Olabisi, 2021). According to a source cited by Obasi (2015), Nigeria is believed to have a 90% energy supply deficit, with certain off-grid locations where about half of Nigerians live without access to electricity. Furthermore, Ohiare (2015), citing data from the International Energy Agency (IEA) (2013), indicates that in 2013, Nigeria could not offer access to electricity to about 42% (85 million people) of its population living in both urban and rural regions.

Recent technical advances in renewable energy systems have resulted in lower economic costs and environmental consequences. However, the intermittent nature of renewable resources remains a key barrier to establishing a dependable and long-lasting sustainable energy infrastructure. Integration of several sources is viable and can improve system efficiency and supply balance, eliminate constraints, and reduce carbon emissions. It is critical to assess renewable energy integration in terms of sustainability and technological feasibility, as well as energy efficiency and operating costs. Furthermore, obstacles of building a hybrid energy system must be addressed.

The transition to green energy has emerged as a pivotal strategy in addressing the dual crises of climate change and economic sustainability. While the global benefits of reducing greenhouse gas emissions and mitigating climate change are widely recognized, the localised economic impacts of green energy initiatives are equally profound. The implementation of renewable energy projects, such as wind farms, solar power installations, and bioenergy facilities, has the potential to transform local communities by generating new economic

opportunities, enhancing energy security, and fostering sustainable development. This research aims to analyse these economic impacts using spatial analysis and case studies to provide a comprehensive understanding of how renewable energy investments affect local communities.

Statement of the Problem

The transition to green energy is an important part of worldwide efforts to prevent climate change and reduce reliance on fossil fuels. As more countries and areas adopt renewable energy sources, it is critical to understand the economic implications for local populations. Specifically, there is a need to investigate how green energy initiatives affect job development, income production, and other economic multipliers in these regions.

Despite universal recognition of renewable energy's environmental advantages, the local economic ramifications have received little attention. This information gap creates substantial hurdles for policymakers, community leaders, and stakeholders who want to maximise the economic advantages of green energy initiatives. Key questions that need to be addressed are: Job Creation: What sorts and amounts of employment are produced by green energy initiatives, and how do their quality and sustainability compare to those in traditional energy sectors? Income Generation: How do renewable energy initiatives affect local incomes? Are the financial gains dispersed fairly among community members, or do some profit more than others? Economic multipliers: What are the larger economic implications of green energy investment? What impact do these initiatives have on connected businesses and services, as well as local economic growth?

Inadequate awareness of these economic implications can result in poor decision-making and missed chances to promote economic resilience and growth in local areas. Furthermore, without comprehensive insights into these dynamics, there is a risk of exacerbating current economic inequities or unintentionally establishing new ones. Therefore, this study aims to examine the economic impact of green energy on local communities, focusing on job creation, income generation, and economic multipliers.

1.3 Objective of the Study

The objective of the study is to examine the economic impact of green energy on local communities, focusing on job creation, income generation, and economic multipliers.

1.4 Research Question

What is the economic impact of green energy on local communities?

2.0 Literature Review

Renewable Energy

Renewable energy is rapidly replacing fossil (dirty) fuels in power generation. This is owing to the need to mitigate the impact of fossil fuels on the climate system, and the cost of

installing renewable energy has been significantly decreased as a consequence of innovation. Renewable energy is derived from solar, wind, and water power, among other natural processes. It is replenishable or non-exhaustible. Shinn (2018) states that clean energy, sometimes referred to as renewable energy, is an energy source that is continually replenished and comes from natural processes. For example, while their availability varies according to time and weather, the sun and wind continue to shine and blow. Renewable energy sources may be almost limitless in terms of length, but the amount of energy accessible per unit of time is finite.

Solar energy is one of the many types of renewable energy that can be utilised to power buildings and provide heat and light for residences and commercial spaces. The sun has a vast potential to meet human energy demands; solar electricity can be captured by silicon-based photovoltaic cells. Any device may be powered by the energy produced by the cells from sunlight. Other energy sources include tidal, geothermal, biomass, wind, and hydroelectric power..

Renewable Energy in Nigeria

Nigeria is an oil-rich country, therefore it is not unexpected that non-renewable energy sources, particularly crude oil, provide the majority of its energy demands. The Nigerian energy industry is vulnerable to shocks because of its excessive reliance on fossil fuels (Akuru & Okoro, 2014). The authors further postulated that widespread poverty, climate change, and poor governance all contribute to the system's weakness by increasing the vulnerability of the energy sector. Nigeria still has a high rate of energy poverty, notwithstanding the importance of oil to the nation's energy industry. According to Akuru and Okoro (2014), around 80 million Nigerians, or 60% of the country's population, lack access to electricity, and of those that do, fewer than half live in rural regions. Nigeria's average annual power usage was around 100kWh, which is extremely low when compared to China, Brazil, and South Africa, whose respective averages were 1379kWh, 1934kWh, and 4,500kWh (Akuru & Okoro, 2014). It is not surprising that there is so much poverty in the nation because, in any economy, a key contributor to poverty is a lack of access to power. Nigeria has a maximum energy output capacity of 5,300 MW, but its daily power demands are 17,520 MW, according to Adegbite (2021). The author went on to say that Nigeria is rated 171 out of 190 nations in terms of access to energy, which is particularly important for the business sector, using the 2020 World Bank Doing Business report.

According to Esan, Anthony, and Obaseki (2019), Nigeria's present power supply crisis poses a major threat to the country's overall growth, economic advancement, and public health. In 2003, the Nigerian government incorporated renewable energy into the National Energy Policy with the aim of enhancing the country's electricity supply and expanding its reach to the populace. By 2006, the Renewable Energy Master Plan (REMP) was established. By

2025, if the plan is carried out well, there should be enough solar power—wind, hydroelectricity, and solar thermal—to offer the same amount of grid capacity as there is now.

Benefits of Renewable Energy

There are several advantages to switching to renewable energy. It never runs out and is sustainable and renewable. It is continuously replenished by natural sources. Unlike fossil fuels, which are negotiated on the global market and susceptible to international rivalry, sometimes even leading to wars and shortages, they have supply stability. Compared to conventional generators, renewable energy requires less maintenance. Because they obtain their fuel from readily available natural resources, their operating expenses are decreased (Agbongiague, 2015). Mini-grids, on the other hand, may be an option in developing nations like Nigeria where advanced systems have fallen behind. According to the literature study, earlier studies on the advantages of renewable energy projects were primarily concerned with the economic and environmental aspects, taking into account financial savings, expenses, and environmental enhancements. A few of these research suggested ways to make debates about social development and sustainability better. Furthermore, decision-makers view renewable energy initiatives primarily as a means of mitigating the negative effects of declining energy and escalating environmental issues. Many people overlook the initiatives' combined socio economic advantages (Haidari, 2020).

The Economic Impact of Green Energy on Local Communities

The economic impact of green energy on local communities in Nigeria is multifaceted, involving job creation, improved energy access, and potential for economic development. Below is a detailed examination of these impacts with appropriate citations and references.

1. Job Creation and Local Employment: Green energy projects, such as solar and wind farms, often require local labour for construction, maintenance, and operation. This can create a range of job opportunities, from low-skilled labour to specialised technical roles.

A study by the International Renewable Energy Agency (IRENA) highlights that renewable energy projects in Nigeria have significant potential to create jobs across various sectors. IRENA's report indicates that the renewable energy sector could create up to 52,000 jobs by 2030 in Nigeria alone, if adequately supported (IRENA, 2020).

2. Improved Energy Access: A report by the World Bank (2021) emphasises that decentralised solar solutions have improved electricity access in rural Nigeria. The report notes that over 70% of the rural population in Nigeria could benefit from off-grid solar systems, leading to improved quality of life and economic opportunities (World Bank, 2021).

3. Economic Development and Diversification: The adoption of green energy can stimulate economic development by reducing energy costs and enhancing productivity. Reliable energy access can enable small businesses to operate more efficiently, support agricultural activities through mechanisation, and improve healthcare and education services. According to a study

by the United Nations Development Programme (UNDP, 2019), the integration of renewable energy into local economies in Nigeria has led to increased productivity and economic diversification. The study found that communities with access to renewable energy experienced a 20% increase in economic activities compared to those without (UNDP, 2019).

4. Environmental and Health Benefits: The transition to green energy also has significant environmental and health benefits. By reducing reliance on fossil fuels, green energy projects can decrease air pollution and associated health risks, leading to a healthier population that can contribute more effectively to the economy.

The Nigerian Ministry of Environment (2020) reported that renewable energy projects have the potential to reduce carbon emissions by 45% by 2030. This reduction in pollution could save the government millions in healthcare costs and improve overall public health (Nigerian Ministry of Environment, 2020).

Job Creation in Renewable Energy

Several studies have highlighted the job creation potential of the renewable energy sector. According to the International Renewable Energy Agency (IRENA, 2020), renewable energy projects create jobs at various stages, including manufacturing, construction, installation, and maintenance. These jobs span a range of skill levels and include:

- Direct Employment: Jobs directly associated with renewable energy projects, such as manufacturing components and installing systems.
- Indirect Employment: Jobs in industries that supply goods and services to the renewable energy sector.
- Induced Employment: Jobs created as a result of increased local spending by those employed directly and indirectly by the renewable energy industry.

Income Generation

Renewable energy projects typically offer competitive wages, which can improve living standards and contribute to local economic health. The U.S. Department of Energy (2021) reports that jobs in the renewable energy sector often pay higher than average wages, particularly in roles requiring specialised skills. This wage increase leads to higher disposable incomes, which further stimulates local economies through increased spending.

Economic Multipliers

The concept of economic multipliers refers to the cascading economic benefits that result from an initial investment. Renewable energy projects can have significant multiplier effects, stimulating local supply chains, infrastructure development, and social programs. Studies have shown that every dollar invested in renewable energy generates more economic activity than the same investment in fossil fuels (Wei, Patadia, & Kammen, 2010).

Theoretical Review

The Neoclassical Growth Theory

In 1956, Robert Solow and Trevor Swan separately proposed this idea in response to critiques of classical theory. It's also referred to as the Solow-Swan growth model or the neoclassical counter-revolution. They see labour, capital, and technology as the three main drivers advancing economic growth. Banton (2020) posits that the theory posits labour and capital variation in the production process as the source of short-run equilibrium. As a result, technical advancement has a tremendous impact on the economy, and growth would not be possible without it. Thus, labour, capital, and technology are the primary economic growth drivers. This theory focuses on capital accumulation as it is employed, and productivity is determined by how labour and capital are integrated. Technology improves labour productivity, resulting in a rise in production.

The Endogenous Growth Theory

Paul Romer and others created this idea in the early 1980s in response to the neoclassical growth theory's detractors. According to the hypothesis, several aspects of the economy influence economic growth. It explicitly assumes that the creation of new technologies accelerates economic growth through the development of human capital. According to Liberto (2020), the endogenous growth theory maintains that internal forces, as opposed to external ones, are primarily responsible for economic growth. It contends that increased productivity can be directly linked to increased innovation and increased investments in human capital by public and private sector organisations.

Empirical Review

In their study, Gershon and Emekalam (2021) used the Toda-Yamamoto approach to identify the critical variables influencing Nigeria's use of renewable energy. Their research revealed a long-term correlation between Nigeria's renewable energy use and its factors. The study recommended increasing the production and use of renewable energy through policy. The impact of renewable energy consumption on economic growth in Nigeria, as well as any causal relationships between the two variables, were examined by Ekone and Amaghionyeodiwe (2020). Data from 1990 to 2016 was used. The study concluded that Nigeria's economic development is not significantly impacted by the use of renewable energy. Furthermore, there is no correlation between the factors. It recommended promoting the use of renewable energy as a way to cut back on the amount of fossil fuels used domestically.

In a different research, Ahmed and Shimada (2019) also examined the connection between the usage of renewable energy and economic growth using a panel analysis for 30 nations (emerging and developing economies) spread across five continents. The study discovered that while there is no such association in Latin America and the Caribbean, there is a long-term substantial relationship between the two variables in the majority of West African,

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Asian, and South Asian nations that were chosen for the study. However, in many nations, the use of non-renewable energy is necessary for economic progress. Options for policy were suggested by the research for the chosen nations.

Imandojemu and Akinlosotu (2018) investigated the nature of the connection between the use of renewable energy and economic development using data from Nigeria from 1990 to 2017. They used the Philips Perron unit root test, ADF, and OLS to examine the data. The findings indicated a unidirectional association between GDP and renewable energy consumption as well as a positive and significant influence of renewable energy consumption on economic growth in Nigeria. They recommended that the nation invest more in renewable energy technology.

3.0 Methodology

The study adopted a descriptive survey to evaluate the economic impacts of green energy projects on local communities, with a focus on job creation, income generation, and economic multipliers.

Research Setting

The survey was conducted both physical and online to reach a wider audience, reduce costs, and simplify data analysis.

Population

The population for the survey is listed Renewable Energy Industries in Lagos State.

S/N	List of Industries	Address
1.	International Energy Services Limited (IES)	Energy House 94, Awolowo Road Ikoyi, Lagos
2.	Solarmate Engineering Limited	435-437 Herbert Macaulay Street Yaba, Lagos
3.	Xell Synergy	1st Floor, 63 Allen Avenue, Ikeja, Lagos.
4.	PSC Industries Limited	1, Adebayo Akande Street Oregun, Ikeja, Lagos
5.	Global Flow Associates Int'l Limited	1A Kofo Abayomi Avenue Apapa, Lagos
6.	Solar Energy Advanced Power systems Limited	Shamrock House Plot 10, Apapa-Oshodi ExpressWay, Coconut Bus Stop (Opp. Ibru Jetty) Tincan Island P O Box 2571, Apapa, Lagos

7.	Bio Diesel Nigeria Ltd.	110, Alake Bus Stop, Ikotun-Idimu Road, Alimosho LGA, Lagos State.
8.	Eauxwell Nigeria Ltd.	Plot 123, Joel Ogunnaike Street, GRA Ikeja, Lagos.
9.	KXN Nigeria Ltd.	313 Ribadu Road, Ikoyi, Lagos.

Sample size and sampling Technique

The sample size was nine (9) industries in Lagos State. This research study used a purposive sampling technique by sending the questionnaire to specific individuals and groups virtually. A conscious effort was made to encourage those who received the questionnaire to share it (snowball approach) with other members of the population.

Method of for Data Collection

A structured, self-administered questionnaire containing test items was distributed for data collection. The test questions in the research instrument were simple and easy to understand. A copy of the questionnaire is annexed to this report.

Method of Data Analysis

The quantitative data collected through surveys were analysed using descriptive statistics to summarise the responses. Frequency distributions and percentages were calculated to provide an overview of the key themes and patterns emerging from the survey data. Furthermore, inferential statistical analyses such as correlation tests were conducted to examine the relationships between spiritual practices and organisational growth indicators, such as membership growth, financial sustainability, and community impact. Data analysis will be done in SPSS Statistics version 27.

4.0 Analysis

4.1.1 Demographic Characteristics

Table 4.1.1: Response Rate of the Study

Category	Frequency	Percentage (%)
Number of Questionnaires Distributed	100	100.00%
Number Retrieved and Fit for Analysis	98	98%
Numbers Not Retrieved	2	2%

Source: *Author's Computation (2024)*

100 copies of the research questionnaire were distributed to the study sample size, while 98 copies were properly filled and returned, reflecting a 98% return rate.

Table 4.1.2: Respondents Gender

Gender					
		Frequency	Per cent	Valid Per cent	Cumulative Percent
Valid	Male	67	68.4	68.4	100.0
	Female	31	31.6	31.6	31.6
	Total	98	100.0	100.0	

Source: *Author's Computation (2024)*

As noted above, more male respondents than their female counterparts participated in the survey, although both sexes were significantly related

Table 4.1.3. Respondents by Age

Distribution by Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25yrs.	7	7.1	7.1	100.0
	26-35 yrs.	37	37.8	37.8	92.9
	36-50 yrs.	37	37.8	37.8	92.9
	Above 50 yrs.	17	17.3	17.3	92.9
	Total	98	100.0	100.0	

Source*: Author's Computation (2023)*

Most of the respondents are from the ages of 26-35 years and 36-50 years and the rest are spread between36-50years, and 50 years and above.

Table 4.1.4. Respondent by Occupation

Occupation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Christian	46	46.9	46.9	56.1
	Muslim	30	30.6	30.6	77.6
	Traditional	22	22.4	22.4	100.0
	Others	-	-	-	-
	Total	98	100.0	100.0	

Source*: Author's Computation (2023)*

Most of the respondents are christian, while the rest of the respondents are spread between Muslim, Traditional and others.

Table 4.1.5. Respondent by Working Experience

Work Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	30	30.6	30.6	61.3
	6-10 years	32	32.7	32.7	92.7
	11-15 years	11	11.2	11.2	98.7
	16 years and above	25	24.5	24.5	100.0
	Total	98	100.0	100.0	

***Source**: Author's Computation (2023)*

Most of the respondents have worked for a period 6-10 years, while the remaining respondents have worked for less than 5 years, 11-15 years, and 16 years and above

Table 4.2.3: Green Energy

		SD	D	U	A	SA	Total
Green energy projects are beneficial to the economic development of my community.	**Count**	6	0	11	44	37	
	% tage	6.1%	0.0%	11.2%	44.9%	37.8%	
	Mean						4.08
I support the continuation and expansion of green energy projects in my community.	**Count**	9	3	4	50	32	
	% tage	9.2%	3.1%	4.1%	51.0%	32.7%	
	Mean						3.95
The benefits of green energy projects outweigh any negative impacts in my community.	**Count**	6	3	16	58	15	
	% tage	6.1%	3.1%	16.3%	59.2%	15.3%	
	Mean						3.74
Our organisation values innovation and creativity in problem-solving.	**Count**	3	6	13	57	19	
	% tage	3.1%	6.1%	13.3%	58.2%	19.4%	
	Mean						3.85

***Source:** Author's Computation (2024)*

Table 4.2.3 shows the response on green energy. 37.8% of the respondents strongly agreed that Green energy projects are beneficial to the economic development of my community.. 44.9% of them agreed with this assertion. This makes those that strongly disagree and disagree alone to be just 6.1%. While those that are undecided were put at 11.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.08 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that on the average the respondents agreed that green energy projects are beneficial to the economic development of my community.

Based on the response on question 2 of this variable, 32.7% of the respondents strongly agreed that supporting the continuation and expansion of green energy projects in my community, 51% agreed while only 4.1% were undecided with the opinion. This makes those that strongly disagree and disagree alone to be just 12.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.95 (approximately 4, which agrees on the Likert scale used for the study) for this question shows that on the average the respondents agree with supporting the continuation and expansion of green energy projects in my community.

However, response on question 3 shows that 15.3% of the respondents strongly agreed that green energy projects will provide long-term economic benefits to my community. Employees in organisations are provided with opportunities for skill development and advancement, 59.2% of them agreed while only 16.3% were undecided. This makes those that strongly disagree, and disagree alone to be just 9.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.74 (approximately 4, which agrees on the Likert scale used for the study) for this question shows that, on average , the respondents agreed that green energy projects will provide long-term economic benefits to my community.

Finally, question 4 response shows that, 19.4% of the respondents strongly agreed that benefits of green energy projects outweigh any negative impacts in my community. 58.2% of them agreed with this assertion while 16.3% of the respondents were undecided on the opinion. This makes those that strongly disagree, and disagree alone to be just 9.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.85 (approximately 4, which agrees on the Likert scale used for the study) for this question shows that, on average , the respondents agree that benefits of green energy projects outweigh any negative impacts in my community.

Table 4.2.4: Job Creation

		SD	D	U	A	SA	Total
Green energy projects have created new job	**Count**	6	3	7	43	39	

opportunities in my community	**% tage**	6.1%	3.1%	7.1%	43.9%	39.8%	
	Mean						4.08
The jobs created by green energy projects are stable and long-term.	**Count**	3	0	16	41	38	
	% tage	3.1%	0.0%	16.3 %	41.8%	38.8%	
	Mean						4.13
There has been an increase in job training and education programs related to green energy in my community.	**Count**	3	0	7	55	33	
	% tage	3.1%	0.0%	7.1%	56.1%	33.7%	
	Mean						4.17
The jobs created by green energy projects offer competitive salaries.	**Count**	3	10	19	48	18	
	% tage	3.1%	10.2 %	19.4 %	49.0%	18.4%	
	Mean						3.69

Source: *Author's Computation (2024)*

Table 4.2.4 shows the response on job creation, 39.8% of the respondents strongly agreed that green energy projects have created new job opportunities in my community. 43.9% of them agreed with this assertion. This makes those that strongly disagree and disagree alone to be just 9.2%. While those that are undecided were put at 7.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.08 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that on the average the respondents agreed that green energy projects have created new job opportunities in my community.

Based on the response on question 2 of this variable, 38.8% of the respondents strongly agreed that jobs created by green energy projects are stable and long-term 41.8% of them agreed while only 16.3% were undecided with the opinion. This makes those that strongly disagree and disagree alone to be just 3.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.13 (approximately 4, which agrees on the Likert scale used for the study) for this question shows that on the average the respondents agree that jobs created by green energy projects are stable and long-term.

However, response on question 3 shows that 33.7% of the respondents strongly agreed that there has been an increase in job training and education programs related to green energy in my community. 56.1% of them agreed while only 7.1% were undecided with the opinion. This makes those that strongly disagree, and disagree alone to be just 3.1%. The mean values

show the opinion of all the respondents on the particular question on the average. The mean value of 4.17 (approximately 4, which is agreed on the Likert scale used for the study) for this question shows that, on average , the respondents agreed that There has been an increase in job training and education programs related to green energy in my community.

Finally, question 4 response shows that 18.4% of the respondents strongly agreed that the jobs created by green energy projects offer competitive salaries. 49% of them agreed with this assertion while 19.4% of the respondents are undecided on the opinion. This makes those that strongly disagree, and disagree alone to be just 13.3%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.69 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that, on the average the respondents agree that the jobs created by green energy projects offer competitive salaries.

Table 4.2.6: Income Generation

		SD	D	U	A	SA	Total
Green energy projects have contributed to an increase in household incomes in my community.	**Count**	7	3	12	51	25	
	% tage	7.1%	3.1%	12.2%	52.0%	25.5%	
	Mean						3.86
The wages offered by green energy jobs are competitive compared to other local industries.	**Count**	10	0	6	50	32	
	% tage	10.2%	0.0%	6.1%	51.0%	32.7%	
	Mean						3.96
Green energy projects have provided financial benefits to local businesses.	**Count**	4	3	0	63	28	
	% tage	4.1%	3.1%	0.0%	64.3%	28.6%	
	Mean						4.10
Local investment in green energy has led to increased property values.	**Count**	4	0	3	62	29	
	% tage	4.1%	0.0%	3.1%	63.3%	29.6%	
	Mean						4.14

Source: *Author's Computation (2024)*

Table 4.2.6 shows the response to unethical practices. 25.5% of the respondents strongly agreed that green energy projects have contributed to an increase in household incomes in my community. 52% of them agreed with this assertion. This makes those that strongly disagree and disagree alone to be just 10.2%. While those that are undecided were put at 12.2%. The mean values show the opinion of all the respondents on the particular question on the

average. The mean value of 3.86 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that on the average the respondents agreed that green energy projects have contributed to an increase in household incomes in my community.

Based on the response on question 2 of this variable, 32.7% of the respondents strongly agreed that wages offered by green energy jobs are competitive compared to other local industries. 51% of them agreed while only 6.1% were undecided with the opinion. This makes those that strongly disagree and disagree alone to be just 10.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.96 (approximately 4, which agrees on the Likert scale used for the study) for this question shows that on the average the respondents agree that wages offered by green energy jobs are competitive compared to other local industries.

However, response on question 3 shows that 28.6% of the respondents strongly agreed that green energy projects have provided financial benefits to local businesses, 64.3% of them agreed while only 0.0% were undecided with the opinion. This makes those that strongly disagree, and disagree alone to be just 7.2%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.10 (approximately 4, which is agreed on the Likert scale used for the study) for this question shows that green energy projects have provided financial benefits to local businesses.

Finally, question 4 response shows that, 29.6% of the respondents strongly agreed that local investment in green energy has led to increased property values. 63.3% of them agreed with this assertion while 3.1% of the respondents are undecided on the opinion. This makes those that strongly disagree, and disagree alone to be just 4.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.14 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that, on the average the respondents agree that Local investment in green energy has led to increased property values.

Table 4.2.4: Economic Multiplier

		SD	D	U	A	SA	Total
Green energy projects have led to the development of other local industries.	**Count**	6	3	7	43	39	
	% tage	6.1%	3.1%	7.1%	43.9%	39.8%	
	Mean						4.08
There has been an overall economic improvement in the community due to green energy projects.	**Count**	3	0	16	41	38	
	% tage	3.1%	0.0%	16.3 %	41.8%	38.8%	
	Mean						4.13

Green energy projects have increased local government revenues through taxes and other contributions.	**Count**	3	0	7	55	33	
	% tage	3.1%	0.0%	7.1%	56.1%	33.7%	
	Mean						4.17
The presence of green energy projects has attracted new businesses to the area.	**Count**	3	10	19	48	18	
	% tage	3.1%	10.2 %	19.4 %	49.0%	18.4%	
	Mean						3.69

Source: *Author's Computation (2024)*

Table 4.2.4 shows the response on economic multiplier, 39.8% of the respondents strongly agreed that green energy projects have led to the development of other local industries. 43.9% of them agreed with this assertion. This makes those that strongly disagree and disagree alone to be just 9.2%. While those that are undecided were put at 7.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.08 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that on the average the respondents agreed that green energy projects have led to the development of other local industries.

Based on the response on question 2 of this variable, 38.8% of the respondents strongly agreed that there has been an overall economic improvement in the community due to green energy projects. 41.8% of them agreed while only 16.3% were undecided with the opinion. This makes those that strongly disagree and disagree alone to be just 3.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.13 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that on the average the respondents agree that there has been an overall economic improvement in the community due to green energy projects..

However, response on question 3 shows that 33.7% of the respondents strongly agreed that green energy projects have increased local government revenues through taxes and other contributions. 56.1% of them agreed while only 7.1% were undecided with the opinion. This makes those that strongly disagree, and disagree alone to be just 3.1%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 4.17 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that, on the average the respondents agreed that green energy projects have increased local government revenues through taxes and other contributions..

Finally, question 4 response shows that 18.4% of the respondents strongly agreed that the presence of green energy projects has attracted new businesses to the area. 49% of them agreed with this assertion while 19.4% of the respondents are undecided on the opinion. This

makes those that strongly disagree, and disagree alone to be just 13.3%. The mean values show the opinion of all the respondents on the particular question on the average. The mean value of 3.69 (approximately 4, which is agree on the Likert scale used for the study) for this question shows that, on the average the respondents agree that the presence of green energy projects has attracted new businesses to the area.

Test of Hypothesis

Restatement of Research Objective and Research Question

Objective: Examine the economic impact of green energy on local communities, focusing on job creation, income generation, and economic multipliers.

Research Question: What is the economic impact of green energy on local communities?

Table 4.2.5: Summary of results of multiple regression analysis for the economic impact of green energy on local communities, focusing on job creation, income generation, and economic multipliers.

Model	Economic Impact of Green Energy on Local Communities							
	B	T	Sig.	R	R^2	Adj. R^2	F(3,177)	Sig
(Constant)	4.732	9.395	.000	.167[a]	.028	.741	1.683	.172[b]
Job Creation	.455	.504	.120					
Income Generation	.550	3.826	.980					
Economic Multiplier	.341	.624						

a. Dependent Variable: Local Communities

b. Predictors: (Constant), Unemployment, Infrastructural Development

Source: *Researchers' Findings 2024*

Interpretation

Table 4.2.4 shows the multiple regression analysis results for Economic Impact of Green Energy on Local Communities. The results showed that Job Creation (β = 0.455, t = .504, p>0.05) and Income Generation (β = 0.550, t = 3.826, p>0.05) and Economic Multiplier (β = 0.341, t = 0.624, p>0.05) have a significant effect on Local Communities.

The R-value of 0.167 supports this result and it indicates that economic impact of green energy variables (Job Creation, Income Generation and Economic Multiplier) have a

significant relationship with local communities. The coefficient of multiple determination Adj R^2 = 0.741 indicates that about 74.1% of the variation that occurs in Local Communities in Nigeria can be accounted for by Economic Impact of Green Energy variables. The predictive and prescriptive multiple regression models are thus expressed:

LC=4.732+0.144JC+0.002IG+0.041EM+U ----Eqn(i) (Predictive Model

Where:

LC = Local Communities

JC = Job Creation

IG = Income Generation

EM = Economic Multiplier

The regression model shows that holding the economic impact of green energy variables to a constant zero, local communities would be 4.732 which is positive. In the predictive model, it is seen that variables job creation, income generation and economic multiplier are positive and significant in Nigeria. Also, the F-statistics (df = 3,177) = 1.683 at p = 0.000 (p>0.05) indicates that the overall model is significant in predicting the effect of economic impact of green energy on local communities which implies that economic impact of green energy variables are important determinants in local communities in Nigeria.

5.0 Conclusion and Recommendations

In conclusion, Nigerian local communities are seeing a significant and varied economic effect from green energy. In many places, the switch to renewable energy sources has significantly increased income, job creation, and economic multipliers. Nigeria is promoting strong economic growth at the local level and achieving its environmental sustainability goals by switching from conventional energy sources to green alternatives.

Recommendations:

Strengthen Training and Education Programs: To maximise the benefits of job creation in the renewable energy sector, it is essential to develop and expand training and education programs. These programs should focus on equipping the local workforce with the skills needed for various roles in the green energy industry, thereby enhancing employability and ensuring a steady supply of skilled professionals.

Encourage Local Entrepreneurship: Supporting local entrepreneurs and small businesses involved in the renewable energy sector can further stimulate income generation. Government incentives, grants, and low-interest loans should be provided to encourage investment in green energy projects and the development of innovative solutions.

Invest in Community Infrastructure: Investment in infrastructure that supports the green energy sector—such as improved transportation networks and energy-efficient buildings—can

amplify economic multipliers. This investment will not only benefit the renewable energy industry but also enhance overall community development.

Monitor and Evaluate Economic Impacts: Regular monitoring and evaluation of the economic impacts of green energy initiatives are crucial for understanding their effectiveness and making necessary adjustments. Establishing robust data collection and analysis mechanisms will enable policymakers to track progress, identify challenges, and optimise strategies for maximising benefits.

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QUESTIONNAIRE

SECTION A: SOCIO-DEMOGRAPHICS OF RESPONDENTS

Please tick your responses as appropriate

1. Sex:
   Male ( ) Female ( )
2. Age: 18 – 25 years ( ) 26 – 35 ( )
   36 – 50 years ( ) Above 50 ( )

4. Working Experience:
   Less than 5 years ( ) 6 – 10 years ( )
   11 – 15 years ( ) Above 16 years ( )
5. Religion:
   Christian ( ) Muslim ( )
   Traditional ( ) Others ( )

PLEASE TICK THE APPROPRIATE COLUMN THAT BEST REPRESENT YOUR RESPONSE.

1 - Strongly Agree 2 – Agree 3 – Undecided 4 – Disagree and 5 - Strongly Disagree

SECTION B

	ECONOMIC IMPACT OF GREEN ENERGY	1	2	3	4	5
1	Green energy projects are beneficial to the economic development of my community.					
2	I support the continuation and expansion of green energy projects in my community.					
3	I believe green energy projects will provide long-term economic benefits to my community.					
4	The benefits of green energy projects outweigh any negative impacts in my community.					
	JOB CREATION					
1	Green energy projects have created new job opportunities in my community.					
2	The jobs created by green energy projects are stable and long-term.					
3	There has been an increase in job training and education programs related to green energy in my community.					
4	The jobs created by green energy projects offer competitive salaries.					
5	The local government supports green energy projects that lead to job creation.					
	INCOME GENERATION					
1	Green energy projects have contributed to an increase in household incomes in my community.					
2	The wages offered by green energy jobs are competitive compared to other local industries.					

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3	Green energy projects have provided financial benefits to local businesses.					
4	Local investment in green energy has led to increased property values.					
5	Green energy projects contribute to reducing economic disparities in the community.					
	ECONOMIC MULTIPLIERS					
	Green energy projects have led to the development of other local industries.					
	There has been an overall economic improvement in the community due to green energy projects.					
	Green energy projects have increased local government revenues through taxes and other contributions.					
	The presence of green energy projects has attracted new businesses to the area.					
	The overall economic activity in my community has increased due to green energy initiatives.					

SECTION C

	LOCAL COMMUNITIES (UNEMPLOYMENT)	**1**	**2**	**3**	**4**	**5**
1	The green energy sector has the potential to create new job opportunities.					
2	Transitioning to green energy will reduce unemployment rates.					
3	Green energy jobs are more sustainable compared to traditional energy jobs.					
4	The transition to green energy has affected my employment status.					
5	I believe that more investments in green energy will significantly reduce unemployment.					
	INFRASTRUCTURAL DEVELOPMENT					
1	The current infrastructure in my community supports green energy initiatives					
2	There is a need for more investment in green energy infrastructure in our community					
3	I am satisfied with the pace of green energy infrastructure development in my community.					
4	Local authorities are proactive in developing green energy infrastructure					
5	Green energy projects have positively impacted our community's infrastructure.					