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**RESEARCH ARTICLE**

**ASSESSING THE SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACT OF POWER TRANSMISSION LINES IN RURAL OGUN STATE, NIGERIA**

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**ABSTRACT**

This research delves into the impacts of power transmission lines on rural communities in Ogun State, Nigeria. Conducting surveys in six communities, we aimed to assess the effects on local livelihoods, health, safety, and land use. Key findings show disruptions in land use patterns, decreased agricultural productivity, and displacement of farming activities. Additionally, health concerns arise, with increased illnesses attributed to electromagnetic fields and construction-related pollution. The presence of power transmission lines also leads to social fragmentation and economic challenges. While some communities experienced a temporary increase in employment opportunities during the construction phase, long-term economic benefits were minimal, with many residents reporting a decline in income levels post-construction. The study also identifies dissatisfaction with compensation and rehabilitation measures. Environmental assessments highlight adverse effects on local ecosystems, including deforestation, soil erosion, and biodiversity loss, impacting the sustainability of rural livelihoods and the region's ecological balance. The study emphasizes the need for policy reforms to ensure a holistic approach to power transmission projects in rural areas, including robust environmental impact assessments, adequate compensation and rehabilitation for affected communities, and continuous monitoring to mitigate adverse effects. This balance is crucial to achieve socio-economic and environmental sustainability, ensuring equitable distribution of project benefits.

**KEYWORDS**

*Socio-economic; Power Transmission Line; Rural*

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## Background of the Study

The Transmission Company of Nigeria (TCN), a government-owned entity formed from the unbundling of the former Power Holding Company of Nigeria (PHCN), is responsible for transmitting electric power from various power stations to load centers across the country and beyond. TCN's mandate includes ensuring efficient and cost-effective transmission, system operation, and enhancing service delivery. It also manages assets related to High Voltage Transmission System Operations, oversees generation dispatch functions, and works on expanding the network by constructing new transmission lines and substations to optimize transmission and system operations.

Despite Nigeria's strong economic growth until the recession in 2016, the future outlook is positive due to the government's anti-corruption initiatives and economic policies aimed at reducing capital flight. However, the nation's power supply remains severely inadequate. To address this critical issue, TCN developed a project to achieve a transmission capacity of 20,000 MW by 2020, in line with the expected growth in generation capacity. Currently, the transmission lines serving Lagos, the largest demand center, face significant bottlenecks, preventing full utilization of the generating capacities being developed nationwide. Additionally, the lack of alternative routes in case of equipment failure results in low system reliability.

The project, targeting Lagos and Ogun States, aims to improve power supply in these regions as part of the broader goal of reaching 20,000 MW transmission capacity by 2020. The Lagos and Ogun States Transmission Project is financed through a Japanese ODA loan from the Japan International Cooperation Agency (JICA), with TCN as the implementing agency and eventual owner. The project involves enhancing transmission capacity, improving electricity supply reliability, and reducing electricity losses by installing transmission systems in southwestern Nigeria, thereby accelerating economic growth and community development. The project encompasses approximately 203 km of high voltage transmission lines and five high voltage substations, divided into three sections for the ESIA and RAP studies: Lot 1, Lot 2, and Lot 3. TCN has appointed EEMS

Limited to conduct a Line Route Study, Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), and Resettlement Action Plan (RAP) for Lot 3 of the project. Lot 3 includes the following components: A 330kV D/C Transmission Line from Ejio to Ajegunle, approximately 29.5 km in length. A 132kV D/C Transmission Line from Ajegunle to Agbara, approximately 21.7 km in length. A 132kV D/C Transmission Line from Ajegunle to Badagry, approximately 36.5 km in length. A new substation at Ejio (2x150MVA, 330/132kV + 2x60MVA 132/33kV). A new substation at Ajegunle (2x150MVA, 330/132kV + 2x60MVA 132/33kV). A new substation at Badagry (2x60MVA, 132/33kV)

## Statement of Problem

Myriads of socio-economic problems have been shown to have resulted from the construction and operation of transmission line project in different communities. Generally, according to Ume et al (1997) these problems will include reduction in farmlands, increase in cost of living, disruption in family structures and traditional institutions, community agitation, housing, transportation and waste disposal problems, etc, most of which have affected rural activities and disrupted rural community life by affecting activities such as farming, fishing, hunting, disrupting rural populations and so on.

In some highly sensitive areas, the construction of pylons and other structures often lead to flooding, erosion and forms of devastation of the physical and socioeconomic environment (Pinder, (2001). Construction developments and structures have implications for traffic management, power and energy consumption, as well as general socio-economics wellbeing of the host communities (Olokesusi, 2004).

The construction of power transmission lines has significantly affected the social environment in the study area. According to Patusco (2013), building a transmission line entails both long-term and temporary impacts. Long-term impacts persist for the duration the line is operational, including land use restrictions, deforestation, and aesthetic concerns. Temporary

impacts, such as noise pollution or crop damage, occur during construction or infrequent activities like line repairs or right-of-way (ROW) maintenance. If not adequately managed or mitigated, short-term impacts can evolve into long-term issues. The Public Service Commission of Wisconsin (2013) notes that the effects of a new transmission line on a given area may vary depending on factors such as topography, land cover, and existing land uses. In Ogun State, the construction and operation of a transmission line have adversely impacted the socio-economic life of local communities, posing a threat to the subsistence-based peasant economy and the environment, thereby jeopardizing the fundamental livelihoods and survival of the inhabitants. The development of transmission lines in these communities, and indeed across the entire country, has led to significant land and water scarcity, which has escalated into intra-community, inter-community, and inter-ethnic conflicts. Despite the benefits associated with transmission line projects, their adverse impacts, when not accompanied by appropriate mitigation measures, have led to the displacement and disenfranchisement of local populations reliant on primary economic activities such as farming, fishing, and hunting. The construction phase of these projects has resulted in soil degradation, a decline in agriculture, deforestation, a reduction in fishery resources, and biodiversity loss. Thus, this study aims to assess the power transmission line's socioeconomic impact on Ogun State's rural communities. To achieve this, questionnaires will be designed to measure the project's effects on the socioeconomic conditions of these communities. The data will be analyzed using statistical techniques to identify the economic and social factors impacted by the project in the affected areas

## Methodology

### Study Area

This study focuses on the Ifo, Ewekoro, and Obafemi Owode Local Government Areas (LGAs) within Ogun State. Although the Ogun State Government has recently subdivided these LGAs into Local Council Development Authorities (LCDAs), these new administrative units have not yet received recognition from the Federal Government, and many local residents are still unfamiliar with them. Consequently, this research utilizes the established LGAs rather than the newly

created LCDAs. The broader project area encompasses 65 communities, but due to budget constraints, this study will concentrate on six specific communities: Olorunsogo, Ita-Alhaji, Ayeye, Abese, Agboke, and Ikija. The following section outlines the characteristics of Ogun State, where the study area is situated.

### Geographical Location

Ogun State, Nigeria, where the study area is located, is between 6°54'35.4" North latitude and 3°15'30.11" East longitude, on the west coast of Africa. The elevation of the state is approximately 23.28 meters (76.37 feet). It is in the southwestern part of Nigeria and shares borders with Lagos State to the south, Oyo and Osun states to the north, Ondo to the east, and the Republic of Benin to the west. The state covers an area of about 16,762 square kilometers, which is roughly 1.81 percent of Nigeria's total land mass of about 923,768 square kilometers (Akanni, 2000).

### Population and Activities

The population of Ogun State, according to the 2006 census, was 4,424,096. By 2015, the projected population had grown to 5,037,594.173 (NBS, 2012). The population density of Ogun State is 307.17 persons per square kilometer. In terms of age demographics, 38.3% of the population are children (0-14 years old), 39.9% are in the 15-44 age bracket, 15.3% are in the 45-64 age bracket, and 3.6% are elderly (65 years and above). The age dependency ratio of the population is 88.5%.

Agriculture is the mainstay of the economy, providing the primary occupation for people in the state, especially in rural areas. The state produces arable crops such as maize, yam, cassava, rice, cocoyam, groundnut, melon, banana, plantain, oranges, pineapple, sugarcane, and kola nuts. The major export crops are cocoa, coffee, rubber, and palm kernel. In the riverine areas, there is a focus on fish farming, and lumbering activities also thrive due to the area's abundant forest resources.

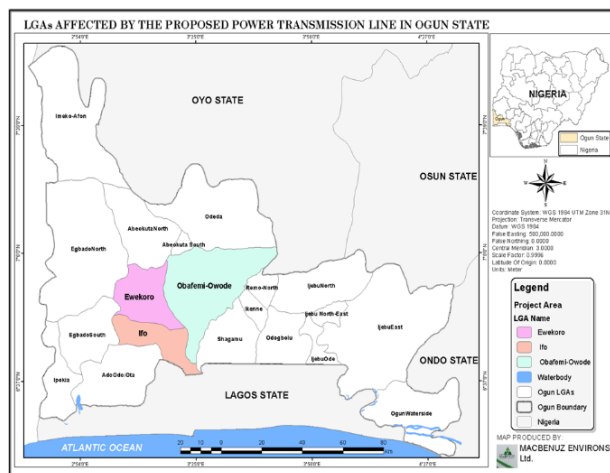
### Infrastructure

The settlement pattern in the study area consists of clusters of compounds with housing that reflects a typical rural setting. The area is characterized by old, poorly constructed homes and substandard facilities. It is

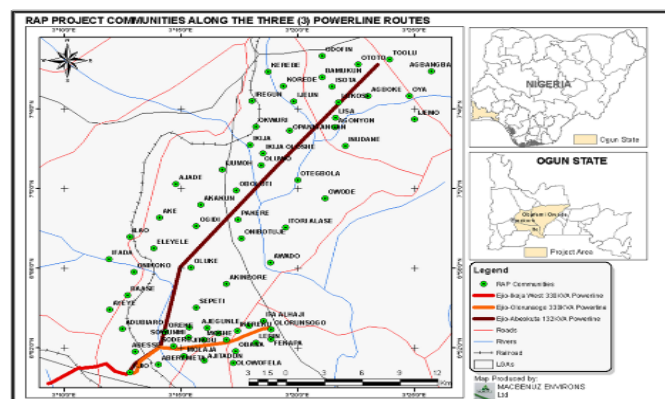
important to note that the majority of the residents either own or live in their own houses. The proposed study will cover six communities within the spatial boundary, with a right-of-way (RoW) of 25 meters wide for the proposed 330kV transmission line and 15 meters wide for the 132kV transmission line. Table 1 provides details and locations of the communities included in the study. Additionally, Figure 1 displays a map of Ogun State highlighting the LGAs of the study communities involved in the proposed project, while Figure 2 shows the map of the project area, indicating the specific communities affected by the project.

**Table 1: The Study Communities and LGAs**

S/No	Sections	LGA/ State	Communities
1	Ejio – Shojuolu	Ewekoro, Ogun State	Ayepe
2			Abese
3	Ejio - Olorunsogo	Ifo, Ogun State	Olorunsogo
4			Ita – Alaji
5	Ejio – New	Obafemi Owode, Ogun State	Agboke
6	Abeokuta		Ikija



**Figure 1: Map Of Ogun State Showing The LGAs of The Study Communities Of The Proposed Project. Source: Researcher's Field Survey, 2021**



**Figure 2: Map of Proposed Project Area Showing Project Communities**

Source: Researcher's Field Survey, 2021

**Materials and Methods**

**Types And Sources of Data**

Two types of data were used in this study and they include primary and secondary data. The primary data used in the study including the variables investigated were as follows; Gender, Age, Ethnicity, Education level, Literacy level, Income level, Employment status, Marital status, Housing type and ownership, Agricultural productivity, Occupation characteristics, Infrastructural facilities, Industry and social related problems, Land use pattern, Economic activities, Household wastes and disposal, Types of Toilets in use

**Instruments of Data Collection**

**Primary Data**

The major sources of primary data used in this study were:

**Questionnaire Survey:**

Primary data was gathered through fieldwork using a well-structured questionnaire that included both open-ended and closed-ended questions. A cross-sectional stratified random survey method was employed, with 1,135 questionnaires distributed across various communities to ensure broad coverage. The community-level survey featured questions regarding basic settings and social changes, which were answered by community leaders or other knowledgeable individuals. The household-level survey addressed family dynamics, individual livelihoods, opinions, perceptions, and values, and responses were provided by household members.

Most respondents completed the questionnaires at home, while some did so at their workplaces. The survey primarily targeted household heads, though other members were included when available. For local farmers with limited educational backgrounds, the researcher recorded responses orally to ensure clarity and accuracy. This oral approach facilitated two-way communication, enhancing response rates and effectiveness, and allowed for further probing and preparation for key informant interviews and group discussions (Babbie, 2002).

## Secondary Data

The secondary data for this study were sourced from libraries, government and non-government agencies where existing textbooks, magazines, newspapers, scientific journals, seminar papers, maps and other existing statistical records were consulted. For example, case studies were obtained from the Ministry of Power, while the content of the procedural guidelines and EIA laws were obtained from the Federal Ministry of Environment's archives. A huge part of the secondary data was however, obtained from journals and research papers from the internet, including the National Bureau of Statistics bulletin and annual abstract of statistics, the Central Bank of Nigeria abstracts, etc.

## Population And Sampling Techniques

The multi-stage sampling techniques were adopted for this study. First, the individual communities were purposively sampled; the second stage is the selection of household units through random selection and, in each case, copies of the questionnaires were distributed in households along the communities under study, to understand the views of the individuals in the selected communities. The choice of sampling techniques depends on many factors such as the size of the sample, population strata, the physical layout of the settlements and the available resources (Olanrewaju, 1990). It is also important that the sample size should be typical and representative of the population from where they were drawn if valid generalization concerning the population is to be made (Trochim, 2006).

## Sample Size

To determine the sample size of the study, the following considerations were made:

- I. Response Rate: The response rate was over 95% because of the method adopted in the distribution of the questionnaire.
- II. Determine the confidence level: A confidence level of 95% was used for the study as this is a standard confidence level for most socio-economic research (Watson, 2001). The (Research Advisors, 2006)

Table was used to determine the final sample size for each community.

## Methods of Data Analysis

Data have been presented with the aid of tables, simple percentages and charts, while data analysis for this study was carried out at four different levels as follows;

- I. The Socioeconomics baseline data from the six communities in the project communities in this study were analyzed and tested.
- II. The hypotheses formulated were tested using t-Test statistics (Hayes, 2021), and the software used for the analysis was IBM SPSS version 26.
- III. The Data on the impact of the Transmission Line project on some selected socioeconomic components in the communities were analyzed and tested.
- IV. Potential and associated impact significance quantification and evaluation using the Impact to be measured on each of the communities to include; population, Age Distribution, employment opportunities, income levels, agricultural productivity, religious and other social activities, education-literacy level, general economic activities, housing, transport & communication, road, electricity & water supply, healthcare, security, community organization, inter-community relationships, land-use, waste generation and disposal.

## Data Presentation Analysis and Discussion of Findings

This section of the research deals with the presentation and analysis of data generated for this research, as well as discussion of findings made by the research. Data generated are presented based on the following:

1. Questionnaire Distribution
2. Respondents Characteristics
3. Identification of the socio-economic activities in the study area impacted by the project
4. Assessment of the extent of the impact of the project on the socioeconomic activities of the people

5. Identification of other secondary effects of the project on the livelihood of the area
6. Mitigation and preventive measures of the identified effects of the project

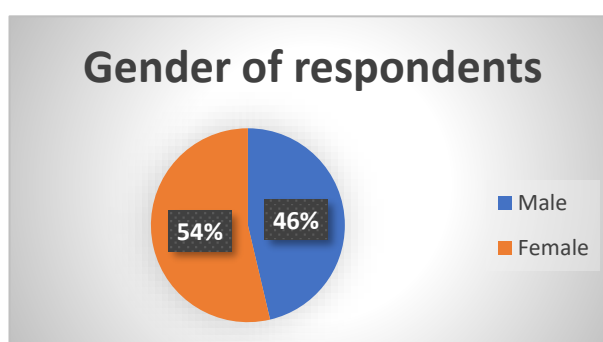
that is more or less affected by the project. The information obtained on the gender of the respondents is presented in Table 8.

**Table 3: Gender of The Respondents**

S/No	Local Government	Community	Male	Female	Total
1	Ifo	Olorunsogo	74	84	158
2		Ita-Alhaji	97	112	209
3	Ewekoro	Ayepe	110	123	233
4		Abese	50	93	143
5	Obafemi	Agboke	77	87	164
6	Owode	Ikija	114	106	220
	<b>Total</b>		<b>522</b>	<b>605</b>	<b>1,127</b>
	<b>% Gender</b>		<b>46%</b>	<b>54%</b>	<b>100%</b>

Source: Researcher's Field Survey, 2018

Information presented in **Table 3** showed that out of the 1,127 respondents that returned their questionnaire, 605 representing 54% of the sample size were females, while 522 respondents or 46% of the sample size were males. This showed that the female respondents outnumbered their male counterparts. Breakdown of Table 4.2 also showed that there were more female respondents than the male respondents in all the sampled communities in the study area, except Ikija community where the male respondents is greater than the female respondents. The community with greatest number of female respondents was Ayepe (123) and this community also turned out the highest number of respondents (233) than other sampled project communities. The reason as the researcher was able to find out was because their community leader was familiar with research work of this nature and so was able to convince more of his subjects to participate in this research work than other sampled project communities. Ikija community recorded the highest number of male respondents (114) in the study area. The lowest number of male (50) and female (84) respondents were recorded in Abese and Olorunsogo communities respectively. The information in Table 8 is further depicted in figure 3;



**Questionnaire Distribution**

A questionnaire survey was the major tool used to generate data for this research. The information in **Table 2** shows the total as well as the percentage of questionnaires distributed and retrieved in the course of the study

**Table 2: Questionnaire Distribution**

Local Government Area	Sampled Community	Questionnaire			
		no. distributed	% distributed	no. retrieved	% retrieved
Ifo	Olorunsogo	163	14.36	158	13.92
	Ita-Alhaji	209	18.41	209	18.41
Ewekoro	Ayepe	233	20.53	233	20.53
	Abese	144	12.69	143	12.60
Obafemi Owode	Agboke	166	14.64	164	14.50
	Ikija	220	19.38	220	19.38
<b>Total</b>		<b>1,135</b>	<b>100</b>	<b>1,127</b>	<b>99.34</b>

Source: Researcher's Field Survey, 2018

Analysis of the information in **Table 2** showed that 6 communities were sampled and chosen from 3 local government areas where the power transmission lines were located in Ogun state. A total of 1,135 copies of the questionnaire were distributed among the respondents of the 6 sampled communities. Out of these 1,135 copies distributed, 1,127 copies representing 99.34 percent were retrieved and used for the study. 3 communities (Ita-Alhaji, Ayepe and Ikija) showed 100 percent questionnaire retrieval, while the other 3 communities showed near 100 percent questionnaire retrieval.

**Respondents Characteristics**

The characteristics of the respondents considered in this research are gender, age, marital status, education/literacy level and respondents' occupation.

**4.2.1. Gender of the respondents**

Study bordering on the socioeconomic impact of a project definitely deserves to know the gender of the respondents. This will help in identifying the gender

**Figure 3: Gender of Respondents. Source: Field survey, 2018**

**Age Distribution of the Respondents in the Study Area**

As a socio-economic characteristic, the age of the respondents was also collected and classified ranging from: 12 – 32 years, 33 – 53 years, 54 – 74 years and above 74 years. The information on the age distribution of the respondents is presented in Table 4

**Table 4: Age Distribution of Respondents**

S/No	Local Government	Community	12 – 32 yrs	33 – 53 yrs	54-74yrs	Above 74yrs	Total
1	Ifo	Olorunsogo	35	55	48	20	158
2		Ita-Alhaji	40	81	65	23	209
3	Ewekoro	Ayepe	45	92	62	34	233
4		Abese	32	50	44	17	143
5	Obafemi	Agboke	28	60	52	24	164
6	Owode	Ikija	45	83	67	25	220
	<b>Total</b>		<b>225</b>	<b>421</b>	<b>338</b>	<b>143</b>	<b>1,127</b>
	<b>% Age</b>		<b>20%</b>	<b>37%</b>	<b>30%</b>	<b>13%</b>	<b>100%</b>

*Source: Source: Researcher's Field Survey, 2021*

The information in Table 4 showed that the highest number of the respondents (37%) fall within the age of 33 – 53 years. This age is regarded as the most active and also a youthful population too, hence the information obtained from them can be very reliable. The least population of the respondents obtained falls within the age bracket of above 74 years. this age represents 13% of the sample population and also regarded as the aged population. The implication of the information in Table 4.3 means that about 87% of the sampled population fall within the active, youthful and working population.

**Marital Status of the Respondents**

The marital status of the respondents was investigated and the information obtained showed that the marital status of the respondents of the study area ranged from single to married and widowed. Information presented in Table 5 indicated the marital status of the study area

**Table 5: Marital Status of Respondents**

S/No	Local Government	Community	Single	Married	Widowed	Total
1	Ifo	Olorunsogo	41	113	4	158

2		Ita-Alhaji	69	112	28	209
3	Ewekoro	Ayepe	28	187	18	233
4		Abese	16	105	22	143
5	Obafemi	Agboke	14	142	8	164
6	Owode	Ikija	35	173	12	220
	<b>Total</b>		<b>203</b>	<b>832</b>	<b>92</b>	<b>1,127</b>
	<b>% Marital Status</b>		<b>18%</b>	<b>74%</b>	<b>8%</b>	<b>100%</b>

*Source: Researcher's Field Survey, 2021*

852 respondents as shown in the Table 5 are married. This means that 74% of the respondents are married. Other marital status observed in the course of the study were married (18%) and 8% are divorced. Analysis of the information in the Table showed that the highest number (173) of married respondents was found in Ikija community while the least of the married respondents are found in Abese. The greatest number of single respondents (69) was found in Ita- Alhaji, while the least number of single respondents (14) are found in Agboke. For the widowed, the largest number (28) was found in Ita-Alhaji, while the least (4) was found in Ifo

**Educational/ Literacy Level of the Respondents**

The data collected showed that there is a moderate level of literacy among the respondents in the project area as shown in Table 6.

**Table 6: Educational/Literacy Level of Respondents**

S/no	Local govt	Community	Non formal Education	Primary	Secondary/ vocational/ Technical	Tertiary	Total
1	Ifo	Olorunso go	13	63	70	12	158
2		Ita-Alhaji	10	71	84	44	209
3	Ewekoro	Ayepe	18	87	86	42	233
4		Abese	15	47	54	27	143
5	Obafemi	Agboke	17	56	60	31	164
6	Owode	Ikija	21	79	73	47	220
	<b>Total</b>		<b>94</b>	<b>403</b>	<b>427</b>	<b>203</b>	<b>1127</b>
	<b>% Literacy level</b>		<b>8%</b>	<b>36%</b>	<b>38%</b>	<b>18%</b>	<b>100%</b>

*Source: Researcher's Field survey, 2021*

Analysis of the information in Table 6 showed that over 90% of the respondents have one form of formal education or the other. This implies that that majority of the respondents have basic knowledge and idea of the theme of the research. The data in Table 4.6 showed that 38% of the respondents had at least secondary or vocational education, 36% had at least primary education 18% had tertiary education, while paltry 8% had non-formal education. The breakdown of the information in the Table showed that the highest literacy rate was found in the Owode community, while the least was observed in the Olorunsogo community. The highest number of people ith non-formal education was seen in the Ikija community, while the least number of respondents with non-formal education was found in Ita-Alhaji

The information in Table 11 is presented in Figure 4.

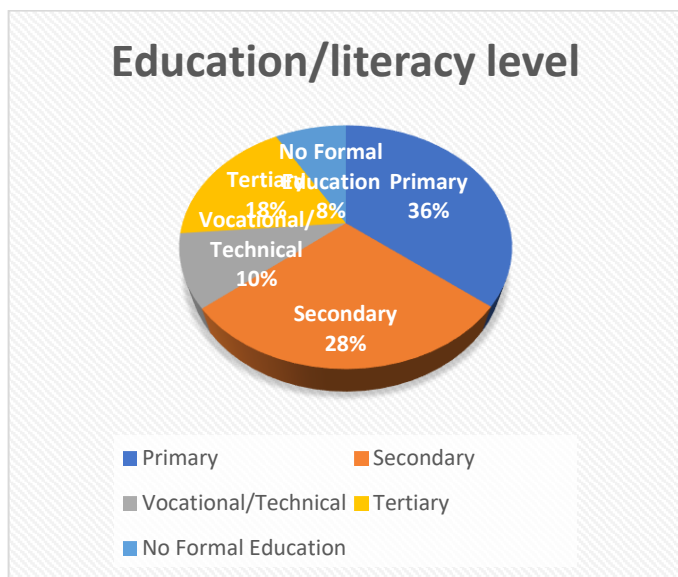


Figure 4: Education/ Literacy Level of Respondents

Source: Researcher's Field survey, 2021

### Occupational Characteristics of the Respondents

The information on the occupation of the respondents in the study area is presented in Table 7.

Table 7: Occupational Characteristics of Respondents

Local Govt	Community	Farming	Petty Trading	Business Contractor	Civil Servant	Students Apprentice	Artisan	Unemployed	Total
Ifo	Olorunso go	47	19	23	17	18	25	9	158
	Ita-Alhaji	68	24	34	39	18	19	7	209
Ewekoro	Ayepe	79	13	47	47	11	23	13	233
	Abese	43	16	21	33	12	7	11	143
Obafemi	Agboke	59	17	13	38	19	10	8	164

Owode	Ikija	85	18	27	53	9	11	17	220
Total		38	10	16	22	87	95	65	11
		1	7	5	7				27
Percentage		34	9%	15	20	8%	8%	6%	10
%		%	%	%	%				0

Source: Researcher's Field Survey, 2021

A total of 6 major occupations were identified through the respondents and a small percentage are unemployed. The highest occupation identified in the study area is farming. This is the view of 381 respondents or about 34% of the sample population. This by implication means that the highest occupation of the study area is primary economic activity which exposes the land to environmental problems of flooding and land degradation. 20% of the population of the study area are civil servants while 15% of the respondents are businessmen and contractors. Other information on the occupation of the respondents is seen in Table 7

### Socioeconomic Impact of the Projects in the Study Area

A heavy project located in any environment will impact both positively and negatively to social and economic activities of the people where it is located. The research therefore examined the socioeconomic activities and how they are affected by and impacted on the project. The result obtained is presented and discussed in this section.

First, the economic activities in the study area identified by the research is presented in Table 8

Table 8: Economic/Occupational Activities Found in the Study Area

Local Government	Community	Farming	Petty Trading	Business Contractor	Civil Servant	Students Apprentice	Artisan	Unemployed	Total
Ifo	Olorunsogo	47	19	23	17	18	25	9	158
	Ita-Alhaji	68	24	34	39	18	19	7	209
Ewekoro	Ayepe	79	13	47	47	11	23	13	233



	Abese	43	16	21	33	12	7	11	143
	Agboke	59	17	13	38	19	10	8	164
	Ikija	85	18	27	53	9	11	17	220
Obafemi Owode									
Total		381	107	165	227	87	95	65	1127
Percentage %		34%	9%	15%	20%	7.7%	8.4%	6%	100

Source: Researcher's Field Survey, 2021

Analysis of the information in Table 8 shows that while 34% of the population of the study area engage in primary economic activities, about 8% are involved in secondary economic activities, 52% are into tertiary economic activity and 6% indicated unemployment status. This result implies that the study area is not a rural-based economy. The information in the Table shows that farming is the highest economic activity observed as 34% of the population are involved in the economic activity. Civil service is the second-highest economic activity observed in the area as indicated by 227 respondents representing 20% of the sampled population. The least economic activity observed are student apprenticeship which represented 7.7% of the sample population. The highest numbers of farmers are found in Ikija community, while the least number is found in Abese community

**Estimated Monthly Income of the Residents before and after the Project**

The monthly income of the residents before citing the power projects was examined. This was done to evaluate if the projects have improved or decreased the incomes of the residents of the communities where these projects are cited. Information in Table 9 shows the monthly income of the communities before citing the projects. The information in Table 10 shows monthly earnings after the project.

**Table 9: Monthly Income of the Communities before the Projects**

Community	Less than N5000	N6000 to N26000	27000 to N47000	N48000 to N68000	More than N68000	Total
Olorunsogo	65	11	20	59	17	158
Ita-Alhaji	61	13	23	61	25	209
Ayepe	38	8	17	75	29	233
Abese	67	9	19	86	21	143
Agboke	88	7	23	102	16	164
Ikija	70	3	17	64	13	220
Total	389	51	119	447	121	1127
Percentage	34.5	4.5	10.6	39.7	10.7	100

Source: Researcher's Field Survey, 2021

Examination of the information showed that while about 40% of the project communities earn between N48000 – N68000 monthly, about 34.5% earn less than N5000 monthly before the projects were cited. By implication and going by United Nations one dollar earning per day as an index for classifying poverty, it is an indication that about 60% of the project lives above the poverty line while about 40% lived below the poverty line before the projects were cited. The community where highest number of high income earners is Ayepe, while the community where the highest number of low income earners is Agboke. Only 10.7 percent of sample size earned more than N68000 before the projects were cited.

**Table 10: Monthly Income of the Communities after the Projects**

Community	Less than N5000	N6000 to N26000	27000 to N47000	N48000 to N68000	More than N68000	Total
Olorunsogo	4	4	52	91	7	158
Ita-Alhaji	11	6	67	119	6	209
Ayepe	14	10	94	108	7	233
Abese	3	3	56	77	4	143
Agboke	3	10	44	98	9	164

Ikija	10	7	53	141	9	220
Total	45	40	366	634	42	1127
Percentage	4%	4%	32%	56%	4%	100

Source: Researcher's Field Survey, 2021

### Variations in Monthly Income before and after Citing the Projects

Projects when cited in any environment tend to impact the income of the inhabitants. Therefore, the research investigated the variations in the monthly income of the study before and after the project was cited, and the result obtained is presented in Table 11.

Table 11: Variation in Monthly Income of the Communities Before and after The Projects

Community	Less than N5000		N6000 to N26000		27000 to N47000		N48000 to N68000		More than N68000	
	before	after	before	after	before	after	before	after	before	after
Olorunsogo	65	4	11	4	20	52	59	91	17	7
Ita-Alhaji	61	11	13	6	23	67	61	119	25	6
Ayepe	38	14	8	10	17	94	75	108	29	7
Abese	67	3	9	3	19	56	86	77	21	4
Agboke	88	3	7	10	23	44	102	98	16	9
Ikija	70	10	3	7	17	53	64	141	13	9

Total	389	45	51	40	119	366	447	634	121	42
Percentage	34.5	4	4.5	4	10.6	32	39.7	56	10.7	4

Source: Researcher's Field Survey, 2021

Data presented in Table 11 shows the variation in the monthly income of the study area before and after the project was cited. Analysis of the Table showed that the power project cited in the study area has impacted positively and improved on the income of the community. Before the projects were cited majority of the inhabitants of the study area earn between N5000 – N26000 monthly. After the projects were cited, it was observed from the Table that the number that earns this paltry amount reduced tremendously. Furthermore, after the project was cited, the number of people who earn between N27000 – N68000 increased drastically. This showed that the power project cited in the area impacted positively on the monthly income earning of the inhabitants. From the Table it was observed that before the projects were cited, 34.5% of the inhabitants earn less than N5000 monthly, and after the projects were cited, only about 4% of the inhabitants earn less than N5000 monthly. Furthermore, before the projects, 10.6% of the study area earn between N27000 –N47000 monthly, the percentage number increased 32% of the inhabitants earning same amount after the projects were cited in the study area. Similar result was observed for people earning between N48000 –N68000 monthly as the number increased from 39.7% before the projects were cited to 56% after the projects were cited.

### Socio-Economic Activities affected by the Projects in the Study Area

Any project whether large or small cited in any area and environment is bound to have significant impacted in the area. After the power projects were cited, the study investigated the socio-economic activities affected by the project and the results obtained is presented and discussed in this section

**Land Ownership/ Access and Tenure System**

Land holding is a very strong influence on the people in the project area. the study went further to ascertain how the project has affected land ownership and tenure systems in the study area. the information obtained is presented in Table 12

**Table 12: Land Ownership/Access and Tenure System of Respondents**

S/No	Local Government	Community	Family Inheritance	Purchase	Leasing	Shared Cropping	Total
1	Ifo	Olorunsogo	67	53	23	15	158
2		Ita-Alhaji	75	65	26	43	209
3	Ewekoro	Ayepe	95	75	17	46	233
4		Abese	51	34	27	31	143
5	Obafemi	Agboke	64	46	22	32	164
6	Owode	Ikija	86	62	21	51	220
	Total		438	335	136	218	1127
	%Land Ownership		39%	30%	12%	19%	100%

**Source:** Researchers Fieldwork, 2021

From the Table 12 it was observed that in the study area, lands are majorly owned by individual families and responsibility of the land is on the head of the family for land management. The information in Table 4.11 showed that 39% of the land in the study area is owned by various families. Family members are apportioned land for cultivation during the planting season. 30% of the respondents indicated outright purchase as the land ownership system; 19% of the respondents indicated shared cropping system while 12% of the respondents get access to land through leasing. The study went further to ascertain if the power projects has led to reduction of land for farming and other developmental purposes. The result obtained is presented in Table 13

**Table 13; Respondents Perception on the Reduction of Land availability for Farming and other Developmental Purposes due to the Projects**

S/No	Local Government	Community	Strongly Agree	Agree	Disagree	Strongly Disagree	None	Total
1	Ifo	Olorunsogo	92	6	7	47	6	158
2		Ita-Alhaji	114	9	5	74	7	209
3	Ewekoro	Ayepe	137	7	6	75	8	233

4		Abese	85	12	23	15	8	143
5	Obafemi	Agboke	92	6	12	49	5	164
6	Owode	Ikija	123	10	7	71	9	220
	<b>Total</b>		<b>643</b>	<b>50</b>	<b>60</b>	<b>331</b>	<b>43</b>	<b>1127</b>
	<b>Percentage %</b>		<b>57%</b>	<b>4%</b>	<b>5%</b>	<b>30%</b>	<b>4%</b>	<b>100%</b>

**Source:** Researcher's Field Survey, 2021

It was observed that land major income-generating activity in the project communities is farming, the availability of land for these activities is very important. However, data collected has shown there were fewer lands available for farming and other activities due to increase in population that accompanied the projects as well as land use for development purposes. From Table 13, it was observed that 61% of the respondents agreed that citing the projects has lead to decreased availability of land farming and other developmental purposes, 35% of the respondents are of the opinion that the projects have not in any way led to decrease in land availability for other purposes in the study area, while 4% of the respondents are indifferent. While 57% strongly agreed that the citing of the of the projects has lead to the reduction of land available for farming and other developmental purposes, 30% strongly disagreed that the projects has caused reduction in land availability.

**Agricultural productivity in the Study area**

Agricultural activities were observed to be another socio-economic activity affected due to the location of the power projects in the study area. In the project affected communities, land is used for cropping and then allowed to fallow so as to regain its fertility and nutrients naturally. The information obtained on agricultural productivity in the study area in the last five years is presented in Table 14.

**Table 14 Agricultural Productivity in the study area in the last Five years**

S/No	Local Government	Community	Increased	Decreased	The Same	Don' t Know	Total
1	Ifo	Olorunsogo	7	99	46	6	158
2		Ita-Alhaji	12	128	60	9	209
3	Ewekoro	Ayepe	19	131	69	14	233
4		Abese	9	85	46	3	143

5	Obafemi	Agboke	27	85	40	12	164
6	Owode	Ikija	36	109	70	5	220
	<b>Total</b>		<b>110</b>	<b>637</b>	<b>331</b>	<b>49</b>	<b>1127</b>
	<b>Percentage %</b>		<b>10%</b>	<b>57%</b>	<b>29%</b>	<b>4%</b>	<b>100%</b>

Source: Researchers Fieldwork, 2021

Analysis of the information in Table 15 showed that 637 respondents or 57% of the sample population indicated that agricultural productivity in the study area have decreased in the last five years. 331 respondents or 29% of the sample size said agricultural production never changed, while 10 of the study area were of the view that in the last five years agricultural productivity has increased in the project communities.

**Table 15: Respondents Perception of increased Agricultural Productivity in the Project Areas in the last five years**

Community	Strongly Agree	Agree	Disagree	Strongly Disagree	None
Olorunsogo	17	23	78	79	3
Ita-Alhaji	12	31	31	75	1
Ayepe	9	38	37	101	4
Abese	16	31	42	74	2
Agboke	13	29	51	96	1
Ikija	12	39	73	109	0
Total	79	191	312	534	11
Percentage	7.01	16.95	27.68	47.38	0.98

Source: Authors Fieldwork, 2021

Analysis of the information shows that about 75 percent of the sample population disagrees that agricultural productivity in the study area has increased in the last five years, about 24 percent agrees that there is an increase in agricultural productivity, while 1 percent is indifferent in their perception. 47.38 percent strongly disagree that agricultural productivity has increased in the project area in the last five years, while 7.01 percent strongly agree that there is improvement in agricultural productivity in the study area in the last five years

**Respondents' Perception on the Effects of the Projects on the General Economic Activities of the Study Area**

Available information from various literature shows that the citing of projects has some effects on the overall economic activities of the inhabitants of the area where the projects are cited. Based on that premise, the research sought to know from the respondents whether the power projects cited in their various communities has an effect on their overall economic activities. The result obtained is presented in Table 16.

**Table 16: Respondents View on whether the Projects have affected their Economic Activities**

Communities	Yes	No	Total
Olorunsogo	169	3	172
Ita-Alhaji	171	22	193
Ayepe	152	21	173
Abese	130	26	156
Agboke	171	39	210
Ikija	182	41	223
Total	975	152	1127
Percentage	86.5	13.5	100

Source: authors Fieldwork, 2021

Analysis of the information in Table 16 showed that a total of 975 respondents or about 86.5% of the sample population agreed that their economic activities have been affected in the last five years, while 152 of them or 13.5% of the sample size did not agree that their economic activities have been affected by the projects. From the Tab it was observed that the largest number of the respondents that agreed that the projects have affected their economic activities came from Ikija, while the least came from Abese. On the other hand, the least numbers of respondents that indicated that the project have not affected their economic activities came from Olorunsogo. With the projects and the various occupational activities in the communities, the respondents were asked if the project have resulted into increased economic activities in their various communities. Their responses were gathered and presented in Table 17.

**Table 17: Respondents Perceptions on Increase in Economic Activities due to the Projects**

S/No	Local Government	Community	Strongly Agree	Agree	Disagree	Strongly Disagree	None	Total
1	Ifo	Olorunsogo	108	43	3	4	0	158
2		Ita-Alhaji	143	61	2	2	1	209
3	Ewekoro	Ayepe	115	83	12	10	13	233
4		Abese	85	46	5	2	5	143
5	Obafemi	Agboke	98	49	4	6	7	164
6	Owode	Ikija	136	12	64	7	1	220
	<b>Total</b>		<b>685</b>	<b>294</b>	<b>90</b>	<b>31</b>	<b>27</b>	<b>1127</b>
	<b>Percentage (%)</b>		<b>61%</b>	<b>26%</b>	<b>8%</b>	<b>3%</b>	<b>2%</b>	<b>100%</b>

Source: Researcher's Field Survey, 2021

As can be seen from Table 17, of 87 percent of the sample population agreed that the location of the power projects have affected their economic activities, 61% strongly agreed that the citing of the projects has affected their economic activities positively, while 21% are also agreed with little conviction that it has affected their economic activities. In summary, while 87 percent of the sample population in the study area agreed that the location of the power projects have affected their economic activities, 11 percent disagreed to that while 2 percent are neutral on their decisions. In general, it can be concluded based on the respondents' perceptions that the location of these power projects have affected the economic activities of the study area.

### Housing Type in the Project Communities

The study investigated the housing type in the project communities with the view to ascertain if the project has improved on the type of housing found in the area. The result of the investigation is presented in Table 18.

Table 18: housing Type in the Project Communities in the study Area

Communities	Thatched roof/wooden	Thatched roof/mud/wall	Zinc roof/wood wall	Zinc roof/mud wall	Zinc roof/block	Total
Olorunsogo	0	0	0	0	82	82

Ita-Alhaji	0	0	0	75	109	184
Ayepe	0	0	0	77	103	180
Abese	0	0	0	72	115	187
Agboke	0	0	0	94	90	184
Ikija	0	0	0	57	113	170
Total	0	0	0	457	670	1,127
%				41%	59%	100%

Source: Researcher's Field Survey, 2021

The data presented in Table 18 indicates that the establishment of various projects within the communities has significantly enhanced the quality and type of housing in the study area. Typically, rural housing in such regions is characterized by thatched roofs and mud block construction. However, the introduction of these projects has led to a remarkable transformation in the housing seen in these areas. In the communities surveyed, most homes are now permanent structures built with either mud or brick walls and topped with corrugated iron sheets (zinc). These houses are considered semi-modern, featuring good ventilation and resembling the average residential homes commonly found in Nigerian towns and cities. In many cases, the kitchen and toilets are separate structures located behind the main house. The houses are generally aligned along the roads in a linear pattern. Across all five sampled project communities, no houses with thatched roofs or wooden walls were observed. Instead, 59 percent of the homes feature zinc roofs with block walls, while the remaining 41 percent have zinc roofs with mud walls.

The research went further to ascertain if the location of the projects in the communities have resulted to housing problems, and the response obtained on the perceptions of the respondents is presented in Table 19.

Table 19: Perceptions of the Respondents on the housing problems in the Study Area

S/No	Local Government	Community	Strongly Agree	Agree	Disagree	Strongly Disagree	None	Total
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1	Ifo	Olorunsogo	99	3	3	52	1	158
2		Ita-Alhaji	127	8	6	65	3	209
3	Ewekoro	Ayepe	124	8	8	86	7	233
4		Abese	83	4	5	46	5	143
5	Obafemi	Agboke	95	9	8	40	12	164
6	Owode	Ikija	122	7	13	73	5	220
	<b>Total</b>		<b>650</b>	<b>39</b>	<b>43</b>	<b>362</b>	<b>33</b>	<b>1127</b>
	<b>Percentage %</b>		<b>58%</b>	<b>3%</b>	<b>4%</b>	<b>32%</b>	<b>3%</b>	<b>100%</b>

Source: Researcher's Field Survey, 2021

Analysis of the information in Table 19 shows that about 58% of the respondents strongly agree that there are housing problems in the communities while 32% strongly disagree to the housing problem in the communities. 4% of the respondents disagree that there are housing problems while 3% each agree and are generally indifferent about the housing problems in the communities. As obtained from the respondents, the greatest housing problem was observed in Ita-Alhaji, while the least was observed in Ayepe. In conclusion, it was observed that the location of the power projects in the areas have resulted to housing problems in the study area

**Social Problems Related to Industries in the Study Area**

The research investigated whether to location of these industries in the area has led to social problems associated with industrial location. The response obtained from them on the type of social problems observed since the industries were cited is presented in Table 20.

Table 20 Type of Social problem associated with the power projects

Communities	Youth delinquency	Land dispute	Traditional leadership/ chieftaincy tussle	Inter-family problem	Unemployment	Alcoholism/ prostitution
Olorunsogo	41	25	3	1	26	27
Ita-Alhaji	20	29	1	5	21	48
Ayepe	53	31	12	7	43	52
Abese	50	26	0	5	35	59
Agboke	71	29	14	4	68	61
Ikija	88	25	0	6	51	90
Total	323	165	30	28	244	337

Percentage	28.7	1.6	2.7	2.5	21.7	29.9
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Source: Researcher's Field Survey, 2021

As can be seen in Table 20, several social vices accompanied the location of the power projects in the study area. Alcoholism/prostitution which was the view of 337 respondents or 29.9% of the sample population was observed to be the greatest social problem resulting the projects. The next closest social vice observed in the project communities is youth delinquency. This is the opinion of 28.7% of the respondents.

The information in Table 21 shows the perception of the respondents on whether the power projects caused social problems in the communities

Table 21: Respondents' Perception on The Existence of Industry Related Social Problem

S/No	Local Government	Community	Strongly Agree	Agree	Disagree	Strongly Disagree	None	Total
1	Ifo	Olorunsogo	81	4	61	8	4	158
2		Ita-Alhaji	106	7	79	11	6	209
3	Ewekoro	Ayepe	109	10	85	14	15	233
4		Abese	68	8	57	6	4	143
5	Obafemi Owode	Agboke	77	7	16	60	4	164
6		Ikija	127	13	10	68	2	220
	<b>Total</b>		<b>568</b>	<b>49</b>	<b>308</b>	<b>167</b>	<b>35</b>	<b>1127</b>
	<b>Percentage (%)</b>		<b>51%</b>	<b>4%</b>	<b>27%</b>	<b>15%</b>	<b>3%</b>	<b>100%</b>

Source: Researcher's Field Survey, 2021

As shown in Table 21, 51% of the respondents strongly agree that there would be industry-related social problems, while 27% of the respondents disagreed to the claim. 15% of the respondents strongly disagreed to the occurrence of social problems, while 4% and 3% agreed and were indifferent respectively regarding the

occurrence of industry-related social problems in the project communities due to the potential project.

## Discussion

The study explored the socio-economic impacts of power transmission lines on the communities in Ogun State. Several key findings emerged from the data, shedding light on both the positive and negative effects of these projects on residents.

### Socio-Economic Activities and Occupations

The predominant occupation in the study area is farming, engaging 34% of the respondents. This primary economic activity is complemented by significant participation in secondary and tertiary sectors, including civil service (20%), business contracting (15%), and petty trading (9%). The data indicates that the introduction of power transmission lines has not drastically altered occupational distribution but has influenced income levels and economic stability.

### Income Levels

The analysis revealed a notable improvement in the income levels of the inhabitants' post-project implementation. Prior to the installation of power transmission lines, a substantial portion of the population earned between N5,000 and N26,000 monthly. Post-implementation, the number of people earning this amount significantly decreased, with a corresponding increase in those earning between N27,000 and N68,000. This shift suggests that the power projects have had a positive impact on the economic well-being of the local communities by enhancing their earning potential.

### Land Ownership and Access

Land ownership in the study area is predominantly based on family inheritance, accounting for 39% of the respondents. Outright purchase and shared cropping are also common, representing 30% and 19% respectively. The introduction of power transmission lines has affected land use, with some reduction in land available for farming and other developmental purposes. However, the overall impact on land tenure systems appears to be minimal, as traditional methods of land distribution and management remain largely unchanged.

### Socio-Economic Impacts

The power transmission projects have had mixed socio-economic impacts on the local communities. On the positive side, the projects have contributed to an increase in income levels and have provided opportunities for economic growth and development. Improved infrastructure associated with the power projects has facilitated better living conditions and enhanced economic activities.

Conversely, some negative impacts were also noted. The reduction in available farmland due to the power transmission lines has affected agricultural productivity, which is the primary livelihood for many residents. Additionally, the presence of power lines has led to concerns about health risks and environmental degradation, although these effects were not quantified in this study.

Furthermore, the displacement of residents due to the construction of power lines has caused social disintegration in some areas. The relocation of families from their ancestral homes disrupted social ties and community cohesion, leading to emotional and psychological distress. This aspect of social disruption underscores the need for comprehensive resettlement plans that include social and psychological support for affected families.

### Health and Environmental Concerns

Health risks associated with electromagnetic fields (EMF) from high-voltage power lines have been a subject of public concern. Although the study did not delve deeply into this issue, it is imperative to consider the potential long-term health impacts on residents living near transmission lines. Environmental degradation, such as deforestation and habitat destruction, also emerged as a significant concern. The clearing of vegetation for the construction of power lines has led to soil erosion and loss of biodiversity, which could have long-lasting effects on the ecosystem.

### Mitigation and Preventive Measures

To mitigate the negative impacts, several measures have been suggested. These include compensation for landowners affected by the reduction in farmland, implementation of health and safety guidelines to

minimize risks associated with power lines, and continuous monitoring of the environmental impact of the projects. Ensuring community involvement and transparent communication between the project developers and local residents is crucial in addressing any concerns and enhancing the benefits of such infrastructural developments.

There should also be investment in agricultural extension services to support farmers affected by land loss and to promote sustainable agricultural practices. Initiatives such as training in modern farming techniques, provision of agricultural inputs, and access to credit facilities can help improve productivity and resilience among the farming communities.

Additionally, the establishment of health monitoring programs to track potential health impacts related to EMF exposure is essential. These programs should include regular health check-ups and public health education to inform residents about potential risks and preventive measures.

## Conclusion

Overall, the power transmission projects in Ogun State have brought about significant socio-economic changes. While the positive impacts on income and infrastructure are evident, attention must be given to the adverse effects on agriculture, community cohesion, and potential health risks. Through effective mitigation strategies, community engagement, and sustainable development practices, the negative impacts can be minimized, ensuring that the benefits of these projects are maximized for the local population. The study highlights the importance of a balanced approach that considers both the socio-economic benefits and the environmental and health implications of infrastructural developments.

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