

## **THE IMPACT OF THE LIQUEFIED NIGERIAN GAS (LNG) ACTIVITIES ON OCCUPATIONAL CHANGES IN GBARAIN- EKPETIAMA CLANS, BAYELSA STATE, NIGERIA**

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### **ABSTRACT**

*The study examined the impact of the Nigerian Liquefied Natural Gas company's activities on the occupational changes in the Gbarain-Ekpetiama Clans' communities. The idea was identify any visible development and appraise the level the LNG activities has contributed to the overall development of both Clans. To achieve this, 160 copies of a structured questionnaire were purposively distributed within four communities in Gbarain-Ekpetiama clans. Results obtained revealed that 76.5% of those surveyed have lived in both area over 10 years. On occupational change, quite a number of residents (21% and 15%) were observed to have been engaged in the private sector and trading respectively, whereas a significant percentage of residents were unemployed prior the advent of the LNG project. However, with the advent of the LNG project in 2004, 75% of residents say their occupations remained intact. Only a few (18.5%) are employees of the LNG Company. Spearman's Rank Correlation analysis result on the hypothesis further confirmed the LNG activities have caused certain changes in the occupations of residents in both clans. Other minimal benefits accorded the communities by the presence of LNG include: electricity, minor roads/ walk-way, water and an increased income generating opportunities. Based on these it was recommended that the LNG Company should employ more qualified graduates as staff to reduce the level of unemployment in the area. The LNG company should continue to evaluate their activities to ensure they comply by global best standards and from time to time make plans to improve in their CSR.*

### **Background of Study**

The economic and environmental implication of the long time uncontrolled gas flaring activities in Nigeria are serious because the process results in a significant waste of very valuable fuel resources which invariably also pollute water, air and soil on which the human population in the Niger Delta depends. Nigeria still remains one of the most under-developed and corrupt countries in the world. Foreign exchange earnings from crude oil sales currently provides for nearly 88% of government revenue, over 90% of foreign exchange earnings, and 90-95 percent of export earnings (O'Rourke and Conolly, 2003).

Notably, more than 75% of this is found in the coastal areas of the Niger Delta which is the largest oil reserve in Africa, as well as the tenth largest in the world. According to the Ministry of Petroleum Resources there are 150 oil fields and 1481 oil wells in the Niger delta region. These activities are characterized by large scale gas flaring which have continued for decades and have been the source of major concerns by environmentalists due to its notable potentials for large scale environmental pollution, climate change and implications in host communities (Akintoye, 2012).

If it is possible one would say that if flared gases are used, then the problem of environmental pollution and other forms of degradation could arguably be solved. Thus, the need for a gas using project from which the host communities of natural gas utilizing- projects and invariably the country at large could equally benefit arises. From observation by *African news service on crude oil and gas resources* exploiting companies and the environment are also quite revealing, especially as regards the implication of gas flaring (Franz and Djumena, 2002).

All over the world, gas extracting and processing facilities are springing up. The number of NLNG projects has even increased, faster than crude oil refineries as crude oil reserve dwindled across the globe (Shell Petroleum Development Company, 2007). Nigeria Liquefied Natural Gas

(LNG) is thus strategically designed to utilize the abundance of gas resources of the nation which are paradoxically currently being waste through decades of flaring and those communities allocated an LNG project in Nigeria were Gbaran- Ekpetiama communities of Bayelsa State.

The environmental, socio-economic and health implications are not presently adequately known as is the case of crude oil and gas refineries worldwide. It is thus a great interest to know to the possible positive and or negative socio-economic, health and ecological implication of a considerably large project like the LNG plant. To know if the impact of LNG projects differ widely or slightly in rural areas of Gbaran and Ekptiama clans in terms of livelihoods/ occupations of individuals in both clans- this therefore, prompts the researcher to embark on this study.

### **Statement of Problem**

The location, design and operation of an LNG project are often the subject of government regulation worldwide (Hightower 2004: Haley and Aldrich 2002). Gbarain-Ekpetiama communities are one of the several communities in Niger Delta region which has been exposed to and bathed by a manifold of fallouts from the Integrated Oil and Gas Project (an NNPC/SPDC Joint Venture project) situated in this community, which commenced since 2004. This sole objective of this Joint Venture project is to reduce gas flaring and expand oil production in the area (SPDC, 2007). Whether this has been achieved or otherwise is unknown as no research has focus on that.

The LNG activity been a large scale project is expected to have environmental, socio-economic and even health implications which are major concerns for environmentalist due to its notable potential for large scale environmental pollution. But still, other numerous problems proliferate which might impede socio-economic development in both clans. These therefore inform the researcher to embark on this study which is poised to investigate how LNG project has impacted on occupational change in the Gbaran-Ekpetiama clans of Bayelsa State.

### **Aim and Objectives**

With reference to the aforementioned problem, this study aims at examining the impact of the LNG on occupational change in Gbaran-Ekpetiama clans. The researcher has in mind the following objectives:

1. To examine the main occupations of the inhabitants of Gbaran and Ekpetiama communities before the advent of the LNG project?
2. To assess the current occupations of the inhabitants of Gbaran and Ekpetiama communities?
3. To identify any visible development in both communities due to the presence of the LNG project
4. To appraise the level the LNG project has contributed to the overall development of both communities?

### **Research Questions**

1. What were the main occupations of the inhabitants of Gbaran and Ekpetiama communities before the advent of the LNG project?
2. What are the current occupations of the inhabitants of Gbaran and Ekpetiama communities?
3. Are there any visible developments in both communities due to the presence of the LNG project?
4. Has the LNG project contributed to the overall development of both communities?

### **Research Hypothesis**

Below is the hypothesis formulated for this study:

- The LNG project has not caused any significant change in the occupations of people in both clans.

## **THEORETICAL FRAMEWORK**

### **LNG CORPORATE SOCIAL RESPONSIBILITIES**

The construction of the LNG project includes road building for the project and community uses, as well as the laying of gas transmission pipelines, through relatively undisturbed areas, often open up such areas to secondary invasions (Oluyemi and Abiodun, 2016). Akintoye (2012) has pointed out that generally, industries in rural areas can eventually spark a change in the livelihoods of residents in the project area and have been implicated for the introduction of new population of non-indigenous construction laborers and management staff, may enable the introduction of new land seeking cultivators, immigrants, inflationary trends, changes in livelihood pattern, new diseases, high crime rate, increased noise level from motorized equipments and other heavy duty vehicles, alcoholism, prostitution, disregard for local culture and dissemination of alien ideas and information. The presence of construction crews and non-indigenous workers may also increase local population which can make high demand on existing infrastructural facilities. Such outcomes are better managed through pre-project environmental Impact Assessment (Ashton and Doughlas, 1999). The transportation, processing and distribution of LNG raw materials and finished products are thus, most likely to generate beneficial and/or non-beneficial socio-economic activities in the immediate host and distance communities. The case of commercial logging crews for instance, may not be directly similar to the pioneering, LNG project construction, but both however, have operational crews and focuses on the exploitation of natural resources in rural and relatively isolated communities. The likes of Akintoye (2012) and Kellman (1997) have concluded that industries depending on natural resources and operating in rural areas have the potentials of affecting the environment, rural households' livelihood and other socio-economic activities, negative and/or positively.

One of the strategies for overcoming resentments emanating from resource utilization resulting in environmental degradation is the amelioration of the negative consequences through what is now commonly known as "Corporate Social Responsibility (CSR)". This invariably is founded and guided by the outcome of the Environmental Management Plan (EMP).

### **Corporate Social Responsibility (CRS) Concept in Petroleum Resources Development and Management**

Corporate Social Responsibility (CSR), also referred to as *Corporate Conscience (CC)*, *Corporate Citizenship (CC)*, *Social Performance (SP)*, or *Sustainable Responsible Business (SRB)* is describable as a form of corporate self-regulation, which is integrated into a business model. CSR policy functions is a corporate built-in, self-regulating system through which business monitors and ensures that it actively comply with the stipulated laws, ethical standards, as well as international norms (Wikipedia (2016)). The main objective of CSR is to enhance responsibility for the company's activities in the host communities and promote desirable impacts of the activities in the environment.

It's also vital for moderating the effects of negative impacts on consumers, employees, host communities, including other stakeholders (Akintoye, 2012). Also, CSR-focused businesses are devoted to encourage public interest by encouraging community prosperity and development, while strategically discouraging such outcomes which are detrimental to the public, irrespective of legality or justifiability. CSR is thus better perceived as the strategically planned incorporation of the consequences of corporate activities on the public into corporate decision-making, based on a tripartite effort to consider the wellbeing of the people, the earth planet, and profit accruing to the company (Akintoye, 2012).

## **MATERIAL AND METHODS**

### **The Nature, Types and Sources of Data Required**

In other to achieve the aim and objectives of this study, a wide range of data were collected. These include the following data sets:

- Data on demographic and socio-economic characteristics of residents of selected communities in Gbarain and Ekpetiama clans before and after the establishment of LNG project.
- Data on social amenities and infrastructural facilities now available in both communities since the advent of the LNG project.

These data sets were collected from primary sources. The primary sources of data collection involved direct collection of information on the field through the administration of questionnaire and careful observation. Questionnaire was used to obtain information on a list of residents' occupations before and after the advent of the LNG project. Furthermore, socio-amenities, infrastructural facilities and overall development currently present due to the project were also ascertained using questionnaire.

## **Methods and Procedures of Data Collection**

### **Reconnaissance Survey**

Owing to the peculiar terrain and the need to determine sample appropriate for the study, a preliminary visit to the study area was embarked upon before the actual acquisition of data. The survey helped to observe land donor communities directly or indirectly impacted by the LNG project and identify whether LNG has fulfilled its corporate social responsibility (CSR) in terms of provision certain amenities in the study area and to also determine potential communities for use as sampling units.

### **Selection of Sampling Units**

The major land donor communities are Gbarantoru and Obunagha communities. Both communities apparently belong to two different clans namely: Ekpetiama and Gbarain clans respectively. To that end, since Gbarain clan is situated up-stream of the LNG project and Ekpetiama clan, on the downstream of the project, the two communities each were selected for sampling purposes.

### **Questionnaire Design and Administration**

A structured questionnaire was designed to collect bio-data as well as elicit appropriate responses from respondents based on the specific details and requirements of the project theme. Furthermore, forty (40) questionnaires each was administered per community bringing the total questionnaire administered to 160. The idea was to collect or retrieve enough for statistical analyses.

The questionnaire comprised of two parts (Parts A and B). Part A deals with the demographic and socio-economic background of the respondents. While part B contains questions that elicits information on a list of occupations and other impact of LNG project (if any). Furthermore, respondents were asked to do some rankings and rate the level of certain occupations prior to and after the commencement of the LNG project in the study area.

### **Methods of Data Analysis**

The data for this study was presented using descriptive statistics such as percentages, tables, graphs and charts. These were used to analyze and summarize the parameters on the questionnaire. Inferential statistics was used to test the hypothesis for this research, to know whether or not LNG project has significantly affected occupational change in Gbarain and Ekpetiama communities. The Spearman's Rank Correlation was employed for this very purpose. The Formula for Spearman's rank correlation:

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

Where:

d = difference in ranks

n = number of data pairs

**RESULTS AND DISCUSSION**

This section dwells on the level of responses to the questionnaires which were administered in the study area. A total of 160 questionnaires were produced, administered and retrieved accordingly.

**BACKGROUND INFORMATION OF RESPONDENTS**

This section answers question on age, sex, occupation, marital status, religion and et cetera form respondents.

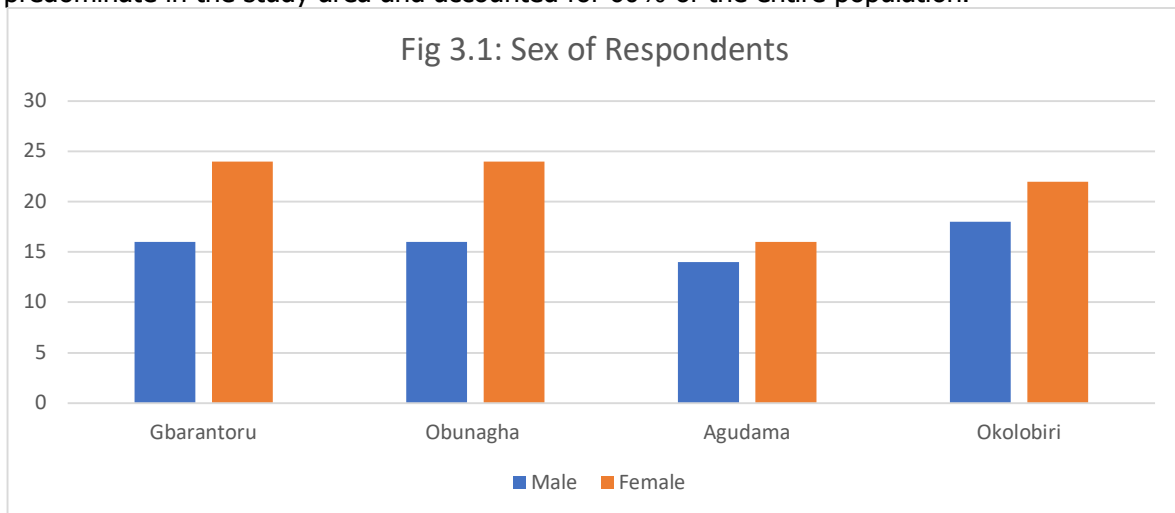
Table 3.1 shows the age brackets of respondents in both clans. From the table 57.1% of those surveyed fell within the ages of 25 and 40years. These persons accounted for more than half of the entire respondents surveyed.

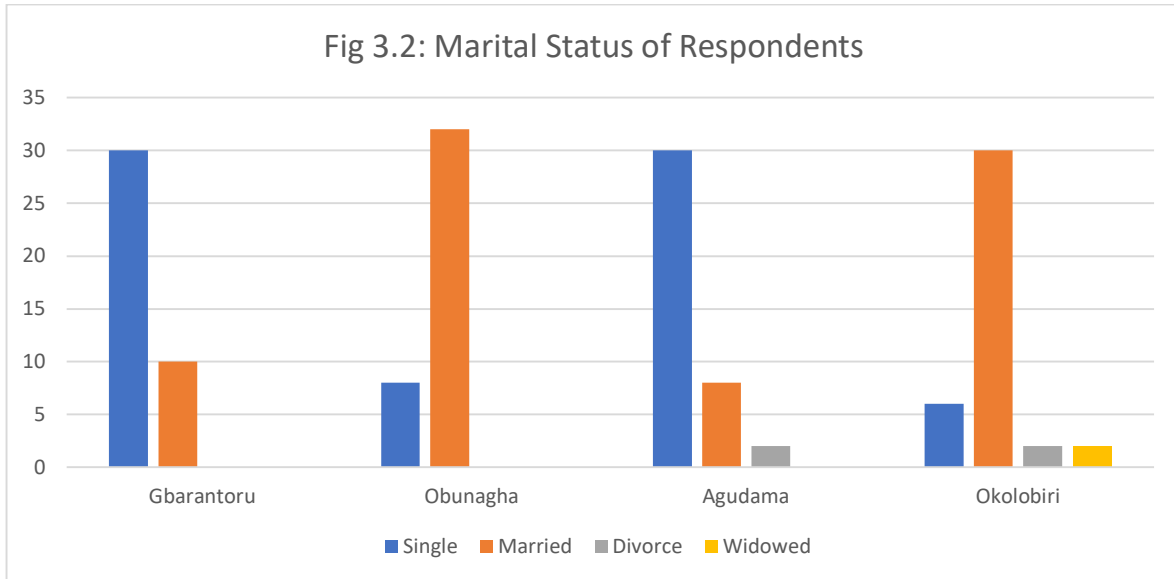
**Table 3.1 Age Distribution**

	Gbarantoru	%	Obunagha	%	Agudama	%	Okolobiri	%	Grand freq.	Grand Total
< 25	6	15	-	-	8	70	2	5	16	11.4
25-40	22	55	30	75	4	10	24	60	80	57.1
41-65	12	30	6	15	6	15	8	20	32	22.8
> 65	-	-	4	10	2	5	6	15	12	8.5
Total	40	100	40	100	40	100	40		160	100

**Researcher’s Fieldwork**

Figure 3.1 shows the sex of respondents in the study area. From the table below, the male folks predominate in the study area and accounted for 60% of the entire population.





Marital status of respondents shows few cases of divorce in both Gbarain and Ekpetiama clans and majority of respondents are either married or are single. Figure 3.2 is explicit on this.

Gbarain and Ekpetiama clans have large homes which definitely have economic implications. Forty percent of the sampled respondents have household sizes of 8 and 10 individuals as seen in figure 3.3.

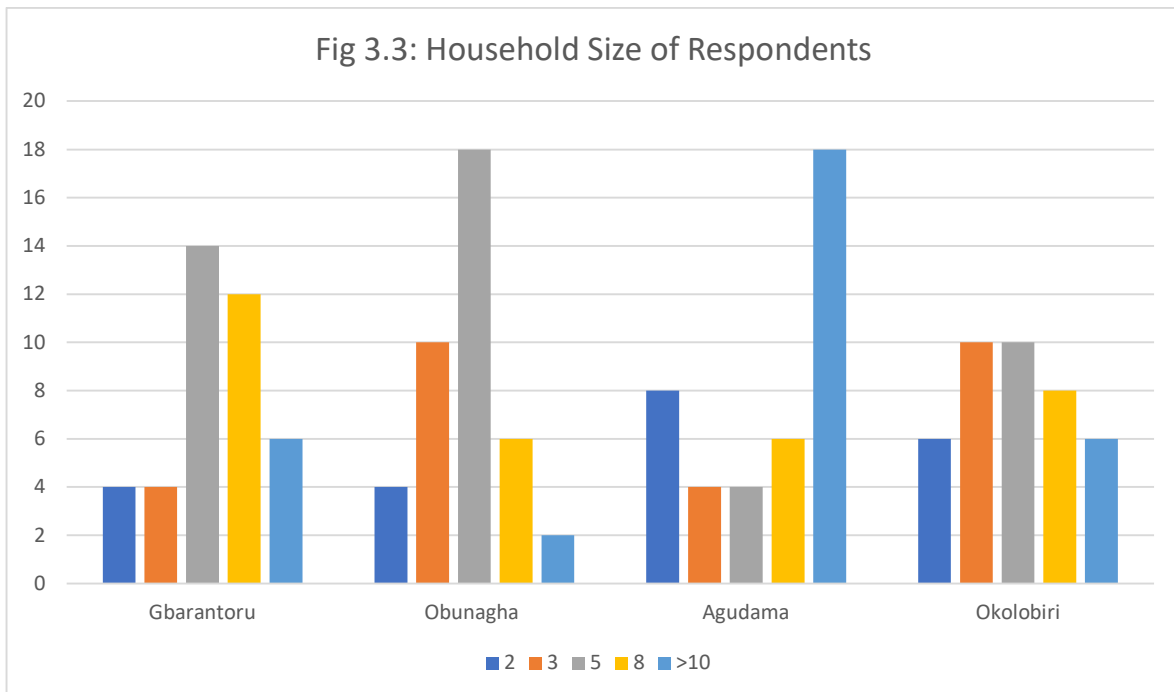
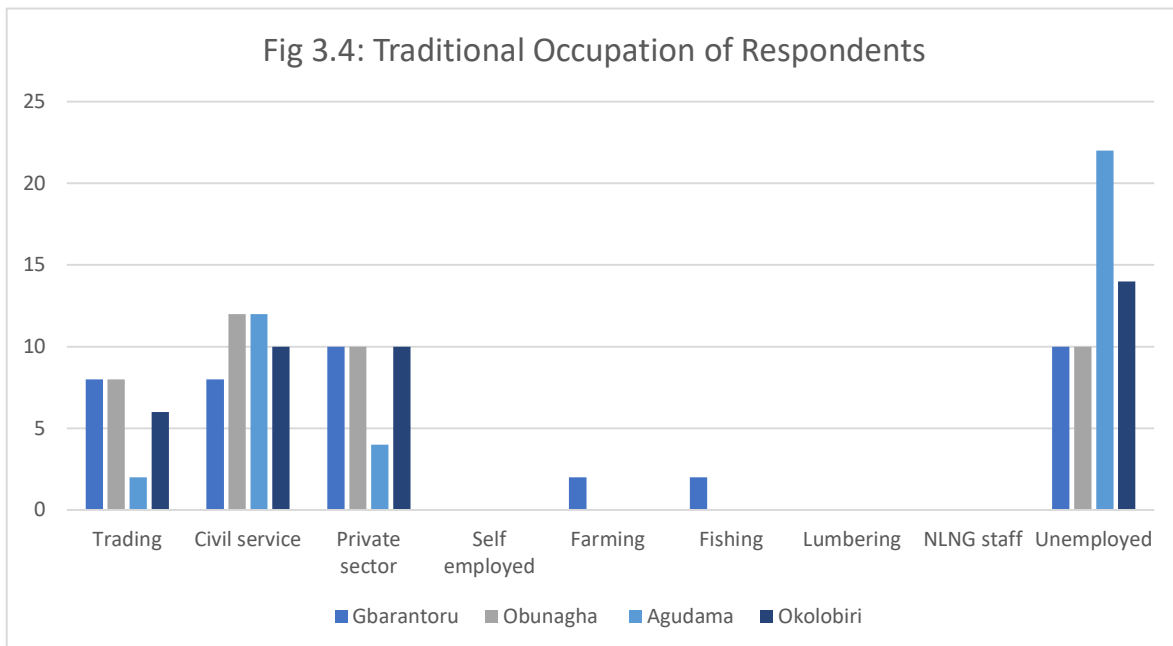


Table 3.2 portrays the highest education qualification obtained by respondents in both clans. From the Table above, only 2% of those surveyed had terminated their education at the primary level. Whereas, the remaining 45% and 53% had their education up to the secondary and tertiary levels respectively. With this, it is fitting to say the inhabitants of both clans are to some extent lettered.

**Table 3.2 Educational Attainment of Respondents**

	Gbarantoru	%	Obunagha	%	Agudama	%	Okolobiri	%	Grand freq.	Grand Total
Primary	2	5	2	5	-	-	-	-	4	2
Secondary	24	60	8	20	20	50	20	50	72	45
Tertiary	14	35	30	75	20	50	20	50	84	53
No formal	-	-	-	-	-	-	-	-	-	-
	40	100	40	100	40	100	40	100	160	100

**Researcher's Fieldwork**

The traditional (former) occupations of respondents suggests that before the advent of the LNG project about 35% of the respondents were unemployed while a quarter were in the civil service as shown in figure 3.4 above.

**Table 3.3 Duration of Stay in Community**

	Gbarantoru	%	Obunagha	%	Agudama	%	Okolobiri	%	Grand freq.	Grand Total
< 5 years	14	35	4	10	8	20	-	-	26	16.5
5 -9years	6	15	-	-	6	15	-	-	12	7
10-14 years	8	20	-	-	10	25	2	5	20	12.5
> 14years	12	30	36	90	16	40	38	95	102	64
	40	100	40	100	40	100	40	100	160	100

**Researcher's Fieldwork**

A greater percentage of respondents have lived in the area for long enough even before the advent of the LNG project as captured in Table 3.3. Therefore they must have been aware of the activities and changes in their area due to the LNG project.

### Impact of LNG Company on Occupational Change

Table 3.4 captures whether or not there were changes in the traditional occupation of residents in both clans. The Table shows a greater negation by respondents in both clans. A handful though, believes changes have occurred in their occupation. Before, some said they were teachers, into trading and others were unemployed. These changes agree with the findings of Akintoye (2012) in the literature that projects like that of the LNG and related ones are capable of impacting change in the livelihoods of communities where they are situated.

**Table 3.4 Change in Traditional Occupation**

	Gbarantoru	%	Obunagha	%	Agudama	%	Okolobiri	%	Grand freq.	Grand Total
No	36	90	24	60	30	75	30	75	120	75
Yes	4	10	16	40	10	25	10	25	40	25
	40	100	40	100	40	100	40	100	160	100

### Researcher's Fieldwork

Those who acknowledged changes in their traditional occupations gave estimates on their previous incomes. From figure 3.5, sixty-two percent of them previously earned N20000 and less. Amongst these ones were those who taught in privately owned primary and secondary schools in their respective communities, whereas, those of earned N20000 and N40000 were predominantly traders.

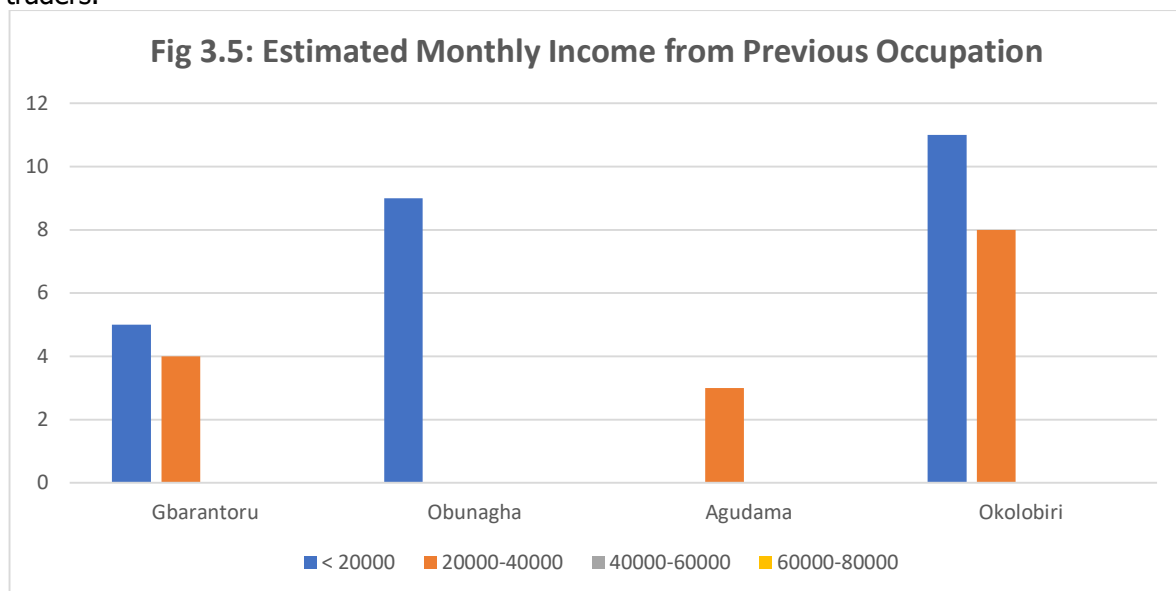
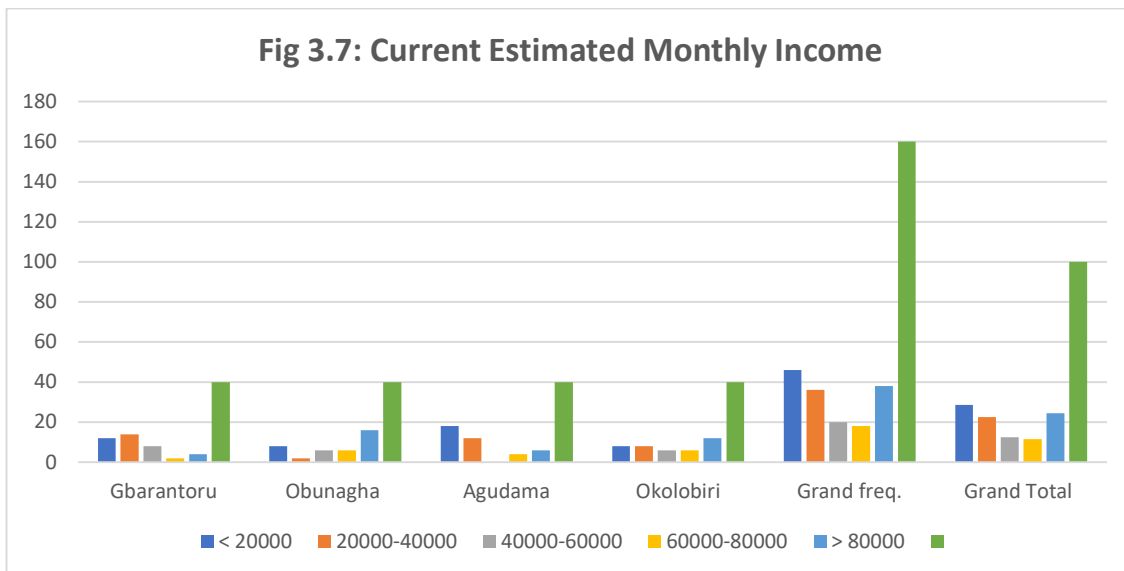
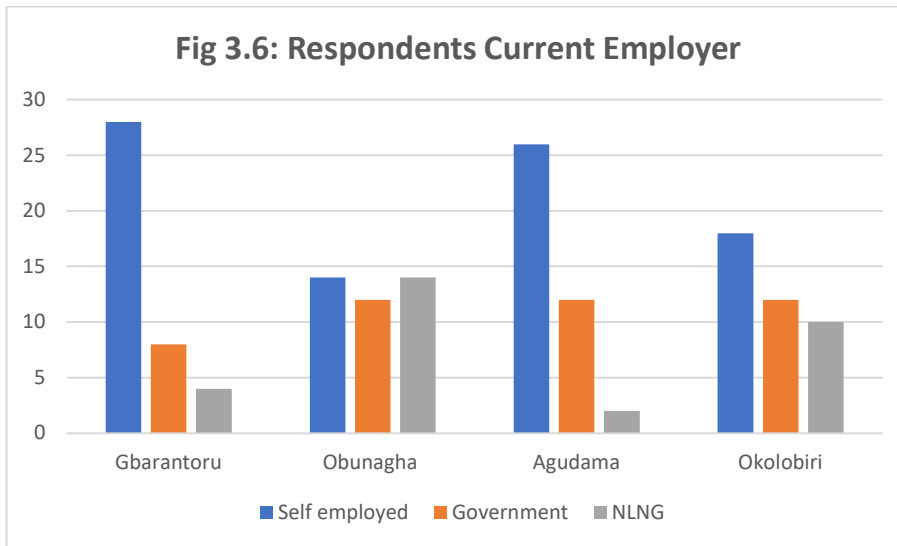
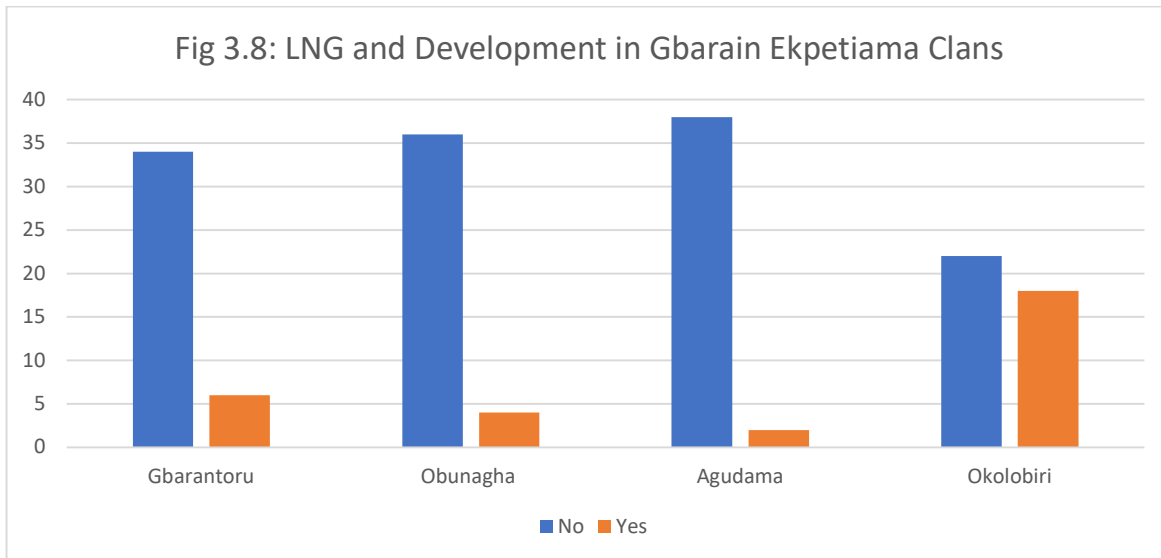


Figure 3.6 shows the LNG company has not done sufficiently enough in job creation and employment opportunities for the residents in the study area as only 18.5% of the entire respondents are gainfully employed by the LNG company.



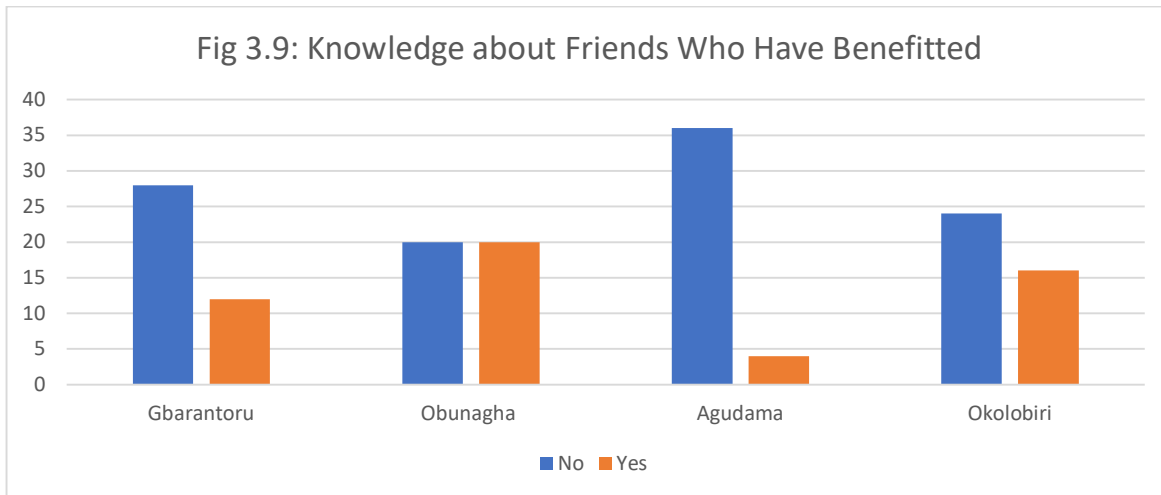
The LNG may not have created jobs for indigenes to their company but has however boosted the economy of these communities (especially Okolobiri and Obunagha) by way of increased income generation as observed in Figure 3.7. This fact is further confirmed when you compare the incomes of residents prior to the commencement of the LNG project. This finding also is in line with those of Akintonye (2012) and Kellman (1997) in the literature.



As part of the Corporate Social Responsibility (CSR), the LNG, just like every other related company, is to provide certain infrastructures and amenities in the area where it is domiciled. From Figure 3.8 above, about 81.5% of those surveyed negated to any contribution by the LNG company to the development of the Gbarain-Ekpetiama clans. Hence, in term of CSR the LNG company has performed poorly.

Respondents however, identified very few areas the LNG company has performed laudably. Those in Okolobiri identified a minor road and walk-ways as the main contributions by the LNG company. Electricity supply and a yet-to-be completed market area were the areas in by those in Gbarantoru. At Obunagha community, residents identified a Town-Hall, Electricity supply and a yet-to-be completed road as contributions by the LNG company. Whereas in Agudama-Ekpetiama community, very constant electricity supply was the only amenity contributed by the company. All these are in line with the findings of Oluyemi and Abiodun (2016) on some of the contributions of a typical LNG Company as in the case of Finima project in Bonny Island of River State, Nigeria. From observation, a major necessity as water was completely absent in both clans. This should be another area the LNG can assist.

Results of respondents' knowledge of the employment status of citizens are contained in Figure 3.9. The responses indicates only a few respondents have either neighbors or relatives as employees of the LNG company.



**Table 3.14 Respondents Ranking of Main Occupations before and After the Advent of LNG Company**

Respondents of residents' main occupations present before the advent of LNG Company and those currently engaged in is illustrated in Table 3.14. The result indicated that farming, fishing and handwork constituted the major primary occupations before the advent of LNG. However, these have been replaced by commerce and handwork whereas farming and fishing have received less attention since the establishment of the LNG.

Occupations	Before NLNG Freq.	After NLNG Freq.
Lumbering	10	6
Fishing	21	12
Farming	18	13
Boat making	5	8
Carpentry	4	8
Weaving and craft	16	15
Trading	13	27
Shoe making	3	1
Film hall	2	2
Café/business centre	1	3
Catering/restaurant	5	7
Civil service	14	5
NLNG staff	-	11
Tailoring	10	4
Others (specify)	-	-
	122	122

### Researcher's Fieldwork

### Hypothesis Testing

For proper and near presentation of facts, only the responses of respondents who have lived over 10years in both clans were used to test the hypothesis of this research.

Occupations	Before LNG Freq.	Ranking	After LNG Freq.	Ranking	D	D <sup>2</sup>
Lumbering	10	6	6	7	-1	1
Fishing	21	1	12	4	-3	9
Farming	18	2	13	3	-1	1
Boat making	5	7	8	5	-2	4
Carpentry	4	8	8	5	-3	9
Weaving and craft	16	3	15	2	1	1
Trading	13	5	27	1	4	16
Shoe making	3	9	1	8	1	1
Film hall	2	10	2	11	-1	1
Café/business centre	1	11	3	10	1	1
Catering/restaurant	5	7	7	6	-1	1
Civil service	14	4	5	8	-4	16
NLNG staff	-	12	11	4	-8	64
Tailoring	10	6	4	9	-3	9
Others (specify)	-	-	-	-	-	-
	122		122			$\sum D^2 = 134$

### Researcher's Fieldwork

$$r^1 = \sqrt{-6\sum D^2 / n(n^2 - 1)}$$

Upon the calculation of  $r^1$ , a value of 0.7618 was obtained. The value was further subjected to the student  $t^*$  test which resulted in 6.542 and was found to be significant when compared with the critical value of the  $t$ -distribution table. From 5% significant level, the critical value (2.31) from the  $t$ -table was seen to be less than the computed  $t$ -value (6.542). Thus, we reject our null hypothesis stated earlier and conclude that the LNG project has certainly caused changes in occupations of the inhabitants of Gbarain- Ekpetiama clans.

### Summary of Findings

As stated earlier, the study sought to examine the impact of LNG project on occupational change in Gbarain and Ekpetiama clans. From the results obtained, it was revealed that about 76.5% of those surveyed have lived in the area over 10 years, as such were very knowledgeable about the operations of the LNG activities in their area. Before the commencement of the project quite a number of residents (21% and 15%) were observed to have been engaged in the private sector and trading respectively, whereas a significant percentage of residents were unemployed (see table 3.6). Also, added to this is the fact their estimated monthly income was less than N20000 (for some). Again, with the advent of the LNG project in 2004, 75% of residents say their occupations remained intact. Only a few (18.5%) are employees of the LNG company.

From the study, the LNG may not have done too well in employment and job creation for residents in Gbarain-Ekpetiama clans, but have no doubt revamped the economies of communities in these clans by way of increased incomes as shown in Table 3.11 to an extent. The LNG company has therefore have a multiplier effect in terms of an increased income level of residents of Gbarian-Ekpeiamas clans.

In terms of infrastructures and amenities provision (which is a sure part of LNG company's Corporate Social Responsibility) the LNG company was adjudged 'fairly poor' by respondents. The contributions are seemingly uniform in the communities. For instance, the LNG company has made only electricity available in Gbarantoru, although there is an ongoing market area under construction. In Obunagha community, respondents identified a Town- Hall, electricity supply and a yet-to-be complete road as the only visible contributions from the LNG company. Elsewhere in Agudama and Okolobiri communities, electricity and walk-way were respectively identified as the only contribution from the LNG Company. The former currently no longer have electricity by the

LNG but rather from the public supply. These go to show that the NLNG company has done minimally in almost all ramifications of their CSR.

## **CONCLUSION**

The work has examined the impact of LNG Company on occupational changes in Gbarain Ekpetiama clans of Bayelsa State. From the findings of this study one can conclude that there have been marked changes in occupations of residents of both clans as occasioned by the activities of the LNG project. Some of these observed changes occurred particularly from the primary sectors to the service oriented ones. In addition, there haven't been any major laudable contributions from the LNG Company in terms of job creation, infrastructure and amenities development. However, the activities of the company have orchestrated a spike in the income levels of individuals, but have so far not resulted in a marked shift in the livelihoods of locales.

## **RECOMMENDATIONS**

In line with the findings of this research, the following recommendations are made:

- Host community members should be increasingly involved in talks with the LNG company so as to bring increase in infrastructural developments to the area.
- The LNG company should employ more qualified graduates as staff to reduce the level of unemployment in the area.
- The LNG company should continue to evaluate their activities to ensure they comply by global best standards and from time to time make plans to improve in their CSR.

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