

Social Impact Assessment of Limestone Exploitation in Yewa North Local Government Area of Ogun State, Nigeria

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Abstract: Inability to manage the unintended consequences affects the success of developmental programmes and often leads to conflict. The need to document intended and unintended consequences to ensure effective management and avoid conflict afterwards necessitated this study. The study therefore determined the social impact of limestone exploitation in limestone belt of Ogun State, Nigeria. Structured questionnaire was used to obtain information from 160 respondents on their views on the perceived social impact of limestone exploitation. Results indicate that respondents perceive that agriculture and agriculture related income generating activities will be affected by the exploitation, while more people are expected to work as factory workers, artisans, traders and hawkers. Infrastructure and employment are expected to achieve positive change while factors such as incidence of conflict, crime rate, traffic hazards and conservation of wildlife species are expected to be threatened. Efforts to avoid conflict and maintain security will thus make the gains of limestone exploitation in the area to be sustainable.

Key words: Limestone, agriculture, conflict, exploitation, hazards

INTRODUCTION

Limestone exploitation is a major activity carried out in cement production. Cement is a finely ground powdery material which with addition of water forms paste capable of hardening both in wet and dry condition and in binding together of aggregate particles. Cement is thus obtained by grinding portland clinker with gypsum^[1]. Limestone exploitation, as for the exploitation of other resources involves the stages of planning, conflict resolution, construction, operation and close down^[2]. The last three stages directly affect the environment and human activities within the project site. This is because Ibrahim^[3] associated construction activities with the destruction of vegetation through the clearing of sites which exposes the soil surface to direct attack of rainwater and heat, all of which pave the way for erosion. Open cast and construction aspects of mining thus render vast areas of land useless through gullies which can only be remedied through reclamation. NEST^[4] reported that in Ajaokuta, Nigeria where a steel development company was established, about 18,390 hectares of forest reserve was cleared, thus affecting the ecology of the area. Also, the cement producing industries in the country cited at Ewekoro, Nkalagu, Calabar, Gboko and others are particularly notorious in that natural vegetation and crops were damaged, wildlife were destroyed or compelled to migrate, streams were excessively polluted, while the soil was overcharged with chemicals. There is thus the need

that social impact assessment is conducted before the execution of the project to reduce the negative effect of such interventions. This thus gives rise to the social impact assessment of Yewa communities where some companies are in the planning stage of limestone exploitation. Social impact assessment is an integral part of environmental impact assessment which aims to widen the focus and integration of the social and economic implications of a development programme on the life, economy, culture and essence of existence of the host or beneficiary communities^[5]. It is used by planning authority in forming judgements on whether the development should go ahead or not and provide alternative or counter measures to the proposed developmental effort. An independent social assessment will thus help to bring in subjectivity in judgements.

It has been reported that the exploitation of limestone for cement production has the tendency of effecting social change to the extent that established crops and arable farms will have to give way, thus affecting the socio-economic activities of the people. NEST^[6] reported that outside the Niger Delta oil mining region in Nigeria, surface mining activities have produced equally devastating effects on the environment and the people in the country. In many parts of the country, open cast mining of minerals such as tin, limestone and marble goes on with little or no regard for environmental effects, against International standards, thus constituting serious environmental hazards to the health and ecology of the local population. Expected increase in population of

host communities which will lead to increased pressure on the available social infrastructures tend to emphasize either the positive role of remittances from wages or the negative effects of reduced labour on other competing human activities, increased consumption and inflation.

The Ministry of Solid Minerals in the country issued licenses for limestone exploitation in the area of study in the state to prospective companies to exploit approximately 135 million tones of limestone deposit in the state^[7]. Of these deposits, the Yewa area of the state has more than 80% of the deposits^[2]. This necessitated the concentration of many prospecting companies within the region. Coincidentally, this area is regarded as one of the food baskets of the state which provides staples such as maize, cassava, yam, vegetables and tree crops such as cocoa, oil palm, cashew and timber products with prospects for international market. There is high excitement displayed by the host communities in anticipation of early commencement of exploitation activities, being of the belief that their standard of living will earnestly change for the better. It is thus necessary that the perception of the people is sought on the environmental pollution that is usually associated with limestone exploitation which gives emissions and pollutants in form of cement klin dust, nitrogen oxides as well as noise and vibrations from the companies that affects the health of humans and also reduces the photosynthetic ability of plants around the processing plant, thus reducing the output of crops and exposing man to health risks. It is therefore necessary that the optimism of the people is analyzed in relation to the associated hazards and problems that might be connected with the exploitation. It is against this backdrop that this study is designed to conduct a social impact assessment of limestone exploitation in the area to serve as a basis for comparing the opinions of the people after the project has been executed in the communities over some time as well as reduce the negative consequences that the exploitation can bring.

This study will therefore address the following objectives:

- Identify perceived changes in the income generating activities of the people in the limestone exploitation zone of the local government area.
- Determine the possibility of conflict over resource use in the communities as a result of limestone exploitation
- Examine perceived extent of change in level of infrastructural development in the communities
- Determine people's perception of the effect that limestone exploitation will have on their livelihood.

MATERIALS AND METHODS

The study was conducted in Yewa Local Government Area (LGA) of Ogun State. It is one of the 20 LGAs in the state and has the largest expanse of land in the state. It is essentially a semi-savannah vegetation area with climatic condition being conducive for agricultural production throughout the year which makes agriculture the largest employer of labour in the area. The area is also blessed with mineral deposits such as limestone, clay and kaolin which remain untapped until recently when attention is being drawn to them.

Five of the 14 communities in Yewa LGA have limestone deposits of commercial quantities. The communities are Ibese, Igbogila, Egua, Imasai and Ikomi-Oba. Random selection was used to select four of the five communities which gave the first four communities. Systematic sampling was used to select 40 households in each of the four communities by selecting every 4th household in each community until 40 households were obtained^[8]. Purposive method was used to ensure that the 40 respondents in each community is made up of 10 adult males, 10 adult females, 10 male youth and 10 female youth to give a total of 160 respondents sampled for the study.

Measurement of variables: Perceived change in the income generating activities of respondents was assessed on a 3 point scale of rarely involved. Seasonally involved. and involved all the time. Respondents were asked to indicate their involvement in the activities now and what changes are likely to take place when exploitation starts. Perceived social impact was assessed on the basis of dimensions of change expected in the population as it will affect community infrastructure, employment, environment, farming and other income generating activities. Perception statements were developed for each while respondents indicated whether they perceive that there will be 'negative change', 'no change' or 'positive change' in the social indicators in the communities as a result of limestone exploitation in the area. Changes that may occur in the socio-economic status as well as perceived potential for conflict in the communities as a result of exploitation were also assessed.

RESULTS AND DISCUSSION

Personal characteristics of respondents: Table 1 show that 85% of the respondents are below the age of 55 years who represent the active workforce of the communities. The remaining 15% are above 55 years of age. It also shows that 64.3% of the respondents are married while

33.1% are married. Majority of the respondents are thus classified as being responsible as marriage is believed to confer responsibility on individuals in the study area as in other communities. It further shows that 57.5% of the respondents are christians while 39.4% are muslims. The remaining 3.1% are traditional worshippers. Religion is believed to have effect on the worldview of individuals and thus it affects the way in which they respond to events around them, including the coming of a cement factory.

Table 1 also shows that only 10.6% of the respondents do not have formal education. The remaining had one form of formal education or the other, with up to 55.0% having secondary education. Also, 17.3% of them have tertiary education. This indicates that the respondents have high level of education. This is good for the community as the people will be able to function as skilled workers when the cement factories begin operation. The table also shows that only 39.4% of the respondents are indigenes while the remaining 60.6% are either long term or short term migrants in the community.

Table 1 further shows that trading is the occupation of 38.1% of the respondents while 28.8% of them are artisans. Also, 22.5% of the respondents are farmers. Thus, only about one-fifth of the respondents have farming as their primary occupation with the remaining having other occupations as their primary ones. Cement exploration will affect those that practice farming as primary occupation as well as those that practice it as secondary occupation as most of their farmlands will be used for exploration activities. As Ibrahim^[3] puts it, cement exploration activities lead to destruction of vegetation, which affects farming activities.

Changes perceived in the income generating activities of respondents results in Table 2 show that the respondents perceive that changes will be noticed in the cultivation of maize, cassava, fruits, the rearing of animals, hawking, working as artisans and trading, while they perceive that there will no change in their lumbering activities. Respondents perceive that the cultivation of maize will reduce as a result of reduction of land area available for cultivation as well as reduction in labour force for maize cultivation. This is as many of the maize farmers will shift to take up employment in the cement factories, thus reducing their maize production activities. This is indicated by a mean difference of -0.08. Cassava cultivation is envisaged to reduce more than maize with a mean difference of -0.42. The relatively longer period that cassava cultivation takes is expected to lead to a greater labour shift to the factories, in addition to the problems of land availability and reduced farm labour. These will affect

food production in the area as these are the major crops produced in the area which is part of the food basket of the state.

The cultivation of fruit trees in the study area is envisaged to reduce when the companies start limestone exploitation. The mean difference is indicated at -0.61 which suggests a sharp reduction. The fact that establishment of the companies will lead to destruction of forests while also affecting photosynthetic activities of plants are reasons advanced for the sharp decrease which will encourage more people to offer their services as factory workers. The respondents perceive that this will not pose a problem as they expect the companies to pay fat wages. The table further shows that the rearing of animals will reduce seriously as many people will not be able to practice the free range as a result of the presence

Table 1: Respondents' personal characteristics

Characteristics	Frequency	Percentage
Age		
15-24	22	13.8
25-34	58	36.2
35-44	27	16.9
45-54	29	18.1
55 and above	24	15
Marital status		
Single	53	33.1
Married	103	64.3
Divorced	4	2.6
Religion		
Christianity	92	57.5
Islam	63	39.4
Traditional	5	3.1
Level of Education		
No formal education	17	10.6
Primary education	27	16.8
Secondary education	88	55
Tertiary education	28	17.6
Migrant status		
Indigenes	63	39.4
Migrants	97	60.6
Primary occupation		
Farming	36	22.5
Artisan	46	28.8
Civil service	9	5.6
Trading	61	38.1
Others	8	5

Table 2: Perceived changes in the income generating activities of respondents

Activities	Involvement now		Involvement after exploitation		Mean difference
	Points	Mean	Points	Mean	
Cultivation of maize	184	2.92	176	2.84	-0.08
Cultivation of cassava	187	2.94	160	2.52	-0.42
Cultivation of fruits	108	1.72	70	1.11	-0.61
Rearing of animals	162	2.57	106	1.68	-0.89
Hawking	94	1.49	136	2.19	0.7
Artisan	96	1.52	120	1.99	0.47
Trading	173	2.7	190	3.1	0.4
Lumbering	68	1.12	68	1.12	0.00

of bigger vehicles and earth moving equipments plying roads in the communities. The mean difference is estimated at -0.89. Thus, the rearing of animals is perceived to become unpopular in the study area when exploitation starts.

Hawking is presently a popular income generating activity in the study area. It is expected to be practiced even by more people when limestone exploitation begins in the area. This is indicated by a mean difference of 0.70 which suggests that many more people will be involved in hawking as the coming of the companies will lead to a marked increase in population in the area. The high wages that people will be paid is expected to improve marketing activities in the area especially with respect to hawking as more people will be mobile. Mobility will suggest that more of the people will be involved in taking goods and commodities to them where they reside, work and go to for satisfying their needs. The table further shows that there will be more artisans with a mean difference of 0.47 and traders with mean difference of 0.40. The position that the males that work in the factories will be able to make more money available for their wives to involve in inter-community trade that will assist to improve the economy of the households. All these show that while agricultural activities will likely reduce, in line with position of NEST^[6], other income generating activities will increase among the people in a way that they will be able to mobilize fund to provide for what they will not be able to produce on their farms.

Lumbering is perceived to experience no change in the process of limestone exploitation as the people are of the view that they will still be able to fell trees for sale from areas that are not covered in the limestone belt of the state. It is interesting to note that the people are of the view that there will be more market for their timber when limestone exploitation starts in the area.

Perceived social impact of limestone exploitation:

Table 3 shows that some of the social indicators are perceived to have positive impact when limestone exploitation commences in the communities while some others are perceived to have negative impact. It is expected by the people that the coming of the cement companies will lead to positive change in the infrastructural development of the communities. This is as the companies are expected to make amenities available to their staff in addition to their ability to render community service through development of the infrastructure they meet in the communities where they will operate. This is perceived by the people to make life more bearable for the residents.

The rate of unemployment is expected to drastically reduce when the companies start exploiting limestone as

Table 3: Perceived social impact of limestone exploitation

Indicator	Positive change		No change		Negative change	
	Freq.	%	Freq.	%	Freq.	%
Infrastructure	113	70.6	37	23.1	8	5
Unemployment	150	93.8	10	6.3	-	-
Agriculture	65	40.6	46	28.8	49	30.6
Conflict						
Among indigenes	146	91.3	3	1.9	11	6.9
With settlers	54	33.8	3	1.9	103	64.4
With cement companies' officials	46	28.8	8	5.0	106	66.3
With government	58	36.3	11	6.9	101	91.3
Population						
Returning indigenes	55	34.4	103	64.4	2	1.3
Settlers	67	41.9	89	55.6	4	
2.5Crime	12	7.5	51	31.9	97	60.6
Traffic hazards	14	8.8	54	33.8	92	57.5
Forest resources	25	15.6	84	52.5	51	31.9
Wildlife resources	9	5.6	44	27.5	107	66.9

they are expected to employ residents of the area as part of the charter on establishment of industries that must ensure local content. Also, more people are expected to derive benefit as contractors to the companies while there will be indirect benefit on employment as residents will be able to buy and sell more as a result of the presence of more people in the communities. On the other hand, agriculture is perceived to derive less of positive change as indicated by the frequency obtained. This agrees with the findings of WAPCO^[1]. On the possibility of conflict, it is expected that there will be less conflict among indigenes while there will be more conflict with settlers, company officials and government. Disregard for the society's norms are expected to aggravate conflict with settlers while lack of compensation is expected to aggravate conflict with the companies. Conflict with government is expected if government fails to play her part on the counterpart development of the communities. These conflicts are expected to be non existent if these other parties play their part well by respecting the norms and values of the people, pay adequate compensation for resources taken over and when government plays her part in community development. The people are of the view that they are law abiding and accommodating people.

Population is expected to increase with slightly more settlers than returning indigenes while crime rate is expected to increase as the communities will change from being rural to the point of being urbanized. Also, traffic hazards are expected to increase in the communities due to the presence of more and bigger vehicles. The presence of law enforcement agencies are thus expected to be substantially fortified in the communities when exploitation starts to curb the crime rate as when as problems associated with traffic.

Forest and wildlife resources are expected to reduce in the communities when limestone exploitation commences. The people feel strongly about these and

Table 4: Test of difference on the perception of social impact of limestone exploitation

Gender	Mean	Std. Dev.	Std. Error Mean	F	p
Male	89.93	7.3	1.2	6.7	0.007*
Female	80.7	8.6	1.4		
Youth	94.08	5.1	0.8		

hope that they will get compensation on these from the improvement that will be witnessed in their new income generating activities when exploitation starts^[3].

Test of difference on the perception of social impact among the different gender Table 4 shows that there is significant difference in the perception of social impact of limestone exploitation in their communities by males, females and youth. While the youth have the highest mean social impact score, the females have the least score. The youth are thus more enthusiastic about the project, the females are not as enthusiastic. This is expected as the youth have more potential to derive benefit from the industries as the form the bulk of the workforce that the companies will utilize. The males are also enthusiastic but not as much as the youth. The women are however not as enthusiastic as apart from the fact that few of the will secure employment with the industries, they will also be more affected by displacements of people and natural resources. Since they provide materials for household use from forests and wildlife products, the effect of the expected displacements will be more felt by them.

CONCLUSION

More of the respondents are in their middle age and are marred with one form of formal education or the other. They thus have the tendency to be employed by the factories that will exploit limestone in their communities. Trading is the most practiced primary income generating activity among the respondents with farming being the primary or secondary income generating activity for most of them. Respondents perceive that agricultural and agriculture related activities will be affected negatively by limestone exploitation in the communities while other income generating activities like hawking, trading and working as artisans are expected to be influenced positively. On the other hand, lumbering which serves the purpose of being an important income generating activity in the communities is expected to experience no change.

Infrastructure and employment are perceived to experience positive change while conflict incidence, crime,

traffic hazards and wildlife resources are expected to experience negative change. These are therefore the negative consequences of limestone exploitation in the study area. Also, the youth perceive the social impact of limestone exploitation to be more positive than it is perceived by males and females in that order. The youth are thus expected to derive more benefit as they are the more economically active members of the communities. There is however the need for all stakeholders to factor in efforts at mitigating the negative consequences of limestone exploitation in the area to reduce the negative effect that the citing of cement factories in the area will have on the people. This is important as failure to do this has often resulted in conflicts in such areas where exploitation of natural resources take place.

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