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Quarry industries and socio-economic development in some selected communities in Cross River State of Nigeria

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Abstract
This research was carried to determine the social and economic benefits of quarry industries in Akamkpa Local Government Area of Cross River State, Nigeria. It was guided by six research questions. Sample comprise of 95 respondents broken down into 10 community leaders from each of the five communities and five respondents from each of the nine companies studied. The research instrument comprised of a structured questionnaire of 24 items built on a modified Likert scale of strongly agree, agree, disagree and strongly disagree weighted 4,3,2,1 respectively. The instrument was validated by two research experts from the department of Educational Foundations of Cross River University of Technology, Calabar. Their advice and suggestions were adhered to in the final instrument produced. Direct delivery technique was adopted in the administration of the instrument. Mean rating was used in analyzing the data. The result shows that quarry industries in Akamkpa Local Government Area have contributed significantly to the economic development of the area through the provision of employment opportunities, emergence of subsidiary industries and middlemen doing business in company products. The industries have however not fared well in the promotion of education, provision of healthcare services and protection of the communities from the hazards of water, air and noise pollution. It was recommended that government should ensure that environmental impact assessment is carried out before any project is undertaken in communities and see that communities are not shortchanged through the establishment of public or private companies.

Keywords: communities, development, industry, instrument, quarry

Introduction
Human wealth comes basically from agriculture, manufacturing and mineral exploitation. Mineral resources are exhaustible. There is therefore need for man to control his over-bloated population and explore other avenues of survival as it is estimated that most of the mineral deposits of the world will be used up in the third millennium of our calendar.

Solid Mineral Exploitation in Cross River State
Our focus in this study is to examine the exploitation of solid mineral resources in some communities in Cross River State of Nigeria and their contributions to social and economic development in the affected communities. Our concentration shall be on quarry activities in Akamkpa Local Government Area of Cross River State.

Quarry involves the extraction of rock, gravel or sand from the ground. Rock-won aggregate is typically produced through drilling and blasting from suitable rock deposits, crushing and screening to the desired sizes.

Cross River State of Nigeria is blessed with abundance of rock deposits across the length and breadth of the state. Most of the rock deposits have remained largely untapped except in few Local Government councils like Akamkpa, Biase, Obudu and Obanliku. Akamkpa, which is our area of study is the largest in landmass and stone deposit in the state. The limestone deposit here has attracted the establishment of United Cement Industry (UNICEM) of Nigeria, one of the largest cement companies in the country. The area has also attracted over 50 quarry industries operating in the area. Some of the quarry companies here include Julius Berger Nig. Ltd.; Raymond Construction Company (R.C.C) Nig. Ltd.; S & V Nig. Ltd; Expanded Nig. Ltd, Wing of Heaven Nig. Ltd.; Star Advantage Nig. Ltd; Two Brothers Nig. Ltd.; Saturn Nig. Ltd.; HZ Blazers Nig. Ltd. etc.

The uses of rock aggregate include road construction, building of bridges and other complex structures and landscaping. There is hardly any building work of standard that can do without rock aggregate. As such stone quarrying has become such a big business today that Akamkpa Local Government Area has become a beehive of activities. Stone dust is widely used as substitute for river sand for moulding of concrete blocks for house construction.

Effect of Quarrying

Quarrying has both positive and negative effects on the workers, communities affected and even off-site environment. The degree and nature of effects vary according to the type of quarry, scale of operation, method used in excavation, geology of the area, the surrounding environment and land use of the area.

On the positive side, quarrying contributes to the economic and social development of an area through the provision of raw materials that enhance and maintain community facilities and infrastructure. This includes provision of potable water supply, health facilities, new roads, schools, recreational centres and community expansion. It also brings about direct and indirect employment opportunities. There is also the diversification of the local economy and promotion of ancillary industries and complementary services.

On the negative side, there is the disturbance of land and vegetation, disturbance of river beds and coastal marine areas, disruption of habitat for wildlife, emission of dust, noise and vibration. Quarrying produces dust that gives rise to atmospheric pollution, poor visibility, respiratory and cardiovascular disorders. The dust equally brings about cough, eye infection, pneumonia, water-related diseases like malaria, typhoid, chest pain, common cold and others. (see Adekoya, 2003, Aigbeduan 2005, Hamann 2004, Garriga E & Mele D. 2004, Brohman 1996 and Nartey, NiiNanor & Klade 2012, U.S. Geological summary Mineral year book 2005)

Social and Economic Development

Social development in our context refers to the provision of people-oriented infrastructures, programmes and policies geared toward improvement in health, education, living standard and quality of life of the people. Social and economic development are often inter-related. At this local level our concept of economic development will imply jobs creation, income distribution, health, improvement, educational services and environmental sustainability of the community (Garry and Asokan, 1999).

It is expected that as the communities lose their farmlands and other means of livelihood to industries, they should in turn receive other benefits that compensate for their losses such as employment opportunities, provision of potable water supply, health services, educational services, better road network, provision of electricity and establishment of subsidiary industries. The industries should bring about social and economic development in the affected communities such that the communities will not regret what the have lost (Adegun, 2003 & Oguntoye and Alani, 1998). By so doing, the pareto optimality which ensures that some people are not worse off by the establishment of public or private industries is maintained.

Problems of the study

The problem of this study is that since the establishment of quarry industries in the communities under study, there has been no documentary evidence of the gains of these communities from the industries. The researcher's casual interaction with the affected communities have not noticed any remarkable improvement in the life of the community. Often the information gathered is a tale of exploitation, lack of community development, inadequate employment opportunities and hijacking of benefits accruable to the communities by the elders. It is to provide the answer to the question of how beneficial have the quarry industries been to their host communities that this research is set to answer.

Purpose of the study

The purpose of the study therefore is to determine empirically the extent to which quarry companies have brought about social and economic development in Old Netim, Obung, Nsan, Awi and Akamkpa town in Akamkpa Local Government Area of Cross River State, Nigeria. In specific terms the research will determine the extent of:

educational development'

provision of health services;

direct and indirect employment opportunities;

provision of better road network and

provision of electricity in the affected communities.

Research questions

The study will attempt to provide answers to the following questions.

1. To what extent have quarry industries brought about educational development in their host communities?
2. What health services have quarry industries provided in their areas of operation?
3. To what extent have quarry industries provided direct employment opportunities to people in their host communities?
4. What subsidiary industries have come on stream following the setting up of quarry industries in the communities?
5. To what extent have quarry companies established good road network in their bases of operation?
6. To what extent has electricity been provided by quarry companies in their areas of operation?

Research hypotheses

The following hypotheses guided the study:

1. Quarry industries have not contributed significantly to the development of education in their host communities.
2. Quarry companies have not brought about significant improvement in the healthcare services of their operational bases.
3. Quarry companies have significantly brought about direct employment opportunities to people in their areas of operation.
4. There has been significant emergence of subsidiary industries in the operational bases of quarry companies in Akamkpa Local Government Area.
5. Quarry industries have significantly provided good road network within the communities they operate.
6. There has been significant provision of electricity by quarry companies in their host communities.

Research Area

The study is carried out in Akamkpa Local Government Area (LGA) of Cross River State, Nigeria. Akamkpa is the largest of the 18 Local Government Areas of Cross River State in landmass, having an area of 5003 sq.km and the richest in terms of forest and mineral resources and exploitation. It has a population of 149705 based on the 2006 National Population Census, the 13th among the eighteen Local Government Areas in a state of 2.8 million people.

The five contiguous communities understudy are Old Netim, Obung, Nsan, Awi and Akamkpa urban. They are the communities with the largest concentration of quarrying industries, some of which had been earlier mentioned in this study. The communities are large and thickly populated.

Akamkpa is also a tourist destination in Cross River State, hosting tourist sites like the Qua-Falls, the National Park, wheelmar oil palm industries Ltd, United Cement (UNICEM), Company of Nig. Ltd, among others. The area has the largest tropical rainforest in West Africa with the most diversified flora and fauna, which has attracted the interest of the World wildlife foundation and the World Environmental conservation foundation, to invest in the preservation of wildlife and protection of the eco-system and carbon credit which abound in the area. Akamkpa is a tourist attraction locally and internationally to students of Geography, Geology, Environmental studies and other earth sciences.

Research methodology

The research used expo facto design in which the opinion of 50 community leaders and 45 company officials were sampled from the five communities of Old Netim, Obung, Nsan, Awi and Akamkpa town in Akamkpa Local Government Area on the basis of 10 leaders from each community and 5 officials from a company.

Instrumentation

The researchers developed an instrument titled "Impact of Quarry Industries on Socio-economic development in Akamkpa Local Government Area". It is a two part instrument in which the 'A' part demands for the bio-data of the respondents while the 'B' part contains 24 items of 4 each on the six research questions and hypotheses used for the study. It is built on a four-point modified Likert scale of Strongly Agree, Agree, Disagree and Strongly Disagree, weighting 4,3,2 and 1 point respectively. The items were meant to generate responses from community leaders and company officials on the role of the quarry companies in the socio-economic development of their host communities. The instrument was validated for both context and construct by two research experts from Faculty of Education of the Cross River University of Technology, Calabar. Modification on the instrument were effected in accordance with the experts' opinion. Direct delivery technique was used for data collection from the 95 respondents comprising 50 community leaders and 45 company officials sampled for the study. Data collected was analyzed using mean statistics for the six research questions.

Result of the study

Mean ratings for research questions 1-3 are presented in table one (items 1-12), while those for research questions 4-6 are presented in table two (items 13-24).

Research question one: To what extent have quarry industries contributed to educational development in their host communities?

Research question two: What health services have quarry industries provided in their areas of operation?

Research question three: To what extent have quarry industries provided direct employment to people in their host communities?

Table 1: Distribution of mean scores of respondents for research questions one to three.

S/N	Respondents = 95	SA	A	D	SD	∑fx	—x	Remarks
1	Company has built primary school for community	44	42	96	22	204	2.15	D*
2	Company has built secondary school for community	--	18	124	27	169	1.78	D*
3	Company has awarded scholarship for higher education from community	64	30	102	18	214	2.25	D*
4	Company has been sending people from community for training	20	45	98	26	189	2.00	D*
5	Company has built health centre for community	-	6	40	73	119	1.25	D*
6	Potable water has been provided for community by company	12	24	46	61	143	1.5	D*
7	Company sometimes provides free health services for community	--	15	132	24	171	1.8	D*
8	Company has taken adequate measures to protect community from noise, air and water pollution.	8	21	74	49	152	1.6	D*
9	Company has adequately employed members of community as staff	152	81	30	15	278	2.93	A*
10	Community is adequately represented on company's management	112	123	40	6	281	2.96	A*
11	Community receives royalties in form of money and material from company	216	108	6	2	332	3.49	A*
12	There is emergence of distributors, contractors & middleman doing business in company product.	168	93	28	8	297	3.13	A *

* A – Agree

* D – Disagree

From table one above, it could be observed that mean responses for items 1-4 which cover research question one fall below the cutoff point of 2.5. This shows that quarry industries in the five communities under study have not made significantly high contribution to the development of education in their host communities. Specifically the industries have neither built primary nor secondary schools for host communities, nor awarded scholarships for higher education or sending their indigenous staff for training in their areas of need.

Items 5-8 which cover research question two have mean responses of 1.25, 1.5, 1.8, and 1.6 respectively. These also show a negative contribution of quarry industries to health services in their operational bases. The industries have in effect not built health care centres nor provided potable water for the communities within which they operate. The

companies have equally not involved themselves in providing periodic free healthcare services for the people. Also the communities are not protected from noise, air and water pollution by the companies.

Responses to items 9-12 which cover research questions three show that the companies have to a high extent provide direct employment to indigenes of their host communities. The ratings for items 9-12 are 2.93, 2.96, 3.49 and 3.13 respectively. These show that the companies have adequately employed members of the communities as staff; that communities are adequately represented in the companies management; that communities receive royalties in the form of money and materials from the companies and that there is emergence of indigenous businessmen doing business with the companies.

Table 2: Distribution of mean scores of respondents for research questions 4-6

S/N	Respondents = 95	SA	A	D	SD	∑fx	—x	Remarks
13	Many subsidiary industries have come on stream in the community due to companies' presence.	116	69	40	23	248	2.61	A*
14	Hospitality industry now thrive in the community	188	102	10	9	309	3.25	A*
15	Auto-engineering services, vulcanizing and sale of spare parts now thrive in the community.	88	147	36	6	277	2.92	A*
16	There is emergence of new services previously non-existent due to companies' presence.	124	114	30	11	279	2.94	A*
17	Community has been provided with bailey road by companies.	184	63	36	10	293	3.08	A*
18	Roads to community are now tarred with asphalt courtesy of companies.	57	69	84	17	222	2.34	D*
19	Roads linking community with outside are regularly maintained by companies	84	75	64	17	240	2.53	A*
20	Vehicles now ply the community with ease due to good road network provided by companies.	88	153	36	4	281	2.96	A*
21	Before companies arrival community had no electricity.	40	45	122	9	216	2.27	D*
22	Companies have been able to link community to national grid for energy.	52	33	92	25	202	2.13	D*
23	Community new enjoys regular and full day power supply from companies	20	39	102	26	187	1.97	D*
24	Community only receives a few hours of light every evening.	100	81	64	11	256	2.69	A*

* A – Agree
* D – Disagree

Items 13-24 on table 2 above cover research questions 4-6. Research question 4 sought to determine subsidiary industries that have come on board in the communities due to the setting up of quarry industries. Items 13-16 which are for this research question have mean ratings of 2.61; 3.25; 2.92 and 2.94 respectively.

It shows that there is general agreement among respondents that many industries that depend on the companies for patronage have come up in the communities. In specific terms hotels and places of entertainment now abound in the communities, auto-engineering services, vulcanizing and sale of spare parts as well as services that were previously non-existent in the communities are now available.

Research question 5 which sought to determine the extent to which good road network have been provided by the quarry industries are answered in items 17-20 which have mean ratings of 3.08; 2.34; 2.53 and 2.96 respectively. Three of the four items in the research question receive positive responses. These imply that quarry industries have provided their host communities with good bailey roads, they maintain these roads regularly and vehicles now ply the communities with case. A high percentage of the respondents however disagree that their roads have been tarred with asphalt by the companies.

Research question 6 which is answered in items 21-24 sought to determine the extent to which companies have provided the communities with electricity. Mean ratings for the items are 2.27; 2.13 1.97 and 2.69. It is only item 24 with mean rating of 2.69 which shows that most of the communities receive a few hours of electricity every evening from the companies. Items 22 and 23 shows that companies have not linked their host communities to public power supply. Communalities equally do not enjoy full day and regular power supply from companies.

Discussion of findings

The findings of this study show that of the six research questions posed for the study, three are answered in the affirmative and three in the negative. Those in the affirmative are research questions 3, 4 and 5, while 1, 2, and 6 are in the negative. Findings from questions 3, 4 and 5 show that quarry industries have to a very high extent provided direct employment to people in their host communities. Also that a number of subsidiary industries have come on stream in those communities and that to a high extent quarry industries have provided a good network of roads in their host communities. These agree with the position of Adekoya, 2003; Aigbedian, 2005 and Miinanor & Klade, 2012 that quarry industries bring some positive benefits to their host communities. They pointed out that quarry industries provide potable water supply, health care facilities, new roads, schools and recreational centres. They also aver that such companies promote establishment of ancilliary industries, diversification of the local economy and provision of direct and indirect employment opportunities to communities.

Findings of research questions 1, 2 and 6 reveal that the industries under study have not fared well in the provision of educational services, health care services and provision of power supply to their host communities. In effect a significantly high number of the companies do not engage in the development of education in their host communities through building of primary or secondary schools, nor award of scholarship to indigenes for higher education. On the health sector, the companies do not significantly involve themselves in the health needs of the people such as building of health care centres, periodic production of free health care servies, provision of potable water and protection of the communities from air, water and noise pollution and other environmental hazards that are

concomitants of their operations. In terms of power supply the companies only provide a few hours of electricity in the evening for their host communities.

Apathy on the social and health needs of their host communities by quarry industries as revealed from the above analysis does not augur well for the communities. This is a violation of the compensation priniciple suggested by Kaldor Hick in Adegun (2003) in which beneficiaries from policies or project implementation should compensate losers to ensure net social gain. The essence of industrialization is not for the marginalization of some people; rather it is for enhancing the wellbeing of the generality without reducing the welfare of others (Oguntoye and Alami, 1998). While communities have made some economic gains from the companies, there is need also for communities to benefit socially through the promotion of education, provision of health care services and protection of the people from hazards emanating from companies operations as applicable in the findings of Adekoya, 2003 and Aigbedon, 2005 in other communities.

Conclusion

From the findings of this study, it can be concluded that quarry industries in Akamkpa have made significantly positive contributions to the economic development in the area but their social contributions are still marginal. If companies contributions are based on demands from the host communities, then it can also be concluded that the communities are yet to appreciate the significance of education and health care services to the overall development of the area.

Recommendations

Based on the findings of this study it is hereby recommended as follows:

1. Before the establishment of any public or private industries or project, government should ensure that environmental impact assessment of the said project is undertaken and necessary safeguards undertaken.
2. Management of any industrial establishment should ensure that there is net social gain from the host communities.
3. Management of any project or industrial establishment should ensure that losers are adequately compensated to minimize restiveness and agitations for redress among community members.
4. Quarry companies in these communities should be sensitive to the health needs of the people by providing them with potable water, periodic free health care services and protection of the people from noise, air and water pollution.
5. State and local government should supervise the activities of private companies in their domains to ensure that citizens are not marginalized.

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