

## SOCIO-ECONOMIC EFFECTS OF ILLEGAL MINING ACTIVITIES IN ANTANG DISTRICT OF JEMA'A LOCAL GOVERNMENT AREA, KADUNA STATE, NIGERIA.

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### ABSTRACT

In recent years the various activities of exploration and exploitation of Nigeria resources to satisfy our demand for consumer goods have had considerable effects and the natural environment. The socioeconomic effects of illegal mining activities in Atang District of Jema'a Local Government Area, Kaduna State, was investigated with the aim to determine the socio-economic effects of illegal mining activities on the Atang District. Primary data for the study were obtained from a total sample of 97 through random sampling techniques by application of structured questionnaires and personal observations. Descriptive statistical tools such as frequencies, percentages and tables were used to analyze the data obtained from the questionnaire. The result indicated that the illegal mining activities in Atang District brought about some benefits like building new houses, marrying new and additional wives and improving the standing living of the communities with the money realized from illegal mining. On the negative side of the illegal mining in Atang District include the lost of good land due to erosion, land crises, loss of animal and human lives in the mining pits, lost of soil fertility, drunkenness, drug addiction and social harassment. The paper recommended reclamation of land through leveling of mine spoil heaps and filling of mine pits is necessary. The reclaimed land could be used for plantation of trees such as *Eucalyptus spp.* which can be grown for producing poles and firewood. Soil conservation measures can be taken to control soil erosion by the use of cover crops on the farmland.

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**Keywords:** Socio-economic, Exploitation, Mining Pits, Environment and Illegal Mining.

### INTRODUCTION

The environmental decay as it is now often unduly used emerges from the concept that the natural environment was stable and safer in the past than it is today. In recent years the various activities of exploration and exploitation of Nigeria resources to satisfy our demand for consumer goods have had considerable effects and the natural environment. The environment had been damaged far-reaching where the soils, plant, animal and water resources are diversely affected. Udo (2009), observed that man has always been conspicuous in his ability to alter the surface of the earth for various purposes. Most destruction of the environment is caused by indiscriminate illegal mining activities of minerals like sand, laterite and gemstones for man uses. According to Kareem and Owao, (2000), while some states in Nigeria have their development hinged on mining of minerals buried underneath their lands, the

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inattention of miners to proper mining practices has made life difficult for the people, for example, potable water is inaccessible or contaminated by activities of miners. He further stated that mine pits by artisanal and small-scale miners of gemstones in Ijero Ekiti, Nassarawa, Olode, Shaki, Jos, Keffi, Akwanga and many parts of Nigeria also create huge environmental hazards to farmers as many of them have been accidentally buried in abandoned pits and shafts. The most disturbing issue is that illegal miners do not know the gravity of the environmental hazards they cause.

An illegal mining activity is extensively carried out at and around Sanga Forest Reserve Area in Jema'a Local Government Area of Kaduna State. Other places covered include Kaura, Jaba and Kachia Local Government Area. The miners damage the profile of the soil, resulting in escalation of soil and environmental degradation. The issue of environmental Protection should be of concern to all; government must lead in terms of policies and strategies to conserve the environment.

### **The Study Problem**

In Antang District, the villages involved in the illegal mining are Antang, Nisama, Kanufi and Atuku. Mining companies were established in the study area in 1960s due to the prospect of gem (sapphire). Prominent among the gems are tourmaline, aquamarine, amethyst, topaz, sapphire, ruby and zircon. Since then the magnitude of the illegal mining has increased enormously.

There are some negative impacts on the human and ecological environment. Some of the negative impacts are observed on the low soils organic matter, stunted crops, increase in erosion activities, deforestation and left over mining pits that are not suitable for economic development. The negative effects of the mining activities in the area have given great cause for concern to the inhabitant of Antang District. Among the research carried out on the activities of illegal mining is in the study area is that of Solomon *et al*, (2001); which dwelled much on the physical effects of illegal mining on agricultural farmlands. The work observed the massive destruction of the farmlands. According to Kareem and Owao, (2000), the illegal mining in Atang forest reserved resulted to the removal of vegetation, destruction of wildlife habitat and emergence of farming activities in the area.

From the research carried out on the activities of illegal mining activities, no one of these could address the effects of the illegal mining on the socio-economic activities of the communities. There is, therefore the need to undertake an in-depth study on the effects of the illegal mining on the socio-economic activities of Atang District Kaduna State, Nigeria.

### **Aim and Objectives of the Study**

The study aimed at assessing the Socioeconomic Effects of Illegal Mining Activities in Antang District of Jema'a Local Government Area, Kaduna State.

To achieve the aim the following objectives were observed:

1. To determine the socioeconomic problems of the mining communities in Atang District.
2. To examine the effects of illegal mining activities on the farmlands of Antang District.
3. To assess the effects of illegal mining pits in study communities.
4. To evaluate the effects of illegal mining activities on the crop output Antang District.
5. Assess the direct benefits of illegal mining to the communities of Atang District.

### THE STUDY AREA

Antang District is situated at South West of Jos within Jema'a Local Government area of Kaduna State. It lies between Latitude  $9^{\circ} 15'N$  and  $9^{\circ} 36'N$  and Longitude  $8^{\circ}$  and  $8^{\circ} 10'E$  (BLSK, 2010). Antang District is approximately  $23km^2$  (Alfredo, 2002). The relief of the district is relatively flat with some undulating altitude of 549m at the North-East of Antang above sea level (BLSK, 2010). A large part of the area belongs to the pre-Cambrian age, which includes igneous and metamorphic rocks (gneiss and schist). The soil colour is reddish due to the high level of drainage and oxidation. The district lies within the tropical climate characterized by temperatures ranges between  $22^{\circ}C$  to  $24^{\circ}C$  throughout the year. The mean annual rainfall ranges between 1000mm to 1750mm (BLSK, 2010). The vegetation comprises of transitional woodland, with species like Daniela, Oliverii, Vitex, Domana, Diospyros, Mespiliformus, Khaye, Grandifohala and Albizia Africana.

### METHOD OF DATA COLLECTION

Antang District was purposely selected because it was the site that had the intensive illegal mining activities in the Sanga Reserved Area. Primary used data for the study were collected through administrative of structured questionnaire and existing Journal, electronic libraries and text books. The data collected include the socioeconomic characteristics of the respondents, the effects of illegal mining activities on the agricultural farmland, on socioeconomic activities, on the crops yield and the benefits of the illegal mining activities to the host communities. The data for the study were obtained from a total sample of ninety seven (97) randomly selected respondents in the four (4) communities of the district through interview schedule. The data were analyzed using frequencies, tables, percentages and ranking.

### RESULTS AND DISCUSSION

#### The Socio – Economic Characteristics of Respondents

Demographic analysis of the respondents' shows that in table 1, age groups of 55 – 65years have the highest number of respondents (26.67%). This was followed by the age group of 35 – 45 and 45 – 55 years respectively with 21.67%. The year group of 25 – 35 followed with the ranking of 14.44%. The list year group are the 15 – 25 and 65 years and above with 8.25% and 7.22% respectively. This shows that majority of the respondents age group (55 – 65years) have the knowledge of effects of the mining activities in the study area.

The result in table 1 observed that majority of the respondents 81.44% were males while 18.56% were females, which means that illegal mining activities is more

prevalently done by the males even though females are involved in the mining activities in the area. This might also be due to the fact that females are involved in domestic work and supplementing farm income in off season periods. This supports the finding of Ani, (2004) and Fedelia, (2005) who stressed that generally men have greater access to the cash economy from mining activities. This can be agreed upon because from the result shown in Table 1, more males are involved in mining activities than females as it is energy demanding activities.

Results in table 1 also show that majority of the respondents (88.7%) were married, 6.19% of the respondents are widows/widowers and 5.15% are singles. This result is in line with the findings of Jande, (2005) who reported that married people have more responsibilities such as the provision of food, education, health and well-being of their spouses and children. This may be the reason why the illegal mining is dominated by the married people unlike the case for the singles, who may not likely have other people to take care of beside themselves.

Most of the respondents (38.14%) in the result obtained have 5 – 10years of formal education, 37.11% of the respondents did not have any formal education, 15.46% of the respondents attended 1 – 5years of formal school and 9.25% of the respondents attended 10 – 15years of formal school. This depicts that educational level of the people is inversely proportional to the number in the illegal mining activities, implying that those that are well educated are not many in the illegal mining. This is not surprising since a great percentage of the people in the communities have little education. This shows that literacy level among the illegal miners in the study area is low. The preponderance of non-literates in high labour and demanding livelihood labour was reported by Amaza (2000), who stressed that practitioners' level of education is inversely proportionate to involvement in labour. This may be for the fact that education helps to liberate the mind and could expose practitioners to several alternatives and helps in efficient use of information which could lead to better output and income.

The result in table 4 also indicates that majority (51.55%) of the respondents were farmers by primary occupation, 34.02% of the respondents were traders and 14.43% of the respondents are civil servant. As observed, the illegal mining activities in the study area is dominated by farmers, it means that illegal mining in the area will markedly affect the farming season due to the attention and time given to illegal mining in the area. Farmers spend substantial part of their time on the illegal mining activities during the dry and rainy seasons.

The result also shows that 67.07% of the respondents have been farming in the area for about 20years and above, 13.40% of the respondents have 15 – 20 years of farming experience and 5.99% each of the respondents have farming experience in the area for 1 – 5 and 5 – 10 years respectively. This indicates that majority of the farmers have the knowledge of the problems of the illegal mining activities since they have been farming their farmland over 20years.

**Table 1: Socio – Economic Characteristics of Respondents**

<b>Age</b>	<b>No. of Respondents</b>	<b>Percentage (%)</b>
15 – 25	8	8.25
25 – 35	14	14.44
35 – 45	21	21.67
45 – 55	21	21.67
55 – 65	26	26.80
65 and above	7	7.22
<b>Total</b>	<b>97</b>	<b>100</b>
<b>Gender</b>		
Male	79	81.44
Female	18	18.56
<b>Total</b>	<b>97</b>	<b>100</b>
<b>Marital Status</b>		
Single	5	5.15
Married	86	88.7
Widow/Widower	6	6.19
<b>Total</b>	<b>97</b>	<b>100</b>
<b>Years of Informal School</b>		
None	30	37.11
1 – 5	15	15.46
5 – 10	37	38.14
10 – 15	8	8.25
15 – 20	0	0.00
20 and above	1	1.35
<b>Total</b>	<b>97</b>	<b>100</b>
<b>Occupation</b>		
Civil Servant	14	14.43
Farmer	50	51.55
Trader	33	34.02
<b>Total</b>	<b>97</b>	<b>100</b>
<b>Years of Farming Experience</b>		
1 – 5	5	5.99
5 – 10	5	5.99
10 – 15	9	9.25
15 – 20	13	13.40
20 and above	65	67.07
<b>Total</b>	<b>97</b>	<b>100</b>

### **The Socio-economic Effects of the Illegal Mining in Antang District Communities**

The frequency in table 2 gives the various socioeconomic effects of the illegal activities on the study communities of Antang District. The results indicate that 39.19% of the respondents ranked first and lost their good lands through erosion, 28.87% of the respondent's lands have poor soil nutrients due to excavation of mining, 17.60% of the respondents complaint of drunkenness and other related social vices, 8.25% of the respondents had land crises and 6% of the respondents who ranked 6th complaint of people becoming unproductive and laziness on farm work.

**Table 2: Socio-economic Effects of the Illegal Mining Activities on Antang District Communities**

<b>Problems of Mining</b>	<b>No. of Respondents</b>	<b>Percentage (%)</b>
Erosion/Lost of good land	38	39.19
Poor soil nutrient	28	28.87
Drunkenness and Related social vices	8	8.25
Land crises	17	17.60
Unproductively/Laziness on farm work	6	6.19
<b>Total</b>	<b>97</b>	<b>100</b>

### **The Effects of Mining Activities on the Farmlands of the Antang Districts Communities**

Table 3 explains the effects of illegal mining activities on the Atang District community's farmlands. The result shows that 37.10% of the respondents complaint of deep pits created in their farmlands due to the illegal mining activities, 35.05% of the respondents complaint that only the top soil were removed due to the illegal mining activities on their farmlands and 27.84% of the respondents complaint that the illegal mining activities removed to the subsoil.

**Table 3: Effects of Mining Activities on Farmlands**

<b>Effects of Mining Activities on Farmlands</b>	<b>No. of Respondents</b>	<b>Percentage (%)</b>
Only top soils removed	34	35.05
Subsoil removed	27	27.84
Deep pits	36	37.10
<b>Total</b>	<b>97</b>	<b>100</b>

### **The Hazards of Mining Pits to the Antang District Communities**

The result in table 4 explains the effects of the illegal mining pits on the lives of the Antang District communities. This reveals that 61.86% of the respondent's complaint of the death of animals that fall into the illegal mining pits and 38.14% of the respondent's complaint of death and injuries of people that fall into the illegal mining pits.

**Table 4: Hazards of Mining Pits to the Communities**

<b>Hazard of Mining Pits</b>	<b>No. of Respondents</b>	<b>Percentage (%)</b>
Death of animal that fall into pits.	60	61.86
Death or injuries of people that fall into pits	37	38.14
<b>Total</b>	<b>97</b>	<b>100</b>

### **Effects of Illegal Mining Activities on the Crop Yield of the Antang District**

Table 5 shows that the effects of illegal mining activities on the crop yield in the communities. It was observed by 67.02% of the respondents that for the past 10 years, they were getting fewer yields in their farmlands and 32.98% of the respondents were getting more yields in their farmlands in the past 10 years.

**Table 5: Effects of Illegal Mining Activities on Crop Yield for the Past 10 Years**

Effects on Crop Yield	No. of Respondents	Percentage (%)
Getting more yield	32	32.98
Getting less yield	65	67.02
<b>Total</b>	<b>97</b>	<b>100</b>

### The Socio-Economic Benefits of the Illegal Mining to the Antang District Communities

The result in table 6 shows that 37.11% of the respondents ranked first and built residential houses from the money realizes from illegal mining, 22.68% of the respondents improved their income level for better living from the money realizes from illegal mining, 18.56% of the respondents used the money realized from mining activities to trained their children and themselves, 12.37% of the respondents married new wives with the money realized from the illegal mining activities and the least in ranking (9.28%) of the respondents use the money to buy cars and motorcycles.

**Table 6: Socio – Economic Benefits of Mining to the Communities**

Socio-economic Benefits	No. of Respondents	Percentage (%)
Building of residential houses	36	37.11
Training of self and children in school	18	18.56
Improved income level for better living	22	22.68
New and additional wives	12	12.37
Purchased car/motorcycles	9	9.28
<b>Total</b>	<b>97</b>	<b>100</b>

### DISCUSSION OF FINDINGS

The results obtained from the analysis of the data collected from the respondents clearly reveals that the illegal mining activities brought socioeconomic prosperity in Antang District but also left behind serious environmental problems and other social vices that created cause to concern in the area.

The problems created are those observed from the lost of good lands due to erosion (Table 2). It was observed by the respondents that during the illegal mining, a vast area of the forest was cleared in search of the minerals. This exposed the farmlands to water erosion and thereby not suitable for farming and other economic activities. This observations agreed with the work of Alexander, (2008), that mining activities mixed up the soil profile which give rise to mine spoil (dumps and pits) and this makes the soil to be highly susceptible to soil erosion. According to him that this process further degrades the land which leads to a high reduction in cultivatable land which contribute to a high intensity of land use.

Majority of the farmers complained that most of their farmlands have lost the soil nutrients due to the mining activities. This is an indication of deep excavation whereby the subsoil was brought out and covered the topsoil. During the interview, most of the farmers complaint that their farmlands are not more suitable for agricultural activities and thereby have taken the option of leaving their farmlands fallow. This results obtained concord with Alexander, (2008) who observed that mined spoils are products of subsoil that are capable of altering the soil nutrients.

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Land crisis of different category were noticed. The farmer's complaint that most of their farmlands were claimed and sold to miners for mining activities without consulting the owners while land boundaries were not easily identified due to the intensive illegal mining activities. According to the respondents, most of these cases ended up in Courts, police stations and village leaders for settlement.

The respondents observed among the effects of the illegal mining activities, the increased in drunkenness, drug addictions, sexual harassment and other related social vices due to the money realized from illegal mining activities. Others became very lazy in engaging in any other job than mining even there after. The analysis in Table 3 reveals that one of the serious effects of the illegal mining observed in the farmlands of study area is the deep pits. Some of these pits have extended to 25meters – 35meters deep and 10 meters – 12meters wide. The respondents' complaint that some of these pits had to collapse during the mining resulted to the death of so many illegal miners.

As reported by the respondents, death and injuries of both animals and people were recorded as a result of them falling into the deep pits (Table 4). During the interview a Fulani cattle grazer complaint of loosing six of his cattle in these mining pits. A man also fell into one of the pits and broke his leg as he was chasing one of his cows into the flocks. These pits are becoming threats and great concern to the communities. The work agrees with that of Kareem and Owao (2000), that mine pits by artisanal and small-scale miners of gemstones in Ijero Ekiti, Nassarawa, Olode, Shaki, Jos, Keffi, Akwanga and many parts of Nigeria also create huge environmental hazards to farmers as many of them have been accidentally buried in abandoned pits and shafts.

The crop yield per farmland was determined and analyzed in Table 5. It was discovered that the farmlands are producing less crop yield due to the activities of the illegal mining. The farmlands that were depended upon as source of income and family sustenance before the mining have lost their organic matter, the topsoil covered with subsoil and bedrocks thereby rendering the soils not suitable for the crop production. During the interview, majority of the farmers' complaint that despite the application of the chemical fertilizers, the farmlands still produce fewer yields.

Apart from the negative effects of the illegal mining activities in the study area, the respondents reported that there are also the socioeconomic benefits from the activities. It was observed that majority of the farmlands and the illegal miners used the money realized from the mining activities to built houses, some improved their living income, some trained their children and themselves to school, some married new wives and some bought new motorcycles and cars.

## **CONCLUSION**

Illegal mining activities have already caused serious socio-economic and environmental challenges in some part of Atang District. These problems include land degradation, damage to topsoil, lost of soil nutrients; mine pits prevented



farmers from harvesting crops and harm to livestock and wildlife biodiversity. Although there is growing awareness of the importance of sound environmental management amongst mining stakeholders and Government officials in Kaduna State, mitigation strategies are possibly offset by conflicts of interest on both political and economic grounds at central and local levels.

## RECOMMENDATIONS

To address the impacts and the activities of illegal mining:

- Reclamation of land through leveling of mine spoil heaps and filling of mine pits is necessary, effort to be carried out with the help of the Local Government Area Authority. The reclaimed land could be used for plantation of trees such as *Eucalyptus spp.* which can be grown for producing poles and firewood thereby generating revenue for the Local Government Area.
- Soil conservation measures should be taken by farmers as guided by extension officers to control soil erosion by the used of cover crops on the farmland. This is done by the planting of the pea species family and sweet potatoes. This reduces the rate of soil erosion and loss of soil fertility. The roots of cover crops also hold the soil particles together. The legumes also add nitrogen into the soil.
- Strategies to eliminate illegal mining and to promote other income-generating activities like agriculture and agro small-scale industries should be encouraged as it may reduce pressures on mining, thus helping to improve the social, economic and environment management of natural resources in the area.

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