

Land Pollution: A Major Impact of Baryte Mining in Azara, Nigeria

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ABSTRACT---- *This paper aimed at assessing the impact of baryte mining on land pollution in Azara, Nigeria. Two barytes mining sites were selected; Vein 2 and Vein 17. Measurements and observations were carried out to indentify the impact of baryte on land pollution in the area. The findings revealed that areas of about 77226m² and 132096m² were devastated in Vein 2 and Vein 17 respectively. The Findings also revealed that rain-fed farming, grazing and mining were the major land uses in the area with Maize, Rice, Cassava, Tafashiya, Daniellia Oliverii (Kadaura), and Parkia biglbosa (Dorawa), as dominant vegetation in the area. The findings also revealed that more than 1000 acres of arable lands have been lost to Baryte mining in the study area. It is recommended that sustainable mining should be practice in the area.*

Keywords---- Baryte, Mining, Pollution, land.

1. INTRODUCTION

Azara Baryte mining started in the 1970s by the Nigeria Mining Cooperation which used mechanize system of mining where bulldozers, scrapers, excavators, loaders were used in the process.

Surface mining is the type of mining in practice since the inception of barites mining in Azara area. The impacts were insignificant at the start of barites mining in the area. However, after the abandonment of mechanize mining in the late 80s, Baryte mining in Azara area has been characterized by the use of primitive tools such as diggers, chisels, shoves, hammers among others; participation of local miners as illegal miners; reckless exploration in search of the Baryte reserves which resulted in the destruction of vegetation, farm lands, roads, soils and landscape. At this juncture, the impacts of Baryte mining began to be felt on physical environment in Azara area.

As the illegal Baryte mining intensify for decades in Azara area, the impacts were so great on the physical environment which posed as problems to the inhabitants of the area where they occasionally lost their arable farmlands to mining, destruction of vegetations is paramount within the mines, soils were eroded or reduce in fertility and landforms have been degraded.

Baryte mining over time has generated plethora of environmental impacts which has elicited concern by environmentalists, farmers, NGOs, Civil Society organizations and Community Based Organizations among others.

It is against this background that this study has been carried out so as to assess the impact of Baryte mining on the land in Azara, Nigeria.

2. PROBLEMS

Mining involves the process of extracting valuable minerals on or beneath the earth surface through disruptive mining techniques for utilitarian purposes. Therefore, all mining operations have disruptive effect on the physical environment, hence, Azara Baryte mining will not be an exception.

For more than three decades Baryte mining is on-going in Azara area and the negative impact on the physical environment are manifesting every day. For examples, Farmland of about 105m x 212m adjacent to “Vein 2” in Azara is left barren due to acidic mine drainage. Vegetations in this farmland were already dead and the soil lost its productive ability. Economic trees such as *Parkia biglobosa* (dorawa), *Daniellia oliverrii* (kadaura) and vast areas of grassland for grazing were lost.

Not only that, large and deep derelict ponds in the study area are left open without reclamation after mining which became dead traps to livestock and breeding ground for mosquitoes and other dangerous reptiles.

However, government and the stake holders are not paying special treatment to these problems. This study has been carried out in order to find solutions to the above mentioned problems. This is the focus of my study.

3. STUDY AREA

Azara area is located to the east of Lafia the Capital of Nasarawa State with a distance of about 108km apart. It is located between longitude 9° 00` to 9° 25` E and Latitude 8° 15` to 8° 35` N (Figure 3.1).

The area has land mass of 1,535.5km² with a population of 108,585 (National Population Census, 1991).

It is bounded to the north by Plateau State, to the east by Taraba State; while to the south is Awe Local Government Area, Obi Local Government Area to the west.

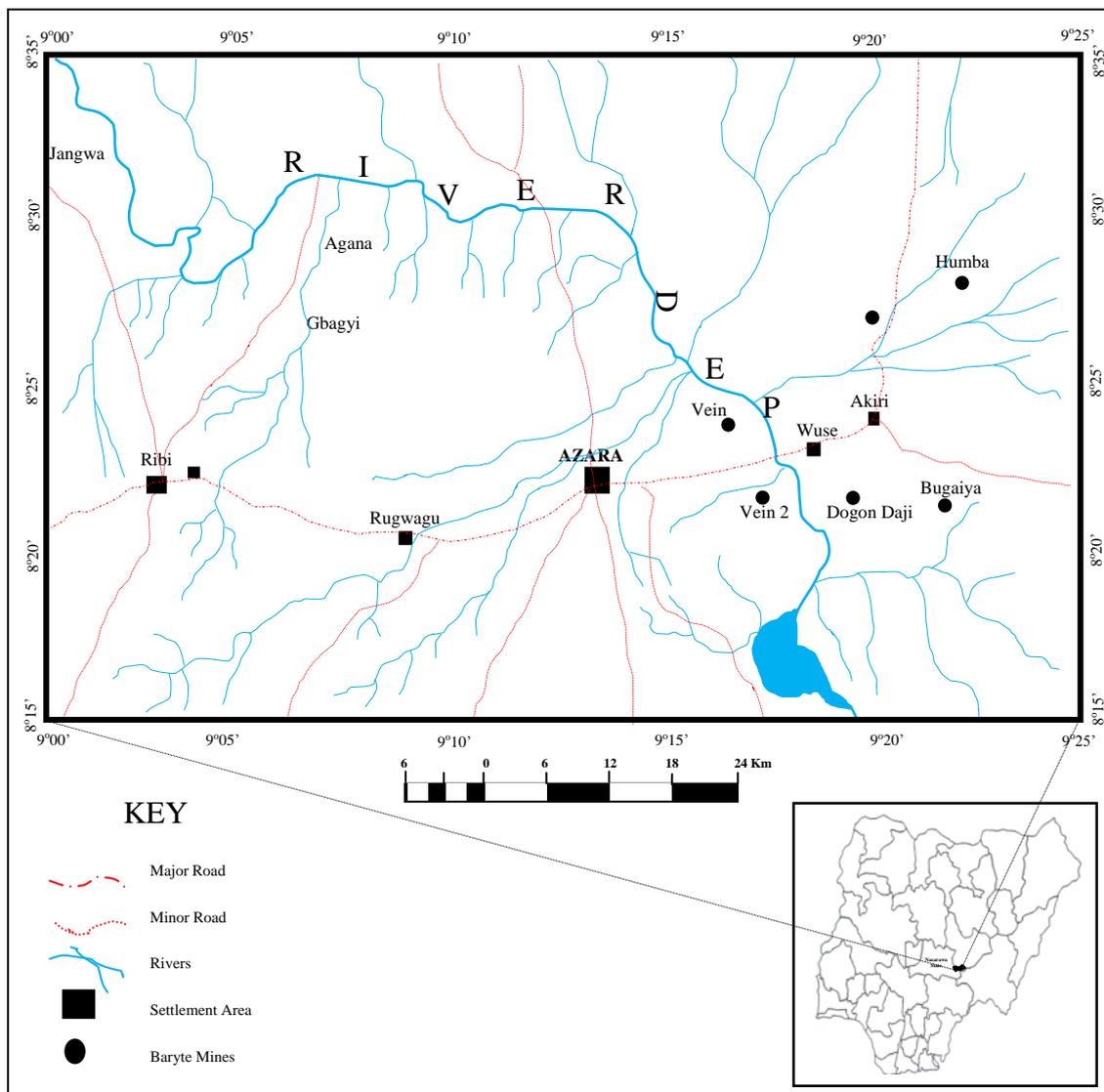


Figure 3.1 The Study Area

4. METHODS

Vein 2 and Vein 17 were selected for the study. The selection of the sites was done based on the fact that the sites are still in operation and show clear evidence of environmental degradation. Observation was carried on the sites where destruction of vegetation is paramount and measurement of the derelict baryte mines was also carried out using measuring tape and the result was analyzed using descriptive analysis and pictographic presentations.

5. RESULT

Table 5.1 Sizes of the Selected Baryte Mines

Sampled Sites	Length (m)	Width(m)	Depth(m)	Area(m ²)
Vein 2	422	183	32.75	77226
Vein 17	516	256	41.5	132096

Based on the result on Table 5.1, Vein 2 has an area of 77226m² and Vein 17 has 132,096m² that have been devastated by baryte mining.



Plate 5.1 Vein 2 Baryte Mining Site

Table 5.2 Land Use and Vegetation Cover

Sampled Sites	Land use	Dominant Vegetation
Vein 2	Rainfed Farming/Grazing/ Mining	Maize, Rice, Cassava, <i>Tafashiya</i> , <i>Daniellia Oliverii</i> (<i>Kadaura</i>), <i>Parkia biglbosa</i> (<i>Dorawa</i>), and Non forest
Vein 17	Rainfed Farming/Grazing/ Mining	<i>Tafashiya</i> , <i>Daniellia Oliverii</i> (<i>Kadaura</i>), <i>Parkia biglbosa</i> (<i>Dorawa</i>), Maize and Yam.

The results on Table 5.2, show that the dominant land uses within the Baryte mining sites in the study area are rain fed farming, grazing during the wet season and mining in dry season. Also the dominant vegetation cover are economic trees such *Kadaura*,

Table 5.3 Farmland Lost to Baryte Mining in the sampled sites

Sampled Sites	Lost Farmland (acres)
Vein 2	755
Vein 17	240

From Table 5.3, more than 1000 acres of arable lands have been lost to Baryte mining in the study area. Vein 2 alone, lost about 755 acres of arable lands, while, 240 acres of cultivable land have been devastated, Vein 17



Plate 5.2 Acid Mine Drainage water at Vein 2 Baryte Mining Site
The researcher is fetching water sample



Plate 5.3 Land Destroyed by Acid Mine Drainage

6. DISCUSSION

Based on the result in Table 5.2, the study found out that rain fed farming, grazing, mining and non forest vegetation are the dominant land uses in each of the sampled Baryte mining sites. However, farming and grazing are usually carried out during the wet seasons while mining in the dry seasons.

The result in Table 5.2, also revealed that rice, yam, maize and cassava are the dominant food crops in the wet season, economic trees such as *Dorawa*, *Kadaura*, *Kiryra*, *Tafashiya*, mango and various species of grass such as *Gamba* and spear grasses constituted the dominant vegetations in the sampled mining sites. The study furthermore discovered that these economic trees are mostly affected by baryte mining

The Study also revealed that over 1000 acres of cultivable land have been devastated by Baryte mining in the study area. Although, Chaanda *etal*, (2010) ascertained this figure, covered only Azara mining community. The destruction of farmlands due to mining activities can never be over emphasized. For instance, at Sabon Barkin in Jos South Jos, Nigeria, farmlands were displaced and altered as a result of tin mining (ERA Report, 2009). Also in 2007, a vast area of land was polluted with the spill of chemicals from the refinery of Nigerian National Petroleum Corporation (NNPC) at Ubeji village near Warri, Delta State, Nigeria, (Darimani, 2011).

The results of observation revealed that Baryte mining sites are not reclaimed after the completion of mining. This issue of non reclamation of mining sites after the completion of mining is a major feature of mining in both the developed and developing worlds. For example, a former Plateau State commissioner for Mineral Resources revealed that over 4,012 mining ponds unreclaimed in Riyom tin mining area, (Daily trust, 11 December, 2010). Also in Appalachia alone, thousands of square miles of mountainous terrain have been scared by strip mining and left unreclaimed (EPA, 2005). Chile and Argentina have abandoned mines of Copper, Lead and Nitrate that are potential sources of contamination due to inadequate rehabilitation after their closure and the risk of chemical spillage (Romero *etals*, 2003).

However, these unreclaimed Baryte mining sites contained a lot of large and deep derelict ponds. Although, (Chaanda *etal* 2010) examined irrigation farming within the Baryte mining sites in the study area, this study revealed that there is no trace of irrigation system within the Baryte mining sites in the study area. This is an indication that the derelict Baryte mining ponds were not put to use for any purpose in the study area except for domestic washing. This situation is not as in other places. For example, in Jos, most of the derelict tin mining ponds are use for irrigation farming.

Reckless exploration in search of baryte reserves by illegal miners using local mining tools such as diggers, shovels, chisels and hammers have been identified sampled sites. Local miners usually uproot the trees and shrubs in order to meet the buried mineral (Plate 5.1). This primitive mining method did a lot of damage to the physical environment across the study area.

Acid Mine Drainage (Plate 5.2) has also been identified on a land adjacent to Vein 2 in the study area where acidic water from a baryte mining pit is being pumped and spread to the surrounding land which resulted to massive destruction of vegetation and rendered the land unproductive (Plate 5.3).

Based on the result in Table 4.2, this study also revealed that rice, yam, maize and cassava are the dominant food crops in the wet season, economic trees such as *Dorawa*, *Kadaura*, *Kiryra*, *Tafashiya*, mango and various species of grass such as *Gamba* and spear grasses constituted the dominant vegetations in the selected baryte mining sites. The study furthermore discovered that these economic trees are mostly affected by the baryte mining in the study area.

7. CONCLUSION

The impacts of baryte mining in Azara area were very insignificant at the start of baryte mining in the 1970s when the Nigeria Mining Corporation was in full operation using mechanize system of mining. Immediately after the abandonment of mechanize mining in the late 80s, manual mining methods set in by the illegal miners which make the impact to be manifested on the physical environment.

Baryte mining has significant effect on the land use (farming) in the study area. Farmlands have been devastated by illegal miners which under take reckless intensive explorations in search of baryte reserves across the study area. Also acidic water from baryte mining pits flowing over adjacent farm land has deflated the productive capacity of the soil and destroyed the vegetation in Vein 2. Over 1000 acres of arable land have been lost in the study area. This situation may also affect the agricultural outputs in the study area.

Baryte mining also has significant effect on the vegetal cover within the sample mining sites. Therefore, Economic trees such as *Kirya, Kadaura, Tafashiya, Dorawa*, mango, gamba grass and spear grass have been destroyed by baryte mining in the area.

As regards to land degradation, baryte mining significantly affected the original land forms of the baryte mining sites across the study area. Baryte mining has left large and deep derelict mining ponds unreclaimed which pose as dead traps to livestock. These derelict ponds are not put for any purpose except for domestic washing by the nearby settlers.

These impacts have been manifested on the physical environment for more three decades and yet neither government nor the communities have attempted any move to ameliorate these problems. Therefore, until government and the concern communities take drastic actions, these problems will continue to be manifested on the physical environment and consequently affecting the inhabitants of the area.

Federal government should ensure that all the abandoned mining sites be reclaimed, trees should be replanted and the waste rocks, sands should be packed to refill the derelict ponds. This will return back the lost agricultural land to its initial or near form.

Federal government should encourage the members of the communities to use the water in the ponds for irrigation farming. This will boost agricultural activities in the area.

On the issue of Acid Mine Drainage, Federal government should ask the miners to stop mining on the barytes pits in Vein 2. Although Acid Mine Drainage is currently treatable, with several different chemicals such calcium carbonate, calcium hydroxide, calcium oxide, sodium hydroxide, sodium carbonate, but there is no treatment stations in the area. Alternatively, Federal government should provide treatment stations in the area for the neutralization of acidic water from the barytes mines.

Finally, Federal government should ensure that Sustainable Mining is practice all over the territory. This is a mining that meet the society's need for mineral and metals while demonstrating responsibility to social, economic and environmental issues. This is an effective way to reduce the negative impacts of mining on the environment

8. REFERENCES

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