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Socio-Economic Impacts of Tin Mining in Jos, Plateau State, Nigeria

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ABSTRACT: *This work studied the social and economic impacts of tin mining in Rayfield of Jos Plateau, Nigeria. The conceptual framework is based on the concept of sustainable development. Questionnaire was randomly administered to generate the data used. Analysis of Variance (ANOVA) was used to test the two hypotheses postulated. The result of the first analysis showed that there is a significant difference between the social components resulting from tin mining, while the second analysis revealed that there is a significant difference between the economic variables resulting from tin mining activities. The work showed that tin mining activities impacted on the environment significantly, leaving behind so much social and economic scars that the government needs to consider and take measures to ameliorate.*

KEYWORDS: *economic impacts, sustainable development, social development, tin mining, economic variables, environment.*

I. BACKGROUND

One of the ways by which man impacts on his environment (both natural and built) is through mining activities. The mining industry is one of the oldest industries in the world, and its importance to human development becomes evident when one considers the naming of the pre-historic age after mined products – "Stone" age, "Bronze" age and "Iron" age (Jennings, 1999).

Mining on the whole is the extraction of valuable mineral resources or other geologic materials from the earth, usually from an ore body, vein or seam (Encarta Encyclopedia, 2001). It can also be said to be an act or process of extracting minerals of economic importance from their natural environment and transporting them to points of processing and use.

Over the years, mining evolved all over the world to include various minerals such as the mining of Malachite at Maadi by ancient Egyptians, Gold and Iron at Wales by the Romans and Turquoise in pre-Columbian America (Shau, 2001). Mining in Nigeria started as far back as the eighteenth century. Over 500 occurrences and deposits of over different minerals are known so far to exist within the country with the exploration of some of them being on a small scale (Adegbulugbe, 2007). One of the major cases of mineral exploration and exploitation that boomed within the nation has been that of tin in Jos. Tin is said to be one of the oldest mineral resources known to man as its strategic importance was recognized as far back as some 300 years ago when its hardening effects on copper was discovered (Adegbulugbe, 2007). Since then, tin ore has been mined in several parts of Nigeria including Zaria, Kano, Bauchi, Ilesha and Plateau provinces, with over 80% of the production coming from the Jos Plateau (Ajaegbu et al, 1992).

The production of tin in Jos Plateau in the colonial era started with about 1.5 metric tones in 1914 and then began to increase until peak production of 17,740 metric tones was reached in 1943 (when Nigeria became the 6th world producer). In 1970 however, tin mining declined rapidly due to the behaviour of the market for tin and a diversion of interest in Nigeria towards oil production and export (Patterson, 1986). With tin mining activities going on in various sites on the Jos Plateau at informal levels, the social and economic impacts within the natural and built environment of Jos Plateau comes readily to mind.

II. STUDY AREA

The study area lies within Jos South Local Government Area in the northern part of Plateau State Nigeria. It is bounded by latitudes $8^0\ 50^I$ N and $9^0\ 00^I$ N, and longitude $9^0\ 45^I$ E and $9^0\ 50^I$ E, covering an area of about 22km^2 (see fig. 1). Plutonic and volcanic rocks predominate in the Jos Plateau, with some alluvium and other unconsolidated deposits. The Rayfield area belongs to the zone of the Jurassic younger granites (Morgan et al, 1978).

III. STATEMENT OF PROBLEM

Mining activities all over the world, have contributed both positively and negatively to the economic and social aspects of human efforts of the people in the mining areas. The positive contributions are seen in the

form of increase in income, job creation/increased employment, intense migration and population growth and provision and maintenance of social amenities.

Alongside the positive contributions are the negative impacts which include land degradation, increased crime rate, loss of cultural heritage and farm land, health hazard and inflation. All these influence the life style of the people. This study assesses the socio-economic impacts of tin mining in the Jos Plateau.

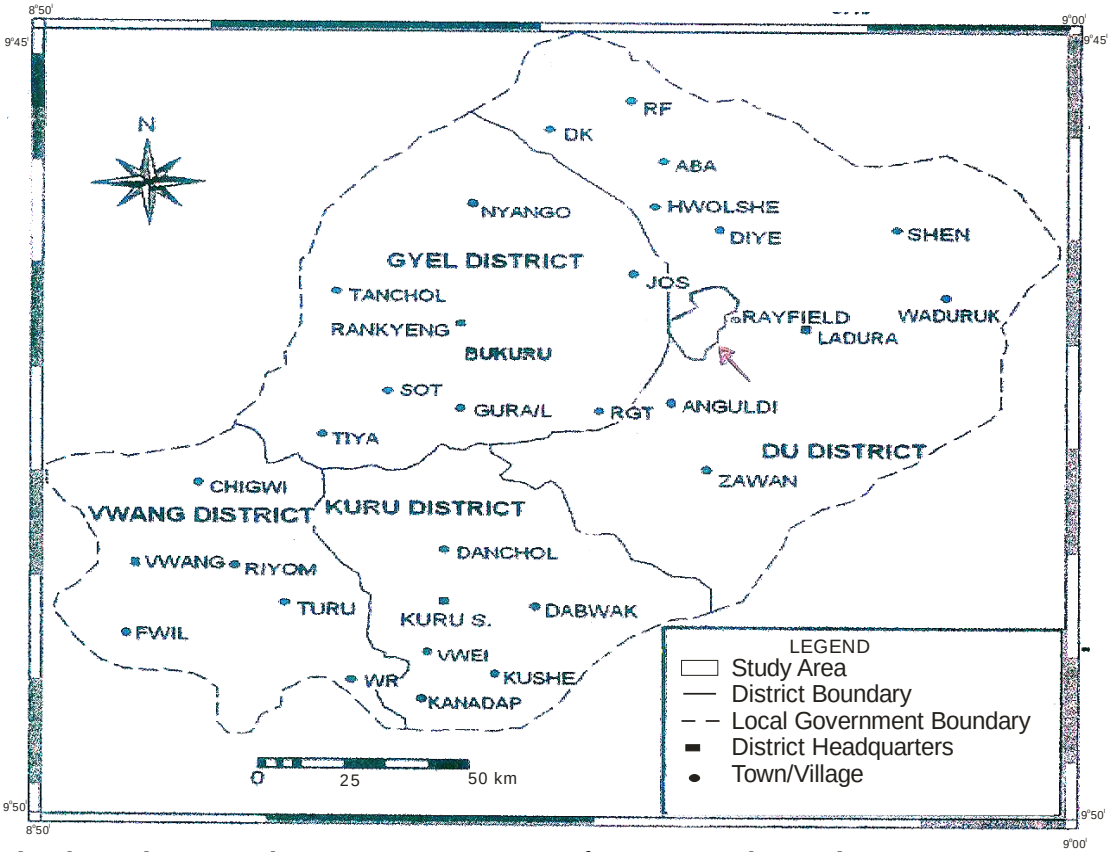

Figure 1: Map of Jos South L.G.A. showing Rayfield

Source: Jos South Local Government Secretariat,2008

Two hypotheses were postulated to help concretize this work. The first hypothesis (H_O) is: there is no significant difference between the social components resulting from tin mining activities.

The second hypothesis (H_O) is: there is no significant difference between the economic variables resulting from tin mining activities.

IV. CONCEPTUAL FRAMEWORK

This work is hinged on the concept of sustainable development. This is the development that meets the needs of the present without compromising the ability of the future generation to meet their own needs. The concept of sustainable development balances on three stands, namely social sustainability, economic sustainability and environmental sustainability (Figure 2).

A development which considers the environment, social benefits and economic gains can be said to be sustainable.

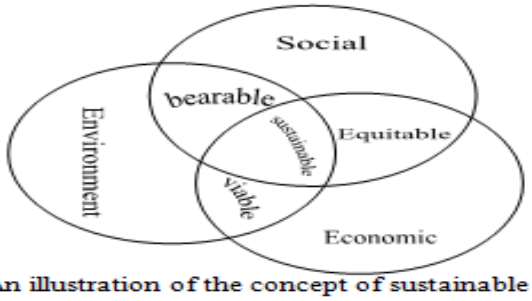

Figure 2: An illustration of the concept of sustainable development

Source: *www.wikipedia.com*

Sustainability according to Hasna (2007) is a process which tells of a development of all aspects of human life affecting sustenance. It means resolving the conflict between the various competing goals and involves the simultaneous pursuit of economic prosperity, environmental quality and social equity, with the resultant vector being technology. Hence it is a continually evolving process. An unsustainable situation occurs when natural capital (the sum total of nature's resources) is used up faster than it can be replenished. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally.

Economic sustainability: Agenda 21 of the Rio Earth Summit clearly identified information, integration and participation as key building blocks to help countries achieve development that recognizes these interdependent pillars. It emphasizes that in sustainable development, everyone is a user and provider of information.

Environmental sustainability on the other hand, is the process of making sure that current process of interaction with the environment is pursued with the idea of keeping the environment as pristine as naturally possible, based on ideal-seeking behavior. Furthermore, Agenda 21 emphasizes that broad public participation in decision making (social sustainability) is a fundamental prerequisite for achieving sustainable development. Mining is an example of an activity that can be unsustainable if not well watched, as it can empower indigenous people and at the same time, strip them of their sovereignty, their traditional wealth, and pose multiple impoverishment risk. It has also brought about tragic and unnecessary forced relocations, violation of human rights, under compensation for damages, and lack of benefit sharing.

V. METHODOLOGY OF STUDY

The research methodology adopted for this work is the survey method. Questionnaire was administered to respondents. It was collated and analyzed. This forms the primary data used. Secondary data were equally gathered from literature. The collected data were subjected to an Analysis of Variance (ANOVA).

VI. RESULTS AND DISCUSSION

This section discusses the data collected.

Table 1 shows the respondents' opinion on the negative social impacts of tin mining in Rayfield of Jos Plateau. The result shows that the most obvious social change/impact is traffic congestion.

As regards traffic congestion, 87.2% of the respondents think that the traffic situation has increased when compared to the time mining was carried out in small scale (that is when large scale mining had not commenced).

Table 1: Negative Social Impacts from Tin Mining

Social impact	Yes	No	No opinion	Total	% Yes	% No	%No opinion	Total %
Loss of cultural heritage	38	7	2	47	80.8	14.8	4.3	100
Community conflicts	35	8	4	47	74.47	17.02	8.51	100
Disruption of land tenure system	37	5	5	47	78.72	10.64	10.64	100
Change in urban pattern	32	10	5	47	68.09	21.28	10.63	100
Migration of people	38	9	0	47	80.85	19.15	0	100
Over population	36	11	0	47	76.6	23.4	0	100
Traffic congestion	41	6	0	47	87.23	12.77	0	100
Poor health facilities	30	14	3	47	68.83	29.79	6.38	100
Increased crime rate	35	12	0	47	74.47	25.53	0	100

Source: Author's Fieldwork, 2008.

On the issue of loss of cultural heritage and disruption of land tenure system, 80.8% of the respondents believe that they have lost their cultural heritage while 78.7% of the respondents are of the view that the land tenure systems have been disrupted. From the Table 1, it will be observed equally that community conflicts, migration of people, population increase and increased crime rate have all been occurring as a result of tin mining activities on Rayfield, Jos, when compared to the period before tin mining commenced.

Table 2: Negative Economic Impacts of Tin Mining Activities

Economic impact	Yes	No	No opinion	Total	% Yes	% No	%No opinion	Total %
Unemployment	33	14	0	47	70.2	29.8	0	100
Loss of farmland	44	3	0	47	93.6	6.4	0	100
Inflation of prizes of commodities	43	4	0	47	91.5	8.5	0	100

Source: Author's Fieldwork, 2008.

Table 2 shows that the most striking negative economic impact of tin mining in Rayfield of Jos Plateau is the loss of farmland. It has equally given rise to unemployment, predominantly among the farmers, since most of them have lost their farmlands to mining sites, and professional farmers are not trained in mining. 70.2% of respondents confirmed this. 91.5% of the respondents have the view that prices of goods have been on the increase as a result of tin mining activities in the area.

Table 3: Socio-Economic Impacts Resulting from a Decline in Mining Activities

Socio-Economic impact	Yes	No	No opinion	Total	% Yes	% No	%No opinion	Total %
Poor maintenance of social and infrastructural facilities provided	41	6	0	47	87.2	12.8	0	100
Loss of job/employment	45	2	0	47	95.7	4.3	0	100
Desertion of the area	35	7	5	47	74.5	14.9	10.6	100
Decline in revenue generated by government	39	7	1	47	83	14.9	2.1	100
Environmental deterioration due to abandonment of mining equipment	33	9	5	47	70.2	19.1	10.6	100
Increased crime rate	43	4	0	47	91.5	8.5	0	100
Loss of income	42	5	0	47	89.4	10.6	0	100

Source: Author's Fieldwork, 2008.

Table 3 shows that there are a lot of socio-economic impacts resulting from decline in tin mining activities in Rayfield. The table showed that as regards the issue of loss of job, 95.7% of respondents answered in affirmation. Equally, the percentage of respondents as regards the issues of increase in crime rate, desertion of the area, decline in revenue can be seen. This implies that if mining activities should stop, many social vices will be on the increase.

To ensure that the conclusions are not based on mere observations from the data, the data was subjected to the Analysis of Variance (ANOVA) to test the two hypotheses formulated. The test of hypotheses revealed that there is a significant difference between the social components resulting from tin mining activities. The second test of hypotheses also revealed that there is a significant difference between the economic variables resulting from tin mining activities.

Mining activities have really impacted on the environment of the Jos Plateau, depriving the farmers of their farmlands and increasing the population of the area. The increase in population brought with it the resultant social vices, stress on facilities, traffic congestion and even loss of cultural heritage. There is equally the resultant effect of increase in prices of commodities and accommodation problems. Youth restiveness and community conflicts over land ownership have been experienced. All these are linked to the mining activities in the area.

VII. SUMMARY AND CONCLUSION

This study was focused on the assessment of the socio-economic impacts of tin mining in Rayfield area of Jos Plateau, Nigeria. A questionnaire was administered to respondents to gather the data needed. The tests revealed that there is a significant difference in the social components resulting from tin mining activities. It also revealed that there is a significant difference between the economic variables resulting from tin mining activities. From these results, it can be concluded that tin mining activities have had serious impacts on the social and economic activities of Rayfield in Jos South L.G.A., Plateau State. This implies that tin mining activities impact on the environment significantly, and has left behind a lot of social and economic scars on the land as well as on the inhabitants of the area.

VIII. RECOMMENDATIONS

Based on the findings made, the following recommendations are made:

- The government should enact and enforce policies that mandate mining companies to re-claim mined areas.
- Public participation should be imbibed in the issues bothering on tin mining in the area.
- There should be full environmental impact assessment (EIA) and enforcement of same on all new mining programmes in the area.

REFERENCES

[1]. Adegbulugbe, A.O., (2007). "Issues of Radioactive Waste Arising from Tin Mining Activities on the Jos Plateau" Paper presented to the Nigerian Nuclear Regulatory Authority.

[2]. Ajaegbu, H.I., Adepetu, A.A., Ajakpo, J.E., Ihemegbulem, V.C., Jumbo, S.E., Olaniyan, J.A., Okechukwu, G.C., and Schoeneich, K., (1992). "Jos Plateau Environmental Excursion Guide" Jos Plateau Environmental Resources Development Programme (J.P.E.R.D.P.) Department of Geography, University of Durham., Durham, England.

[3]. Encarta Encyclopedia (2001). (c)1999-2000 Microsoft Corporation.

[4]. Jennings, N.S. (1999). "Social and Labour Issues in Small-scale Mines": Report for Discussion at the Tripartite Meeting on Social and Labour Issues in Small scale Mines. International Labour Office, Geneva.

[5]. Hasna, A.M. (2007). "Dimensions of Sustainability" Journal of Engineering for Sustainable Development, Energy, Environment and Health 2(1): 47 – 57.

[6]. Morgan, F. and Floyd, M.J. (1978). The Jos Plateau: A Survey of Environmental Use. Occasional Publication pp. 7 – 21.

[7]. Patterson, G., (1986). Lake Pidong-"A Preliminary Survey of a Volcanic Crater Lake". Jos Plateau Environmental Resources Development Programme. (J.P.E.R.D.P.), Department of Geography, University of Durham. Interim Report No. 10, Durham, England.

[8]. United Nations Division for Sustainable Development. Documents: "Sustainable Development Issues" (2007).

[9]. US Partnership for the Decade of Education for Sustainable Development (2007). www.uspartnership.org.

[10]. http://www.wikipedia.com/sustainable development