
**COPPER MINING AND HOUSEHOLD WELFARE: A CASE STUDY OF KILEMBE COPPER MINES IN
KASESE DISTRICT.**

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ABSTRACT

The study aimed at the effect of copper mining on household welfare and it was guided by the following; To determine the effect of copper mining on people's income in Kilembe, to establish the effect of copper mining on the education in Kilembe and to establish the effect of copper mining on food security in Kilembe. This study adopted a case study research design to enable the researcher generate detailed and in-depth data from the study population. A case study was exploited because the study population is homogeneous with similar characteristics and life style, being affected by similar problems and they all live in rural areas around Kilembe, Kasese district, it also enabled the researcher to obtain qualitative information from the respondents. The answers given in the interview guide was edited manually to collect writing errors, and then was coded for easy entry into a statistical package SPSS (16.0) because of its flexibility, then the data was processed to generate Graphs, Frequencies, tables and percentages

According to the findings, 61.8% of the respondents agreed that copper mining had an effect on household welfare followed by 20 individuals thus 29.4% who strongly agreed, this was discovered due to a number of reasons given by individuals who agreed and the researcher as well. 3 respondents with 4.4% did not agree, 2 respondents with 2.9% strongly disagreed. However, 1 respondent accounted for 1.47% disagreed thus discovered by the researcher that copper mining has increases household welfare. The researcher also recommends that people of Kilembe should be sensitized about the importance of education and how school dropout contributes to poverty.

Key words: copper mining, household and welfare

Back Ground of the Study

The entry of copper mining activities into communities has oftentimes meant that access to large tracts of land owned by local people and used to sustain their welfare are curtailed or denied. Globally, the effect of mine activities on house hold welfare has been investigated by a number of researchers in many parts of the world (Oromo et al., 2023). The presence of mines in certain localities raises high expectations from the communities. It is argued that the presence of copper mines in developing countries contribute positively to the socio-economic development of the areas in which they operate (Frank et al., 2023). The practices and policies of the copper mining agencies could lead to the realization of welfare of households in the community in terms of job creation, education benefits, income and food security which is necessary to the promotion of sustainable development (Allan et al., 2023).

Notwithstanding the positive contribution of copper mining to the economy, there are negative impacts on the economy especially at the micro-level (Wegulo et al., 2023). A consequence of the location of copper mining in communities is the influx of people into these areas in search of jobs with the copper mining companies or with allied services or to engage in other occupations, which are sometimes criminal (Derrick et al., 2023). Some available facilities in the communities which gives them low quality service and finally of the effects of this situation are that there is pressure on the breakdown; increases in the competition for jobs, accommodation, and food lead to price hikes and increases in crime and social vices leading to HIV/AIDS (Oliver et al., 2023). Copper mining activities are usually said to be destructive to the environment and welfares (Godfrey et al., 2023).

In Africa, for more than a decade, Africa has enjoyed a mineral boom. This has fueled exports, government finances and hope for a sustainable growth trajectory. During 2001-12 extractive industries (including oil) comprised three-quarters of exports with metals and minerals alone accounting for 60 percent. This gain in export share, and by consequence government revenues, went to some (but not all) countries, which explains partly why resource-abundant countries have grown faster than non-resource rich countries (Kazaara & Christopher, 2023).

In Uganda, copper mining communities are significantly more likely to be affected by health problems, unemployment, trade shocks, famine, or conflict (Sanoh 2014). Thus, the vulnerability of the households in these communities connotes the extent to which the households can adequately resist or withstand shocks (Paul et al., 2023). In the Ugandan context, the dominant approach in ameliorating the effects of copper mining on communities as well as individuals is through monetary compensation, yet this approach has not addressed vulnerabilities of copper mining communities (Sweeting & Clark, 2012) and copper mining activities have often led to the alienation of local communities because they lose access to their farmlands and sometimes, they are relocated.

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Kilembe Mines is a copper and cobalt *mine* in Uganda, the third-largest economy in the East African Community. *Kilembe Mines* is Uganda's largest copper *mine*, with estimated deposits of copper in excess of 4,000,000 tonnes and an undetermined number of cobalt ore. The *mine* is located in *Kilembe*, a suburb of the town of Kasese, in the foothills of the Rwenzori Mountains in the Western Region of Uganda.

Statement of the problem

The presence of copper mines in certain localities raises high expectations from the communities (Ronald et al., 2023). It is argued that the presence of copper mines in developing countries contribute positively to the socio-economic development of the areas in which they operate (Christopher et al., 2022). However, Copper mining has the potential to have severely adverse effects on the environment including loss of biodiversity, erosion contamination of soil, ground water and surface water by chemicals from copper mining process which may negatively affect agricultural activities resulting into scarcity of food and loss of farmer's income hence leading to poverty (Christopher & Micheal, 2022). The government has tried to improve on mining industry, but still copper mining has negative effects on environment. This therefore has prompted the researcher to conduct a study on the effect of copper mining on the house hold welfare in kilembe copper mines in Kasese district.

Specific objectives of the study

1. To determine the effect of copper mining on people's income in Kilembe.
2. To establish the effect of copper mining on the education in Kilembe
3. To establish the effect of copper mining on food security in Kilembe

Research questions

1. What is the effect of copper mining on people's income in Kilembe?
2. What is the effect of copper mining on the education in Kilembe?
3. What is the effect of copper mining on food security in Kilembe?

Methodology

Research Design

A research design is a plan used while conducting a research study. This study adopted a case study research design to enable the researcher generate detailed and in-depth data from the study population. A case study was exploited because the study population is homogeneous with similar characteristics and life style, being affected by similar problems and they all live in rural areas around Kilembe, Kasese district, it also enabled the researcher to obtain qualitative information from the respondents. A case study was used because it provides an in-depth study of the

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problem with limited time scale. The study used both qualitative and quantitative research approached. The researcher used qualitative approach to yield an unbiased result that can be generalized to some larger population.

Target Population

Target population is that population that the researcher wants to generalize the results of the study. Mugenda and Mugenda (2003) define target population as the entire group a researcher is interested in or the group about which the researcher wishes to draw conclusions. The target population of the study will be the 82 small scale copper miners.

The sample size was determined basing on Krejcie and Morgan formular: Given by

$N = \frac{n}{1 + n(e)^2}$ where n= total population

$\frac{82}{1 + 82(0.05)^2} = 68$

3.4 Sample size and sampling procedures

The sample of the study composed of 68 respondents was selected from Individuals and households that depend and live around Kilembe mines. Selecting an appropriate sample size is a critical aspect in research with particular reference to this study.

Data collection Methods

The study used primary data, which was collected using questionnaires and interview guides. The researcher administered the questionnaires to respondents via personal interviews. The questionnaires comprised a variety of questions which was structured into different sections with each of the sections addressing a specific objective. Both open and closed questions was included in the data collection tool. Questionnaires for all strata was structured in five parts. The first part captured the demographic information of the respondent while the second, third, fourth parts were designed to collect data on price, funding, and labor.

Data analysis

The answers given in the interview guide was edited manually to correct writing errors, and then was coded for easy entry into a statistical package SPSS (16.0) because of its flexibility, then the data was processed to generate Graphs,

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Frequencies, tables and percentages (Nelson et al., 2022). A graph shows the trend of responses, percentages to gauge the proportionality of the response, then frequencies and tables represents a more advanced stage analysis. Then qualitatively, data was analyzed by running a logit model as given below;

Model

To find out the relationship between the variables, the researcher will adopt logit model as shown below:

$$Z = P(Y_i=1 | X_i) = \frac{1}{1+e^{-z}} = \frac{e^z}{e^z+1}$$

Where;

$$Z = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \varepsilon$$

The parameters α_j for all $j = 0, 1, 2, \dots, m$ are all estimated.

$Y = 1$ if the household is a beneficiary of copper mining and P_i is the probability that the i^{th} is the households welfare is improved.

x_1 =Peoples' income, $x_2=1$, if education is primary, $x_2=0$ other wise

$X_3=1$, If education level is secondary, $X_3=0$ other wise

Benchmark category/ base category is no education level

$X_4=1$, if food security is increased, $X_3=0$ other wise

$X_5=1$, if food security is decreased, $X_5=0$ other wise

$X_6=1$, income earned from non-mining, $X_6=0$

e = error term

RESULTS

Table 1 Effect of copper mining on people's income

Variables	SA	A	U	SD	D
Does copper mining have a significant relationship with welfare of households?	20 (29.4)	42 (61.8)	3 (4.4)	2 (2.9)	1 (1.47)

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H₁: There is a significant relationship between copper mining and welfare of households in Kilembe.

H₂: There no significant relationship between copper mining and welfare of households in Kilembe

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.883 ^a	1	.015	.020	.014
Continuity Correction	4.692	1	.030		
Likelihood Ratio	6.056	1	.014		
Fisher's Exact Test					
Linear-by-Linear Association	5.797	1	.016		
N of Valid Cases	68				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.68.

b. Computed only for a 2x2 table

According to the study objective one in table 4.4, 33 individuals that is 61.8% of the respondents agreed that copper mining has an effect on household welfare followed by 20 individuals thus 29.4% who strongly agreed, this was discovered due to a number of reasons given by individuals who agreed and the researcher as well. 3 respondents with 4.4% did not agree, 2 respondents with 2.9% strongly disagreed. However 1 respondent accounted for 1.47% disagreed thus discovered by the researcher that copper mining has increases household welfare (Oromo et al., 2023).

This is in line with Kotsadam and Tolonen (2015) who said that raising nominal wages and other incomes of miners and also added that reduced level of income inequality among the miners.

The chi-square table above shows that since the P-value (0.015) is less than 0.05 the confidence level, we reject the null hypothesis and conclude that copper mining has a significant effect on household income. The observation here is that a bigger percentage supported that copper mining has a significant effect on household income (Mark et al., 2023).

Presentation of model

Table 2: Binary Logistic model

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Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	People's income	1.663	.626	7.061	1	.008	5.278
	Secondary	.294	.648	.206	1	.650	1.342
	Food security	-1.438	.645	4.969	1	.026	4.211
	Constant	5.865	2.106	7.754	1	.005	.003

a. Variable(s) entered on step 1: People income, Secondary, Food security.

$$Z = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \varepsilon$$

$$Z = 5.865 + 1.663 X_1 + 0.294 X_2 - 1.438 X_3$$

An increase in copper mining would on average increase that people's income by 1.663 keeping other factors constant. This is statistically significant since the p-value ($0.008 < 0.05$) therefore there is a significant relationship between copper mining and household welfare.

The coefficient for secondary (0.294), means that an increase in copper mining would on average increase attendance in secondary level of education. The p value ($0.650 > 0.05$) thus, statistically insignificant at 5% level of significance (Nelson et al., 2023). The coefficient for food security (1.438) implies that copper mining on average would reduce food security. The P value ($0.226 > 0.05$) meaning it's statistically insignificant. From results, copper mining reduces food security because according to the researcher, people tend to concentrate on copper mining instead of farming (Allan et al., 2023).

Conclusion

Miners who had acquired a post-primary education are expected to better manage their copper mining areas than relatively miners who have below primary education or without any formal education. Some parents who are engaged in copper mining neglect education and send their children to work, not out of choice reveal the effect of copper mining on education. The study concluded that poor children and their families may rely upon child labour in copper mining in order to improve their chance of attaining basic necessities and neglects education. Over concentration on copper mining results into satisfactory child growth under harsh economic circumstances such as food scarcity. As a result of copper mining, food output is dependent on acreage, as acreage under food crops decreases food output also decreases.

Recommendations

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1. Community leaders should ensure that households produce food sufficient to feed the households
2. The researcher recommends that the government should establish strong environment control systems so as to protect the environment.
3. The researcher also recommends that people of Kilembe should be sensitized about the importance of education and how school dropout contributes to poverty.
4. The researcher recommends that the management of Kilembe should introduce advanced methods of copper mining and how it contributes to their income level.

References

- Allan, K., Charles, N., Moses, N., Kazaara, A. G., & Nelson, K. (2023). *The Effect of Operation Wealth Creation on Youth Farmers Development : A Case Study of Labongo Layamo Sub County , Kitgum District*. 7(2), 50–63.
- Christopher, F., & Micheal, M. (2022). *The Role of Tourism on Poverty Reduction of People : A Case Study of Magambo Sub County in Rubirizi District*. 6(5), 23–29.
- Christopher, F., Moses, N., Muhindo, M. E., & Komunda, T. R. (2022). Employee Training and Organizational Performance: A Case Study of African College of Commerce and Technology in Kabale District, South Western Uganda. *International Journal of Academic Pedagogical Research*, 6(5), 1–7.
- Derrick, T., Nelson, K., Kazaara, A. G., Deus, T., Catherine, M., & Ismail, L. (2023). *The Effects of Savings and Credit Cooperative Societies on the Livelihood of Rural Dwellers , A Case Study At Kyamuhunga People ' s Sacco Rutookye Town Mitooma District*. 7(2), 329–346.
- Frank, M., Nelson, K., Kazaara, A. G., Deus, T., Christopher, F., & Catherine, M. (2023). *The Macroeconomic Determinants of Economic Growth in Uganda a Case Study Of Wakiso Distict*. 7(2), 147–159.
- Godfrey, S., Matovu, K., & Ismail, L. (2023). *Effect Of Youth Unemployment And Crime Rates In Uganda , A Case Study Of Mityana Distrist .* 7(3), 325–334.
- Kazaara, A. G., & Christopher, F. (2023). *Impact of Micro Credit Financing on Agricultural Production A case Study of Bundibugyo District In The Western Region Of*. 7(3), 56–62.
- Mark, N., Kazaara, A. G., Deus, T., Julius, A., Nelson, K., Catherine, M., Christopher, F., Benefansi, I., & Alex, K. (2023). *Anaylsis of Students ' Enrollment and Graduation Rates in Gulu University in Uganda . A Case Study of Gulu University*. 7(2), 167–177.
- Nelson, K., Christopher, F., & Milton, N. (2022). *Teach Yourself Spss and Stata*. 6(7), 84–122.
- Nelson, K., Kazaara, A. G., & Kazaara, A. I. (2023). *Teach Yourself E-Views*. 7(3), 124–145.
- Oliver, E., Peter, S., Kazaara, A. G., Nelson, K., Nicholas, K., & Deus, T. (2023). *The Effect Of Unemployment Relates To Crime Among The People In Kirombe North B Village , Lira City . A Case Study Kirombe North B Village*. 7(2), 111–122.

Oromo, O. D., Julius, A., & Nelson, K. (2023). *Effect of Covid-19 Lockdown on Household Income in Uganda A Case Study of Kitoro Parish , Entebbe Municipality*. 7(4), 107–117.

Paul, K., Alex, I., Kazaara, A. G., & Kazaara, A. I. (2023). *Corruption and Public Finance Management A Case Study Of Wakiso District*. 7(3), 298–306.

Ronald, K., Kazaara, A. G., Ismail, L., & Micheal, T. (2023). *The Impact Of Privately Owned Enterprises On The Economic Development Of Communities In Uganda . A Case Study Of Masaka City*. 7(3), 191–197.

Wegulo, N. A., Kazaara, A. G., Kazaara, A. I., Deus, T., Moses, N., & Charles, N. (2023). *Effect Of Public Sector Monitoring And Evaluation On Promoting Good Governance In Uganda , A Case Study Of Ministry Of Local Government*. 7(3), 227–239.