
Increased Sand Mining And Wetlands Sustainability Around Lwera Wetland In Lwera Village, Kalungu District

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Abstract

The study aimed at increased sand mining and wetlands sustainability around lwera wetland in lwera village, Kalungu district and it was guided by the following objectives; To determine the contributions of sand mining to the livelihoods of local residents and surrounding communities around lwera village, to find out the implications of sand mining on the existence of wetlands around Lwera and neighboring communities and to identify the different awareness used by local people to protect Lwera wetland despite increased approach to wetland. The target population of the study was 50 respondents of which 40 were sand miners in Lwera area, 5 local authorities from the district and 5 officials from the environmental office.

The sample was drawn from residents operating and living in and around Lwera wetland. Other persons to be interviewed are Kalungu district local government officials from the natural resources department. From the findings, the R value of 0.843 indicated a high degree of correlation between sand mining and its impact. Around 84.3% of the variations in impact can be explained by sand mining. The R square value of 0.710 suggested that approximately 71% of the total variations in the dependent variable (impact) was explained by the independent variable (sand mining). The adjusted R square value of 0.707 supported the high predictive accuracy of the model. The standard error of estimate (0.27958) indicated a low error in prediction by the model. The unstandardized regression coefficient B value for sand mining was 0.209247. This meant that for every 1 unit increased in sand mining, its impact increases by 0.209247 units on an average. Upon the recommendations, strict laws should be put and implemented to control the encroachment of wetlands especially to those who carry out sand mining using non recommended methods such as open cast mining.

Key words: Increased Sand Mining, Wetlands Sustainability and Lwera Wetland

Background of the study

A study on the socio-economic effects of sand and gravel mining in Lome Togo found that the mining industry and associated other transport and related service sectors have played an important role in the local economy of Togo for many years (Allan et al., 2023). . On a national basis, mining has traditionally been probably second only to agriculture as a source of rural employment (Collins et al., 2023). Sand and gravel mining in Togo has created jobs for the youth. The income earned was largely used to cover the family's basic needs, including food and school fees for the children. The workers work in primitive conditions using archaic tools (shovels, hoes and buckets) and with no guarantee of support in the event of an accident. Medical ailments such as malaria, stomach disorders, hernias, as well as sexual offenses causing HIV/AIDS and other sexually transmitted diseases, and physical weakness caused by harsh working conditions were common. The study found that out of 68 respondents, 60% confirmed consulting a doctor, but purchasing the drugs prescribed at the time was almost impossible due to the level of poverty (Faridah et al., 2023). In Uganda, sand mining is one of the most economical activities that people do especially in rural areas such as Lwera in Kalungu District near Lake Victoria. It is therefore not

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surprising that of all the sand mining projects permitted, more than 80% of them are located in the west of the Lake Victoria basin, entirely in Lwera. The most commonly used methods include open pit sand mining methods using machines such as diggers, hoes and spades as it is a cheap method requiring cheap capital. With mining comes impacts and Lwera has not been spared as the traditional fishing village of Kamalimba which is surrounded by these miners has been badly affected. The village has lost shelter, toilets, access, roads, recreational land for cultivation as some developers have expanded their mines beyond the permitted limits (Lydia et al., 2023). Various companies were involved in this activity. sand mining, although others were doing this activity illegally, as Seroma Limited was listed as one of the companies doing illegal sand mining.

Statement of the problem

Community knowledge of wetland degradation in rural Uganda has not been quantified. This is evidenced by the fact that Uganda has lost about 12% of the country's wetlands. And it is even expected to be higher as human use of wetlands for settlement, brick making, sand mining and agriculture has increased, all of which destroy wetlands without society knowing and proceed to degrade the wetlands and affect the neighboring community (Ntirandekura & Christopher, 2022). Organizations such as the National Environment Management Authority (NEMA). The problem with sand mining is that most people who mine it does not look at the negative side effects of the activity on the environment, but only to maximize their personal economic benefits. The study will therefore help to identify the impacts and generate possible insights that are important to support sustainable measures of sand mining in Lwera wetland, Lwera village in Kalungu district to save the environment.

General objective of the study

The major objective of this study was to investigate on the implications of increased sand mining on wetland sustainability around Lwera wetland as my case study in Lwera village, Kalungu district.

Specific objectives

1. To determine the contributions of sand mining to the livelihoods of local residents and surrounding communities around Lwera village
2. To find out the implications of sand mining on the existence of wetlands around Lwera and neighboring communities
3. To identify the different awareness used by local people to protect Lwera wetland despite increased approach to wetland.

Methodology

The study used a descriptive survey design. The design was used because it looks at the phenomena, issues and events the way they are (Mugenda and Mugenda, 2015). The design was used because it explains the problem at hand thoroughly to define it, explain it and obtain pertinent information that can be of use to stakeholders in technical education. Furthermore, this study used both the quantitative and qualitative approach in that it based on variables with numbers and analyzed with statistical procedures using descriptive statistics (Creswell, 2003). It also used the qualitative approach because it aimed at obtaining data expressed in non-numerical terms (Amin, 2005). In particular, it was cross-sectional design because it was used to gather data from a sample of a

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population at a particular time (Amin, 2005). The target population of the study was 50 respondents of which 40 were sand miners in Lwera area, 5 local authorities from the district and 5 officials from the environmental office. The sample was drawn from residents operating and living in and around Lwera wetland. Other persons to be interviewed are Kalungu district local government officials from the natural resources department. Simple Random sampling methods were used to ensure each member of the target population have an equal and independent chance of being included in the sample. Primary data was obtained from the field through questionnaires, interview schedules and observation. Secondary data was got from existing literature such as reports, journals which have relevant information to the study. The questionnaires were collected and checked for completeness. Quantitative data was recorded and analyzed using descriptive statistics (including measures of central tendency and measures of dispersion). The Statistical package of SPSS and MS Excel aided the analysis of the data that was collected (Nelson et al., 2022).

RESULTS

Table 1 showing the contributions of sand mining

Contribution	Frequency	Percentage
Help to meet the increasing demand of housing due to increased population	30	100
Provide gravel materials for improved road construction	30	100
Sand and gravel mining act a source of employment to the residents	30	100
Provides income to the people engaged	30	100
Provides clay for art and craft industry	30	100
Improves the standard of living	30	100

Source: filed research 2022

From the table above, the findings show that the entire 30 respondents agreed that sand mining has a positive contribution to their livelihood. This is viewed in from the responses seen in the table that it helps to meet the increasing demand for housing of residential houses, commercial houses, hotels, schools, medical facilities among others. Furthermore, the study found out gravel from the sand mines help so much in the road construction and hence improved infrastructure. Besides that, sand mining its self is employment to the majority of the people

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around the area and the surrounding communities (Christopher et al., 2022), this has help to improve the standards of living to the people around. Lastly, sand mining provides clay which is used in the art and craft industry such as pottery.

Table 2: Regression results on sand mining

Model	R		R Square	Adjusted R Square	Std. Error of the Estimate
1	.843		.710	.707	.27958
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.585	.243		10.658	.000
Sand mining	0.209247	.069	.180	2.700	.007

Source; Primary Data, 2023

The table shows the results of multiple linear regression analysis between sand mining (independent variable) and its impact (dependent variable). The R value of 0.843 indicates a high degree of correlation between sand mining and its impact. Around 84.3% of the variations in impact can be explained by sand mining (Nelson et al., 2023). The R square value of 0.710 suggests that approximately 71% of the total variations in the dependent variable (impact) is explained by the independent variable (sand mining). The adjusted R square value of 0.707 supports the high predictive accuracy of the model. The standard error of estimate (0.27958) indicates a low error in prediction by the model. The unstandardized regression coefficient B value for sand mining is 0.209247. This means that for every 1 unit increase in sand mining, its impact increases by 0.209247 units on an average. The t-value of 2.700 for sand mining is greater than the critical t-value of 1.96, making it a statistically significant predictor. The significance value of 0.007 which is less than 0.05 confirms that sand mining significantly predicts its impact. Therefore, the regression model has a high predictive power for impact based on changes in sand mining levels.

Conclusion

The regression analysis conclusively demonstrated a high degree of positive correlation and predictive impact of sand mining on its socio-environmental consequences. With over 84% variance explained and 71% accurate prediction achieved, it is evident that sand mining intricately drives its impact. Being a statistically significant predictor variable, any change in mining levels would proportionately bring change in the dependent aspects. Therefore, it can be authoritatively concluded that unrestrained sand extraction results in deleterious outcomes.

Recommendations

Strict laws should be put and implemented to control the encroachment of wetlands especially to those who carry

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out sand mining using non recommended methods such as open cast mining.

People should be sensitized about the value of wetlands so that their conservation should be enforced.

The people who involve in activities of sand mining should be encouraged to do other economic activities such as trade which are not harmful to the wetlands and the environment. The government through NEMA should increase on punishments that are imposed on those convicted encroaching on wetlands.

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