
**EFFECTS OF URBANIZATION ON WETLAND MANAGEMENT IN UGANDA, A CASE OF
LUBIGI WETLAND IN KAMPALA**

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ABSTRACT

The study aimed at the effects of urbanization on wetland management in Uganda, a case of Lubigi wetland in Kampala and it was guided by the following objectives; To identify the major urban land use activities that affect Lubigi wetland and the environment as a whole, to examine the effects of these urban land use activities on the wetland and the environment and to examine adaptive wetland management plan for Lubigi wetland. The study population targeted a population of 30 people mostly those who live or stay immediate to area of study because these people are those who use the wetland in various ways. Other members of the public will have a chance to also participate in interviews. From the findings, the correlation coefficient (0.816) shown a strong positive relationship between urbanization and wetland management. This was statistically significant at 95% confidence interval since the P-value (0.00) was less than 0.05 at 95% level of significance and therefore, we reject the null hypothesis and conclude that there was no relationship between urbanization and wetland management. Public awareness and education were essentially important regarding wetland utilization, management and importance to the society. Thus, it was advocated to be initiated by the government.

Key words: urbanization and wetland management

Back ground of the study.

Globally, about 64% of the wetlands have been lost since 1900 because of human activities, (Davidson, 2014) and their destruction will likely continue (Fraser and Kedely, 2005; Mitsch and Day, 2006). Natural wetlands occur on 3.8% of the Chinese landscape (600,000km²); accounting for approximately 10% of the global area of

wetlands (Marti, 2011). However, between 1990 and 2000, 30% of the Chinese natural wetlands were lost (Jackline et al., 2023).

Uganda's wetlands originally covered about, 29,000square kilometers about 13% of the total land of the country (NEMA, 2016; Pomeroy, 2017). They comprise swamps (8,832 square kilometers), swamp Forest (365 square kilometers) and sites with impeded drainage (20,392 square kilometers) and include areas of seasonally flooded grassland, swamp Forest, permanently flooded papyrus such as Lubigi wetland, grass swamp and upland bog (NEMA, 2016). Most wetlands in Uganda occur outside of the protected areas, and their range and quality are rapidly being eroded for agricultural land. By the end of June 2016 Uganda's land area covered by wetlands had reduced to about 10.9% (MWE, 2017). In Eastern Uganda alone 20%, central region 2.8%, Northern 2.4% and Western 3.6% of the wetlands have been destroy (NEMA, 2008), warning that this has implications on the wetland biodiversity and functionality.

Statement of the problem.

Lubigi wetland is currently undergoing rapid degradation due to the effects of Urbanization and its associated activities. Lubigi wetland area has reduced from 489 ha in 1995 to 85 ha in

2009 and it is at 42% higher degradation rate than the natural average of 30%.

Recent urban developments have raised serious concerns on its biodiversity and its contribution to the proper functioning of the wetland. In addition, Uganda is working with UNFCCC to mitigate the loss of wetlands to 12% by 2030 from 10.9% in2014 through restoration of degraded wetlands.

A number of studies have been carried out on this wetland, but there is limited information about the effects of Urbanization on wetland and the management of Lubigi wetland. Therefore, this study is intended to contribute to the common cause by availing updated information on the effects of Urbanization activities on wetland management in Uganda (Jackline et al., 2023).

Specific objectives of the study.

1. *To identify the major urban land use activities that affect Lubigi wetland and the environment as a whole.*
2. *To examine the effects of these urban land use activities on the wetland and the environment.*
3. *To examine adaptive wetland management plan for Lubigi wetland.*

Research Questions.

1. *What are the major urban activities carried out in Lubigi wetland?*
2. *What are the effects of these activities on the environment?*
3. *Which action plans can be adopted in managing Lubigi wetland ecosystem?*

Methodology

Research designs

The research was conducted using a cross sectional survey design as well as a story telling approach. The information and details concerning the various Urban land use activities and factors influencing them in Lubigi wetland, their impacts or effects on Lubigi wetland was obtained through the use of oral interviews, questionnaires, observation, recording, photographing as well as graphicacy and data analysis.

Study population.

Data from UBOS indicate that Kampala's population increased by more than four times from 330, 700 in 1969 to 1.6 million in 2008. The Bureau projects that the city's population swell further to 2.5 million in 2017 (New vision, 2008).

The study population targeted a population of 30 people mostly those who live or stay immediate to area of study because these people are those who use the wetland in various ways. Other members of the public will have a chance to also participate in interviews.

Sample size.

Sample is a subgroup in a population which can be used as a representative of the population to derive inferences about the Guidance of that population (Kingori, 2004). According to Mulusa (1988), at least 30% of the total population is

representative. Therefore, the sample size for this study shall be 15 respondents.

Sampling procedures.

The study used both random sampling and purposive sampling techniques basing on the population of the study area and the management authorities of the study area. The study therefore used 30 respondents.

Data analysis.

Descriptive statistics are used to describe the basic features of the data in a study. This provided simple summaries about the sample and the measurements. Together with simple graphics analysis, they form a basis of virtually every quantitative analysis of data. Both quantitative and qualitative data analysis was used.

Descriptive method included the use of frequency tables, photographs, and pie charts are to be used to present findings from the questionnaires, observation and interview schedules using SPSS.

Quantitative analysis.

Quantitative data was analyzed using mean, Pearson correlation product moment and regression with the help of the SPSS computer package. Mean was used to show the level of agreement and disagreement among the respondents(Nelson et al., 2022).

Pearson correlation product moment was used to establish the relationship between the two variables and regression was used to ascertain the overall relationship between the independent and dependent variables.

RESULTS

Table 1: Impacts of rapid urbanization on Bwaise wetland

Impact	Scale	No. of respondents.	% of respondents.
Increased storm	1	30	66.8
Water runoff.	2	15	31.2
	3	2	1
	4	1	1

<i>Flow constriction.</i>	1	30	62.5
	2	18	37.5
	3		
	4	0	0
<i>Hydrologic drought.</i>	1	13	27.1
	2	25	52.1
	3~	5	10.4

	4	5	10.4
<i>Sediment deposition.</i>	1	0	0
	2	40	83.3
	3	8	16.7
	4	0	0
	1	45	94
	2	0	0
<i>Pollutant</i>	3	3	6
	4	0	0

Table 1 indicates that all the five investigated impacts of rapid urbanization considerably affected Bwaise wetland. Flow constrictions (100%) and increased storm water runoff (98%) were identified as the most destructive impacts in Bwaise wetland. Pollutant accumulation (94%), sediment deposition (83%) and hydrologic drought (79.2%) also affected Bwaise wetland. Other impacts like increased ponding, decreased ground water recharge was also noted in Bwaise wetland during the study.

However, according to the study conducted in Bwaise wetland, there is increased storm water runoff due to storm water which is directly discharged to a wetland through a ditch, channel or storm drain pipe.

Possible strategies in minimizing the impacts of rapid urbanization on Bwaise wetland.

Table 2 the possible strategies in Bwaise wetland.

Question				Scale	Number of respondents	% of respondents.
				1	30	66.8
A1 Restoring				2	15	31.2
				3		
				4	1	1
				1	45	94
A2 Task force.				2	0	0
				3	3	6
				4	0	0
				1	13	27.1
A 3 Consider natural systems				2	25	52.1
(wetlands) in Lan u						
decisions				3	5	10.4
				4	5	10.4
				1	30	62.5
A 4 Eviction of squatters				2	18	37.5
encroachers				3	0	0
				4	0	0

			1	45	94
A 5 Use of alternative 2				0	0
sources of			3	3	6
			4	0	0
A6 Use of alternative 1				30	62.5

building			2	18	37.5
			''		
			3		
			4	0	0
A 7 Creation of awareness			1	30	66.5
(Learning about natural			2	15	31.5
habitats)			3	2	1
			4	1	1

Source: primary data 2022

Table 2, indicates that the seven investigated strategies in Bwaise wetland considerably affected the management of the wetland. Eviction of squatters and encroachers, and use of alternative building materials are the main strategies since 100% of the respondents strongly agreed, use of task force, and use of alternative sources of energy came in next with 94% followed by creation of awareness (learning about natural habitats) and restoring watersheds in order of reducing on the impacts of rapid urbanization.

Eviction of squatters and encroachers in most urban wetlands of Uganda has always been used as a strategy. This is mainly due to unplanned settlement. In Bwaise wetland, a lot of people both the rich and the poor have settled there

leading to the deterioration of the wetland through over extraction of wetland materials such as sand, water, and the vegetation, dumping of wastes and others.

Table 3: Correlation between urbanization and wetland management

		urbanization	wetland management
urbanization	Pearson Correlation	1	.816**
	Sig. (2-tailed)		.000
	N	113	113
wetland management	Pearson Correlation	.816**	1
	Sig. (2-tailed)	.000	
	N	113	113
**. Correlation is significant at the 0.01 level (2-tailed).			

Source; Primary Data, 2022

The correlation coefficient (0.816) shows a strong positive relationship between urbanization and wetland management. This is statistically significant at 95% confidence interval since the P-value (0.00) is less than 0.05 at 95% level of significance and therefore, we reject the null hypothesis and conclude that there is no relationship between urbanization and wetland management.

Conclusions

The findings revealed that a number of rapid implications of urbanization on I3waise wetland, Kawempe division in Kampala district still need serious attention. For example, severe flooding of this wetland and its surrounding areas can take place during the rainy season. This is particularly problematic because the weather patterns are non- predictable, with more severe rains. During drought, the wetland seems disappearing which makes farmers to cultivate on it. However, when the rains return all their plantings is always lost to the floods.

Recommendations.

Public awareness and education are essentially important regarding wetland utilization, management and importance to the society. Thus, it is advocated to be

initiated by the government.

References

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