Environmental Challenges 2 (2021) 100021

Contents lists available at ScienceDirect

Environmental Challenges

journal homepage: www.elsevier.com/locate/envc

Management of wetlands and livelihood opportunities in Kinawataka wetland, Kampala-Uganda

Sultan Juma Kakuba*, John Mary Kanyamurwa

Kyambogo University, P.O. Box 1, Kampala, Uganda

ARTICLE INFO

Keywords:
Wetland management
Sustainable livelihoods
Wetland planning
Implementation and control

ABSTRACT

Wetlands are globally recognized as ecosystems that provide livelihood opportunities in aptly structured management contexts. Many wetlands, particularly those in urban Uganda are, however, getting degraded through infilling, construction, extraction, agricultural and industrial production despite the existing resource management regime. The purpose of this study was to analyze the gap between wetland management practices and extent of sustainable harnessing of livelihood opportunities. Therefore, this study contributes to an understanding of wetland management functions in relation to sustainable livelihoods. Cross-sectional qualitative and quantitative data were collected to investigate the stated relationships. The study established a positive but insignificant relationship between planning function and sustainable livelihood opportunities. Further, the study found a negative significant relationship between implementation and sustainable production. Finally, findings revealed that there was a connection between the control function and sustainable opportunities. The study recommends inclusive management functions to achieve sustainable wetland livelihood opportunities.

1. Introduction

Wetlands are globally described as a type of ecological structure epitomized by temporarily or permanently waterlogged grasslands, swamps, marsh, bogs, papyrus, grassy fens and fertile floodplains. Recent description adds that such bionetwork is located in upland valleys or transitional areas between dry-lands and water bodies (Gokce, 2018). Falling centrally under public management, these spaces are recognized as an integral part of the productive ecosystem capable of supporting the 2030 UN Agenda on Sustainable Development Goals (SDGs). This analysis is apt particularly in relation to SDG 1 which is about ending poverty in all its forms everywhere on planet earth (McElwee and Wood, 2017; Seifollahi-Aghmiuni et al., 2019). Thus, well-managed wetlands can support this agenda because of their potential to support livelihood opportunities in vulnerable communities regardless of size and location (Omagor and Barasa, 2018). This potential lies in the varied resources with which wetlands are endowed, but which also calls for an elaborate and well-coordinated public management structure. It suffices to note that the livelihood opportunities wetlands provide are the means by which people can earn a living at personal, household and community levels (Lamsal et al., 2015). Management as a broad concept is denoted as the process which primarily focuses on organizational configuring, administering and governing the affairs of a specific organizational outfit, regardless of character, nature, form, location and magnitude (Ornella et al., 2019). Thus, management is mainly intended to calculatingly design and maintain its performance in accordance with the organizations' core objectives. While management has a number of components, this paper puts emphasis on three of its fundamental facets of planning, implementation and control mainly to analyze how these management mechanisms influence livelihood opportunities in urban wetlands.

The potential of wetlands to provide supportive opportunities can, however, be sustainable only when its exploitation is supported by effective wetland management measures (Rebelo et al., 2010; McElwee, 2013). This is the whole essence of SDG 15, which enjoins United Nations member states to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, …reverse land degradation and halt biodiversity loss" (UN, 2015). Wetland management is essential because of the role it plays as a promoter of conservation and wise use of all wetlands through diverse local approaches and international cooperation to achieve sustainable development throughout the world (Ramsar, 2017). This role has long been recognized in the 1971 Ramsar Convention ratified by over 169 member states in Iran. Essentially, wetland management involves planning for sustainable use of this ecosystem, implementing strategies and controlling them to ensure that appropriate livelihood opportunities are achieved (Nabahungu, 2012; Lamsal et al., 2015). It is, thus, in order to investigate this management model with a focus on its most central

* Corresponding author.
E-mail address: ksultanjuma@gmail.com (S.J. Kakuba).

https://doi.org/10.1016/j.envc.2020.100021
Received 5 October 2020; Received in revised form 29 December 2020; Accepted 29 December 2020

facets of planning, implementation and control to measure the logical linkages with livelihood opportunities in urban wetland settings.

Kinawataka wetland, the center of focus for the research, decreased by 46% and its degradation rose from 49% to 95% from 1992 to the present (Tumusiime, 2013). This state of affairs forms the basis for examining the management structure for this resource and its linkages to sustainable livelihood in the area. The research questions focused on how the applied management model, which specifically focused on (a) planning, (b) implementation and (c) control, affected wetland provision of livelihood opportunities on a sustainable basis. Thus, the underlying question was: do the present planning, implementation and control system elements support the Kinawataka wetland resource livelihood opportunities? Wetland planning strategies entail specific activities designed, formulated and implemented by government authorities to protect this resource that guarantee sustainable use for sustainable livelihoods. Therefore, to achieve viable wetland use that provides sustainable livelihoods requires well-coordinated planning, implementation and control mechanisms at different levels of government. According to Ochola & Nyariki (2010) planning is "what comes before action i.e. a process of establishing a set of decisions intended for action to accomplish defined task to achieve goals and objectives by preferable means". While implementation refers to a process used to execute or putting a plan or decision into effect. Whereas, control is understood as the power to influence or direct human behavior or events, majorly for performance improvement purposes in the management plan. Therefore, wetland management policies implementation strategies have to purposely be inclusive and mainly focus these aspects to ensure sustainable livelihoods of the users, irrespective of location.

2. Theoretical perspectives

2.1. The sustainable wetlands management theory

This study was guided by the theory of sustainable wetlands management proposed by (Hobfoll et al., 2018; (Hobfoll et al., 2015) (Hobfoll, 2012)). The conservation of resources (COR) theory is a tress model that describes the motivation that drives humans to both maintain the current resources and pursue new ones. The theory is based on several basic principles which underline the rationale for resource management in real-life situations. First, the theory states that personalities with more resources in society were likely to construct systems for creating more while folks with smaller amounts of resources were positioned to have even much weaker resource bases. Second, the COR posits that initial resource losses would lead to resource loss in future circumstances. Thirdly, a related principle is that initial resource gains would lead to resource gains in future, thus supporting resource systems. Lastly, a fourth assumption for the COR is that lack of resources would consistently lead to defense attempt to conserve the remaining resources (Hobfoll et al., 2018). In regard to the system for resources management, the theory implies that when resources are not thoughtfully utilised, it creates threat of future loss which aggravated further potential costs in less efficient management structures. In addition, this theory emphasises democratic and economic justice when utilizing natural resources for sustainable livelihoods. The theory calls for mechanisms where, as one protects the available resources to satisfy present-day demands, automatic accumulation for more new resources should become a norm (Walker, 2008). While the COR has deceptively straight forward assumptions, they intricately speak to contemporary resource management models, including the public resource management system in place in Uganda. Equally important in explaining this study is the preservation theory which attaches intrinsic value to wetlands. Reis et al. (2017); Byamukama & Kiyawa (2019) argue in the context of this theory that natural resources such as wetlands should be protected against inappropriate human activities that may undermine various contributions ecosystem provide to well-being of the people.

The two theories are linked to management practices demonstrated in the planning, implementation and control functions. This is because the theories were developed from a combination of the core insights of management, the rational use principle emphasised in the 1971 Ramsar Convention and sustainable development goals promoted by the UN. While the management aspects of the theories represented the fundamental features of management in organizational settings, the rational utilization principle describes sustainable exploitation of wetlands. The latter principle emphases human use of a wetland where it remains in position to yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations (Ramsar, 2017). The components of the theories that relate to sustainable development designate development that does not only meet the present human needs without compromising the ability of future generations to meet their own needs (Hák et al., 2016; Evers, 2018). Equally significant in the theoretical analysis is the ability of the natural productive entities (wetlands), as managed in the public sphere, to wholesomely contribute to the development process on a sustainable basis (Gossling-Goidsmiths, 2018; Mensah and Casadevall, 2019). The COR in particular combines these principle ideas to advance a view that wetland management involves designing legislation, structuring the institutional framework, formulating policy guidelines and implementation schedules that promote agreeable livelihood prospects in line with the existing public management systems. Based on the latter public structures, the public management practices are expected to prevent negative human-driven pressures and impacts on fragile ecosystems and enforce the relevant legal instruments with community involvement. Fundamentally, the management aspects of the theory suggests that other key managerial activities include undertaking planning, monitoring and evaluation of ecosystem to build capacity necessary to promote acceptable wetland utilization that does not threaten its important benefits it provides to society (Baral et al., 2016). Designing pertinent legislation, configuring apposite institutional framework and policy guidelines necessary to promote sustainable wetland utilization was, in this study, conceptualised as planning. In essence, successful institutional structuring is principally the main focus of management as a concept and in practice. The enforcement of the carefully considered managerial instruments was operationalized as implementation while monitoring, evaluation and review as part of the model in the analysis, were denoted as control since these were the management practices employed to examine the input of public functions (Brito and Sauan, 2016; Opio et al., 2011).

2.2. Planning as a wetland management tool

Various scholars have analysed planning as a central component in the management of wetlands. It is conceived as one of the tools that is used to organize critical spaces in the public domain (Sullivan and Fisher, 2011; Lamsal, 2015; Mafabi, 2018). Besides, planning is a comprehensive multilevel process that involves operations at different stages in which diverse state organs operate basing on the legal, institutional, regulatory and the administrative structures for wetland management as structured (Brito and Sauan, 2016; Phethi and Gumbo, 2019). The institutional definition recognises the pertinent legal instruments starting with the Constitution, the Wetland Conservation Act, Wetland Conservation Policy, and Wetland Conservation Regulations, all of which provide guidance to planning for wetland management (Brito and Sauan, 2016; Mafabi, 2018). This process spells out a regulatory or institutional hierarchy necessary to enforce the enacted legal, policy and regulatory instruments and articulating the necessary positions/offices making up the hierarchy, clarifying the duties and responsibilities attached to each office. Planning further suggests the structuring of the specifications a manager should have to qualify for the office, and how the offices are linked or coordinated in terms of reporting lines (Tumusiime, 2013). In relation to wetland management, this would refer to identification of wetland conservation priorities in line with government plans, formu-

lating an overall enforceable wetland conservation plan and strategy, the guidelines and reviewing government performance. The planning component equally calls for determination of activity plans, developing budgets, the expected outcomes and their utilization (Phethi and Gumbo, 2019). It is noted that while all these scholars explain how planning is conducted at the organizational level, none of the analyses delves into its impact on the potential for effective management of wetlands and sustainable livelihood. This constituted one of the gaps in knowledge filled in this study.

2.3. Plan implementation and the context of wetland management

The manner in which the wetland management plans are implemented has attracted the attention of several scholars. Implementation involves putting in place a bureaucratic national structure which works with local authorities and community members to enforce the laws, policies, regulations and plans designed to promote sustainable wetland exploitation. Implementation, as public policy function, further involves mobilizing the necessary resources and positioning them to facilitate the plan execution processes. Similar observations appear in the work of scholars who argue that the implementation function determines the government machinery for achieving its finer objectives (Tumusiime, 2013; Turyahabwe, 2013). Central to this discussion is that while these analyses emphasized the key processes involved in plan implementation, their other main concern was the contribution of wetland resources management to ecological balance, but not to the potential of the wetlands to support livelihood opportunities.

Consistent with the integrated management argument, enforcing laws and policies enacted to promote wetland utilization are constrained when the necessary resources are not released in time and when these resources are inadequate. Similarly, when the available resources are not put to planned use, often, due to mismanagement in form of embezzlement, misappropriation and inefficiency that benefits the office holder, wetland management implementation is undermined (Gosling et al., 2017). Wetland management plans implementation involves diverse stakeholders effectively playing their supervisory and regulatory roles. In addition, such implementation implies that environmental officers make the statutory field visits to conduct regular wetland utilization assessment, training and sensitization of the community about sustainable wetlands utilization (Jiang et al., 2015). Significantly, plan implementation also involves law enforcement by officers against wetland offenders and local authorities playing their watchdog role over community members to ensure sustainable wetland management (Nabahungu, 2012; Lamsal et al., 2015). Furthermore, Finlayson (2018) emphasised that management of urban wetland plan implementation should comprise of wetlands inspection, negotiating with law offenders to change their destructive practices, and taking legal action if they fail to comply with wetland management regime. Nonetheless, recent analyses suggest that high ranking government officials constrain this process by initiating illegal developments in wetlands and doing so with evident impunity (Oloka-Onyango, 2017). While the studies on plan implementation critically examine the loopholes in contemporary wetland management models, these analyses barely discuss the relationship between wetland management models and the nature of livelihood prospects in urban settings.

2.4. Control of plan execution as a wetland management component

Previous research has shown that control is a management function that is carried out prescriptively at the planning level. At this level, the latter component is inbuilt by designing inclusive laws, policies, regulations and codes of conduct that should be democratically observed to effectively implement wetland strategies as planned (Solomon et al., 2018). The control plan further denotes the criteria that should be followed to evaluate the success of the management implementation activities (Brito and Sauan, 2016; Gevers et al., 2018; Mafabi, 2018). Some studies have indicated that wetland control mechanisms can be conducted concurrently with planning. This entails supervising, inspecting and monitoring the implementation of the designed wetland conservation activities. This process aims at to constantly correcting any deviations found during the implementation process as part of the wetland management control procedures to improve wetland control management options (Xu et al., 2020). Scholars have, indeed, argued that control can be detective in which case it involves following up, appraising, measuring and reviewing what the implementers have done basing on the initial results from wetland plan implementation (Walters et al., 2019). Further, control involves establishing whether conservation officers have implemented the wetland plans in accordance to the existing public law or not, the challenges they have encountered, if any, and how they can be addressed.

Perhaps significant to note, control is effective only when it is conducted as an integrated process with all the dimensions supporting each other until the final evaluation regardless of the type adopted (Ramsar, 2018; Malak et al., 2019). These analyses posit that after all, it is difficult to separate prescriptive control from detective control since the latter cannot take place without using the evaluation and assessment criteria designed at the former stage. Similarly, although concurrent control is significantly dependent on leadership and professional competence, it is also supported by prescriptive control, especially when the officials have to refer to designed performance standards to correct omissions or errors committed. Current studies further note that effectiveness of control is enhanced when the community is involved as a watchdog over how public officials carry out their work (Malak et al., 2019; Krause et al., 2016). These reviews suggest that the control component of wetland management can only be effective when this process is not constrained by inadequate resources. While current scholarship explains control as an important component of the management for promoting sustainable use of public resources, they have made little effort to delve into how it is linked to the livelihood opportunities provided by the wetland ecosystem.

2.5. Key debates in management and wetland provision of livelihood opportunities

Extant evidence indicates that wetlands have great potential to provide varied resources that act as livelihood opportunities (Aazami and Shanazi, 2020; Lockwood et al., 2010). These include water for domestic use, livestock watering, and agricultural irrigation during prolonged dry seasons; fertile soils that support growing of compatible crops, and fodder (Ba et al., 2013). Wetlands also are home to flora species used to make different handicrafts and roofing materials; clay and sand used as building materials; food resources such as fish, yams and vegetables, among others (Turyahabwe et al., 2013). Furthermore, wetlands have potential to provide fuel-wood, microclimate amelioration, ecological stability, and control of floods and storms that can destroy valuable property and businesses in nearby communities (Seifollahi-Aghmiuni et al., 2019). They serve as a habitat for edible wild game and for species that have ecotourism and medicinal value (Ramachandra et al., 2011). This potential provides livelihood opportunities by acting as a source of food, employment, income, construction materials, and other resources used to earn a living (Lamsal et al., 2015). Examples of the resources include fish, water, and edible crops; construction materials such as clay, sand, wood, papyrus; and cultivatable land (Rebelo et al., 2010; Lamsal et al., 2015). These resources are livelihood opportunities because nearby communities can use them as a source of food, medical care, construction materials, fuel power and most of all, income from the sale of some of the resources (Mccartney, 2013) . While all these scholars pointed out the different resources by which wetland provide livelihood opportunities, they fell short of examining the role of management models on the potential for maintaining ecosystem to support livelihoods in a sustainable manner.

The conceptual framework illustrates the theoretical relationship between management (specifically planning, implementation, control) and livelihood opportunities in wetlands. When there is effective planning, implementation and control it is assumed that there is wise use of wetland resources. The latter would be expected to lead to enhanced future opportunities and continuous access to food, water, fuel, employment, land and medicinal resources.

3. Study area and research methods

The general situation in Uganda's wetlands and in particular, Kinawataka wetland, is not any different when examined in the same managerial framework. Wetlands cover 10%–13% of 241,037 km^2s of Uganda's land area; of which Kampala Capital City Authority (KCCA) covers 189 km^2s. Of this total dimension, the KCCA's share of wetland is 12.76 km^2s, with Kinawataka wetland's land coverage standing at 1.5 km^2s (Mafabi, 2018). This ecological space is, however, facing degradation through marram infilling, rapid infrastructure and housing construction, pollution through direct dumping of toxic industrial wastes, and incompatible cultivation. According to recent analyses, these human activities have destroyed wetland coverage in Uganda from 96.3% of the total wetland land coverage to 82.5% in 2015 and to 80.6% in 2018 (Omagor and Barasa, 2018). Suggesting a breakdown in contemporary management mechanisms, wetland destruction was also found to have been encroached on by smallholder agricultural cultivation whose annual damage increased from 0.2% in 2002 to 1.6% in 2015 and 7.7% in 2018. Equally revealing in terms of wetland management challenges were data which suggested that settlement in wetlands increased from 3.2% to 7.8% by 2015 and 12.5% by 2018. Similarly, the built-up area rose from 54% in 1992 to 66% in 2014, the area encroached by small businesses rose from 14% to 18%, with encroachment by industries rising from 9% to 12% during the same period (Tumuheire, 2017). On the basis of these data, there is perhaps no comparable wetland in Uganda that has faced worse mismanagement, diminishing potential to provide maintainable livelihood prospects as Kinawataka wetland.

Kinawataka wetland is located in Nakawa Division, one of the five local administrative zones under KCCA. It stands out significantly as one of the city's wetlands that has the potential to provide livelihood opportunities for the nearby communities and beyond (Bikangaga et al., 2007). Prominent among the features of the study site were housing construction sites, agricultural activities, clay extraction locations, car washing bays, garbage dumping and motorcar garages. As key indicators of the challenges in the current public management mechanisms, these wetland activities combine to critically threaten Kinawataka's potential for resource sustainability (Wanasolo et al., 2018). The activities mostly undermined the wetland's capacity to control flooding, potential support for controlled agriculture, water purification and employment openings (Kakuru et al., 2013). The rationale for purposively selecting this study site was essentially justified by visible mismanagement of the second biggest wetland in KCCA, which had experienced more degradation than other urban wetlands (Tumuheire, 2017; Uganda, 2015). In addition, the site had an estimated 4000 households, suggesting it was the most highly populated compared to other urban wetland locations beyond Banda, Naguru, Mambo-Bado Kisenyi, Luzira, Butabika and Bukoto in Nakawa Division. Fig. 2 indicates the area, specifically the upper and lower parts of the study site.

The study was conducted using a case study research design involving a mixed methods approach. This research design facilitated the collection and analysis of both quantitative and qualitative data. The latter combination of evidence was needed to get a deeper insight into how the management of Kinawataka wetland affected the potential of this ecosystem to provide sustainable livelihood opportunities (Creswell and Creswell, 2018). Quantitative and qualitative collected from primary and secondary sources. The secondary data sources included the Constitution of Uganda, 1995, Uganda Wetland Management Act and Policy, the KCCA Enforcement Regulations and the KCCA wetland management plan. On the other hand, the primary sources entailed wetland users from Kinawataka and public management officers from the Ministry of Water and Environment (MWE), National Environment Management Authority (NEMA), KCCA officials and local leaders. The data collected included essential information on perceptions of wetland users and government officials, essentially on how wet management functions, specifically, planning, implementation and control were performed as critical variables in wetland use. Ultimately, this analysis was also essential to facilitate the understanding of the relationship between management functions and the sustainability of livelihood opportunities for Kinawataka wetland users.

The total population of households and business entities in Kinawataka was 43,050 (Nakawa Division Annual Report, 2018). Using this population assessment as the size of the study population, the sample was computed using Sloven's formula given as:

$$n = \frac{N}{\left[1 + N(e)^2\right]}$$

Where n = sample size, N = size of study population and e = margin of error. The sample was selected at a confidence level of 95%, implying that e = 5% or 0.05. Therefore, the expected sample size was:

$$\mathrm{n} = 43050 \div \left[1 + 43050(0.05)^2\right] = 396$$

This study used stratified the sampling technique to choose business entities and households and the simple random technique to select respondents from their strata. On the other hand, purposive sampling technique was utilized to select government officials and local leaders responsible for diverse dimensions of the wetland management mechanisms. The respondents in this category were selected as key informants on account of holding exclusive information about how Kinawataka wetland was managed and logical effects.

A triangulation method was used in data collection where a combination of different data collection methods were applied to gather relevant information. These included a survey questionnaire, focus group discussions (FGDs), key interview and observation. The survey questionnaire was used to collect quantitative data regarding how planning, implementation and control management functions affected wetland user livelihood (Sekaran, 2016). The questionnaire elicited information on knowledge, information, level of awareness on current planning wetland processes, the Uganda constitution wetland provisions, laws, policies and regulations and deterrent law against wetland abuse. On the other hand, data were collected on consultations on implementation processes, meetings on acceptable wetland activities, legal provisions on plan execution processes and wetland protection. Control being one of the key management function, data were collected on wetland officers' performance in control processes and whether wetland users were involved in reporting, monitoring, assessment evaluation and feedback mechanisms. Regarding the potential sustainable livelihood opportunities, data were gathered on wetland resource utilization and legally acceptable community activities. A Likert scale was used to measure questionnaire items where Strongly Disagree (SA) =1, Disagree (D) =2, Not sure (NS) =3, Agree (A) =4, strongly Agree (SA) =5. Results obtained were presented using Tables and descriptive statistics particularly the mean and standard deviation to highlight the variation in the questionnaire items.

It is important to note the questionnaire was administered to Kinawataka household wetland users and small business operators on the fringes of the wetland. Questionnaire were directly administered to randomly selected respondents where they were requested to respond to questionnaire items which were recorded. This process was carried out after individual subject had consented to participate in the study. This was to ensure free provision of responses without bias and to guarantee high response rate. Conversely, qualitative data were obtained through key interviews, FGD using open-ended questions. Key interviews were mainly used to elicit information from government officials, KCCA enforcement officers and local leaders charged with the execution of wet-

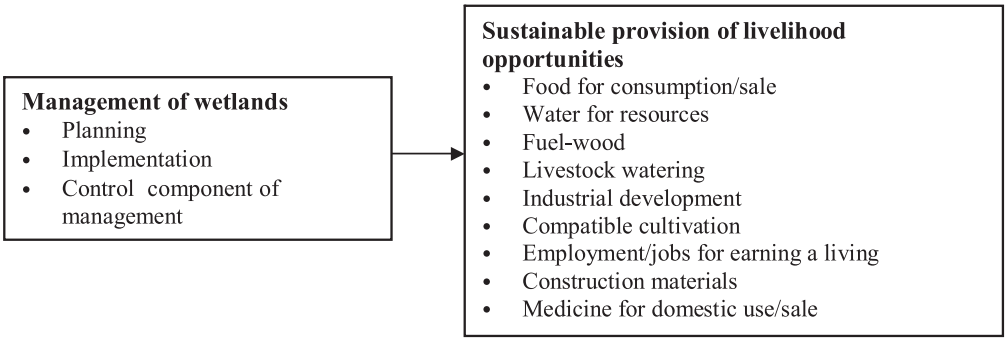

Fig. 1. Conceptual Framework.

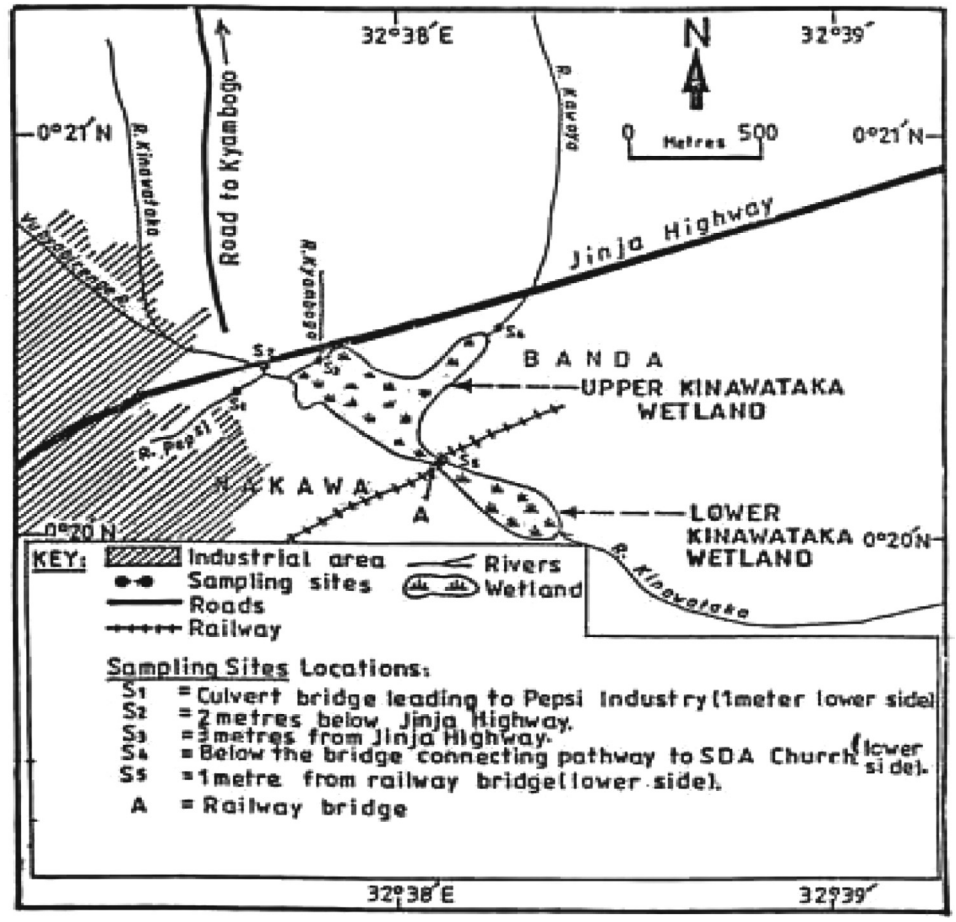

Fig. 2. Map of Kinawata Wetland: The Study Area-Upper and Lower parts, sampling sites and some major features. Adopted from Opio et al.

land management functions. Observation was used in exploring the nature of households and livelihoods dynamics within and along the wetland. The observation method was applied in the various site visits made while conducting FGDs and key interviews.

The study utilized both qualitative and quantitative data analysis techniques. Quantitative data from questionnaires were entered into the SPSS program and analyzed using the descriptive data and linear regression analysis method. Data transformation was used to construct central variables from the administered questionnaires, while linear regression was used to establish how management practices (planning, implementation and control) affected Kinawataka wetland's potential for sustainable livelihood opportunities. Before quantitative data analysis, the raw data were collated, compiled and edited to ensure that all the questionnaires that were issued out and administered were properly analyzed. This allowed for obvious errors resulting from possible data entry inaccuracies to be removed. Thereafter, the quantitative data were entered into the SPSS program and analyzed using the descriptive, data transformation and linear regression analysis. Descriptive analysis was used to establish how instrument variables related. Specifically, descriptive analysis was used to establish how community members assessed the logical linkages between the major variables. Linear regression was used to establish relationship between management practices (planning, implementation and control) and the potential of Kinawataka wetland to provide livelihood opportunities. This was carried out to provide the diversity of outcomes that could help to answer the stated research questions and to successfully test the hypothesis. Data were mostly presented in tabular form.

Qualitative data was analyzed using the thematic technique focusing on the research' main variables. All the qualitative data collected through FGD and interviews were transcribed, texts paraphrased while some relevant quotations were retained with minor editing, where need arose. The ultimate qualitative data analysis outcome, arranged by

Table 1
Community's Responses on Planning for Sustainable use of Kinawataka wetland.

Indicators of planning for wetland utilization	% of community members per response (N = 322)						
	SD =1	D = 2	NS=3	A = 4	SA=5	Mean	Std.
I am aware that the constitution of Uganda does not allow misuse of wetlands, including our wetland in Kinawataka.	10.0	4.1	10.0	75.2	0.7	3.53	.974
I know that degrading or destroying our wetland in Kinawataka breaks the law enacted in Uganda to protect how wetlands should be utilized.	8.9	5.2	10.0	68.5	7.4	3.80	.161
There is a policy in place to guide how Uganda's wetlands such as this one at Kinawataka should be managed to ensure that they are not abused.	8.9	4.8	11.1	72.6	2.6	3.95	.238
KCCA officials tell us that the activities we conduct in Kinawataka are only those allowed in the plan they formulated to guide how we should use wetlands.	10.0	3.7	10.3	66.7	9.3	3.81	.190
KCCA officials tell us that there are laws that can use to punish anybody found using Kinawataka wetland in a manner that compromises its ability to serve future generations.	0.4	7.7	3.0	79.3	9.6	4.10	.814
Average	**7.6**	**5.1**	**8.9**	**72.5**	**5.9**	**3.84**	**.475**

Abbreviations: SD-Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree, SA-Strongly Agree, Std.-Standard deviation.

themes in line with the central study variables were finally integrated in the study results.

4. Findings and discussion

Out of the 396 total questionnaires administered, a total of 322 were returned representing 81.3 percent. The first research question focused on establishing how, as wetland management practice, planning affected Kinawataka's sustainable provision of livelihood opportunities.

4.1. Planning for wetlands and potential for sustainable livelihoods

Results in this perspective are presented with effort focusing on the relationship between the planning functions and the outcomes measured at the community level in Kinawataka wetland. Table 1 presents the findings on planning for sustainable use of Kinawataka wetland resources.

The average row in Table 1 indicates that (72.5%) of the community members agreed to the various indicators of wetland planning (Mean = 3.84) which was close to (4) in relation to wetland utilization. Evidently, the community members' reports did not deviate much from each other (Std. = 0.475). These results reveal that majority of the community members expressed a view that the planning indicators for sustainable use of wetland resources were visible in Kinawataka wetland. Community members were further asked to indicate the livelihood opportunities relating to the wetland resource planning functions. Descriptive analysis of their responses produced results shown in Table 2.

The average row in Table 2 indicates that most of the respondents (67.1%) were not sure about the wetland opportunities (Mean = 3.11) which was close to (3). This suggests that in general, the community members were uncertain about the sustainability of Kinawataka wetland to provide livelihood opportunities. The standard deviation (Std. = 1.572) was close to 2, implying reasonably large deviation from the mean. This deviation indicates that not all community members were uncertain. In fact, the percentage distribution was (21.7%) of those respondents who disagreed with the wetland for provision of the wetland opportunities. About (10.6%) of the participants agreed Kinawataka wetland could sustainably provide the identified opportunities. However, the fact that majority of the reports were undecided suggests that the wetland's potential to provide livelihood opportunities was at stake, further pointing to likely pessimism among the respondents. To determine how planning for wetlands contributed to this state of affairs, the responses in Table 1 and Table 2 were combined using the arithmetic technique of the data transformation method of SPSS to compute the central variables of 'planning' and 'sustainable provision of livelihood opportunities'. Thus, in order to test the hypothesis stated in this study, inferential statistics were used, particularly regression correlation analysis. The correlation analysis was used to establish the relationship between the variables measured in this study, that is, regression analysis was employed to determine whether planning had a practical bearing on of Kinawataka's wetland livelihoods.

Results obtained from linear regression were positive but not significant (Beta = 0.133, t = 0.735, Sig. = 0.468 > 0.05). Further, the multiple R was (0.133) which indicates a weak linear relationship between the predictor (planning) for Kinawataka wetland resource use and sustainable livelihood opportunities. On the other hand, the R^2 value was (0.015) which indicates a 1.5% variance in Kinawataka's sustainable wetland livelihoods can be reasonably explained by wetland use planning functions. This is because the pertinent statistics revealed that the relationship between planning for Kinawataka wetland and its sustainable provision of livelihood opportunities was positive but insignificant. This relationship shows planning and Kinawataka's sustainable livelihood opportunities varied in the same direction. These findings further mean that corresponding Adjusted R^2 was insignificant (Adjusted R^2 = 0.015, F = 0.541, Sig. = 0.468 > 0.05). These results in turn implied that despite varying in the same direction, planning did not predict the wetland's sustainable provision of livelihood opportunities in a significant manner. Invariably, the results also suggested the link between planning for wetlands and sustainable provision of livelihood opportunities was weak for Kinawataka wetland. In line with these results, the weak link implies that planning activities for wetlands did not do much to involve wetland users in the process of ensuring the continued sustainable livelihood opportunities.

Interestingly, the main findings generated when the same question on planning was posed to the key informants confirmed the above finding. The aggregated responses indicated that public officials engaged in planning for sustainable use of wetlands in Uganda, including Kinawataka wetland, were constrained by inadequate budget to involve all stakeholders in the planning process. In addition, officials interviewed mentioned that the promulgation of the 1995 Uganda Constitution and NEMA in the same year provided for planning but resources on the ground did not sufficiently support it. Public officials further stressed that the Constitution gazetted all the wetlands as conservation areas protected by government to sustainably guarantee potential wetland users livelihoods. Respondents also pointed out that as workers for state agencies, they had the mandate to enforce the said protection by developing plans on how wetlands were supposed to be wisely exploited by anyone, be they the nearby community, local or foreign investors. One official stated that "we started by formulating the Uganda national policy for the conservation and management of wetland resources. Guided by this policy, we mapped all wetlands and developed a national wetland management plan for guiding the utilization of resources to ensure that they were not abused". Contributing to this discourse, other respondents indicated they initiated the improvement of the National Environment Act which was enacted by Parliament in 2019 to effectively guide the management of the environment. These results obtained from key

Table 2
Responses on Kinawataka Wetland's Sustainable Provision of Livelihood Opportunities.

Indicators of opportunities	% of community members per response (N = 322)						
	SD =1	D = 2	NS=3	A = 4	SA=5	Mean	Std.
Kinawataka wetland can continue providing papyrus that community members use to roof houses.	4.4	6.3	86.7	2.2	0.4	3.42	1.776
Kinawataka wetland can continue to provide plants which are used as structural building materials.	9.6	6.3	69.6	6.7	7.8	3.10	1.327
Kinawataka wetland can continue to provide plants from which handicrafts such as mats and baskets can be made.	16.7	7.4	55.2	18.1	2.6	3.20	1.167
Kinawataka wetland has fish that the community can catch to sell or consume as food.	8.9	3.0	69.6	13.7	4.8	3.19	1.181
The marginal parts of Kinawataka wetland can be continually used as grazing areas for livestock especially during the dry season.	8.1	3.7	75.6	9.6	3.0	3.31	1.920
Kinawataka wetland can still purify runoff water to make it good for irrigation during the dry season	4.4	13.7	77.0	3.0	1.9	3.28	1.904
Kinawataka wetland can still purify water runoff to make it good for livestock watering at no cost.	13.0	16.6	54.1	16.3	0.0	3.44	1.300
Kinawataka wetland has potential to attract tourism.	81.4	12.6	0.0	3.0	3.0	1.37	1.584
Kinawataka wetland has plants that can be continually used for medicinal purposes.	8.1	1.1	84.4	6.4	0.0	3.41	1.788
Kinawataka wetland has potential to support continual sand extraction for sale.	0.4	4.8	82.2	3.7	8.9	3.04	1.592
Kinawataka wetland has resources people can continually exploit as a source employment that can earn them a living.	16.7	7.4	55.2	18.1	2.6	3.20	1.167
Kinawataka wetland has potential to support continual bricklaying from clay resources.	4.1	4.1	90.5	0.9	0.4	3.42	1.757
Average	**14.5**	**7.2**	**67.7**	**7.6**	**3.0**	**3.11**	**1.572**

Abbreviations: SD-Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree, SA-Strongly Agree, Std.-Standard deviation.

informants agreed with Lamsal's (2015) findings which suggested that wetland management for sustainable human livelihoods could be achieved by well-defined laws and policies. Qualitative data clearly demonstrated that efforts for wetland management in Uganda aimed at promoting proper wetland resources management and sustainable livelihoods. Yet, in the final analysis planning for urban wetlands was found to be more theoretical despite the realities on the ground which indicated that regardless of meticulous state-led effort, sustainable livelihoods were under extreme threat. Perhaps we can argue that the contributions above suggest Kinawataka wetland was among those resources whose conservation for sustainable utilization was inadequately based on the existing wetland policy, Map, Act, and government Management Plan.

However, it can be noted from the above analysis contradicts legal solid issues emphasized by respondents interviewed. Firstly, they said, the 1995 Constitution of the Republic of Uganda provides for the protection of wetlands to ensure their sustainable utilization, and by extension, the Constitution is the basis of livelihood opportunities. Secondly, they further stated that the State protects important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda to ensure guaranteed livelihoods on a sustainable basis. One respondent specifically emphasized that the Constitution protects wetlands for the good of Ugandans in Article 237(b) that states:

> The Government or a local government as determined by Parliament by law shall hold in trust for the people and protect natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological and touristic purposes for the common good of all citizens.

Thirdly, respondents pointed out that the National Environment Act, 2019 the entire Article 54 is dedicated to describing how wetlands such as Kinawataka should be conserved and managed for the good of the people. One respondent particularly referred to key articles including, Article 54(2) which requires Government not to "lease out or otherwise alienate any wetland" and Section 3(a) of the same Article which underscores the need for wise use of wetlands. Pertinently, Article 54(4)-(6) also explains the powers and responsibilities of the agencies mandated to manage this use to ensure its sustainability. Nonetheless, while these articles emphasize planning for sustainable wetland management at the national and local government levels, not much of this emphasis was observed.

Further effort were made to ask local government officials at KCCA and Nakawa Division to explain how they translated national wetland planning within the context of Kinawataka wetland and how this affected the wetland's provision of sustainable livelihood opportunities. These officials categorically indicated they had a comprehensive environment management plan in place. They emphasized the local plan was designed in line with the National Environment Policy and Environment Conservation Plan with, both of which aimed at guiding sound conservation and sustainable use of the natural resources, including wetlands in KCCA, amongst others. In other words, the officials presented the local plans as an extension of the national environment conservation. One respondent specifically indicated that "the purpose of the plan is to ensure that KCCA's natural environment, including wetlands, is not degraded or destroyed by unplanned housing and industrial constructions, infrastructural developments and establishment of commercial centres. The latter consist of markets and shopping malls, motor garages, and social centres such as churches, cinema halls, and other human activities…". However, data collected from FGD varied from KCCA officials' responses in regard to wetland management and sustainable livelihood in Kinawata. It was strongly noted that KCCA planners hardly involved them in wetland management issues. To their dismay they mentioned, the KCCA enforcement officials only appeared periodically in the wetland to evict them from diverse locations. These data further confirm that there is a disconnection between official planning processes and sustainable livelihoods in Kinawataka. Indeed, this evidence gives credence to the scholarly observations made by Brito and Sauan (2016), Mafabi (2018) and Phethi and Gumbo (2019) who emphasize the linkages between planning and natural resource utilization. It should, however, be noted that interviews held at the environment office in Nakawa Division revealed that all the wetland and other natural resources plans which were undertaken in the Division were plans not fully comprehensive as they required more financial resources for planning purposes than was available to the Division.

4.2. Implementation of wetland management plans

Descriptive statistics were used to determine the means and standard deviations of the items defined to generate data from the respondents on the plan implementation variable. Table 3. presents the summary of the data for each indicator measured.

Table 3
Community's Responses on Implementation of Wetland Plans at Kinawataka.

Indicators of wetland plan implementing at Kinawataka	% of community members per response (N = 322)						
	SD =1	D = 2	NS=3	A = 4	SA=5	Mean	Std.
People in Kinawataka are invited by government officials for community meetings at which they are sensitized about what they should and should not do to ensure that the wetland is not abused.	8.5	76.3	4.4	5.2	5.6	1.65	.178
The village secretary for production and environment ensures that community members do only those activities that do not destroy Kinawataka wetland.	8.9	74.1	10.7	3.7	2.6	1.58	.152
Any community member found doing any activity that destroys Kinawataka is punished according to the law	4.8	68.5	3.0	13.7	10.0	1.65	.197
Any development such as a house, commercial building, market center or dumping site that destroys the wetland is halted by authorities	0.0	81.9	7.0	2.6	8.5	2.46	.340
No construction project or activity is allowed in Kinawataka wetland when it is not approved by authorities	1.5	91.1	1.1	2.6	3.7	2.43	.376
There are no industries that release their wastes directly into Kinawataka wetland	8.9	76.3	10.7	3.7	0.4	1.56	.430
Government officials carry out regular surveillance around Kinawataka wetland to ensure that all activities conducted within are in compliance with the law.	0.4	91.5	.4	6.3	1.5	1.87	.538
Government officials in charge of protecting Kinawataka wetland cannot accept to be bribed to allow any project or activity that degrades or destroys it.	0.0	94.4	0.4	4.8	.4	1.90	.438
Government officials in charge of protecting Kinawataka wetland stop any development that encroaches on it even when it belongs to powers that be.	5.9	92.2	0.4	1.1	0.4	1.80	.440
Average	**4.3**	**82.9**	**4.2**	**4.9**	**3.7**	**1.88**	**.343**

Abbreviations: SD-Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree, SA-Strongly Agree, Std.-Standard deviation.

Table 4
Effect of Plan Implementation on Kinawataka Wetland's Sustainable Provision of Livelihood Opportunities.

Independent variable	Predicted statistics									
	Dependent variable: sustainable provision of livelihood opportunities									
	Unstandardized Coefficients		Beta	t	Sig.	R	R^2	Adjusted R^2	F-value	Sig.
	B	Std. Error								
(Constant)	.839	.072		11.692	.000	.139	.019	.017	13.986	.000
Plan implementation	−0.420	.138	−0.139	−3.041	.002					

The percentage distribution corresponding to the average row in Table 3 indicates that (82.9%) disagreed (mean = 1.88 was close to 2) to all the indicators of wetland plan implementation at Kinawataka. The respondents further disagreed without much deviation from the average (Std. = 0.343). These results suggest that from the community members' perspective, the implementation of wetland plans was poorly carried out in Kinawataka. Further analysis was conducted to establish how such plan implementation influenced the wetland's ability to provide livelihood opportunities. The responses in Table 3 were computed using the arithmetic technique of the data transformation method of SPSS to compute the central variables of 'plan implementation'. Thereafter, linear regression analysis was conducted producing results shown in Table 4.

From Table 4, the Beta value and its corresponding t-value were both negative and significant (Beta = −0.139, t = −3.041, Sig. = 0.002 < 0.05). These statistics suggest the relationship between wetland plan implementation in Kinawataka and the wetland's capacity to sustainably provide livelihood opportunities was negative and significant. This relationship implies the plan implementation and Kinawataka wetland's sustainable provision of livelihood opportunities varied in opposite directions. The Adjusted R^2 was significant (Adjusted R^2 = 0.017, F = 13.986, Sig. = 0.000 < 0.05), implying that plan implementation predicted the wetland's sustainable provision of livelihood opportunities in a significantly negative manner. Therefore, it can be argued that since R^2 is 0.017 which indicates a 1.7% variance in implementation can be explained by the presence of limited livelihood opportunities for wetland resource users. It can be concluded that the manner in which wetland plans were implemented in Kinawataka, wetland constrained its capacity to sustainably guarantee livelihood opportunities.

Qualitative data collected in regard to the second research question echoed the quantitative reported. Its fundamental relevance was to provide a framework for receiving diverse opinions on how, as a management practice, plan implementation affected Kinawataka wetland's capacity for livelihood opportunities to its users. Selected key informants explained how they put the wetland plans they designed into practice, especially with respect to Kinawataka wetland. Respondent's revealed that there is an elaborate system which is used to implement wetland management plan. They opined that this involved officials from the Ministry of Water and Environment, NEMA, KCCA, Nakawa Division local government, and secretaries for production and environment at village local councils. They mentioned that they work together to ensure that the wetlands in Kampala are not abused. For Kinawataka, they stressed that they rely mostly on the village secretaries and the environment officer at the local government of Nakawa Division to ensure that wetland users do not destroy the wetland through waste dumping, over extraction of sand and clay, and overcutting of its general vegetation cover. For big projects such as constructions of houses, shopping or market centres, and other infrastructural developments, we rely on NEMA, KCCA and Ministry of Water and Environment, which we expect to work to together to analyze the impact assessment of each project on the wetland before approving it.

They emphasized that this system should really ensure that wetlands are sustainably used, but….. Corruption is a big disease. When most of these stakeholders are given bribes, they leave rich people and investors to engage in any activity such as constructing industries, warehouses or etc. that encroach on the wetland regardless of its destructive impact. They said that this had led to fading of much of this wetland through being covered by constructed houses, motor garages, shopping, washing bay and market centres, area of empty plastic bottle collection centres, scrap buying points motor cycle rider stages and dumping sites. These opinions from the respondents, revealed that at the implementation level, management of Kinawataka wetland involves different stakeholders performing roles expected of them at the different level of the applied bureaucratic structure. The narrative therefore,

supports Lamsal et al. (2015) who observed that wetland management involves implementation of wetland plans by different officials playing the roles assigned to their positions to ensure that wetlands are utilized in a sustainable manner. Also, this suggests however, that in the case of Kinawataka wetland, most of the stakeholders did not do their implementation roles as expected because of corruption. For instance, one of the government officials interviewed said that:

> When our budget is funded by government, we go out to the field to ensure that wetlands are not misused and destroyed. What we basically do, which is within our mandate, is to monitor all human activities and developments carried out in wetlands to enforce compliance with the law as enshrined in the Act and Policy. But the budgets remain seriously low.

In other words, budget limitations constitute one factor that undermined the implementation of wetland plans. While the officials stated that they inspected the developments in wetlands to establish whether they are approved in line with existing wetland management plan, this activity was similarly undermined by the Uganda Land Board which sometimes issues land titles in the wetlands. This in turn means that whereas the inspections stopped any activity and destroy any development which violated government plans, in some situations the implementers did not have the authority to halt wetland abusers. Thus, the bureaucrats in wetland management did not always have the power to protect livelihood opportunities. Further qualitative analyses re-emphasized the challenge of budgets which were not only perennially found acutely low but were also subject to abuse themselves. Thus, a correct summary would reflect the policy implementation situation and state that the managers could only do so much. Moreover, the state officials could not demolish some of the irregular developments that destroyed or altered Kinawataka, especially those established by powerful and untouchable government officials.

It was clear from the expression above that implementation of wetland plans starts with funding the planned and goes on to involve monitoring and inspecting the activities and developments, stopping and demolishing those that contravene the wetland laws and plans. The extract indicates further that this implementation is constrained by acute underfunding, high ranking and untouchable government officials who establish developments in the wetland with impunity. These findings support the observation made by Smith (2013) and Oloka-Onyango (2017) that implementation wetland plans is sometimes constrained by underfunding and impunity of high ranking government officials.

Furthermore, when respondents particularly government officials were as how implement laws and policies to ensure the protection of the Kinawataka, one respondent expressed that:

> Like we do with other wetlands within our jurisdiction, we promote the conservation of this wetland (Kinawataka) to ensure its sustainable use by making community outreaches to sensitize and educate village leaders and the people living nearby and those working within the wetland about its importance, why they should not misuse it, and how they should work therein. We tell them about what they are expected and not expected to do; how they should use the resources such as fish, papyrus, sand, clay, grass and other valuable things in the wetland. We also encourage them to be watchdogs of each other to ensure that activities that are not allowed in a wetland such housing construction are not done. This way, we ensure that people use wetlands without destroying them. However, some of our employees do not do their work as expected. Due to being underpaid, they are vulnerable to receiving bribes that compromise them not to stop some of the activities they very well know are illegal in wetlands. Some of the officials in charge of releasing money needed to facilitate community sensitization and mobilization to participate in the conservation of the wetland swindle the money to satisfy selfish interests.

The above expression indicates that the implementation of the plans designed to ensure that wetlands in Kampala, particularly Kinawataka wetland were sustainably utilized involved community sensitization and education about the importance of the wise use principle. The excerpt indicates however that this process faced challenges such as vulnerability to and acceptance of bribes and swindling of money meant to facilitate it for person aggrandizement. Therefore, the results confirm that the observation made by Smith (2013) and Jiang et al. (2015) that while the implementation of the policies and plans that are meant to promote sustainable use of wetlands involves community sensitization, education, and mobilization, it tends to be constrained by bureaucratic inefficiencies. Further effort was made to ask selected household heads and business operators to indicate the activities that were being carried out by government, local authorities and the local community to ensure that the resources in Kinawataka wetland were used in a sustainable manner

4.3. Control of kinawataka wetland and sustainable provision of livelihood

Control activities in the framework of wetland activities and sustainable livelihoods refer to those policy functions in the area of policy monitoring and evaluation. Descriptive results from respondents are presented in Table 5.

Table 5 indicates that on average, (77.8%) of the community members strongly disagreed (mean = 1.22 was close to 1) without deviating much from each other (Std. = 3.17) that the control wetland plan implementation was well conducted. This implies that the majority of these respondents indicated the control functions were not visible at Kinawataka. As to how this state of affairs affected the wetland's sustainable provision of livelihood opportunities was determined after using the arithmetic technique of the data transformation to construct a global variable of 'control' from the responses in Table 5. A simple linear regression was carried out to predict the livelihood opportunities based on wetland control management practices. Results generated from linear regression are shown in Table 6.

The analysis of the Beta value and its corresponding t-value in Table 6 reveals that both were negative and significant (Beta = −0.608, $t = -16.611$, Sig. = 0.000 < 0.05). These statistics show that the relationship between the control of plan implementation at Kinawataka and this wetland's sustainable provision of livelihood opportunities was negative and significant. This suggests that the control of plan implementation and this wetland's sustainable provision of livelihood opportunities varied in opposite directions. It was found that the Adjusted R^2 was significant (Adjusted $R^2 = 0.368$, $F = 275.931$, Sig. = 0.000 < 0.05), suggesting that control of plan implementation predicted the wetland's sustainable provision of livelihood opportunities in a significantly negative manner. Therefore, it can be argued that since R^2 is 0.368 which indicates that 36.8% of variance in control can be explained by livelihood opportunities. These results reveal that Kinawataka wetland's sustainable provision of livelihood opportunities was critically hampered by the manner in which the control of implementing the plans designed to protect it was conducted (Aazami and Shanazi, 2020).

In order to get deeper insight into the third research question which focused on examining how, as a management practice, control of the implementation of wetland plans affected Kinawataka's sustainable provision of livelihood opportunities from a qualitative dimension, respondents gave interesting views. When the question of how control of the implementation of wetland plans affected Kinawataka's sustainable provision of livelihood opportunities to wetland users was posed to the key informants, they expressed that there were necessary laws, guidelines and assessment criteria which are needed to evaluate field officers in charge of implementing the designed wetland implementation policy and plans. They further stated that even the supervisors in charge of monitoring these officers to inspect and evaluate their fieldwork were around. One of the respondents specifically said that "we as a whole unit was dedicated to this work of ensuring wetland were protected. But

Table 5
Community's Responses on Control of Wetland Plans at Kinawataka.

Indicators of control of wetland plan implementation at Kinawataka	% of community members per response (N = 322)						
	SD =1	D = 2	NS=3	A = 4	SA=5	Mean	Std.
Community meetings are organised to seek the views of the members about how environment officers ensure that the wetland is used in a proper manner	76.3	8.5	5.2	4.4	5.6	1.25	.278
Government authorities in charge of wetland management encourage community members to report any of their field officers who do not do their work of ensuring that the wetland is not destroyed.	74.1	8.9	3.7	10.7	2.6	1.18	.252
Government authorities in charge of protecting wetlands respond effectively to any concerns raised by any community member about how their officials are doing their work.	68.5	4.8	13.7	3.0	10.0	1.35	.397
Environment officers reported to their employers are subjected to appropriate action whenever community member reports them for not doing their work well.	92.2	5.9	1.1	0.4	0.4	1.10	.340
Average	**77.8**	**7.0**	**5.9**	**4.6**	**4.7**	**1.22**	**.317**

Abbreviations: SD-Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree, SA-Strongly Agree, Std.-Standard deviation.

Table 6
Effect of Control on Kinawataka Wetland's Sustainable Provision of Livelihood opportunities.

Independent variable	Predicted statistics									
	Dependent variable: Potential to provide livelihood opportunities									
	Unstandardized Coefficients		Beta	t	Sig.					
	B	Std. Error				R	R^2	Adjusted R^2	F-value	Sig.
(Constant)	.233	.033		7.067	.000	.608	.369	.368	275.931	.000
Control	−0.550	.033	−0.608	−16.611	.000					

unfortunately, this unit is not funded". In that regard observed from the views of the respondents that, what happens is that those who are supposed to work as supervisors and inspectors end up working as if they are the field officers, doing the work not meant for them. Popular view among wetland user contacted during FGD, was that the supervisors and inspectors connive with field officers to solicit for bribes and leave the developments and activities that are not supposed to be conducted in wetlands to flourish there, thereby destroying these ecosystems.

Perhaps it is correct to argue that the prescriptive control measure used to enforce proper implementation of designed wetland plans in place, are not well implemented because of poor remuneration of officials charged with responsibility to control misuse of the wetland and inadequate funding. This deficiency not only causes redundancy of supervisors and inspectors but also makes them compromise their responsibilities and vulnerable to soliciting bribes that further renders their work poorly done the consequence of which is to contribute more to destruction of wetlands and subsequently, their sustainable provision of livelihood opportunities. In consistency, another key informant had this to say:

> We are supposed to supervise and monitor our environment officers. But this is perhaps the least done here because we lack funds to do so. We rarely follow up, monitor and evaluate what our environment officers do in the field. We stop at sending them there to do their work hoping that they do it well. It is only in exceptional cases such as when what they have done has agitated the public or the owners of the affected projects. We try to find out how they have done it, whether they followed the law and whether they were not influenced (bribed) to do it. For instance, demolishing housing constructions in wetlands tends to cause public uproar. People rise up demanding explanations as to why some constructions are put down while others in exactly the same situation are not. They ask why the owner of the demolished structure was allowed to put it up in the first place. The public gives us the questions we also ask our environment officers. In most cases, we find they have acted within the law. But the question that remains unanswered is why they do not do so to all the projects in the same situation. We find fear to touch the projects of the untouchable powerful government officials who act with impunity….as common reasons. Most of wetland public officials are confrontational instead of encouraging participatory approach to ensure wise use of the wetland.

The foregoing results suggest that control of plan implementation is not well conducted because of lack of funds. They also indicate that environment officers are left to do their work unsupervised and unmonitored, which creates chances for them to implement the plans discriminately by stopping or demolishing some developments in the wetland while leaving others to continue either because fear to antagonize public officials who abuse their offices. This supports the study of Malak et al. (2019) that indicates that control of the implementation of wetland plans is in some cases not well carried out because of insufficient funding, corruption and impunity of high ranking government officials. In addition to the key informants, community members were asked to indicate whether efforts were done to ensure that officers in charge of protecting the wetland in Kinawataka did their work. Respondents said that generally there were laws and policies to control not only Kinawata wetland but all wetlands in Uganda, and these laws and policies are well documented and know, however, enforcers do not sensitize and encourage those who utilize wetland to put them in practice, they are on paper. One of the respondents specifically mentioned that "I don't see such laws and policies working to protect the wetland. Many people have deeply encroached on it, inhabitants and users have increased. We may no longer have this wetland any more as different kinds of development were taking place on it". Furthermore, respondents revealed that law enforcement officials were known for forcing those residing in this wetland to demolish their houses and seek shelter elsewhere. They stressed that unless these laws and policies are properly implemented many wetlands including Kinawataka.

5. Conclusions and recommendations

The aim of the study was to examine how wetland management practices of planning, implementation and control influenced Kinawataka wetland ability to provide sustainable livelihood opportunities. The overall results revealed there were positive linkages between

management functions of (planning, implementation and control) and livelihood opportunities, but had an insignificant predictive effect. This suggests that there was a gap between managers and the users in the public processes for handling wetland resource sustainability issues. Related to this, is the reality that explains the increasing poverty and the current Kinawata wetland degradation which stood to undermine the potential hub of diverse livelihood opportunities. In many ways, this context also provides the framework for understanding inadequate support from legal and policy institutions which operate within neoliberal policy settings characterised by bureaucratic inefficiency in wetland "allocations" to investors. Nevertheless, these constraints largely emerge from the negative effects that were caused by the manner in which the designed management plans were implemented and how the execution process was controlled. Therefore, it can be concluded that if the three management functions were adequately considered in conservation and preservation of wetland management processes, would facilitate continued access to sustainable livelihood opportunities in the wetland. From the fore, the following recommendations were made:

a) Planning as a management function should be democratic to involve all stakeholders as one the central strategies for managing wetland resources on sustainable basis. This thus calls for effective stakeholders' participation in wetland use planning backed-up by strengthening policies and general legal framework to capture the input from policy makers and environmental scientists and wetland users.
b) Government officials implementing wetland policy should strive to design durable partnership involving civil society and wetland users. Such strategy should strongly suggest need to increase improved implementation resources entailing funding, adequate human resources and GIS technology to handle wetland implementation processes at community level to ensure sustainability.
c) The control function of management which is central to effective wetland resource governance should be reshaped and positioned to ensure logically linked monitoring, evaluation and reporting processes to support sustainable livelihood opportunities. An equivocally this should demand for targeted governance reforms to eliminate inefficiencies from the control procedures of wetland conservation to ensure Kinawataka provides sustainable livelihood opportunities.

Declaration of Competing Interest

We the authors declare that this study deeply reflects our views, interpretation and discussions, and that the ideas of other authors have been duly acknowledged. The authors do not have any competing interests that could in any way influenced the research.

Acknowledgements

The Authors would like to register their most sincere and heartfelt appreciation to Kyambogo University for funding this research work.

References

Aazami, M., Shanazi, K., 2020. Tourism wetlands and rural sustainable livelihood: the case from Iran. J. Outdoor Recreat. Tour. 30. doi:10.1016/j.jort.2020.100284.
Baral, S., Basnyat, B., Khanal, R., Gauli, K., 2016. A total economic valuation of wetland ecosystem services: an evidence from Jagadishpur Ramsar site, Nepal". Sci. World J. 2016. doi:10.1155/2016/2605609.
Bikangaga, S., Picchi, M.P., Focardi, S., Rossi, C., 2007. Perceived benefits of littoral wetlands in Uganda: a focus on the Nabugabo wetlands. Wetl. Ecol. Manag. 15, 529–535. doi:10.1007/s11273-007-9049-3.
Brito, L.A.L., Sauan, P.K., 2016. Management practices as capabilities leading to superior performance. BAR 1–21 Rio de Janeiro, 13, 3art 5. e160004, July/Sept. 2016. doi:10.1590/1807-7692bar2016160004.
Byamukama, W., Kiyawa, S.A., 2019. Sustainable management and conservation of wetland resources in Uganda: a review. J. Environ. Health Sci. 5 (1), 47–51. doi:10.15436/2378-6841.
Creswell, J.W., Creswell, J.D., 2018. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th Ed. Sage, Thousand Oaks, CA LCC H62. C6963 2018/ DDC 300.72/1—dc23 LC record available at https://lccn.loc.gov/201704464 .
Finlayson, C.M., et al., 2018. Ramsar convention typology of wetlands. In: Finlayson, C.M., Everard, M., Irvine, K., Mclnnes, R.J., Middleton, B.A., van Dam, A.A., et al. (Eds.), The Wetland Book1: Structure and Function, Management and Methods. Springer publishers, Dordrecht.
Gevers, I., Koopmanschap, E.M.J., Irvine, K., Finlayson, C.M., van Dam, A.A., 2018. Capacity development for wetland management. In: The Wetland Book: I: Structure and Function, Management, and Methods. Springer, Netherlands, pp. 1935–1942.
Gokce, D., 2018. Introductory Chapter: Wetland importance and management, in Gokce, D., (Ed.), Wetlands management: Assessing risk and sustainable solutions Doi:10.5772/intechopen.82456. available at https://www.intchopen.com/books/wetlands-management-assessing-risk-and-sustainable-solutions/introductory-chapter-wetland-importance-and-management.
Gosling, A., Shackleton, C.M., Gambiza, J., 2017. Community-based natural resource use and management of Bigot wetland sanctuary, Uganda, for livelihood benefits. Wetl. Ecol. Manag. 25, 717–730. doi:10.1007/s11273-017-9546-y.
Gossling-Goidsmiths, J., 2018. Sustainable Development Goals and Uncertainty Visualization. University of Twente Masters Dissertation.
Hák, T., Janoušková, S., Moldan, B., 2016. Sustainable development goals: a need for relevant indicators. Ecol. Indic. 60 (1), 565–573. doi:10.1016/j.ecolind.2015.08.003.
Hobfoll, S.E., 2012. Conservation of resources theory: its implication for stress, health, and resilience. Annu. Rev. Organ. Psychol. Organ. Behav. 5 (1), 103–128. doi:10.1093/oxfordhb/9780195375343.013.0007.
Hobfoll, S.E., Halbesleben, J., Neveu, J.P., Westman, M., 2018. Conservation of Resources: a New Attempt Conceptualising Stressing. Annu. Rev. Organ. Psychol. Organ. Behav. 5, 103–128. doi:10.1146/annurev-orgpsych-032117-104640.
Hobfoll, S.E., Stevens, N.R., Zalta, A.K., 2015. Expanding the science of resilience: conserving resources in the aid of adaptation. Psychol. Inq. 26 (2), 174–180. doi:10.1080/1047840X.2015.1002377.
Jiang, B., Wong, C.P., Chen, Y., Cui, L., Ouyang, Z., 2015. Advancing wetland policies using ecosystem services – China's way out. Wetlands 35, 983–995.
Kakuru, W., Bai, J., Cui, B., Cao, H., Li, A., Zhang, B., 2013. Total economic value of wetlands products and services in Uganda. Sci. World J. 2013 (2013), 192656. doi:10.1155/2013/192656. https://www.hindawi.com/journals/tswj/si/976158/. (accessed 16 November 2019).
Krause, R.M., Feiock, R.C., Hawkins, C.V., 2016. The administrative organization of sustainability within local government. J. Pub. Admin. Res 26, 113–127.
Lamsal, P., Pant, P.K., Kumar, L., Atreya, K., 2015. Sustainable livelihoods through conservation of wetland resources: a case of economic benefits from Ghodaghodi Lake, Western Nepal. Ecol. Soc. 20, 1.
Lockwood, M., Davidson, J., Curtis, A., Stratford, E., Griffith, R., 2010. Governance principles for natural resource management. Soc. Nat. Res. 23 (10), 986–1001. doi:10.1080/08941920802178214.
Malak, A.D., Schröder, C., Guitart, C., Simonson, W., Ling, M., Scott, E., Brown, C., Flink, S., Franke, J., Fitoka, E., Guelmami, A., Hatziiordanou, L., Höfer, R., Mino, E., Philipson, P., Plasmeijer, A., Sánchez, A., Silver, E., Strauch, A., Thulin, S., Weise, K., 2019. Enhanced Wetland Monitoring, Assessment and Indicators to Support European and Global Environmental Policy. SWOS Technical Publication.
Mccartney, M., 2013. The value of wetlands for livelihood support in Tanzania and Zambia. In: Wood, A., Dixon, A., Mccartney, M. (Eds.), Wetland Management and Sustainable Livelihoods in Africa. Routledge-Earthscan, London, pp. 43–62.
McElwee, G., Wood, A.P., 2017. Wetland entrepreneurs: diversity in diversification in Zambian farming. J. Small Bus. Enterp. Dev. 25 (5), 752–768. doi:10.1108/JSBED-03-2017-0089, accessed 22 June 2020).
Mensah, J., Casadevall, S.R., 2019. Sustainable development: meaning, history, principles, pillars, and implications for human action: literature review. Cogent Soc. Sci. 5, 1. doi:10.1080/23311886.2019.1653531.
Nabahungu, N.S., 2012. Problems and Opportunities of Wetland Management in Rwanda. Wageningen University Doctoral Dissertation.
Ochola, W.O., Nyariki, D., 2010. Natural resource project planning and management. In: Ochola, W.O., Sanginga, P., Bekalo, I. (Eds.), Managing Natural Resources For Development in Africa: A Resource Book. university of Nairobi press, university of Nairobi, pp. 319–388.
Oloka-Onyango, J., 2017. Land Injustice, Impunity and State Collapse in Uganda: Causes, Consequences and Correctives. Human Rights & Peace Centre, Kampala *Technical Report.*
Omagor, J.G., Barasa, B., 2018. Effects of human wetland encroachment on the degradation of Lubigi wetland system, Kampala City Uganda. Environ. Ecol. Res. 6 (6), 562–570.
Opio, A., Lukale, J.K., Masaba, I.S., Oryema, C., 2011. Socio-economic benefits and pollution levels of water resources, pece wetland, Gulu municipality-Uganda. Afr. J. Environ. Sci. Technol. 5 (7), 535–544. doi:10.5897/AJEST10.205.
Ornella, M., Sica, D., Supino, S., 2019. The role of public administration in sustainable urban development: evidence from Italy. Smart Cities 2, 82–95 Doi:10.3390/smartcities 2010006.
Phethi, M.D., Gumbo, J.R., 2019. Assessment of impact of land use change on the wetland in Makhitha village, Limpopo Province, South Africa. JAMBA 11 (2), a693. doi:10.4102/jamba.v11i2.693.
Ramachandra, T.V., Alakananda, B., Rani, A., Khan, M.A., 2011. Ecological and socio-economic assessment of Varthur Wetland, Bengaluru (India). J. Environ. Sci. Eng. 53 (1), 101–108 PMID:22324154 .
Ramsar, 2017. Ramsar Convention on Wetlands https://sustainabledevelopment.un.org/content/documents/24632wetlands.pdf.
Ramsar, 2018. Global Wetland Outlook: State of the World's wetlands and Their Services to People. Ramsar Convention, Gland, Switzerland.

Rebelo, L.M., Mccartney, M., Finlayson, M., 2010. Wetlands of sub-Saharan Africa: distribution and contribution of agriculture to livelihoods. Wet. Ecol. Manag. 18, 557–572. doi:10.1007/s11273-009-9142-x.

Reis, V., Hermoso, V., Hamilton, S.T., Ward, D., Fluet-Chouinard, E., Lehner, B., crd Linke, S., 2017. A global assessment of inland wetland conservation status. Bio. Sci. 67 (6), 523–533. doi:10.1093/biosci/bix045.

Seifollahi-Aghmiuni, S., Nockrach, M., Kalantari, Z., 2019. The potential of wetlands in achieving the sustainable development goals of the 2030 agenda. Water (Basel) 11 (609), 1–14. doi:10.3390/w11030609.

Sekaran, U., 2016. Research Methods for Business: A Skill Building Approach, 7th Edition Wiley & Sons, Australia.

Solomon, A.K., Lertzman, K., Brown, K., Wilson, K.B., Secord, D., McKechnie, I., 2018. Democratizing conservation science and practice. Ecol. Soc. 23 (1), 44. doi:10.5751/ES-09980-230144.

Sullivan, C.A., Fisher, D.E., 2011. Managing wetlands: integrating natural and human processes according to law. Hydrol. Sci. J. 56, 8. doi:10.1080/02626667.2011.630318.

Tumuheire, A., 2017. Impact of Land use Changes and Wetland Degradation on Water: The Case of Upper Kinawataka Wetland, Kampala – Uganda. Makerere University Master's Dissertation.

Tumusiime, T.T.M., 2013. The Contribution of Wetland Resources Management to Household Food Security in Nangabo Sub-County, Wakiso District, Uganda. Uganda Management Institute Masters Dissertation.

Turyahabwe, N., Kakuru, W., Tweheyo, M., Tumusiime, D., 2013. Contribution of wetland resources to household food security in Uganda. Agric. Food Secur. 2, 1–15. doi:10.1186/2048-7010-2-5.

Walker, R.A., 2008. Wetland preservation and management: a rejoinder-economics, science and beyond. Coast. Zone Manag. J. 1, 2. doi:10.1080/08920757409361683.

Walters, D., Kotze, D., Cowden, C., Browne, M., Grewcock, M., Janks, M., Eggers, F., 2019. An Integrated Monitoring and Evaluation Framework to Assess Wetland Rehabilitation in South Africa. WRC Report No. 2344/1/19. Water Research Commission, South Africa.

Wanasolo, W., Turyagenda, K.B., Kansiime, F., 2018. Evaluation of industrial effluent levels in Kinawataka stream, its tributaries and Kinawataka swamp, prior to discharge into Lake Victoria. Am. J. Mater. Sci. 5 (4), 49–56.

Xu, X., Chen, M., Yang, G., Jiang, B., Zhang, J., 2020. Wetland ecosystem services research: a critical review. Glob. Ecol. Conserv. 22. doi:10.1016/j.gecco.2020.e01027.