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Awareness, perceptions and implementation of policy and legal provisions on wetlands in Uganda

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ABSTRACT
Wetland degradation is currently a major global environmental challenge. In Uganda, the situation is similar despite the country's relatively long history of wetland policy and legislation. This study was carried out after over two decades since the onset of an ambitious national wetlands programme to examine local awareness and perceptions wetlands policy and legislation. It was conducted on the basis that understanding of the opinions and attitudes of farmers and other wetland users regarding wetland policies and regulations helps managers and policy makers in making informed decisions for sustainable wetland management. Semi-structured interviews conducted with 222 randomly selected households resident within a 5 km radius of the sampled wetlands were augmented by three Focus Group Discussions and 40 key informant interviews. More than half of the respondents (64%) were aware of the national wetlands management and conservation policy, with 32% expressly suggesting that the provisions in the National Environment Act are sufficient to support sustainable use of wetlands while only 6% expressed knowledge of informal or traditional rules and regulations for use of wetlands. Regression results revealed that education and income status significantly influenced respondents awareness of the wetland policy and provisions in other formal policies and laws. Residents of both Lake Victoria Crescent and South western farm lands were significantly ($p<0.05$) more likely to be aware of provisions in other formal policies and laws, owing to sensitisation by conservation projects based in these localities and having operational Community-based Wetland Management Plan. Majority (77%) of respondents expressed that the policies and legal provisions on wetlands were not adequately enforced and nearly 90% of the respondents perceived a need for locally tailored by-laws and ordinances and an improvement in communication of information about wetland policy. Irrespective of improvement in awareness of the wetland policy and legislation in Uganda, enforcement is likely to remain poor due to limited livelihood options for local people as they use wetlands for food security and livelihood improvement. Local communities also claim ignorance of wetland policy, regulations and laws that they do not agree with, given the sensitivity of use and management of wetland resources. Successful conservation of wetlands will thus depend on implementation of acknowledged policy and legal provisions coupled with the crafting and creation of awareness of locally tailored policies, by- laws and ordinances on wetlands.

Key words: legal provisions, perceptions, policy, Uganda, wetlands

RÉSUMÉ
La dégradation des marais est devenue actuellement un enjeu environnemental mondial majeur. En Ouganda, la situation est pareille, malgré l'historique relativement long de la politique et de la législation sur les marais. Cette étude a été réalisée plus de deux décennies après l'avènement d'un programme sur les marais nationales, pour analyser la prise de conscience et les perceptions locales sur la politique et de la législation sur les marais. Elle a été menée sur la base que la compréhension des idées et des attitudes des agriculteurs et autres bénéficiaires en ce qui concerne les politiques et les règlements des marais, aidera les gestionnaires et les décideurs à prendre des décisions éclairées pour une gestion durable des marais. Des entretiens semi-structurés menés auprès de 222 ménages choisis aléatoirement dans un rayon de 5 km des marais échantillonnées ont été renforcés avec trois discussions de groupes et 40 interviews avec des informateurs clés. Plus de la moitié des répondants (64%) étaient conscients de la politique nationale de gestion et de conservation des marais, 32% suggérant expressément que les dispositions de la loi nationale sur l'environnement suffisent à conserver l'utilisation durable des

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marais alors que seulement 6% ont exprimé leur connaissance des règles et règlements traditionnels ou informels dans l'utilisation des marais. Les résultats de la régression ont révélé que l'éducation et le niveau du revenu influençaient de manière significative la prise de conscience par les répondants. Les populations résidant aux alentours du littoral du lac Victoria et des terres agricoles du sud-ouest étaient significativement ($p < 0,05$) plus susceptibles d'être informés des dispositions politiques et lois officielles, du fait de la sensibilisation par les projets de conservation basés dans ces localités et disposant d'un plan opérationnel communautaire de gestion des marais. La majorité (77%) des répondants a déclaré que les politiques et les dispositions légales sur les marais n'étaient pas appliquées de manière adéquate et près de 90% des répondants ont exprimé un besoin de règles localement adaptées et une amélioration de la communication des informations sur la politique des marais. Malgré l'amélioration dans la prise de conscience de la politique et la législation régissant des marais en Ouganda, l'application de la loi risque de rester médiocre en raison du manque d'alternatives pour la subsistance des populations locales, car elles utilisent les marais pour la sécurité alimentaire et l'amélioration leur survie. Les communautés locales réclament également l'ignorance de la politique, des règlements et les lois avec lesquels elles ne sont pas d'accord, compte tenu de la sensibilité de l'utilisation et de la gestion des ressources maraichères. Une meilleure conservation des marais dépendra donc de la mise en œuvre des politiques et de dispositions juridiques reconnues, associées à l'élaboration et à la sensibilisation des politiques et aux règlements localement adaptés sur les marais.

Mots clés: dispositions légales, perceptions, politique, Ouganda, marais

INTRODUCTION

Wetlands are a key resource in developing countries where they sustain livelihoods of rural households particularly in locations with low rainfall and where uplands are either scarce or have low productivity because of poor soil characteristics (Halima and Munishi, 2009; Rebelo *et al.,* 2010). In the drier regions of the world, wetlands are frequently the only places where local people can collect basic supplies including water and food (Mwakubo and Obare 2009), thus a tendency to (over) exploit wetlands through de facto common - and frequently open – access (Adams *et al.,* 2003; Romanelli *et al.,* 2011). In Uganda, at least 50% of the nation's wetlands are reportedly under human use to secure livelihoods through either direct consumption of wetland products (including cultivation of crops in wetlands) or sale of wetland products to generate cash (Turyahabwe *et al.,* 2013). Overall, Uganda's wetland sector employs over 2.7 million people (almost 10% of the entire population) (Wetland Management Department, 2009; GoU, 2010).

Despite the contribution of wetlands to livelihoods in Uganda, some local uses of wetlands have resulted into wetland loss. For example, the wetland coverage in Uganda reduced from 37,575 km^2 (15.6% of the nation's land area in 1994 to about 26,308 km^2 (10.9 %) in 2009. This represents a loss of 30% of national wetlands (Wetland Management Department, 2009). This loss is partly due to stakeholders' insufficient awareness of the policies and legal provisions concerning the wise use of wetlands. In addition, many laws, policies and regulations governing natural resources including wetlands seem to be inadequate to meet today's needs and challenges posed by high population growth rate and intensive agricultural activities (Were *et al.*, 2013). Uganda is a signatory to a number of international treaties and conventions such as the Convention on Biological Diversity and the Ramsar convention that call for national and local action to develop, implement and enforce policy and legislation that match international standards set in these conventions required for achieving wise use and conservation of wetlands. However, developing and implementing national policies and legislation that promote wetland conservation and management remains an elusive goal to many countries including Uganda. Wetland policies and/or strategies can be important steps in recognition of wetland problems and targeted action to deal with them. Wetland policies provide an opportunity to recognize wetlands as ecosystems requiring different approaches to their management and conservation, and not being masked under other sectoral management objectives (MEA, 2005). In many cases, wetland policies or strategies are components of national sustainable development, water or other sectoral environmental policies. There is thus a need for protective legislation to comply with these international commitments, but also to promote the attainment of the 14 and 15th sustainable development goals that seeks to conserve, protect, restore and sustainably manage use of the oceans, seas and marine, terrestrial ecosystems and resources for sustainable development (UN, 2015).

Legislation on wetlands in Uganda. In the colonial period (before Uganda got independence in 1962), most wetlands like other natural resources in the Crown Land were designated as reserves, and legally belonged to the British Crown and later the Government of Uganda and were governed directly by British law (Ntambirweki, 1998). However, wetlands outside the reserves remained a property of nobody, accessible to everybody and did not receive the special protection of the State. In addition, traditional institutions through monarchial systems played a big role in their protection particularly in Buganda and Toro Kingdoms where management of wetland resources were almost exclusively based on traditional beliefs and spiritual attachment. With political changes since independence, the powers of traditional institutions were reduced. As a result, they lost direct control over these resources. With no regulations to guide wetland drainage, the Government encouraged the drainage of wetlands or agricultural expansion and infrastructure development. By 1964, an estimated 16.2 km^2 of swamp areas had been reclaimed through drainage (Kamugisha, 1993). In the south western districts of Uganda, rich and "progressive" farmers acquired leaseholds upon these wetlands and commenced the programme of draining them to convert them into dairy farms and areas for crop production (MISR, 1998; Ntambirweki, 1998). This led to massive drainage especially in densely populated districts of the country such as Kabale, Bushenyi and Iganga and for industrial expansion in the districts of Kampala and Jinja in the 1970s and early 1980s.

In 1986, the Government of Uganda banned large-scale reclaiming of wetlands until a satisfactory policy had been put in place (WID and IUCN, 2005). In 1988, the Government of Uganda ratified the Ramsar Convention of 1971 on wetlands of international importance. Under the Ramsar Convention, formulation of national wetland policies is regarded as a key step in implementing best practices for sustainable use of wetlands. A national wetlands programme was established in 1989. The programme expressly sought to develop a National Wetlands Conservation and Management Policy to guide wetland users and the Government on best practices for sustainable use of wetlands. Consequently, Uganda enacted a national wetland conservation and management policy in 1995, whose overall objective is to enhance equitable distribution of wetlands benefits to all stakeholders. Provisions on wetland use were also included in important legislations such as the 1995 Water Statute, 1995 National Environment Statute that established a National Environment Management Authority, 1995 Constitution of the Republic of Uganda, the 1997 Local Government Act, the Land Act 1998 and the National Environmental (Wetlands, River Banks and Lake Shores) Management 2000 that reinforce and give further details of specific aspects of wetland management. In 1997, wetlands were included in the Local Governments Act. This Act devolved wetlands management to district authorities for effective management purposes. However, they cannot sell, lease or alienate wetlands under their jurisdiction. Districts manage wetlands according to all other relevant laws and legislation including the Constitution 1995, the National Environment Statute 1995, and the Wetland Policy 1995. The Land Act 1998 deals with issues of land ownership. According to this Act, wetlands in Uganda are 'held in trust' by Government and local Governments for the good of all the citizens of Uganda in accordance with the Constitution 1995. Just like the Local Governments Act 1997, the Land Act 1998 also devolved responsibility of wetland management to the district authorities. Other policies and laws with deliberate provisions on wetland resources management include: the Uganda Forestry Policy (2001), the National Forestry and Tree Planting Act (2003); and the National Environment (wetlands, river banks and lakeshores management) Regulations of 2000. There is however limited awareness about its provisions and therefore local communities still lay claim on wetland areas.

The existing legislation is fragmented in the different laws. Access to these pieces of legislation to the general public is therefore constrained. The communities are still not aware that wetlands are legally owned by Government for the good of all Ugandan citizens. There is still assumed ownership of these ecosystems, leading to continued encroachment. The problem is further compounded by lack of statutory regulations defining the identification or demarcation of wetland boundaries. These views are backed by the observations of Hartter and Ryan (2010) that: "despite the successes of Government decentralization and legislated devolution of rights and responsibilities to the local level, mandated regulations instituted by the central government can remain ignored or unheard of locally". The key question addressed was whether the wetlands policy

and wetlands provisions in the National Environment Act (NEA) and other relevant policies and laws have been enforced to support use of wetlands for improved food security and wetland integrity? This study was carried out after over two decades since the onset of an ambitious national wetlands programme to examine local awareness and perceptions of wetlands policy and legislation. It was conducted on the basis that understanding of the opinions and attitudes of farmers and other wetland users regarding wetland policies and regulations helps managers and policy makers in making informed decisions for sustainable wetland management.

STUDY AREA AND METHODS

Study Area. Out of ten agro-ecological zones in Uganda, three (South western farmlands, Lake Victoria Crescent, and Kyoga plains) were randomly selected (Figure 1). The South western farmlands have a population density of about 247 persons per km^2, with a moderate level of food security; the Lake Victoria Crescent has a high population density of about 484 persons per km^2, and the level of food security is medium (WFP, 2009). Kyoga plains are characterized by a moderate population density (252 persons per km^2), high levels of food insecurity among small-holder subsistence farmers, annual crops predominate and are occasionally supplemented by some pastoralism (Pallisa District, 2004). In each zone, wetlands were stratified based on four ecological and socio-economic factors (i.e. population density, level of food security, farming system, and agro-ecological factors) as per national recommendations for wetland characterization (MWLE, 2003). From each zone, two sample wetlands were then randomly selected from the respective strata; Lake Nakivale and Rucece wetlands in the South western farmlands agro-ecological zone. Munyere and Mabamba Bay wetlands in Lake Victoria Crescent, and Gogonyo and Limoto wetlands were selected from Kyoga plains.

The specific study period was from 1986, the time when the National Resistance Movement (NRM) government came into power and started reforming institutions for governing natural resources, including wetlands. It also coincides with time when the National wetland conservation and management policy was enacted in 1995 and provisions on wetland included in important legislations such as the 1995 Constitution of the Republic of Uganda, 1995 National Environment Statute that established a National Environmental Management Authority,

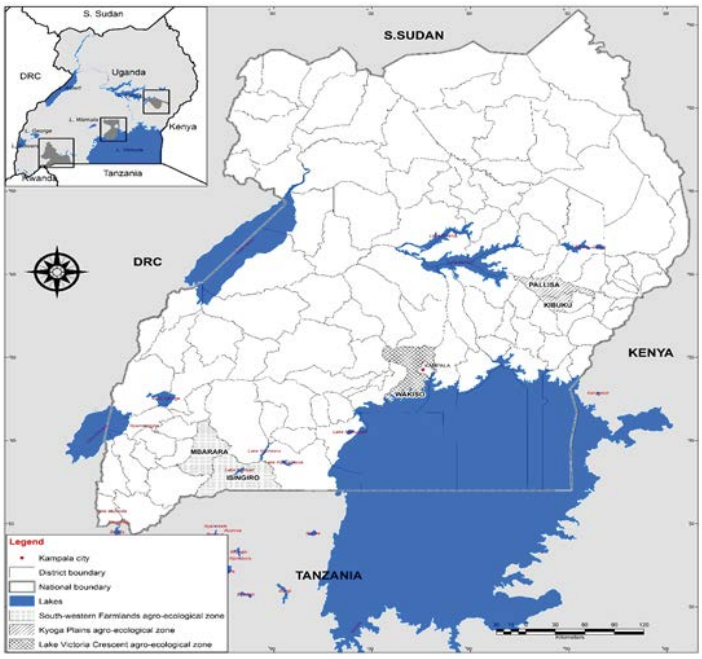

Figure 1. Location map of sample wetlands in Uganda

1995 Water Statute, the 1997 Local Government Act (GoU 1997) and the Land Act, 1998.

Data collection. To examine local knowledge and perceptions of wetland legislations, semi-structured interviews guided by a questionnaire were conducted with 222 randomly selected households resident within a 5 km radius of the sampled wetlands. Specifically, data were collected on three categories of policies: (1) informal/traditional rules and regulations; (2) National Wetlands Management and Conservation Policy; and (3) provisions in other formal policies and laws. Of the 222 respondents, 80 households were from the South western farmlands, 65 from the Lake Victoria crescent, and 77 from Kyoga plains. The survey targeted heads of sample households, but for practical reasons the most knowledgeable and senior of the adults present was interviewed in the few instances where the head was not at home. The purpose of these interviews was to ascertain the kind of wetland resources directly harvested for food security, the status of wetland resources, policies and laws regulating wetland resource use and management, institutional arrangements for governing wetland resources and wetland status. Before conducting each interview, the purpose of the study was explained to each respondent as purely scientific and academic and the respondents were assured of confidentiality, and anonymity. Where necessary, the respondents were further informed that the study would benefit them by providing information that local leaders could use to improve the policies for management and conservation of wetlands in their communities. Participation was purely voluntary. Interviews were conducted in a common local language for each zone. Survey tools were pre-tested in pre-determined areas that were not part of the sample. In addition, a focus group discussion (consisting of 6-12 local residents and leaders deemed conversant with wetland policies) was conducted in each of the agro-ecological zones. Participants were purposefully selected basing on their duration of residence in the zone, utilisation of wetland products/resources, and knowledge on wetland use.

Further, 40 key informant interviews were held with staff from the National Agricultural Advisory Services (NAADS), Production and Districts' Natural Resources Departments of the respective Sub county and District Local Governments, and personnel from sub county and district local government councils. At the national level, key informant interviews were held with members of the Wetland Working Group and members from institutions responsible for management and use of wetland resources and food security. These included the Ministry of Water and Environment (MWE), the National Forestry Authority (NFA), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Finance Planning and Economic Development (MoFPED), Ministry of Local Government (MoLG), National Agricultural Advisory Services (NAADS), Wetlands Management Department, National Environment Management Authority (NEMA) and the Parliament Sectoral Committee of Natural Resources. Key informant interviews were held to ascertain their knowledge about the wetland systems in terms of use, and key wetland benefits accruing to local people, wetland tenure and access, policy and regulation regarding wetland use, and history of use and management practices within these wetland systems.

We also reviewed archival information and records of the Ugandan policies and laws such as the 1995 National Wetland Conservation and Management policy, 1995 Constitution of the Republic of Uganda, 1995, National Environment Statute 1995; Water Statute and the 1997 Local Government Act, wetland management plans and government reports from the national archives in Entebbe, Makerere University, National Environment Management Authority, Ministry of Water and Environment and other government departments. Direct field observations were made on wetland management practices such as crop and livestock farming that are highly influenced by wetland policy and legislation to gain insight into awareness and perception of the same in the wetland adjacent area.

Data analysis. Questionnaire responses were edited, coded and analysed using SPSS version 18.0 for Windows. Descriptive statistical analyses were carried out to summarise peoples' knowledge about wetland values and policies and presented using tables and graphs developed in MS Excel. Awareness of legal provisions is a dichotomous variable with a particular respondent being either aware or not. Therefore to examine how socioeconomic factors influence awareness of the provisions, a binary logistic regression (Agresti, 2002) was run in

Minitab 14. Qualitative factors with more than two levels were specified as factors so as to examine inter-level variation. Variable levels apriori expected to influence awareness in significantly different ways were assigned a value of 1 to form the basis for comparison across factor levels.

RESULTS

Socio-demographic characteristics of sample. The average respondent was 36 years old, but there was a wide range with the youngest being 16 years and the oldest 85 years. Majority of respondents were male, most of them subsistence farmers with primary level of formal education and with low incomes with up to 71% of the respondents earning less than 60 USD a month (Table 1).

Table 1. Socio-demographic characteristics of sample respondents

Characteristic	Percentage
Sex	
Male	75
Female	25
Education level	
No formal education	10
Primary	55
Secondary	23
Tertiary	12
Primary occupation	
Subsistence farmer	66
Formal (Regular wage, Business)	20
Wetland based (Fishing and Pottery)	11
Others (Carpentry, casual labourer)	3
Household monthly income status	
Poor (Less than 60 USD)	71
Not so poor (More than 60 USD)	29
Agro-ecological zone	
Kyoga plains	35
Lake Victoria Crescent	29
South western farm lands	36

Knowledge on policies and laws

Awareness of existence of policies. Three categories of wetland policies were discerned and there was a wide variation in the extent of awareness by local people of their existence (Fig 2). Less than 6% of the sample respondents were aware of informal or traditional rules and regulations for use of wetlands for improved food security while maintaining wetland integrity. A much larger number (64%) were aware of the national wetlands management and conservation policy while a smaller proportion (38%) of respondents were aware of other provision (s) in other formal policies and laws that can contribute to wise use of wetlands for improved food security and wetland integrity.

A number of factors were observed to influence awareness of: (i) National wetlands management and conservation policy; and (ii) Provisions in other formal policies and laws (Table 2). No regression was done to examine awareness of informal/ traditional rules and regulations because of a very low number of events. For the two models fitted, there is: (i) sufficient evidence that in both cases at least one of the slope is non-zero as reflected in the very low P-Values for the test on all slopes; and (ii) insufficient evidence to claim that the models do not fit the data adequately as indicated by the high P-values for the Goodness-of-Fit Test.

For both legislations, awareness significantly improves with level of formal education and income status. Compared to Lake Kyoga, residents of the South western farm lands were significantly more likely to be aware of the national wetlands management and conservation policy. Also, compared to Lake Kyoga, residents of both Lake Victoria Crescent and South western farm lands were significantly more likely to be aware of provisions in other formal policies and laws. Finally, respondents employed in other occupations (including carpentry) were significantly less likely to be aware of the national wetlands management and conservation policy when compared with those whose primary occupation was subsistence farming.

Adequacy of provisions in the National Environment Act (NEA) to wetland resource conservation. The study revealed that 32% of the respondents regarded the provisions in the current NEA sufficient to support use of wetlands for improving food security and maintaining the integrity of wetlands. Only 23% of the respondents were aware of existence of legal provisions on wetland use in other laws to operationalise use of wetlands for improved food security and wetland integrity. The most frequently reported provisions in this category were guided use of wetlands for cultivation (32%) and restriction on construction works in wetlands (18%) (Table 3).

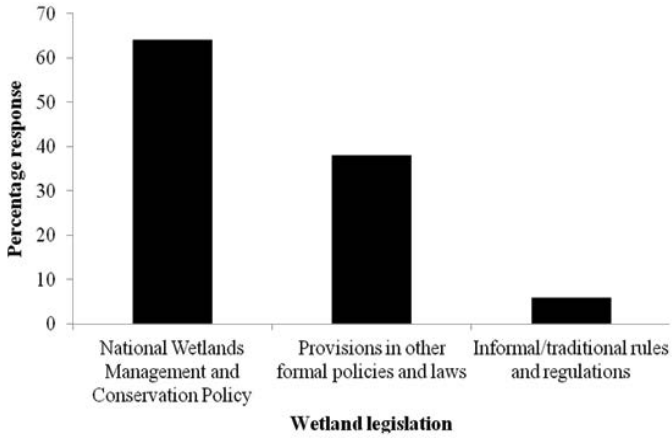

Figure 2. Local knowledge of wetland policies and laws in Uganda

Table 2. Factors influencing awareness of wetland policy and legislations

	National wetlands management and conservation policy			Provisions in other formal policies and laws		
Predictor	Coeff (SE)	Z	P-value	Coeff (SE)	Z	P-value
Age in years	0.01(0.01)	0.91	0.363	0.01(0.02)	0.89	0.376
Education level (Ref = No formal education)						
Primary	0.56(0.53)	1.05	0.292	0.90(0.69)	1.32	0.188
Secondary	1.39(0.62)	2.24	0.025**	1.71(0.75)	2.27	0.023**
Tertiary	1.34(0.79)	1.69	0.090*	1.82(0.85)	2.14	0.033**
Income (Ref = Poor)						
Not so poor	1.11(0.47)	2.38	0.017**	1.80(0.45)	4	0.000***
Agro-ecological zone (ref = Kyoga plains)						
Lake Victoria Crescent	0.06(0.37)	0.17	0.867	1.45(0.45)	3.22	0.001***
South western farm lands	1.15(0.45)	2.59	0.010**	1.82(0.49)	3.73	0.000***
Primary occupation (ref = Subsistence farmer)						
Formal	-0.46(0.50)	-0.92	0.358	-0.53(0.51)	-1.04	0.299
Wetland based	-0.16(0.58)	-0.27	0.788	0.10(0.57)	0.17	0.868
Others	-1.83(1.05)	-1.75	0.080*	0.66(1.09)	0.61	0.542
Sex (ref = Female)						
Male	-0.41(0.38)	-1.06	0.289	- 0.11(0.41)	-0.26	0.793
Constant	-0.82(0.81)	-1.01	0.311	-3.64(1.00)	-3.62	0.000***
Log-Likelihood	-126.24			-113.13		
Test that all slopes are zero						
G	28.91			60.54		
DF	11			11		
P-Value	0.002			0.000		
Goodness-of-Fit Test: Hosmer-Lemeshow						
Chi-Square	7.36			5.84		
DF	8			8		
P-Value	0.498			0.665		

Table 3. Reported provisions in other laws supporting use of wetlands for food security

Provisions in other laws	Percentage
Guided use of wetlands for crop, livestock and fish farming	32
Restrictions on wetland drainage	18
No construction	16
Guided extraction of wetland products	14
No dumping	12
Empowerment of local and civil society organisations	6
No wetland ownership	2

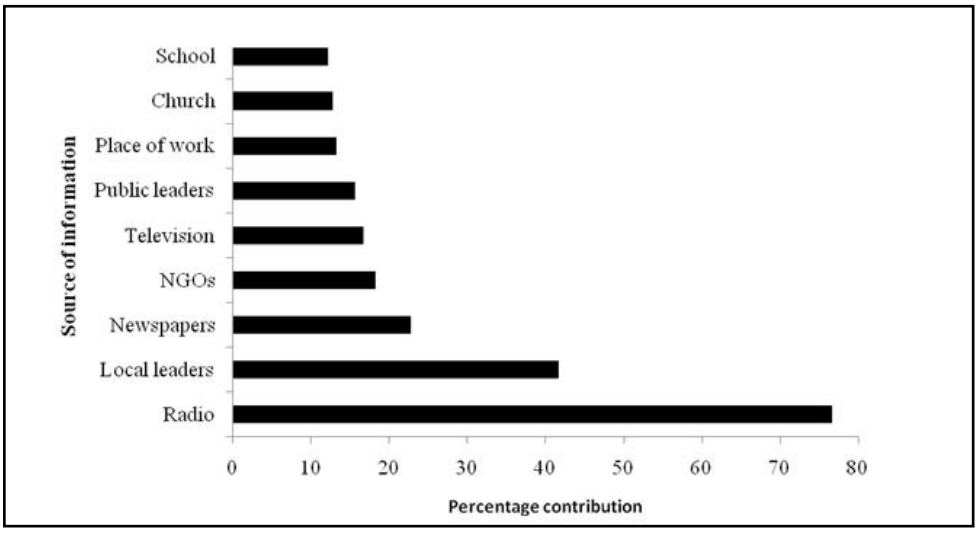

Figure 3. Sources of information on wetland policies and legal provisions among households settled adjacent to wetlands in Uganda

Table 4. Aspects perceived as not adequately addressed in Ugandan wetland policy and legislation

Aspect	Percentage
Law enforcement by LCs and Security personnel	32
Illegal activities	26
Community sensitization	15
Activities allowed in wetlands	9
Ownership and wetland margin	7
Buffer zone management	5
Encroachment	4
People are using wetland anyhow	2

Table 5. Benefits from enforcement

Benefits from enforcement	Percentage
Harvest of mature fish	36
Reduced crop and livestock farming in the wetland	31
Water regulation/Sustainable water supply	17
Increased local capacity to enforce byelaws	4
Increased awareness/knowledge base on functions and wetland laws	4
Reduced hunting of wetland animals	1

Sources of information on wetland policies and legal provisions. Local people reported access to a variety of sources of information on wetland policies and legislation (Fig. 3). The most frequently reported source was the radio followed by local leaders. The other notable sources of information on wetlands to the local people were newspapers, NGOs, television and public leaders.

Implementation and enforcement of wetlands policy and legal provisions. Most (77%) of the respondents were of the view that the policies and legal provisions on wetlands that support wetland use for improving food security while maintaining wetland integrity were not adequately enforced and the rest perceived otherwise. Respondents who were of the view that wetland policies and legal provisions that support wise use of wetlands for improving food security were not enforced attributed this failure to deficiencies in the operationalisation of the policies and laws. The key aspects of wetland policies and laws that the respondents perceived to be predisposing enforcement to failure included law enforcement by LCs and security personnel (32%), illegal activities (26%) and inadequate community sensitisation (15%) (Table 4).

Of the respondents (33%) who perceived wetland policy and legal provisions in the NEA and other relevant policies and laws to have been enforced in their agroecological zones, they attributed it to some benefits of enforcement that included harvesting of mature fish (36%) and reduced cultivation in wetlands (31%). (Table 5).

In the opinion of the local people, there was a range of best way to guide use of wetlands for improved food security while maintaining wetland integrity. (Table 6). Nearly 90% of the respondents perceived a need for locally tailored bylaws and ordinances. They proposed a number of provisions and/or regulations for inclusion in such by- laws for guiding wise use of wetlands for improving food security (Table 7).

Institutional arrangements for managing wetlands. Up to 77% of the respondents had someone talk to them about wetland management issues, and 68% were aware of a government body or committee at national level that guides use of wetlands for food security. However, local people perceived a need for a number of specific improvements (Figure 4).

At the national level, up to 90% of the respondents identified the Wetlands Management Department (WMD) whereas at the local community level, local government production committees were suggested by 72% of the respondents. Local people had varied opinion regarding the most appropriate way of communicating information about wetland policy and legislation (Figure 5).

Table 6. Suggested ways to guide wetland use

Ways to guide wetland use	Percentage
Development and enforcement of the law	51
Sensitization	21
Have guidelines for promotion of sustainable wetland practices	12
Land demarcation	8
Giving authority to local authorities	5
The Government should stop sale of wetlands	3

Table 7. Proposed legal provisions or regulations for inclusion in by-laws guiding use of wetlands

Proposed provisions or regulations	Percentage
Ban cultivation of crops in wetlands	41
Regulated harvesting of wetland products	28
Proper guidelines in place	19
Establish buffer zones	5
Clear ownership of wetlands	3
Land demarcation	3
Issue permits	1

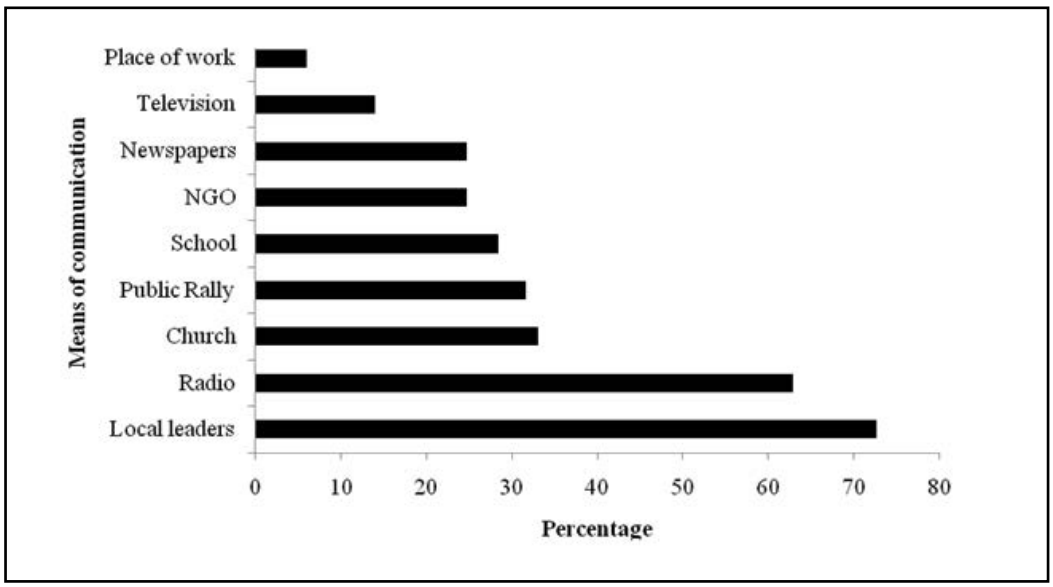

Figure 5. Preferred means of communication about wetland policy and legislation

DISCUSSION

Results of the study show that education and income status significantly influenced respondents' awareness of the wetland policy and provisions in other formal policies and laws. The results suggest that educated people are more likely to be able to comprehend information on wetland policy and legislation provided through various channels more easily than those not educated. In addition wetland policies and legislation might have formed part of the curriculum at some stage of the education system for those who had formal education. As a result educated people may deliberately sustain interest in such matters at other stages of their lives. People with higher incomes may be aware about wetland policy and legislation because they can afford to access copies of such documents. It may also be because they are in possession of gadgets such as radio and television which are commonly used by authorities to sensitise communities about issues of environmental policy and legislation. In Ethiopia, Mulugeta (2004) reported that wetland cultivation was commonly undertaken by the rich farmers due to their legal and customary access to the wetlands. Mulugeta (2004) also attributed wetland cultivation by the rich to their ability to afford labour for the task as opposed to the poor farmers. It may also be argued that since wetland cultivation in some places is dominated by the rich, they are bound to be more aware of the policy and regulatory framework for such wetlands by virtue of being stakeholders who after all are governed using these policies and laws.

Despite awareness of wetland policy and regulations amongst the educated and higher income earners, wetlands are more degraded among the rich and educated in urban and peri-urban areas. This is attributed to (i) industrial expansion in Uganda that target wetlands in urban areas; (ii) a situation of having many urban poor who depend on subsistence farming especially in the Lake Victoria Crescent agro-ecological zone comprising wetlands adjacent Kampala-the capital city of Uganda and nearby towns of Wakiso, Entebbe and Mukono and Jinja (formerly, an industrial city) (Turyahabwe *et al.,* 2013); and (iii) the fact that educated people being more aware of the wetland policy and regulations, can easily exploit the weaknesses in the policies and laws regulating wetland use.

Residents of both Lake Victoria Crescent and South western farm lands agro-ecological zones were significantly ($p<0.05$) more likely to be aware of provisions in other formal policies and laws than those from L.Kyoga agro-ecological zone. This can be attributed to sensitisation by conservation projects based in these localities. An example here is the Community Based Wetland Biodiversity Conservation Project (COBWEB) that is being implemented in the two wetland systems of Lake Mburo-Nakivale in Western Uganda (Amaniga-

Ruhanga *et al.,* 2009). The two wetland systems also have operational Community-based Wetland Management Plan.

As indicated in the results, only a small proportion (6%) of the households were aware about the informal or traditional rules and regulations for use of wetlands for improving food security and maintaining wetland integrity. This can as well be attributed to wetland management project activities that follow top down administrative procedures and routines with emphasis on formal rules and regulations thus weakening and phasing out the traditional rules and regulations. The lack of awareness about informal rules can also be pinned on the fact that the influx of people to wetland areas in search of livelihood opportunities as suggested by Halima and Munishi (2009). It may also be due to and settlement of immigrants in wetlands areas as is the case of refugees in Lake Nakivale Refugee settlement and the settlement of some of the communities who previously inhabited the areas now gazetted as the Lake Mburo national park around Lake Nakivale which has enhanced multiculturalism around wetland areas leading to dilution and/ or neutralisation of the traditional values of the original inhabitants of these areas. In addition, the wide consultations undertaken during the National Wetlands Programme with the aim of developing the national wetlands policy and the bottom up development of wetland management plans could have indirectly contributed to integration of some of the informal rules and regulations for managing wetland into the formal policy and law thus blurring any differences between the two.

The lack of awareness about provisions for wetland management in other legal documents can be attributed to the fact that not many local people exhibit literacy on legal matters. Although people may be aware of certain laws for managing wetlands, they may not be aware of which legal documents carry such provisions. In any case, sensitisation may not focus on the exact location of the laws perse but on their existence and interpretation. Furthermore, for purposes of creating awareness, legal provisions may be simplified into forms understandable to local people thus creating a gap in access to original legal texts.

Radios were the main source of information on wetlands because of the possibility of communicating information from one source to masses in a wide geographical area at a relatively affordable cost for both the sender and receivers compared to other methods such as meetings. In addition, methods of communication on wetlands through local leaders were common perhaps because local leaders are in touch with the local people by virtue of being members of the communities in which they lead. Secondly, local leaders also act as a link between agencies that are concerned with wetland conservation and management and therefore have better opportunities to access information through training that they can later deliver to local people. They are also law enforcement agencies in their communities; so they could be duty bound to sensitise people on the laws and policies for managing wetlands. In Uganda for example, local leaders such as local councils are involved in compliance Monitoring of Wetlands (MWLE, 2005).

Results show that local people recognise benefits of enforcement of wetland laws. However, despite the current recognition of wetland benefits, many potentially conflicting interests still exist, such as that between the interests of the users, including farmers and developers and conservationists and wetland managers. The Government of Uganda has put in place a number of policies and programme/ strategies aimed at lifting the local communities out of poverty, which include the Plan for Modernisation of Agriculture (PMA) (1997), Poverty Eradication Action Plan (PEAP), 2001, Vision 2040 and the 'prosperity for all' programme. These policies and programmes focus on the use of land resources, which is becoming increasingly scarce in many areas. The implication of such policies is that the people resort to using marginal areas such as wetlands for agriculture and meeting other livelihood initiatives. These policies will thus need to integrate concepts of sustainable wetland resource management as enshrined in the National Policy for the Conservation and Management of Wetland Resources, 1995. Conflicting interests are the source of much tension and controversy in current wetland protection policy. Although wetland policy attempts to reconcile some of these differences, many policies in the natural resources management will have to be modified to achieve consistency. Despite all the government legislation, policies, and programmes, wetlands will not be protected if the regulations are not enforced. Perhaps the best way to protect wetlands is to

educate the public of their benefits. If the public does not recognize the benefits of wetland conservation, wetlands will not be conserved. Protection can be accomplished only through the cooperative efforts of citizens.

Although Uganda is among the sub-Saharan countries with a strong environmental information system (Gowa, 2009), information flow to wetland users was minimal. This perhaps could be due to weak policy networks for information flow to end users. According to Jung (2009), strong involvement in policy networks is supposed to increase the satisfaction of regulatees with the regulatory process that makes it more likely that they will comply with the rules. This is because having various channels to the government agency charged with enforcement and policing, regulatees possibilities to misunderstand the regulation and can advise government agencies to modify the rules if they find out potential implementation problems. In addition, effective networks help policy actors coordinate their interests and make it easy to produce a mutually advantageous outcome.

The reported low level of implementation of wetland policy and provisions could perhaps also be due to the fact that wetland users consider wetlands as a source of survival, and less about its conservation. Especially, the poor communities have few reasons to support strict wetland regulations. Their major concern is food security, not wetland conservation which is a common-pool resource that cannot exclude other communities from obtaining benefits from its use (Ostrom, 1990). To some extent, this points to the fact that agencies and authorities responsible for implementation of wetland policy and regulations have not done much to sensitise the public (Mukasa, 2011). Wetland regulation requirements are just regarded as legal barriers to local development by imposing additional costs on it. Thus, wetland users and their local leaders support less stringent wetland regulation to facilitate local economic development.

CONCLUSION

A greater percentage of the community was aware of the wetland policies and legal provisions under the policy, but only a small proportion (6%) of the households exhibited awareness of the informal or traditional rules and regulations for use of wetlands for improving food security and maintaining wetland integrity. This is possibly due to wetland management project activities that follow top down administrative procedures and routines with emphasis on formal rules and regulations thus weakening and phasing out the traditional rules and regulations, but also as a result of the influx and settlement of immigrants in wetlands areas. There was also a lack of awareness about provisions for wetland management in other legal documents which can be attributed to the fact that not many local people exhibit literacy on legal matters. Although Uganda has a strong environmental information system, information flow to wetland users was minimal due to inadequate dissemination of information by regulatory authorities. Wetland enforcement was generally perceived to be poor because those who were aware about the policies and laws to be enforced were mainly the educated and high income earners who are not the majority. There is also danger that irrespective of improvement in awareness of the wetland policy and legislation in Uganda, enforcement is likely to remain poor due to limited livelihood options for local people as they use wetlands for food security and livelihood improvement. As longer as local communities have no viable alternative livelihood options, they may claim ignorance of wetland policy, regulations and laws that they do not agree with, a situation which may mask reality. Even where policies and regulations are known, the public in Uganda is suspicious over matters sensitive to use and management of common pool resources, making debate on wetland policy and legislation equally sensitive. Successful conservation of wetlands will thus depend on implementation of acknowledged legal provisions coupled with the crafting - and creation of awareness - of locally tailored by- laws and ordinances on wetlands.

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STATEMENT OF NO COFNFLICT OF INTEREST

We the authors of this paper hereby declare that there are no competing interests in this publication.

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