Mabamba Wetland System Ramsar Site and its Catchment: Current Challenges and Recommendations for Sustainable Management

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1. Introduction

This Issues paper flags the importance of the Mabamba Wetland System Ramsar site and its catchment considering the goods and services it offers to the local, national, regional and international communities. Furthermore, the key management issues in the Mabamba wetland system ramsar site and its catchment which require urgent attention and action for its sustainable management are identified. The paper has been developed through literature review, field observations and consultative interactions with key stakeholders in the Mabamba Wetland System and its catchment including members of community based organizations, non-governmental organizations staff, local government leaders and technical staff, technical staff of the Wetland Management Department of the Ministry of Water and Environment and representatives of the Catholic Church.

2. The Mabamba Wetland System Ramsar Site

Mabamba wetland system ramsar site is situated in Wakiso and Mpigi districts in Central Uganda, 00°07'N 032°21'E. It is located 55 km from Kampala through Nateete-Nakawuka road. It is an extensive marsh covering an area of 2,424 ha, stretching through a narrow and long bay fringed with papyrus towards the main body of Lake Victoria. Mabamba is an Important Bird Area (IBA). It is the only wetland near Kampala that hosts the globally threatened shoebill stock also locally known as *Bulwe.*

The site hosts and supports an average population of about 190,000 birds including 38% of the global population of the Blue Swallow *(Balaeniceps Spp.)* and the globally threatened Yellow Warbler. Communities in and around the districts of Wakiso and Mpigi highly depend on Mabamba Ramsar site catchment for socio-economic activities including; fishing, collection of raw materials for craft making, building materials and hunting. It is also one of the major sources of water for the communities. Due to its unique importance and benefits to users, Mabamba wetland system was designated as a Ramsar site on 15th September 2006. It is one of the twelve Ramsar sites in Uganda.

Wetlands are defined as areas, which are permanently or seasonally flooded with water and where plants and animals have become adapted. Thus, they are shallow water bodies with teaming life of complex fauna and flora (National Environment Statute, 1995).

According to WMD, (2010), *Ramsar sites* are areas identified under the international agreed convention on wetlands of international importance, especially as waterfowl sites. Wetlands are designated as ramsar sites because of the international importance. Thus, characteristics of ramsar sites include: support vulnerable, endangered or critically endangered or threatened ecological communities; support populations of plant and /or animal species important for maintaining biological diversity; support significant proportion of indigenous fish

Important Bird Areas are sites of global conservation importance, which are identified using birds to locate key sites for conservation across the globe. Thus, they are practical tools for conservation and contain various mammals, fish, reptiles and insects. Therefore, they are important biodiversity areas (Nature Uganda, 2010).

The Mabamba Wetland System Ramsar Site and catchment also has a forest researve (Kalangalo Forest Reserve) which is an intergral part of the Mabamba Ramser site ecosystem. The forest stretches about 8km and 337 hectares. The forest was gazetted in 1932 to protect Lake Victoria from siltation. It is an important forest for other functions to the community such as regulation of micro climate and rainfall formation; provisioning of forest products (e.g. timber, firewood, honey, firewood, herbs, wild fruits). The

forest provides habitat for birds and contributes to climate change mitigation through carbon sequestration and storage in its above and below-ground biomass. However, these products, services and functions are now being compromised by the escalating degradation of the forest reserve due to unregulated sand mining, illegal agricultural activities, charcoal burning and lumbering. Due to the forest degradation, most birds have migrated. In 2005, the forest reserve was classified by the National Forestry Authority as one of the industrial central forest reserve with a target of development of sufficient resource base for a viable future forestry industry in Uganda. Therefore, private investors are being encouraged to establish commercial timber plantations to attract wood processing industries in the district (NFA, 2005).

The rainfall in Wakiso and Mpigi districts where the Mabamba wetland system ramsar site and its catchment is located is bi-modal. There are two wet seasons running from April to May and October to November. The principal rainfall peak is in April while the minor one is in November. The dry months are January to February and July to August. The mean annual rainfall is 1320mm though in many areas of the lake zone it is between 1750 and 2000mm. The average monthly days of rainfall are 10. The minimum surface air temperature of the district is 11 C, while the maximum is 33 C. There is little variation in temperature throughout the year. There are two temperature peaks, one during the month of January – March and the other from July – September. However recently, climate change and variability has become a key challenge to agricultural activities in the area due to the various disasters like prolonged dry spells, heavy rain storms, more frequent and severe hailstorms all of which result into destruction of crop fields hence increasing the risks of food shortages in many households (National Environment Management Authority, 2010).

3. Key features in the catchment of Mabamba Wetland System Ramsar Site

a. Nansubuga cultural hill

This cultural hill is found in the catchment and is the most important cultural site for the Mamba Kakoboza clan of the Buganda Kingdom. The hill has cultural sites including tombs believed to be 600 years old; rocks with board games (omweso) and sacred forests (Nature Palace Foundation, 2010). It has an amazing view of Mabamba bay, Entebbe International Airport and Uganda's State House.

Figure 1. *Nansubuga Hill located within the Mabamba Ramsar site Wetland catchment in Kasanje, Wakiso district. Photo by EA.*

b. Mabamba caves

These caves were used by early people for shelter. They are today used by fishermen for shelter (Nature Palace Foundation, 2010).

c. Smallholder farmers

There are several smallholder farmers in the catchment undertaking agricultural production for their food security and income generation. They cultivate various crops (such as bananas, cassava, beans, maize) and rear livestock (cattle, goats, pigs) under a zero grazing system. Their activities can potentially be developed for additional income generation through agro-ecotourism.

4.0 Services and functions of Mabamba wetland system ramsar site and its catchment

The Mabamba wetland system ramsar site and its catchment offer the following services and functions:

a. Buffering capacity for Lake Victoria – protection of the lake from siltation arising from soil erosion from the agricultural lands of the smallholder farmers located in the catchment area which can destroy fish breeding grounds and, in the long term, can shrink the lake;

b. Contributes to underground water re-charge thereby contributing to the natural water cycle;

c. Provisioning of water for domestic use to the surrounding community in the catchment;

d. Fishing - the wetlands surrounding the lake banks provide a good environment for fish breeding. Thus, special sections of the wetlands serve as fish breeding sites. Besides, the nearby communities in the catchment fish in the wetlands. Hence, the species commonly fished from the wetlands include: Lungfish, Nile perch and Tilapia;

e. Regulation of local micro-climate;

f. Are a source of raw materials (e.g. papyrus) for making crafts such as mats, bags by the community for income generation;

g. Sand mining for construction and income generation for communities;

h. Source of medicinal herbs used by the community for treatment of several ailments and diseases such as malaria, cough, stomach pains, asthma;

i. Support eco-tourism activities and enterprises (such as bird watching) for income generation to the surrounding community. This is the key motivation for the community to guard and conserve the wetlands. Wetlands are carbon sinks which store carbon in the plant biomass and in the soil thereby contributing to climate change regulation. The annual carbon storage rate under wetlands is 10-20 times higher compared to other terrestrial systems (such as tundra, taiga, temperate, temperate deciduous forest, tropical rain forest, grassland and desert). The higher rates of carbon storage are attributed to the slower decomposition rates under anaerobic conditions (van der Valk, 2006). Given the size of Mabamba wetland system ramsar site and its associated forest, there is high potential for sequestration and storage of carbon in the soil, below-ground and above-ground biomass. However, the conversion of the forest reserve which is now underway to other land uses (agriculture and human settlement) will result in degradation and release of the stored carbon into the atmosphere resulting in further climate change disasters;

j. The soils in the Mabamba wetland system catchment support agricultural productivity thereby contributing to household food security and incomes among smallholder farmers. The soils in the catchment are generally classified as Ferralsols with a sandy loam texture. They are highly weathered and have been continuously cultivated. They have low inherent soil fertility and require management attention for increased and sustainable productivity (National Soils Policy, 1998).

The wetland soils include the following: sandy textured grey soils comprising of alluvium and hill wash materials; grey coarse sands from lake deposits; black and grey clays from river alluvium; and peat sands and clay formed from papers residues and river alluvium (Soil maps of Uganda, 1971).

5.0 Current and future management initiatives in the Mabamba wetland system ramsar site and its

There are various development initiatives in the Mabamba wetland ramsar site and its catchment. These are based on the different interests of the stakeholders. Table 1 presents the key interests, activities implemented so far and future plans of some of the stakeholders in the catchment.

Table 1. Stakeholders interest, activities and future plans for the Mabamba wetland system ramsar site and its catchment

Stakeholders	Interests in the Mabamba wetland system ramsar site and catchment	Key activities (previous & current) implemented so far	Future plans
Mabamba Wetland Eco-tourism Association (MWETA)	- Sustainable use and management of the catchment.	- Wetland based eco-tourism for income generation; - Mobilization and awareness creation of the community members about wetland wise use and sustainable use concepts.	- More awareness and training of community members about wetland wise use and sustainable management concepts, principals and their applications; - Strengthen investment in eco-tourism activities for increased income generation.
Community (including: farmers, fisher folk, herbalists, brick layers, sand miners, boat)	- Access of water for household use and consumption; - Access to wetland products such as fish, sand, bricks, herbs, papyrus for subsistence use and income generation.	Extractive activities including: fishing, sand mining, harvesting of papyrus, herbs.	- Continuously access and utilize the wetland resources/products for their livelihood.
Private sector – extractive activities (i.e. sand minors, fishing)	- Continuous access and utilization of the wetland resources/products for livelihood.	- Undertaking wetland products extractive activities such as sand mining, fishing.	- Continuously access and utilize the wetland resources/products.
Private sector – non extractive activities (i.e. tourism, service providers – transport, food)	- Provide services to their clients for income generation.	- Service delivery (such as transport, food/restaurant, guiding tourists) for the clients.	- Continuously provide services to their clients for their livelihood.
Wakiso District Natural Resources Department	- Sustainable use and management of the ramsar site and the catchment; - Regulating natural resources (wetland, forests, land, lakes and rivers) use and management through development of ordinances.	- Awareness creation among stakeholders about wetland wise use and sustainable management.	- Development and implementation of ordinances to guide sustainable environment and natural resources (wetlands, forests, lake, rivers) utilization and management.
Kasanje, Bussi and Kamengo Sub Counties	- Regulating natural resources (wetland, forests, land…) use and management through development of byelaws.	- Awareness creation among stakeholders about wetland wise use and sustainable management.	- Development and implementation of byelaws to guide sustainable environment and natural resources (wetlands, forests, lake, rivers) utilization and management.

Wetland Management Department	- Sustainable use and management of the ramsar site and its catchment; - Policy formulation and implementation.	- Awareness creation among stakeholders about wetland wise use and sustainable management; - Providing technical backstopping about wetland wise and management to various stakeholders.	- Facilitating the review and development of the management plan.
National Forestry Authority	Sustainable use and management of Kalangalo central forest reserve located in the catchment.	-Issued license to private developers for mining sand from the reserve; - Issued permits to private developers for planting trees in the forest reserve.	- Advancing tree planting in Kalangalo central forest reserve by establishing commercial timber plantations to attract wood processing industries in the district.
National Environment Management Authority	- Sustainable use and management of the catchment; - Monitoring compliance to wetland use and management.	- Review and approval of environmental impact assessments for key interventions in the wetland for instance sand mining in the wetland.	- Creating awareness about wetland wise use and sustainable management among stakeholders; - Monitoring compliance to environment and natural resources policies and laws.
The Catholic Church, Kampala Archdiocese	- As the main land lord in the catchment area is interested in development of the land; Sustainable use and management of the ramsar site and its catchment.	- Awareness creation among stakeholders about wetland wise use and sustainable management; - Planted pine trees in selected parts of the wetland catchment.	- Establishing development and investments on their land for income generation.
Voluntary Action for Development	- Protection and conserving of the surrounding environment; - Promotion of environmentally friendly activities that preserve the beauty of Mabamba wetland system ramsar site and its catchment.	- Improving water hygiene and sanitation through construction of school VIP latrines, pit latrines for the elderly and disabled; - Construction of water sources, rain harvesting and water jars; - Community sensitization in proper hygiene and sanitation in households.	- We expect to construct more water sources to increase on the percentage of safe clean water on the Bussi Island, Bussi sub county; - Build capacity of the settlers around the Mabamba wetland system ramsar site in the practices in good hygiene and sanitation of facilities i.e. Latrines and water sources.
Environmental Alert	- Sustainable use and management of the ramsar site and its catchment; - Food security and poverty reduction among communities; - Resilient communities to climate change impacts through strengthening adaptation, mitigation and disaster risk reduction.	- Awareness about the wise use and sustainable use management principles and concepts among stakeholders; - Supported communities in the catchment to establish alternative livelihood enterprises to reduce pressure on the wetlands and forests while delivering household food security and incomes; - Strengthening community based institutional development through awareness about policies and training on leadership, lobbying and advocacy skills; - Awareness of stakeholders about climate change impacts in the catchment, practical adaptation and mitigation practices and technologies.	- Support up scaling and out scaling best practices for wise use and sustainable use of wetlands, climate change adaptation and mitigation within the ramsar site and the catchment.
Nature Uganda	- Biodiversity conservation; - Biodiversity monitoring-Birds; - Community Empowerment;	- Trained community; - Provided birding equipment to MWETA; - Provided two tourism boats;	- Capacity building of community based on the capacity needs assessment ; - Provide funds to a community driven project

	- Eco-tourism development; - Community livelihood improvement; - Improving community awareness; - Alternative income generating activities; - Reduction of illegal activities in the Ramsar site; - Promotion of Mabamba as a key tourism site in Uganda.	- Providing administrative; support/guidance/materials; - Provided publicity materials, brochures, web page, sign posts; - Conducted a community resource mapping; - Finalizing a draft community management plan for the site; - Conducted a capacity assessment; - Conducted a stakeholder analysis.	proposal; - Resource mobilization to support livelihood and conservation activities.
Nature Palace Foundation	- Upholding the ramsar site status; - Eco-system based conservation; - Promoting community support of conservation initiatives; - Promotion of community benefit accruing from wetland resource.	- Supported the establishment of the Eco-tourism Information Centre for MWETA; - Initial landscaping & Compound development for centre and campsite; - Mapping and documentation of other tourist attractions in the catchment.	- Scientific research on impacts of mechanized sand mining within the Ramsar site to eco-system and species; - Advocacy and lobbying for political leaders/local government action to stop large-scale mechanized and other forms of large-scale degradation of the wetland; - Enhanced connectivity of conservation efforts in neighboring Mpigi District sharing the Ramsar site.
Ecological Christian Organization and Pathfinder International	- Conservation of Natural resources, family planning & reproductive health.	- Created awareness among stakeholders in Bussi sub county about the linkages between population, environment and health; - Trained 15 Peer educators trained in sustainable agriculture, agro forestry, land use planning & biodiversity conservation who are also training other community members; - Trained 30 women in energy saving technologies. So far community have constructed 1,700 energy saving stoves (Lorena & Shielded fire rocket stoves) and promoted use of solar lights; - Established a nursery for agro forestry trees; - Distributed and planted 129,604 seedlings (translated into 201 Hectares) to community members; - Distributed improved agro seeds to 250 households (maize, beans, cassava cuttings –NASE 14, banana suckers, vegetable); - Identified Model Beach Management Units (BMUs)- Mubembe in Jagusi, Kyanjazi in Bussi and trained them in : Sustainable fisheries, data collection, identification and demarcation of fish breeding areas and provided them with two 40 Horse Power boat engines to assist in patrolling against illegal fishers; - Trained 64 youths in Apiary and equipped them with starter up kits including beehives, protective gears;	- Support model BMUs with designation and protection of 9 fish breeding areas/grounds. (Community-wide sensitization & demarcation/marking of the breeding zones); - Support local capacities to conducting patrols, protection of protected fishing sites; - Support monitoring of fisheries activities (fisheries data collection reporting and management); - Promote innovative saving program (include leadership, working in groups, business skills, book keeping, credit & savings; - Promote innovative saving program (include leadership, working in groups, business skills, book keeping, credit & savings; - Support BMU to BMU monthly outreaches (BMU to BMU or Fisher to Fisher community sensitizations); - Facilitate energy saving groups to construct more stoves; - Organize Exposure Visits for community groups; - Support ongoing community efforts on tree nursery development and tree planting (Support grafting

		- A total 64 improved breeder goats provided to model households after training in animal husbandry practices. *Family Planning & Reproduction* - Trained service providers in provision of long-term family planning methods; - Equipped 2 Health facilities (i.e. Jagusi & Bussi) with solar lighting; - Trained and equipped Village Health Teams (VHTs) (Jagusi and Bwondha) in promotion of healthy timing and spacing of pregnancy and provision of selected methods of contraception; - Equipped Health facilities with implants and injectable contraceptives; - Trained Heath Workers on long term methods of family planning and emergency obstetrics care & life saving skills; - Recruited 2 Reproductive Health Officers and posted to the project sites of Jagusi & Bussi; - Sensitized all community groups on Population Health & Environment linkages; - Provided support to health facilities to conduct outreaches & campfire sessions aiming at men's' involvement in family planning, Antenatal & child immunization services; - Supported VHTs to conduct monthly community mobilization & referrals; - Provision of buffer stocks (condoms, commodities etc) to health facilities & for VHT distribution; - Provided tricycle ambulance to Jagusi Health centre II for emergency transport for women in labor.	existing root stocks (passion fruit, citrus, ovacado); - Support cluster members with revolving agricultural inputs. *Family Planning & Reproduction* - Train more service providers in provision of long-term family planning methods; - Train and equip VHTs (Jagusi and Bwondha) in promotion of Healthy timing and spacing of pregnancy and provision of selected methods of contraception; - Equip Health facilities with implants and injectable contraceptives; - Train Heath Workers on long term methods of Family planning and emergency obstetrics care & life saving skills; - Provide support to health facilities to conduct outreaches & campfire sessions aiming at men's' involvement in family planning, Antenatal & child immunization services; - Conduct outreaches in schools; - Support VHTs to conduct monthly community mobilization & referrals; - Provision of buffer stocks (condoms, commodities etc) to health facilities & for VHT distribution; - Support in data collection & reporting to all community groups; - Support to emergency transport for women in labor and other health complications.

6.0 Major management issues in the Mabamba wetland system ramsar site and its catchment

The following are the major management issues in the Mabamba wetland system ramsar and its catchment, which greatly compromise its integrity and ability to continuously provide the cherished goods and services:

i) Climate change disasters pushing community into the wetland and forest reserve resulting in further degradation

The climate change disasters such as prolonged droughts ranging between 2-4 months are already happening in the catchment. They severely affect crop and livestock production. Thus, community members have reported reduced yields resulting in household food insecurity and incomes. Consequently, more community members encroach on the wetlands and forests for survival through the stress period. This results in increased pressure of extractive activities in these natural resources, which in addition are associated with unsustainable and unacceptable practices. As a net result, there is accelerated degradation of the wetlands and forests resources. The other reported climate change disasters in the catchment include: heavy rains with strong winds and hailstorms which destroy property including houses, crop fields and at extreme involve loss of lives. These are very common in Bussi islands in Bussi Sub County.

ii) Escalating degradation in the Mabamba wetland ramsar site and its catchment

There is notable degradation in the catchment, particularly it occurs in the Mabamba wetland system, Kalangalo central forest reserve, deforestation of the slopes and hills and siltation and pollution in Lake Victoria. Some of the observed indicators of degradation in the catchment include: deforested forest patches, bare hills greatly affected by soil erosion, degraded patches in the wetland catchment due to unregulated sand mining, reduced fish population, some community members now use papyrus as fire wood for cooking. The causes of this accelerated degradation in the catchment is largely due to: Over dependence of population within and outside the catchment on firewood and charcoal for cooking; poor agricultural practices (i.e. bush burning, continuous farming without due nutrient replenishment, failure to establish soil and water conservation trenches across the slopes); Ignorance about environment and natural resources policies among communities and the public; Lack of ordinances and byelaws as supportive tools for enforcement of environment and natural resources policies and legislation implementation; Weak implementation and monitoring of policy implementation due to limited capacity (financial resources and staffing) by the Local Governments.

iii) Low investment in eco-tourism enterprises and activities

The Mabamba wetland system ramsar site and its catchment have a very big potential for tourism activities, which would fetch substantial revenue and foreign currency for the benefit of both the local community and the whole country. The weak investment in eco-tourism activities results in poor service delivery to the tourists and low revenue collection. However, the tourism attractions at the ramsar site and in the catchment require further development. Besides, the tourism investments should target to establish other services (hotels and accommodation, camping, community resource centre) which facilitate and support the tourism activities. The investment in eco-tourism activities should be guided and enshrined in a public private partnership. The tourism investment should be based on the following principals: Sustainable use

and management; Equitable sharing of benefits (such as revenue) among stakeholders along the chain; Community involvement and participation; Economic viability; Social and cultural acceptability; Building on existing initiatives; The provisions for environment, wetland management and community participation and involvement as provided for in the environment and wetlands policies and legislation should not be violated or compromised.

iv) Lack of a management plan for the whole Mabamba wetland system ramsar site and its catchment

The existing management plan was developed only for small portion in Wakiso i.e. Ssisa and Zziba parishes in Kasanje sub-county, thus it even left out other parishes (such as Buyege, Ssazi and Bulunbu). Furthermore, the wetland system stretches into other sub-counties including the neighboring islands in Bussi sub-county and Kamengo sub-county in Mpigi district. This presents a high risk for further degradation of the natural resources in the areas where there is no management plan considering that the communities and user groups are ignorant about the wise and sustainable use concepts and associated acceptable and unacceptable practices in the wetlands and forests. A management plan and associated land use plan is required to guide sustainable use and management of resources in the Mabamba wetland system ramsar site and its catchment.

v) Weak coordination and information sharing among stakeholders

The weak coordination and information sharing amongst the stakeholders implies that each stakeholder implements their own interventions with little or no knowledge of what the others are doing yet they are all targeting the same community. In the extreme cases, even the Local Government leadership both the political and technical leaders at the district and sub county levels are not aware of the various stakeholder interventions in the catchment. This result in duplication of efforts and the respective interventions by each stakeholder and could potentially yield conflicts. The weak coordination among stakeholders is attributed to the limited budget and logistics accessed by the District Wetlands Office to effectively implement this task. Secondly, the stakeholders who are implementing various interventions in the catchment do not proactively share information with the Local Government leadership and their fellow stakeholders. Subsequently, sustainability of stakeholder's development initiatives through monitoring and support for up and out scaling through the rolling Local Government programs remains in balance.

vi) Reduction in fish population and harvest

The reduction in fish population and harvests is largely due to overfishing using unacceptable practices (such as fishing young stock), pollution of the Lake Victoria as a result of siltation due to soil erosion from up slopes and destruction of fish breeding sites in the wetlands as a result of unregulated sand mining. The reduction in fish population and harvests means a loss of livelihood among the fishing communities in the catchment. Subsequently, they will have no immediate source of income thus compromising the quality of their lives. At the national scale, it means a reduction and/or loss of foreign exchange income. Hence, the Government would in the long term not be in position to finance the services (including education, health, roads) it is expected to deliver to the communities. Therefore, strategies which reduce pollution of the lake and others that prevent destruction of breeding sites for fish should be designed and implemented alongside promotion of commercial fish farming among the community members in the catchment.

vii) Population growth and urbanization within and outside the Mabamba wetland system ramsar site and its catchment.

The current population of Uganda is 27.7 million people. Given its high annual population growth rate estimated at 3.4%, Uganda's population is projected at 130 million people by 2050 (Population Reference Bureau, 2006). The Mabamba wetland system ramsar site catchment is shared by 3 sub-counties including Kasanje, Bussi and Kamengo. Kasanje and Bussi sub-counties are located in Wakiso district with a population of over 1.2 million people (Uganda Bureau of Statistics, 2011). Kamengo sub-county is located in Mpigi district and has a population of 33,700 people with an average population growth rate of 3% over the last decade and a population density of 230 people per square km. Kamengo sub-county has a population of 33,700 people (Uganda Bureau of Statistics, 2011).

Population and urbanization demands various services and products to sustain its life and well being. Such services include: food, housing and accommodation, education, health, energy. The delivery of these products and services to the population is associated with increased pressure on the natural resources base which most often provides the raw materials and or converted through land use change to pave way for new land uses such as urbanization, commercial agriculture production, infrastructure development (schools, hospitals, roads, markets). Therefore, the Mabamba wetland system ramsar site and its catchment being so close to the capital city is much likely to face the impacts of population growth and associated effects towards addressing its goods and services demands. Thus, it is strategic to develop a land use plan for the catchment and the sub county authorities in the catchment should develop urbanization plans and advance implementation of physical planning guidelines.

viii) Lack of ordinances and byelaws for environment and natural resources (wetlands, rivers, lakes and forests) management in the local government administrative units

The absence of ordinances and byelaws to guide the implementation of environment and natural resources (wetlands, rivers, lakes and forests) policies and laws stifles sustainable use and management of the environment and natural resources by the communities in the catchment. The major limitation for absence of ordinances and byelaws is the lack of capacity (in terms financial resources and staffing) by the Local Governments to facilitate the process for the development of the ordinances and byelaws.

7.0 Recommendations to advance sustainable use and management of the Mabamba wetland system ramsar site and its catchment:

The following recommendations should be considered to address management issues to advance sustainable use of the wetland catchment for continued provisioning of the goods and services:

(A) *Development of a management plan for the whole Mabamba Wetland ramsar site and its catchment*

i. The Wetland Management Department should lead a planning process involving all stakeholders (community, local government, civil society organizations, religious institutions, cultural institutions) to develop a management plan for the whole Mabamba Wetland ramsar site and its catchment in Wakiso and Mpigi districts.

(B) *Development of a land use plan at the site results in wrong location for various building and activities at the site*

(i) The Wakiso district (Natural resources department) to provide technical guidance for development and approval of the land use plan at the site to guide developers/users. The land use plan should be based on the existing environmental guidelines and regulations.

(C) *Strengthening coordination and information sharing among stakeholders results in duplication of efforts and initiatives*

(i) The Wakiso District Directorate of Natural Resources, in particular the District Wetlands Officer should conduct a stakeholders mapping to better understand the stakeholders in the ramsar site and its catchment and what they are doing. This should be updated on a regular basis to take note of any changes which may arise;
(ii) Regular stakeholders planning and information sharing meeting should be organized by the Wakiso District Directorate of Natural Resources in collaboration with Non-Governmental Organizations;

(iii) A Mabamba wetland system ramsar site and catchment management committee should be instituted comprising of key stakeholders in the catchment. This committee should be chaired by the Wakiso District Natural Resources Officer. This committee should meet on a quarterly basis to discuss management issues and make appropriate decisions.

(iv) The Wetlands Management Department should on a regular basis provide the necessary back stopping to the committee (for instance guidance regarding the terms of reference for the committee) and other stakeholders in the ramsar site and its catchment.

(D) *Promoting sustainable use and management of the Mabamba wetland system ramsar site and its catchment*

(i) The National Forestry Authority should guide and coordinate re-planting of trees in Kalangalo forest reserve. In this arrangement even the community (i.e. MWETA) should be considered and supported to participate actively through collaborative forest management arrangements.

(ii) The National Environment Management Authority and the National Forestry Authority should ensure that sand minors, both companies and individuals, follow the regulations and refill and replant the mined areas. The licenses of those who are flouting the regulations and guidelines should be cancelled and additional penalties should be imposed for flouting the regulations and guidelines.

(E) *Promote increased and sustainable fish productivity from the Mabamba wetland system ramsar site*

(i) Regular monitoring and surveillance by lead institutions (such as Ministry of Agriculture, Animal Industry and Fisheries, National Environment Management Authority, Wetland Management Department, District Environment Officer, Sub County Wetlands Focal Point) in close collaboration with community and community based organization should be done to prevent further destruction of breeding sites for fish and the use of illegal fishing gears and practices.

(F) *Effective planning and service delivery top the increasing population in the Mabamba wetland system ramsar site catchment*

(i) The Wakiso and Mpigi districts Local Governments (through their physical planning departments) with technical support from lead institutions in the Ministry of Water and Environment (i.e. Wetlands Management Department, National Environment Management Authority and National Forestry Authority) should advance the development and implementation of urbanization and physical development plans for the peri-urban centers in the catchment;

(ii) The Ministry of Health and other relevant stakeholders should create more awareness about family planning and health among the communities in the ramsar site and the catchment.

(G) *Advancing community climate change adaptation and mitigation within the Mabamba wetland ramsar site and its catchment*

(i) Stakeholders (including community based organizations, non-governmental organizations, local government, wetland management department, religious and cultural institutions) in the catchment implementing development activities in the catchment should create more awareness about climate change impacts and support community resilience to climate change impacts through adaptation and mitigation. Thus, the following actions should be promoted to advance long term community climate change adaptation and mitigation: farm forestry and agro-forestry; commercial fish farming using appropriate technologies; planting drought resistant and early maturing crop varieties; appropriate water for production and irrigation technologies and practices; energy saving stoves, solar energy and bio-gas for better household energy utilization.

(H) *Promoting increased investment in eco-tourism enterprises and activities for better services delivery to the tourists and increased revenue generation from the sector*

(i) The existing community initiatives and investments in eco-tourism enterprises should be supported and strengthened;

(ii) The landlords (including the largest landlord i.e. the Catholic Church- Kampala Archdiocese) in the catchment should explore possibilities for investment in eco-tourism through establishing public private partnerships with interested investors.

(I) Development and implementation of ordinances and byelaws for environment and natural resources (wetlands, rivers, lakes and forests) management to guide policy implementation at the community and local levels difficult

(i) The Government through the Ministry of Finance, Planning and Economic Development should allocate funding to facilitate the development and implementation of ordinances and byelaws for environment and natural resources (wetlands, rivers, lakes and forests) management;

(ii) The Non-Government Organizations should collaborate with the relevant Government institutions to facilitate the development and implementation of ordinances and byelaws for environment and natural resources (wetlands, rivers, lakes and forests) management.

Conclusion

The Mabamba wetland system ramsar site and its catchment provide tremendous goods and services to the local, national, regional and international communities. However, these goods and services are now in jeopardy due to the numerous challenges in its catchment such as increased population growth and urbanization, climate change impacts, poor land use and management practices. These challenges result in various management issues in the catchment. These issues should be addressed through involvement of all stakeholders at different levels.

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About Environmental Alert

Environmental Alert (EA) was founded in 1988 and has developed and transitioned to into a leading National Non-Governmental organization contributing to an enabling policy environment for sustainable agriculture and sound environment and natural resources management at community, local, national and international levels. EA is officially registered with the NGO Board as a Ugandan non-governmental organization (NGO), incorporated as a company limited by guarantee. EA is governed by an Independent Board that is responsible for providing strategic oversight of the organization including ensuring its integrity as a voluntary service organization.

EA is a ***1st prize winner*** of the Energy globe award for environmental sustainability-2005 under the category, earth. EA is a member of the International Union for Conservation of Nature (IUCN) and a Member of The IUCN National Committee for Uganda.

EA envisions, ***'Resilient and dignified communities, managing their environment and natural resources sustainably.'***

EA's mission is to, ***'Contribute to improved livelihoods of vulnerable communities by enhancing agricultural productivity and sustainable natural resources management.'***

Program and institutional Components:

1. Environment and Natural resources management;
2. Food security and Nutrition;
3. Water, Sanitation and Hygiene;
4. Finance and Administration;
5. Resource mobilization and Investment.

Scale of Implementation:

EA operates in selected districts for generation of evidence to inform policy engagements on agriculture, environment and natural resources at National and International levels. EA undertakes area wide targeted awareness on selected issues in agriculture, environment and natural resources engagements

EA is a Secretariat for following networks:

a) The Network for Civil Society Organizations in Environment & Natural Resources Sector (ENR-CSO Network);
b) Uganda Forestry Working Group;
c) The Standards Development Group; and
d) Promoting Local Innovation in ecologically oriented agriculture and natural resources management (PROLINNOVA-Uganda Network).