

FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE THE CONTRIBUTION OF WETLAND RESOURCES TO PEOPLE'S LIVELIHOODS

A CASE STUDY OF NALWEKOMBA WETLAND IN NAMASAGALI SUB-COUNTY, KAMULI DISTRICT

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A research report submitted to the Faculty of Natural Resources and Environmental Sciences in partial fulfillment of the award of a bachelor of Science Degree in Natural Resources and Environmental Economics of Busitema University.

MARCH 2022

DECLARATION

I, Abitegeka Margret hereby declare that this work on" The Contribution of Wetland Resources on Peoples
Livelihoods, A Case Study of Namasagali Sub-county, Kamuli District" is my original piece and has never been
submitted to any University or Institution of higher learning for the award of a degree in any field for any academic
purposes.
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APPROVAL

This is to certify that **Abitegeka Margret** carried out the study on" The Contribution of Wetland Resources on Peoples Livelihoods". A Case Study of Namasagali Sub-county, Kamuli district "under my supervision as academic supervisor and therefore approved for submission for the fulfillment of the requirements for the award of Bachelor of Science in Natural Resource Economics of Busitema University.

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DEDICATION

I dedicate this report to the Almighty God that has provided the knowledge and understanding to the completion of this piece of work, am so grateful and humbled.

I also dedicate this work to my parents Mrs. Atugonza Caroline and the late Mr. Tumusiime Geofry, relatives and friends who have been unseasoned pillars of support, encouragement and admonishment throughout my academics and life at large.

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LIST OF ABBREVIATIONS

NEMA - National Environmental Management Authority

GDP - Gross Domestic Product

IWMI - International Water Management Institute

MEA - Millennium Ecosystem Assessment

KM² - Kilometer Squared

KG - Kilogram

US\$ - United States Dollar

% - Percentage

/⁰ - Degree

⁰C - Degree Celsius

SPSS - Statistical Package for Social Scientists

N - Number

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ABSTRACT

There are numerous benefits the society receives from wetland resources all over the world. Nalwekomba wetland located in Kamuli district, has for a long time been associated with improving people's livelihood but has never been studied. This study was carried out to assess the contribution of the Nalwekomba wetland resources to people's livelihoods and also assess the factors influencing or limiting people's utilization of these resources. Semi-structured interviews, direct observations, key informant interviews and review of secondary data sources were used for data collection. A total of 80 respondents were used in the study, 47 of which were females and 33 were males.

Data was coded in Microsoft excel and analyzed using Statistical Packages for Social Sciences (SPSS) version 20 and Excel to get descriptive statistics.

Responses showed that the wetland contributes directly to people's livelihood through provision of water for domestic use, fertile land for crop growing, fishing, pasture for livestock grazing, brick making and others like craft materials such as papyrus. The income generated from activities done in Nalwekomba wetland is mostly used to cater for domestic expenses and educating their children. Water availability for domestic use and availability of land for crop growing for food security and incomes were considered the major contributions of Nalwekomba wetland to the livelihoods of the local people around it. There is need for community sensitization to enable communities appreciate the contributions of wetlands to the communities and the country at large, as well as guiding them on how to maintain their sustainably. The study also recommends adoption of environmentally sustainable strategies in the utilization of Nalwekomba wetland resources for the sustainability of community's benefits from this resource.

CHAPTER ONE: INTRODUCTION

1.0 General introduction

This chapter covers the background and objectives of the study, problem statement, the general objective, specific objectives, research questions and scope of the study.

1.1Background to the study

Wetlands are defined as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing; fresh brackish, or salty, including areas of marine water the depth of which at low tide does not exceed six meters (Ramsar Convention, 2016). This definition is similar to the definition set forth by the National Wetlands Management and Conservation Policy of 1995,"an area that stays wet long enough for only certain plants and animals to grow even when there is no rain." Wetlands are characterized by; impended drainage, length of their flooding period, depth of water, soil fertility, and other environmental factors vary with different wetlands (National Policy for the Conservation and Management of Wetland Resources, 1995).

Globally, wetlands occupy about 5.5% of the earth's surface area and 95% of these wetlands are freshwater; the rest are marine or estuarine. Wetlands occupy 8.9% of Uganda's total area and the current estimate of land is 26,600km (National Environment Management Authority, 2020). Wetlands as areas where plants and animals have become adapted to temporary or permanent flooding conditions (National Policy for the Conservation and Management of Wetland Resources, 1995), It includes permanently flooded areas with papyrus or grass swamps, swamp forests or high-attitude mountain bogs, as well as seasonal floodplains and grasslands. Wetlands are characterized by; impended drainage, length of their flooding period, depth of water, soil fertility, and other environmental factors vary with different wetlands.

Wetlands have played a critical role in the livelihoods of people for millennia. They have been sources of food and water for people living in often dry and semi-arid environments (Scoones, 1991) cited in (Wood, Alan, & Mathew, 2013). For example, in Zambia, wetlands are estimated to contribute around 5% of gross domestic product (GDP) (Wood, Alan, & Mathew, 2013). They often support the poorest people in the region. Their economic benefits are often more significant than a simple measure of their contribution to GDP. In Tanzania's Kilombero Valley, wetlands contribute up to 80% of cash income for the poorest households (McCartney, L-M, & Max,

REFERENCES

Ministry of Water and Environment. (2013). *National Water Resources Assessment*. Kampala: Ministry of Water and Environment (MWE).

World Bank Collections. (2020). Uganda-POPULATION, Females (% of Total).

Adrian, G., Jennifer, A., O'Keefe, S., Gonneea, Meagan, E., Brosnahan, et al. (2015). *Continous monitoring data from Herring River wetlands*. Cape cod, Massachuetts: Northeast Region: WOODS HOLE COASTAL & MARINE SCINCE CENTER.

Andrade, G., & Rhodes, J. (2012). Protected areas and local communities: an inevitable partnership toward successful conservation strategies. Ecology and Society.

Arthington, A., Lorenzen, K., Pusey, B., Abell, R., Halls, A., Winemiller, K., et al. (2004). River Fisheries:ecological basis for management and conservation. *Mekong river commission* (pp. 31-60). Cambodia: Phnom Penh.

Authority, N. E. (2020). National Environment Management Authority.

Barbier, E., Acreman, M., & Knowler, D. (1997). *Economic valution of wetlands: A guide for policy makers and planners*. Glad, Switzrland: Ramsar Convetion Bureau.

Carol A Johnston, P. D. (2009). Sediment and nutient retention by freshwater wetlands: Effects on surface water quality. *Critical Reviews in Environmetal Control*, 500-502.

Carvalho, G., Moutinho, P., Nepstad, D., Mattos, L., & Santilli, M. (2004). An Amazon perspective on the forest climate connection:Opportunity for climate mitigation. *Conservation and development*, 163-174.

Chukwuma, B., Ekene, G., & OB, N. (2007). Importance of wetland resources, their threats and the need to protect them. *International Scholars Journal*.

Cyril, D., & Isabelle, C. (1971, February 2). The legal Development of the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat. *Ramsar convention Bureau*.

Davidson, N. (2014). Long-term and recent trends in global wetland area. *Marine and freshwater Research*, 934-941.

Dent. (1986;1992). Acidic Sulphate Soils: A Baseline for Research and Development; Reclamation of acidic suphate soils. Wageninggen, Netherlands: ILRI Publication 39;.

Dent. (1992). Reclamatin of acidic sulphate soils. Springer-Verlag, New York: ILRI publication 39.

Di, B., Elshamy, M., van, G., Soliman, E., Kigobe, M., Ndomba, P., et al. (2011). Further hydrology and climate in the River Nile basin: a review Hydrol. Sci.J.

Emerton, L., & Muramira, E. (1999). *Uganda BIodiversity: Economic assessmwnt*. Kampala: National Environment Management Authority.

Ewel et al; Cole et al. (1998;1999). Different kinds of mangrove forests provide different goods and services; Structure of mangrove trees and forests in Micronesia. Global Ecology and Biogeography Letters 7; Forest Ecology and Management.

Finlayson, M., & Moser, M. (1991). Wetland facts on file. Wetlands, 224.

Garraway, C., Authur, R., Chamsingh, B., Homekingkeo, P., Lorenzen, K., Saengvilaikham, B., et al. (2006). A social science perspective on stock enhancement outcomes: lessons learnt from inland fisheries in Southern Lao. PDR.

Giri et al;Twilley and Day;Krauss et al. (2011;2013;2014). Status and distribution of Mangrove forests of the world using earth observation satelite data;Mangrove wetlands;How mangrove forests adjust to rising sea level. Global ecology and Biography;Estuarine Ecology;New Phytologist.

Hughes, J. M. R; Windmeijer, P & Andriesse, W; Scoones, I. (1995;1993;1991). The current status of European wetland inventories and classifications; Inland valleys in West Africa: An Agro-Ecological Characterization of Rice-Growing Environments; Wetlands in drylands: Key resources for agricultural and Pastrol Production in Africa. Wageningen: Ambio: Vegetation; International institute for Land Reclamation and Improvement.

Inocencio, A., Hilmy, S., & Douglas, J. (2003). *Innovative approaches to agricultural water use for improving food security in Sub-Saharan Africa*. IWMI.

International Water and Management Institute. (2014). Wetlands and People, retrived from Lanka: http://www.iwmi.cgiar.org/Publications/Books/PDF/wetlands-and-people.pdf. Colombo,Sri Lanka.

Isabelle, B., Andrew, M., Rafael, R., Gabriel, A., Sara, B., & Francois, C. (2020). Assessing the Increase of Snakebite Incidence in Relationship to Flooding Events. (A. Radfar, Ed.) *Journal of Environmental and Public Health, Volume 2020*.

Kaggwa, R., AA, V. D., GS, B., Kansiime, F., & Patrick, D. (2009). Uganda using organically manured seasonal wetland fish ponds. *Increasing fish production from wetlands at Lake Victoria*, 257-277.

Kamukala, G.L & Crafter, A. (November, 1991). Wetlands of Tanzania. *Proceedings of a Seminar on the Wetlands of Tanzania*, 27-29, p. 169pp. Morogoro.

Kansiime, F., Nalubega, M., & Tukahirwa E.M. and Bugenyi, F. (1994). THE POTENTIAL OF NAKIVUBO SWAMP (PAPYRUS WETLAND) IN MAITAINING WATER QUALITY OF INNER MURCHISON BAY-LAKE VICTORIA. *The African Journal of Tropical Hydrobiology and Fisheries*, 2.

Kapanda, K., Matiya, G., N'gong'ola, D., Jamu, D., & Kaunda, E. (2005). A logistic analysis of factors affecting adoption of fish farming in Malawi:a case study of Mchinji rural development programme. *Journal of Applied Sciences* 5(8), 1514-1517.

Kizito, C., & Nsubuga, E. (2014). *Individualization of common wetlands in Uganda and the role of changing economic opportunities: a case study of Igogero wetland, Iganga district.* Iganga: Makerere University.

Lamsal, P., K.P. Pant, L., Kumar, and, K, Atreya. (2015). Sustainable livelihoods through conservation of wetland resources: a case of economic benefits from Ghodaoghodi Lake. Western Nepal: Ecology and Society.

Maltby, E., & Turner, R. (1983). Wetlands of the World. Geographic Magazine.

Marambanyika T and Beckedahl H;Dixon A,Wood A and Hailu A. (2016;2021). Wetland utilisation patterns in semi-arid communal areas of Zimbabwe between 1985 and 2013 and the associated benefits to livelihoods of the surrounding communities; Wetlands in Ethiopia: Lessons from 20 years of Research, Policy and Practice. *Transactions of the Royal Society of South Africa 71; Wetlands 41*, 175-186; 20.

McCartney, M., L-M, R., & Max, F. (2010). distribution and contribution of agriculture to livelihoods. *Wetlands of Sub-Saharan Africa*, 557-572.

McNEILL, J. (2000). Something New Under the Sun: An Environmental History of the Twentieth-Centuary World. Norton New York.

Millennium Ecosystem Assessment. (2005). *Ecosystem Assessment: Ecosytems and human wellbeing wetlands and water synthesis*. Washington DC: World Resources Intitute.

Ministry of Finance Planning and Economic Development. (2006). *Ministry of Finance Planning and Economic Development, retrived from https://wedocs.unep.org.*

Moses, O. (2000). *State of the Environment Report*. Uganda: National Environmental Management Authority.

Muchapondwa, E. (2003). *The economics of community-based wildlife conservation in Zibabwe* . rapport nr.:Econmic Studies.

National Enironmental Management Authority. (1998). *National Environment and Management Authority, retrived from https://ir.kiu.ac.ug.*

National Environmental Management Authority. (2004). *National Environment Management Authority, retrived from http://www.natureuganda.org*.

National Environmental Management Authority. (2011). *National Environmental Management Authority report, retrived from http://nema.go.ug.*

National, W. (1995). National Policy for the Conservation and Management of Wetland Resources.

NEMA-Uganda. (2010). State of Environmental Report. Kamuli: NEMA-Uganda.

Nepal. Ecology and Society 20(1):10, retrived from http://dx.doi.org/10.5751/ES-07172-200110.

Ntshane BC and Gambiza J;Wangai PW,Burkhard Pand Muller F;Musasa Tand Marambanyika T. (2016;2016;2020). Habitat assessment for ecosystem services in South Africa;A review of studies on ecosystem services in Africa;Threats to sustainable utilization of wetland resources in Zimbabwe.

International Journal of Biodiversity Science Ecosytem services and management; International journal of sustainable Built Environment; Wetlands Ecology and Management, 242-254;228-245;681-696.

O'Connell, M. (2003). Detecting, measuring and reversing changes to wetlands. *Wetlands ecology and management*, 397-401.

Okechi, J. (2004). *Profitability assessment: A case study of African catfish farming in the Lake Victoria basin*. Kenya: United Nations University-Fisheries Training Programme.

Ollis et al. (2015). The development of classification system for inland aquatic ecosytems in South Africa. *WaterSA 41*, 727-745.

Opio, A, J.K, L., I, S., & C, O. (2011). Soci0-economic benefits and polution levels of water resources, Pece wetland, Gulu municipality. *African Journal of Environmental Science and Technology*, 535-544.

Osbahr, H., Twyman, C., Thomas, D., & Adger, W. (2008). *Effective livelihood adaptation to climate change disturbance: scale dimensions of practise in Mozambique* (Vol. 39). Geoforum.

Prigent, C., F, P., F, A., C, J., W, B., & E, M. (2012). Changes in Land surface water dynamics since the 1990s and relation to population pressure. Geophys.

Purushottam, N., Ashwini, B., Narasannavar, & Mubashir, A. (2015). "Knowledge, attitude and practice Regarding Risk factors of Coronary Heart Disease among students Pursuing Technical Education in Belagavi City". *International Journal of Advanced Research*, 220 - 224.

Purushottam, N., Ashwini, B., Narasannavar, & Mubashir, A. (2015). "Knowledge, attitude and practise Regarding Risk factors of Coronary Heart Disease among students Pursuing Technical Education in Belagavi City". *International Journal of Advanced Research*, *3* (7), 220-224.

Ramsar Convention. (2016). An introduction to Ramsar Convention on Wetlands, retrived from Comprehensive Remote Sensing,2018. *previously The Ramsar convention Manual, seventh edition*. Ramsar, Iran: Ramsar Convention Secretariat.

Ramsar Convention Secretariat. (2011). The Ramsar convention manual:a guide to convention on wetlands (Ramsar, Iran, 1971). *Ramsar Convention Secretariat*, (p. 5th ed). Gland, Switzerland.

Resources, M. o. (1995). *Uganda National Policy for Conservation and Management of Wetland ReSOURCES*. Republic of Uganda.

Russi, D., P, t., A, F., T, B., D, C., J, F., et al. (2013). *The Economics of Ecosystem and Biodiversity for Water and Wetlands*. Glad, London and Brussels: IEEP,Ramsar Secretariate.

Scoones, I. (1991). Wetlands in Drylands: Key Resoucres for Agricultural and Pastoral Production in Africa. *Forestry and the Environment*, 367.

Sinthumule N I. (2021). Global Ecology and Conservation. Elsevier B.V.

Smith, L., Nguyen-Khoa, S., & Lorenzen, K. (2005). Livelihood functions of inland fisheries: Policy implications in developing countries. *Water policy*, 359-386.

Taruvinga, A., & Mushunje, A. (2010). Socio-economic factors that influence households' participation in wetland cultivation: a binary logistic regression of wetland cultivators and cultivators.

Tom, K. (2016). Working Paper retrieved from http://hdl.handle.net/1834/457 29/04/2022 07:44:01 An Overview of African Wetlands. Ramsar Bureau, Switzerland: Technical Officer for Africa.

Turyahabwe, N., Willy, K., Mnason, T., & David, M. (2013). *Contribution of wetland resources to household food security in Uganda*. Uganda: Agriculture and Food Security.

Verburg, P., Kathleen, N., & Linda, N. (2011). *Challenges in using land use and land cover data for global change studies*. Global change biology.

Verhoeven, J. T., Arheimer, B., & Hefting, C. Y. (2006). Regional and Global concerns over wetlands and water quality. *TRENDS in Ecology and Evolution*, 98.

William, J., James, G., Zhang, L., & Chritoper, J. (2009). *Wetland ecosytems*. Hoboken, New Jersey: John Wiley& Sons.

William, J., Mitsch, James, G., & Gosselink. (2015). Wetland Hydrology. In J. William, Mitsch, G. James, & Gosselink, *Wetlands* (pp. 112-113). Hoboken, New Jersey: John Wiley & Sons.

William, J., Mitsch, James, G., & Gosseslink. (2015). Peatlands. In J. William, Mitsch, G. James, & Gosseslink, *WETLANDS* (p. 413). Hoboken, New Jersey: John Wiley & Sons.

Wood, P., Alan, D., & Mathew, P. (2013). *Wetland management and sustainable livelihoods in Africa*. Routledge: Earthscan from Routledge.

Xie, Z., X, X., & L, Y. (2009). Analizing quantitative and qualitative changes in coastal wetland associated to the effects of natural and anthropogenic factors in a part of taijin, China. *Estuarine*, 379-386.

Zidan, A., Kaunda, E., Phiri, A., Khalil-Edriss, A., Matiya, G., & Jamu, D. (2007). Factors influencing cultivation of the Lilongwe and Linthipe River banks in Malawi:a case study of Salima District. *Journal of Applied Sciences* 7(21), 3334-3337.