

ACCESS TO AND UTILIZATION OF WETLAND RESOURCES IN THE KINGDOM OF ESWATINI: A CASE OF LUSHIKISHINI CHIEFDOM

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ABSTRACT

This study focused on assessing how community members access wetland resources, how they use wetland resources, as well as whether community members have knowledge on any threats to the existence of wetland resources and on national legislations governing access to and the sustainable use of wetland resources. Data was collected by using semi-structured face-to-face interviews administered to 104 heads of households selected through simple random sampling at Lushikishini chiefdom, Eswatini. Key informants included personnel from national bodies mandated to regulate the utilization of natural resources in Eswatini. The findings indicate that there are control measures towards access to wetland resources at Lushikishini chiefdom, however, their enforcement remain a major challenge. Wetlands were found to be predominantly a source of fibre plants in the chiefdom, and the major threat to their sustainability being uncontrolled livestock grazing. Also, community members lacked knowledge on national legislations governing utilization of wetland resources. Therefore, there is a need for enforcement of control measures and raising of awareness on national legislations to ensure sustainability of wetland resources in Eswatini.

Keywords: Wetland resources, Lushikishini chiefdom, Access, Utilization, Sustainability, Fibre plants, Control measures,

INTRODUCTION

Wetlands are defined as distinct ecosystems that are inundated by water, either permanently or seasonally, where oxygen-free processes prevail. The primary factor that distinguishes wetlands from other forms of water bodies is the characteristic vegetation of aquatic plants adapted to the unique hydric soil (Keddy, 2010). Water saturation largely determines how the soils develop and the types of plant and animal communities living in and on the soil. Furthermore, wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favour the growth of specifically adapted plants and promote the development of characteristic wetland soils. Wetlands, generally, include pans, swamps, marshes, lakes, flood plains, river and streams banks (Votteler, 2002).

In the Kingdom of Eswatini, wetlands are divided into three, namely: palustrine, lacustrine and riverine system (Mwendera, 2003). The palustrine refers to wetlands that are vegetated and have more than 30% emergent vegetation and are non-channel systems (Mwendera, 2003). The lacustrine system is situated in a topographic depression or a dammed water channel (Mwendera, 2003). It has greater than 30% areal coverage with little or no vegetation coverage (Mwendera, 2003). Finally, the riverine system refers to wetlands connected by rivers, which are usually found along the edges of rivers, streams, and creeks (Mwendera, 2003). It mostly has fresh water and is associated with streamside vegetation. Among the three systems, the riverine system is the most common type of wetlands in the country, and the sustainable utilization of wetland resources has become a major policy issue in the Kingdom of Eswatini (Sah and Heinen, 2001).

Among the major reasons for placing great emphasis on the sustainable use of wetland resources is that a number of plant species with different economic significance (especially for the craft industry) are found in wetlands. For instance, wetlands in Eswatini are characterized by the presence of hydrophytes such as floating plants, *Typha (Libhuma)*, *Phragmites (Umhlanga)* and *Cyperus (Lukhwane, Incoboza, Incoshana and Insikane)* plant species (Masarirambi, Manyatsi and Mhazo, 2010). In other parts of the world such as the Diawling wetlands of Mauritania, wetland plant species which characterize the area include: *Sporobolus robustus*, a perennial grass which is used for making mats and materials for fishing, *Acacia nilotica*, which delivers the tannins for traditional leather tanning and *Oryza tium* wild rice, which provides food (Acre et al., 1985). In addition to standing water that attracts different animal and plant species, wetlands are also known for hydromorphic soils. Considering the contribution of wetlands to biodiversity and well-being of most rural communities, the sustainable utilization of wetland resources is important for the sustainability of rural livelihoods, especially in the Kingdom of Eswatini where the craft industry remains a major employer for rural women.

Wetland areas are very valuable natural resources in Eswatini as they are also recreation and tourism attraction sites, as well as used for small-scale agricultural production (Mwendera, 2003). As already alluded to, most of, if not all, the plant species that are found in wetland areas are important economic resources for women in the country. For example, *Cyperus articulatus* and *Schoenoplectus corymbosus* plants are used for making food mats, sleeping mats, bags, and baskets, hence provide economic livelihood to many rural women (Edje, 2006). This, therefore, justifies the need for these resources to be managed in a sustainable way and protected for future generations, hence advance the concept of sustainable development.

In a study by Dragan *et al.* (2010) it was proven that natural resources from wetlands have a good economic value. The study also reported that about 80% of the population in the Southern African Development Community (SADC) region generates income from plants that grow wild or through cultivation. Furthermore, medicinal plants from wetlands generated an average of US\$ 32.1 million per year, followed by fuel wood which generated about US\$ 13.5 million per year. Wetland resources are sold in towns with the highest value for the products obtained from direct sale to tourists. These products represent the main source of cash income for many indigenous people in Africa, hence the sustainable use of wetland resources becomes crucial for the development of rural and urban communities in Africa (Jensen and Balslev, 1995). The dominant plant species that are usually harvested are *Lukhwane* (*Cyperus latifolius*), *Incoboza* (*Cyperus articulatus*), *Lukhasi* (*Festuca costata*) and *Lutindzi* (*Coleochloa setifera*) (Dlamini, 1981).

The wetland resources, especially fibre plants, in general are used for weaving a number of products which include sleeping mats, table mats and thatching ropes. The fibre plants from wetlands in the Kingdom of Eswatini are mainly used for making woven craft products. They include: sleeping mats, mini versions of sleeping mats, wall decorative hangings and trays for fruits and vegetables. These plants are mainly harvested during the winter months (June to August). The reported annual income from harvested wetland plants used for craft ranges from E200 to E4 000. Some people earn between R501 and R1 000 per annum, and others earn between E1 001 and E2 000 per annum (Zwane and Masarirambi, 2009).

Women in most rural areas, due to high unemployment rate in the country, find themselves with no other option, but to sell handicrafts made from the hydrophytes found in wetlands. Furthermore, the livelihoods of the rural poor and of late urban poor in Eswatini mainly depend on selling handicrafts. As such, 70% of the stock of handicraft products made from fibre plant in Manzini and Mbabane was discovered to be coming from *Cyperus articulatus*, whose long leaves were used to make a number of products (Boitumelo, 2010). Prices charged by crafters in Manzini are comparable to those charged by women of KwaZulu Natal province in South Africa as observed by Mander and Letty (2004). The economic contribution of handicraft products to family lives is significant, although difficult to quantify. This also emphasizes the importance of sustainable use of wetland products for sustainable rural livelihoods in rural Africa.

There are a number of threatening factors to the sustainable utilization of wetland resources and the dominant concern is overgrazing of wetlands by livestock. The majority of wetlands that are accessible to members of the community fall under communal land ownership that is not fenced. Livestock grazing is, therefore, not controlled, leading to overgrazing and subsequent land degradation and loss of indigenous plant species. Wetlands sustainability is also threatened by invasive alien plant species, which are spreading rapidly in the Kingdom of Eswatini. The major threat is posed by the triffid weed (*Chromolaena odorata*) and wild tobacco bush (*Solanum mauritianum*) (Manyatsi, Mhazo and Masarirambi, 2010).

On the other hand, wetlands are gradually drying up as water is increasingly diverted and/or abstracted from rivers and streams for irrigation and domestic purposes. Some wetlands are deliberately drained to allow cropping activities and construction of homesteads. Similar practices of wetland degradation have previously been reported. In a bid to curb the imminent loss of wetland ecosystems, some private land owners strictly deny communities access to wetland resources

within their premises (Masarirambi, Manyatsi and Mhazo, 2010). There is, therefore, a great need for sustainable management of the natural resources found in wetlands. This study, therefore, assessed access to and utilization of wetland resources at Lushikishini chiefdom.

Problem statement

As observed by Masarirambi, Manyatsi and Mhazo (2010), Eswatini does not have a clear policy on wetland use and management. The overall management of wetland resources is, however, on an *ad hoc* basis through several uncoordinated pieces of legislation. These legislations spread among a number of ministries as well as other institutions outside the government. Moreover, they are aimed at solving specific issues without due consideration of harmonization. Enforcement of these regulations remains the main challenge and the sustainability of wetlands in the country remains highly questionable. Apart from Eswatini Environment Authority (EEA), Eswatini National Trust Commission (ENTC) and Ministry of Agriculture (MOA), other organizations and ministries do not have a legal mandate to prosecute environmental offenders. However, most people in the country do not abide by the pieces of legislation (Government of Swaziland, 1972), which threatens the sustainability of wetland resources in the country. This, therefore, justifies the need for communities to come up with their own local rules and regulations to ensure that wetland resources are utilized in a sustainable way. This study, investigated whether access to and utilization of wetland resources in the Kingdom of Eswatini is controlled or regulated at the chiefdom level, using Lushikishini as a case study. The main objective of the study was to assess access to and utilization of wetland resources in the Kingdom of Eswatini, using Lushikishini as a case study. The specific objectives were:

- ❖ To investigate how community members access wetland resources at Lushikishini chiefdom.
- ❖ To document wetland resources and their uses at Lushikishini chiefdom.
- ❖ To investigate whether community members have knowledge on the threats militating against the existence and sustainable use of wetland resources at Lushikishini chiefdom.
- ❖ To investigate whether community members have knowledge on national legislations regulating access to and the use of wetland resources at Lushikishini chiefdom.

MATERIALS AND METHODS

Study area

Lushikishini chiefdom is found between latitudes 26°46'0"S and 26°47'0"S longitudes and 30°52'0"E and 30°51'0"E (Figure 1). It is located in the Highveld physiographic region of the Kingdom of Eswatini. It falls under Phondo *Inkhundla* and its nearest town is Mankayane. The Highveld physiographic region where Lushikishini is located, is humid. It receives annual rainfall of approximately 1 406mm. The highest amount of rainfall is received in summer. Average maximum and minimum monthly temperatures are up to 23°C and 13°C, respectively; however, these temperatures vary according to the season of the year (Word Climate Guide, 2017). This kind of climate is ideal for the growth of the plants/vegetation as the sunlight (temperatures) and humid conditions promote plant growth. Moreover, the relatively high rainfall amount received promotes the hydration of wetlands, thus promoting the growth of wetland plants which are the focus of this study.

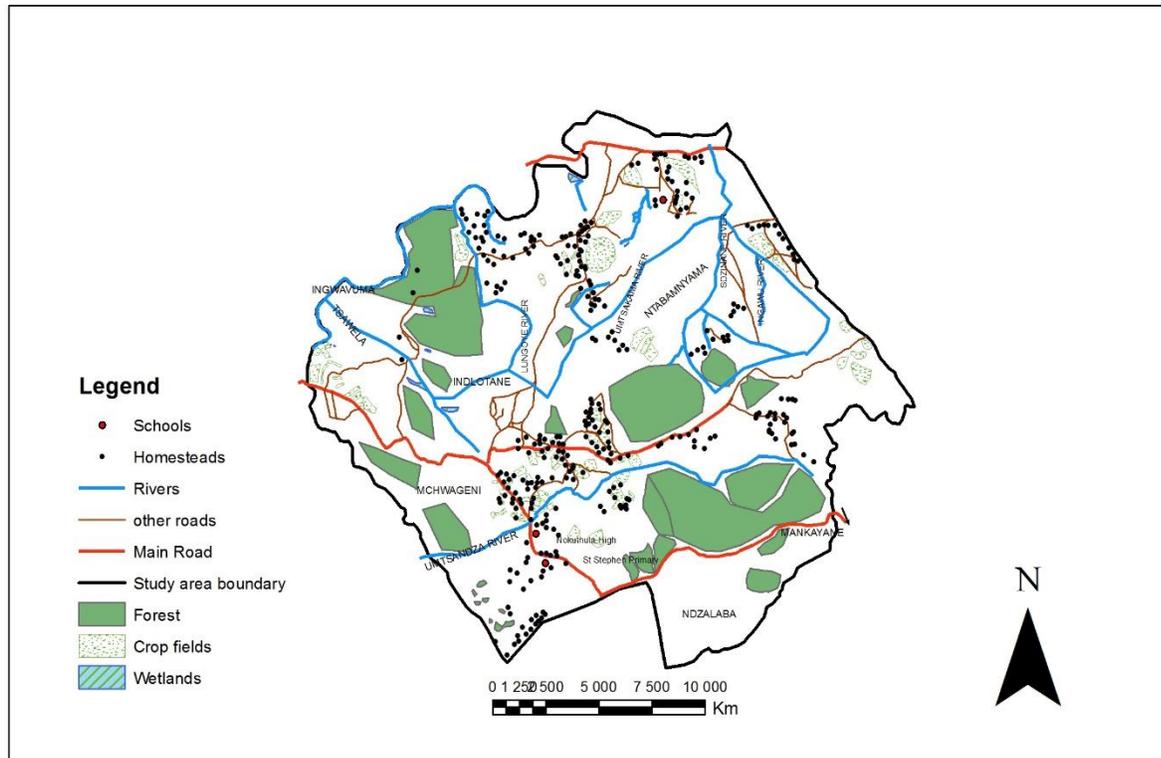


Figure 1: Lushikishini chiefdom

Lushikishini chiefdom is drained by rivers and streams. The major river passing through the area is the Ngwempisi River. Other rivers include: *Umtsandza, Umtsakama, Tsawela, Ingawu, Luhlelo, Sdzinane, Lungoye, Indlotane, and Mawelawela* (Figure 1). Some of these rivers have distributaries whose banks end up harbouring the fibre plants which contribute to the livelihood of most community members. The area is also characterized by valleys and hills. The hills include *Ntabamnyama, Ngwebendze, Ding'zembe, Ndzalaba, Gongodza, Lubisi, Phondo, Bhece Liyahlababa, Mchwageni, Ngwagwili, Hhoko, Mevana, Ntsabankhulu, Sompentjane* and *Ntabamhlophe* (Figure 1).

The Highveld physiographic region where Lushikishini is located is characterized by intense weathering and leaching with very deep soil formation (Ferrisols and Ferralitic soils). The soils have low clay and low base saturation of the exchange complex (Masuku, 1994). These soils promote cultivation of food crops like maize and the growth of vegetation, which include commercial and natural forests, and wetland fibre plant species among other plants.

Research design

This study employed a cross-sectional design, also known as a survey. According to Brynard (1991), surveys are often seen as prime examples of quantitative research. According to Krejcie and Morgan (1970), the strengths of field surveys are their external validity, their ability to capture and control for a large number of variables, and their ability to study a problem from multiple perspectives or using multiple theories.

Information collected

Data was collected using a questionnaire, and it comprised the respondents' knowledge on existing government legislations on the conservation of wetland resources. This kind of information assisted in assessing whether government legislations are effective and enforced at chiefdom level. Information on local control measures was also acquired through the questionnaire. This helped in determining if chiefdoms like Lushikishini have control measures for the sustainable use of wetland resources at chiefdom level. Furthermore, community members' knowledge of threats to the existence of wetland resources and the sustainable use of these resources was also acquired. This helped in ascertaining whether community members at Lushikishini knew about possible threats to the existence of wetland resources and their sustainability. Information on wetland resources and their uses was also collected; information on whether the resources were used for economic or domestic use and the value of the resources was acquired. This helped to determine if the wetland resources were of economic importance to the people of Lushikishini or not. This also enhanced the need for controlled access to wetland resources, especially if they were of economic importance to the people. Finally, information on the community members' recommendations on how wetland resources can be protected to ensure sustainability was also acquired.

Sources of information

The study targeted heads of households, community leaders, namely; *Bucopho*, headman (*Indvuna*), ward elder (*Umsumpe*) and inner council members (*Bandlancane*). Key informants were institutions whose mandate focus on natural resources protection and preservation through sustainable use, and these were: Eswatini Environmental Authority (EEA) and Eswatini National Trust Commission (ENTC).

Lushikishini chiefdom had 1035 homesteads from which 104 were sampled. According to Brynard (1991), a table for calculating sample sizes, suggested by Stocker (1985) can be used to calculate a sample size. It points out that for a population of 1 000, 14% of the population can be taken as a representative sample. This study, therefore, sampled 10% (104 homesteads), of the total population because as you go down the table, the larger the population the smaller the sample suggested. The sample size was determined using the sample size calculator, based on a confidence interval of 9.10 and a confidence level of 95%.

Data collection

Data was collected using in-depth personal interviews, guided by questionnaires. The questionnaires were administered to heads of households, community leaders and officers from EEA and ENTC. The questionnaires comprised open and closed ended questions. The data was presented using graphical techniques, tables and narratives.

RESEARCH FINDINGS

This chapter focuses on presenting the findings of the study. The findings indicate that 20% of the respondents were males and 80% were females, which depict that most of the respondents were females. In the same vein, most the respondents were unemployed (64.4%), while 17.3 % self-employed and 18.3% employed. When looking at age against employment status, the

findings depict that there were generally more respondents who are unemployed in all the age groups compared to those who are either employed or self-employed (Figure 2). Due to the fact that most of the respondents were unemployed, a majority of them depended on selling handicrafts made from the hydrophytes found in wetlands. This therefore emphasized on the importance of the protection of wetlands and sustainable use wetland resources as they are of economic importance.

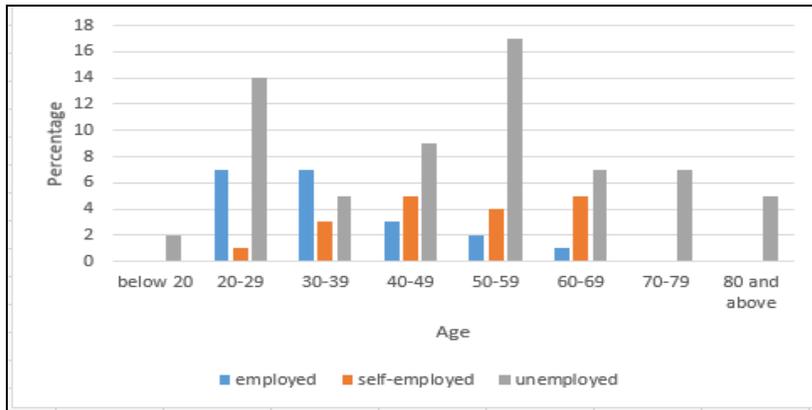


Figure 2: Respondents' occupation against age

Community members' access to wetland resources

According to the respondents, the Chief stipulated that community members can harvest wetland resources (fibre plants) in May up to August every year. This was communicated to community members during community meetings at the Chief's kraal. The reason given by community leaders for choosing this time of the year was because the Chief and other community leaders held a belief that fibre plants prevent lightning from striking the area, therefore the plants should not be accessed in summer. The Chief and the other community members selected a group of people under community leaders (*Bomangwana*) to ensure that community members adhered to the control measure. Moreover, a fine in the form of a cow or an equivalent amount of money was levied on offenders, and was to be paid to the Chief as a means of control to ensure that the wetland resources were utilized in a sustainable manner.

From the findings, 82.7% of the respondents indicated that there were control measures to ensure sustainability of the resources, while 17.3% argued that there were none. The responses were influenced by distance of homesteads to the Chief's royal kraal, such that respondents from distant homesteads often failed to attend community meetings, where the control measures were deliberated on. Regarding adherence to the measures for controlling access to wetland resources, 16% of the respondents indicated that they adhered to them, while 61% did not abide and 23% were not sure. The majority of the community members did not abide by the local control measures because of several reasons. Firstly, some did not even know about the existence of the control measures, while some pointed out that it was because they were not enforced, instead they only existed on paper. This, therefore, means that even though control measures do exist at Lushikishini chiefdom, they are, however, ineffective and this compromises the sustainability of the wetland resources in the community.

Uses of wetland resources

Concerning the use of wetland resources, 96.2% of the respondents indicated that they used wetland resources, while 3.8% claimed that they did not use wetland resources. Among those who used the resources, 36% fetched water for domestic use, 7% collected water to irrigate their crops, 50% collected fibre plants from the wetlands and 7% used the wetlands for cultural purposes (Figure 3). This shows a generally high dependency for community members on wetland resources at Lushikishini chiefdom and attest to the importance of enforcing rules to enhance the sustainable use of these important resources. As already indicated, wetlands are mainly a source of fibre plants which are used to raise income for most families. This is, therefore, a justification for the need to control access to wetland resources as well as protect them to ensure that they are used in a sustainable manner.

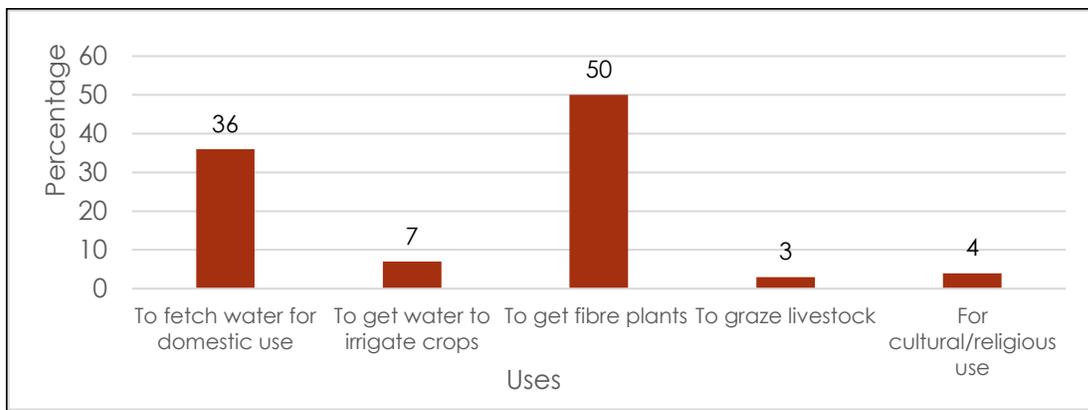


Figure 3: Uses of wetland resources

When occupation of respondents was cross tabulated with how they used wetland resources, those who are employed used wetlands mainly to get fibre plants, which shows 7.7%, those who are self-employed also used wetlands mainly to get fibre plants and constituted 20.4% of the respondents (Figure 4). Most of the unemployed respondents rely on wetland resources for their livelihood, especially fibre plants (Figure 4). This shows that the major use of wetlands and wetland resources at Lushikishini is harvesting fibre plants species. This is particularly done by unemployed community members. Moreover, even those who are employed also use wetland resources to get fibre plants, which indicate that the wetlands resources are not only used by the unemployed. Therefore, the findings depict that occupation does not affect the use of wetland resources.

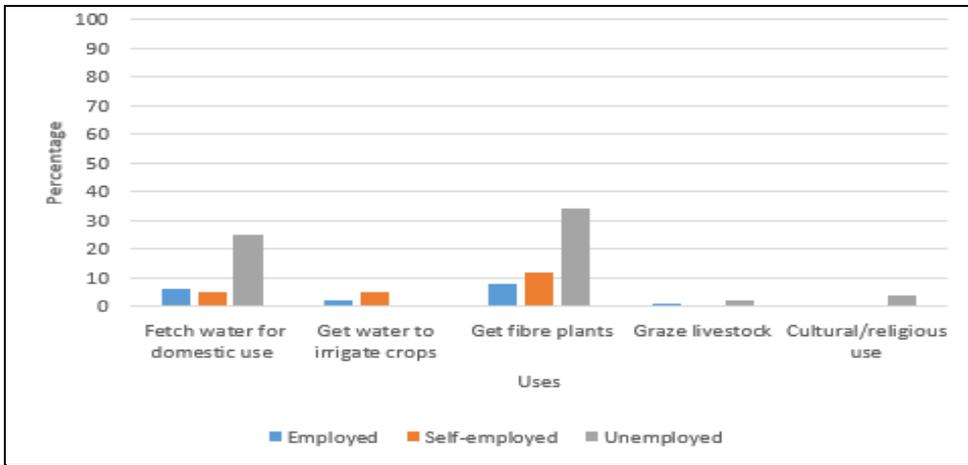


Figure 4: Cross tabulation of occupation and uses of wetlands

Regarding estimation of the value of the resources when sold, 14.4% of the respondents estimated the value at less than E200 per month, 17.3% at E200-E400 per month, 14.4% at E401-600 per month, 12.5% at E601-800 per month, 23.1% at E801-1000 per month, 9.6% above E1000 per month and 8.7% were not sure (Figure 5). This shows that wetland resources help community members raise their income level, especially, those that receive between E801-1000 per month and those that receive above E1000 per month. Controlling the use of wetland resources and ensuring that such resources are utilized in a sustainable manner remain crucial for the welfare and economic progress of rural communities in Eswatini. The money derived from wetland resources helps community members to survive especially because most of them are unemployed and thus rely on the wetland resources for income. Some of them indicated that they do not see the need for them to be employed because handicrafts helped them make money on a weekly or monthly basis. Concerning the usage of wetland resources, EEA and ENTIC confirmed the usage of wetland resources for economic purposes. This shows that the organizations are also aware that community members use wetland resources to enhance their livelihood, hence the need for the regulation of access and utilization.

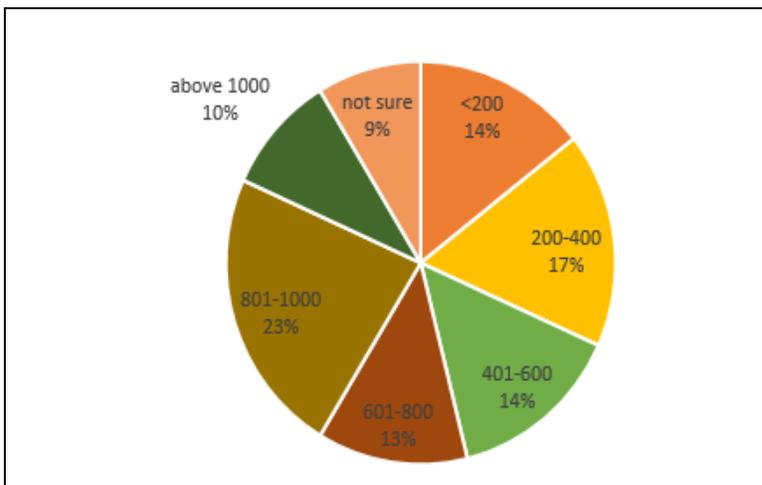


Figure 5: Estimation of income in Emalangeneni received per month

Concerning distance from and uses of wetlands, respondents closer to wetlands mainly use them to collect water for domestic purposes, followed by those collecting fibre plants. While those further away from wetlands mainly access wetlands for collection of fibre plants. This is because accessing water is much easier for respondents closer to wetlands than those further away. Moreover, respondents who are located away from rivers, streams and wetlands either have community boreholes, taps and tanks from where they collect water for domestic purposes. This therefore shows that distance from wetlands does affect community members’ usage of wetlands.

Threats to the existence of wetland resources

The main threat to the existence of wetland resources was found to be uncontrolled livestock grazing (95%). Another notable threat to the existence of wetland resources was the use of wetlands to collect water for domestic purposes (3%) (Figure 6). The same sentiments of uncontrolled livestock grazing being a major threat were also shared by traditional authorities of Lushikishini chiefdom. From the point of view of EEA and ENTC, the main threat to the existence of wetland resources is encroachment by settlements, followed by waste disposal in wetlands and then overgrazing or uncontrolled livestock grazing. All these threaten the sustainability of wetlands and undermine the efforts to conserve these important natural resources in rural Eswatini.

Despite the severity of the threats, community leaders pointed out that nothing was done towards alleviating them. Nonetheless, EEA argued that through the National Environment Fund, they assist communities to rehabilitate degraded wetlands and promote their sustainable utilization by rural communities. They further indicated that they have also engaged traditional leaders about the importance of not allocating land on wetlands for settlements and controlling livestock grazing on wetlands. Moreover, they indicated that the community is the one which leads the whole rehabilitation process by offering labour and also ensuring that the access to the wetland is controlled. The environmental impact assessment (EIA) process is one tool that they also use to curb the encroachment into wetlands by developments.

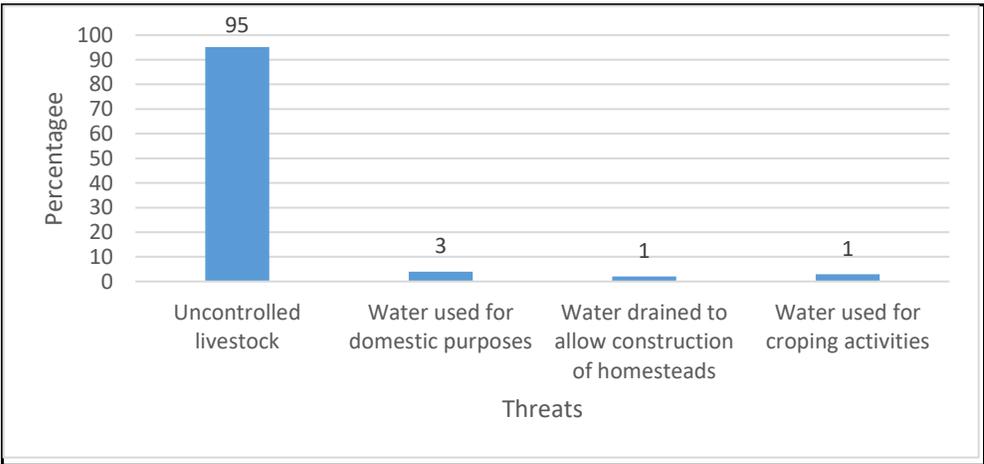


Figure 6: Threats to the existence of wetlands and wetland resources

Knowledge on national legislation governing access to and usage of wetland resources

Community leaders, like heads of households, indicated that they do not have any knowledge about the existence of national legislations governing management of wetland resources. This shows a lack of awareness on legislations regulating access to and use of wetland resources. A total of 39.4 % of the respondents who had attained primary education did not know about national legislations (Figure 7). While 25.04 % of the respondents who had secondary education, 19.2 % with high school education and 15.4% with no formal education also had no knowledge on the legislations (Figure 7). Although most people had formal education, this did not translate to enhancement of people’s knowledge of wetland management legislation since wetland studies were not a specific component of the school curricula.

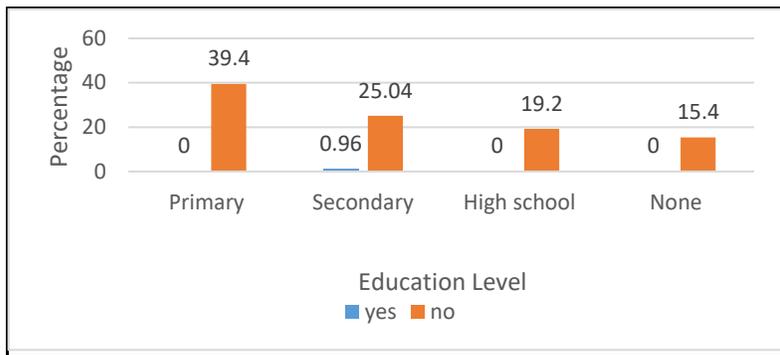


Figure 7: Cross tabulation of education level and knowledge on legislations

The ENTC and EEA pointed out that there is the Environmental Management Act 2002 (EMA) and Stream Banks Regulations which prohibits any form of activity within 33m from the river bank. Nonetheless, the organizations (ENTC and EEA) decried that the EMA act is insufficient, hence there was an ongoing process of coming up with a new legislation governing access to and usage of wetland resources in the country. Regarding some of the provisions of the legislation, EEA and ENTC indicated that Section 64 states that a protection order may be served if an activity is believed to result or is likely to result to adverse effects on wetlands.

Regarding involvement of community members when coming up with legislations, the organizations (EEA and ENTC) pointed out that they involve communities. They indicated that this was done through stakeholder consultations. This was done during drafting of the legislation and before Parliament can pass any law. Noteworthy is that, there is a national consultation when that proposed law is discussed in parliament. Concerning raising awareness, the organizations (EEA and ENTC) pointed out that they use radio programmes, which are aired on Monday morning (*Imvelo Yakitsi/ Temvelo*), and another one by PELUM Eswatini on Wednesday afternoon to promote the sustainable utilization of wetlands in the country. All these programs address environmental issues and legislations as well as aid in raising awareness. Moreover, newspapers and pamphlets are also used to raise awareness about conservation of natural resources including wetland resources.

Regarding enforcement of the legislations, EEA and ENTC indicated that they sent representatives from time to time, and with the help of community police, they manage to enforce the legislations. They also pointed out that offenders were made

to pay fines which are collected by some community leaders (*Bomangwana*), which are later given to the representatives from the organizations.

DISCUSSIONS

The overall observation is that Lushikishini chiefdom has strategies (measures) employed to control and guide access to wetland resources, to ensure these resources are used in a sustainable way. However, the findings show that community members do not abide by the control measures. This, therefore, justifies the need for communities in the Kingdom of Eswatini to come up with strategies for enforcing the control measures formulated by communities themselves. The concept of control measures involves communities coming up with strategies to enforce rules guiding access to and utilization of natural resources of which wetland resources are not an exception. These findings are corroborated by Edje (2006), who observed that in Eswatini, with the help of a group of local people, community members only harvest *Papyrus* for handcrafting after every four months. The group also reported illegal users of wetland resources, for example, some hunters were once reported and fined heavily (Edje, 2006). This, therefore, shows that some communities in the Kingdom of Eswatini have control measures at community level, although, their enforcement is still a challenge.

The findings also concur with those of Dlamini and Lupupa (1995) who observed that in Eswatini, as a conservatory strategy set at community level, the traditional system restricts the cutting of certain plant species at specific times of the year to allow for the plants to propagate or ratoon for sustainability. Interestingly, the findings of Masarirambi, Manyatsi and Mhazo (2010) in Eswatini also validate those of the present study as some respondents also indicated that they feared that if they harvested fibre plants at any time, their community would be prone to being struck by lightning. Similarly, Masarirambi, Manyatsi and Mhazo (2010) also highlighted that traditional restrictions are also linked to the cultural beliefs that prohibit the harvesting of certain plants from wetlands in order to avoid occurrence of natural disasters.

Wetland resources and their uses

Fibre plants are generally the major wetland resource used by communities in the Kingdom of Eswatini. For example, the study discovered that a majority of respondents used wetlands mainly to source fibre plants. In turn, the fibre plants are either used to make handicrafts or sold unprocessed as raw material. These findings are similar to those of Manyatsi, Mhazo and Masarirambi (2010) who observed that all homesteads in Bethany and Dwaleni chiefdom in Eswatini either harvested indigenous plant species for making craft for sale or sold the harvested plant material unprocessed. The dominant plant species that were harvested were *Lukhwane* (*Cyperus latifolius*), *Incoboza* (*Cyperus articulatus*), *Lukhasi* (*Festuca costata*) and *Lutindzi* (*Coleochloa setifera*).

Wetland resources can be used to enhance the livelihoods of people living in the rural areas since 23% of the respondents reported that they received between E801-E1000 per month. This, therefore, indicates that wetland resources, particularly fibre plants, have a high economic value, which in turn improves income levels for some rural communities. These findings are in line with those of Moses (2008) who discovered that handicrafts from fibre plants found in wetlands are massively important in terms of balance of payments and the economic development of India. The findings are also corroborated by

Mwendera (2003) who observed that a number of plants that are found in wetland areas are important economic resources for women in the country. This highlights the importance of sustainable use of wetland resources.

Threats to the existence of wetlands and wetland resources

Wetland resources and their sustainability are mainly threatened by uncontrolled livestock grazing (95%). Regardless of community members having identified the threats to the existence of wetland resources, there was however, nothing being done by the community to alleviate the threats. These findings are in agreement with those of Masarirambi, Manyatsi and Mhazo (2010) who also observed that uncontrolled livestock grazing and overgrazing were the major threats to the existence of wetland resources in the Kingdom of Eswatini. Similarly, Manyatsi, Mhazo and Masarirambi (2010) also indicate that among the several threats to the sustainability of utilization of wetland resources, overgrazing is critical in the Kingdom of Eswatini. Moreover, the majority of wetlands that are accessible to members of the community fall under communal land ownership, and dominantly not fenced. Furthermore, Schuyt (2005) also corroborate the findings of this study having observed the major threats to wetland resources at the Hadejia-Nguru wetlands in Nigeria. These were uncontrolled livestock grazing, over intensification of agricultural activities, overuse of wetland resources and creation of space for construction of homesteads. For instance, uncontrolled livestock grazing lead to overgrazing and subsequently land degradation and loss of indigenous plant species (Manyatsi, Mhazo and Masarirambi, 2010).

Knowledge on legislations governing access to and utilization of wetland resources

From the findings, it emerged that community members do not have knowledge on the existence of national legislations governing access to and the use of wetland resources. Generally, national legislations are enacted to regulate and control the use of natural resources including wetlands. In an effort to raise awareness or capacitate community members about conservation of natural resources including wetlands, the ENTC and EEA reported that they rely on radio programmes, newspapers and pamphlets. Moreover, the existence of legislations is on an *ad hoc* basis except for the Environmental Management Act of 2002. The findings are substantiated by Mbereko (2008) who observed that the absence of knowledge of wetland law was high in Zimbabwe. In turn, this threatens effective wetland management as evidenced by resource degradation driven by prohibited activities such as draining and drilling. Similarly, the findings are also corroborated by the IUCN (1997) which observed that although the Kingdom of Eswatini has legislations and policies that have some implications on sustainable utilisation and management of wetlands, community members' knowledge on the legislations and their enforcement remain a major challenge.

CONCLUSION

Based on the findings of the study, it can be concluded that some communities come up with their own control measures to enhance the sustainable utilization of wetland resources. Wetland resources have a good economic value such that most of the unemployed rural women mainly depend on them for their livelihood. However, uncontrolled livestock grazing threatens wetlands sustainability, hence the need to protect and control access to them as advocated by the national legislations. Moreover, organizations like EEA and ENTC make countless efforts in raising awareness on national legislations governing wetland resources.

RECOMMENDATIONS

Issue- The study aimed at assessing community members' access to wetland resources. Community leaders come up with control measures for guiding access to wetland resources, which community members however fail to adhere to.

Recommendation- The study recommends that community leaders come up with means to curb the lack of adherence. These means should take into account even those members whose communities are too far from the Chief's kraal where community meetings are held.

Issue- Documentation of wetland resources and their uses, which mainly is harvesting of fibre plants for economic purposes.

Recommendation- The study recommends that organizations and communities work together to come up with strategies that can be used to protect the wetland resources such as fencing the wetland to curb uncontrolled livestock grazing.

Issue- Community members lack knowledge on national legislations governing wetlands and wetland resources.

Recommendation- It is recommended that organizations like EEA and ENTC, work closely with community members instead of community leaders only. This is because community members are on the ground, which means they know more about the wetland resources. Moreover, there is need for the government to mobilise revenue and resources to empower regulatory institutions. This would assist the organizations to effectively educate and supervise communities' adherence to the pertinent legislations governing wetland resources.

Recommendation- Legislations should state unambiguously whether it applies to all wetlands, public or private. If it does not automatically apply to private wetlands, it must be clear in what circumstances such wetlands do come under the legislation. In some cases, landowners effectively apply the law on a voluntary basis, for instance, where they benefit from tax exemptions if they bring their property within the ambit of the law. Where appropriate, the legal status of wetlands in communal ownership should be made clear. The study also recommends that the organizations use other means, other than radio programmes, to raise awareness. These could be road-shows and social networks, which can reach a number of people.

Recommendation- Legislation should, where possible, lay down the principle that the conservation and wise use of wetlands are of public interest, for present and future generations, and should be promoted throughout national territory. A declaration of public interest (whether in a constitution or primary legislation) gives important legitimacy to wetlands and usually confers additional duties or powers on public authorities to take action where these protected objects are threatened.

Recommendation- Provisions for national legislations must be communicated to community members in simpler ways, like writing them in SiSwati. Implementation strategies for the legislations should also be documented and assessed from time to time to monitor their effectiveness.

Recommendation- Incentives for wetlands under communal ownership should be designed to maximize participation in integrated conservation and development projects. Legislation should make it possible to institute community-based programmes for wetland resource management and for the proceeds of sustainable practices to be returned, at least partly, to such communities. Financial and/or technical assistance should be provided where appropriate to support income diversification initiatives compatible with wise use.

REFERENCES

- Acres, B. D., Rains, A. B., King, R. B., Lawton, R. M., Mitchell, A. J. B. and Rackham, L. J. (1985). African Dambos: their distribution, characteristics and use. *Geomorphology* 52:63–86.
- Boitumelo, B. (2010). *Status of plant fibre handicrafts in Swaziland: A case study in Manzini and Mbabane markets*. Unpublished B.Sc. Research Project, University of Swaziland. Luyengo, Swaziland.
- Brynard, D. J. (1991). *Introduction to Research*. South Africa: Van Schaik Publishers.
- Dlamini, B., (1981). *Swaziland Flora: their local names and uses*. Ministry of Agriculture and Cooperatives - Forestry Section, Mbabane, pp:72.
- Dlamini, G. M., Lupupa, T. (1995). *Swaziland: Country report to the FAO international technical conference on plant genetic resources*. FAO, Rome.
- Dragan, M., Ferneti, M., Misomali, E. and Ngulube, M. (2010). *Sustainable use of plant resources in Southern Africa: GIS supports biodiversity conservation*.
- Edje, O. T., (2006). *Indigenous knowledge in nature conservation and utilization*. Report on nature conservation and natural disaster management-role of indigenous knowledge in Swaziland. UNEP and University of Swaziland, Mbabane, pp:21-51.
- Government of Swaziland, (1972). *Report of Natural Resources*. Ministry of Justice, Mbabane, Swaziland.
- IUCN, (1997). Swaziland. In: Breen, C.M., N.W. Quinn and J.J. Mander (Eds.), *Wetlands Conservation and Management in Southern Africa: Challenges and Opportunities*. Summary of the SADC Wetlands Conservation Survey Report, IUCN ROSA, pp:107-110.
- Jensen, O. H., Balslev, H. (1995). Ethnobotany of the fibre palm *Astrocaryum chambira* (Arecaceae) in Amazonian Ecuador. *Econ. Bot.* 49 (3), pp.308-319.
- Keddy, P.A. (2010). *Wetland ecology: Principles and conservation* (2nd edition). New York: Cambridge University Press.
- Krejcie, R.V., and Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement* 30, pp.607-610.
- Mander, M. and Letty, B. (2004). *Industry analysis: Indigenous plant fibres handicraft*. W.K. Kellogg Foundation. ComMark Trust, Gallo Manor, South Africa.
- Manyatsi, A. M., Mhazo N., and Masarirambi, M. T. (2010). Climate variability and change as perceived by rural communities in Swaziland. *Res. J. Environ. Earth Sci.* 2, pp.165-170.

- Masarirambi, M. T., Manyatsi, A. M. and Mhazo, N. (2010). Distribution and utilisation of wetlands in Swaziland. *Res. J. Environ. Earth Sci.* 2 (3), pp. 147-153.
- Masuku, R. A. (1994). *Characterization and correlation of the soils of Swaziland*. Mbabane: Food and Agriculture Organization of the United Nations.
- Mbereko, A. (2008). *Understanding socio-economic outcomes of technological innovations over access, use and management of natural resources in Zimbabwe: A case study of Zungwi Vlei (Zvishavane district)*. Dissertation, University of Zimbabwe.
- Moses, O. (2008). *An Institutional Analysis of the Management of Wetland Resources: A comparative study of Floahreppur municipality in South Iceland and Oyam district in Uganda*. Land Restoration Training Programme, Agricultural University of Iceland.
- Mwendera, E.J. (2003). The use of wetlands for small-scale agricultural production in Swaziland. *Int. J. Ecol. Environ. Sci.* 29, pp.15-28.
- Sah, J. P. and Heinen, J. T. (2001). Wetland resource use and conservation attitudes among indigenous and migrant peoples in Africa. *Environmental Conservation* 28 (4), pp.345-356.
- Schuyt, K. (2005) Economic consequences of wetland degradation for local populations in Africa. *Ecol. Econ.* 53, pp.177–190.
- Votteler, T. H., (2002). *National Water Summary on Wetland Resources: United States Geological Survey Water Supply Paper 2425*. University of Texas, Dallas.
- Zwane, P.E. and Masarirambi, M.T. (2009). Kenaf (*Hibiscus cannabinus*) and allied Fibres for Sustainable Development in Swaziland. *J. Agric. Soc. Sci.* 5, pp. 35-39.

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