

Interaction of local community and wetlands: The case of Lake Ziway shore area, Ethiopia.

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Abstract

Now-a-days changes in land use system to meet the demands of a growing global population are inducing a shift in the socio-economic and ecological functions of wetlands. The objective of this study was therefore to assess the level of community's perception on wetland conservation as well as to determine the trends/changes in status of wetlands in Lake Ziway shore area in the previous years and compare them to the present situation. A short survey was undertaken to identify and investigate the community perceptions on wetland degradation. Data was collected from purposefully selected group through questionnaire survey, focused group discussions (open ended guide questions for purposefully selected community members), and also personal field observations. The view of the respondents from the survey has indicated that the high conversion and loss of wetlands over time in the area due to population growth leading to farm land scarcity, over-grazing, sedimentation, direct conversion in to other land use types, vegetation clearance, and lack of awareness on wetlands. The overall result of wetland degradation is to contribute to the loss of precious wetland values and functions that will directly and indirectly endanger the livelihoods of thousands of citizens. Hence, sustainable ways that minimize their conversion and maximize their long-term benefits are non-arguably needed this time.

Key words: Lake Ziway, Wetlands, Degradation, Local community

1. Introduction

Wetland resources in Ethiopia are considered as an integral part component of the environment in the country and provide a wide range of social, economic, and ecological benefits (Tessema *et al.*, 2013) as the wetlands are distributed throughout the country from the lowlands of afar depression to the highlands in the bale mountain (FAO, 2008).

It was reported that changes in land use to meet the demands of a growing global population are inducing a shift in the values and functions of wetlands (Villa, 2014). Its dynamics are widespread, accelerating, and significant processes driven by human actions but also producing changes that in turn impact humans (Ali, 2009).

The huge values provided by wetlands support millions of people in different ways. Especially, in countries like Ethiopia where agriculture plays significant role in the economy, wetlands seems to be the main sources of livelihood (FAO, 2008). It is obvious that, the social, cultural and economic benefits alongside the enormous ecological advantages can serve as saviors to the community as well as environment if the current mismanagement actions would be amended in a sustained way.

Despite wetlands are the sources of invaluable benefits, their destruction around the world has often been common and is mainly caused by land reclamation and drainage because of high human population density (Junk *et al.*, 2013). Wetland ecosystems in Ethiopia as well are under a big threat (Yilma and Kim, 2003; EWNRA, 2005; Tessema *et al.*, 2013). Wetlands are modified in a number of ecological ways by

changing normal hydrologic patterns (Vicari, *et al.*, 2011) and direct and indirect measures to clearance of biodiversity.

In Ethiopia there is a massive loss of wetlands over time and yet management of these ecosystems didn't get prioritization (Hailu, 2007). The reckless attention given by people and policymakers to wetlands is highly damaging these ecosystems. Therefore, more rapid dissemination of the available information on the interaction of community and wetlands could drastically reduce the risk of their loss and lead to a more sustainable management plan. Such actions to be taken in countries like Ethiopia, baseline studies as attempted in this study on the status of wetlands appear to be primary tasks to document pertinent information for policy makers.

2. Methodology

2.1. Data collection (Questionnaires development)

Data was collected based on the sampling procedure applied by Bekele (2010). The first task was identifying the target group and one kebele named Bochesa was purposefully selected based on preliminary observation and discussions with key informants. This kebele was selected because of the following reasons:

- a) The community residing in the area is very close to the lake and wetlands; hence, it is assumed that they knew more about the wetlands since they have been there for a long time.
- b) Due to high human pressure around the area in converting and degrading the lake and associated wetland resources.

Following this, sample size was determined according to Bekele (2010), 10% of household sample size was drawn from the selected kebele. Sample respondents were selected randomly from the households registered as permanent residents of the kebele. According to the information obtained from the kebele administration office, 520 households were living permanently in the kebele, and from this 53 respondents (10% of the total) were selected randomly for this survey.

Both primary and secondary data were collected from the target respondents. Primary data were collected through

questionnaire survey (with both open and close ended questions) (Appendix 2), focused group discussions (open ended guide questions for purposefully selected community members), and also personal field observations. Available secondary data such as population number of the kebele over years and the extent of land use types used in this study were also collected.

2.2. Data Analysis

Descriptive statistics (frequency, crosstab, mean, etc) were used to analyze the data using SPSS software (Version 21). Chi-square tests were also undertaken to see a relationship among respondents land size and age with the interest that they had on wetlands. In addition, data obtained from the respondents was directly narrated by the author.

3. Results and Discussion

3.1. Status and Major Triggering Factors for Wetland

Loss

All of the interviewed respondents (100%) and the participants of the focused group discussion agree that wetlands in the area are being encroached over time by the local community and other investment activities. The major triggering factors of wetland loss which were identified by the interviewed respondents and from the focused group discussions are population growth which lead to farm land scarcity, overgrazing due to shortage of grazing land and increase in the number of heads of livestock, sedimentation due soil erosion from the catchment, direct drainage and conversion of wetlands in to other land use types, lack of awareness, vegetation clearance, and introduction of exotic species (Figure 1). This indicates that, conversion of wetlands is becoming very rapid because of these above reasons coupled with the lack of regulations and strategies to control and manage these resources wisely.

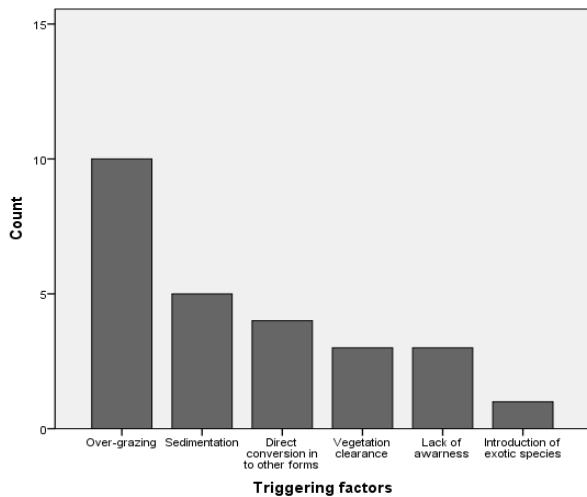


Figure 1. Major triggering factors for the loss of wetlands as identified by the respondents of the study area

These are almost common problems to all Ethiopian wetlands as it was reported their shrinkage of in many different recent studies. For instance, Sewnet, (2013) has reported that, wetlands in Gilgel Abay watershed have declined from 10.7% in 1973 to 7.2%, 5.8%, and 5.6% in the years 1986, 1995, and 2008 respectively. Gebremedhin et al., (2014) also reported the shrinkage of Kurt Bahir wetlands from 764.5 hectare in 1973 to approximately 450 hectare in 2013. High conversion and loss of shesher and welala wetlands of Lake Tana Basin was also reported in other recent studies.

According to the respondents' views, population increase was the major triggering factor for wetland loss in the area. The data obtained from the Agricultural Bureau of Bochesa Kebele, Ziway, showed that, population number has almost doubled in the past five years (2010-2014). The number of population in the area was 1365 by 2010 and this number has increased to 2030 by 2014. However, the agricultural area remains the same so that the community is forced to convert and clear wetlands to other land use forms/modifications in an unsustainable way. Similarly, Kameswara et al., (2011), on their study on southern part of Lake Tana basin (Gilgel Abay watershed) reported that, the population is growing rapidly and is over- utilizing the resources and brought the scarcity of land, deforestation, over use of lake's water and soil erosion

from the catchment. So this could result in immediate effect on the livelihood of the community either through reduced agricultural productivity or through depleting wetland resources which can further result in high climatic variability in the area (IFAD, 2004).

This wetland loss and other associated problems are tending to show in micro-climatic changes in the area. Especially the year 2015 was a disastrous year for the surrounding community of Lake Ziway and in general to Ethiopia as the changing climate due to shortage of rainfall which leads to serious drought (El Niño) and this has endangered the livelihoods of several people. This could be due to many climatic and human mediated impacts, especially environmental degradation.

The interviewed respondents are also fully aware about the changes that occurred in their local climate. They have detected so many changes in their local climate over the past years although the problem was clearly observed in this year. Some of the changes that were detected by the respondents and that are still happening in the area are temperature increase, decrease in rainfall availability and variability in its distribution, changes in wind direction, drought, and occurrence of disease in livestock. This can be supported by the study conducted by Lijalem et al., (2006) on climate change signals scenarios for precipitation and temperature for Lake Ziway watershed from 2001 to 2099, and the average annual precipitation scenarios does show an increase but not significant trend while temperature showed strong trend (from 27 °C in 1981 to 31 °C in 2099). Generally, the overall result will directly or indirectly contribute to the livelihoods of thousands of people residing in the near area.

Furthermore, when the respondents were asked if they agree or disagree on the idea of converting wetlands in to other land use types, 41.03 % and 12.82% of the respondents strongly disagreed and disagreed, respectively (Figure 2).

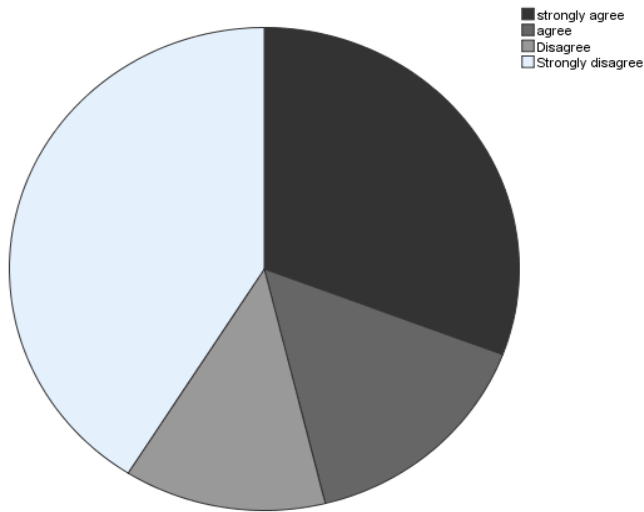


Figure 2. Respondents view on wetland conversion in to other land use types

These respondents said that wetlands should not be converted in to other land use types since these ecosystems are more beneficial than when converted in to other forms, are sources of water for the community, and for maintaining their local climate. 30.77% and 15.38% of the respondents strongly agreed and agreed, respectively (Figure 2). Although these respondents are aware of the value of the wetlands, they believe that wetlands should be converted in to other LUTs since population is highly increasing in the area and consequently landless youths are increasing. So they believe that if wetlands are converted, landless youths will have access to cultivable land so that the constraints of land in the area could get a solution (figure 3).



Figure 3. Wetland conversion at the shore area of Lake Ziway

It is understood that, it is high time now to bring in the differences in interests of the community to one dimension for the sake of sustaining these wetlands and their life serving values and functions. Unless otherwise, to consider the impact of wetland loss on local community and on the environment, there are good examples of wetlands which are already lost (Haromaya Lake) and in rapid loss such as Abijata and Cheffa (EWNRA 2008) and indeed the fate of these wetlands and their nearby dependent communities could be similar as well.

3.2. Final recommendations of the community on wetland management

Most of the respondents in the study area mentioned that, Lake Ziway shore area wetlands are being depleted from time to time due to both climatic as well as anthropogenic pressures especially the later one is clearly observed in the area.

In general, although there are many reasons that push the community to encroach on wetlands, such an action would be a short term gain and a long term loss. It is therefore recommended that it is better to start community-based participatory wetland management practices like that of forest management practices which are being practiced in some parts

of this country and have started to become successful showcases.

Similarly, most of the respondents have recommended the following for sustainable management of wetlands.

- The government should work on awareness creation activities on the community through education.
- Wetlands should be conserved for enhancing and protecting the biodiversity.
- Watershed management should be intensified so as to decrease the load of sediment that enters to the lake like afforestation programs, soil and water conservation activities and other related actions that have shown positive results in some parts of Ethiopia.
- The community and different stakeholders should own the wetlands in their surrounding and should be responsible for their action and work together to sustainably manage the wetlands.
- There should be responsibility with in the community members to use wetland resources wisely.
- There should be a clear demarcation between wetlands and other land use types so that people can't degrade and convert wetlands as they like.
- The government should start restoration activities that involve the interest of the local community for promoting wetland management.
- Wetlands should be conserved based on the interest of the community on the basis of economically viable plus environmentally sustainable way.

4. Conclusion

To conclude, wetlands are declining in surface area over time around Lake Ziway due to population growth, over grazing, sedimentation, their conversion in to other LUTs, lack of awareness, and vegetation clearance. This is also having a significant impact on the values that can be provided by these wetlands. As the results collected in the field work and the

discussions made with the leading community members and environmental management personnel of the area, it is high time now more than ever that further integrated and demand-based research be conducted with the user people of Lake Ziway wetlands to come up with models that would bring about improved livelihoods of the people with sustainable wetland environments.

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