Article

Assessing community perception on drivers and its consequences on Tinishu Abaya wetland degradation in Siltie zone, SNNPR Ethiopia

Aman Nesre[1], **Ahmed Hussein**[2]

[1]Department of Natural Resource Mamagement, Werabe University, Werabe Ethiopia

[2]Department of Animal Science, Werabe University, Werabe Ethiopia

E-mail: nesrea2@gmail.com

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Abstract

Wetlands contribute significant roles in providing ecosystem functions and producing a number of products and services-that are socially and economically important to the local community. However, they are the most threatened landscapes by adverse human activities. So, this study was conducted to assess social perception on the drivers and consequences of Tinishu Abaya wetland degradation in Silte zone, southern Ethiopia. The study used survey research design and different methods were used to collect primary data. The primary data were collected from 131 household heads selected from sampled respondents drawn from 3 kebeles (two from Silti and one from Lanfuro district) using pretested questionnaires, field observation, focus group discussion and key informant interview. The survey result showed population pressure, farming practice and livestock grazing were the major drivers for rapid degradation of Tinishu Abaya wetland. All these factors resulted in reduction in wetland, flooding and erosion, drying of the lake and lack of quality and quantity water. Therefore, developing alternative method of wetland resource, creating awareness about indirect benefit of wetland, monitoring of upstream-downstream user relations and developing appropriate wetland management interventional policy are recommended.

Keywords land use; land cover change' proximate; social perception; wetland degradation.

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1 Introduction

Wetlands are defined as lands transitional between terrestrial and aquatic eco-systems in which the water is usually at or near the surface or covered by shallow water (Davidson, 2018). The global wetlands coverage was 6% of the Earth's surface which is estimated 7 to 9 million km^2 (Cools et al., 2013) covering about 131 million ha (USAID, 2014). It is among the most biologically productive ecosystems as they contain species diversity and habitats for a number of biota (Hagos et al., 2014).

Ethiopia owns more than 58 different types of Wetlands however, it is not well documented (Eisenhauser et al., 2011) and EPA (2003) of which all sizes play a vital role in supporting the livelihoods of people as a basic safety net of food and water security for many of the poorest people. According to report of Dixon (2021) they offer an opportunity to develop and diversify livelihood and generate income.

Despite they are sources of valuable 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). As Davidson (2014) pointed out, the global extent of wetlands is estimated to have declined between 64 and 71% in the 20th century, and wetland losses and degradation continue worldwide. Apart from natural factors, the loss of wetland and wetland degradation are majorly caused by human activities (Moser et al., 1996) at global level becoming the greatest threat to its well-being (Bjerstedt, 2011). Fishing from Rift Valley lakes and livestock grazing (Tesfaye and Wolff, 2014), crop cultivation (maize) during dry season (Biggs, et al., 2004), traditionally provided grazing resources for cattle, medicinal plants, craft-making and construction material, and water for domestic consumption are wetland contribution supporting huge livelihood and also are potential factors increasing the frequency of wetland degradation (Dixon and Wood, 2003). Similarly, wetland ecosystems in Ethiopia as well are under a big threat (Tessema et al, 2013). This is related to computation made because of multiple benefits and growing population pressure (Cools et al., 2013) and management of these ecosystems didn't get prioritization yet (Hailu, 2007). So understanding the physical environment of the wetland system and also of the institutional and socioeconomic context is an essential requirement in order to reverse the drivers (Ostrovskaya et al., 2013). In order to track the ecological changes of the wetlands as well as to make a sound decision on its management and protection, knowing its degradation status is prerequisite (Dixon, 2008), where this conditions were not verified well and the current study was designed to assess social perception on the drivers and consequences of Tinishu Abaya wetland degradation in Silte zone, southern Ethiopia.

In the study area, Tinishu Abaya wetland is degrading progressively due to different natural (drought, siltation and flooding and soil erosion) and human factors (Siltie Zone Information and Site Observation, 2020). The accelerated deterioration of the wetland resources and their functions, therefore, calls for critical measure, which can create agreement among wetland users and ecological functions and values of wetland. Overall, the underlying forces remain the lack of recognition and perception on the indirect benefits of wetlands and the roles they play in national economies and local community livelihoods (Yirga and Lema. 2018) having focused on there was limitation of study that highlights the trend and magnitude of the Tinishu Abaya wetland degradation and their consequence. So this study was designed to assess community awareness on the major drivers and consequence of degradation on Tinishu Abaya wetland

2 Study Area and Methodology

2.1 Study site

Tinishu Abaya wetland stretches between Silti and Lanfuro districts. It covers a total area of 10005.03 ha, located in the Ethiopian Rift Valley nearly 160 km southwest of Addis Ababa at 70 0'0" N to 7029´03.65´´N latitude and 38003`17.79´´E to 380 31'12"E longitude, and its altitude ranges from 1870-2000 m a.s.l. and also the wetland is situated nearly15 km away from main road that crosses Silti district by passes from Addis Ababa to Hadiya zone (Fig. 1). The total population of the study area in 2018 was 40520 with, the population density 405 persons per km^2. The agro-ecology it is dominated by dry Weyna Dega (midland) and characterized by frequent drought, mixed farming, suitable for cultivate various c crop and handle different species of animals receiving uni-modal rainfall of which a maximum average annual rainfall is estimated less than 900 mm. The small rainy season occurs from March to April, maximum from June to September,

maximum and minimum annual temperature recorded 30^{o}C and 18^{o}C in winter and summer season respectively (Woreda Agricultural Office, 2020).

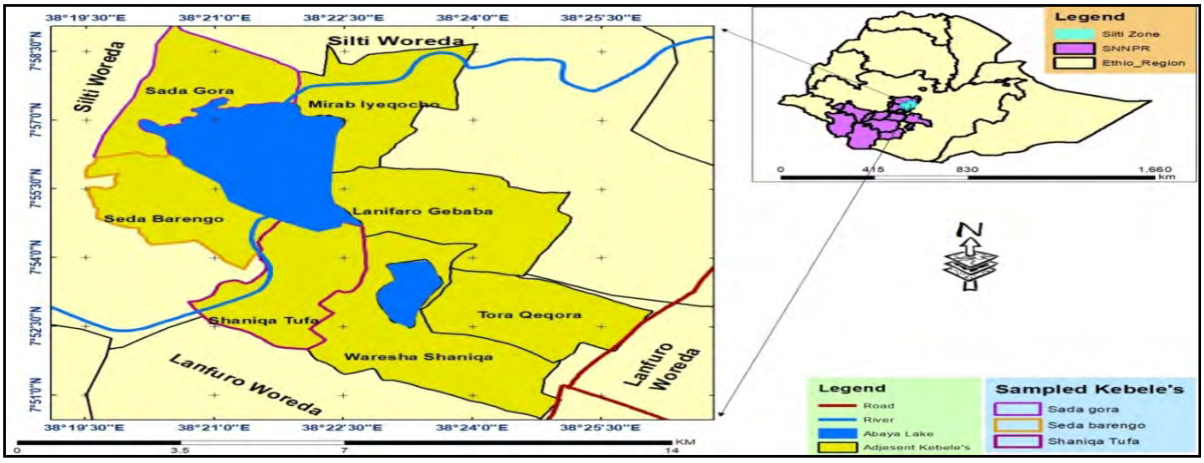

Fig. 1 Location map of study area.

2.2 Sampling techniques and sample size determination

Three kebeles were selected purposely based on their bordering to Tinishu Abaya Lake. Accordingly two kebels located in Silti and one kebele located in Lanforo were included as part of study as largest portion of the wetland (Tinishu Abaya). The total sample sizes from each selected kebeles were proportionally organized and the sample from each selected kebele was selected using systematic random sampling method. The household sample size was determined by using Cochran's formula (Cochran, 1977).

$$no = \frac{z^2 pq}{e^2} \quad \text{.....(1)}$$

$$n = \frac{N}{1+N(e)2} \quad \text{.....(2)}$$

where *no* = the desired sample size Cochran's (1977) when population is greater than 10,000, *n* = the desired sample size when population is less than 10,000, *z* = the desired confidence level 95% which have the value 1.96, *p* = the estimated proportion of an attribute that is present in the population i.e. 10%, *q* = 1-*p*, *e* = the desired level of precision (0.05), *N* = total number of household population (2367). The total population sizes of the selected kebeles are 6327, 4787 and 5585 with the household number 881, 741 and 745 for sada Gora, Seda Barengo and Shaniqa Tufa kebeles respectively, giving the total HH number of 2367. The sample size of the study is decided to be 131 HHs using the above formula. The total sample of each kebele determined using proportionally as follows

$$(HHK\ x^{*}n)/N \quad \text{.....(3)}$$

where *HHK* = household of kebele, *x*= 1, 2, 3…, *n* = total sample size, *N* = total households of three kebeles' Accordingly 49 from Seda-gora, 41 from Seda-barengo, 41 from Shaniqa Tufa with total 131 total households were administered the questionnaires reasoned of obtaining basic primary information

2.3 Data collection

The primary data source was collected by field observation, household survey (questionaries), focus group discussion and key informant; whereas, the secondary data was collected from Silti district office, published journals and unpublished reports.

2.4 Analysis data

The computer software Excel 2010 was used for data management and entry. All the collected survey data was coded prior to entering into the computer and analyzed using the Statistical Package for Social Sciences (SPSS) software (version 20).

3 Results and Discussion

3.1 Demographic and socio-economic characteristics of respondent

The present study shows that 79 (60%) and 52 (40%) of respondents were males and females respectively of which higher percentage (60%) lays within 26-45 productive age group. However half (50%) of the respondent had no formal education indicating most of communities residing around wetland were illiterate. Out of 131 respondents 84% were married, whereas 7.6%, 4.6% and 3.8% were widowed, divorce and unmarried respectively. This indicated that most of the communities perform stable way of life.

The level of education is highly linked with sustainable utilization of wetland resources as well as understanding of drivers of wetland degradation and the implication of wetland degradation. This is consistent with report of Mengistie et al. (2013) education is basic factor that influences sustainable utilization of wetland resources and main tool to shape people's perception about wetland conservation (Table 1).

This study shows that 75 (57.25%) of respondents household size (family size) ranged between 6-10. Majority (39%) of land was owned by inherit from parents while More than 80 % of the respondents had ≤1.5 ha. This shows that the family size reported in study was greater than average family size (4.6) report of by Siltie zone (2007). This implies continuous population increment of study area and such family exerts pressure on wetland due their greater dependence on wetlands for all purposes leading to the degradation of wetland resource. As Gerubin (2017) reported large family size needed more resources to survive and the situation puts pressure on the wetland. In line with this findin (Marambanyika et al., 2021) larger household sizes have benefits of labor force in wetland utilization. Traditionally, land is the most important asset that is transferred to heirs. Farmers in the study area give land, perennial crops and livestock as a gift to newly married sons, as a means of providing initial capital for the new household. According to response of respondents the lands were owned by inherit (39%) from parents, shared (27%) with parents, shared cropping (20%) and rent (14%) (Table 1). More than 80 % of the respondents had ≤ 1.5 ha while, 6% respondents had farm size of equal to 3-4 ha implying most of the farmers had small farm sizes because of the high population pressure. This result was separated into 2 parts: 1) variation of aerosol in different areas and 2) variation of aerosol in different seasons.

Table 1 Demographic and socio-economic characteristics of respondent.

Characteristics of respondent	Variables	Frequency	%
Sex	Male	79	60
	Female	52	40
Age of respondent	18-25	6	4.6
	26-45	79	60
	46-65	36	27.5
	>65	10	7.6
Education level of the respondent	No formal education	65	50
	1st cycle	35	26.7
	2nd cycle	17	13
	Diploma	9	6.9
	Degree	5	3.8

Marital status of the respondent	Married	110	84
	Unmarried	5	3.6
	Divorced	6	4.8
	Widowed	10	7.6
HH size of respondent	[1-5]	41	3129
	[6-10]	75	57.25
	>10	15	11.46
Source of land of respondent	Inherited from parents	51	39
	Shared from parents	35	27
	Shared cropping	26	20
	Rented	19	14
Farm size of respondents (ha)	<0.25	30	23
	0.25-1.5	76	58
	1.5-3	17	13
	4-Mar	8	6

%= percentage of respondents.

3.2 Activities respondents do in the wetland

Fig. 2 shows that 38%, 26% and 13% respondents were engaged in farming and animal husbandry activities along the wetland, farming and animal husbandry respectively. In agreement with this (Nyakaana, 2008) reported that farming was the mainstay economic activity. As Discussion made with farmers revealed, there is practice of Cutting trees for livestock feeding and cropland expansion during dry season and this reduce vegetative cover which act as a barrier for soil erosion since surface sediments become more exposed therefore unstable and subject to weathering and erosion (Plate 1) . This also allows the cattle to trample the soil leading to soil compaction. Joseph (2011) reported that, livestock trampling cause soil compaction and prevents infiltration, which in turn prevents the groundwater table from recharging and therefore increases surface runoff. This could be the reason for livestock grazing to become the leading cause of degradation in this area.

During the focus group discussions, the participants indicated that crop production is becoming impossible without fertilizer due to high soil degradation. On the other hand, the perennial crops such as Avocado, Khat, and Sugarcane were the major ones as they have dual purposes. The field observation farther reveled that Most of the upland farmers do not use effective soil and water conservation practice. Gebretsadik and Mereke (2017) argued that the overgrazing/overstocking/ of wetlands, have caused a major change in abundance and community structure of vegetation and also compaction of the wetlands, due to soil treading, that have an impact on soils 'infiltration capacity and the general hydrological system.

This allows washing of top soil by run off that carry sediments and pesticides, fertilizer and herbicides to the wetland which contributes for eutrophication, reducing the quantity and quality water and dry off the wetland.

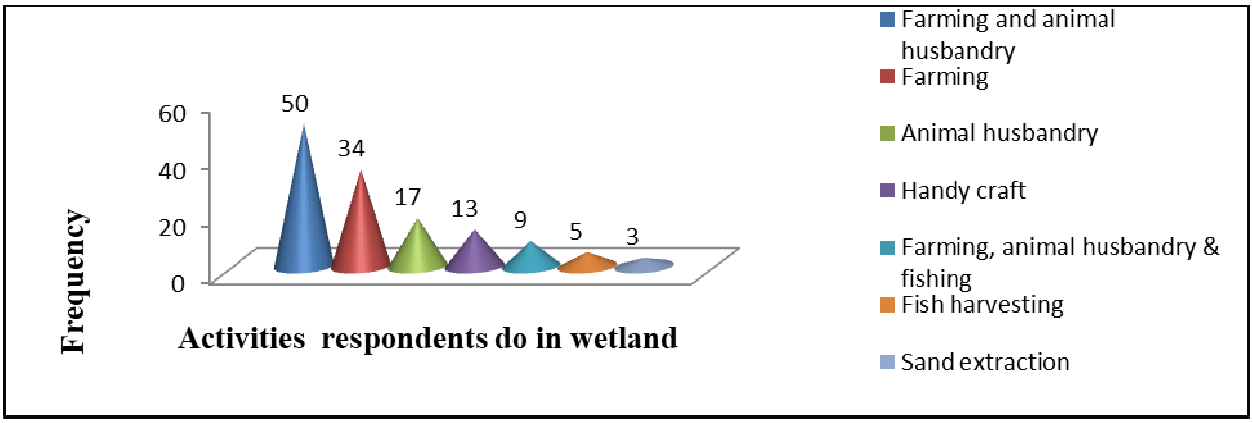

Fig. 2 Activities respondents do in wetland.

Plate 1 Farming practice around Tinishu Abaya wetland.

3.3 Community awareness on the values of Tinishu Abaya wetland

Socio-economic benefits of wetlands in the study area were very diverse and greatly contribute to livelihood of the community. These contributions did not only related to food security and income generation through farming to get foods and cash crop but also some specific goods and services such as grazing area, building material, erosion control and climate regulation. As shown in Fig. 3, out of 131 selected respondents 121(92.4%) perceived the direct value of wetland as source of food and cash crop.

Similarly, a study made by Moges et al. (2016) reported that, the majority (96.7%) of the respondents' extractable benefits that sustain their day to day needs for living. The respondent's perception on Tinishu Abaya wetland is also similar with study report of Mombo et al. (2011), which revealed that, majority of households preferred conversion wetlands to farmlands. In the present study, 113 (86.3%) of the respondent agreed that water for domestic use (washing cloth, bathing and for cooking purpose) is the second item of value that they get from the wetland and the third items of the value of the Tinishu Abaya wetland that respondents perceive were fishing that accounts for 45%. The rest of the respondents perceived as Tinishu Abaya wetland serve them by reducing erosion and flood, regulate environmental climate, and storage and recycling of nutrients they act as a water sink from various channels that accounting 42%, 39.7% and 27.5% respectively indirectly. Similar conclusion was also reported by (Afework et al., 2015) which are made on households living nearby wetlands.

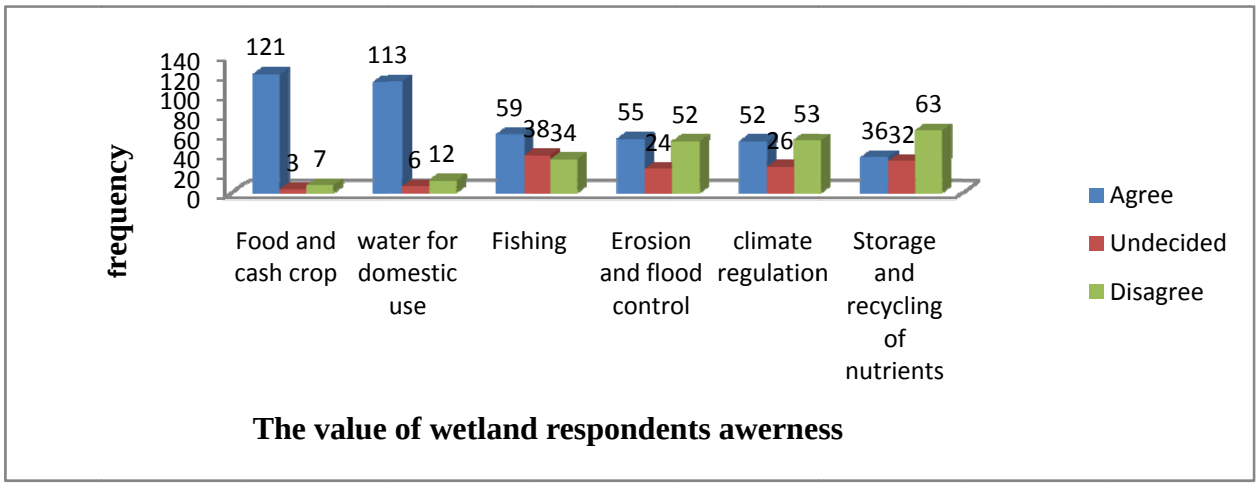

Fig. 3 The value of wetland that respondents perceive.

3.4 Community awareness on the major drivers of Tinishu Abaya wetland degradation

3.4.1 Proximate/direct driving forces

As field observation and FGD made with respondents revealed that, over utilization of wetland for agriculture purpose due to mismatch of land holding with continuously increasing population growth forced them to plough and cultivate crops. Figure 4 shows the perception of respondents on the proximate drivers of degradation of Tinishu Abaya wetland. Majority of the respondents agreed on farming and livestock grazing along the wetland (n=125) were the major drivers of Tinishu Abaya wetland degradation followed by livestock grazing (n=117) and settlement expansion (n=95). About 95.42% of the respondents agreed that improper crop cultivation associated with poor irrigation facilities were seriously affecting the wetland by clearing of vegetation's, breaking of the lake banks and soil erosion along the wetland area. 89.31% of the respondents agreed on livestock grazing as the main cause of wetland degradation next to farming around the wetland. Farm expansion toward the wetland induced by a shortage of farmland (Assefa and Bork, 2016) and overgrazing was due to shrinkage of grazing-land in the areas adjacent to wetland were factors contributed to the degradation of the wetland resources (Bakala et al., 2019).

Grazing by domestic stock is threat to wetlands and when grazing is continuous wetlands become easily degraded and lose their natural characteristics. In line with Gebremedhin and Mereke (2017), Gebremedhin et al. (2018) reported that major threats to wetlands in the Lake Tana Sub-basin are due to anthropogenic activities among which agriculture and, population growth, rapid grazing common. According to FGD made the communities in study area perceive wetland as communal grazing land, so as large numbers of livestock's were allowed daily to graze and drink the water. Throughout Ethiopia, past and present wetlands areas have been and still are important sites for livestock grazing (EWNRA, 2003). Field observation made by researchers confirmed that large numbers of livestock were allowed to graze continuously which in turn affects both the physical and biological components of the wetland through the consumption of plant biomass, trampling of plants, soil compaction and increasing nutrient input and bacterial contamination from their dung and urine. The information gathered from the district agricultural office also revealed that there was limitation of policy and practices aimed at protection and conservation regarding wetland management practices independently.

Settlement expansion (72.5%), deforestation (58%) and illegal fishing (50.8%) were the threats of Tinishu Abaya wetland degradation (Fig. 4). Even the owned were fragmented among young household population for those recently married as initial capital for residence house construction and agriculture cultivation. Congruent to current study (Leykun, 2003) reported that, the Ethiopian farmers give farm land, perennial crops and livestock for newly married sons, as a means of providing initial capital. In some places of these wetlands the local communities dig ditches in wetlands in order to remove the water stored in the soil so as to make home after the areas are dried well. The study of Mengistu (2008) reported that wetland deforestation mainly for agricultural purposes, encroachment and settlement as a result of population pressure and the need for grazing land. Furthermore respondents from the study area confirmed, deforestation is common in this wetlands aimed house construction (timber production), fuel wood and charcoal production, and agricultural cultivation.

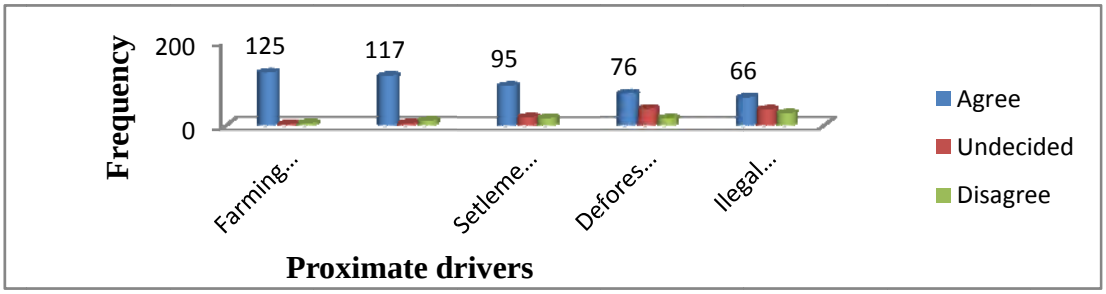

Fig. 4 Proximate drivers of Tinishu Abaya wetland degradation (n=131).

Plate 4 Encroachment of the Tinishu Abaya wetland by agricultural activity and over grazing along wetland.

Plate 5 Encroachment of wetlands by settlement and deforestation (Photo: Author field survey, January 2019).

3.4.2 The underling/indirect driving forces

The underling force contribute to wetland degradation were factors that initiates the wetland to degrade. According to Figure 5 the major underling forces enhancing the degradation of Tinishu Abaya wetland in descending order were population pressure (90.8%), poor watershed management (84.7%), poor knowledge and lack of awareness about wetland (80.2%), and weak local institution setup (70.2%). Accordingly Rapid population growth highly contributed for wetland degradation (Tariku et al., 2021). Additionally, Delelegn and Geheb (2003) and Mengistu (2008) explained that in Ethiopia most of the wetlands do not have management plan, which ensures sustainable management of wetlands

Field observation and quantified data of this study assured that population growth forced farmers to over exploit owned land in unsustainable way for cultivation which resulted in loss of soil fertility and weed invasion, and forced them to move and clear vegetation and grasses for agricultural purpose which in turn leading to wetland degradation. This result was in line with Mckee (2007) who specify, the growth of population resulted in forcing the people to encroach the wetlands, apparently over exploiting the resource. About 84.7% of the respondent agreed that poor watershed management was there from both government and resident side. Field observation confirmed that, there was farming land which was too close to the wetland with no barriers/buffers/ and measures applied to conserve soil and water. These factors were resulted in the Tinishu Abaya wetland was losing their ecological benefit over time eutrophication, sediment accumulation

and shrinking from time to time. No practice of biosphere reservation zone done to minimize sedimentation and ecosystem conservation (field observation). According to ZurHeide (2012) biosphere reservation zone (potential core zones, buffer areas and transition zones) has great importance to minimize risk of wetlands degradation by reducing sediments and maintaining ecosystem conservation. This problem was due to poor watershed management and knowledge (84.73%) and lack of awareness about wetland (80.15%) and weak local institution set up (70.23%) which was also strengthened by information collected during FGD and KII.

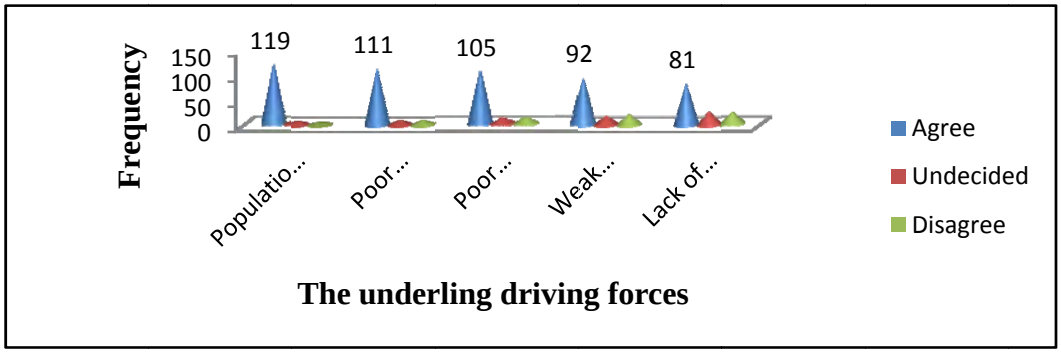

Fig. 5 The underling/indirect driving force that contribute to wetland degradation.

(a) Plate 1: Key Informant Interview with selected respondents

Fine Mode/Small size

(b) Plate 2: Focus Group Discussion with respondents

Coarse Mode/Big size

3.5 Changes in social and agro-economic activities

The result from the figure 6 shows that size of wetland was decreased while type crop grown and pests and disease increased over study duration due rapid increment of population growth. This finding is in line with (Wasswa et al., 2013) who reported that the area under crop production had increased and this implied that more people were opening up new areas including wetlands for cultivation. Crop yield, grazing area, soil fertility and rain fall data from current study showed that highly decreased in the near present (2018) when compared to past (10-20) years. This is due to over cultivation of agricultural land, clearing of vegetation around Tinishu Abaya wetland and increasing pests and diseases at present time. This study is also congruent with Zinhiva et al. (2014) who reported that the respondents, many of who depended on rain fed agriculture for crop production said that the amount of the rainfall had drastically reduced over the years and that contributed to poor crop yields due to droughts. This supported the fact that majority of the respondents had acknowledged that the soil fertility levels in their farms had reduced due to over cultivation of the farm land which

contributed to poor crop yields. However, the decline in crop yields could also have been brought about by the increased incidences of pests and diseases which had occurred in the recent year.

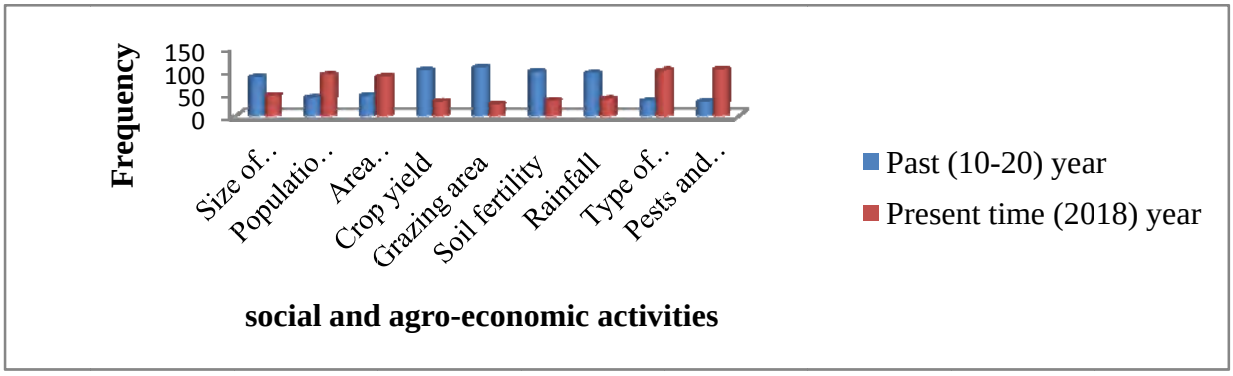

Fig. 6 Comparison of social and agro-economic activities in past and present.

3.6 Social perception on the consequence of Tinishu Abaya wetland degradation

The change of wetlands has created numerous problems including decrease and extinction of wild flora and fauna, loss of natural soil nutrients, water reservoirs and of their subsequent benefits. The consequences of wetland loss and degradation are enormous and directly affecting the livelihood base of rural communities. They have affected various traditional occupations, socioeconomic conditions and cultural activities (Kumsa, 2015). Table 2 indicated that the majority (84%) of the respondent replied that occurrence of flooding and erosion was very high in the study area. The FGD also revealed that this problem was mostly observed in recent 10-20 years when the vegetation are cleared for agricultural purpose due to population pressure, poor watershed management and lack of awareness about ecological value of wetland. In congruent with current study (Zinhiva et al., 2014) that reported that majority (75.4%) occurrence of floods is the foremost consequences of wetland degradation. Accordingly, Moges et al. (2016) reported that, losses of wetlands have resulted in greater flooding and erosion and reduced water quality, and have resulted in reduced populations of many plants and animals.

About 74.8% and 73.3% of the respondent perception as very high on the scale of change of drying of Tinishu Abaya Lake and wetland, and reduced quantity and quality water respectively. Even the lake found within this wetland which served farmers for long period of time in different way including as drinking water was showing reduction in size, water quality and biodiversity in an alarming rate. This was due to improper agricultural activity continuously practiced by farmers residing around the lake. The report of study made by Yirga and Lema (2018) showed that Lake Tinishu Abaya was very turbid throughout the study period (ranged 57-188 turbidity (NTU)) at the open-water station and (71-143 turbidity (NTU) at the offshore station which indicate turbidity value much higher than water recommended for drinking purpose. Field observation also assured that absence of water shade management, population computation and improper agricultural practice were currently pose great threat to Tinishu Abaya wetland and lake its ecosystem which may dry out in the very near future like other economically important lakes (Haramaya), unless corrective measures should be taken by concerned body.

Field observation and FGD assured that there was accumulation of silt within the Tinishu Abaya wetland and lake due to repeated flood and erosion currently leading to a complete change in the ecosystem, resulting in biodiversity alteration, in decreases in the water holding capacity of the wetland and in the worst case in the collapse of the wetland resources (Zinhiva et al., 2014). Reduced crop yield, loose of biodiversity, and climate

change are consequence of wetland degradation in the study area. Wetland degradation can have major consequences for various aspects of livelihoods, especially in the dry season, such as domestic water supply, fish, grazing, and even crop production, and this has socio-economic implications (Mengistu, 2008). The overall findings on community perception revealed that degradation of wetland has led to a decline in various services and products that wetland has been offering to them in the past and therefore posing a threat to their livelihood options. These findings are similar report of Belay et al. (2019) who stated that wetland degradation switches the societies from getting various services including income from agriculture, fish, and wildlife habitat, quality water, water quantity, and recreation benefits, as well as an increase of the cost for replacing wetland services. In line with Gerubin (2017), he reported that degradation of the wetland significantly resulted in the declining of livelihood options hence the inhabitants experience food insecurity, malnutrition, and water shortages and income loss.

Plate 6 Siltation problem in little Abay wetland (Photo: Authors field survey, January 2019).

Table 2 Social perception on consequences of Tinishu Abaya wetland degradation.

Consequence of wetland degradation	Respondent responses % (n=131) Scale of change				
	Very low (%)	Low (%)	Medium (%)	High (%)	Very high (%)
Occurrence of flood and erosion			2.3	13.7	84
Reduced crop yield		7.6	8.4	34.4	49.6
Drying of lake			9.2	16	74.8
Lack of quantity and quality water			8.4	18.3	73.3
Loss of biodiversity		8.5	19	30.5	42
Climate change		7.6	16.8	39.7	35.9

3.7 Alternative methods of wetland utilization

Tinishu Abaya wetland is the potential area for eco-truism but almost all (98%) of the respondents are not perceived about this alternative methods of wetland utilization due to lack of awareness about wetland. Most communities perceived wetlands as sources of direct benefits (crop production, grazing, fishing, clay and water harvesting) but failed to appreciate the ecological functions and other life support non-tangible benefits like filtering of polluted water, reduction of river flooding and siltation and environmental benefits. Diriba and Leta (2021) explained that Identifying the multi sectorial interest on wetlands in order to coordinate their efforts to generate reliable data on the value, incorporating stakeholders in national wetland policy, who play significant role in the design, discussion and implementation of wetland conservation action. The eco-tourism development portion which not only helps in conserving wetland but also provides sustainable income for the communities lesf behind as alternative both to use and conserve it. Nyakaana (2008) reported that Tourism creates an employment, demand for transport, telecommunication, financial services, handicrafts, consumption of local products (foods), and housing, linkages to agriculture, fisheries and food processing.

4 Conclusions

Wetlands contribute significant roles in providing ecosystem functions and producing a number of products and services that are socially and economically important to the local community. However, the current findings obtained from satellite imagery analysis and survey revealed the prevalence of wetland degradation resulted from rapid expansion of farm land and settlement over 1988-2018 years becouse of increased human population. Area shares of wetland, lake and grassland contributed for continuous reduction of wetland over specified study period. Majority of the respondents perceived on farming and livestock grazing were proximate driving force of Tinishu Abaya wetland degradation. Settlement expansion, deforestation and illegal fishing were also major driving forces for degradation of Tinishu Abaya Lake wetland. The severity of degradation in the wetland was due to population growth, lack of awareness about wetland utilization and conservation and less institutional intervention policy. This continuous declination of wetland has created numerous problems including occurrence of flooding and erosion, reduced crop yield, lack of quality and quantity water, decrease and extinction of wild flora and fauna and loss of other subsequent benefits. Most of respondents from study area have no information about alternative utilization of wetlands and only perceived the direct utilization which contributes for degradation at large.

Generally, based on survey result we suggest that the wetland of the study area was under risk unless corrective measures could be taken by concerned body. Therefore, urgent action was needed, because the longer we wait the more difficult it will be to bring the wetlands and their complex web of life back to their former splendor. Weak local institution for example lack of any concern body about the wetland among the local administration, absence of any office that works on conservation of the wetland area, lack of regulation on activities on the wetland area and also poor governance verses week enforcement.

5 Recommendations

Tinishu Abaya wetland resources provide means of livelihood for the people and all ecosystems depend upon it but is faces various anthropogenic and natural factors; In order to reduce severe declination of wetland and its surrounding the following recommendations were suggested.

(1) There should be in need of tangible control measures from concerned bodies particularly from Silte zone to local communities of study area.
(2) Awareness should be created about the indirect/ ecological benefit of wetlands for local communities, and wise utilization wetland resources (controlled grazing, etc.) to insure its sustainability.
(3) Appropriate Wetlands restoration, rehabilitation and conservation methods should be developed.

Acknowledgement

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