

# Preliminary Survey of Wetland in Ethiopia, Threats, Extent of Degradation, and Future Perspective:-A Review Paper

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Received: 23 Mar. 2018, Revised: 23 Apr. 2018, Accepted: 27 Apr. 2018.

Published online: 1 May 2018.

**Abstract:** Wetlands are among the crucial natural resources having various socio-economic and ecological contributions worldwide. Even if concerned studies have been conducted so far globally wetlands loss and status, the actual extent of degradation in African countries including Ethiopia caused directly by human activities are still remain active as a basic factor for the degradation of wetland. The actual extent of currently surviving wetlands remains uncertain till now specifically in Ethiopia. The main aim of this review paper focused on wetland loss, causative agents, extent of degradation and future perspective from various directions. Among those deriving pressures responsible for wetland degradation for wetland in Ethiopia, shifting of wetlands for agricultural land, resettlement of people without farm land especially youth group in rural areas are found the main reasons behind wetland degradation. Besides, to these urbanization and industrialization, lack of wetland policy specifically at national level is also some major causes for the degradation of wetland in Ethiopia. Hence, most recently published studies and the reviewed outcomes of this paper indicate, wetlands ecology and management documents that the trends of highly diminishing wetland in Ethiopia need multidisciplinary approach to support wetland governances and wise use from now onwards.

**Keywords:** Wetland threats; Current status; Future perspectives; Local community.

## 1 Introduction

In our increasing population there are potentially the greatest claim that Wetland provide ideal benefit that the local communities dependent directly or indirectly for the need of the socioeconomic and ecological values they are providing. Wetlands are highly productive ecosystems (Bassi et al., 2014), providing numerous goods and services to people living in their periphery, as well as to communities living outside the wetland areas (Barbier et al., 1997). These include provisioning, regulating; cultural, and supporting services (MEA, 2005). Thus, there is a strong interest in understanding the ecosystem services they provide and finding the ways to protect or enhance these services to promote sustainable natural resource use (Adekola et al., 2015).

Wetlands occupy only 1% of the earth surface globally around 20% of the world different species are inhabited in the wetlands (Dugan, 1993). However, wetlands are also ecologically sensitive and adaptive systems (Gliessman, 2015). As Dingell, (2008) also forwarded in 20th century half of the world wetland have been lost. Even though, there is growing recognition of the need for their

conservation, wetlands continue to be lost throughout the world (Turner et al., 2000). With the increasing numbers of humankind, there are increasing pressures on natural areas that can be converted to “productive” uses (Gliessman, 2015). The increasing population growths and unwise uses of wetland ecosystem will resulted in the possibility of nonlinear and potentially intensify changes in the ecosystems with the important consequence in human well-being (MEA, 2005 and Schuyt, 2005.). Indeed, (Barbier, 2007) cited the benefits from wetlands may not be fully considered in commercial development decisions and broader public policy initiatives. Likewise, (Ambelu et al., 201), reported that there is a high level of anthropogenic threats to wetlands of Ethiopia. Many wetlands in Ethiopia are regarded as vulnerable zones, and some of the most exploited and mismanaged ones have lost their regenerating capacity and are at the verge of extinction (Alemayehu, 2006). Therefore, undertaking real finding of theoretical and practical aspects and reducing the controversial attitude of the local community and resolve conflict of interest is important for sustainable management of this fragile resource (Kangalawe and Liwenga, 2005). This would clarify the changing features and driving forces of wetland

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degradation as per of various political, socio-economic and environmental issues contexts. Based on this several articles have been reviewed to answers questions a raised with regard to rapid wetland degradation due to various reasons, to what extent these wetland are changed , what are the major consequences for wetland losses, and the future perspective. The values and various services of wetland are decreasing continuously. To develop and firm their continuity for the future, cost should be paid to understand the dilemmas that they face and in identifying the good practices which should be strengthened. Therefore, the intent of this review paper is to summarize the threats of Ethiopian wetlands that suspicion their continuity, identifying the possible consequences and strategic policies that can be opportunity in reducing these threats.

## 2The Role and Dynamics of Wetlands

### 2.1 The Role of Wetland in Ethiopian Context

Worldwide queries with regards to conservation, management and wise use of wetland ecosystems are revealing some fundamental controversial environmental as well as socially, economically and politically sensitive issues. However, they got international recognition as a basic resource for achieving food, water and livelihood security in many parts of sub-Saharan Africa (Oneka and Verhagen, 2000 and Stuij et al., 2002). Wetland ecosystems are thus, critical for human survival since there cannot be water and life in the absence of healthy wetlands (Ounsted and Madgwick, 2008). Recognising the primary ecological functions of wetlands and their economic, cultural, scientific, and recreational values, the Ramsar

Convention on wetlands mandates its member states to stop the continued encroachment and loss of wetlands now and in the future (Pittock et al., 2010). The Ramsar Convention member states are encouraged to contribute towards achieving sustainable development throughout the world by ensuring the conservation and sustainable use of all wetlands through local, national and regional actions, and international cooperation (Ramsar, 2010).

It is a worthless prompt of the vital coupling between sustainable wetland management and human wellbeing and of the severe consequence when the bondage between the two becomes detached (Moges et al., 2016). Hence, well-managed wetlands are among the most productive ecosystems they provide the opportunity for sustainable development, helping to meet the needs for improved living standards in the developing countries like Ethiopia. With their rich, seasonally inundated soils, wetlands have become ‘new agricultural frontiers’ that provide important farming resources for a wide range of sectors (Schuyt, 2005). Further, in many cases of poor rural household have been considered as a safeguard for their livelihood mostly in small wetland that can be managed at community level in most Ethiopia parts (Dixon and wood, 2003). That is the main reason why wetland degradation and loss is likely to aggravate the socioeconomic pressures on the rural poor of the developing nations whilst reducing the options available for maintenance of environmental quality as a main consequence (Ramsar, 2011). Traditionally, they have been used for a wide range of livelihood activities including fishing, agriculture and the collection of water, food and forage (Dixon, 2003; Kangalawe & Liwenga, 2005). As per of the collected data with reference to wetland of Ethiopia benefit (Table1) listed some of their major contributions.

**Table 1:** Major role and wetland benefit in Ethiopia.

Major uses of wetland in Ethiopia	Rate of house holding benefits from wetland in %
Social use of reeds	100% with urban resident
Medicinal plants	100% indirectly by purchase from traditional healers
Domestic water from springs	50–100% depending on the locality
Thatching reeds	85% most rural households
Temporary crop guarding huts of reeds	30%
Dry season grazing – most cattle owners	30% of population
Water for stock – most cattle owners	30% of population
Cultivation	25%
Craft materials	5% palm products and reeds

Adopted from: - Wood et al. (2002)

### 3 Major Ethiopian Wetland Threats

According to the Ramsar Convention, the conservation and wise use of wetlands and associated resources by national action and international cooperation has been put in place as a means to achieving sustainable development throughout the world (Ramsar, 2007). Nevertheless, wetlands are the most threatened, and still the destruction and their alarming alteration has been seen continual mostly in African countries including Ethiopia. As (Hailu, 2007), reported due to the lack of wetland policy in Ethiopia and shortage of land for farming have aggravated the conversion of wetlands into farmlands. This intensifies the land use practices adjacent to wetlands bringing about physical changes to wetland ecosystems in most part of Ethiopia Regions without any legal frame work to limit the speed how fast this is going on. Among the major threats to Wetland of Ethiopia generally include wetland conversion to farm lands by draining (Virbicks et al., 2011), over grazing, over exploitation of resource, appearance of invasive species, and introduction of perennial vegetation, urban settlement (Soni and Bhatt, 2008) and industrialization some regional part of Ethiopia and lack of bioassessment tools (Miller, 2006), brick-making and misconceptions of people towards wetlands (Moges et al., 2016) are the common challenges for wetland degradation. On top of these fact the lack of clear awareness in general public, decision and policy makers coupled with the absence of clear policy and direction on wetland issues are contributing to the problems mentioned above as (Hailu, A., 2005, 2007) and (Yimer, and Mereta, et al., 2013) reported. Besides, (Ambelu et al., 2013) also indicated that in the last 2 decades with an increase of population pressure and limitation of the resources (land, water) farming shifted to wetland including river bank, channel bank and shore line of the lakes.

#### 3.1 Ethiopian Wetland Distribution

On the global review of wetland resources and priorities for wetland inventory conducted in 1999 only 7% of all countries found adequate national wetland inventories and 25% had no available national wetland inventory data (Finlayson and Spiers, 1999; Ramsar COP8, 2002; Revenga, 2003). On top of this issue Ethiopia was not considered as the part of this inventory of the 'best estimate' and reliability assessment global wetland inventory in the AFRICA dataset due to lack of data (Finlayson and Davidson, 1999). However, since then still now in Ethiopia an exhaustive wetland assessment and details survey have not been conducted yet except to some extent (Hailu, A., 2005,) estimated the coverage of wetland in Ethiopia as they cover around 2% of the total of the country land coverage.

### 4 The Role of Private Institution/s in Ethiopian Wetland Conservation

Regardless of many scientific studies reported worldwide the importance of wetlands for ecosystem services, most wetlands have suffered from extensive exploitation in the past century (Xu et al., 2011). Among the main reasons for wetland disappearance drainage for agriculture services are the primary causes (Xu et al., 2011) which take higher percentage for about 50% of the world's wetlands loss. In Ethiopia, in particular in addition to rapid population growth, resettlement of landless and people from dry regions and exploitation activities in wetland areas triggers the expansion of wetland loss (Shewaye, 2008). With this, to some extent some studies have been initiated in response to the speedy wetland loss in Ethiopia, specifically on wetland hydrology (Dixion, 2002; Dixion and Wood, 2003) and socio-economic activities (Solomon, 2004). However, the role of private Institutions are found figure count not only towards wetland management but also concerning the overall ecological condition of wetlands in Ethiopia yet. The development of wetland management plan for Ethiopia wetland will need basic studies including creating awareness, conducting detail survey, and inventories, which should part and parcel of the a wetland development program (Ramsar, 1997). Although there are intergovernmental drivers to support the wise use of wetlands through the obligations under the Ramsar Convention, the Convention has not yet been ratified in Ethiopia (Hailu, 2007). Thus, there is no also national standing wetland policy. That is why their values, ecological services and their associated management issues of Ethiopian wetlands are poorly documented and addressed and in need of immediate actions from governmental and private Institutions from now on wards. Though this is the fact there are some Institutions involved in wise uses wetland management plan for some period but ceased already. These include:

- Ethiopian Wildlife Conservation Organization (EWCO): which focus on Wetland distributions, preliminary mapping and gathering information, protected area management,
- Ethiopian Wetland Natural History Societies (EWNHS), focus on wetland birds, identification of wetland Birds Important areas (IBAs) and promoting the research and the most threatened species
- Environmental Protection Authority (EPA): environmental policy, conservation strategies, Environmental Impact Assessment procedures are some of them. Hence, in depth data that provides scientific information on all Ecological, economic and social status of Ethiopian Wetlands is critically needed.

#### 4.1 Local Community Perception Towards Wetland Management in Ethiopia

As a fundamental point wetland management and sustainable uses need responsible Institute to coordinate national action and application of International principles hand in hand with the local community and stakeholders. Ethiopia has been one of the most populous countries in Africa, and is currently the second largest nation in sub-Saharan Africa Ethiopian Central Statistical Authority (CSA), (2007). Likewise as most African countries also in Ethiopia context due to land scarcity, high population pressure and large family size, local community have insignificant interest towards wise of wetland resources generally, in addition in some part of the regional state the local community have any valuable information what contribution do wetlands have except farm land expansion. Further, the urban households, who were not interested in wetland conservation, were relatively smaller than the agricultural and forested wetlands (Flinn et al., 2008). In addition, (Moges et al., 2016) strengthen this as most households prioritized fulfilling their basic needs rather than conserving wetlands. The Ethiopian government is also emphasizing the improvement of food security with no consideration of ecological sustainability in wetlands (Moges et al., 2016). This is in line with (Lamsal et al., 2015) reported as the people participation in conservation efforts was inadequate although they maintain a positive attitude towards wetland conservation globally. This show us Ethiopian wetland management plan need multidisciplinary coordination to carry out details basic studies inclusively public awareness, survey, monitoring and inventories that would be the part and package of wetland development (Davis,1993,Ramsar,1997) as the rest of the world.

Summary of the reviewed paper and future perspective Generally from reviewed articles the underlying causes of wetland loss as responsible agents have been seen from various sides. Among those causes of Ethiopian wetland degradation are taken as a less important over other priorities or tend to be regarded as free goods to be used without any bench mark. This is mainly due to the absence of proper guiding policy nationally, and at regional state level being taking in to account regional issues to be considered accordingly. Furthermore, there is no coordinated institution for wise use wetland management based on international rules and regulations or weak environmental policy and lack of specific wetland policy nationally for addressing problems associated to wetland degradation. The lack of any strategic planning and capacity for wetland management programs and sustainable uses are other barrier. Besides to the strategic planning and policy problem throughout the country regarding Ethiopian wetland that accelerate their rate of degradation, as the number of the population growth increasing at fast rate there is imbalance of need and demand. Hence, this issue is

also reported as the main reason behind wetland threat that there is expansion of wetland being shifting to agricultural land and improper farming systems, over grazing, brick-mining, urbanization and human settlement, deforestation of forest wetland for energy sources since majority of Ethiopian population are entirely dependent on fire wood for cooking and any other related domestic services, and income generation for their livelihood. Besides, there are also, finger count studies have been conducted basically on Ethiopian wetland which provide the visible real image and ideal data regarding their status, extent of degradation, their relevancy from multidisciplinary directions (social, ecological, economic) role, action to be taken holistically. Moreover, the lack of alternative livelihood for the local community that encourage illegal settlement within the wetland areas though the wetland areas in all Ethiopian regions are not specifically delineated are also another factor identified as a main challenge for wetland degradation. Thus, as a future perspective if this proceeds as it is even some part of the remaining wetlands have no any chance to survive. Therefore, to overcome those challenges if the following action will be taken:-

-if the cultural influence become internalized within the policy guide lines to encourage traditional community based management. For instance in some part of Ethiopian regional state particularly in Oromiya Regional state as a model a Gada systems that the elder or the leaders of the local community will take responsibility to lead the local community to use natural resources in sustainable way under his monitoring frequently. As per of the Gada systems once the leaders of the cultural ruling systems once announce the rules and regulation the community fears mentally not to violet this rules since they think this violation as a cast and this pass to the next generation as a cultural believe. In turn, this enhance the potential mental to take care for wetland resources

- Developing strategic plan as an action by identifying specifically the level of degradation by considering their importance for biodiversity, hydrological, unique flora and fauna constituents
- Increasing participatory approach mediating the local people benefit directly without affecting sustainable uses, if not as the population growth insist on it may be uncertain to attain wetland conservation objectives
- Identifying and prioritization will be given for monitoring and research activities based on their degree of degradation and associating those outcomes with community based management plan
- To initiate focal specific institute for wetland, this consists a number of various governmental bodies organized from various disciplines in the form of national road map to minimize those challenges and build a wetland information database nationally. This fully provides wetland values, socio-economic importance and answers for future

management action accordingly.

- Intensify Environmental Impact Assessment will be conducted before development program

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