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Review on Wetland Ecosystem Destruction

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ABSTRACT

Ecosystem services lie at the heart of interactions between society and nature. Wetlands are natural assets that can deliver ecosystem services from local to regional scales. Due to their unique characteristics, they influence global biogeochemical and hydrological cycles in spite of their scattered nature. The idea of the "wise use of wetlands" derives from intergovernmental treaty the Convention on Wetlands held in Ramsar, Iran, in 1971. Wetlands continue to decline globally, both in area and in quality. Depending on the region, 30–90 % of the world's wetlands have already been destroyed or strongly modified in many countries. Because of wetland losses and degradation, people are deprived of the ecosystem services that wetlands provide. Wetland resources in Ethiopia are not fully documented. In Ethiopia, wetland management is not efficiently coordinated and lacks adequate policy support. The attitudes of people about wetlands have shifted enormously over the past several decades. When both the marketed and non-marketed economic benefits of wetlands are included, the total economic value of unconverted wetlands is often greater than that of converted wetlands. Traditional and modern agricultural expansions, continuous land degradations, urbanizations and industrializations, lack of policies and institutional arrangements, lack of capacities, natural and ecological problems are the most dominant challenging factors of wetlands. Conservation of wetlands is a relatively recent priority, and it has seen more recent shifts from protection of remaining wetlands initially as a static biodiversity resource towards a focus on the many, formerly largely undervalued beneficial functions that these ecosystems provide to society.

Keywords : Wetland, Wetland Ecosystems, Conservation, Destruction

I. INTRODUCTION

Wetlands are defined as 'lands transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water. The Ramsar convention defined wetlands as ". . . .areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres"2 . The United States Geological Survey (USGS) defined wetland as a general term applied to land areas which are seasonally or permanently waterlogged, including lakes, rivers, estuaries, and freshwater marshes; an area of low lying land submerged or inundated periodically by fresh or saline water. Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by shallow water (Ramsar, 2004). The Ramsar Convention takes a broad approach in determining the wetlands which come under its guidance. Under the text of the Convention (Article 1.1), wetlands are defined as: "areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters." (Article 1.1 of the Convention text)

(François et al., 2005). Wetland ecosystems, including rivers, lakes, marshes, rice fields, and coastal areas, provide many services that contribute to human well-being and poverty alleviation (François et al., 2005). Some groups of people, particularly those living near wetlands, are highly dependent on these services and are directly harmed by their degradation (François et al., 2005). Two of the most important wetland ecosystem services affecting human well-being involve fish supply and water availability. Inland fisheries are of particular importance in developing countries, and they are sometimes the primary source of animal protein to which rural communities have access. For example, people in Cambodia obtain about 60–80% of their total animal protein from the fishery in Tonle Sap and associated floodplains (François et al., 2005). The idea of the ‘‘wise use of wetlands’’ derives from the Convention on Wetlands held in Ramsar, Iran, in 1971. The ‘Ramsar Convention’ is an ‘‘intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the ‘‘wise use’’, or sustainable use, of all of the wetlands in their territories’’ (Ostrovskaya et al., 2013). Wetlands cover at least 6 % of the Earth’s surface (Cools et al., 2013). They play a key role in hydrological and biogeochemical cycles, harbor a large part of the world’s biodiversity, and provide a wide range of ecosystem goods and services to humankind but are increasingly threatened by unsustainable uses, both within the wetland, encroachment for crop production or settlements, and in the upstream catchments that provide supporting flows. However, pressure in the form of land reclamation, intense resource exploitation, changes in hydrology, and pollution threaten wetlands on all continents. Depending on the region, 30–90 % of the world’s wetlands have already been destroyed or strongly modified in many countries with no sign of abatement (Cools et al., 2013; Junk et al., 2013). The multiple benefits provided by wetlands often mean that there are competing priorities for wetland use. Management must thus balance the competing needs of different users, as well as the threat of degradation from external pressures such as upstream land and water developments, climate variability and population growth linked to urban development (Cools et al., 2013). The same source stated that, understanding the physical environment of the wetland system itself is an essential requirement in order to counter or reverse the threats; understanding of the institutional and socioeconomic context also needed. Wetland functions are in most cases insufficiently appreciated, and only to a limited extent quantified. This is resulted from the fact that often users/ stakeholders lack sufficient knowledge on wetland functioning, options for sustainable use of the wetland and sustainable development within the wetland (Ostrovskaya et al., 2013). Ethiopia owns different types of wetlands which have national, regional as well as global ecological and socio economic significances. In spite of all their indispensable functions and values, these wetlands are in the rapid crisis of deterioration due to neglect, unplanned and skewed development needs, and priorities. Consequently, wetlands are ranked amongst the most highly threatened ecosystems in Ethiopia and unfortunately the degradation and loss of wetlands are continuing (Gebresllassie et al., 2014). Wetlands are often a last destination for pastoralists during the dry season in most parts of Ethiopia. However, livestock population increases, fodder shortages and the simultaneous expansion of agricultural activities have contributed to exacerbating the grazing pressure on wetlands. In some cases, wetlands have been transformed into rough grazing land. Over-grazing in wetlands can become a threat when for instance year round grazing excludes ecological recovery period of the wetland (Amsalu & Addisu, 2014). Carbon stock significantly differs along the wetland gradient. The Intact wetland has the highest total carbon stock while the converted farmland has the lowest. The total carbon stock in wetlands was more than double as compared to converted cultivated as well as grazing lands (Afework et al, 2015). Wetlands are

often viewed as standalone systems rather than as elements of the river basin. As a result wetlands are poorly integrated into river basin management (Cools et al., 2013). As Ethiopia is prone to desertification and recurrent drought, the effects of wetland loss could be more visible in complicating the situation locally (Gebresllassie et al., 2014). The aim of this paper is to review the status of wetland ecosystems in Ethiopia and required actions for conservation. In Ethiopia, wetlands cover nearly 2% of the total land area of the country. They are one of the most productive ecosystems and perform many functions that maintain ecological integrity.

II. WETLAND ECOSYSTEM STATUS

Wetlands are estimated to cover about 4 to 6% of the world's land (Demissie & Addis, 2015; Junk et al., 2013). Wetlands are a phenomenon of naturally flat terrain. Wetlands occur everywhere in the river basin, from the head waters to the floodplains and the coastal zone. Wetlands have historically been regarded as wastelands, which harbor disease vectors. Therefore, they were regarded as an obstacle to human development and this has led to large-scale drainage and conversion for alternative uses without regard to ecological and socio-economic values (Demissie & Addis, 2015). Wetlands are distinctive ecosystem in between aquatic and terrestrial ecosystems or are transitional zone ecosystems between dry land and open water body (Gebresllassie et al., 2014). Ecosystem services are "the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious, and other nonmaterial benefits." This term corresponds with the usage by the Convention of the terms "products, functions and attributes" (François et al., 2005). In the driest state in a dry continent there are few natural wetlands and many of these are salty and semi-permanent in nature, very few are fresh. Climate change is already affecting the precious few natural wetlands, resulting in some water bodies being inundated for shorter periods of time or drying up altogether (Farrington, 2014). The interests and roles in wetland use and management are diverse. Wetland communities are primarily interested in utilization of wetland resources while the management institutions at sub-county, district and national levels are more interested in conservation. The most important conflicts highlighted by the stakeholders were of two types: conflicts among the local resource users mainly about the use of land; and conflicts between the organizations interested in conservation of the wetland and the community (Namaalwa et al., 2013).

2.1. Status of World's Wetland Ecosystem

The extent of wetlands is not known for several major regions, e.g., South America, Africa and Russia, because detailed inventories do not exist, and the definition of wetlands is not uniform. Small riparian wetlands along low order streams, as well as small depression or temporary wetlands, are often not considered, but may add up to large areas. For example, in the Amazon basin, these areas may cover up to 1 million km^2 (Junk et al., 2013). Areas with intensive agriculture around the world have often been created in river catchments by draining large wetland complexes and converting them to agricultural production (Hefting et al., 2013). Wetlands continue to decline globally, both in area and in quality. As a result, the ecosystem services that wetlands provide to society are diminished (Gardner et al., 2015). The current distribution and extent of wetlands no longer coincides closely with that which previously existed; the conversion and loss of wetlands has seen major changes in the area and ecological condition of many wetlands (Junk et al., 2013).

Previously published global estimates range from 560,000,000–970,000,000 ha (Finlayson & Spiers, 1999). However, the exact data about losses are not widely available. Huge areas of wetlands have been

destroyed in most countries. Wetland destruction is advanced in densely populated regions, such as Western Europe and parts of China, or in countries with shortages of water, such as Australia, and also in countries with powerful agro-industries, such as the USA. On the other hand, wetland restoration and man-made wetlands are becoming increasingly important. In the USA, during recent years, wetland restoration has increased the total area of wetlands. In China, 47 % of the wetlands are human-made (rice paddy plantations and fish ponds) (Junk et al., 2013). A similar situation is found in many tropical and subtropical Southeast Asian countries. But wetland destruction continues in most parts of the world, sometimes at an increasing rate, because of wetland-unfriendly land-use planning (Junk et al., 2013). The global extent of wetlands is now estimated to have declined between 64-71% in the 20th century, and wetland losses and degradation continue worldwide. Because of wetland losses and degradation, people are deprived of the ecosystem services that wetlands provide. Adverse changes to wetlands, including coral reefs, are estimated to result in more than US$ 20 trillion in losses of ecosystem services annually (Gardner et al., 2015).

2.2. Status of Ethiopian Wetland Ecosystem

Ethiopia owns more than 58 different types of wetlands which provide enormous socio-economic and environmental values. Despite all those and other indispensable values, these wetlands are under severe pressure and degradation. Due to improper extraction of uses and misconceptions forwarded to wetlands, the health of the wetlands is continuously decreasing from time to time that in doubt their existence in the near future (Gebresllassie et al., 2014). Ethiopia is often referred to as the water tower of Africa. This resource potential exists in the country's highly varied landforms and climatic conditions, creating a very extensive wetland system throughput, as alpine, fresh, alkaline-lakes, rivers, swamps (Abunie, 1990). Ethiopia having variable topography and altitudinal range, from 126m below sea level to 4,620m above sea level (a.s.l.), is a country endowed with rich wetland resources that include lakes, marshes, and swamps (Yimer & Mengistou, 2009). Wetland resources in Ethiopia are not fully documented. They are currently threatened throughout Ethiopia (McKee, 2007) as cited in (Birhan, Sahlu, & Getiye, 2015). However, many scholars inventory indicates that about 2% of the total land coverage in Ethiopia is wetland. Like other developing countries most of Ethiopian wetlands are under the risk of degradation and loss due to population growth, policy related issues, on site and off site management problems, cultivation of wetland due to fall of upland production, draining, farmers need to meet their household food requirements and occurrence of drought (Mekonnen & Aticho, 2011). In Ethiopia, wetland management is not efficiently coordinated and lacks adequate policy support. Due to the absence of workable institutional arrangement and wetland management policy, sustainable management of wetland and capacity building are not strengthened. As a result the field suffers from shortage of skilled manpower which is capable of disseminating the concept of wise use of wetland (Birhan et al., 2015). The study conducted on wetland conservation and management policy debates on wetlands and considering the threats imposed on wetlands two points of argument have been forwarded. One, to revisit existing wetland policy elements in the different sectors and magnify the issue of wetland development and encourage the respective institutions to consider the issues of wetland development in their strategic and annual development plans. The other contention attaches prime importance of designing a national wetland development policy and using this framework regional states need to develop their own polices that reflect objective realities on the ground (Amsalu & Addisu, 2014).

2.3. Importance of Wetland

Wetlands do not just do one thing. They perform many processes simultaneously and therefore they provide a suite of values to humans (Demissie & Addis, 2015). Wetlands provide a habitat for many

species of plants, animals and other organisms that depend on the reliable source of water and nutrients in the wetland to survive, and cannot live elsewhere. These are wetland dependent organisms, and are those most at risk if a wetland is threatened (Urbye, 2006). A wide range of wetland types are represented in the complex, such as red gum wetlands, lignum wetlands, cane grass wetlands, shallow freshwater marshes and freshwater meadows. These habitats provide important feeding grounds and breeding sites for a large number of species (Farrington, 2014). There are many examples of the economic value of intact wet- lands exceeding that of converted or otherwise altered wetlands. For instance, areas of intact mangroves in Thailand have a total net present economic value calculated based on the economic contribution of both marketed products such as fish and non- marketed services such as protection from storm damage and car- bon sequestration of at least $1,000 per hectare (and possibly as high as $36,000 per hectare) compared with about $200 per hectare when converted to shrimp farms (François et al., 2005). The attitudes of people about wetlands have shifted enormously over the past several decades.

However, the values of wetlands became more and more recognized that wetlands have a far greater importance for ground water protection, regulation of the water cycle, water storage, water purification, and as an ecological basis for many forms of life, especially for fish (Demissie & Addis, 2015). Similar source stated that, Wetlands do not just do one thing. They perform many processes simultaneously and therefore they provide a suite of values to humans. When both the marketed and non-marketed economic benefits of wetlands are included, the total economic value of unconverted wetlands is often greater than that of converted wetlands (François et al., 2005). Wetlands have their own positive impacts on the environment. They serve to slow down storm flood, trap sediments, protect property damage in downstream, and the siltation of dams (Amsalu & Addisu, 2014). A global value for ecosystem goods, services, biodiversity, and cultural considerations of US$ 6,579x109 year-1 has been estimated for all inland waters and wetlands in comparison to US$ 5,740x109 year-1 for all other non- marine ecosystems combined (Junk et al., 2013). Wetlands are vital sources of water and fodder, particularly during dry season and in times of drought, to both domestic and wild animals. Wetlands also serve as important sources of food, construction and fuel wood, raw materials for making household furniture, fodder, and medicine to rural communities. They contribute significantly to efforts aimed at poverty reduction and food self-sufficiency. Growing number of people in Ethiopia, in both rural and urban areas, depend on wetland resources for their survival. Many peasant farmers in the western parts of the country make their living from wetlands (Amsalu & Addisu, 2014). Throughout Ethiopia, past and present wetlands areas have been and still are important sites for livestock grazing. Specifically, wetlands are often a last destination for pastoralists during the dry season in most parts of the country (Birhan et al., 2015). Boye wetland is one of the wetlands found near Jimma town. Socioeconomic activities that take place in the area include grazing land, agriculture, bricks and different types of pottery making. Moreover, the ecological potential of this wetland is that it serves as a habitat for a variety of plant, bird and mammal species and is a water source for human and livestock consumption (Mekonnen & Aticho, 2011).

III. WETLAND ECOSYSTEM DESTRUCTION

Attempts to define wetland degradation have been carried particularly by the Wetlands International for the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention). They distinguish between wetland loss and wetland degradation. Wetland degradation is the impairment of wetland functions as a result of human activity. In practice, wetland loss is rarely independent of wetland degradation, since loss of part of a wetland is likely to impair the functions of the remaining wetland area. Conversely, wetland degradation frequently occurs without the loss of

wetland area, through upstream impacts on hydrology and water quality, etc. Thus, both wetland loss and degradation relate to the change in quantity and/or quality of the wetland resource around a baseline (MOSER et al. 1996).

3.1. Major Causes of Wetland Destruction

The degradation and loss of wetlands is more rapid than that of other ecosystems. Similarly, the status of both freshwater and coastal wetland species is deteriorating faster than those of other ecosystems (François et al., 2005). Nowadays, widely recognized that many of the world's wetlands have been placed under considerable stress through anthropogenic disturbance to catchment surfaces and hydrology, and the direct release of human waste products (Gell et al., 2013). Areas with intensive agriculture around the world have often been created in river catchments by draining large wetland complexes and converting them to agricultural production (Hefting et al., 2013). Wetlands are often considered as wastelands, which should be transformed to "useful" systems, e.g., by traditional agricultural, forestry, husbandry and aquaculture, or for the construction of houses, and infrastructure (Junk et al., 2013). Lack of adequate knowledge and awareness of the social, economic and eco- system benefits of wetlands and the increasing demand for agricultural land due to population pressure and degradation of upland areas are believed to be the most significant reason for increased conversion of wetlands to agricultural lands (Afework et al., 2015). Climate change scenarios predict additional stresses on wetlands, mainly because of changes in hydrology, temperature increases, and a rise in sea level (Junk et al., 2013). The primary direct driver of the loss and degradation of coastal wetlands, including saltwater marshes, mangroves, sea-grass meadows, and coral reefs, has been conversion to other land uses. Other direct drivers affecting coastal wetlands include diversion of freshwater flows, nitrogen loading, over-harvesting, siltation, changes in water temperature, and species invasions. The primary indirect drivers of change have been the growth of human populations in coastal areas coupled with growing economic activity (François et al., 2005). In Ethiopia, wetland resources play a vital role in the lives of adjacent communities by helping them to achieve food security and livelihoods. However, many wetlands throughout the country are facing degradation as high population growth rate increases the need for more fertile agricultural land. Lack of awareness and logistic constraints are important reasons for the weak consideration of wetland ecosystems by the country's development planners (Mereta et al., 2012). Although wetlands have many known characteristics that are important to the livelihoods of local inhabitants, population pressure has caused massive encroachment. Agricultural development in wetlands through either the use of drainage systems or change of land use to hydrophilic plants such as rice is among the causes for wetland loss (Afework et al., 2015). Wetlands in Ethiopia are currently being lost or altered by over utilization and unregulated management. Among such activities that are seriously affecting the wetlands are water diversion for agricultural intensification, urbanization, dam construction, pollution and other forms of intervention (Abunie, 1990). Draining of wetlands for agricultural purpose is a century old practice in some parts of Ethiopia, mainly in Southwest part of the country. However, improper draining mechanisms, double cropping, growing of perennial crops such as sugar cane within wetlands ecosystem have become major threats for the survival of wetlands (Birhan et al., 2015). Traditional and modern agricultural expansions, continuous land degradations, urbanizations and industrializations, lack of policies and institutional arrangements, lack of capacities, natural and ecological problems are the most dominant challenging factors of wetlands in Ethiopia (Gebresllassie et al., 2014). Urbanization is recognized as a major driver of amphibian declines globally. To maintain urban biodiversity, features that promote local amphibian populations must be identified. The construction of storm water ponds is a useful tool for mitigating wetland loss and retaining water runoff from impermeable urban surfaces, yet

their value as breeding habitat for amphibians that require both terrestrial and aquatic habitat to persist remains poorly known (Scheffers & Paszkowski, 2013). Eucalyptus, banana, sugarcane and 'chatt' cultivation on the periphery of the wetlands and 'teff' cropping in the wetlands has been identified as a threat for the survival of wetlands in Ethiopia. Moreover grazing by domestic stocks has also been identified as threats of wetlands (Gebresllassie et al., 2014). Study conducted in South-Bench, Southwest of Ethiopia identified that, Majority of local peoples were dependant on wetlands resource directly and indirectly for their livelihood through non-cultivation and cultivation. However, the unsustainable use of wetlands for cultivation was creating the degradation and/or loss of wetlands system and their precious resources. The major problem associated with unsustainable utilization of wetland for cultivation is lack of proper ownership structure and legal supports over illegal holding of wetlands and its utilization (Mulatu et al., 2015). Boye wetland, near to Jimma town, has been highly degraded and under the risk of loss due to poor watershed management, city solid and liquid wastes disposal, expansion of Jimma town towards the wetland and conversion to agriculture (Mekonnen & Aticho, 2011). The study conducted on Boye wetland by (Yimer & Mengistou, 2009) stated that the aquatic flora and fauna in wetlands can be affected by the degree of human disturbances in the catchment. There is a risk of flora and fauna species reduction due to the abovementioned factors. Though natural factors, ecological factors and lack of potentials are important wetland influencing factors, the most sever and coming severing threats are those related anthropogenic factors. Most of these anthropogenic factors are raised due to engaging the stakeholders on the immediate benefits and values of wet wetlands instead of the long term and sustainable benefits and values (Gebresllassie et al., 2014).

IV. MANAGEMENT APPROACHES OF WETLANDS CONSERVATION

4.1. Global Approaches of Wetlands Conservation

Pressures on the World's freshwater resources are increasing rapidly due to rising populations and climate change, necessitating improved management of freshwater ecosystems if the many services they provide are to be sustained (Rebelo et al., 2013). Wetland managers are faced with an array of challenges when restoring ecosystems at risk from changing climate and human impacts, especially as many of these processes have been operating over decadal millennial timescales. The management of the catchment drivers of wetland condition faces an additional challenge when viewed from the long-term record of change (Gell et al., 2013). Addressing the challenges requires improved management of wetlands. Defining what constitutes 'good' wetland management is a delicate undertaking as what is considered 'good' is likely to differ between users/stakeholders and from one location to the next. Notwithstanding these complications, several international agencies have expressed their perspective on what they believe amounts to 'good wetland management' (Ostrovskaya et al., 2013). In order to facilitate more evidence-based wetland management, it is important to translate the existing knowledge into the local context, preferably through a combination of scientific tools, expert opinion and stakeholder knowledge. The role of scientific and technical studies is then to identify links and interdependencies that may not be obvious at the local level, to provide predictive capacity for situations outside local experience, and based on this to identify thresholds and tipping points where management (or lack of it) could fundamentally transform the system. The role of local experts and stakeholders is to provide insights in the dynamics of the system (bio-physical, socio-economic and institutional), to highlight pressures and potential conflicts and to assess feasibility, acceptance and preference of proposed solutions (Cools et al., 2013). Wetlands are too often perceived as standalone

elements and are poorly integrated into river basin management. The Ramsar Convention recognizes the critical linkage between wetlands, water and river basin management; the governments that are party to the Convention have committed to conserving their wetlands within a framework of Integrated Water Resources Management (IWRM). The "Critical Path" approach and related guidance have been adopted by Contracting Parties of the Ramsar Convention in order to effectively integrate wetland conservation and management into river basin management planning and decision-making. However, despite international acceptance of the approach, it is not widely implemented (Rebelo et al., 2013). The Convention on Biological Diversity (CBD) and the Ramsar Convention are linked not only as a result of the ecological linkages between the ecosystems that they work with, but also due to policy linkages between them. Ramsar incorporates the CBD directly in its mission since the wise use of wetlands requires use of the ecosystem approach as defined by the Convention on Biological Diversity. While Ramsar and the CBD have different focal points and Parties, proper implementation of either convention requires the consideration of ecosystem linkages, thereby strengthening the importance of close partnership between the CBD and Ramsar (Blumenfeld et al., 2009).

4.2. Ethiopian wetland management Approaches

Wetlands are a common feature of the landscape in the highlands of western Ethiopia, particularly Western Wellega and Illubabor. The warm, temperate climate, characterized by a mean annual temperature of around 20°C and annual rainfall usually in excess of 1500 mm, together with the undulating to dissected topography, which ranges between 1000 and 2000 m above sea level, produce an environment characterized by steep-sided river valleys and flat, waterlogged valley bottoms (Dixon & Wood, 2007). Many developed and developing countries signed in and supported the inclusion of agriculture and wetland projects in the Kyoto Protocol. But Ethiopian government has not yet tried to take advantage of this opportunity and start negotiations to use conservation and improvement of wetland's carbon sequestration potential in the country to obtain carbon funds as an economic incentive for the communities involved (Afework et al., 2015). There are conflicting accounts of the origins of wetland cultivation in the Western Ethiopia, it is generally agreed that more intensive forms of wetland cultivation were initiated in response to food shortages on the uplands caused by drought in the early years of the 20th century (Dixon & Wood, 2007).The conversion of wetland to agriculture and drainage in southwestern Ethiopia is increasing through time. In Illu-Abba-Bora Zone, the percentage of wetlands converted to agricultural land is 27.7% in 2003 and 65.6% in 2006, which doubled within three years is an example of loss of wetlands (Legesse, 2007) as cited by (Mekonnen & Aticho, 2011).

V. REQUIRED ACTIONS FOR IMPROVING WETLANDS CONSERVATION

Wetlands have been the focus of conflicts in societal priorities throughout human history, with competing demands for water and land use delivering a range of ecosystem services but contributing to severe degradation and loss. Conservation of wetlands is a relatively recent priority, and it has seen more recent shifts from protection of remaining wetlands initially as a static biodiversity resource towards a focus on the many, formerly largely undervalued beneficial functions that these ecosystems provide to society (Maltby et al., 2013). Studies from several parts of the world have further shown that wetland creation and restoration has definitely enhanced regional flora as well as fauna diversity in intensively used agricultural landscapes. As long as the nutrient loading of these wetlands does not surpass critical limits, plant and animal diversity is not threatened by the effects of the nutrient inputs (Hefting et al., 2013). Any development related to water resources or wetland ecosystems should be better instituted (based) on environmentally sound planning system

and, hence, ensuring long term ecological productivity and welfare of the local community (Abunie, 1990). Wetland resources in Ethiopia could be considered as an integral component of the environment in the country and provide multifarious social, economic and ecological benefits (Amsalu & Addisu, 2014). Policymakers have sufficient scientific information to understand the urgent need to take appropriate actions to conserve wetlands and their services to people (Gardner et al., 2015). To update existing information and also to collect a comprehensive data on wetland resources across the nation, there is a need for preparing a fund soliciting project by interested groups and forward the project to potential donors to secure the fund to carry out the task. In this regard universities can take the initiative to establish a consortium and enhance the overall activity. This consortium can also be made in charge of reviewing all the national and regional workshops conducted in the country over the years and synthesize the salient features of wetland resource management in the country (Amsalu & Addisu, 2014). In order to reverse emerging problems and conserve these fragile but crucial wetlands, integrated problem solving approach through realizing the collaboration of relevant stakeholders from policy level down to grassroots community is indispensible opportunity to Ethiopian wetlands. Government, Communities, private sector and all others who have stake in wetlands should cooperate and contribute their part. Decision makers at higher levels are required to strengthen sustainable wetland management efforts through effecting policy and legislation, improving institutional arrangements and supporting capacity building initiatives. It is appropriate to reevaluate the significance of wetlands and their environs for national development, and also the consequences of wetland degradation (Gebresllassie et al., 2014).

VI. SUMMARY AND CONCLUSION

Wetland plays a significant role in regional ecosystem, such as the regulation of climate, cleansing of environment and balancing of regional water. The wetland provides critical habitat for a large number of flora and fauna. Wetlands are the link between land and water, and are some of the most productive ecosystems in the world. Some common names for different types of wetlands are swamp, marsh and bog. Wetlands provide fundamental ecological services and are regulators of water regimes and sources of biodiversity at all levels; species, genetic and ecosystem. Wetlands constitute a resource of great economic, scientific, cultural, and recreational value for the community. Wetlands play a vital role in climate change adaptation and mitigation. Progressive encroachment and loss of wetlands cause serious and sometimes irreparable environmental damage to the provision of ecosystem services. The destruction of wetlands is a concern because they are some of the most productive habitats on the planet. They often support high concentrations of animals including mammals, birds, fish and invertebrates and serve as nurseries for many of these species. Many animals that live in other habitats use wetlands for migration or reproduction. The ability of wetlands to recycle nutrients makes them critical in the overall functioning of earth. No other ecosystem is as productive, or as unique in this conversion process. In some places artificial wetlands were developed solely for the purpose of water purification. Today, less than half of the nation's original wetlands remain. Activities resulting in wetlands loss and degradation include: agriculture; commercial and residential development; road construction; resource extraction; industrial siting, processes, and waste; dredge disposal. The primary pollutants causing degradation are sediment, nutrients, pesticides, salinity, heavy metals, weeds, low dissolved oxygen, and selenium. Despite the efforts of regulatory programs and private conservation organizations, degradation and destruction of wetlands will continue unless offset by additional protection approaches. Now, it is recognized that numerous losses are incurred when a wetland is damaged or destroyed. Restoration and creation can help

maintain the benefits of wetlands and their surrounding ecosystems and at the same time accommodate the human need for development. Being that wetlands are part of environmentally provided assets that make up our natural capital, the depletion of a large portion of them indicates that the welfare of our environment is in a poor state. In order to sustain the ecosystem, environmental assets must be maintained, or at least not depleted.

VII. PROSPECTS

Ethiopia is prone to desertification and recurrent drought, the effects of wetland loss could be more visible in complicating the situation locally. As many literatures stated wetlands as a crucial ecosystem requires a collaborative action to conserve and mange for the wise use of the resources. From the review of different study in order to reverse these emerging problems and conserve these fragile but crucial wetlands the following recommendations are forwarded.

- ✓ Awareness should be created about the crucial importance of wetlands in all stage; from local community, policy makers and all concerned bodies.
- ✓ A big attention should be given for the sustainability of wetland resources.
- ✓ There should be a collaborative effort from different sectors and stakeholders.
- ✓ Wetlands should be restored and rehabilitated, whenever possible.
- ✓ Wetlands should be conserved by ensuring their wise use.
- ✓ Support local wetlands and watershed protection initiatives by donating materials, time, or money.

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