

Ethiopian Biodiversity Institute (EBI)



ETHIOPIAN AQUATIC AND WETLAND ECOSYSTEMS: PRECIOUS BIOTIC SYSTEMS UNDER THREAT

Policy Brief



Ethiopian Aquatic and Wetland Ecosystems: Precious Biotic Systems under Threat

1. Summary

Aquatic and wetland ecosystems are areas that are either covered by water or where water is the primary factor controlling the environment year round or for a varying period of time. They are home to diverse genetic resources and are playing a critical role in a variety of ecosystem services fundamental for people's well-being and national economy.

However, these ecosystems are under serious pressure due to several proximate threat factors such as area conversion to different land uses, over exploitation of resources, agricultural and industrial pollution, invasive alien species (IAS), among others. The ultimate underlying or root causes for all the above include overpopulation coupled with inefficient governance and poverty. This policy brief emphasizes the urgent need for action to protect and conserve these ecosystems. It explores the current status and trends of Ethiopian aquatic and wetland ecosystems, highlighting risks they face and potential consequences of further delays in taking policy and management actions. It presents policy options, including formulating and strengthening policy and legal frameworks, promoting integrated water resources management, and implementing restoration and conservation actions. Furthermore, the policy brief recommends formulation of regulated aquatic resources access and adoption of sustainable management practices through enhanced involvement of local communities in resource management decisions. In summary, the policy brief further highlights the immense potential of the Ethiopia aquatic and wetland ecosystems, the multiple pressures threatening the resource base, policy options to reverse the declining trend of the resource-base and key policy recommendations that will help create enabling conditions for ensuring rehabilitation, restoration, conservation and regulated use of these sensitive ecosystems.

2. Introduction

Ethiopian aquatic and wetland ecosystems include lakes, rivers, marshlands, inland waters, man-made reservoirs and wetlands, and peat lands, among others. There are 12 major watersheds associated with major drainage basins covering an estimated area of 18,587 km². Lakes, reservoirs and rivers of Ethiopia alone cover an estimated areas of 7,444 km² (about 0.07% of the country's landmass), but the potential may account to about 1.5-2.0% of the country's landmass if man made reservoirs such as dams are taken into consideration. These ecosystems play a vital

role in the economic, social and environmental development endeavors. Goods and services generated by these ecosystems fall under the four major ecosystem service categories of the Millennium Ecosystem Assessment (MEA): provisioning; regulating, supporting; and cultural and spiritual services. The goods and services that flow from these resource-stock contribute to national and sectoral economic development. The ecosystems provide goods such as water for house-hold use and agricultural activities; and support fishery, pasture and grass production, energy generation, formation of fertile riverine soil, waste sink, habitat for aquatic organisms and transportation services, among others. It also provides intangible ecosystem services such as flood mitigation, microclimate control, aesthetical services, and cultural and ritual services. However, these ecosystems are currently facing significant threats that jeopardize their integrity and the services they provide which, in turn, undermine the contribution of these ecosystems to socio-economic development of the country.

One of the primary threats to Ethiopian aquatic and wetland ecosystems is area conversion to different land-uses, primarily agricultural activities followed by overexploitation of resources and pollutants released from agricultural and industrial activities. The agricultural expansion to aquatic and wetland ecosystems is derived from social stressors such as population pressure, accompanied by various maladaptive economic activities including growing application of agrochemicals and expansion of invasive alien species. Other threatening factors are related to industrial pollution, unplanned urbanization that gradually leads to encroachment, shrinkage and loss of aquatic and wetland biodiversity. Moreover, human activities such as overexploitation of resources, unplanned land use change, and placement of infrastructures in sensitive ecosystem zones seriously threaten these precious ecosystems.

If these threats go unchecked and no appropriate actions are taken, the consequences will be severe. The degradation of Ethiopian aquatic and wetland ecosystems will lead to decline in biodiversity and reduced availability of ecosystem goods and services. The deterioration of these ecosystems and their services will have detrimental effects, particularly on local communities and overall ecological functioning of the country and beyond.

To address these challenges, it is crucial to prioritize protection, rehabilitation and development of Ethiopian aquatic and wetland ecosystems as a prerequisite for conservation and sustainable use. Therefore, immediate interventions are required to: mitigate wetland conversion to other land uses, restore degraded habitats, promote sustainable management practices and prevent pollution of aquatic systems. Ensuring sustainability of these precious ecosystems and climate resilient development is achievable by adopting integrated approaches to water resources

management, formulating and implementing policy and legal frameworks as well as engaging local communities in decision-making processes.

3. Rationale

Assessments on the current status and trends of Ethiopian aquatic and wetland ecosystems reveal several alarming signs that range from local extinction of species to dwindling of vital ecosystem services and other associated environmental challenges. Most of the threats arise from unwise economic development practices that do not take the issue of sustainability into consideration, lack of appropriate policy instruments, and weak regulatory measures that shape resource use norm.

In line with the above, land-use decisions, agrochemical use, industrial waste handling, and invasive alien species control and management are among issues that need framework of regulation and law enforcement at all levels. Furthermore, enhancing the National Biodiversity Platform, established to strengthen the policy-science-practice interface, is highly vital to facilitate dialogue and consensus building where all tools and scientific information could be exchanged. Above all, national enabling conditions that underline institutional and legal frameworks are primary policy requirements prerequisite to defining: broader objectives of aquatic and wetland ecosystem protection, roles of national institutions, mechanisms of national coordination pertinent to aquatic and wetland ecosystem, rehabilitation and development of the aquatic and wetland ecosystems, financing mechanism for development, and conservation and sustainable use of these resources. Likewise, the enabling policy frameworks need to sufficiently integrate local community knowledge and wisdom for harnessing integrated resources development and management to ensure the 2050 Vision of Living in Harmony with Nature. A system of society-wide mobilization is imperative to disseminate the awareness and knowledge on the vital roles of biodiversity, in general, and aquatic and wetland ecosystems, in particular, as this will contribute to sustainable economic development and creating a broad-based rehabilitation that involves local community engagement.

Thus, it is high time to take urgent actions to mitigate and reverse the degradation of aquatic and wetlands ecosystems and enhance their contribution to the national economic development and societal well-being.

Policy Options

4.1. *Enhanced sectoral commitment and regulated access approach*

This option focuses on mobilizing different sectors to ensure sustainable use of aquatic and wetland ecosystems through inclusive engagement of multi-stakeholders and regulated access to component resources. Accordingly, open access regime is discouraged and more sustainable and regulated resource use principles are promoted.

4.2. *Legal framework for conservation and sustainable use*

Formulating stand-alone and comprehensive laws and regulations is crucial to address the threats the Ethiopian aquatic and wetland ecosystems are facing, as a means to: deter unwise use of the resources base, effect compliance measures and prevent illegal activities. Envisaged undertakings include: developing comprehensive legislation that specifically prohibits unsustainable resource use, habitat conversion and pollution; strengthening law enforcement mechanisms, including market-based measures pertinent to polluters pay; and putting resource use threshold; and establishing monitoring mechanisms.

4.3. *Paying back to nature/valuing nature*

Nature deserves reward and it is also important to recognize the contributions of stewards of biodiversity. With respect to this, one of the available schemes to payback nature and incentivize conservationists is payment for ecosystem services (PES). Payment for ecosystem services provides opportunities for protection, restoration, conservation and sustainable use of aquatic and wetland ecosystems and incentivizes actors therein. This approach facilitates effecting payments in return to goods and services drawn from the specific ecosystems thereby benefiting relevant institutions, groups or individuals. As market-based instrument, PES can help ensure the long-term conservation of these ecosystems by directly involving stakeholders in their management.

4.4. *Ecotourism Development*

Promoting the development of sustainable ecotourism activities in and around aquatic and wetland ecosystems is one of the approaches for protection, restoration, conservation and sustainable use of aquatic and wetland ecosystems. This option involves creating opportunities for tourists to experience and appreciate the natural beauty and biodiversity

of these ecosystems while generating income for the nation in general, and local communities, in particular. By capitalizing on the socio-economic values of these ecosystems, ecotourism can provide a strong incentive for their conservation and sustainable management.

4.5. Invasive alien species management

Invasive alien species have the potential to disturb the equilibrium of aquatic and wetland ecosystems, posing a threat to the integrity of native genetic resources and functioning of the system. Therefore, it is required to pro-actively manage and address the challenges presented by invasive alien species, maintaining the delicate balance of the ecosystems. Additionally, strict enforcement of regulations pertaining to the introduction and release of potentially invasive species is crucial to prevent their establishment and expansion.

4.6. Integrated ecosystem-based management

Integrated land-use (ecosystem) management fosters a synergistic relationship between development and conservation, promoting concurrent implementation. The integrated ecosystem-based management approach advocates sustainable practices, striving to achieve equilibrium between economic development and environmental protection. It integrates land-use planning and the ecological significance of aquatic and wetland ecosystems. This involves the formulation of zoning regulations that prioritize the preservation of wetland areas and restrict activities that pose habitat degradation threats. Furthermore, encouraging sustainable ecosystem management practices can be achieved through the provision of incentives such as tax breaks or subsidies for initiatives embracing eco-friendly principles, or removing harmful subsidies dedicated to non-eco-friendly undertakings.

5. Recommendations

To address the threats faced by Ethiopian aquatic and wetland ecosystems and enhance their vital contribution to the national and local economies, the following recommendations are proposed:

5.1. Integrate conservation and sustainable management of aquatic and wetland ecosystems into national policies and strategies: Put in place policies, strategies and other legislative tools that pertain to aquatic and wetland ecosystems; mainstream the legislative tools into national development plans; and consider to be part of international arrangement and processes, and ensure the effective implementation of policies, strategies and plans are effectively implemented at all levels.

5.2 Enhance capacity for research and monitoring: Strengthen capacity to conduct comprehensive research and biodiversity monitoring to improve understanding and management practices of these ecosystems. This will help to identify key areas of concern, track changes over time, and inform evidence-based decision-making and management strategies.

5.3. Strengthen collaboration and coordination: Foster collaboration among government agencies, local communities, NGOs, the private sectors and other stakeholders directly or indirectly involved in the management and conservation of aquatic and wetland ecosystems. This will enable for establishing or strengthening platforms for dialogue, information sharing, and joint decision-making to ensure effective implementation of conservation measures.

5.4. Raise public awareness: Devise and execute targeted awareness creation undertakings to inform policy makers and educate the general public about the importance of aquatic and wetland ecosystems, their values, and the threats they face. This will help promote public participation in conservation efforts and encourage responsible behavior towards these ecosystems such as reducing pollution and supporting sustainable resource use.

5.5. Improve fiscal budget allocation and other resources availability: Secure adequate financial resources to support the implementation of sustainable management practices and conservation initiatives. This includes mobilizing finance and other resources for effective management of the ecosystems.

5.6. Prioritize aquatic and wetland ecosystems for restoration and conservation: Identify affected water systems and wetlands and set priority for their conservation. In line with this, it is crucial to conduct nationwide survey of aquatic and wetland ecosystems and arrive at compiling a comprehensive information on their status, drivers of change and trends of changes.

Adopting the above recommendations would enable Ethiopia to ensure conservation and sustainable use of aquatic and wetland ecosystems. This will not only help the conservation of biodiversity and maintenance of ecosystem services but also contribute to the national development and well-being of its people.