

ADDRESSING LAKE BESEKA'S CHALLENGES: POTENTIAL SOLUTIONS

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Lake Beseka, a shallow saline lake in the East African Rift Valley of Ethiopia, has expanded considerably since the 1960s, inundating a large land area. The lake's expansion is a result of groundwater discharge, inflow from hot springs, and excess irrigation water entering the lake through subsurface flows. Figure 1 shows its growth from 1986 to 2012.

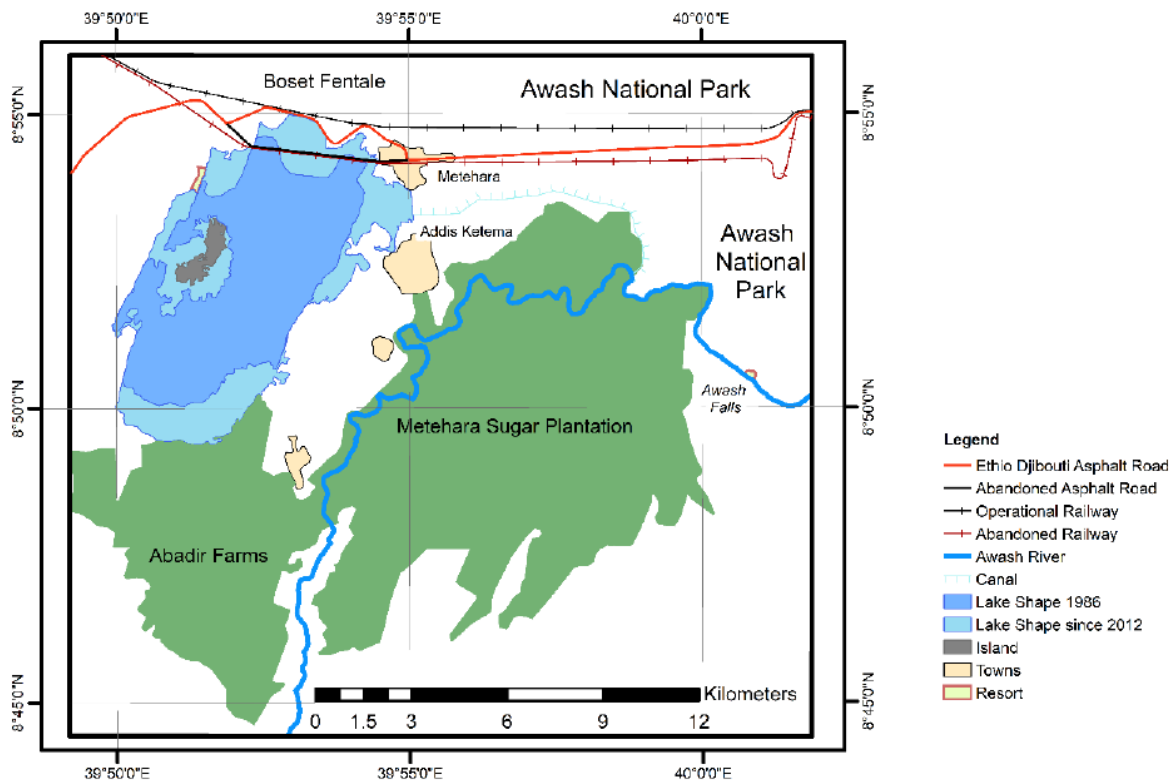


Figure 1

Source: Authors.

In 2011, a two-canal system was designed to release excess water from Lake Beseka into the Awash River and slow the lake's expansion. The canals connect the bottom of the lake to the river. This technical solution saved the nearby town of Metehara from submersion, but sulfuric and saline water from the lake have affected the water quality in the Awash River, increasing soil salinity and reducing farm yields. Moreover, the system's gates are currently broken, so the canal is not functioning, and it is unclear who manages the water releases.

While the reasons for the lake's expansion have been well researched, there has been little focus on the governance and institutions crucial to improving lake management. To understand the relationships among key actors who use and manage the water in the Awash River, this study conducted key informant interviews (KIIs) and social network analysis (SNA).

Key Informant Interviews

KII respondents identified an efficient regulatory environment as the most important factor in allocation of the river water. They listed flooding, poor water quality, water insecurity, and health effects as the four main hydrological challenges faced by stakeholders; the severity of these problems varies across upstream and downstream users and across sectors. KIIs also indicated that the lake's expansion was exacerbated over the past 10 years by the Fentale-Bosset irrigation project, which increased the underground interconnections between the Awash River and Lake Beseka systems.

Social Network Analysis

The SNA revealed that relationships between upstream and downstream stakeholders are mediated through just a few central government actors. Collaborative ties exist within the government sector, while relationships among local actors are often characterized by conflict. The clusters of relationships are shaped by local boundaries, indicating that geographic location matters in building networks. Fewer cooperative ties were found downstream than upstream, suggesting that downstream water quality problems reduce the potential for cooperative links among that area's stakeholders.

Potential Solutions

Based on this improved understanding of governance and institutional relationships among stakeholders in the Lake Beseka–Awash River area, this study makes three recommendations for solving the water basin issues:

► Recognize existing informal networks of stakeholders

Both informal and formal relationships are integral to the management of land and water resources in the Awash Basin. Local authorities play the role of “brokers,” connecting community-based organizations and private actors and enterprises that use the lake and the river.

Tensions exist between the upstream farming communities and the downstream agropastoral users. These tensions worsen in the dry season when the Awash River's flow decreases and both private farms upstream and pastoralists downstream face water scarcity. There are very few collaborative ties between the small-scale farmers and agropastoralist communities, as both groups are excluded from the Awash Basin Authority, which controls the Water User Association (WUA). Because they are not included, these informal users do not have to abide by any water allocation decisions made by the formal WUA institutions. This situation gives formal actors little incentive to abide by the formal

system's rules and may further degrade relationships among stakeholders. Development of solutions must be inclusive of small-scale farmers and the agropastoralist communities as well as the larger private farms, or else the current water conflicts will persist.

► **Build on existing stakeholder relations**

Stakeholder groups have the potential to contribute to solutions in different ways. The Awash Basin Development Office and Metehara Sugar Farm are both influential stakeholders, and their inclusion will be key to ensuring effective governance of the lake. Local government authorities such as the Metehara Municipality and Fentale Woreda are equally important. These regional offices play a cross-cutting role across multiple sectors, which can facilitate governance of the basin's water resources. Universities can act as mediators, connecting science, policy, and implementation. Local NGOs and external donors can mobilize communities and finance the activities of federal and local stakeholders.

When developing a framework for managing water resources, the existing relationships among all actors involved — including cooperative and conflictual relationships — must be considered. The WUA, as currently constituted, is highly centralized. This leaves little room for collaboration and co-management of the water resources by all stakeholders, especially informal users. Existing collaborative networks must be leveraged to ensure a sustainable solution is reached.

► **Change the status quo**

Clearly, the current approaches to managing water in the region are unsustainable, including the inoperative canal system and the organizational arrangement. Potential regional solutions that emerged from the study included wetland development outside of the Awash National Park, dam building, and desalinization of Lake Beseka water. At the farm level, KII respondents suggest introducing salt-tolerant crops, more water-efficient irrigation technologies, and better land tenure security. Further research is needed to assess the costs and benefits of the proposed solutions, including consideration of potential unintended consequences affecting underrepresented stakeholders to ensure these are minimized.

Related Resources

Mekonnen, Dawit Kelemework; Tensay, Teferi M.; Yimam, Seid; Arega, Tiruwork; Beyene, Eprem G.; Zhang, Wei and Ringler, Claudia. 2022. "Key Stakeholders and Actions to Address Lake Beseka's Challenges in Ethiopia: A Social Network Approach." IFPRI Discussion Paper 2135. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.136359>

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This document is an output from the [REACH programme](#) funded by UK Aid from the UK Department for International Development (DFID) for the benefit of developing countries (Aries Code 201880). However, the views expressed, and information contained in it are not necessarily those of or endorsed by IFPRI or DFID, which can accept no responsibility for such views or information or for any reliance placed on them. This publication is not peer reviewed.

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