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“Competing pathways for equitable food systems transformation:
Trade-offs and synergies”

Austrian African University Network - Strengthening community-based research for river health and climate change mitigation in Eastern Africa

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Abstract

Most urban areas in Sub-Saharan Africa depend on sustainable and resilient use of freshwater ecosystems, especially for their drinking water supply. However, the water quality of these ecosystems is often jeopardized by pollution from industry and agriculture, as well as the critically increasing effects of climate change. Water quality monitoring in Uganda is limited to physical and chemical indicators so far, which are considered short-term and highly inconstant drivers. Sustainable management of freshwater resources is challenging as it requires a holistic socio-ecological understanding of (1) the environment and (2) human interactions to enable the best inclusive decisions for mitigation and restoration measures. Our project focuses on one of Uganda’s main River (Kafu) catchments around Kampala. The implemented multiple lines of evidence method identified agriculture, industry, urbanization, and climate change as the most critical drivers of freshwater and ecosystem degradation. Multiple lines of evidence have been drawn from international and local publications, expert judgment, community knowledge, and abiotic and biotic (benthic invertebrates) field data. A trans- and interdisciplinary cause-effect model, finalized in a participatory approach, allowed the transfer and facilitating of complex scientific results in a “Driver-Pressure-Status-Impact-Response” framework to a broader public. The key lesson learned, to respect aquatic ecosystems and their function of resilience, underlined the community-engaged and scientific relevance to identifying the best and most sustainable socio-ecological training programs and locally adapted recommendations to politicians, stakeholders, and decision-makers.

Keywords: Cause-effect models, community-based methods, freshwater ecosystems, multiple-lines of evidence, water quality, Uganda