



TOWARDS GROUNDWATER SECURITY IN COASTAL EAST AFRICA – AN INTERDISCIPLINARY STUDY IN COMOROS, KENYA AND TANZANIA.

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Abstract

Rapid population growth, economic development and environmental change are placing unsustainable pressures on groundwater resources in coastal East Africa. Saline intrusion is an issue in many areas where abstraction of groundwater exceeds local recharge rates while poorly constructed wells and inadequate source protection lead to contamination and associated public health issues. Building resilience to future growth and climate change in these regions is dependent on understanding the current status of the resource and assessing the interplay of the environmental and demographic forcing factors. Presently, however, comprehensive information is unavailable and the status of groundwater in many areas is not well-constrained.

In response, this project (funded by the UPGro Catalyst Programme) aims to address the knowledge gap through targeted, interdisciplinary research at pilot sites in Kenya, the Comoros Islands and Tanzania, to establish the current status of groundwater resources, to identify issues with past practices and develop strategies towards groundwater security.

An integrative approach is applied to the components of the groundwater cycle in each site. Detailed hydrogeological and geophysical investigations are applied to characterize the aquifers and current water infrastructure. Land use mapping and infiltration measurements, together with near-continuous monitoring of weather and piezometric change allow assessment of the hydrological and environmental driving factors affecting recharge. The social and political aspects of water use are incorporated through social surveys and workshops with stakeholders and end users, to identify water supply and monitoring needs and their expected evolution.

A synopsis of the results from these sites, covering a range of geological, environmental and demographic typologies is presented. These data provide a key first step towards modeling for projected demographic and climate change scenarios and the pilot sites a valuable resource for further long-term monitoring.