Unlocking the Potential of Groundwater for the Poor

CATALYST PROJECT
A social and natural science approach to enabling sustainable use of groundwater for the benefit of the poor

STUDY NAME

Assessing Risks of Investment in Groundwater Resources in Sub-Saharan Africa (ARIGA)

RESEARCH ORGANISATIONS

World Agroforestry Centre (WAC), University College London (UCL), Training and Research Support Centre (TRSC), Acacia Water (AW), Centre for Training and Integrated Research in Arid & Semi-Arid Lands Development (CETRAD)

RESEARCH TEAM

WAC: **Jan de Leeuw (PI)**, Eike Luedeling, Maimbo Malesu, Alex Oduor
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RESEARCH AIM / HYPOTHESIS

The risks to current and future generations of over-exploiting groundwater resources in African dryland areas can be reduced through the development of a framework for addressing uncertainties where data is scarce, and using it to assess the financial investment risks and social impacts of increased groundwater abstraction.

STUDY DESCRIPTION

Decision-makers in the developing and developed world are notoriously poor at considering the risk that an investment or intervention could fail to achieve its objectives. This is also true for groundwater development projects in African drylands. A host of uncertainties around costs, benefits and risks make the success of such projects far from certain. When interventions aim not only at providing potable water, but also at ensuring environmental sustainability and equitable distribution of project benefits, current best-practice impact assessment methods for groundwater development are inadequate.

ARIGA aims to develop a novel approach for projecting the impact of groundwater development projects that does justice to the multiple uncertainties that accumulate along the entire socio-hydrological impact pathway. This approach starts with mapping out the impact pathway, starting with the investment or management decisions that will affect the hydrological system through to the likely impacts on the livelihoods of water users. It models and assesses the probability of envisaged outcomes, using quantitative estimates of the uncertainty of individual variables in this socio-hydrological system.

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The research presents an approach to address uncertainties around ground water development and applies this to model the uncertainties around investment in development of the fossil Merti aquifer in Northern Kenya. This aquifer provides water to the world's largest refugee camp, population 630,000, and may already be over-utilized. The investment uncertainty modelling focuses on far advanced plans to abstract water from the Merti aquifer to supply drinking water to the city of Wajir. Recent devolution of government authority to county level also leads to a spur of local aspirations and plans for water development that is likely to affect the use of the Merti aquifer far beyond recharge capacity. The second part of the research aims to assess the impacts of these various plans and aspirations and review the effectiveness of the devolved political and water management institutions to effectively manage the sustainable use of the groundwater.

The models that will be developed will assess the level of uncertainty and value of information of the basic geo-hydrological parameters. This value of information approach will serve as guidance for selection of key parameters to focus on for a follow up proposal to the next UPGro round with a view to supporting initiatives to manage the aquifer to achieve greater social sustainability including intergenerational equity.

WHERE?

Kenya

WHERE TO FIND OUT MORE:

worldagroforestry.org

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