



STUDY NAME

Sustaining groundwater safety in peri-urban areas

RESEARCH ORGANISATIONS

University of Southampton (USO), University of Bristol (UBR), University of Surrey (USU), Jaramogi Oginga University of Science and Technology (JOOUST) and the Victoria Institute for Research on Environment and Development International (VIRED)

RESEARCH TEAM

USO: **James Wright** (PI)
UBR: Stephen
USU: Steve Pedley
JOOUST: Lorna G. Okotto
VIRED: Joseph Okotto-Okotto

RESEARCH AIM / HYPOTHESIS

This pilot project aims to assess how far the poor in Kisumu, Kenya, are exposed to unsafe groundwater, both now and in 2030. The research questions are:

What are the water quality implications of rapid urban growth and intensive groundwater exploitation in peri-urban areas, now and in the future under different development scenarios?

To what extent are the urban poor differentially exposed to unsafe groundwater, now and in the future using the same scenarios?

STUDY DESCRIPTION

A recent study of sanitation and water provision for people living in developing countries found that over two billion people live in places where pit latrines are prevalent and use groundwater as their main source of drinking water. Why is this important? Pit latrines dispose of faeces into the ground, where the diffusion of pathogens and chemicals out of the pit can contaminate the water that is used for drinking. Under these conditions disease can spread quickly and death in childhood can be common. Many cities in sub-Saharan Africa are growing rapidly and piped water and sewerage systems struggle to keep pace with this growth. Consequently, in poorer neighbourhoods, many households are forced to improvise to meet their sanitation and water supply needs: they rely on a mix of pit latrines and shallow wells, potentially exposing them to contaminated groundwater.

This pilot project aims to assess how far the poor in Kisumu, Kenya, are exposed to unsafe groundwater, both now and in the future. Kisumu is the third largest city in Kenya and its population is increasing rapidly. Most of the population growth is in the peri-urban slum districts around the outskirts of the city. In common with other slum areas pit latrines are the dominant form



**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

of sanitation and hand-dug wells are a vital source of water. Recently, the Government of Kenya published a development planning framework called Kenya Vision 2030. Some of the key development objectives within the Vision document are: installation of physical and social infrastructure in slums; rehabilitation and expansion of urban water and sanitation facilities; and solid waste management. We are using the Vision document as the point of reference for this project. It will provide the timeframe for predicting the outcomes of the different development strategies that are being promoted by Vision 2030.

The initial project phase will involve networking activities, limited groundwater quality testing, and an initial feasibility study looking into different future population and land use scenarios and their impact on groundwater quality. Water quality data will be combined with socio-economic information and used to assess how far the poor are differentially exposed to contaminated groundwater, relative to the rich. The findings will help in designing a subsequent follow-on project to assess likely future changes in urban groundwater quality. This project will also evaluate different strategies for managing urban groundwaters into the future for the benefit of the poor peri-urban communities who depend largely on groundwater resources.

The challenge of providing safe water and hygienic sanitation to the most vulnerable people living in the slum districts is substantial. Prioritising the most effective interventions is vital if significant and sustainable gains to the health and wellbeing of people in these communities are to be achieved.

This project will look at the implications of different future scenarios for a range of development options. It will provide a valuable aid to key agencies in the water and sanitation sector as they work to improve the lives of slum dwellers worldwide.

WHERE?



Kenya

WHERE TO FIND OUT MORE:

Contact James Wright: j.a.wright@soton.ac.uk