

Groundwater quality risks in a densely populated rural coastal area- Kwale, Kenya Abstract n°2233

Albert Folch, Barcelona, Spain

folch.hydro@gmail.com

Núria Ferrer, Department of Civil and Environmental Engineering, Universitat Politècnica de Catalunya (UPC),
Jordi Girona 1-3, 08034 Barcelona, Spain. Associated Uni, Barcelona, Spain

Willie Sasaka, Rural Focus Ltd., Kenya, Kwale, Kenya

Calvince Wara, Rural Focus Ltd., Kenya, Kwale, Kenya

Mike Lane, Rural Focus Ltd., Kenya, Kwale, Kenya

Mike Thomas, Rural Focus Ltd., Kenya, Kwale, Kenya

Julius Odida, Department of Geology, University of Nairobi, Kenya, Nairobi, Kenya

Dan Olago, Department of Geology, University of Nairobi, Kenya, Nairobi, Kenya

Patrick Thomson, Smith School of Enterprise and the Environment, Oxford University, UK, Oxford, United
Kingdom

Rob Hope, Smith School of Enterprise and the Environment, Oxford University, UK, Oxford, United Kingdom

KEYWORDS: Hydrochemistry, Groundwater, Kenya, rural area

As the global population grows, so does the demand for fresh water. In rural Africa and Asia, many communities rely on groundwater for their drinking water, making groundwater quality vital to the social, economic and physical well-being of rural people. This presentation characterizes current and future potential risks to groundwater quality in a densely populated rural area on the southeast coast of Kenya. This work is part of the “Gro for Good- Groundwater Risk for Growth and Development” project, one of a number of consortium projects funded through the UPGro Programme - Unlocking the Potential of Groundwater for the Poor (<http://upgro.org> consortium gro-for-good). Focusing on Kwale County, a rural area where industrial irrigated agriculture, and heavy mineral mining have recently been established, our study captures the complex reality of Africa’s groundwater science and policy challenges at a time of social, economic and environmental change. The goal of this interdisciplinary project is to analyse and synthesise a broad spectrum of natural and social data to promote improved groundwater governance that balances economic growth with poverty reduction and groundwater sustainability. As one aspect of this, the potential risks to groundwater quality posed by industrial activity and population growth in the region are being investigated via a series of water quality surveys (dry and wet season) covering shallow and deep wells as well as surface water across different geological



formations. Analysis includes isotopes, major and minor ions, TOC (Total Organic Carbon), Faecal Bacteria, Alkalinity and Ammonia (in situ). Our initial results show that multiple factors are affecting the chemical and biological quality of groundwater throughout the study area. Acknowledgements The research is supported under the NERC ESRC DFID Unlocking the Potential of Groundwater for the Poor (UPGro) as a Catalyst Grant (NE L001950 1) with work extending until 2019 as a Consortium Grant (NE M008894 1), see <http://www.upgro.org>. Our gratitude to all contributors, Base Titanium Ltd, Kwale International Sugar Company and Water Resource Management Authority.

