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Sustainable water for rural security – a transdisciplinary approach

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Abstract

This abstract presents the work conducted by the CSIR project entitled Sustainable Water for Rural Security with the following aims: to link research disciplines within the CSIR which together can provide an appropriate science base to enable the provision of clean water to rural communities; to bridge the knowing-doing gap by carrying out research on integrated implementation in partnership with communities and implementing Agencies; to ensure the sustained and expanded impact of this action-research through effective transfer of knowledge and technologies; and to identify the critical design criteria that ensure sustainability of rural water supply systems in South Africa. The transdisciplinary methodology and approach to water supply and sanitation involves stakeholder engagement and community workshops in order to jointly frame the “problem”. The three case studies are: the Bulungula Incubator project at Nqileni in the Eastern Cape; Giyani local district municipality, Limpopo and the Kamiesberg Municipality in Northern Cape. Assessments of water quality using portable field hydrogen sulphide test kits were carried out at the sites. Water collected from springs and rivers was found to be generally unacceptable for drinking, whereas borehole water was usually not contaminated. Workshops were held with different community groups in the study areas and key issues emerged from the discussions. Ethical clearance was obtained to conduct household surveys and interviews took place with community members. In the E.Cape study area most people rely on natural sources of water such as the river or springs and they are concerned about water quality as pollution from animals is visible at these sources. Community members believe they sometimes get sick from their drinking water. Rainwater harvesting and boreholes with pumps have been introduced in the Eastern Cape site and generally people prefer the quality of this water but when pumps or gutters break there are no resources or skills to fix it and people revert to natural sources of water. Women and children are walking 200 m to 2 km per day to fetch water. There is not sufficient access to water infrastructure to irrigate crops, which is a problem as unemployment is high in the Limpopo case study site, with a high reliance on social grants and subsistence agriculture. Researchers observed that lack of reliable, acceptable quality water is contributing to stalled rural economic development. Other significant contributing factors are low skills, low levels of connection to supporting resources; poor access and distance to markets; and weak local governance evidenced by

slow service delivery. The Northern Cape site has a history of CSIR involvement and European donor funded projects involving artificial groundwater research and currently reverse osmosis is taking place to purify the groundwater for drinking purposes. The Kamiesberg study site has a complicated history of water supply projects and provides a good case study of why and how water supply projects succeed or fail in an arid environment.