

PROJECT PORTRAIT

Water for Elundini Municipality
#29 (2014)

What is this project about?

This was a study completed under the auspices of the Energy Research Centre. This study investigated how suitable the use of solar and wind powered groundwater pumping would be in the region based on the respective natural energy resources available and how these would compare with currently used diesel powered options. The primary aim of the project was to investigate the suitability of alternative energy sources for sustainable groundwater pumping systems, such as solar and wind powered systems, in comparison to diesel powered options. This was done in an effort to develop more efficient, cost-effective

methods of providing groundwater to the residents of the rural Elundini Municipality in the Eastern Cape.

The research

A sample of villages in the Elundini area was selected for pilot testing. The criterion for selection was whether borehole pumps were used to source water. Once selected, the researcher compared diesel, wind and solar powered systems for these boreholes in an effort to test the efficiency of each and comparing the results against one another. To analyse the cost efficiency of these methods, an equation was used to determine the future costs incurred, such as those relating to fuel and maintenance.



What you need to know:

Running and maintaining borehole pumps to provide water in rural areas is a considerable cost to municipalities.

The findings of this study indicate that in some areas photo-voltaic cells (using solar energy) or wind may be a more cost-effective and environmentally sustainable than diesel to secure water for villages – but this depends on local conditions.

The research findings

Upon analyzing the data, it was concluded that solar powered systems offer the most attractive option from a cost perspective. This owes to both the natural conditions of Elundini, as well as the significantly lower maintenance and running costs.

In addition to the financial and technical benefits, the researcher discusses how the solar panels option could improve socio-economic conditions of Elundini residents. This will come in the form of employment opportunities for the residents of Elundini, in terms of installation and maintenance.

Using the research

The results of this study can be directly applied to areas using borehole pumps as a source for water. It will allow for such areas to utilize more cost-effective ways of obtaining water, while still ensuring the protection of the environment.

Local conditions will however have to be analysed to ensure sunlight or wind properties are suitable for a reliable energy supply.

This study was completed in June 2014

Want to know more?

Research was carried out by Gordon Kernick, supervised by Andrew Hibberd and Holle Wlokas of the Energy Research Centre. This summary is based on the study 'The Potential of Renewable Energy for Rural Groundwater Supply in the Elundini Municipality.' A link to the thesis as well as related report will be available on the Co-op website.

Keywords: drinking water, rural municipalities, solar/ wind power, groundwater abstraction potential.

To **reference** this Project Portrait, cite UCT Knowledge Co-op as the author.

Project portraits are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike license: <http://creativecommons.org/licenses/by-nc-sa/2.5/za/deed.en>

The Knowledge Co-Op at the University of Cape Town

The UCT Knowledge Co-op aims to make it easier for community partners to access UCT's skills, resources and professional expertise. It helps initiate joint projects that benefit both the community partner and the university. The Co-op links community groups with appropriately qualified staff and students at UCT, and supports both partners throughout the project – from initial planning to final product.

know-op@uct.ac.za

www.knowledgeco-op.uct.ac.za

Tel: 021 – 650 4415



[INSERT TEXT : Project Portrait - Title]