

## **Smart sustainable energy for rural community development**

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### **Abstract**

Reliable access to electricity is a basic precondition for improving people's lives in rural areas, for enhanced healthcare and education, and for growth within local economies. Currently more than 1.5 billion people worldwide do not have access to electricity in their homes with 590 million of these people living in sub-Saharan Africa. An estimated 80% of these people live in rural areas; most have scant prospects of gaining access to electricity in the near future, unless innovative and robust ways are developed to increase the rate of electrification of these rural communities. To gain first hand understanding of the complexity of sustainable energy for rural community development, CSIR undertook a three year investigative project to investigate the linkages between communities, energy the economy and the environment/ecosystem as well as identify any projects that could be implemented. Due to its impoverished state, particular attention was given to the Eastern Cape Province of South Africa in this project, Szewczuk *et al*, (2000). During this project an analytical tool was developed that could be used to assist in identifying viable renewable energy opportunities in areas with no prospect of grid electrification in the Eastern Cape Province using wind, hydro and biomass-powered remote area power supply systems. The analytical tool utilises Geographical Information Systems (GIS) and provides the basis to investigate various scenarios.

### **Keywords**

Sustainable infrastructure

Electricity access

Renewable energy opportunities

Smart sustainable energy system