

Energy Sustainability: Role of Makerere University in Facing the Global Challenge

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History of Makerere University

- Established in 1922 as a humble technical school.
- One of the oldest and most prestigious Universities in Africa and the region.
- Offers both undergraduate and postgraduate courses leading to its own awards.
- In July 2011, the university became a collegiate University consisting of 8 colleges and 2 schools.

University Vision:

“To be the leading institution for academic excellence and innovations in Africa”

University Mission:

“To provide innovative teaching, learning, research and services responsive to National and Global needs”.



School of Computing & IT (CIT)

- One of 2 schools in the College of Computing and Information Sciences
- Formerly the Faculty of Computing and Information Technology
- Established by the University Council on 19th January 2005 by upgrading the Institute of Computer Science into a faculty
- Four departments: Computer Science, Networks, Information Technology, and Information Systems
- Runs programmes and research in Computing, Information technology and related areas
- More information: <http://mak.ac.ug>; www.cit.mak.ac.ug



Sustainability of Energy in Uganda

- Research at CIT
- **Energy challenges in Uganda:**
 - prices of energy are high
 - energy is insufficient for the needs of the citizens
 - energy grids are old and no longer suitable for the high contemporary consumer demands
 - climate change



Smart Energy Communities and ICT Services for Ugandan Energy

- Smart energy communities observed to contribute to alleviating energy system challenges in Uganda
- Smart energy communities need ICT services to provide support to their activities; however, no clear guidelines for designing ICT services
- **Research concern:**
 - seeks to understand how to design ICT services
 - what guidelines can be used for designing these services for smart energy communities (based on smart grid technology) that can be used to alleviate energy system challenges for Uganda



Existing Approaches to Improve Energy Systems in Uganda

- A proposal to link the entire African continent's electric power grid networks; a significant step in African's cooperation and development. However, seen to be very complex and capital intensive
- Use of solar energy
- Government's attempts to provide subsidies to citizens



Research Road Map

- Explore the ways:
 - a smart energy community can be used to alleviate specified energy system challenges (high energy prices and low energy production) in Uganda
 - ICT services can be used to aid smart energy communities in alleviating specific energy system challenges
- Define the requirements for ICT services that should support smart energy communities in alleviating specific energy system challenges
- Design the guidelines for designing ICT services that should support smart energy communities in alleviating specific energy system challenges



Scope

- Limited to:
 - services needed at the utility side (the demand side) of the energy chain. It is at the demand side that energy users can make a significant contribution in improving the energy system in Uganda by acting as both consumers and producers of energy
 - isolating the core ICT services for the customer who will be expected to contribute to the energy grid locally and sell the power to the main energy provider.



Research Relevancy to Ugandan Community

- The ICT services guidelines for smart energy communities will:
 - help energy system stakeholders in getting a foresight of the nature of services that will be required to support smart energy communities in Uganda
 - provide a vision of the scenario of the smart energy community operation in Uganda. This will aid in guiding ICT service implementers to reflect on and produce services that are necessary for community participation in improving the energy system in the country.



Thank you!!!

- Comments and questions?