

SAMSET Project - energy in urban Africa

Ghana, Uganda, South Africa 



The goal of achieving LEED certification standards through quality of life and sustainability

Urbanization rates in Africa are the highest in the world, and the delivery of services in most Sub-Saharan countries is inadequate to keep up with increasing needs. Supporting African Municipalities in Sustainable Energy Transitions (SAMSET) is an EPSRC/DFID/DECC funded project that seeks to develop a knowledge exchange framework to support local and national bodies involved in municipal energy planning for an effective transition to sustainable energy use in urban areas. Through close partnership with six cities in three African countries, the project aims to develop an information base from which to support strategy development and priority initiatives in cities, and facilitate knowledge exchange and capacity building. The project's aim is to design, test, and evaluate a knowledge exchange framework to facilitate the implementation of an effective sustainable energy transition in Africa's Sub-Saharan cities [1].

Country/ City Profile



Country	City
Population (2014) Ghana = 26.790 million [2] Uganda = 37.780 million [2] South Africa = 54.000 million [2]	Population Awutu Senya East = 108,422 [4] Ga East = 147,742 [4] Jinja = n/a Kasese = 702,029 [5] Cape Town = 3,740,025 [6] Polokwane = 510,000 [7]
Land area (km ²) Ghana = 238,540 [2] Uganda = 241,550 [2] South Africa = 1,219,090 [2]	Land area (km ²) n/a
GDP per capita (2014, current international \$, at purchasing power parity) Ghana = 4,090 [3] Uganda = 1,765 [3] South Africa = 13,046[3]	GDP per capita / GDP per capita at purchasing power parity n/a
Region Africa	Region Sub-Saharan Africa
Cities' physical geography	Location ✓ Sahara Desert (extreme events, floods, droughts, water and food insecurity)
	Climate ✓ Tropical/hot semi-arid (Central) and semi-tropical (South) climate

Initiating context

Urbanization is occurring fastest in developing countries, with the least developed countries expected to have the highest population growth rates between 2010 and 2050.

Cities in these countries are increasingly relevant in terms of energy demand and associated emissions, as they often exhibit extreme levels of poverty and a lack of access to modern energy services; a portion of their energy systems is often dominated by informal activities. The focus may therefore be less on energy conservation and reduction, as it is in many developed country contexts, but rather about using energy more efficiently and decoupling economic activity from emissions. For Sub-Saharan African countries, this is a critical focus due to high-levels of energy poverty. It is particularly a challenge for cities like Jinja and Kasese (Uganda), Awuntu Senya East and Ga East (Ghana), and Polokwane (South Africa), which are currently faced with fast urbanization and a predominance of unhealthy and unsafe energy use: coal, charcoal, paraffin and wood [1].



Source: [12]

Project description

The SAMSET Project has six main objectives:

- identify the relevance, transferability and adaptation of the existing body of knowledge on sustainable energy transitions to the Sub Saharan African urban situation
- understand the specific and contextual issues involved in effective implementation of policies relevant to energy transitions in the African urban context,
- clarify how best to facilitate policy and strategy development and implementation through active engagement and support for six partner cities in three Sub Saharan African countries to enable detailed understanding of the complex set of constraints and dynamics in these cities,
- explore knowledge exchange methodologies via inter-city and inter-country network exchanges, specialist inputs and practical lesson exchanges,
- develop knowledge exchange methodologies for facilitating more effective interactions between researchers and practitioners to improve implementation of policy objectives at the city level,
- disseminate project findings and information beyond the project in Africa and internationally.

Each of these objectives relies on a simple but key set of data: analyzing landscape pressures on cities (why), mapping the landscape of energy transition (where), identifying intermediaries (who), reveal the dynamics of existing energy transition pathways (how), understanding the gap between existing energy context and future transition pathways (affinities), comparative learning (options), intervention development (experimentation), drawing on best practice (project) [8].

This research project aims to *design, test, and evaluate a knowledge exchange framework to facilitate the implementation of an effective sustainable energy transition in Africa's Sub-Saharan urban areas*, and includes a strong research component to foster a deeper understanding of the dynamics and constraints that policy and strategy implementation faces in Sub Saharan African cities.

Implementation process

Despite Sub-Saharan Africa having the lowest urbanization levels of all global regions, rapid urban growth on the continent is expected to see over 700 million urban dwellers by 2030 and 1.2 billion by 2050. Population modelling suggests that around 37 percent of sub-Saharan Africans were residing in urban areas in 2010, rising to 61 percent in South Africa and 51 percent in Ghana [9]. Although there are significant amounts of research on urban energy transformation, research does not adequately address the detailed organizational dynamics and constraints in cities, and therefore is often of limited use. Additionally, there is a gap between policy and implementation, capacity within local/national government departments involved in energy and urban development is inadequate in the face of increasing challenges, and modes of knowledge transfer are not effective in facilitating sustainable energy transitions in cities.

To remedy this situation, some research centres and local NGOs have begun with the implementation and development of the SAMSET, a 4-year project (2013-2017), which involves the University of Ghana, the Uganda Martyrs University and the University of Cape Town, the South Africa NGO Sustainable Energy Africa, the Durham University and the University College London (UK), and the UK consultancy Gamos [1].

Two key instruments are used to enable municipalities to engage in energy transitions. The *Knowledge Exchange Framework* (KEF) is a conceptual framework to inform the developing knowledge and debates concerning energy transitions across the six cities and beyond. The *State of Energy Report* is published as a result of project activities, which collect and organize data from within the cities and to use the data to model future urban energy scenarios. This approach involves close partnering with institutions, individuals and the local community, as well as

researching the specific challenges and frameworks that exist in urban areas to develop a more tailored, accurate solution to the challenges faced in each specific context.

Modelling is another important tool that the SAMSET project uses to assist and support municipalities in working towards sustainable energy transitions. With the support of energy modelling experts from the Energy Research Centre at the University of Cape Town, the project aims to analyze factors previously overlooked in sustainable energy planning in the city. This includes analyzing not only the raw figures of fuel and electricity consumption, both per capita and per source, but also demographic and sectoral analyses of energy consumption in an effort to determine new paths of development and support in urban energy planning [10].

Results (*preliminary outcomes*) [11]

- SAMSET approach has received strong support from the Mayors and Municipal Chief Executives of the various municipalities
- Incorporation of sustainable energy development measures (energy efficiency, solar and waste-to-energy, ...) into municipalities' Medium Term Development Plans
- Analysis of the linkages between local landscape pressures, energy sector and climate change for COP21

Lessons learned

While much attention has been paid to mega-cities, small and medium sized cities require the same particular attention. It is in these cities that most urbanization in Africa will take place, where the lack of resources and capacity to deal with the resulting challenges is often weak or absent. This suggests that any approach to influence energy transitions in urban Africa will need to include smaller cities. The South African experience shows that knowing what needs to be undertaken, and having this worked into policies and strategies, is relatively easy compared with the challenge of developing an effective environment for implementation. While there is a growing body of work on promoting sustainable energy in cities, including African cities, it tends to be too high-level, often listing barriers and policy options to be adopted, and generally has had limited impact on welfare in urban areas because a detailed understanding of the complexities of the urban institutional situation is absent. Instead the issues that need to be understood include capacity constraints in different municipal departments, financial planning and management practices, political priorities and pressures, mandates in different areas of service delivery, national versus municipal competencies and tensions, standards and codes of practice, experience base of the engineers and planners, legal barriers, procurement practices, land rights issues and rigidity of land markets, and revenue sources and flows, amongst others [1]. SAMSET shows the great importance to develop a different urban policy design approach in African cities to help the poorest urban areas in the transition from traditional to modern fuels, in line with the new targets of Sustainable Development Goals set for 2030.

References

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