

Can cities find the energy to transform?

A comparison of 6 SSA municipalities

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SAMSET

Supporting African Municipalities in Sustainable Energy Transitions

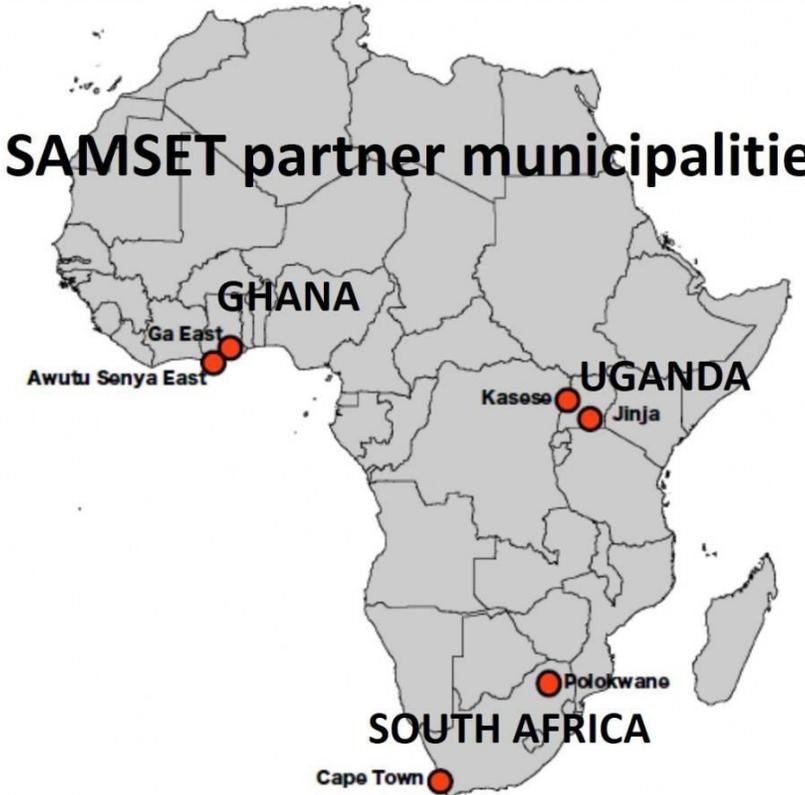
Research partners



Funders



SAMSET partner municipalities



Data and Analysis generated by the above project SAMSET, with due acknowledgement to partners, funders and participating municipalities

<http://samsetproject.net/>

Sustainable energy

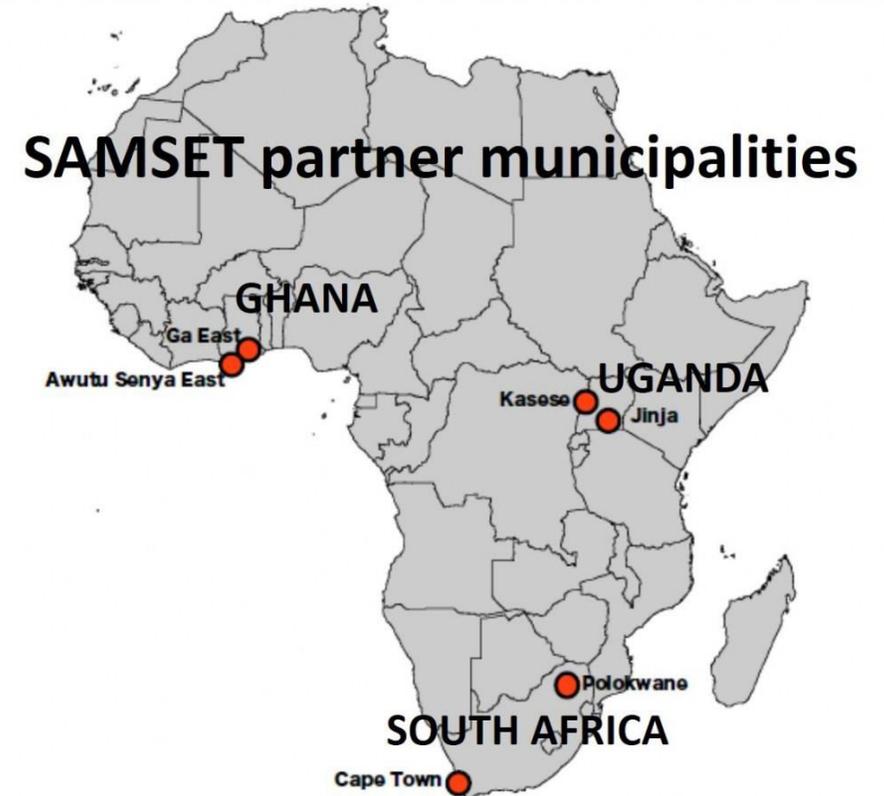
- important imperative internationally,
- linked to the threat of energy-related global warming emissions and
- persistent energy poverty of many developing countries, with Africa being the worst-off.
- The global Sustainable Energy for All initiative (SE4All) focuses on the three major aspects of sustainable energy:
 - energy efficiency improvements,
 - renewable energy promotion, and
 - increased access by the poor to safe, modern, affordable energy.

Nexus of government

- Not only are national governments aligning themselves with these imperatives, but it is now widely recognized that local governments have a critical role to play in their delivery.
- Cities are a case in point where 'nexus' thinking becomes important.
- Energy transitions cannot be siloed into the 'transport department' or the 'planning department', rather authorities need a view of the whole in order to take action strategically.

Different shapes but a single process

- Cape Town and Polokwane in South Africa,
- Ga East and Awutu Senya East in Ghana, and
- Jinja and Kasese in Uganda.
- Very different municipalities in their detailed characteristics
- But each municipality has been engaged in a similar process





Identifying data specific to their municipality in order to create a 'State of Energy' document for their planning processes.

	Population	Households
Ga East, Ghana	259,668	34,000
Awutu Senya East, Ghana	108,422	43,795
Jinja, Uganda	72,931	18,936
Kasese, Uganda	101,679	25,631
Polokwane, South Africa	628,999	177,911
Cape Town, South Africa	3,677,000	1,068,000

	Household/ Residential
Ga East, Ghana	2.62
Awutu Senya East, Ghana	6.92
Jinja, Uganda	9.87
Kasese, Uganda	2.07
Polokwane, South Africa	3.97
Cape Town, South Africa	7.34

Household residential energy in 2013, Tera joules per resident

Mixed method data collection

- questionnaire (face-to-face) interview; and
- Focus Group Discussions (FGD).

- **Residential/Household Sector**
- **Commercial Sector**
- **Industrial Sector**
- **Agricultural Sector**
- **Transport Sector**
- **Municipal Assembly**
- **Local Government Sector**
- **Energy Resources in SSA municipalities**

For instance in ASEM in Ghana, 435 commercial activities were sampled out of the 1,854 commercial activities.

and in the case of ASEM all 16 agricultural activities registered with the municipality land use authorities were interviewed.

Liquid and Gas Fuel Filling Station Association
Private Road Transport Union
Toll Booth Workers
Trotro Unions
Taxi Unions
Truck Drivers Union

Focus Groups were used to ascertain the quantities of power (electricity), biomass (wood fuel and Charcoal) and petroleum products (kerosene, LPG, diesel and petrol) that are available in the municipality.

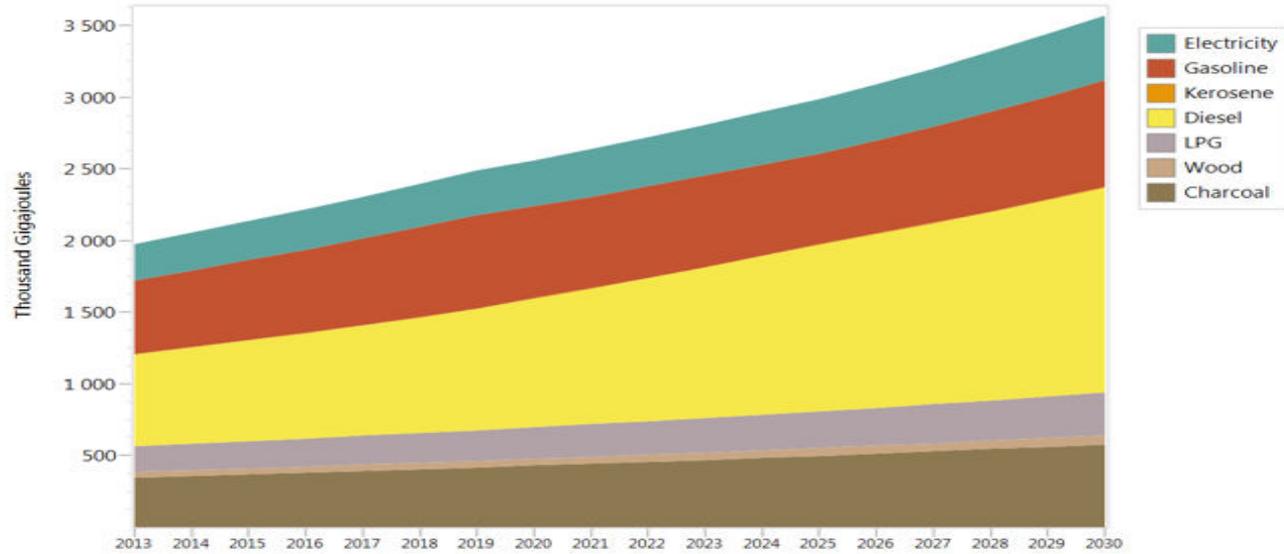
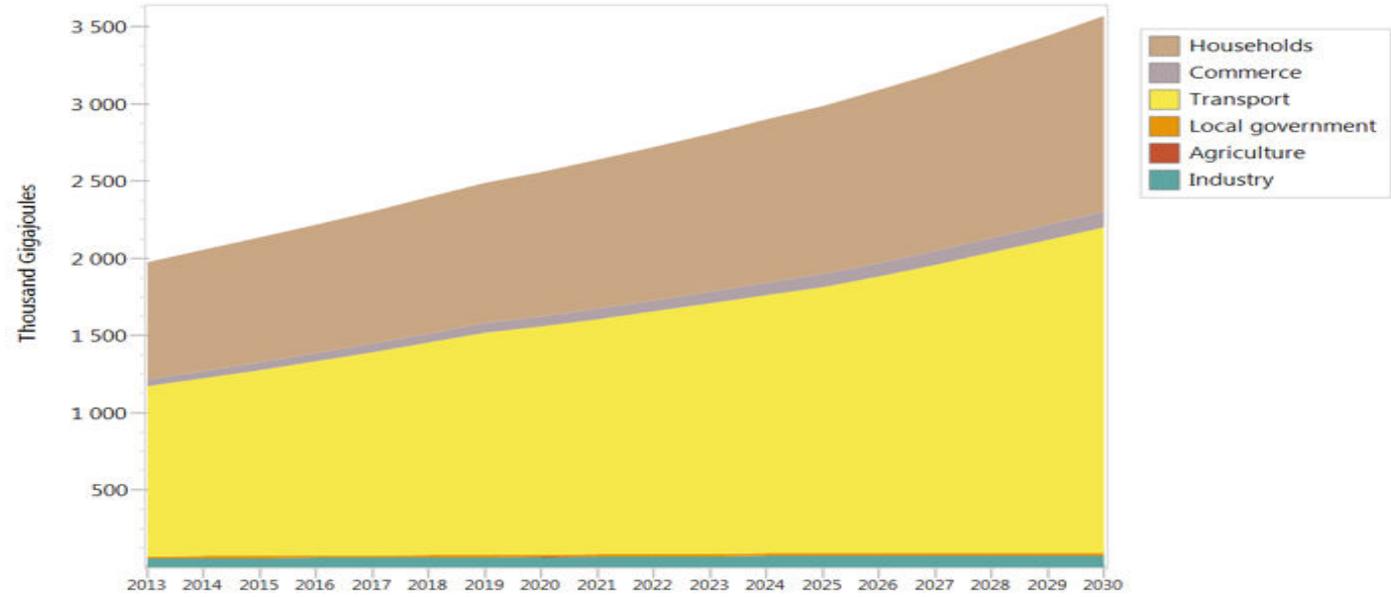
Identifying data specific to their municipality in order to create a 'State of Energy' document for their planning processes.

- Based on this gathered and collated data, the municipalities have worked with the University of Cape Town (UCT) to undertake 'futures modelling'.
- The model is developed on the Stockholm Environment Agency's (SEI) Long range Energy Alternatives Planning System (LEAP) platform. LEAP is essentially an accounting type simulation model although other uses and features have emerged as the product has developed. The rationale for the selection of LEAP as a tool for the SAMSET project has been documented in project outputs (Tait, McCall, & Stone, 2014) and the LEAP software tool itself is well documented by SEI (<http://www.energycommunity.org>).

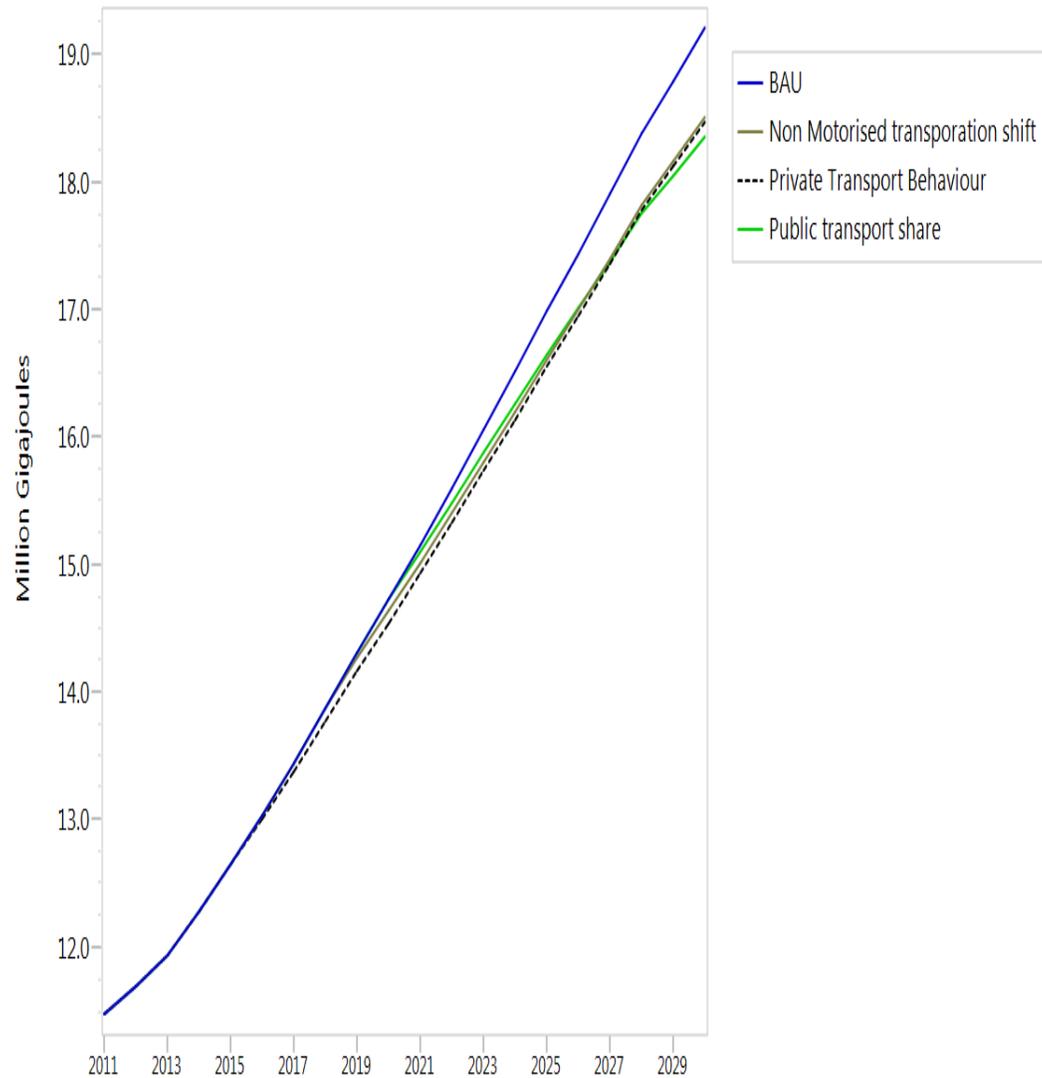
Future modelling

- Using the LEAP model developed by SEI, the researchers at UCT have been able to illustrate what 'Business As Usual' (BAU) will mean by 2030 in terms of probable energy consumption.
- In all cases the BAU scenario which includes population growth suggests an ever increasing consumption of energy. The paper presents the BAU for each city.
- Based on the modelling the municipalities are currently considering what actions to take to mitigate energy consumption; using sensitivity analysis on the model to identify possible policy or infrastructural interventions that might mitigate production of emissions.

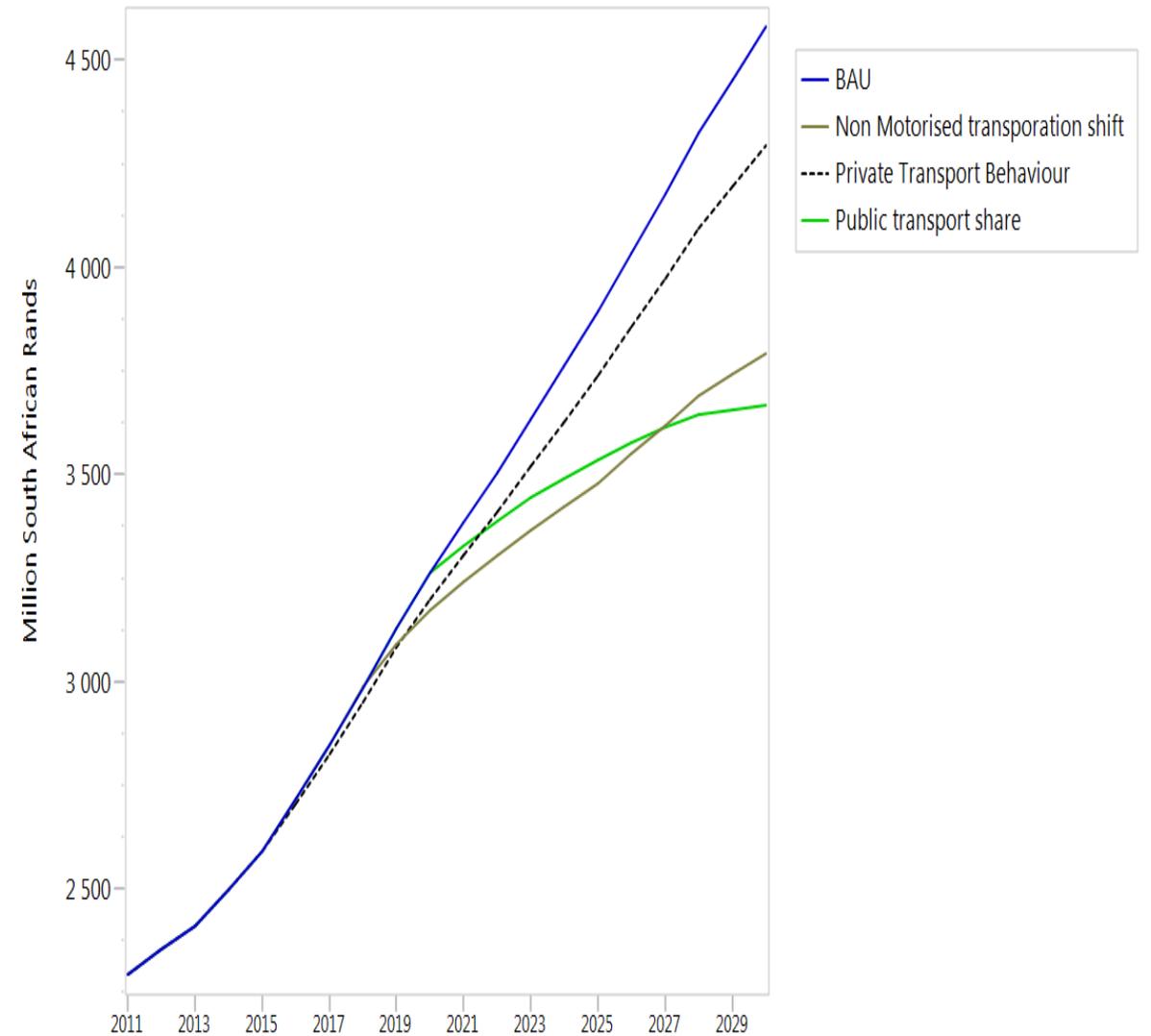
Awutu Senya East Ghana



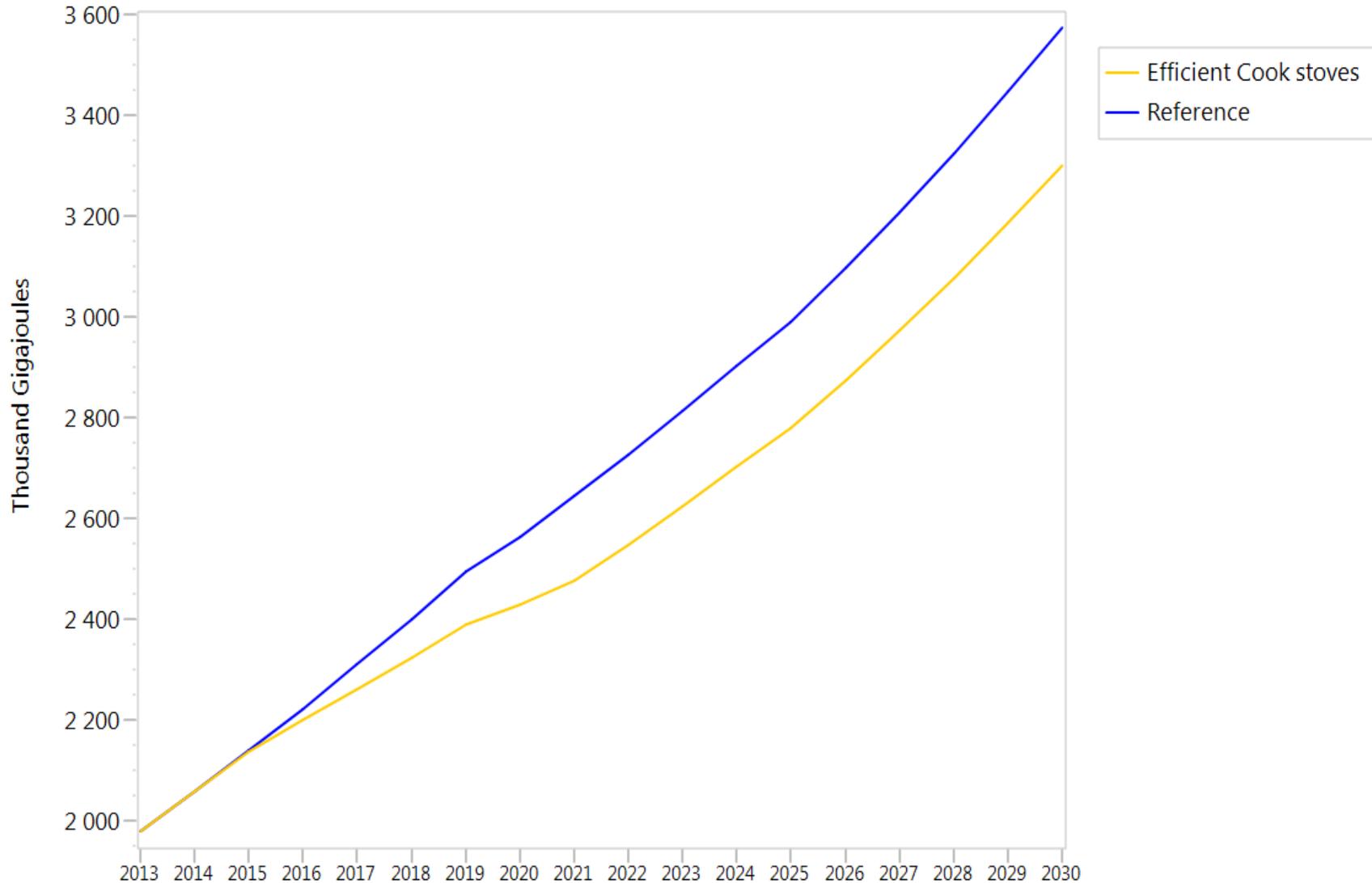
The total Polokwane city energy demand comparing the transport scenarios to the BAU – smelters excluded



Total cost to the Polokwane passenger transport sector for the transport scenarios



Awutu Senya East total energy consumption for reference and Household Efficient cook stoves scenario



This scenario looks at what the impact of a mass rollout or rebate program will do to household energy consumption within the municipality. With enough commitment and the right tools to encourage takeup, a program starting in 2016 and ending in 2021 could see all household whom indicated they wanted to use the cookstove, obtain one. In the scenario, the remaining households, who did not partake in the program by 2021, purchase a Gyapa by 2030

Conclusions

- In the session narrative, the convenors state:- “how does the word nexus, a coming-together, help to analyze the contradictions, contestations and clefts created by conflicts of interest and differences of power and knowledge?”
- Our paper suggests that municipal governments are natural places for ‘nexus’.
- They can take the energy dilemma (and trilemma) and bring together water departments, transport departments, sanitation, building maintenance, planning, etc.
- Bringing together different departments has its own benefits, helping each to understand each others priorities.

Conclusions - practicalities

- The differences between the municipalities are quite considerable
- However the **process** of engaging municipal actors in assessing energy can be applied to all
- Collection of data – fills a data gap
- Modelling contributes to future thinking
- Because energy sits at the nexus of many ‘sectors’ (water, waste, transport, consumption) an integrated approach helps decision makers.