

SAMSET – SUPPORTING SUB-SAHARAN AFRICAN MUNICIPALITIES WITH  
SUSTAINABLE ENERGY TRANSITIONS



# SAMSET NETMAP BASELINE

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1	Executive Summary.....	3
2	Introduction .....	6
2.1	Background to Project.....	6
2.2	Research questions .....	7
2.3	Background to underlying concepts.....	9
3	Methodology.....	12
3.1	An iterative approach.....	12
3.2	Overarching principles .....	12
3.3	Processes used .....	13
3.4	South Africa .....	15
3.5	Ghana .....	15
3.6	Uganda .....	16
4	Findings.....	16
4.1	Stakeholder matrix mapping.....	16
4.2	Communication pathways .....	30
5	Analysis .....	38
5.1	Understanding the derivation of the maps.....	38
5.2	Cross Country comparison .....	41
5.3	Comparison of different energy transitions.....	43
6	Conclusions .....	43
6.1	Relevance to Knowledge Exchange Framework.....	43
6.2	Relevance to State of Energy reports.....	44
6.3	Relevance to ongoing research activities.....	44
6.4	Relevance to wider research uptake.....	44

## 1 EXECUTIVE SUMMARY

“Supporting African Municipalities in Sustainable Energy Transitions” (SAMSET) is an EPSRC/DFID/DECC-funded project (Grant No. EP/L002620/1) that seeks to develop a knowledge exchange framework for supporting local and national bodies involved in municipal energy planning in the effective transition to sustainable energy use in urban areas. Through close partnering with six cities in three African countries (Ghana, Uganda and South Africa), the project aims to develop an information base from which to support cities, undertake direct support for cities around strategy development and priority initiatives, and facilitate knowledge exchange and capacity building.

The project has 6 main objectives. Each of these objectives relies on a simple but key set of data – ‘who’. Who holds the existing body of knowledge (1), who is involved with implementation of policies (2), who do should the research engage to enable detailed understanding (3), who should be in a network for exchange of knowledge (4 &5), and who might be interested in the research findings (6). The netmapping exercise seeks to:

- map stakeholders in the traditional matrix scoring of importance and influence – in order to engage with key stakeholders.
- identify key institutions that are said to have the most influence on an energy transition – to ensure proportional effort is applied to leverage institutions.
- identify the overall shape of the stakeholder maps to inform ways in which knowledge about energy transitions might be passed throughout the whole network, potentially creating a critical mass required for action and change.
- Start the comparison of the three countries to identify the key roles within actor networks and to contribute to understanding on how these affect energy transitions.

**This report presents the baseline stakeholder analysis.** Stakeholder mapping will be an ongoing exercise within the life of the project, and an endline is planned for year 4.

The project builds on general experience from energy transitions and specific experience from South Africa. Two key instruments are to be used to enable municipalities to engage with energy transitions. The Knowledge Exchange Framework is a conceptual framework to inform and interrogate the developing knowledges and debates concerning energy transitions across the six municipalities and beyond. State of Energy reports, one for each partner municipality, will be published as a result of project activities to collect and collate data from within the municipalities and to use the data to model future energy scenarios for the municipality. Such reports have been a key instrument of change in the previous South African experience.

In this baseline the research has actively sought the input of partners (municipalities) to co-create the stakeholder matrices and incorporate their specific practical knowledge of who is important, and how do things work (i.e. the beginnings of a political economy analysis).

The findings are presented in two formats. In a traditional stakeholder matrix, qualitative data on individual institutions are used to plot **power** (or



Figure 1-1 Traditional stakeholder matrix

authority/influence) scores mapped against their **interest** in clean energy (Figure 1-1). Those in the upper right quadrant have power to influence energy transitions, and have an interest in the transition to clean energy. Those in the upper left quadrant have an interest in seeing the transition, but have less authority to push the transition through. They may be key stakeholders for influencing and convincing others in the network. Those in the lower right quadrant are said to be disinterested (or less interested) in energy transitions even though they have considerable power and authority on the energy system.

Energy transitions within a Municipality can take place within various domains. One of the complications of the exercise is that the domain of change will not be known until mid-way through the project – as a part of the research on the State of Energy and the Knowledge Exchange Framework, the municipalities will discuss appropriate and feasible energy transition action. Examples of domains of change include:-

- General action on ‘clean energy’
- Household energy
- Transport
- Public and commercial buildings
- Water and Waste
- Spatial Planning.

Where possible, the netmapping exercise has been used to construct traditional stakeholder matrices relating to a number of potential domains of change.

In addition to the matrix process above, network analysis was used to gather qualitative data on who is talking to whom, i.e. what pathways might exist for communication of key information. The findings present visualisations of the networks developed by the participants, and tables of institutions with high degrees of Centrality (many connections) and Betweenness (are brokers for flows of information).

Section 3 presents the methodologies applied. These vary slightly from country to country due to the local context.

Section 4 of the report presents the findings.

Section 5 presents a basic analysis of the data and notes that different perspectives on the stakeholders leads to different matrices even within the same country. Over the course of the project, these alternative views need to be monitored to ensure that the research is engaging with the right people. It also notes the difference in institutional setups between the different countries. Since the premise of the research is that lessons learned from South Africa might inform and support energy transitions in Uganda and Ghana, the differences in institutional setup could be of crucial importance.



Figure 1-2 Ghana officials engaging in the netmapping

The report concludes with some observations as to how the data is relevant to the ongoing work of the research project.

**Relevance to Knowledge Exchange Framework.** As Knowledge is exchanged regarding the research, the energy transitions and the strategic planning, the key institutions identified are the ones that need to be engaged. Workshops to discuss knowledge exchange should contain invitations to the identified institutions (see example of State of Energy report below).

**Relevance to State of Energy reports.** In terms of creating the state of energy report, this is predominantly as a result of the partnership between the team and the municipalities. However stakeholders in the upper right quadrants have authority and are said to be disposed towards cleaner energy. They may prove helpful in **creating** the state of the energy report. They certainly are likely to be interested in the completed product, and they may need to be engaged in any discussions on subsequent energy transition action.

In particular, there are stakeholders who are in the lower right quadrants who have authority but are said to have little interest in cleaner energy. These stakeholders should be actively engaged, and perhaps the easiest engagement is ensuring they are **given** the state of energy report in settings where they can be engaged and introduced to its relevance. It would not be wise to just post the report to them, but rather to take a little extra time to ‘introduce’ them to it.

Regarding networks, those with high centrality and betweenness should be kept well informed of project activities and outputs so that they can disseminate information throughout their networks.

**Relevance to ongoing research activities.** The netmaps indicate who should be engaged depending on the energy transition focus. They provide a minimum checklist for engaging with institutions. (It is noted that new stakeholders may become relevant as energy transitions are discussed).

**Relevance to wider research uptake.** Those with high centrality and betweenness are said to have good communication networks. They are therefore key institutions for sharing research outputs.

## 2 INTRODUCTION

### 2.1 BACKGROUND TO PROJECT

“Supporting African Municipalities in Sustainable Energy Transitions” (SAMSET) is an EPSRC/DFID/DECC-funded project (Grant No. EP/L002620/1) that seeks to develop a knowledge exchange framework for supporting local and national bodies involved in municipal energy planning in the effective transition to sustainable energy use in urban areas. Through close partnering with six cities in three African countries (Ghana, Uganda and South Africa), the project aims to develop an information base from which to support cities, undertake direct support for cities around strategy development and priority initiatives, and facilitate knowledge exchange and capacity building.

Urbanisation rates in Africa are the highest in the world, and in most Sub Saharan countries service delivery is inadequate to keep up with the needs. African populations remain amongst the poorest in the world, and efforts to achieve the energy-related dimensions of the Millennium Development Goals s have in most cases not had significant impact on urban populations.

The situation can be summarised as one where much urban energy transformation research does not understand the detailed organisational dynamics and constraints in cities and therefore is often of limited use; where there is a gap between policy and implementation; where capacity within local/national government departments involved in energy and urban development is inadequate in the face of increasing challenges; and where modes of knowledge transfer are not effective in facilitating sustainable energy transitions in cities.

The 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 action research component which involves close partnering with six cities in three African countries (two each in Ghana, Uganda and South Africa) to foster a deeper understanding of the dynamics and constraints that policy and strategy implementation faces in Sub Saharan African cities.

The project includes the following key features: it draws on existing work in the North and other developing countries, while recognising the often huge contextual divergence, and will develop a deeper understanding of the status quo and constraints particular to Sub-Saharan Africa; core work packages are based on an existing model that has been developed in South Africa over the past 15 years to support cities with effective energy transitions, and it is rooted in practicalities of implementing energy-related initiatives effectively in complex urban environments through action research components.

The project work areas cover the knowledge exchange research thread. These include developing an information base from which to support cities, undertaking direct support for cities around strategy development and priority initiatives (the ‘action research’ component), and focusing on knowledge exchange and capacity building in range of different ways, covering local to international levels.

The Knowledge Exchange Framework is a conceptual framework to inform and interrogate the developing knowledges and debates concerning energy transitions across the six municipalities and beyond.

The State of Energy reports, will be published as a result of project activities to collect and collate data from within the municipalities and to use the data to model future scenarios for the municipality. Such reports have been a key instrument of change in the previous South African experience.

### 2.1.1 THE PROJECT TEAM , PARTNERS AND ACKNOWLEDGEMENTS

The core project team consists of The UCL Energy Institute (Xavier Lemaire, Daniel Kerr and Gabriel Anandarajah), Sustainable Energy Africa (SEA South Africa) (Mark Borchers, Megan Euston-Brown and Melusile Ndlovu), ISSER – University of Ghana (Simon Bawakyillenuo and Innocent Komla Agbelie), Uganda Martyrs University (Alex Ndibwami, Mark Olweny, David Mann and Josephine Namukisa), Durham University (Simon Marvin and Jonathon Silver), Energy Research Centre – University of Cape Town (Adrian Stone, Louise Tait and Bryce McCall) and Gamos UK (Simon Batchelor).

In addition Municipal partners include Jinja Municipality and Kasese Municipality, Uganda; Ga East Municipality and Awutu Senya East Municipal Assembly, Ghana; and Polokwane Municipality and Cape Town South Africa. The exercises undertaken in this report were undertaken by the people named in Annexes 1, and due acknowledgement is given to their co-construction of the information summarised here. Without them it would not have been possible.

## 2.2 RESEARCH QUESTIONS

The objectives for the netmapping have been derived from the 6 wider SAMSET objectives, which are:

1. Identify the relevance, transferability and adaptation of the existing body of knowledge on sustainable energy transitions to the Sub Saharan African urban situation
2. Understand the specific and contextual issues involved in effective implementation of policies relevant to energy transitions in the African urban context,
3. 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,
4. To explore knowledge exchange methodologies via inter-city and inter-country network exchanges, specialist inputs and practical lesson exchanges,
5. To develop knowledge exchange methodologies for facilitating more effective interactions between researchers and practitioners to improve implementation of policy objectives at the city level, and
6. To 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 – ‘who’. Who holds the existing body of knowledge (1), who is involved with implementation of policies (2), who does the research engage to enable detailed understanding (3), who should be in a network for exchange of knowledge (4 &5), and who might be interested in the research findings (6).

The research team therefore need to know who the key stakeholder institutions are in any energy transition in the project locations, and which sub group within that set of stakeholders are key to collecting and collating contextualised knowledge, and disseminating lessons learned and research findings.

As discussed briefly above these translate into tasks or actions for the project which include:-

- Working with the Knowledge Exchange Framework both locally within municipalities and globally
- Working with the State of Energy reports both co-construction and use of them to make decisions
- Actioning ongoing research activities – working with the right people
- Wider research uptake both locally and globally

For each of these there is an implicit purpose. The project is identifying stakeholders in order to ensure that knowledge generated by the research is heard, taken up and applied by the ‘right’ people. The research is



Figure 2-1 'Engage with these people' (Polokwane)

seeking to investigate and track stakeholders and their communication channels in order for the knowledge exchange to have maximum effect.

These can be brought together in three 'objectives' for the netmapping exercise.

1) **'Engaging in a most effective way'**. Identify the right people to engage with during the research – those to invite to workshops; those to have discussions with. Part of this is finding out whether fora currently exist where those people come together. If not, then perhaps part of the research, part of process of facilitating knowledge exchange might be the creation of a new forum. (On the other hand, part of the analysis is also to find out where these people already meet, in order not to invite them to new meetings per se but to support and strengthening their existing mechanisms for knowledge exchange).

2) **'Working with the right people'** "The project action research is not merely aimed at supporting the knowledge exchange research objective, but also

introduces a direct developmental impact objective through supporting partner cities with priority energy related issues" (Proposal). So another aspect is that the research wants to work alongside them as they implement actual clean energy initiatives. To do this the research needs to identify the stakeholders that get things done, and have resources to flow to others. The actor analysis becomes a tool for working with the right people.

3) **Wider communication.** "To disseminate project findings and information beyond the project in Africa and internationally" (Proposal 2013). Many of our contacts in the locality also have contacts beyond their borders. If the research is to be spread and talked about (and hopefully taken up), then it is worth considering within the stakeholder analysis the bridge makers – those who have inroads into wider communication networks.

And this translates into three research questions for the netmapping thread of the SAMSET project:-

1. **What networks currently exist that could provide forums for strategic planning of energy transitions within a municipality?**
2. **Who should the project engage with to ensure the research is discussed and utilised throughout the municipality?**
3. **Who within the partnerships could be effective in enabling wider research uptake?**

Finally for this section, another way of considering this paper is to look at the aim of the analysis. These will be:

- To map stakeholders onto the traditional matrix by scoring importance and influence – in order to engage with key stakeholders.
- To identify key institutions that have the most influence on an energy transition – to ensure proportional effort is applied to leverage institutions.
- To identify the overall shape of the netmap such that knowledge about energy transitions is passed throughout the whole network, creating a critical mass required for action and change.



- To compare the three countries to identify the key roles within actor networks and to contribute to understanding on how these affect energy transitions.

The hypothesis is that the arrangement of the stakeholders will be significantly different in each of the three project countries and that this arrangement will affect the actual and potential pathways of energy transitions. Where power and interest align, it will likely be relatively easy to engage with the institutions, and to undertake positive clean energy action. This is a ‘low hanging fruit’ environment where effective policy implementation is likely and possible.

Where authority has no interest in clean energy it is expected that energy transitions will need a more directive policy ‘persuasive’ environment.

## 2.3 BACKGROUND TO UNDERLYING CONCEPTS

Variously called ‘Actor network theory’, ‘social network analysis’ and stakeholder analysis, the core idea behind such analysis is to identify the institutions and people who are engaged in or influence a project or action. Having identified them, the participants in the research can assign various status characteristics, i.e. whether they are interested in the project, and whether they have power over the project. Netmaps are just one pragmatic process for identifying the stakeholders and ‘mapping’ their influence on the project.

For SAMSET, the research is seeking to engage with stakeholders in a municipality. As it states in the proposal ‘While the overarching project research focus is on developing effective knowledge exchange frameworks and tools, the project methodology includes a strong theme of action research - close partnering and support for six cities in three African countries (Ghana, Uganda and South Africa) - in order to bring the necessary level of detailed understanding to the knowledge transfer methodology research in pursuit of the overarching objective.’ At the heart of knowledge transfer is identifying the key players, those who will take that knowledge and use it.

### 2.3.1 BEYOND STAKEHOLDER MATRICES

Every project should do a stakeholder analysis. The recommended steps are :- *“The first step in a stakeholder analysis is to clarify the research or policy change objective being discussed, and to outline the consequences that will flow from the policy reform. The second step is to identify all the stakeholders or interest groups associated with this objective, project, problem or issue. ....A third step is to classify the various stakeholders in terms of their power in relation to the issue, and in terms of their interest in relation to the issue.”* *“At the very top of the ‘power’ list will be the ‘decision makers’, usually members of the government. Beneath these are people whose opinion matters - the ‘opinion leaders.’”* *“If time and resources permit, further analysis can be carried out that explores in more detail i) the nature of the power and its position and ii) the interests that give it that position. This helps the project to better understand why people take certain stands and how they can be bought around.”* ODI 2009



Figure 2-2 Representation of the stakeholder matrices

This process has resulted in a matrix as described in the figure and one can find these in reports over the last 10 years. However, many matrices are often generic, and the process of constructing them is isolated from the wider research partners. In this baseline the research has actively sought the input of the partners (municipalities) to co-create the stakeholder matrices and incorporate their specific practical knowledge of who is important, and how do things work (ie the beginnings of a political economy analysis)

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### 2.3.2 COMMUNICATION CHANNELS

In addition this matrix process has been enhanced during the last 10 years. Network analysis has become very important for digital networks. In the IT sector, network analysis (e.g. analysis of which machines send information to other machines, who is talking to who, what pathways data take to reach their destination) has become essential. This has led to visualisation of networks, and these visualisations have been taken up by social scientists.

It is possible to use social network tools to examine the connections between people, and to validate who key players are in terms of influence and power. Batchelor 2011<sup>1</sup> gives a wider understanding of how social network analysis (SNA) can be applied to Policy influence.

The relevance here is that while a stakeholder matrix maps institutions and people of power and interest onto a grid, social network analysis attempts to go that one step further and identify the pathways of influence. An NGO may have low power but strong interest, and a Minister may have high power and medium interest. Are there any connections between the NGO and the Ministerial office so that the NGO might change the Ministers mind over time? Social network analysis identifies pathways of communication, in order to create changes in attitude of a stakeholder and influence them over time.

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### 2.3.3 WHAT TYPE OF NETWORKS IS THE RESEARCH INTERESTED IN?

Before proceeding there is a need to distinguish between intentional and unintentional networks. The project seeks to bring people together to discuss energy transitions, and indeed one evidenced way of influencing policy is to intentionally create actor networks (Young 2009). However within any subset of a society, there are also unintentional networks – those that form spontaneously and are a result of people’s social and institutional relationships. For the SAMSET project, in order to fulfil the purpose, the research is likely to work with both, and needs mechanisms for:

- Working with the Knowledge Exchange Framework both locally within municipalities and globally.
- Working with the State of Energy reports both co-construction and use of them to make decisions.
- Actioning ongoing research activities – working with the right people.
- Wider research uptake both locally and globally.

Therefore at this baseline, SAMSET is seeking to document both intentional and unintentional networks.

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### 2.3.4 INTENTIONAL NETWORKS

Intentional networks have some form and purpose. They often have a coordinating body, and they require investment in time, effort and money to initiate and maintain. At the DDRN 2010 workshop, Enrique Mendizabal and Simon Hearn from the Overseas Development Institute presented some ideas about

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<sup>1</sup> <http://www.ids.ac.uk/files/dmfile/PPIinBrief1final.pdf>

intentional networks. They noted that ‘At RAPID we have studied networks from a functional approach (following the basic rule that form should follow function)’. Learning from that, they presented some guiding principles relating to network purpose, ensuring people understood their role, clarifying the functions of the intentional network, and the form of the network. These lessons learned echo some of the key work of others.

In Next Generation Network Evaluation (Scaling Impact 2010) although the authors point to the fact that the World Bank has been funding networks since the 1990s, ‘and is now currently supporting approximately 175 partnership programs, having spent \$3.5 billion in 2006 alone’, they state clearly in their paper that ‘The field of network evaluation is still young both in theory and practice’. They go on to say ‘Most studies using network methodologies to date have been small in both the size of the networks and the number of participants with the majority of these projects focusing more on network diagnosis than assessment’.

Building on a body of work (e.g. Horelli, Lisa, 2009; Creech, Heather; Ramji, Aly, 2004; Bender-demoll, Skye, 2008, Ramalingam, Ben and Mendizabal, Enrique. and Schenkenberg Van Mierop, eds., 2008), they suggest that analysis of intentional networks should include all three overlapping areas of quality:- Network Vibrancy, Network Connectivity and Network Effects, resulting in a long list of network components and measures. The paper echoes the statements of Mendizabal and Hearn – that networks have form and function, and offer tools and measures for considering the quality and effectiveness of the intentional network.

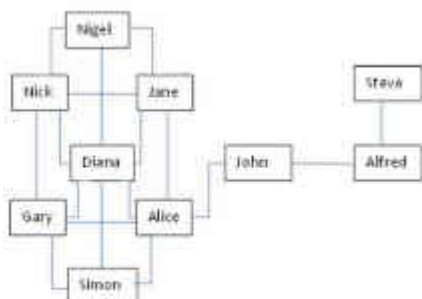
### 2.3.5 UNINTENTIONAL NETWORKS

However there are also unintentional networks. Networks of friendship or common interest where people touch each other’s lives and where synergies of purpose can come about without intentional investment. On the one hand social capital is enshrined in the Sustainable Livelihoods Framework and the development community readily acknowledges the role of social capital (networks) in sustainable livelihoods. For many years participatory processes have incorporated Venn diagrams and stakeholder mapping to ensure that even at the household level social capital is taken into account. However, on the other hand, there is very little in more recent literature about unintentional networks and their influence in the development sector.

### 2.3.6 BASIC UNDERSTANDING OF NETWORK ANALYSIS

A social network is said to be a social structure made up of individuals (or organisations) called nodes, which are tied (connected) by one or more specific type of interdependency, such as friendship, kinship, common interest, financial exchange, dislike, sexual relationship, or relationships of beliefs, knowledge or prestige. Social network analysis views social relationships in terms of network theory consisting of nodes and ties.

Nodes are the individual actors within the networks, and ties are the relationships between the actors.



‘Kite Network’ David Krackhardt 2002

Figure 2-3 Kite Network - simplified network for illustration

The nodes described above can be many and varied, depending on the purpose for which the network is being analysed. Ties have to include some form of dependency or linkage, and it is the strength of those ties, and the expectation or assumptions about that strength, that is important to the subsequent analysis. In an intentional network, actors may ‘sign up’ to the network and establish a formal link within the network. However the modes and methods of analysis remain relevant in defining the strength of that linkage, and thus providing analysis and commentary on the effectiveness of the network.

Before grounding this discussion in case examples of how social

network analysis has monitored and improved the effectiveness of networks in poverty alleviation, let us discuss some basic terminology of networks.

Figure 2-3 presents a simple network in order to discuss the relevant terms.

**Degree Centrality;** The degree of centrality that a person, actor or node has is a simple count of the number of ties the person has. A person with high degree of centrality has many direct connections. In the diagram above, Diana has the highest degree of centrality.

**Betweenness;** Betweenness is a measure of how much a node sits between one or more network groupings. For example in the diagram above John has high betweenness as he sits between the network that focuses on Diana, and that which focuses on Alfred.

**Closeness;** Closeness is a measure of how 'near' an actor or node is to all other actors or nodes in the network, i.e. they have the shortest route to reaching everyone. For example, Alice has a higher closeness than Diana, because she has a shorter distance to everyone. Closeness is thought to be good for 'hearing what's on the grapevine', i.e. having the potential to have a good view on what people feel and think.

The nuances of the basic analysis of centrality, betweenness and closeness are much discussed in the literature. A bridge is a node with a unique betweenness, where removing that node separates two networks. Structural cohesion asks the question 'what is the minimum number of nodes to be removed in order for the network to 'disconnect?'

Linkages between people are difficult to define, particularly in an informal network. As will be described in the methodology section below the research has taken the Netmapping approach (IFPRI 2010) which uses observational data to create a social network in the first instance, and the research has focused on institutions communication pathways rather than seeking to document formal intentional networks (effectively documenting the 'rough sketch' of an unintentional network). This is discussed below in more detail.

## 3 METHODOLOGY

### 3.1 AN ITERATIVE APPROACH

There are a number of possible approaches to undertaking stakeholder mapping and identifying unintentional networks. SAMSET teams used their own knowledge as a 'first cut' and then asked colleagues from within the newly formed partnerships with municipalities to comment on and improve the mapping through a netmapping exercise. This took slightly different forms in each country. Although the methodology varied slightly from country to country we remain confident the results are comparable.

### 3.2 OVERARCHING PRINCIPLES

#### 3.2.1 DOMAINS OF CHANGE

Energy transitions within a municipality can take place within various domains. One of the complications of the exercise is that the domain of change will not be known until mid-way through the project – as a part of the research on the State of Energy and the Knowledge Exchange Framework, the municipalities will discuss appropriate and feasible energy transition action. Examples of domains of change include:-

- General action on 'clean energy'
- Household energy

- Transport
- Public and commercial buildings
- Water and Waste
- Spatial Planning.

Where possible, the netmapping exercise has been used to construct traditional stakeholder matrices relating to a number of potential domains of change.

One might expect different stakeholders to enter the foreground for the different domains of change. Where Municipalities choose a particular domain of change, the research will need to engage with a slightly different set of stakeholders. The methodology was adapted to accommodate this by (in some cases) running the exercises with a specific focus on a particular domain of change.

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### 3.2.2 BEYOND INSTITUTIONS - INDIVIDUALS

Much of the exercise focused on institutions. While institutions are important it is often the role of the individual that influences a project. An overworked official who never responds to email or invitations can create a blockage for change. Similarly, an enthusiastic and dynamic champion can stimulate disproportionate change. Over the lifetime of the project it is likely that individuals within institutions will change (role, departments, even institutions). Any exercise on capacity building of municipalities needs to take a view on whether the individuals invited to capacity building events will have long term impact on the project. The methodology included seeking to get the research team to identify individuals that they knew.

## 3.3 PROCESSES USED

All research teams started the exercise by brainstorming the list of possible stakeholders.

This potentially involved 5 worksheets.

**Worksheet 1 'Power and Interest'** listed the institutions of relevance. To this worksheet several columns were then marked up representing 'Power' (Authority/Influence) and 'Interest' i.e. the traditional stakeholder analytical parameters for the six domains of change. A number between 1 and 9 was assigned representing their power.

**Worksheet 2 'Linkages'** seeks to get a view on the communication links between the institutions. The stakeholders named in the first worksheet are reformed into a matrix. The team then placed a number on the intersecting grid to indicate a link. The number was between 1 and 5 to describe the strength of the 'linkage'.

'Linkage' is a slightly vague term. It was decided that it was about communication in general, it was not possible to describe the strength of 'communication' its 'direction' nor was the 'nature' of the linkage specified e.g. line of authority / responsibility, flow of funding, etc.. In theory one might be able to say that the regulator informs an oil company of its obligations, but in practice the communication is two way or indeed they never talk to each other! This spreadsheet sought to document the 'strength of the linkage' i.e. did the team believe the institutions talk regularly to each other, does information flow between the institutions.

**Worksheet 3 Flow of Resources** repeated the matrix but with a focus on resources. Does money flow from one institution to another? Money flows are very relevant to projects, but at the same time the team also explored whether the connection had any relevance to SAMSET in terms of how actions might be financed.

**Worksheet 4 Departments and People** repeats the original lists (as a list), and was used to document departments. The team also sought to identify any individuals in any department known to them, giving the job title and the name of the current individual if known.

The idea of this worksheet was to examine the state of the team’s detailed knowledge about the municipality. If the team did not yet know the individuals, this flagged opportunities for further work to be done. In some cases it was possible to identify job titles and then seek to find out who currently holds that position (and are they likely to stay in that position for the next few years). In some cases, individual consultants came to mind who did not currently belong to any institution already listed. If they were considered potential Champions for the research they were documented.

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### 3.3.1 VALIDATION

Based on the above exercise, a netmapping exercise was set up with officials in the two partner municipalities. One of the challenges of undertaking such an exercise is the time required from officials. Therefore the netmap validation was connected to a broader meeting, and an hour was dedicated to the validation of the existing maps.



Figure 3-1 Polokwane officials engaging with Netmapping

Stakeholders were printed on individual cards and laid out on a large table. A disposable white cloth covered the table and enabled participants to draw lines and connections freely directly onto the cloth. The axes were also labelled on the cloth.

The sequence of the validation process was to invite participants to look at the stakeholders and add any they thought were missing. They were asked to move the stakeholders on the authority/interest grid if they thought they had initially been put in the wrong place (and mark the card with a yellow dot to indicate it had been moved). They were then asked to indicate the ‘importance’ of stakeholders by placing dots on them, which was used to enhance their power/authority/influence scores. In South Africa each participant was given the same number of sticky dots and asked to use all of them.

In one case participants were given beans instead of sticky dots and asked to put them onto the stakeholders that had authority, the quantity of beans representing their relative strength of authority. Once this had been done, the same beans were distributed on the stakeholders to represent the stakeholder interest in a particular energy transition. The exercise was run a total of 5 times, once for each energy transition sector.

Finally the participants were asked to draw lines representing who talked to whom. They were instructed to consider who currently talked to whom, about any subject (not just energy). The idea behind the instruction was to know who are engaged in potential pathways of communication and could in the longer term be carriers of key information on energy transitions. A disposable white cloth covered the table and enabled participants to draw lines and connections freely directly onto the cloth.

## 3.4 SOUTH AFRICA

### 3.4.1 RESEARCH TEAM

Having worked with municipalities for over fifteen years, the research team were able to fully populate the excel sheet.

### 3.4.2 CAPE TOWN.

Participants of the Cape Town validation are given in the Annexes. Given they were energy, spatial planning and transport officers, the validation process was only conducted for those three subsets of possible transitions.

### 3.4.3 POLOKWANE

Participants of the Polokwane validation are given in the Annexes. They were predominantly directly concerned with energy provision, and the exercise focused on validating the energy netmap.

## 3.5 GHANA

### 3.5.1 THE RESEARCH TEAM

In Ghana, the research team were able to create an initial listing of stakeholders during a brainstorming exercise (undertaken during the Tanzania network meeting (2013)). This list was validated and strengthened by reference to various secondary sources on the government structure within Ghana. The resulting stakeholders were put on a spreadsheet, and used to print out the stakeholder cards for validation.



Figure 3-2 Research Team explaining their original Netmapping exercise

were missing.

### 3.5.2 STAKEHOLDER VALIDATION

Participants of the Ghana validation are given in the Annexes. Since an initial scoring process had not been conducted, stakeholders were printed on individual cards and laid out on a large table but not in a scored matrix layout. The core element of the validation process at this stage was to invite participants to look at the stakeholders and add any they thought

After adding stakeholders, the beans method was used to assign Power/authority/influence and interest to the key stakeholders.

Communication lines were drawn on the tablecloth to show the linkages between stakeholders.

## 3.6 UGANDA

In Ghana, the research team started the exercise by brainstorming stakeholders during the Tanzania network meeting (2013). This list was validated and strengthened by reference to various websites including Local Government System in Uganda<sup>2</sup>.

### 3.6.1 STAKEHOLDER VALIDATION

A workshop was arranged to add detail to the netmap, and its participants are given in the Annexes.

External circumstances limited the interaction at this workshop and delayed the completion of the exercises. Since the workshop had been unable to complete the netmapping exercise, a final validation for this baseline was sought during the networking meeting in Ghana (2014). In this case 2 municipal officers from Jinja and Kasese (named in Annexes), undertook to confirm that all stakeholders had been mentioned, move stakeholders into place on a matrix of authority and interest for 'clean energy' transitions, and draw communication pathways for the main stakeholders.

## 4 FINDINGS

### 4.1 STAKEHOLDER MATRIX MAPPING

In this section, the **power** (or authority) scores are mapped against the **interest** in clean energy. The research is most interested in the upper right quadrant since these agencies have power to influence energy transitions, and have an interest in the transition to clean energy. Those in the upper left quadrant have an interest in seeing the transition, but have less authority to push the transition through. They may be key stakeholders for influencing and convincing others in the network. Those in the lower right quadrant are said to be disinterested (or less interested) in energy transitions even though they have considerable power and authority on the energy system. And those in the lower left quadrant have minimal interest in clean energy transitions, and do not have much authority.



Figure 4-1 Representation of the stakeholder matrices

<sup>2</sup> <http://molg.go.ug/departments/directorate-of-local-government-administration/local-councils-development/94-molg/departments/local-councils-development/228-local-government-system-in-uganda> and <http://molg.go.ug/local-governments>



#### 4.1.1 SOUTH AFRICA

The team researched the official structure of the government. Their conclusions can be found in Annexes. Figure 4-2 illustrates the general structure. The formality of the official government structure stands in contrast to the realities of the qualitative data co-constructed in the matrices below.

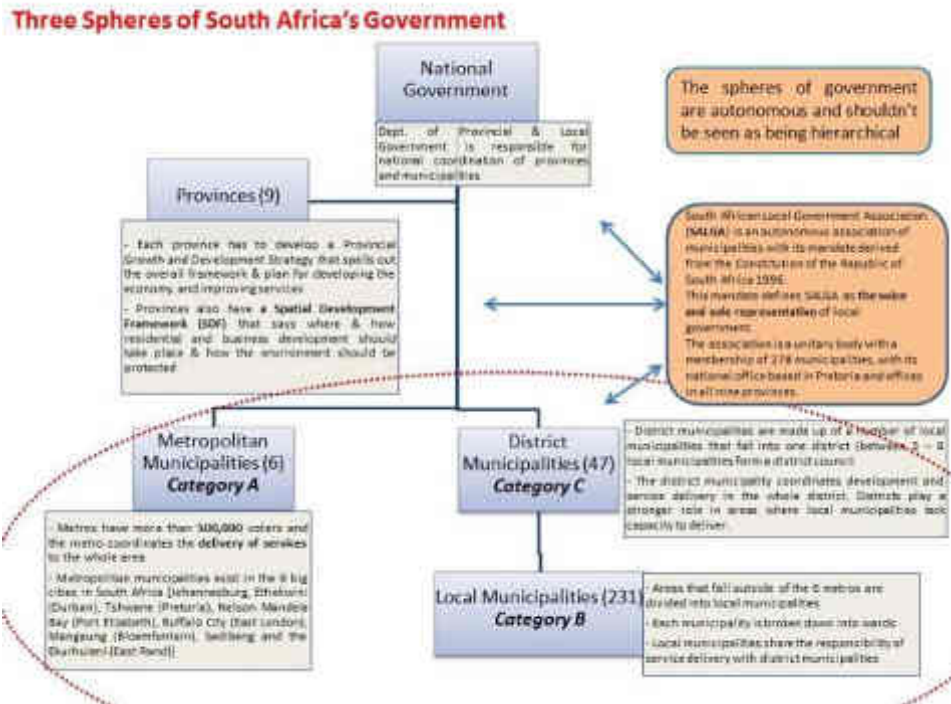


Figure 4-2 Organisation chart for South African Government (SAMSET 2014)

#### Clean energy

Figure 4-3 presents the co-constructed stakeholder matrix for the energy transition of 'clean energy'. The map below is a combination of three maps constructed by the South African participants. Unlike Ghana and Uganda it is not a single co-constructed map, but rather a synthesis of three independent maps.

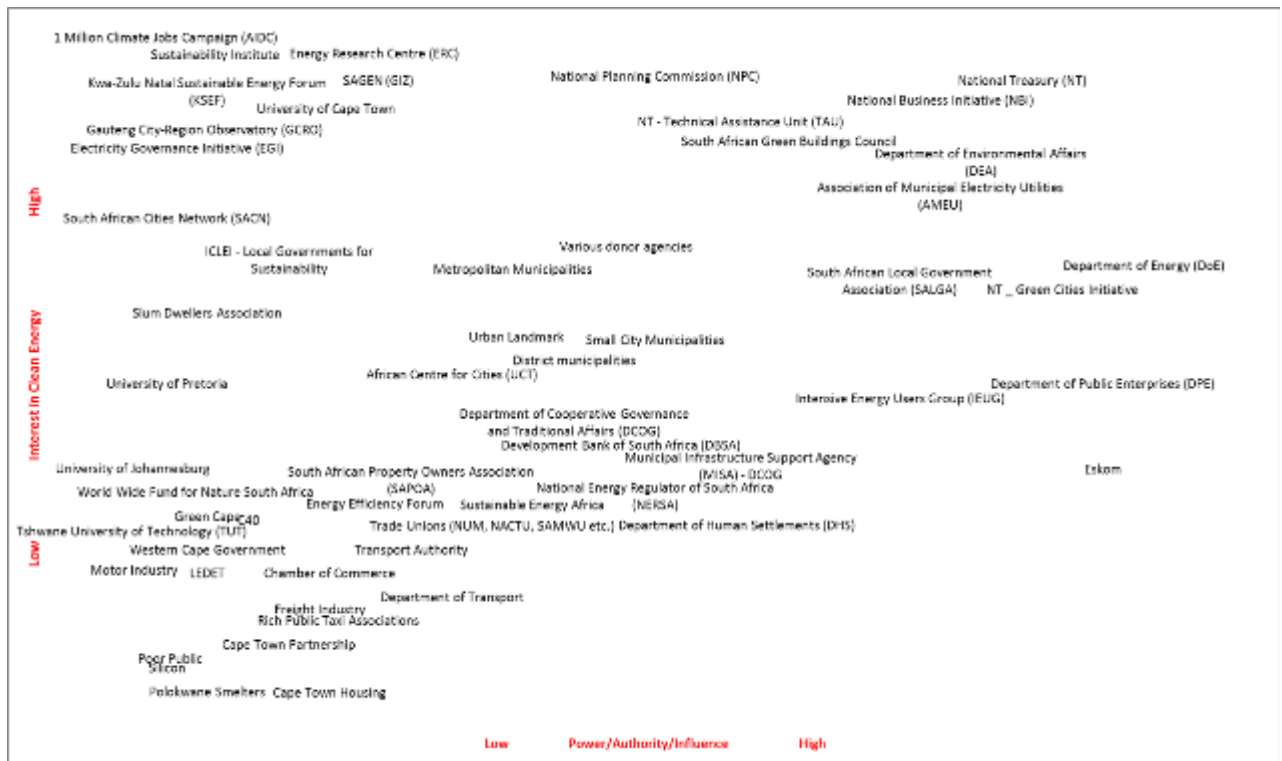


Figure 4-3 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, South Africa

The figure indicates there is a cluster of government and private sector institutions that are key to the clean energy agenda, including the National Treasury, National Business Initiative, the Green Buildings Council of South Africa, and the Department of Environmental Affairs. Eskom stands out as an institution with huge influence in this area, but relatively little interest. This would appear to be a possible target for advocacy work by the mostly academic and civil society institutions with a keen interest but little power or authority, including the Energy Research Centre (University of Cape Town), the 1 Million Climate Jobs Campaign, and the Kwa-Zulu Natal Sustainable Energy Forum.

The South African Local Government Association seems to have an interest in clean energy and some authority. They potentially form a link between the municipal authorities in the centre of the matrix and the national authorities in the upper right quadrant.

Upper right quadrant – interested stakeholders who have some authority. Key to work with.	Lower left Quadrant – Less interest, but with authority – need to try to persuade.	Upper right quadrant – high interest but lower authority – good to involve to help persuade others.
National Planning Commission (NPC)	Department of Public Enterprises (DPE)	Various donor agencies
National Treasury (NT)	Intensive Energy Users Group (IEUG)	District municipalities
National Business Initiative (NBI)	Development Bank of South Africa (DBSA)	Urban Landmark
South African Green Buildings Council	Eskom	Metropolitan Municipalities
NT - Technical Assistance Unit (TAU)	Municipal Infrastructure Support Agency (MISA) - DCOG	African Centre for Cities (UCT)

Department of Environmental Affairs (DEA)	Department of Human Settlements (DHS)	Energy Research Centre (ERC)
Association of Municipal Electricity Utilities (AMEU)	National Energy Regulator of South Africa (NERSA)	University of Cape Town
Department of Energy (DoE)		SAGEN (GIZ)
NT _ Green Cities Initiative		ICLEI - Local Governments for Sustainability
South African Local Government Association (SALGA)		Sustainability Institute
Small Municipalities		Kwa-Zulu Natal Sustainable Energy Forum (KSEF)
		1 Million Climate Jobs Campaign (AIDC)
		Gauteng City-Region Observatory (GCRO)
		Slum Dwellers Association
		Electricity Governance Initiative (EGI)
		South African Cities Network (SACN)

It is worth noting that the combination of the exercises can distort a local perspective of the mapping exercise. For instance, the Research Team members Sustainable Energy Africa, did not put themselves on their original map, and have worked only recently in Polokwane and therefore the Polokwane officials did not add them to their map. Cape Town officials at the last minute did add them, and gave them relatively high scores. However the average across the three means that SEA show on the diagram as low in authority and low in interest.

Netmapping is not 'science'. There is no one true answer. Rather it is qualitative data on how people perceive the flow of interest and authority. Therefore these exercises are intended to be practical insights into the actual political economy of a situation, but must always be treated with informed analysis drawn from other experiences. This is further discussed below.



Figure 4-4 Capetown officials engage with the Netmapping

### For Household Energy

Figure 4-5 presents the South African stakeholder map when considering energy transitions focused on household energy.

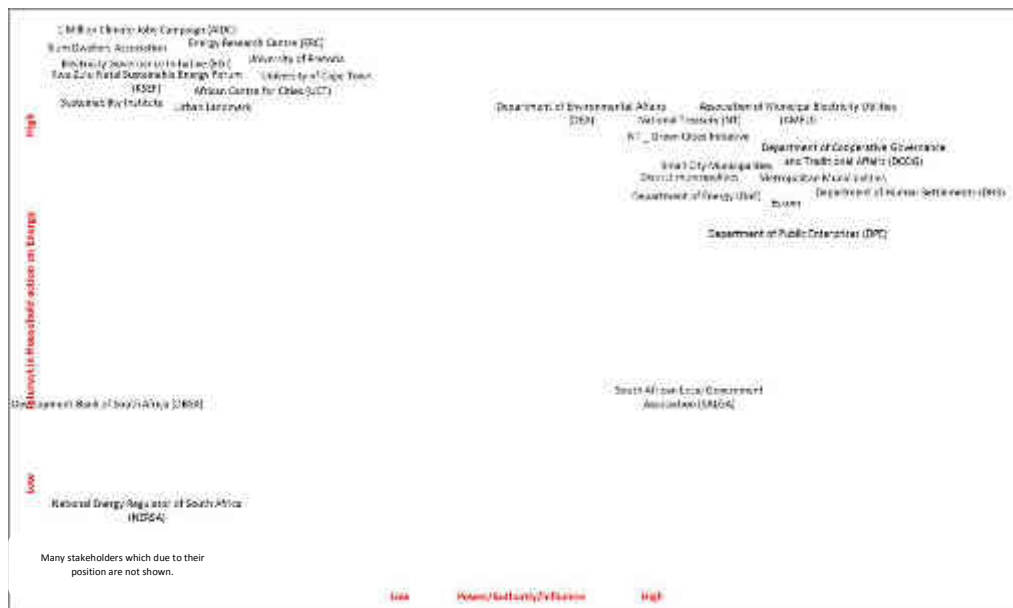


Figure 4-5 Matrix for stakeholder Authority (Power/influence) and Interest in Household energy, South Africa

Here the map has changed somewhat. While many of the same actors remain, NERSA has moved up and across in terms of both authority and interest. The Department of Human Settlements (DoHS) as an institution that deals with settlements and planning comes to the foreground. The District and Metro municipalities move up into the upper right quadrant.

### For spatial planning

Figure 4-6 presents the South African stakeholder map when considering energy transitions focused on spatial planning. The South African Property Owners Association is said to have considerable authority and a strong interest in using spatial planning to create energy transitions to cleaner energy.

Stakeholders marked \*\* were said to be important by the City of Cape Town participants, and this has been considered in the overall weighting of all mapping. However it is perhaps interesting to note that the public, although ending up in the lower left quadrant were said by the City officials to have considerable sway over plans for energy transitions. They noted that the ‘rich public’ had more authority/power/influence than the ‘poor public’.

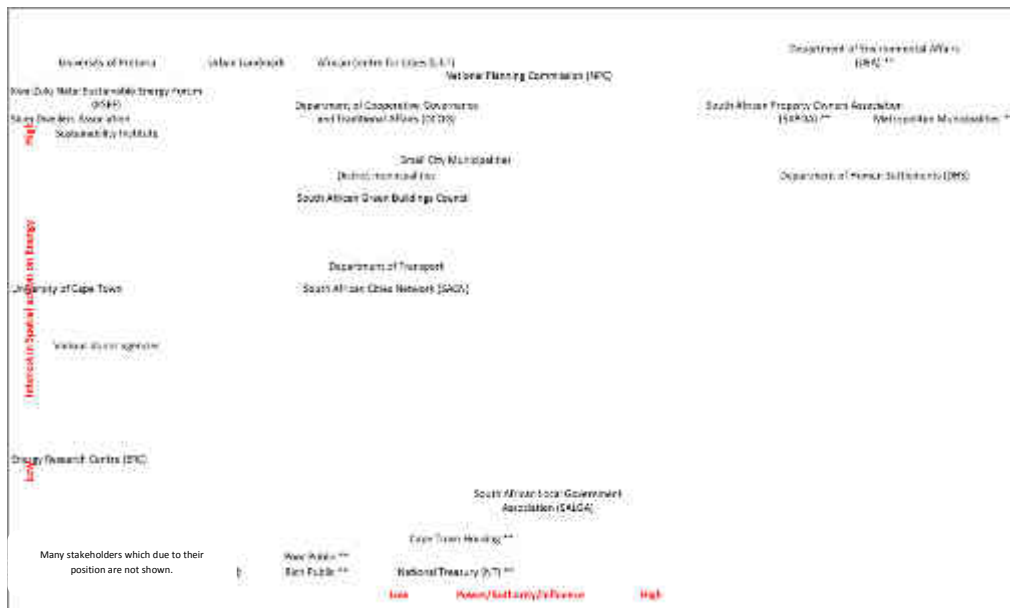


Figure 4-6 Matrix for stakeholder Authority (Power/influence) and Interest in Spatial Planning energy transitions, South Africa

### For Transport

Figure 4-7 presents the South African stakeholder map when considering energy transitions focused on transport.

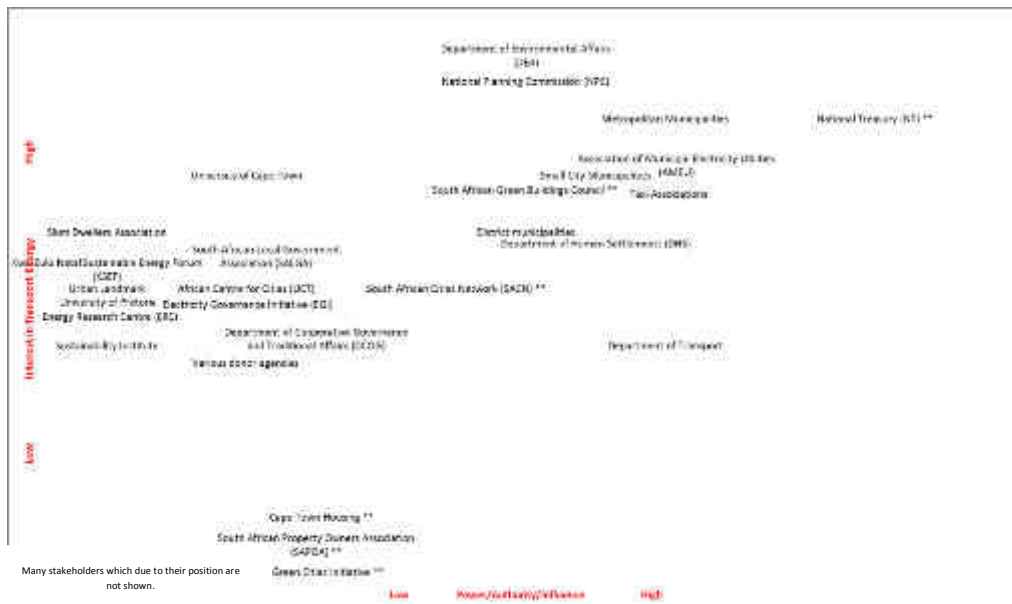


Figure 4-7 Matrix for stakeholder Authority (Power/influence) and Interest in Transport energy, South Africa

For the transport sector, the picture changes quite significantly. Understandably the Department of Transport and the Taxi Associations come into the upper right quarter, and many of the original institutions move to the lower left. The metro municipality remains in the upper right quadrant and the District authorities come into the foreground. Items marked with \*\* were said by Cape Town Transport Department to be important stakeholders.

### For Public and Commercial Buildings

Figure 4-8 presents the South African stakeholder map when considering energy transitions focused on the management and construction of public and commercial buildings.

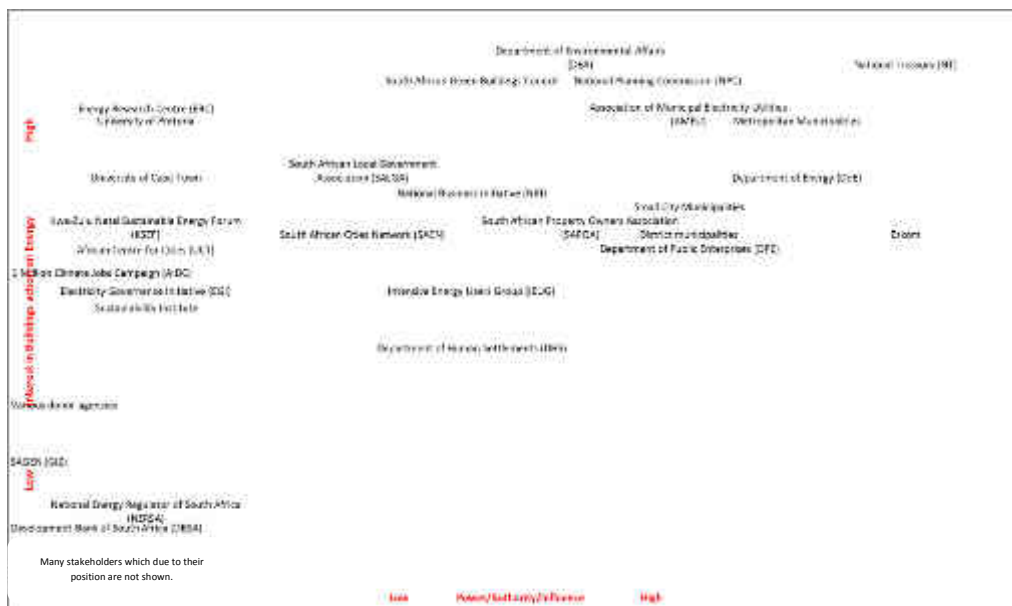


Figure 4-8 Matrix for stakeholder Authority (Power/influence) and Interest in energy in Public and Commercial Buildings, South Africa

For public and commercial buildings the matrix mirrors to a large extent the matrix for clean energy generally. The role of local authorities in the delivery of electricity seems to create a stakeholder map with national mechanisms for financing in the top right quadrant, supported by local authorities (municipalities).

### Waste and Water

Figure 4-9 presents the South African stakeholder map when considering energy transitions focused on waste and water.

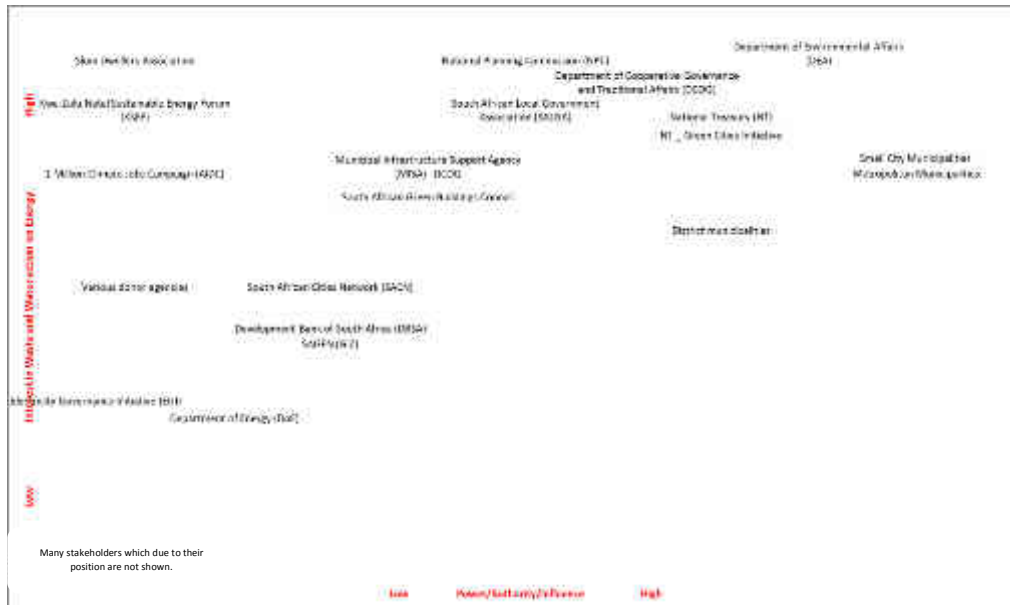


Figure 4-9 Matrix for stakeholder Authority (Power/influence) and Interest in Waste and Water, South Africa

For waste and water, SALGA and the small municipalities remain in the upper right quadrant, as does the National Treasury’s Green Cities Initiative and the Department of Environmental Affairs. The municipalities are said to have even more authority/power/influence over waste and water as it is their direct responsibility.

It may be interesting to note the lack of the private sector.

### 4.1.2 GHANA

The team researched the official structure of the government. Their conclusions can be found in the Annexes. Figure 4-10 illustrates the general structure. Once again the formal organised structure stands in contrast to the outputs of the stakeholder matrices.

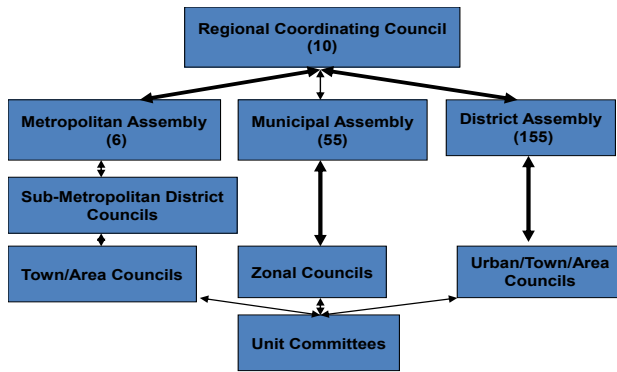


Figure 4-10 Organisation chart for Ghana Government (SAMSET 2014)

Co-construction of stakeholder lists and matrices were undertaken by the municipalities jointly in a single session.

When presented with a list of stakeholders participants laid them out on the table as in Figure 4-11. This was not to represent a score on a matrix but to enable participants to think through missing stakeholders. It is included here only for completeness.

				MESTI (Climate change)				
IMCC Interministerial Coordinating Committee	Transport Ministry (DVLA) Ministry of Finance	Min. of Local Government	National Development Planning Commission (NDPC)	Environmental Protection Agency (under MESTI)				
		Local Govt Service						
	Metropolitan Assemblies	RCC (10) Municipal Assembly SCUTA (Accra based and Kasoa)	District Assembly		Academia (various)			
		Dept of the Assemblies Urban Roads Urban Transport Department			CWSA	Biogas Technology Ghana	Contractors associations	
					Danida	Toll Company		
					Banks	Waste Management Companies Estate Developers	Wood Processors Associations Cattle Rearing Association	
	Sub Metros	Zonal and Urban Councils	Area Councils	Landlord Association	Land Owners	Civil Society/ Lobby Groups (Various) TUC (Trades Union)	Transport Associations	Butchers Association
							KITES	
			Unit Committee	Traditional Chiefs		Charcoal Transport Association Charcoal Sellers Associations Market Associations		
			Min. of Energy			Plan Ghana		
		IPPs	Petroleum Commission		Pineapple company			
				Energy Commission (regulator) - renewable; power				
	PIJRC National Petroleum Authority (NPA)		VRA + Thermal					
			GridCo	TEMA Oil Refinery				
			ECG					
			NEDCo					

Figure 4-11 Stakeholders presented as cluster, Ghana

Not all stakeholders were mapped for their authority and interest and key stakeholders only were highlighted. The matrices below reflect this process.





Figure 4-12 Ghana officials photo the results of the netmapping for their own reference

**For Household Energy**

Figure 4-13 presents the Ghana stakeholder map when considering energy transitions focused on household energy.

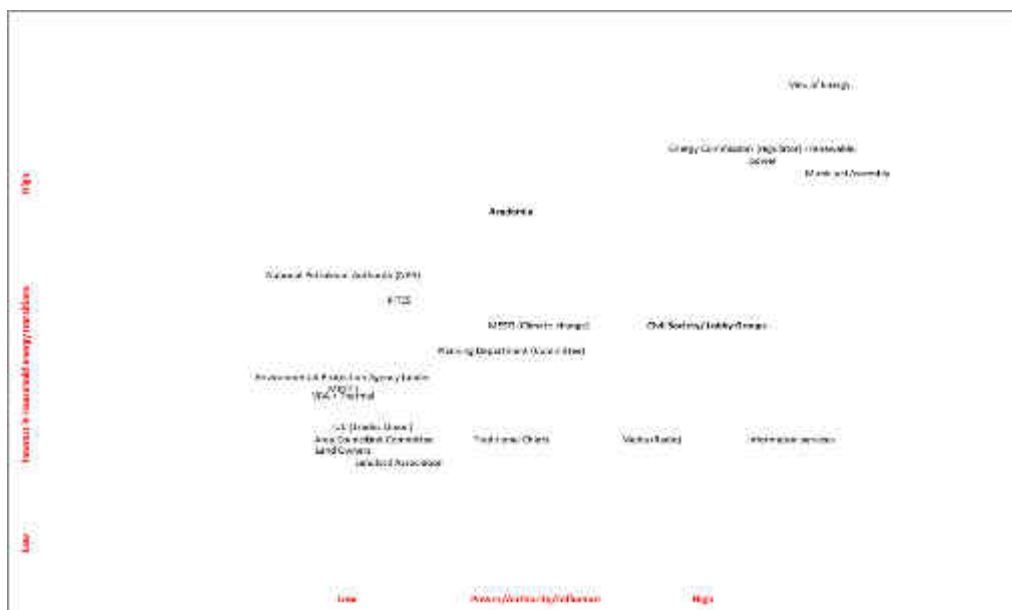


Figure 4-13 Matrix for stakeholder Authority (Power/influence) and Interest in Household energy, Ghana

Here the Ministry of Energy, the Energy Commission and the Municipal Assembly are attributed with high authority and interest in household energy transitions.

**For Public and Commercial Buildings**

Figure 4-14 presents the Ghana stakeholder map when considering energy transitions focused on the management and construction of Public and Commercial Buildings.

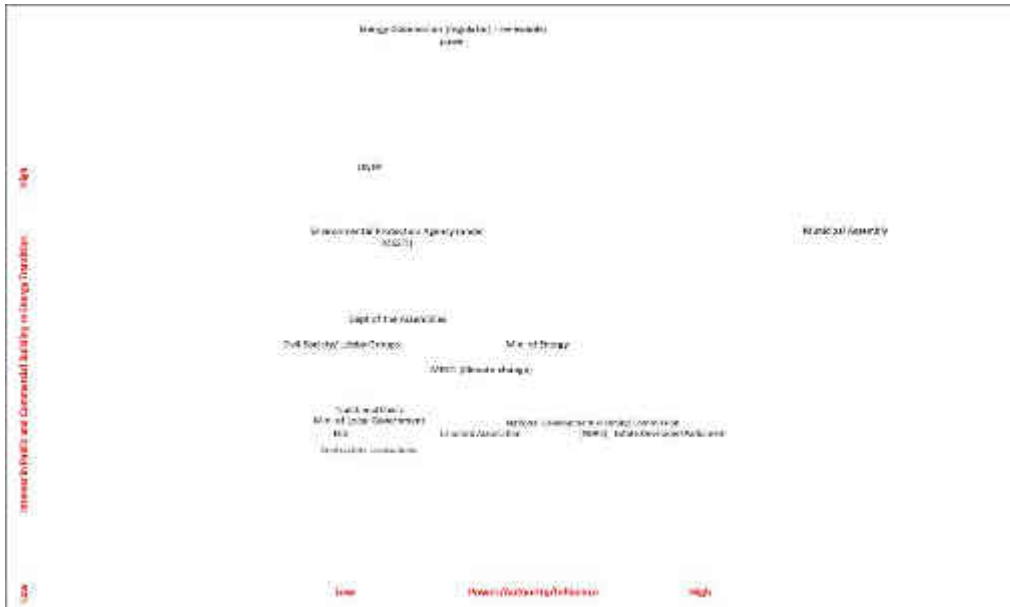


Figure 4-14 Matrix for stakeholder Authority (Power/influence) and Interest in Public and Commercial Buildings energy, Ghana

When public and commercial buildings are considered the Ministry of Energy disappears from the participants map, while the Commission of Energy lowers its power/authority/influence. Only the municipal Assembly remains in the upper right quadrant.

**For Transport**

Figure 4-15 presents the Ghana stakeholder map when considering energy transitions focused on transport.

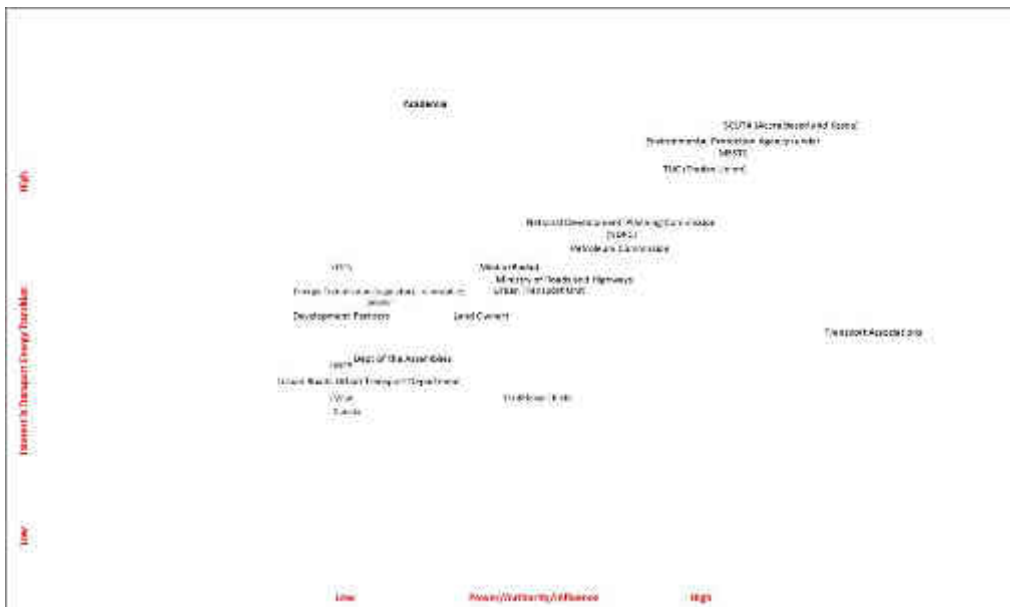


Figure 4-15 Matrix for stakeholder Authority (Power/influence) and Interest in Transport energy, Ghana

When the energy transition in question is transport, the stakeholder map changes significantly. Ministry of Roads and Highways becomes important although the specialist agency Steering Committee on Urban Transportation in Accra (SCUTA) comes into the upper quadrant. The Environmental Protection Agency and perhaps a little surprisingly the Trade Unions become important. It is interesting to note the attributed role of the media.

We also note the varying role for academics who are said to be very interested in transport, be less interested in household energy but have more authority, and do not feature on the public and commercial buildings. The Media also has a varying role. Authority for household energy but little interest, medium authority and interest for transport, but like academia does not show on public and commercial buildings.

### 4.1.3 UGANDA

The team researched the official structure of the government. Their conclusions can be found in the Annexes. Figure 4-16 illustrates the general structure – once again a formality not reflected in stakeholder matrices.

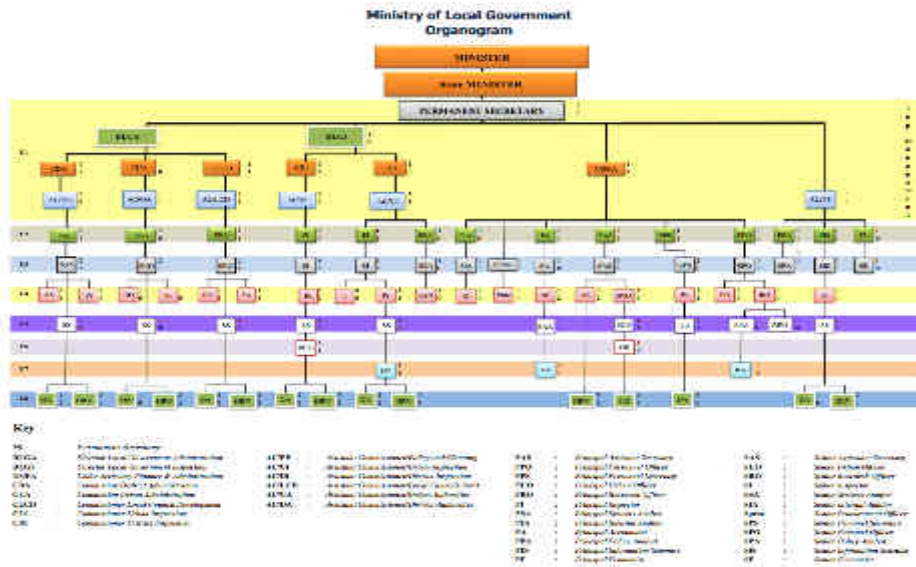


Figure 4-16 Organisation chart for Uganda Government (SAMSET 2014)

### Clean Energy Transitions

As described in the methodology the matrix below was co-constructed over a number of sessions. Figure 4-17 presents the Uganda stakeholder map when considering energy transitions focused on clean energy transitions.

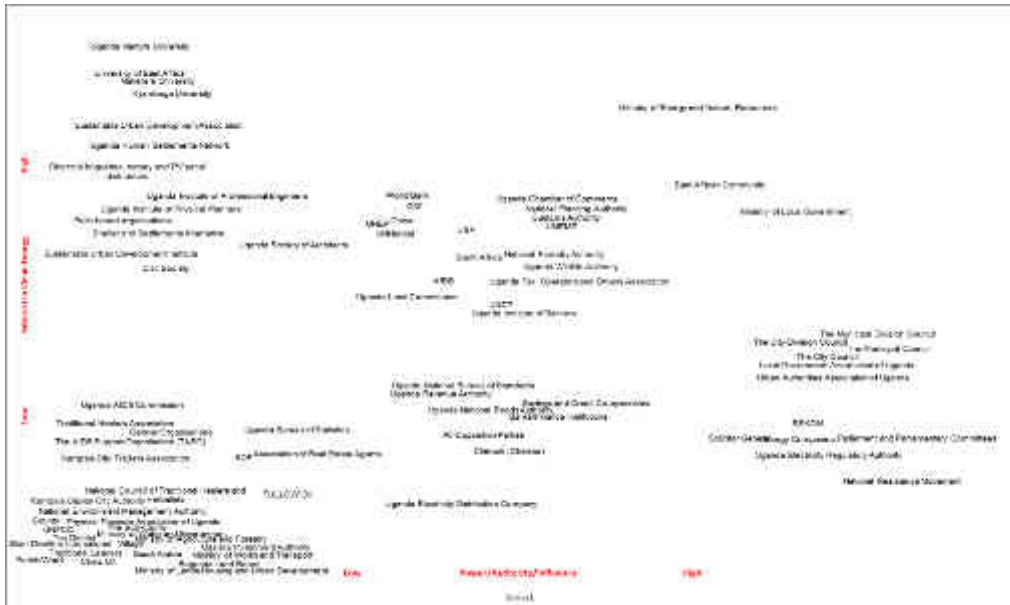


Figure 4-17 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, Uganda

In an interim step, the workshop in Uganda generated the top six key stakeholders. These are given in the Annexes.

We note that the multinational donors are named and they have medium authority and interest.

Although a couple of Ministries are in the upper right quadrant, the political arm of the government, the National Resistance Movement is lower right quadrant. This suggests that participants felt they have considerable authority but little interest in cleaner energy transitions. The Ministry of Energy & Natural Resources is highly interested, yet the Electricity Regulatory Authority (ERA) is not; both are regarded as influential. How can the interested stakeholders leverage their interest to persuade the agencies not interested?



Figure 4-18 Uganda officials engage with the Netmapping

We note that financial institutions are on the maps, and have considerable power (presumably they are important for accessing finance for private sector energy projects).

Research Team Comments – In this box we invited the research team to comment on what the maps were saying.

*“These figures seem a reasonable reflection of the situation. However there is often a slight bias towards the ‘official’ situation – i.e. an overemphasis on the official mandate/role of the organisation in question. If we think about which organisations we actually consider worth engaging with and which we feel are not worth the effort, it seems to bring an additional layer to these charts which is difficult to reflect. Partly the earlier points about individuals and unintentional networks come into play. Factors like Cape Town having different politics to most of the rest of the country, making communication and cooperation with national government by Cape Town-based organisations more complex. Partly enthusiastic individuals within organisations. Partly long-term trusting relationships that we’ve built up...etc. So while the netmap figures successfully guide our efforts to those that should be key players in promoting aspects of sustainable energy transitions, we still bring an added layer of experience which guides us to where it is worthwhile and where not.*

*To illustrate further, there is one organisation highlighted which is officially very interested in sustainable energy in urban areas and we should in theory work closely with them. However our experience suggests that they may have relatively low levels of competency, be territorial about their work, feel that they are the ‘big boys’ in the field and don’t need to talk to us, or have ambitious individuals who do not naturally cooperate with others or feel threatened by our experience in the field (this is of course purely hypothetical for illustrative purposes). So the irrationality of humans means irrational and unconstructive organisational behaviour often. Over time we have learned that its best to put our energy where the receptivity and dynamism is, so we don’t work with all sorts of organisations which are officially the best to cooperate with.*

*I suspect this is moving beyond the ability and function of the netmap exercise, but does link to points made earlier about individuals and unintentional networks being hugely important. And we probably need to emphasise it to the project team, because one can waste a lot of time and energy if purely guided by the more ‘official’ picture.*

*It is interesting to note that the political party in South Africa, the ANC, was not mentioned. However the ANC has overall control over Eskom through the Chancellor House. We have experience of the DoE (Ompie) intervening in the national Solar Water Heater strategy SEA worked on.*

*We are looking at new approaches? How does this affect our baseline view? For example working with informal communities (via Slum Dwellers or not) to transform their own energy system. The netmap works with existing networks and this should not stop creative thinking beyond these worn paths.”*

## 4.2 COMMUNICATION PATHWAYS

In this section the communication pathways co-constructed by the participants of the various workshops are presented. The communication pathways are presented as visualisations for each country. However, derived from the network maps are the degrees of Centrality and Betweenness (as described in Methodology section).

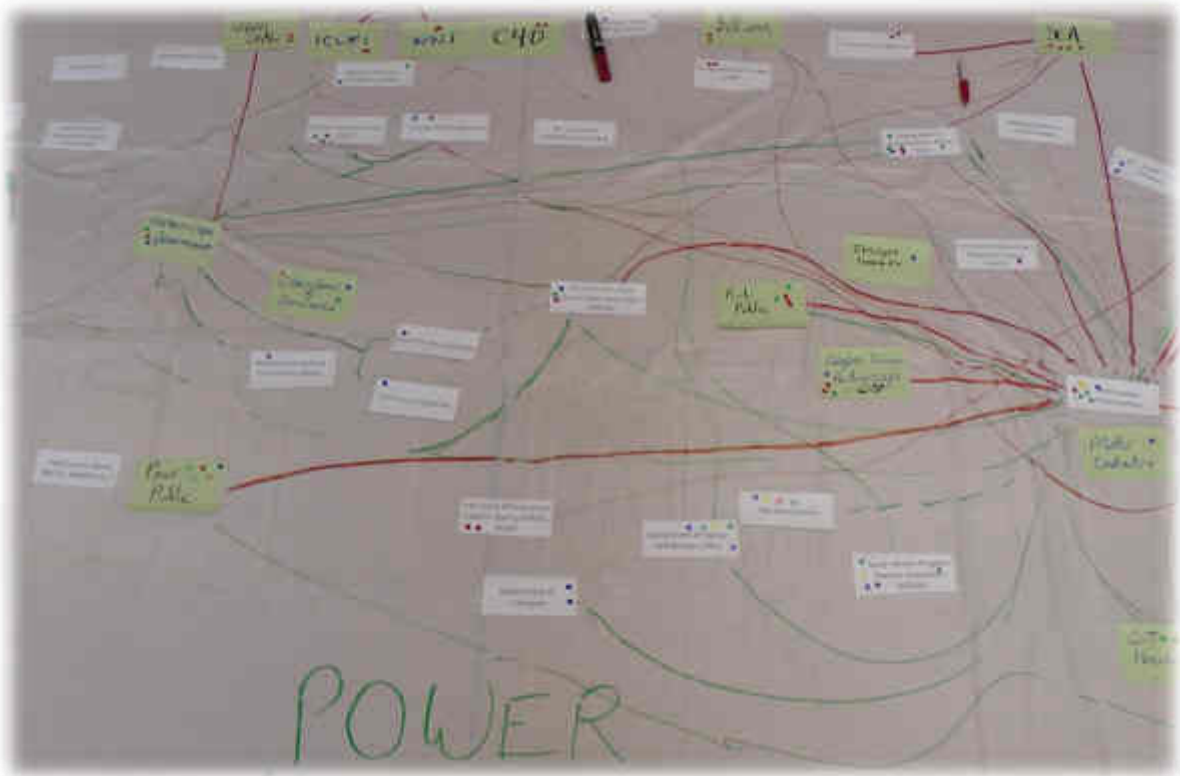


Figure 4-19 Netmapping exercise from Cape Town

#### 4.2.1 SOUTH AFRICA

Figure 4-20 is a social network map of institutions said to be involved in clean energy in municipalities in South Africa created by the research team, and a qualitative view of the degree to which they communicate with each other.

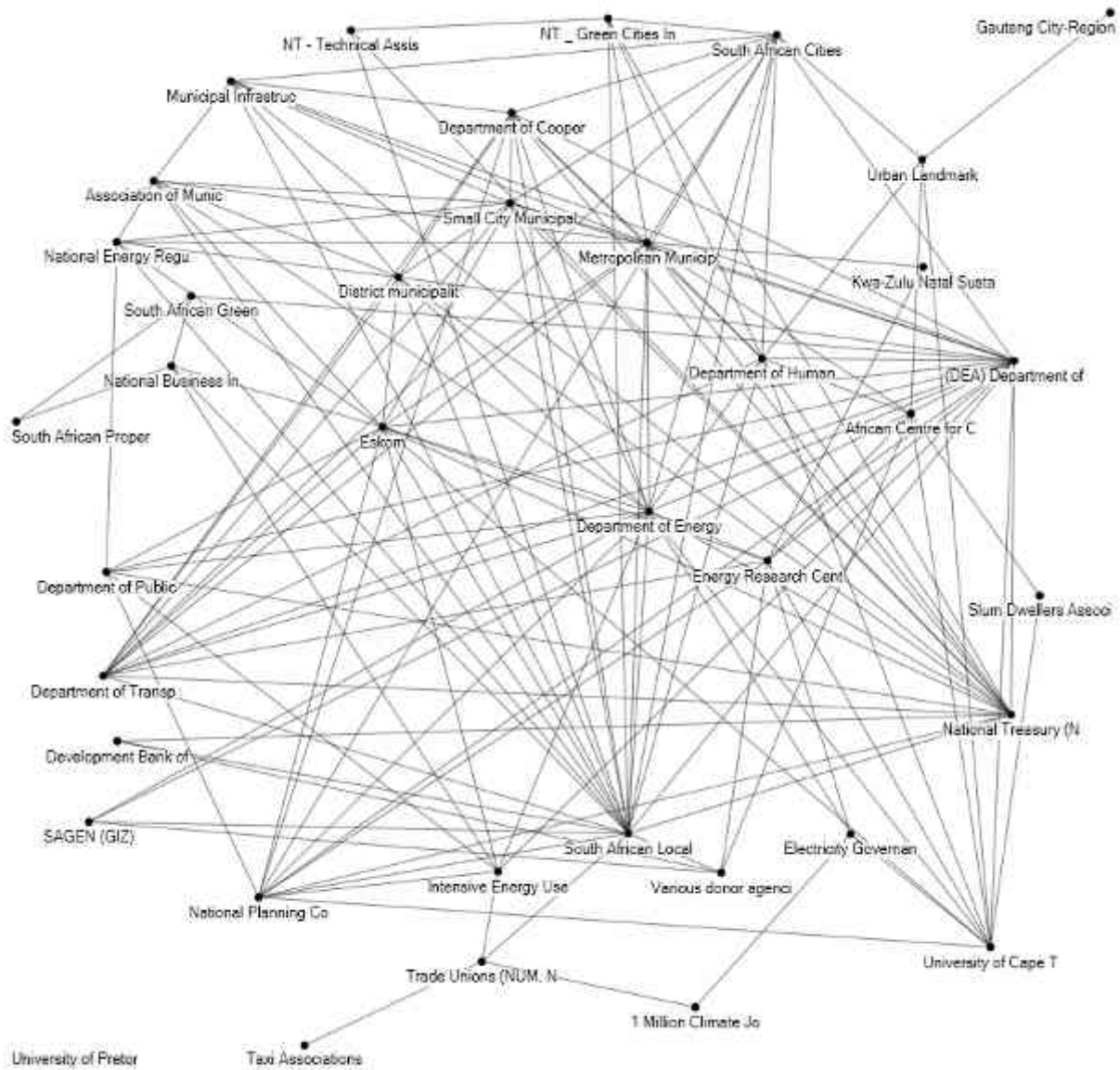


Figure 4-20 Communication visualisation for stakeholders, South Africa

During the validation exercise, the somewhat optimistic communication view above was considerably reduced (Figure 4-21 and Figure 4-22).

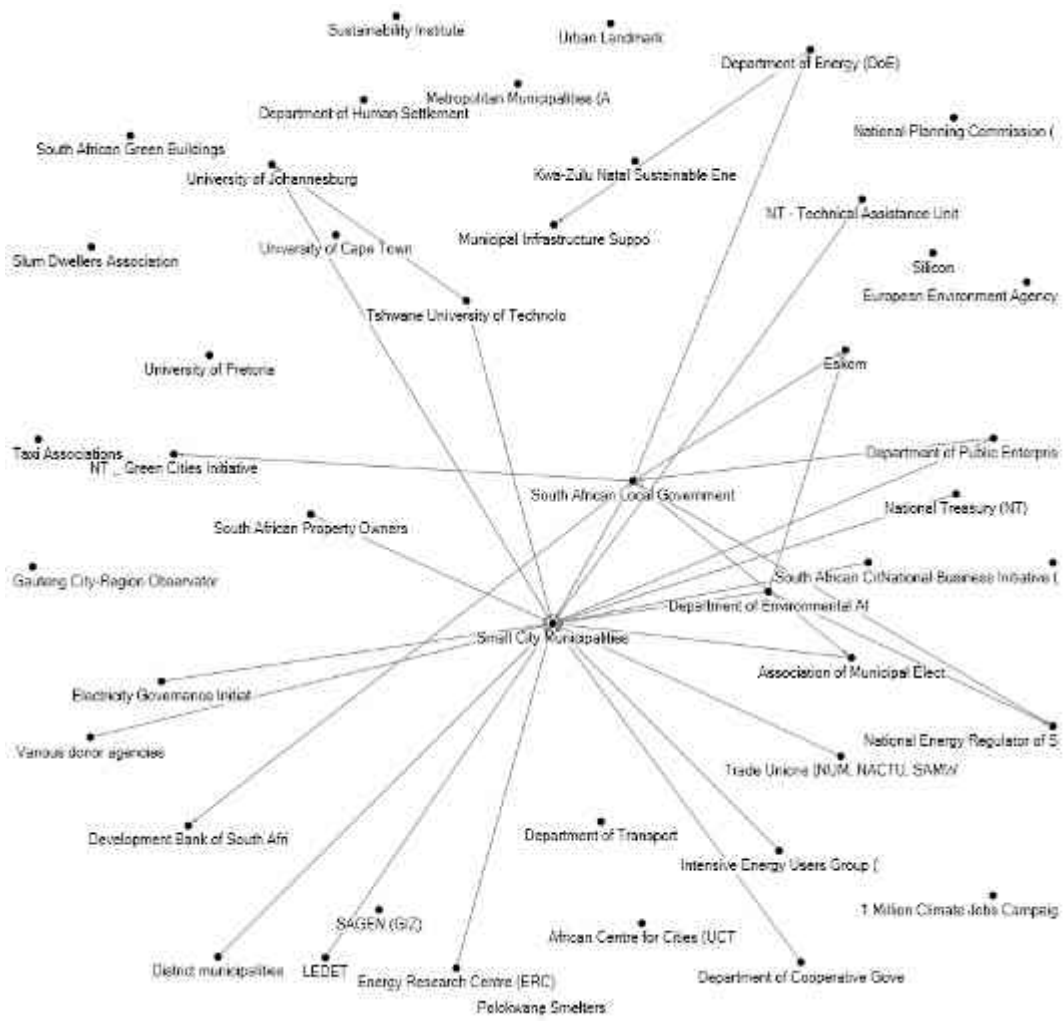


Figure 4-21 Communication visualisation for stakeholders, South Africa Polokwane





Metropolitan Municipalities	10	251.056	0.009
Department of Public Enterprises (DPE)	9	3.050	0.009
Association of Municipal Electricity Utilities (AMEU)	8	0.742	0.009
National Energy Regulator of South Africa (NERSA)	8	6.378	0.009
Intensive Energy Users Group (IEUG)	8	11.575	0.009
Various donor agencies	8	91.516	0.010
African Centre for Cities (UCT)	7	25.362	0.008
NT _ Green Cities Initiative	6	2.532	0.008
Electricity Governance Initiative (EGI)	5	31.660	0.009
Department of Environmental Affairs (DEA)	5	50.931	0.009
National Business Initiative (NBI)	5	8.543	0.008
Trade Unions (NUM, NACTU, SAMWU etc.)	5	68.668	0.008
Sustainable Energy Africa	5	18.038	0.009
Urban Landmark	5	51.071	0.008

Combining both cities (CT and Polokwane) potentially makes this table less useful since it is strongly influenced by how the exercise was done at the time - the Cape Town one was a little rushed with fewer participants than the Polokwane one for example, so ended up with fewer lines which affects the Centrality etc scores when combining the two. So ‘Smaller munics’ rates much higher than ‘Metropolitan munics’ for example, which to the Research Team does not feel right. Independent tables are available for future analysis.

The table is ranked by Degree Centrality (i.e in simple terms, the most connections), however betweenness and closeness are important considerations for the research project. A high Betweenness score suggests that the stakeholder is well connected to be able to pass on information to as many clusters of stakeholders as possible. While University of Cape Town (a research team member) ranks 20<sup>th</sup> for Centrality, it seems well placed for Betweenness.

It is notable that the City of Cape Town officials added ‘Rich Public’ and ‘Poor Public’ to their stakeholder lists. While these do not rank highly in the centrality scores, their presence on the stakeholder maps is a timely reminder of who the research is for, and the role of public participation in energy transitions.

City of Cape Town officials also added Sustainable Energy Africa (SEA), a project team member, particularly as they have worked intensively with the City over the last ten years or more. However SEA themselves did not include themselves (probably because they were being humble), and Polokwane Municipality did not add them since they have not yet worked with Polokwane. They therefore have a lower ranking than perhaps they should. This illustrates the qualitative nature of this process, and reminds us that while these rankings and stakeholder analyses offer guidance, they are not definitive.



Figure 4-23 Ghana officials engaging with the Netmapping

#### 4.2.2 GHANA

Figure is a netmap of institutions said to be involved in clean energy in Municipalities in Ghana, and a qualitative view of whether they communicate with each other.

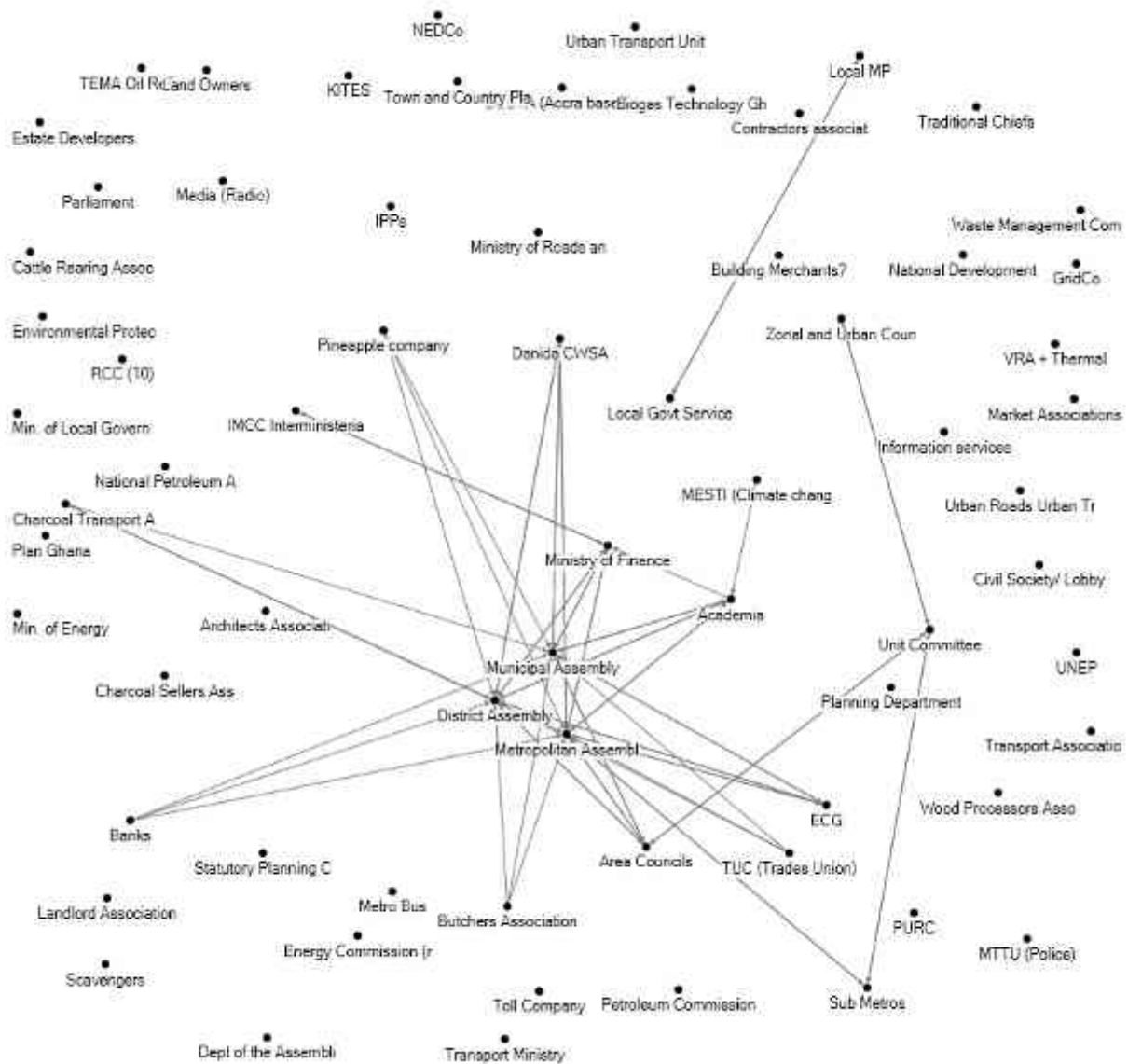


Figure 4-24 Communication visualisation for stakeholders, Ghana

As above for South Africa, behind this visualisation computer software can calculate the degrees of centrality and betweenness for each stakeholder. Table XX presents the twenty stakeholders with the highest scores of each. Note scores are always relative to within the network, and can not be compared across countries.

	Degree Centrality	Betweenness	Closeness
Metropolitan Assemblies	11	44.318	0.042
Municipal Assembly	10	25.500	0.038
District Assembly	10	25.500	0.038
Academia	5	16.482	0.031
Ministry of Finance	5	16.482	0.031

Area Councils	4	22.164	0.031
Pineapple company	3	0.482	0.028
Banks	3	0.482	0.028
Charcoal Transport Association	3	0.482	0.028
Butchers Association	3	0.482	0.028
TUC (Trades Union)	3	0.482	0.028
Danida CWSA	3	0.482	0.028
ECG	3	0.482	0.028
Sub Metros	2	6.500	0.028
Unit Committee	3	16.682	0.023
MESTI (Climate change)	1	0.000	0.021
IMCC Interministerial Coordinating Committee	1	0.000	0.021
Zonal and Urban Councils	1	0.000	0.017
Local MP	1	0.000	1.000
Local Govt Service	1	0.000	1.000
Dept of the Assemblies	0	0.000	0.000

#### 4.2.3 UGANDA

Figure is a netmap of institutions said to be involved in clean energy in municipalities in Uganda, and a qualitative view of whether they communicate with each other.



Figure 4-25 Uganda officials engaging with Netmapping

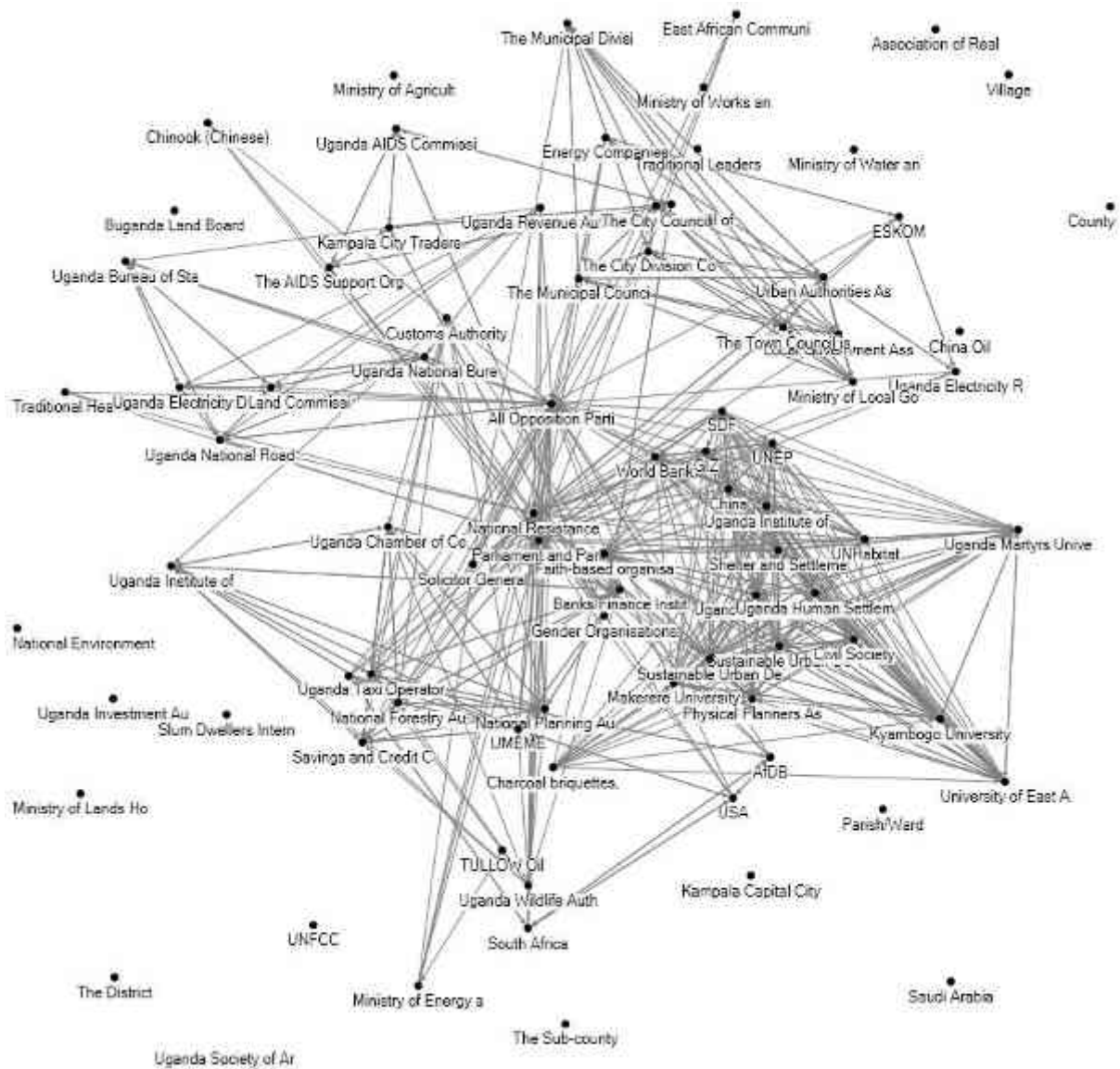


Figure 4-26 Communication visualisation for stakeholders, Uganda

As above for South Africa, behind this visualisation computer software can calculate the degrees of centrality and betweenness for each stakeholder. Table XX presents the thirty<sup>3</sup> stakeholders with the highest scores of each.

	Degree Centrality	Betweenness	Closeness
All Opposition Parties	36	530.833	0.012
National Resistance Movement	33	376.333	0.012
Parliament and Parliamentary Committees	33	376.333	0.012
Shelter and Settlements Alternative	22	58.239	0.009
Sustainable Urban Development Association	22	58.239	0.009
Physical Planners Association of Uganda	22	58.239	0.009
China	21	44.444	0.009

<sup>3</sup> Up from twenty due to the unusual betweenness of the opposition parties.

World Bank	21	44.444	0.009
GIZ	21	44.444	0.009
UNEP	21	44.444	0.009
UNHabitat	21	44.444	0.009
SDF	21	44.444	0.009
Uganda Martyrs University	19	0.462	0.007
Makerere University	19	0.462	0.007
University of East Africa	19	0.462	0.007
Kyambogo University	19	0.462	0.007
Sustainable Urban Development Institute	19	0.462	0.007
Faith-based organisations	19	0.462	0.007
Uganda Institute of Physical Planners	19	0.462	0.007
Uganda Human Settlements Network	19	0.462	0.007
Uganda Institute of Professional Engineers	19	0.462	0.007
Civil Society	19	0.462	0.007
Charcoal briquettes, battery and PV panel distributors	13	0.000	0.006
Savings and Credit Co-operatives	12	22.744	0.008
Banks/Finance Institutions	12	22.744	0.008
Uganda Taxi Operators and Drivers Association	12	22.744	0.008
National Forestry Authority	12	22.744	0.008
National Planning Authority	12	22.744	0.008
UMEME	12	22.744	0.008
Solicitor General	12	408.000	0.008
Uganda Wildlife Authority	11	14.286	0.008

## 5 ANALYSIS

### 5.1 UNDERSTANDING THE DERIVATION OF THE MAPS

While Ghana and Uganda maps were co-constructed by a mix of research team and municipal authorities in a single session, South Africa presents an interesting sequential map construction, which can be used to consider the different perspectives of both the researchers and the municipalities.

Figure 5-1 presents the map as constructed by the researchers. This is based on over 10 years of working with municipalities.

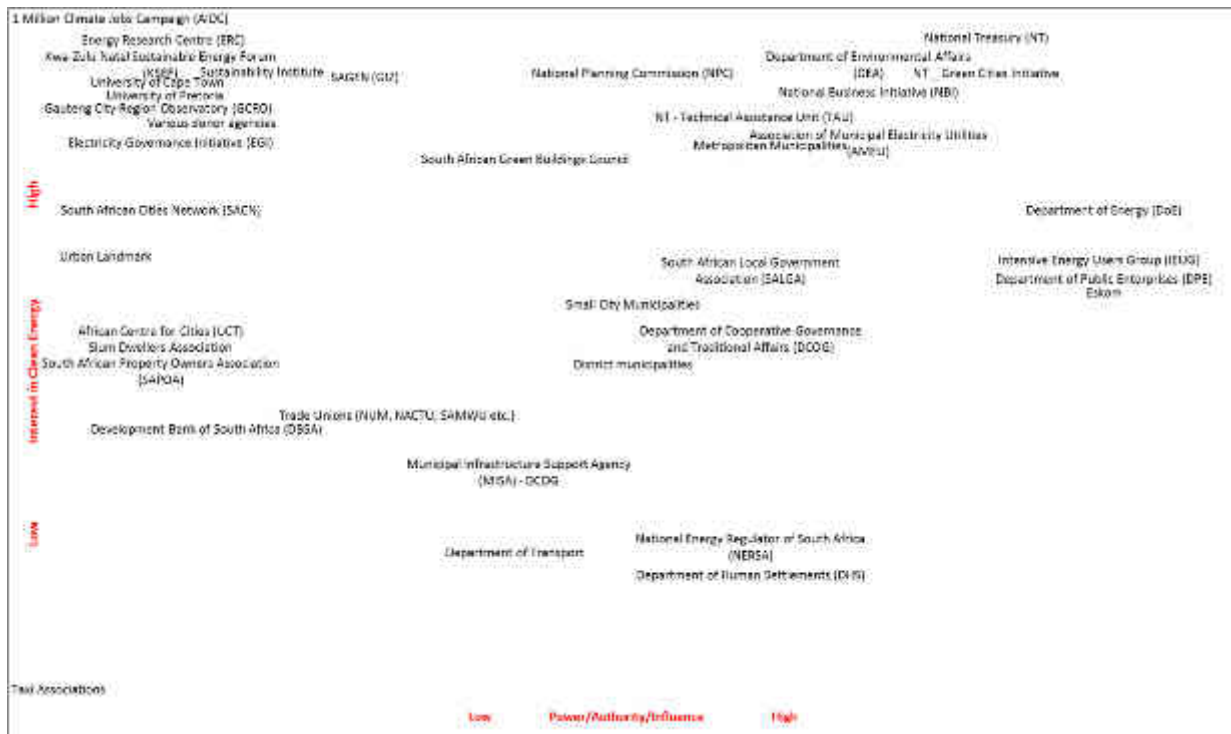


Figure 5-1 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, South Africa, Original, Team only

In this opening matrix, the upper right quadrant includes some key National actors as well as local actors. The National Treasury and the Green Cities Initiative are said to be important and supportive of clean energy transitions. SALGA features in this quadrant and consistently comes up in the analysis below.

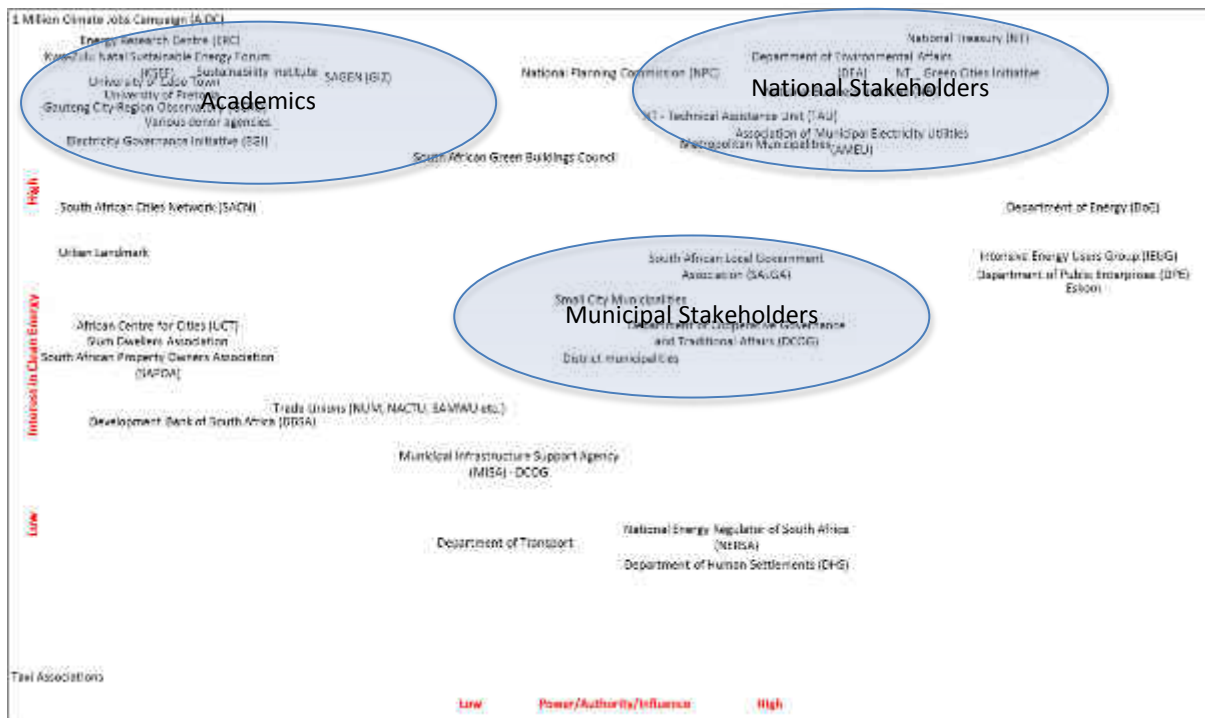


Figure 5-2 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, South Africa, Original, Team only

In Figure 5-2, some zones/ovals have been added showing some clusters of similar stakeholders.

However, when validated by the City of Cape Town and Polokwane Municipality officials, the map changes. First some new stakeholders are added. In Figure 5-3, the new stakeholders have been added (and previous ones removed for clarity). Polokwane additions are Red text with blue shading.

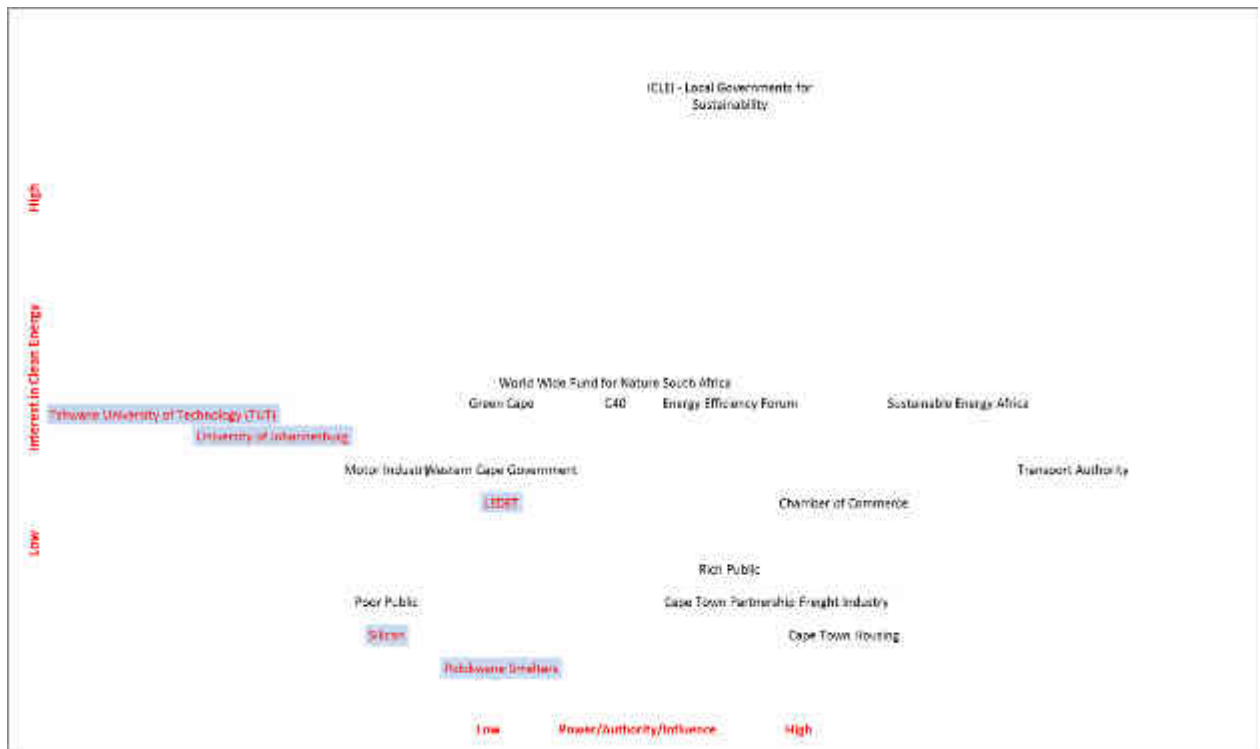


Figure 5-3 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, South Africa, New Stakeholders from Cape Town and Polokwane

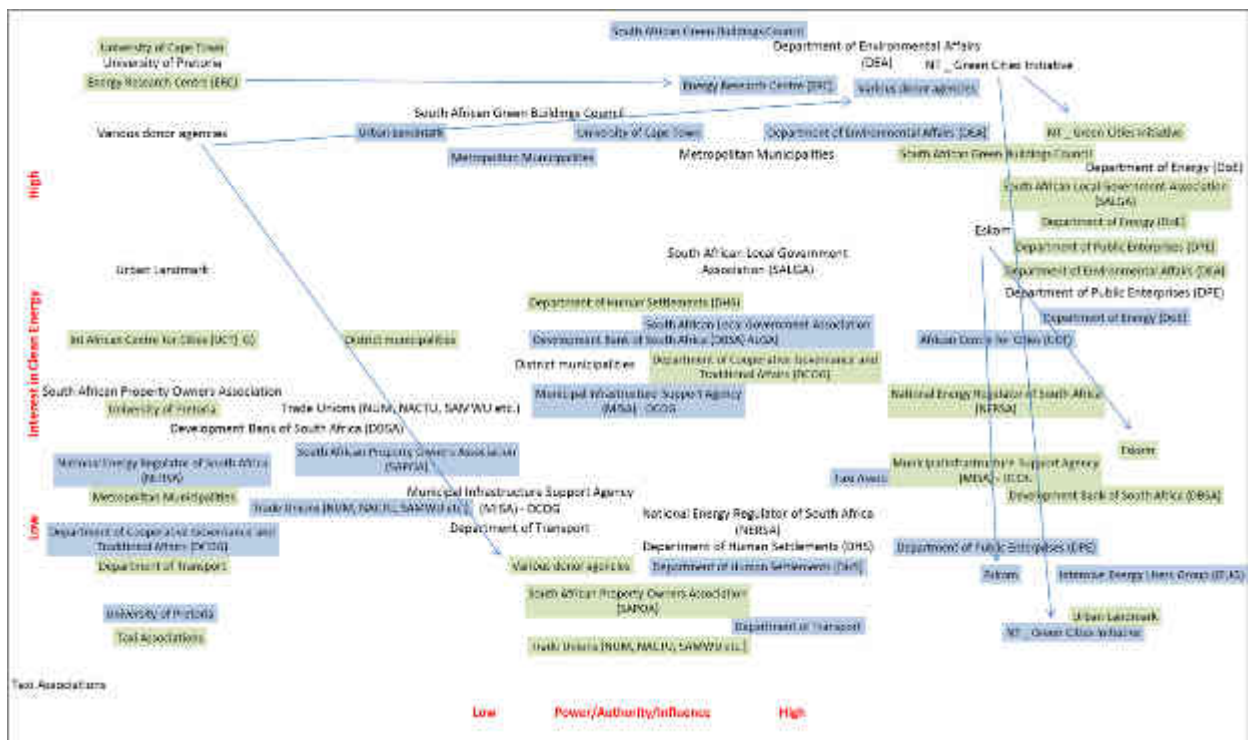


Figure 5-4 Matrix for stakeholder Authority (Power/influence) and Interest in Clean energy, South Africa, Stakeholders with differing scores between the team original, Cape Town and Polokwane.



Again, as part of the validation, the municipal officials were asked to comment on the scoring previously assigned to each stakeholder. Figure 5-4 plots the stakeholders that moved significantly. For example while the Energy Research Centre of Cape Town University was originally said to be interested in clean energy but to have little power/authority/influence, and this was agreed to by Polokwane officials, the Cape Town officials thought it had considerable authority. In another example ESKOM, was said by the team to have a reasonable interest in clean energy. Polokwane officials disagreed and gave it a lower interest score, while Cape Town officials disagreed even more and gave an even lower score. For 'Various Donors' one can see that there was very little agreement. The research team felt they had little authority or influence, but a strong interest in clean energy. Cape Town officials agreed they had a keen interest in clean energy and put them as considerably more influential, while Polokwane agreed they were reasonably influential but disagreed about their interest in clean energy.



Figure 5-5 Capetown officials engaging with the Netmapping

To observe this movement visually, and explore manually, use these links.

[Polokwane.](#) [Cape Town.](#)

Change the colours to 'Unique colours' using the menu and press play.

Hovering over any dot brings up the stakeholder name.

This is visually 'interesting' but has limited real use in contributing to our understanding and interpretation.

There is of course, no 'correct' answer. This is qualitative data and depends on the person's perspective. However, by combining the three views the research can generate a list of stakeholders in the various quadrants, and seek to engage them strategically – as presented in the findings.

## 5.2 CROSS COUNTRY COMPARISON

One of the key premises of the research project is that lessons learned from over ten years of work conducted in South Africa are transferrable to Ghana and Uganda (with a broader scope of generic lessons available for other countries).

The key work within South Africa has been with municipalities, and relies on a process rather than a prescribed pathway. The process has been to engage municipalities, who in SA have considerable authority over energy

concerns within their jurisdiction, and to work with them to create a state of energy report based on systematic modelling. It is the process of engaging with data that is said to enable strategic discussions and positive planning of energy transitions towards cleaner energy.

It is therefore interesting to note that municipalities (Metropolitan Municipalities, Small Municipalities, and District Municipalities) are attributed only moderate power regarding clean energy and transport, although they are regarded as having high influence regarding household energy, buildings, and waste & water.

In Ghana and Uganda the structure of local government is different. Both countries have relatively decentralised government structures, however the responsibility of the municipality for energy is significantly different. For instance in South Africa municipalities are significant distributors of electricity which they buy in bulk from the sole generator Eskom.. No such arrangement is available in Ghana or Uganda. In Ghana the Municipal Assembly is accorded highest levels of power (except for Transport).

It therefore seems important to understand the local context, including the relevant roles of the local government. In South Africa, as the netmaps suggest, the municipality is a key decision maker in most energy transitions (within their location). However, in Ghana and Uganda, the national stakeholders seem to hold a greater significance.

This suggests that any activity seeking to create a strategic plan for the municipality needs to engage not only the municipal stakeholders but some strategic national actors as well.



Figure 5-6 Netmap exercise from Ghana

### 5.3 COMPARISON OF DIFFERENT ENERGY TRANSITIONS

It is clear from the matrices that for different energy transitions, different stakeholders take centre stage.

For instance, in South Africa, the upper quadrant contains the following for a general interest in clean energy. However, if the research focuses on transport energy transitions, the list changes significantly. The South African experience is predicated predominantly on clean energy and in particular household and public buildings energy. Once transport activities are considered, officials and departments are included in the stakeholder map that the South African team have little interaction with.

According to the netmaps of Ghana, a similar situation will occur there. For cleaner energy these stakeholders (Table XX Column 1) will need to be engaged whereas if transport is said to be the key opportunity for energy transition action, other stakeholders will need to be engaged (Table XX, Column 2). Similarly in Uganda.

## 6 CONCLUSIONS

To date, with this report, we have presented a baseline stakeholder analysis. This gives us a view of the institutions the research might need to engage with in order to exchange knowledge with key people, take effective action in partnership and ensure uptake of the research.

As a baseline, this also enables the team to monitor change throughout the project, where mandates of institutions might change and energy transitions create different actor networks (or emerging actor networks create energy transition action).

In this conclusions section, we seek to apply the findings directly to the project plan.



Figure 6-1 'Engage with these people' (Ghana)

### 6.1 RELEVANCE TO KNOWLEDGE EXCHANGE FRAMEWORK

The findings present the key stakeholders. Apart from South Africa they have not yet been granulated to departments and individuals. As Knowledge is exchanged regarding the research, the energy transitions, the strategic planning, these institutions are the ones that need to be engaged. Workshops to discuss knowledge exchange should contain invitations to these institutions (where budgets permit).

Where possible it would be good to granulise the data down to departments and individuals. The role of Champions in energy transitions can be easily illustrated from within Cape Town. The presence of XXXXX (an ex-member of Sustainable Energy Africa, and now a senior member of the municipality) has been key to getting cleaner energy transitions adopted by the municipality.

This emphasis on individuals is important for workshops, as attendance at knowledge exchange for a by a set of differing people albeit from the same institution rarely leads to embedded knowledge and action orientated uptake of strategic thinking.

Products such as Case Studies and policy briefings could also be circulated specifically to those agencies with the highest centrality and/or betweenness. While they may not be actively involved in the energy transition action, they are conduits of communication. If the energy transition is of note, they may discuss it with colleagues even beyond their own institutions.

(Caveat – no amount of analysis can determine what people are really interested in and might talk about over lunch or a drink – the high degree of centrality is a qualitative assessment made by people who should know that suggests there are opportunities for relevant discussion)

## 6.2 RELEVANCE TO STATE OF ENERGY REPORTS

Again, in terms of engaging with the right actors, the lists give a checklist to see who should be included.

In terms of creating the state of energy report, this is predominantly as a result of the partnership between the team and the municipalities. However stakeholders in the upper right quadrants have authority and are said to be disposed towards cleaner energy. They may prove helpful in creating the state of the energy report. They certainly are likely to be interested in the completed product, and they may need to be engaged in any discussions on subsequent energy transition action.

In particular, there are stakeholders who are in the lower right quadrant who have authority but are said to have little interest in cleaner energy. These stakeholders should be actively engaged, and perhaps the easiest engagement is ensuring they are given the state of energy report in settings where they can be engaged and introduced to its relevance. It would not be wise to just post the report to them, but rather to take a little extra time to 'introduce' them to it.

Regarding networks, those with high centrality and betweenness should be offered several reports so they can pass them on.

## 6.3 RELEVANCE TO ONGOING RESEARCH ACTIVITIES

Similar to the above, the netmaps indicate who should be engaged depending on the energy transition focus. If post states of energy reports, the municipalities decide to do something about transport, then the netmaps give some indication of the key stakeholders that should be engaged. They provide a minimum checklist for engaging with institutions. (We note that new stakeholders may become relevant as energy transitions are discussed).

## 6.4 RELEVANCE TO WIDER RESEARCH UPTAKE

Those with high centrality and betweenness are said to have good communication networks. They are therefore key institutions for sharing research outputs. Individuals in these institutions should be regularly informed of how the research is outworking, where possible they should be invited to contribute their own

opinions and data since co-constructed research is more likely to be spread, and they should be specifically invited to participate in social media or other mechanisms for research delivery.

This report does not analyse the institutions for their attendance at national and international for a, and this is another step in the network analysis.



Figure 6-2 Polokwane officials discussing the netmapping