Exploring perspectives that underpin decisions for southern African urban development

Insights from Blantyre, Malawi

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Contents

1. Introduction

Blantyre is one of two major industrial and commercial cities in Malawi, the other one being the capital and industrial city, Lilongwe. It is located in the southern region of the country. The city is one of the oldest urban settlements in the southern Africa region and was established by Scottish Missionaries in the 1870s. It was named after Blantyre in Scotland, a birthplace of the famous missionary and explorer, Dr. David Livingstone. The city covers an area of over 220 square kilometres (km^2). The population of Blantyre city is projected to increase from the current count of 1.0 million through 1.5 million in 2030 to 2.1 million people in 2040. Currently Blantyre has a very high population density, with 4,600 people per km^2 against the national average of 200 people per km^2.

Blantyre is one of the cities participating in the FRACTAL Project. This think piece presents the findings and results of a stakeholders' think tank workshop for the Innovation Fund research project for Blantyre City: *Exploring values and perspectives that underpin the development of African cities*. It features stakeholder level of engagement and participation in the decision making for the city, as well as their views on the purported waste-to-energy value chain that the city would want to embark on by way of bringing the private sector on board to invest in the venture. This potential decision was used as a case study to explore values and perspectives.

2. Objective

The objective of the discussion paper is to present the outcome of the Innovation Fund Research (IFR) engagement with stakeholders which was conducted as an input process for the research.

3. Methodology

The IFR team discussed the scope of the think tank meeting with the Blantyre city council and other FRACTAL members. At the meeting, the team brainstormed the current situation on waste management challenges and opportunities and the waste-to-energy value chain proposal. From this discussion, a set of questions was developed to guide the think tank meeting. The team also came up with the structure, date, venue and budgets for the think tank and validation workshops. Further, the team proposed a list of stakeholders to participate in the think tank

and how other stakeholders that could not attend the think tank meeting could be reached for discussion.

Stakeholder interviews were conducted in Lilongwe and Blantyre, and data was collected as input for the research (see Appendices D and E). Further, a think tank workshop was conducted with stakeholders in Liwonde, a town closer to Blantyre, for further interaction and more value addition to the data collected during interviews. The sampling was purposive. Key informant interviews (KIIs) were employed in data collection using question guides from the pre-think tank discussion paper. Data that were collected were qualitative and it was analysed using manual coding and identification of recurrent themes and trends.

4. Stakeholders

Justification for the choice of stakeholders

Stakeholders were selected from public, private and non-governmental organisations (see Appendix A). The stakeholders involved are relevant to the development of Blantyre city in various ways as explained in the following paragraph.

Blantyre City Council has the governance mandate of Blantyre city, and it would therefore highlight the enabling environment (policy frameworks) relevant for the current decision process. The City Council would also give a clear guidance on the challenges involved in waste management in the city. The Environmental Affairs Department (Disaster and Relief Development) hosts a Technical Committee on Climate Change (TCCC), which would provide vital interfaces with FRACTAL research protocol (work packages). The Ministry of Housing, Lands and Urban Development (MoHLUD) and Ministry of Local Government would help in ensuring that the current project captured all the pertinent issues on land use and urban development. WASHTED has previously been involved in water and sanitation and energy projects, hence they would provide (share) good lessons-learned. The Malawi Bureau of Standards oversees the implementation of standards in Malawi. The Bureau would therefore give guidance on the available standards on waste, waste management and energy. EGENCO and ESCOM, being the main generators and distributors, respectively, of electricity, hold useful data on energy needs, distribution and costing. Their contribution would be vital in deciding on how the

energy from solid waste could be generated, distributed and priced. MERA is responsible for energy regulation including energy that would be generated from solid wastes. Civil society organizations often interface with the general public around various public and ecological issues. These organizations would therefore represent the voice of the public in the research, and in this case, Waste Advisers, as representative of civil society, and a private entity, could speak on behalf of the public and from an entrepreneurial perspective. MCCCI plays an advisory role on business matters that concern the environment and some of their members are involved in waste collection business. The Confederation also questions the city on issues of waste management, which affect business operations. There is a significant need for investors in the waste-to-energy value chain, therefore MCCCI would be a channel to get the investors involved. This would enable them to offer significant input on the business/financial matters in the waste-to-energy value chain.

5. Think tank findings and results

5.1 Definition of a developed city

The stakeholders present at the think tank brainstormed on what they perceived and expected of a city that is 'developed'. In this case, a developed city is defined by its characteristics and priorities, which are summarised as follows:

Generic characteristics of a developed city

i. Adequate security: This is for social safety and integrity, as well as safety for investments.
ii. Good infrastructure: This is in terms of road network, housing, dual carriages, fly-overs, footpaths and cycling tracks, railways, high rise buildings and those designed for future expansion.
iii. Adequate, reliable and good quality power (energy) and its sources: This is for sustainability of the city.
iv. Good sanitation services: A developed city should embrace proper waste management as a public health aspect.
v. Adequate and reliable transportation modes: This should service all parts of a developed city.

vi. Good and reliable communication network and services: A developed city must allow its residents and users access to phones, internet, postal and related services.
vii. Availability of safe and reliable potable water supply to all parts of the city.
viii. Adequate and affordable housing in all residential areas of the city.
ix. Adequate health facilities.
x. Adequate education and recreation facilities.
xi. Investment friendly environment: In a developed city, the local authority should not only focus on physical facilities, but also on the creation of a environment that is conducive for investment.
xii. A developed city should have adequate markets.
xiii. There must be an all-time emergency response.
xiv. Commerce and industrialization: A developed city should stimulate value addition processing, agro-industry, & tourism. This should be promoted and incentives may be put in place to attract industrialization of all scale, so as to create jobs and enhance the multiplier effect of the city.
xv. A developed city should address cross-cutting issues like environmental sustainability, planning and land use, science and technology, and other issues in a holistic way.
xvi. Social inclusion: A developed city must address issues of disability friendliness, gender, youth, as well as social impact.
xvii. A developed city should advocate for proper urban planning for infrastructure development, settlements, provision of services, and so forth.
xviii. Policy and legal framework enforcement: For civil orderliness, a developed city must put in place and enforce its related policy and legal provisions.
xix. City residents' participation in decision making (inclusiveness): A developed city provides avenues for citizen views and input in issues affecting the city.
xx. Tax regime that is responsive to needs of the residents: City taxes should take into consideration the status of city residents
xxi. Environmentally sustainable city: parks, recreation centres, and green belts are part of a developed city

5.2. Priorities for development of Blantyre city

In an attempt to develop Blantyre city and realise the characteristics mentioned above, priorities for development could be as presented in **Table 1** below.

Table 1: Priorities for development of Blantyre city

<u>Group 1 priorities</u> ***- Group members:*** - MERA - BCC - EAD	1.Provision of adequate land for development 2. Road infrastructure 3. Provision of adequate, reliable and quality power 4. Water 5. Communication infrastructure 6. Health facilities 7. Education facilities 8. Transportation 9. Waste management facilities 10. Recreation and entertainment
Group 2 priorities ***- Group members:*** - WASHTED - BCC - Waste Advisers	1. Basic services: Water, sanitation, energy, education, health, emergency response, security, public transport. *Reasons*: basic services are enablers of development 2. Infrastructure: Roads, dual carriage, Buildings. *Reasons*: enablers of development & trade 3. Commerce and industrialization. Reasons: increase economy and job creation
Group 3 priorities ***- Group members:*** - EAD - BWB - MBS - MoLHUD EAD_ energy, waste management, manufacturing should define development BWB_ Health delivery services & waste management should define development MBS_ Manufacturing and health service delivery should define development MoLHUD_ Sustainable urban development should characterize a developed city	1. Energy sector 2. Waste management 3. Health sector 4. Manufacturing 5. Cross-cutting issues. Reasons: sustainability of development

Other priority sectors

Besides the sectors mentioned above, there are other sectors that need to be hooked in and given considerable attention, for the sake of their significant contribution to city development. Such sectors are listed below:

- Security
- Information and Communication Technology
- Social inclusion

This information came from peer review of groups' priorities through carousel and plenary presentations. These categories are apparently cross-cutting, demonstrating that despite different interests, stakeholders have some common platforms that may enhance cohesive decision.

5.3 Values and perspectives of the different groups

Thematic priorities that emanated from the group discussions were infrastructure for utilities and social services (MERA, BCC, EAD), Industry and commerce (EAD, Waste Advisers and MBS), and, waste management (BWB, EAD). The priorities apparently emanate from institutional mandates and responsibilities. Malawi Energy Regulatory Authority (MERA), being responsible for energy market regulation, put greater value on infrastructure as an enabler for the energy market (infrastructure for adequate power, water, communication & transport). Blantyre City Council's perspectives and values were founded on their mandate as a local government entity responsible for social and technical services for city residents hence their emphasis on recreation and entertainment vis-à-vis land use and physical infrastructural development. The Environmental Affairs Department (EAD) is interested in ecological health / environmental integrity and their values are apparently founded on pollution prevention and control hence their emphasis on energy, waste management and manufacturing. The Malawi Bureau of Standards as a national standards body has responsibility for conformity of products and processes to set national and international standards. Their values appear founded on industrial development and public health (manufacturing and health service delivery). Blantyre Water Board with its responsibility to provide safe, adequate water to Blantyre city, places greater value on waste management and energy from the perspective that inadequate waste management will pollute water sources while limited power supply will negatively affect their ability to pump water. Waste Advisers are a private entity interested in energy harnessing from organic waste.

Being a private entity, interested in business development, their values are founded on commerce, hence their argument that commerce and industrialization must characterize definition of a developed city. Ministry of Lands Housing and Urban Development deals with land use and management and argued for sustainable development in general.

This reveals that decisions are mandate and responsibility driven. Having a mix of different mandates and responsibilities among stakeholders implies that a democratic and inclusive decision process for development in the city will be slow and difficult. The city authorities need to balance democracy, inclusiveness, and progress.

5.4 Current status of Blantyre city

The stakeholders, in plenary, discussed the current status of Blantyre city with respect to generic characteristics of a developed city, as obtained from group work followed by carousel and plenary review. The summary of the current status of Blantyre city was arrived at through stakeholder consensus and based on agreed generic characteristics of a developed city:

> Blantyre city, generally, has inadequate, unreliable and poor quality power supply. In addition, the city is faced with the problem of unreliable and poor quality transport network, which is aggravated by inadequate and poor road network. Further, there is uncoordinated development control, which also contributes to poor waste management. The city also experiences unreliable water supply, and has few recreation facilities.

5.5 Back-casting: Development pathways

In reference to the situation in which Blantyre city currently is, a *back-casting* exercise by the stakeholders outlined areas that sequentially require attention in order to realise a developed Blantyre city that reflects the characteristics mentioned earlier on. The areas highlighted per group are as follows:

Table 2: Development pathways for Blantyre city

Group 1 ***(Members:*** *MERA, BCC & EAD)*	**Group 2** ***(Members:*** *WASHTED, BCC, Waste Advisers)*	**Group 3** ***(Members:*** *EAD, BWB, MBS, MoLHUD)*
1. Stopped corruption which increased revenue by 40% (UN-Habitat, 2011)	1. Revolutionised conduct of business in the city	1. Stakeholder engagement / collaboration
2. Implemented zero-aid budget	2. Accountable governance structures	2. Resource mobilization: international donor support and lobbying for resource allocation
3. Mind set change (patriotism) through civic education & enforcement of laws	3. Enforcement of sound/workable policies and bye-laws	3. Political stability and will
4. Embraced waste management as business which improved energy supply: promotion of waste segregation and collection	4. Effective, dedicated, and well-qualified personnel	4. Capacity building
5. Enforcement of better standards for development (development enabling environment)		5. Transparency & accountability
6. Life style change in terms of energy efficiency		6. Sustainability of initiatives : good exit strategies
7. Review of cost reflective tariffs on electricity		7. PPPs
8. Development of more power plants		8. Infrastructure development
9. Development of reliable and affordable transportation system		9. Mindset change
		10. Improved waste collection

Themes that emanated from the groups on what requires attention in order to realise a developed Blantyre city were: <u>good governance</u> (*corruption free society,*

accountable governance structures and transparency and accountability), resource mobilisation and management (*zero-aid budget; effective, dedicated, and well-qualified personnel; and capacity building*), patriotism (*mindset change, dedicated personnel, political will*), and regulatory frameworks and implementation (*sustainability of initiatives, development of service platforms and requisite management*).

These general themes were identified across all three groups inferring that the groups, despite differences in mandates and responsibilities, share similar values and perspectives with respect to major issues requiring attention in order to realise a developed Blantyre city.

5.6 Sectors and stakeholders to be engagement for the development of Blantyre city

For the desirable development of Blantyre city, there are sectors to be engaged, and in this case, relevant stakeholders need to be prioritised. The prioritization is as follows:

Table 3: Sectors & stakeholders for the development of Blantyre city

Water & sanitation sector's priority stakeholders	***Energy sector's priority stakeholders***	***Manufacturing sector's priority stakeholders***
a. Blantyre City Council (BCC)	a. Electricity Generation Company (EGENCO)	a. Malawi Confederation of Chambers of Commerce & Industry (MCCCI)
b. Blantyre Water Board	b. Electricity Supply Corporation of Malawi (ESCOM)	b. Environmental Affairs Department (EAD)
c. Ministry of Agriculture, Irrigation & Water Development (MoAIWD)	c. Department of Energy Affairs	c. Ministry of Lands, Housing & Urban Development (MoLHUD)
d. Private investors/entrepreneurs	d. Ministry of Natural Resources	d. Academic institutions
e. Academia	e. Malawi Energy Regulatory Authority (MERA)	e. Dept of Occupational Safety & Health

f. Local Government, Malawi Environmental Health Association (MEHA), and Consumer Advocates	f. Independent Power Producers (IPPs)	
g. Private waste collectors	g. Blantyre City Council (BCC)	
	h. Academia	
	i. Private waste collectors	
	j. Informal waste pickers	

The sectors identified for engagement for the development of water and sanitation, energy and the manufacturing sector reflected the perspective that government and local authorities must take the lead and play a major role in development. Academia must provide research and consultancy to inform policy and practice across subthemes, and the private sector must participate to commercialise development initiatives for sustainability.

6. How was the 'waste-to-energy' decision, as a priority, arrived at by Blantyre city?

Since 2017, motivated by a review of the Local Government Act, which led to decentralization, the Blantyre City Assembly (Council) had been able to make bye-laws as deemed useful for its operations and development. Henceforth, the City Council embarked on a number of reforms aimed at addressing some of the main challenges the city was facing, primarily solid waste management. The City Council eventually unveiled a decision process to turn solid wastes into energy to enhance power infrastructure development. Thus, the Council came up with an investment proposal seeking the involvement of the private sector in the project. This was a two-year project that began in 2016.

The City Assembly envisaged that this decision process:

- was a sustainable way of disposing wastes, and

- would also improve the quality of surface water resources such as rivers and lakes which often got contaminated by untreated wastes through run-off and flush floods

The Council appreciated the fact that the issues surrounding this decision process were:

- multidisciplinary in nature, and
- would therefore entail collaborations with various institutions.

In addition, the City Council had lots of unanswered questions pertaining to the then current state of the environment. For instance, there had been a rise in mosquito infestations in the city, and the question was 'Why?' The City Council was not sure whether the rise in mosquito population was a result of:

- Climate variability (yielding rise in temperature) or
- Due to poor waste management leading to stagnant, sludge pools, which acted as breeding areas for mosquitoes.

The think tank sessions planned for this IFR study project were therefore expected to explore the waste-to-energy value chain, as a case study, as well as the values and perspectives that are driving this decision. The values and perspectives that led to this decision were prospects for sustainable solid waste management to obtain a clean city environment vis-à-vis inadequate energy supply and access to Blantyre city. BCC official during key informant interviews, group and plenary discussions emphasized the solid waste management and energy poverty challenges that BCC is encountering. The main driver of the decision is the desire for a clean city. Harnessing of energy from the solid waste is a secondary driver and solution for a cleaner city.

7. What are the barriers to solid waste to electrical energy value chain in Blantyre city?

The possible barriers to ventures in waste to energy value chain in Blantyre city are suggested as indicated in **Figure 1** on the next page.

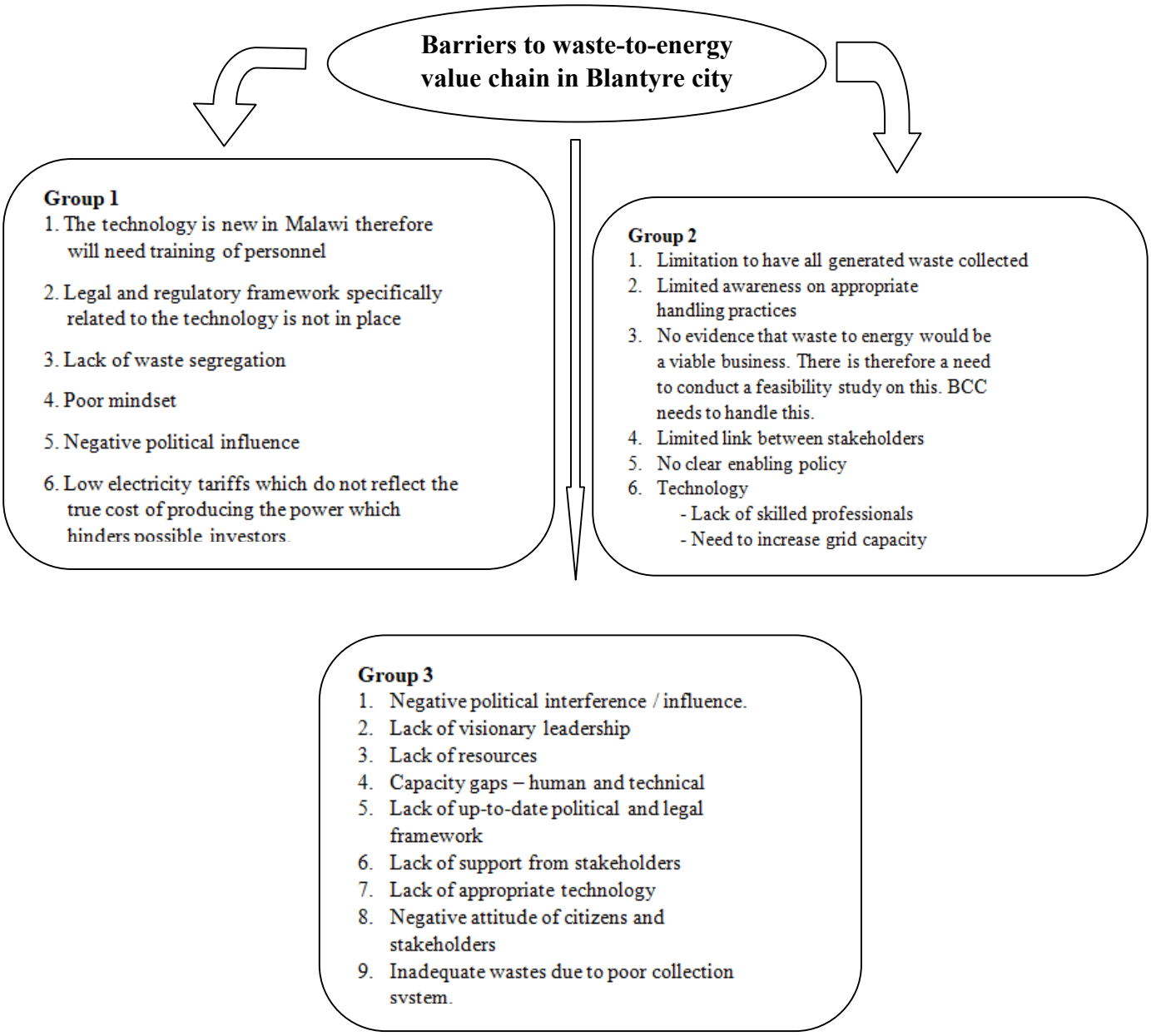

Figure 1: Possible barriers to solid waste to electrical energy value chain in Blantyre city

8. What opportunities for waste-to-energy value chain are present in Blantyre city?

Blantyre city presents some opportunities that can be leveraged to realise the production of energy from waste, so as to deal with the energy crisis that the city is currently experiencing. In general, the stakeholders identified such opportunities as follows:

1. Growing city population which may mean more available wastes
2. A ready market for power since there is an established energy demand
3. Available funding opportunity
4. Available informal waste pickers
5. Policy for Independent Power Producers (IPPs)

9. Action areas

9.1 What action areas can Blantyre city council control?

In relation to solid waste to electrical energy value chain, stakeholders highlighted areas that Blantyre city council could control. Such areas are as indicated in **Table 4** below.

Table 4: Action areas Blantyre city council can control

Group 1 ***(Members:** MERA, BCC & EAD)*	**Group 2** ***(Members:** WASHTED, BCC, Waste Advisers)*	**Group 3** ***(Members:** EAD, BWB & MBS, MoLHUD)*
1. Waste segregation	1. Limitation to have all generated waste collected	1. Lack of visionary leadership
	2. Limited awareness on appropriate handling practices	2. Lack of resources
	3. Avail evidence that waste to energy would be a viable business	3. Capacity gaps
	4. Limited link between stakeholders	4. Lack of up to date policy & legal framework
	5. Feasibility study	5. Appropriate technology
		6. Inadequate waste
		7. Corruption

Waste segregation appeared most important to enable a waste-to-energy value chain for MERA, BCC and EAD. For WASHTED, BCC and Waste Advisers the Council needs to provide evidence that waste-to-energy would be a viable business, enhance waste collection & promote waste segregation, if waste-to-energy prospects are to be feasible. The EAD, BWB, MBS and MoLHUD were more concerned with the legal framework and resource envelope for waste management as determinants of waste to energy value chain.

9.2 What action areas can Blantyre City Council not control?

It is further pointed out that there are areas in the waste to electrical energy value chain that are deemed to be beyond the control of Blantyre City Council, and these are presented as follows:

Table 5: Action areas that Blantyre city council cannot control

Group 1 ***(Members:*** *MERA, BCC & EAD)*	**Group 2** ***(Members:*** *WASHTED, BCC, Waste Advisers & MoLHUD)*	**Group 3** ***(Members:*** *EAD, BWB & MBS)*
1. The technology is new in Malawi therefore will need training of personnel	1. No available clear policy	1. Political interference
2. Legal and regulatory framework specifically related to the technology is not in place	2. Skilled professionals	2. Corruption (to some extent)
3. Poor mindset	3. Grid capacity	3. Lack of support from stakeholders
4. Negative political influence		4. Negative attitude of citizens and stakeholders
5. Low electricity tariffs which do not reflect the true cost of producing power which hinders possible investors.		5. Lack of visionary leadership

10. Potential sources of funding

Stakeholders identified Blantyre City Council (BCC), private investors, service users, grants, and levy as potential sources of funding for the solid waste to electrical energy value chain. It was agreed that this may be negotiated. This implies that the stakeholders viewed Blantyre City Council (BCC), private investors, service users, grants, and levy as legitimate and relevant sources of funding for a waste-to-energy value chain. None of the stakeholders volunteered a source of funding for waste-to-energy value chain, indicating limited ownership of such a prospective project. It is worth noting that the Malawi Energy Regulatory Authority (MERA) did not

demonstrate any enthusiasm towards this project by suggesting possible financial support from themselves, yet it is has prospects for addressing energy poverty in the city.

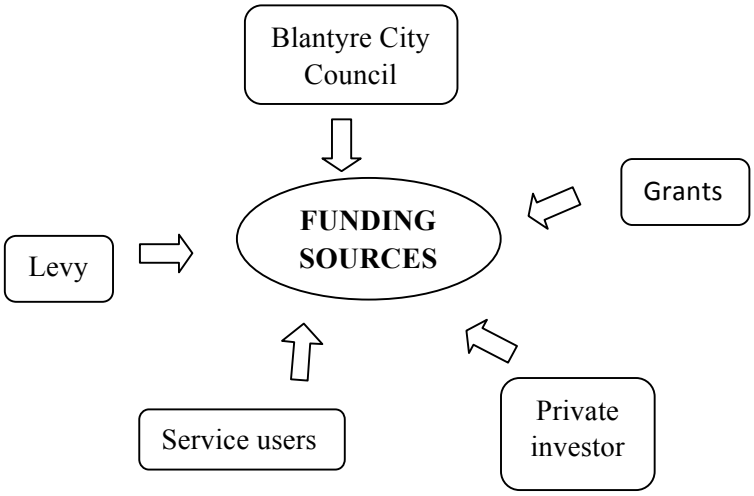

Figure 2: Potential sources of funding

In relation to the above, engagement of Public Private Partnerships (PPPs) is generally viewed as the way to go, if the project is deemed profitable. Further, willingness of the users to pay for the product is likely to be there, but this will largely be influenced by the incentives that are put in place.

11. Modalities for sustainability of decision

The think tank stakeholders, in plenary, arrived at a consensus that the decision to turn solid waste to electrical energy, as a project, requires modalities to be in place so as to ensure sustainability of the project. The following are the modalities deemed necessary for implementation and sustainability of the purported venture:

1. Lobbying for changes in the laws
2. Putting up relevant governance structure
3. Promoting private waste collectors
4. Ensuring continued availability of solid waste
5. Engaging informal waste pickers
6. Granting tax holidays to private investors
7. Availability of tailor-made credit facility
8. General security
9. Subsidies
10. Vibrant regulatory framework

12. Possible trade-offs

For this project to be rolled out in Blantyre city, there must be some trade-offs by Blantyre City Council. Such compromises will create an enabling environment for the private sector to invest in the project. The possible trade-offs are outlined below:

1. Privatising some services
2. Allowing more emissions for energy production
3. Offering part of the land for the power plant
4. Increasing the operating costs to ensure continued availability of solid waste and to meet the performance requirements
5. Loss of revenue through subsidy, and tax holidays
6. Investment in human resource development
7. Risk of heavy investment during the transition period

This informs us that the stakeholders recognized the role of private sector, regulatory framework (tax regimes, emission standards), need for seed money and land for the realization of the waste-to-energy value chain.

13. Other benefits from the solid waste to electrical energy value chain project

Stakeholders identified other benefits apart from offsetting the power deficits that the city has. It was envisaged that the prospect project is likely to bring to the city of Blantyre the following benefits:

1. Creation of employment
2. Blantyre will be a cleaner city
3. Business opportunities
4. Improved health of city residents
5. Improved sanitation
6. Reduction in power blackouts
7. Improved solid waste management
8. Improved livelihoods

The stakeholders recognized possible benefits emanating from waste to energy value chain for ecological and public health; improved livelihoods, and commerce. These thematic benefits were derived from sector perspectives i.e. those from environmental management / protection emphasized ecological and public health,

stakeholders from energy the sector pinpointed energy benefits and those from the private sector emphasized commerce.

14. Alternatives to the municipal solid waste to electrical energy value chain decision

Some alternatives can be explored besides the solid waste to electrical energy value chain, to deal with the energy situation of Blantyre city. The alternatives can be as follows:

1. Bio gas production
2. Other waste valorization processes
3. Solar energy
4. Wind energy
5. Thermal energy

15. Waste to energy decision contrasted with back-casting steps

The decision to generate electrical energy from municipal solid waste is seen to be fitting well within the back-casting steps looked at earlier on. The ideal state of developed city identified by all stakeholders, among others, includes addressing energy poverty as a necessary intervention. The waste-to-energy value chain decision is an attempt to address this challenge and therefore belongs well among possible solutions for the development of Blantyre.

16. Wider considerations on decision processes that guide development in Blantyre

Development decisions affecting Blantyre are multi-faceted and require multi-sectoral, inclusive input. The decisions are not mutually exclusive, that is, a decision on one development parameter affects other development sectors that may appear remote from the parameter in question. Blantyre city's development must be regarded as a *project* and, in this case, all relevant stakeholders need to be taken on board so that whatever development decisions are arrived at, they are holistic and address all the crucial areas that are important for the city to function properly. Therefore emphasis should be placed on collaborations of the City Council with various institutions. Citizen participation is key to define the expectations of the target population. Regulatory framework also plays a vital role in guiding the

development decisions and outcomes. Blantyre city might have all this in place in terms of policy, but practical reality must be striven for, and this may require, at one point or the other, independence of the city development decisions from political manoeuvering. A decentralised approach to development, in its entirety, may in the process, make all this a reality. At the same time, stakeholder awareness, besides stakeholder prioritization, is crucial for the development of Blantyre city. In addition, corruption should not be tolerated at any cost. With all this in place, the decision to turn solid waste to electrical energy can be realistic, as Blantyre city is seen to have all the potential to roll out this kind of venture.

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Appendices

A. Stakeholders that participated in the think tank workshop

The following stakeholders were part of the think-tank meeting:

Present

IFR Team

Dr. B. Mkandawire – FRACTAL (Coordinator – BT city)
Mr Dereck Mamiwa – Early Career Researcher (ECR)
Mrs Tawina Mlowa – Early Career Researcher (ECR)

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10. Mrs Yasinta Ganiza Chafutsa	Environmental Affairs Department	0888447023 999447023	cinta.hope@gmail.com

Apologies

- Dr Bernard Thole – IFR Experienced (Principal) Researcher – Blantyre city
- Mr. Kenneth Gondwe

Absent

- Electricity Supply Corporation of Malawi (ESCOM)
- Electricity Generation Company of Malawi (EGENCO)
- Malawi Confederation of Chambers of Commerce and Industry (MCCCI)

B. Consent Form

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INFORMED VOLUNTARY CONSENT TO PARTICIPATE IN THINK-TANK DISCUSSION & OR RESEARCH STUDY

Invitation to participate and benefits: You are invited to participate in a research study conducted by **FRACTAL (Future Resilience of African CiTies and Lands)**, through the **University of Malawi-The Polytechnic College**. This research seeks to generate and disseminate knowledge on **Exploring Perspectives That Underpin the Decision By Blantyre City Council (BCC) To Convert Solid Wastes To Energy**. The aim is to investigate how the fore-stated decision can build climate resilience via more inclusive/collaborative planning and action. We believe that your experience would be a valuable source of information, and hope that by participating you may gain useful knowledge and get networked with people and institutions which could be valuable to your own career development or to your organization's development.

Procedures: During this study, you will be asked to engage in a discussion around a set of open ended questions.

Risks: This interview is conducted with you, in your capacity as a stakeholder in the local government, or city council, or in the name of your institution when appropriate. The information will thus be treated as reflecting your personal views or the views of your institution according to the situation. Your name will not be disclosed (unless you agree to such disclosure). However, there is a possibility that your identity is unintentionally revealed through your position/affiliation. To mitigate the risk, you can choose to remain completely anonymous in which case

the researcher will not link the information you provide to you or your institution. You can also choose to speak in your personal capacity and not in the name of your institution, and the information you provide will be treated as such. During the engagements, your voice may be video-recorded or your photo taken. Before that is done your permission will be sought; and you have the right to refuse to be recorded or video-recorded. Some photographing will be done during the Think-Tank sessions as evidence to funders that the workshop was conducted and that participants availed themselves for the meetings or engagements; and that there were no ghost participants.

Disclaimer/Withdrawal: Your participation is completely voluntary; you may refuse to participate, and you may withdraw at any time without having to state a reason and without any prejudice or penalty against you. Should you choose to withdraw, the researcher commits not to use any of the information you have provided without your signed consent. Note that the researcher may also withdraw you from the study at any time.

Confidentiality: All information in this study can be kept private if you specifically require it. For the purpose of this research, the researcher may disclose the name of your institution. The goal is to provide an overview of your institution/or personal views on the research topic.

What signing this form means:

By signing this consent form, you agree to participate in this research study. The aim, procedures to be used, as well as the potential risks and benefits of your participation have been explained verbally to you in detail, using this form. Refusal to participate in or withdrawal from this study at any time will have no effect on you in any way. You are free to contact the researcher, to ask questions or request further information, at any time during this research.

I agree to participate in this research (tick one box)

☐ Yes ☐ No

I agree to the disclosure of my institution/affiliation (tick one box)

☐ Yes ☐ No

I agree to the disclosure of my position (tick one box)

☐ Yes ☐ No

I agree to the disclosure of my name (tick one box)

☐ Yes ☐ No

The views expressed during this interview represent:

☐ Those of my institution ☐ My personal views (Initials) _____

Name of Participant	Signature of Participant	Date

Name of Researcher	Signature of Researcher	Date

C. Discussion Guiding Questions

Theme and Questions	Outcome (and conversation milestone)
Facilitated conversation about the **development of Blantyre city:** 1) What does a developed Blantyre City mean? (General). 2) What are the characteristics of a developed city (or various possibilities for development), and why are these characteristics important? In other words, what is the Blantyre city working towards in order to be developed?	Perspectives on the meaning of development, and priorities for development, particularly for Blantyre city and relevant sectors (water, energy, health, food/agricultural).
Visioning casting: 1) What does a **developed Blantyre** look like, particularly in terms of power infrastructure sector? 2) What are the various perspectives on this? 3) What can be done to upscale these perspectives for engagements with stakeholders beyond solid waste and power, e.g., interface with the health sector?	Specific perspectives on what the developed Blantyre city (and power Sector) would look like
Backcasting: 1) What are the pathways and steps that should be taken to get to a developed Blantyre (from session above)? a. Through a back-casting exercise, these steps would be identified "backwards" (i.e. starting with the vision and working	Maps and notes on moving from a developed Blantyre to now (backwards steps).

Theme and Questions	Outcome (and conversation milestone)
back to the now/current status). 2) What are the various perspectives on this process?	
Unpacking the case study decision: 1) How did the case study decision come about in Blantyre? To what broader development objective does it contribute? (Here may refer to MGDS III, or SDGs) 2) Who was involved in the decision-making process in this case study? Were some voices louder than others? If so, whose? 3) Most decisions include trade-offs, particularly within contexts where resources are tight. a. What trade-offs were considered within this decision? b. Have costs, because of these trade-offs, been experienced; and who was most worried about these costs? 4) Were there any priorities that were beyond the control of the present (expected) decision makers? If so, what were these?	Notes on the "real factors" that influence decision making.
Comparing the case study decision with the backcasted steps 1) Does the case study decision fit within the steps that have been identified through the backcasting exercise? (i.e., does the case study decision fit within the idea of a developed Blantyre)	Notes on the "real factors" that influence decision making (continued).

Theme and Questions	Outcome (and conversation milestone)
2) What could the alternatives to this decision/action be to contribute to the envisaged development in Blantyre? a. Were these alternatives considered? If not, why not? 3) If the decision does not fit within the steps that have been identified through the backcasting exercise, why was this decision made?	

D. Interview Guide

FRACTAL
FUTURE RESILIENCE FOR AFRICAN CITIES AND LANDS

DISCUSSION GUIDE FOR STAKEHOLDER CONSULTAUION ON SOLID WASTE-TO-ENERGY VALUE CHAIN

Introduction

The Future Resilience for African CiTies and Lands (FRACTAL) project (2015-2019) has the main objectives to advance scientific knowledge about regional climate responses to anthropogenic forcings, enhance the integration of this knowledge into decision making at the co-dependent city-region scale, and thus enable responsible urban development pathways.

Within the context of FRACTAL, an innovation project has been designed to **explore perspectives that underpin decisions for southern African urban development.** Through semi-structured conversations with stakeholders that have been involved in relevant decision-making processes (affecting Blantyre City), data is being collected to explore the perspectives that influence development decisions in Blantyre. One of the main objectives of this research is be to break away from "western" worldviews related to these issues.

Research Questions

The main research question is "**What are the perspectives and values that underpin the decision to expand the power infrastructure through generation of sustainable energy from solid wastes in the City of Blantyre?**"

Emanating from the main question are six (6) sub-questions that are;

1. What are the barriers to and enablers for private sector investment in electric power generation from solid wastes?
2. How can we measure the end user willingness to pay?

3. How will communities contribute to the solid waste collection, especially in the non-serviced areas?
4. What would be some public & ecological health benefits of harnessing energy from solid waste?
5. How would climate variability impact on potential of generating sustainable energy from solid wastes?
6. Can we exploit energy, water and food nexus potential in the project?

Some generic guiding questions

I. Which decisions does your organization make or participate in making that relate to solid waste management in Blantyre?
II. Which decisions does your organization make or participate in making that relate to energy generation in and/or for Blantyre?
III. What do you think are the relationships between such decisions and solid waste management or energy generation in/for Blantyre?
IV. What are the issues that can attract private sector to invest in waste management as a business in Blantyre?
V. What are issues that can discourage private sector from investing in waste management in Blantyre as a business?
VI. What is the role of other regulatory authorities in waste-to-energy value chain (MERA, MBS, EAD, other)
VII. What do you think are the factors that determine frequency & distribution of waste collection in the Blantyre?
VIII. What should be included in the regulatory provisions for waste-transportation in Blantyre City?
IX. How can we leverage on the existent political context in waste-to-energy value chain?
X. How is climate change factored in decision-making processes in energy infrastructure development?
XI. How is health-care factored in decision-making processes in energy infrastructure development?