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Transitioning to a Green Economy in the Gauteng City Region: Assessing Local Municipalities' readiness

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Executive summary

Over recent years, countries, regions, and cities around the world have designed and tested a range of policies, strategies and programmes aimed at facilitating the emergence of green growth plans. Yet, transitioning to a Green Economy can mean vastly different things to different stakeholders in the public and private sectors, with of conflicts of vision, interest and strategy leading to delays or sub-optimal policy or project outcomes. This study aimed to assess the capacity of the main urban centres in the Gauteng City-Region (GCR) to transition to a green economy, in other words assessing their level of green-economy readiness. Combining content analysis of publically available and private Metropolitan and District Municipality reports with interviews of key informants from each municipality, we have compared the five Gauteng municipalities (Ekurhuleni, Johannesburg, Sedibeng, Tshwane, West Rand) using nine comparative criteria (green economy strategy, scope of activities, baseline information, targets, roles / responsibilities, financial resources, human resources, performance assessment and monitoring, transparency and accountability) and four scoring options for each criterion. Overall, through most municipalities were found to have relatively comprehensive green economy strategies, with activities initiated in many of the identified green economy themes, our results show that, apart from the City of Johannesburg, cities are struggling to cost-effectively transition to greener economies. Baseline information is missing for many sustainability challenges and the focus is often skewed towards new, readily bankable projects (e.g. renewable energy and energy efficiency opportunities), often discarding harder topics such as the greening of existing industries, changing housing and travel choices and the effective management of biodiversity and ecological infrastructure. This leads to struggles in the definition of clear, quantified targets, the lack of clearly

articulated roles and responsibilities as well as inadequate or poor performance assessment, monitoring and disclosure. This situation is further compounded by the general lack of financial and human resources to change the way Gauteng cities deliver services to residents and businesses. Yet, despite these apparent challenges, much can still be done to shift urban development pathways to greener, more inclusive socio-economic outcomes and several key recommendations are highlighted in this report, including making governance systems (about decision-making, budgeting and performance monitoring) more inclusive, better prioritising project implementation in an integrated manner at the provincial level, investing in baseline data collection and regular monitoring, sharing project funding and delivery in an equitable manner (as per priorities) and improving performance monitoring. We hope this study will contribute to a renewed sense of urgency among Gauteng cities and greater cooperation among all stakeholders towards co-building a common understanding of the challenges as well as a shared, collaborative vision of what needs to be achieved and how possible solutions should be co-implemented.

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1- Introduction

The main goal of this study is to enhance our understanding of the level of green-economy readiness prevailing among the main urban centres and cities in the Gauteng City-Region (GCR). To that end, before presenting our chosen methodological approach (section 2), we briefly discuss the meaning of transitioning to a green economy, first in general terms (section 1.1) and then with a focus on cities (section 1.2).

1.1 Transitioning to a Green Economy

The concept of a *Green Economy* (GE) has gained local and international policy traction in recent years (e.g. Caribbean Development Bank, 2014; NBI and KPMG, 2015; OECD 2012; SAIIA 2013; UNCSD 2012; UNDESA 2012a & b; UNEP 2011). In the mainstream vision of a GE, growth in income and employment are expected to be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. In essence, green growth approaches have been argued to provide the opportunity for key players to reconcile the need for ongoing economic growth with the imperative of staying within environmental limits and maintaining healthy ecosystems. Transitioning to a GE has therefore been heralded as the opportunity of our time (e.g. OECD 2012; UNEP 2011), with national and local governments identified as key players to promote change. They have been called to chart new, more sustainable pathways toward a prosperous, inclusive, climate-resilient and environmentally sustainable future. This means moving away from orthodox forms of development that will continue to worsen environmental and social problems, and create lasting negative environmental legacies and associated ecological debts for the future (e.g. acid mine drainage in Johannesburg). On this path lies the promise and potential of a greener economy.

Yet, what does transitioning to a GE mean in practice? According to Brand (2013), the terms 'transition' (i.e. 'to cross over') and 'transformation' (i.e. to reshape, change') are in vogue and often used synonymously in current academic and socio-political debates on sustainable development and the greening of the economy. This should not be the case. On the one hand, 'transition' can be understood as a process of politically intentional control, i.e.

a planned intervention in development paths and logics, structures and relations of forces mediated by state policy, in order to steer dominant developments in a different direction. As further explained by Brand (2013), a large part of the studies on a GE and on socio-ecological transformation argue along this line. On the other hand, 'transformation' should be understood as a comprehensive socio-economic, political and socio-cultural process of change which incorporates controls and strategies, but is not reducible to them. This distinction is not fortuitous.

In part due to disillusion and opposing views on what principles, values and priorities should be at the core of the concept of GE (Goetz and Schäffler, 2015; Brand 2012; van den Bergh, 2011), several alternative visions of human progress based on deep socio-economic transformations have been proposed by academics and stakeholders, including prosperity without growth / de-growth strategies (e.g. Jackson 2009; Schneider et al., 2010; Martínez-Alier et al., 2010). This exposes diverse perspectives about what should be done to green our economy. For instance, NBI and KPMG (2015, p. 25) argue that the South African economy should be based on seven principles:

1. *"Efficiency - Minimise the financial and natural resources required in production and consumption;*
2. *Resilience - Withstand variability in social, economic and environmental conditions;*
3. *Preservation of natural capital - Halt and reverse the decline in natural capital;*
4. *Social equity - Minimise barriers to participation in the economy;*
5. *Job creation – Maximise the number of people in employment;*
6. *Growth - Create new economic opportunities;*
7. *Governance - Ensure a transparent and effective system of governance."*

Several definitions and alternative strategies could be designed for each principle. For instance, how should natural capital be preserved towards a greener economy (third principle listed above)? Indeed, managing ecosystem services often calls for trade-offs between alternative land uses and hence natural capital stocks, which may lead to the loss of biodiversity (e.g. Goldstein et al., 2012; Seppelt et al., 2013). On the one hand, some contend that natural capital could be transformed in other forms of capital (e.g. financial or human capital) as long as society benefits overall (i.e. based on net economic benefit as the primary value for decision-making) (i.e. weak sustainability principle ; Hartwick 1977; Solow 1974). On the other hand, others argue that natural capital cannot be replaced and needs to be

maintained for human survival (e.g. Common and Perrings, 1992; Sullivan 2014; ten Brink et al., 2012). Each viewpoint would result in different targets, strategies and action plans for the management, sustainable use and conservation of natural capital and the associated ecosystem services.

Similarly, how can we minimise barriers to participation in the GE (i.e. social equity, fourth principle listed above)? Social equity in public administration can mean very different things to different people (e.g. Jones 2009; Johnson & Svara, 2009; Svara 2012). Part of the problem in trying to define the concept of social equity is that it reflects ideas of “fairness” and “justness”, concepts which are based on moral values and norms. Typically, social equity implies fair access to livelihood, education, and resources, full participation in the political and cultural life and self-determination in meeting fundamental needs. Yet, in South Africa, what policies, goals, strategies and actions should be set up and implemented to address inequalities, both current and past? Different stakeholder groups have vastly opposing views on this, ranging from procedural fairness (e.g. equal opportunity in GE activities though affirmative action) to distributive justice (e.g. land redistribution or spatial re-arrangement of cities to rectify inequalities in access to ecosystem services or job opportunities) strategies.

In other words, transitioning to a GE can mean vastly different things to different people (Simon *et al.*, 2011)¹. Conflicts of vision, interest and strategy often arise, and can prove deep-seated, leading to delays or sub-optimal policy or project outcomes. In addition, positive green interventions may have unintended consequences that adversely affect accessibility or equity, such as when enhanced aesthetics or climatic resilience leads to increased land prices and property values in particular areas, thereby displacing poorer residents. This creates challenges for cities which strive to transition to a GE.

1.2 Are Gauteng Cities transitioning to a Green Economy?

Over the past several years, countries, regions, and cities around the world have designed and tested a range of policies, strategies and programmes aimed at facilitating the

¹ Goetz and Schäffler (2015) argue that, on a continuum of interpretations of what it means to build the GE, the South African government has found it easier to emphasise limited industrial-policy style interventions rather than a vision of a fully regenerative economy.

emergence of green growth plans. Cities, in particular, have been called to play a leading role in greening economies (GIZ and ICLEI, 2012; UNEP 2011) because:

- Cities are the backbones of national economies;
- About 70 percent of all resources are consumed in cities,
- More than 75 percent of all CO₂ emissions are emitted by city-based emission sources.
- They often grow in unplanned and uncoordinated ways that can cause unexpected and often overwhelming social, environmental and economic challenges;
- They are likely to bear the brunt of climate change impacts;
- They hold the head offices of the institutions and organisations involved in the policy and decision-making processes by which resource availability and allocation to future generations will be decided;
- They have the authority, resources and sometimes can mobilize expertise to implement interventions that make a difference in the GE agenda.

For instance, GIZ and ICLEI (2012) argue that an urban GE should contribute to reaching the following goals:

- An eco-effective and eco-efficient economic structure;
- Creation of Green jobs;
- Poverty eradication and inclusiveness;
- Eco-effective infrastructures and urban forms;
- Energy and resource efficiency in the physical infrastructure;
- Renewable energy production and sourcing;
- Valued urban ecosystems;
- Innovation, research and development; and
- Stakeholders involvement.

In fact, many green economic measures have been demonstrated to promote prosperity and climate resilience in very different urban contexts around the world (e.g. Simon *et al.*, 2011; TEEB 2011; ten Brink *et al.*, 2012). These include sustainable urban transportation systems, the deployment of renewable energy systems, the maximisation of recycling and minimisation of waste, the retrofitting of existing buildings and construction of new and environmentally appropriate green buildings, the rehabilitation of natural habitats and the enhancement of ecosystem services delivery to city dwellers.

Accordingly, in the GCR, Spencer et al. (2010, p. 15) have argued for “*policy interventions to enable a Green Economy should revolve around the following core drivers:*

- *Creation of both new skills and jobs in new green-driven industries;*
- *Promote innovation in existing processes and new technologies;*
- *Promote both local and foreign investment into Gauteng;*
- *Decouple growth from resource consumption, especially dependency on fossil fuels;*
- *Improve efficiency in energy and resource consumption;*
- *Promote energy security and reduce dependency on crucial imports (e.g. oil);*
- *Respect ecological limits;*
- *Design for virtuous circles i.e. cradle-to-cradle economies, reduce-recycle-reuse;*
- *Promote equity & fairness to both people and the environment;*
- *Shift energy supply from Centralised Fossil Fuel systems to Decentralised Renewable Energy Systems;*
- *Create food security and alleviate poverty.”*

In the end, the final Green Strategic Programme for Gauteng (Gauteng Province 2011) covered the following themes: Air quality, climate change, economic development, energy, food security, spatial planning and land use, transport, water and sanitation, waste. But what does a GE mean for the GCR Metropolitan Municipalities (MM) and District Municipalities (DM), in theory and in practice? Are the cities and towns in the GCR ready to transition to a green growth path? What are their GE challenges and opportunities? What strategies have been designed and how are these being implemented? Are they using shared approaches, understandings and methods? Are different spheres of government working together on this path? If so, how are they doing it?

2- Study aims and research methodology

This section first explains the aims of the study (section 2.1) and then presents the methodology used to assess the readiness of selected GCR Municipalities (section 2.2 and 2.3).

2.1 Aims of the study

This study aims to assess the readiness of selected Gauteng Metropolitan Municipalities (MM) (i.e. Ekurhuleni MM, Johannesburg MM and Tshwane MM) and District Municipalities (DM) (i.e. Sedibeng DM and West Rand DM) in transitioning to a GE, not whether their economies are green. Three broad groups of research questions were proposed:

- A. **Identifying the relevant issues:** What are the main GE-related challenges and opportunities identified by the Provincial Government in Gauteng and selected DM and MM? Are these similar to those identified by other cities and the international literature?
- B. **Identifying existing GE strategies and associated-activities:** To what extent have the Provincial Government in Gauteng and the MM and DM taken steps to enable implementation of interventions that promote transition to a GE? What are their main GE strategies, approaches, and plans and programmes (including pilot projects) (if any)?
- C. **Assessing local District Municipalities' readiness to transition to a GE:** What are the strengths and weaknesses of these strategies and associated activities in relation to international best-practices? Do they address all the challenges and opportunities identified? Are these fully aligned or do they exhibit disparities? What is working well and can be replicated elsewhere, and if possible, scaled up? What is not working (gaps and shortcomings) and why not? What is required for the transition to be feasible? And what can be done to address these gaps and harvest some 'low-hanging fruits' (if any)?

2.2 Overall methodology

A mixed research methodology was used to answer the aforementioned questions (section 2.1). We have combined content analysis of publically and privately available MM and DM reports with interviews of key informants from the selected MM and DM. Interviews were critical to inform initial MM / DM "readiness to transition to a GE" assessments as publically available information was restricted in several cases.

In other words, there were three main work phases towards completing MM / DM readiness assessments:

- Desktop research: report content analysis;

- Consultation with each MM and DM (at least one face-to-face interview per municipality):
 - Informants were first asked general questions about the meaning of GE for their own municipality: i.e. vision / definition of GE, identification of successes and challenges, recommendations to support the transition to a GE.
 - Informants were then asked specific questions in each GE theme according to nine comparative criteria and associated scoring / rating options (section 2.3);
- Finalisation of MM / DM “readiness to transition to a GE” assessments based on the findings of the consultation process and report write-up.

2.3 Assessment themes, comparative criteria and rating system

Based on the literature review and the set of research questions, we have selected the following focus areas or themes, extracted from the Green Strategic Programme for Gauteng (Gauteng Province 2011), to assess the GE readiness of the selected MM and DM:

- Air quality;
- Climate change;
- Economic development;
- Energy;
- Food security;
- Biodiversity / ecosystems, spatial planning / land use;
- Transport;
- Water and sanitation;
- Waste.

Each municipality was then assessed according to the following comparative criteria and scoring options:

- Green Economy Strategy:
 - Score of 0: No strategy;
 - Score of 1: 3 or fewer GE themes covered by strategy;
 - Score of 2: Between 4 and 6 GE themes covered by strategy;
 - Score of 3: More than 6 GE themes covered by strategy.

- Scope of activities:
 - Score of 0: No GE theme covered;
 - Score of 1: 3 or fewer GE themes covered;
 - Score of 2: Between 4 and 6 GE themes covered;
 - Score of 3: More than 6 GE themes covered.
- Baseline information:
 - Score of 0: No GE baseline information;
 - Score of 1: Comprehensive baseline information for 3 or fewer GE themes;
 - Score of 2: Between 4 and 6 GE themes with comprehensive baseline information;
 - Score of 3: More than 6 GE themes with comprehensive baseline information.
- Targets:
 - Score of 0: No GE target;
 - Score of 1: 3 or fewer GE themes with clear, quantified targets ;
 - Score of 2: Between 4 and 6 GE themes with clear, quantified targets;
 - Score of 3: More than 6 GE themes with clear, quantified targets.
- Roles / Responsibilities:
 - Score of 0: Lack of clear role / responsibility over GE theme(s);
 - Score of 1: 3 or fewer GE themes with appropriate or clear roles / responsibilities and / or partnerships;
 - Score of 2: Between 4 and 6 GE themes with appropriate or clear roles / responsibilities and / or partnerships;
 - Score of 3: More than 6 GE themes with appropriate or clear roles / responsibilities and / or partnerships.
- Financial resources ;
 - Score of 0: Lack of financial resources for GE transition;
 - Score of 1: Limited funds but financing strategy designed / in place (both internal and external funds);
 - Score of 2: Between 1 and 3 GE themes with sufficient funds (both internal & external);

- Score of 3: More than 3 GE themes with sufficient funds (both internal & external).
- Human resources / skills ;
 - Score of 0: Lack of human resources / skills on GE;
 - Score of 1: 3 or fewer GE themes with sufficient human resources;
 - Score of 2: Between 4 and 6 GE themes with sufficient human resources;
 - Score of 3: More than 6 GE themes with sufficient human resources.
- Performance assessment and monitoring:
 - Score of 0: No GE performance assessment / monitoring;
 - Score of 1: 3 or fewer GE themes covered by performance assessment / monitoring system;
 - Score of 2: Between 4 and 6 GE themes covered by performance assessment / monitoring system;
 - Score of 3: More than 6 GE themes covered by performance assessment / monitoring system.
- Transparency / accountability:
 - Score of 0: No transparency ;
 - Score of 1: Performance / progress information about 3 or fewer GE themes disclosed to the public;
 - Score of 2: Between 4 and 6 GE themes with performance / progress information disclosed to the public;
 - Score of 3: More than 6 GE themes with performance / progress information disclosed to the public.

2.3 Data sources and limitations

The primary sources of information were publically available reports from the websites of the Gauteng Province and the selected MM and DM, including but not limited to annual reports, specific strategies (e.g. growth and development strategies), integrated development plans, spatial development frameworks, service delivery and budget implementation plans. Additional information was sought directly from interviewed MM / DM staff. However, information gaps may occur for some GE aspects for each municipality

due to challenges encountered in seeking up-to-date information from MM / DM. Opportunity was given to each MM / DM to comment on its individual “readiness to transition to a GE” assessment.

3- Comparative assessment of Gauteng Cities' readiness to transition to a Green Economy

This third section presents the comparative analysis of the MM and DM Readiness to Transition to a GE Assessments. Please see Annex A for explanations of the scores for individual MM and DM.

3.1 Comparing overall municipality readiness: Johannesburg MM ahead of the game, DM struggle.

Figure 1 synthesises the readiness assessment results for Gauteng MM and DM organised per criterion. Table 1 shows, per municipality and overall, the number of times each score (0, 1, 2 or 3) has been allocated as well as the overall weighted scores of each municipality. The highest score (3) has been allocated 19 times (37% of all scores) while the lowest (0) 16 times (31% of all scores). Figures 2 to 6 depict the readiness to transition to a GE assessment results of individual MM / DM in the form of spider diagrams. Figure 7 shows the number of times each scoring option has been awarded in a bar diagram.

Score	Number of times MM / DM score				Total weighted score (maximum of 135 overall for all municipalities combined)
	0	1	2	3	
Ekurhuleni MM	3	4	0	2	10
Johannesburg MM	0	0	2	7	25
Sedibeng DM	7	2	0	0	2
Tshwane MM	2	4	0	3	13
West Rand DM	4	1	0	4	13
Total	16	12	4	19	77
Percentage of scores	31%	24%	8%	37%	57%

Table 1: Total weighted scores and number of times scores (0 to 3) have been allocated for this readiness assessment

At first impression, overall, the Johannesburg MM seems to be ahead (weighted score of 25), with no criteria with a score below 2 and seven criteria with the highest score possible (3). On the other hand, the Sedibeng DM seems to be significantly lagging behind (weighted score of 2). It scored seven times the lowest possible score (0) and only twice the score of 1. Furthermore, Ekurhuleni MM and Tshwane MM have similar statistics, with no more than

three times the lowest possible score (0) and a score of 1 awarded four times each. Last but not least, the West Rand DM scores four times the lowest possible score (0) and the highest possible one (3), which is surprising and warrants further analysis.

Figure 1: Bar chart of Gauteng MM and DM's scores for each comparative criteria

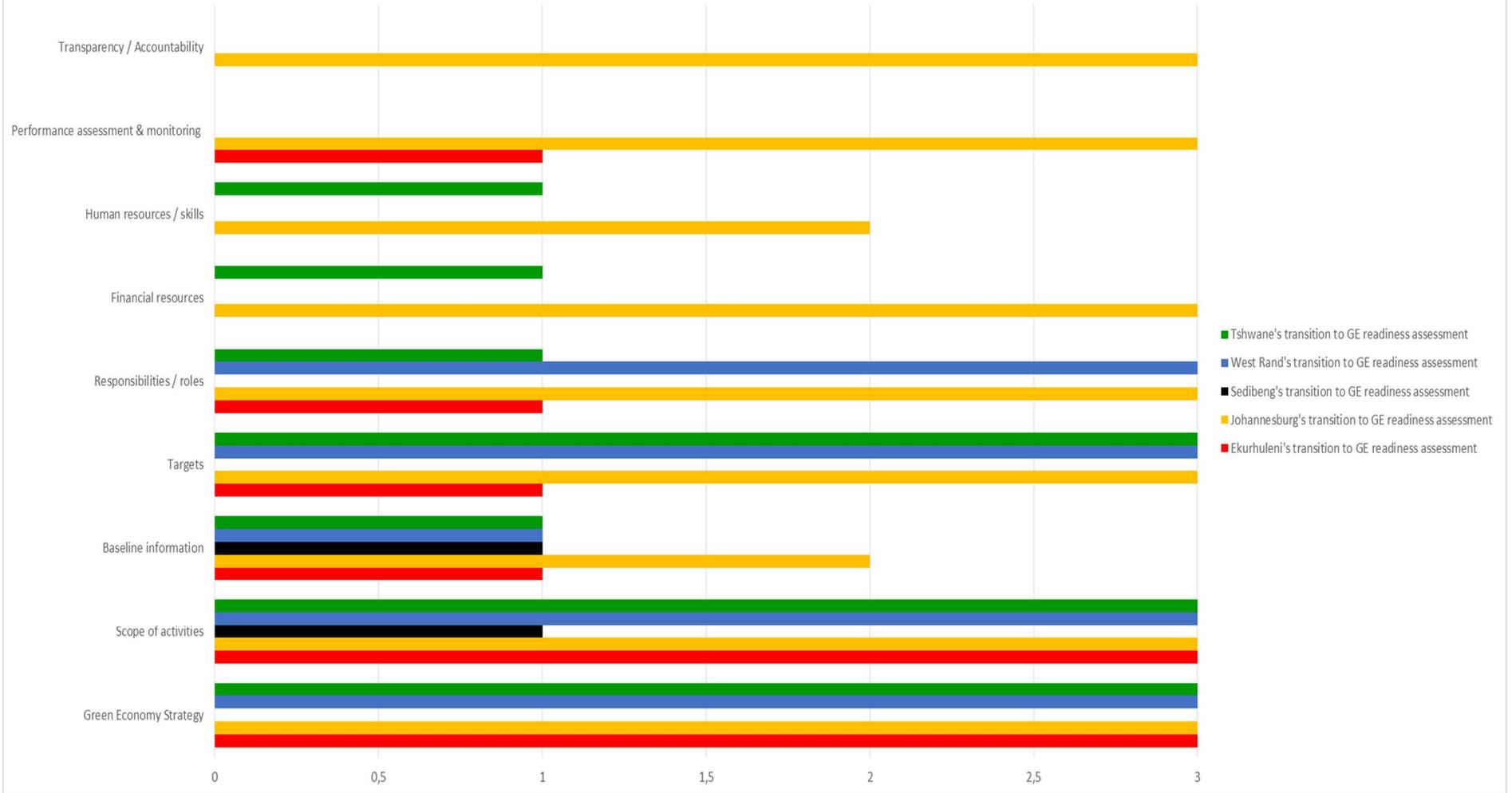


Figure 2: Ekurhuleni's transition to GE readiness assessment

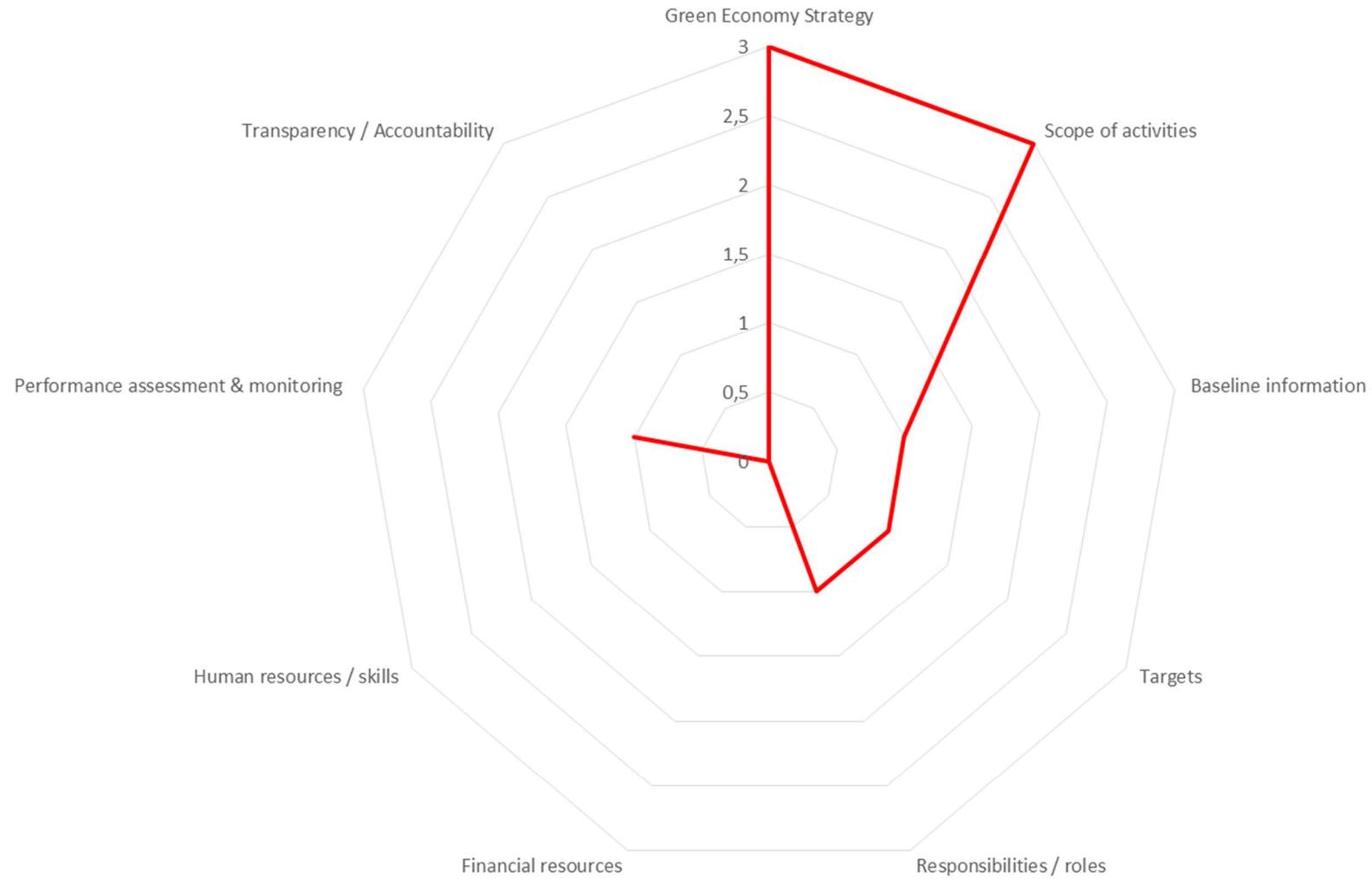


Figure 3: Johannesburg's transition to GE readiness assessment

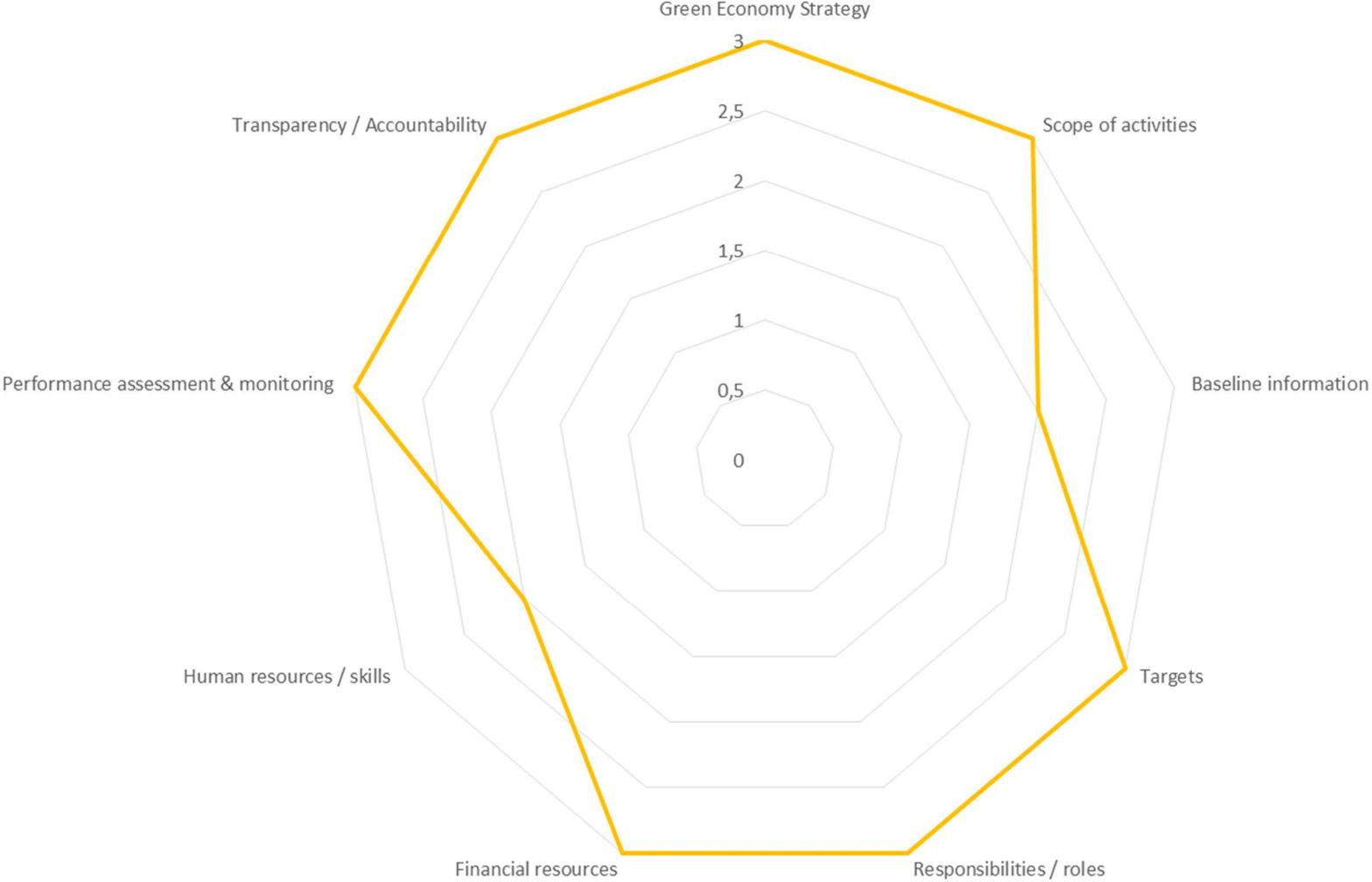


Figure 4: Sedibeng's transition to GE readiness assessment



Figure 5: Tshwane's transition to GE readiness assessment

3

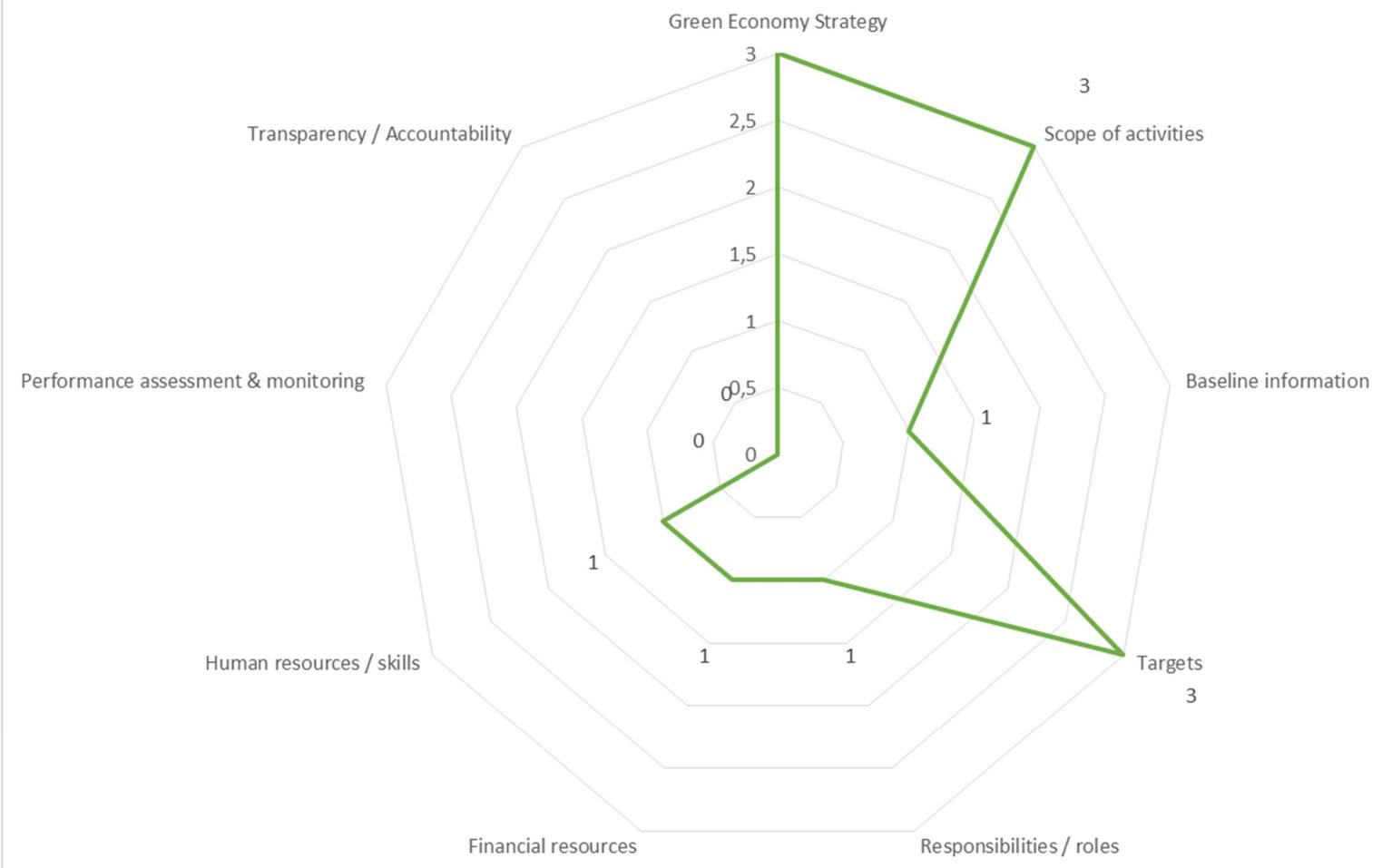


Figure 6: West Rand's transition to GE readiness assessment

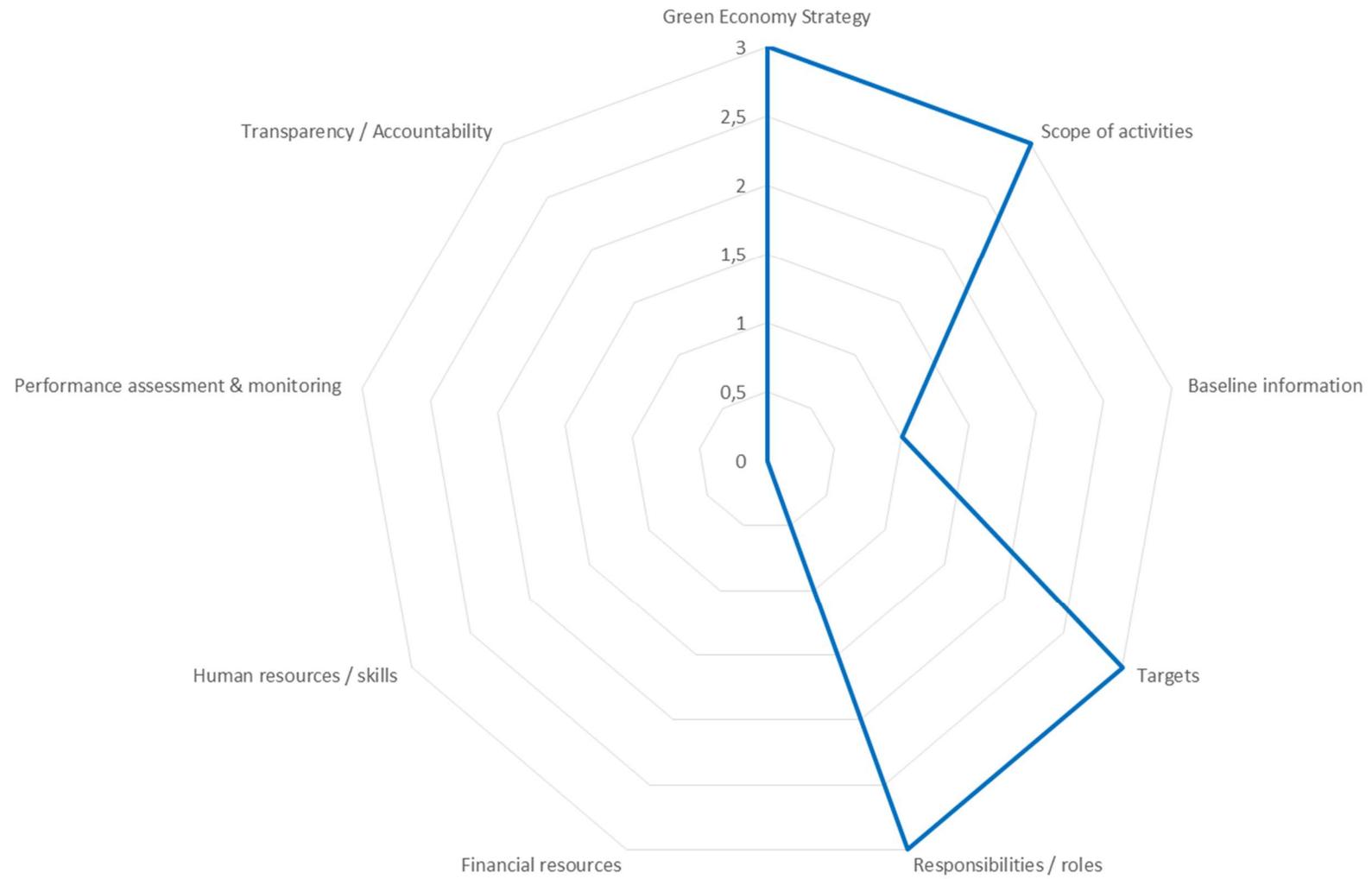
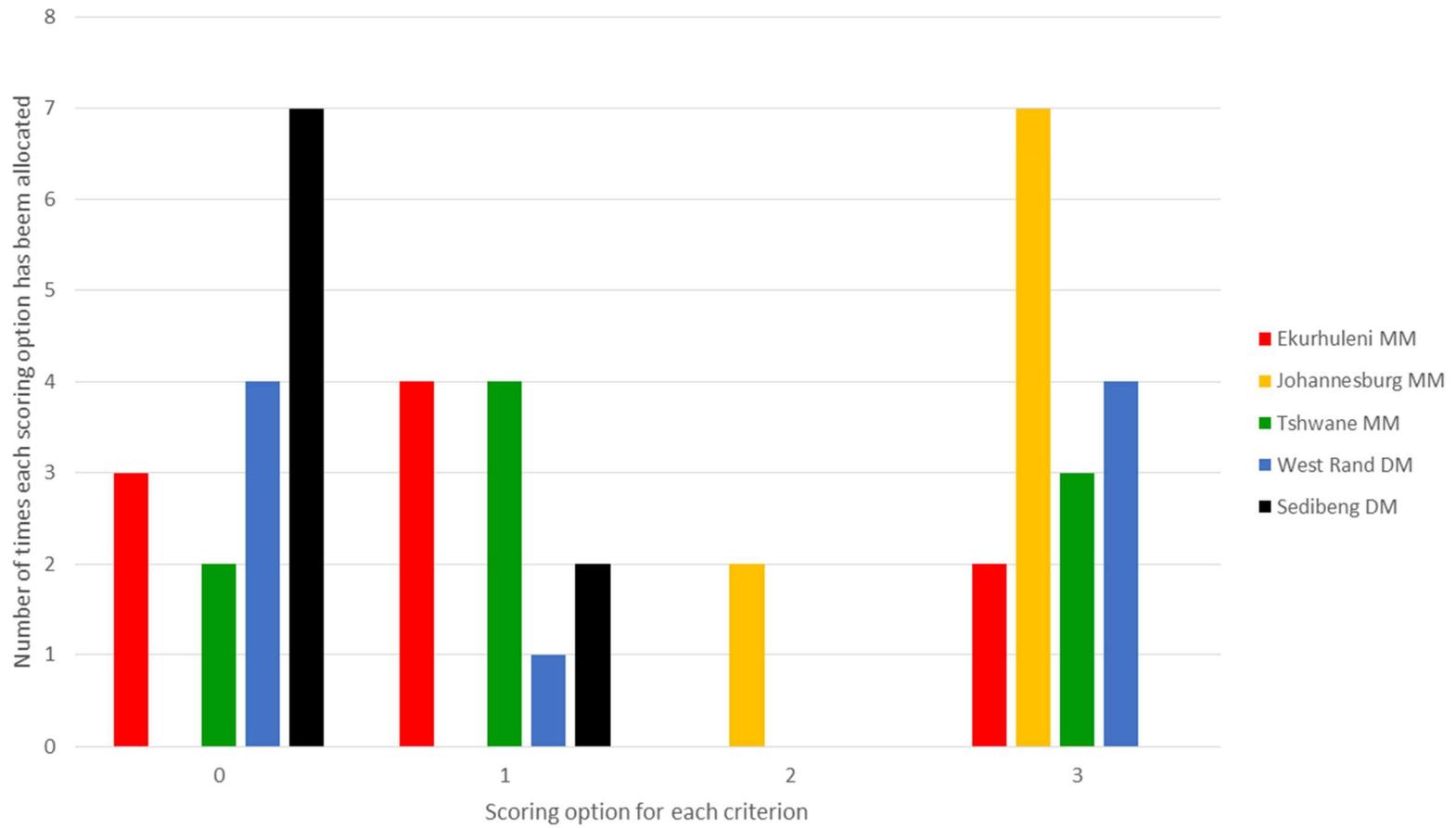


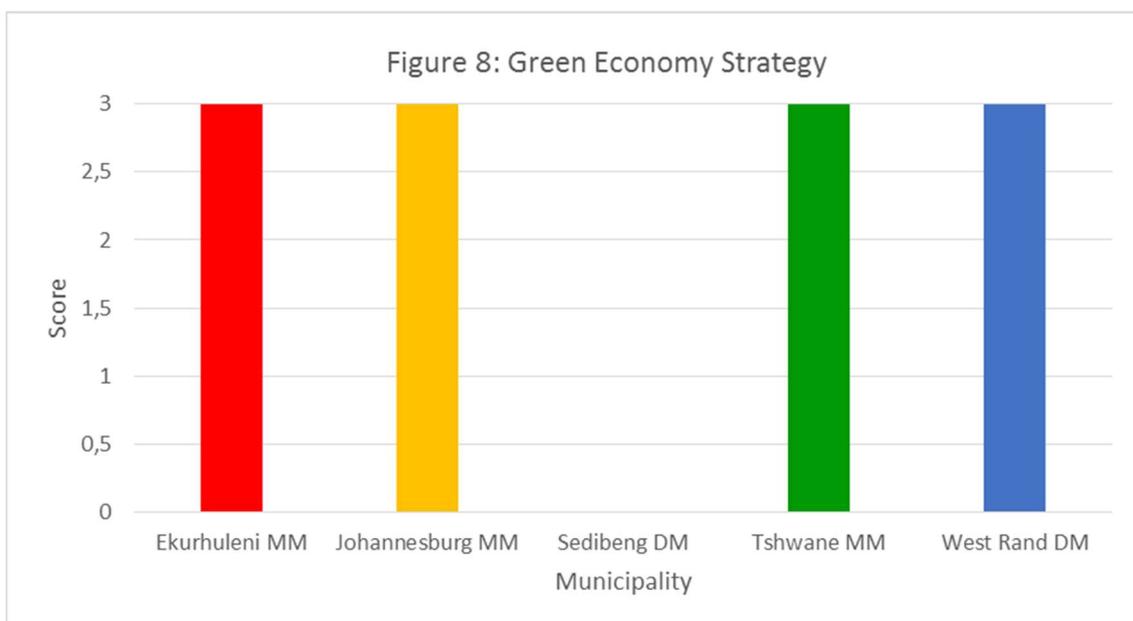
Figure 7: Number of times each MM / DM scored each possible score



3.2 Most municipalities have comprehensive Green Economy Strategies

The first criterion for undertaking this comparative analysis of Gauteng MM and DM deals with (a) whether the sampled municipalities have designed and adopted a GE strategy and, (b), if so, the extent to which GE themes listed in section 2.3 are included in it. Figure 8 shows the scores for each municipality, highlighting that only Sedibeng DM does not yet have a GE strategy. Furthermore, it was found that all identified strategies had similar scopes, covering all main GE themes identified in section 2.3 ; through most tend to focus on readily bankable themes, such as energy efficiency, renewable energy, waste management (e.g. separation at source, landfill-to-gas), water management (e.g. reducing water losses / non-revenue water) and green job creation.

However, identified GE strategies were not always be clearly labelled as a GE strategy, which did not prevent the concerned municipality from scoring on this criteria. For instance, though the Ekurhuleni MM does not have a GE strategy strictly speaking, most GE themes are included in its Environmental Resource Management Departmental Service Delivery and Budget Implementation Plan (SDBIP) (2015), hence its score of 3. Similarly, the West Rand DM has a “Green IQ Strategy” which resembles significantly GE strategies developed by other Gauteng municipalities.



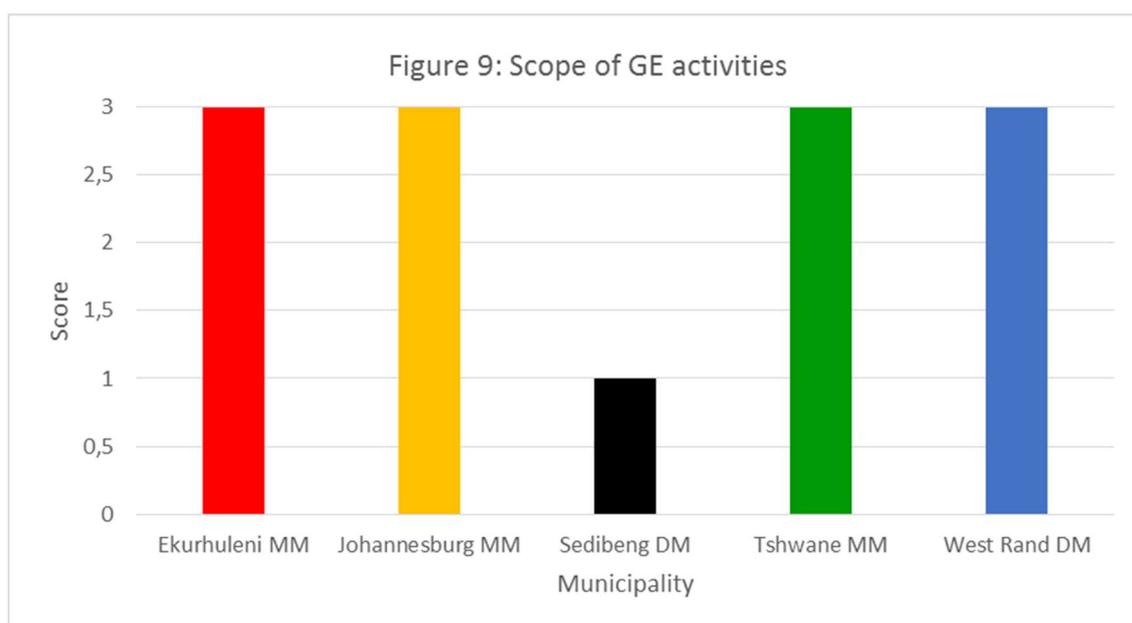
3.3 The scope of GE activities aligned with GE strategies

The second comparative criterion is concerned with the actual scope of GE activities undertaken by Gauteng municipalities. In other words, the aim is to assess whether the designed GE strategies are actually implemented.

Figure 9 shows the scores for each MM and DM, highlighting that all four municipalities which scored 3 for the first criterion (Green Economy Strategy) also scored 3 for this criterion. This means that they carry out activities in more than 6 GE themes, in alignment with their GE Strategy.

Interestingly, the Sedibeng DM also undertakes activities in a couple of GE economy themes (i.e. resource efficiency through their industrial symbiosis project, air quality monitoring / industry audits) despite the lack of a GE strategy. This highlights the fact that municipalities can undertake “green” activities as part of their core service delivery mandate (e.g. compliance with regulations).

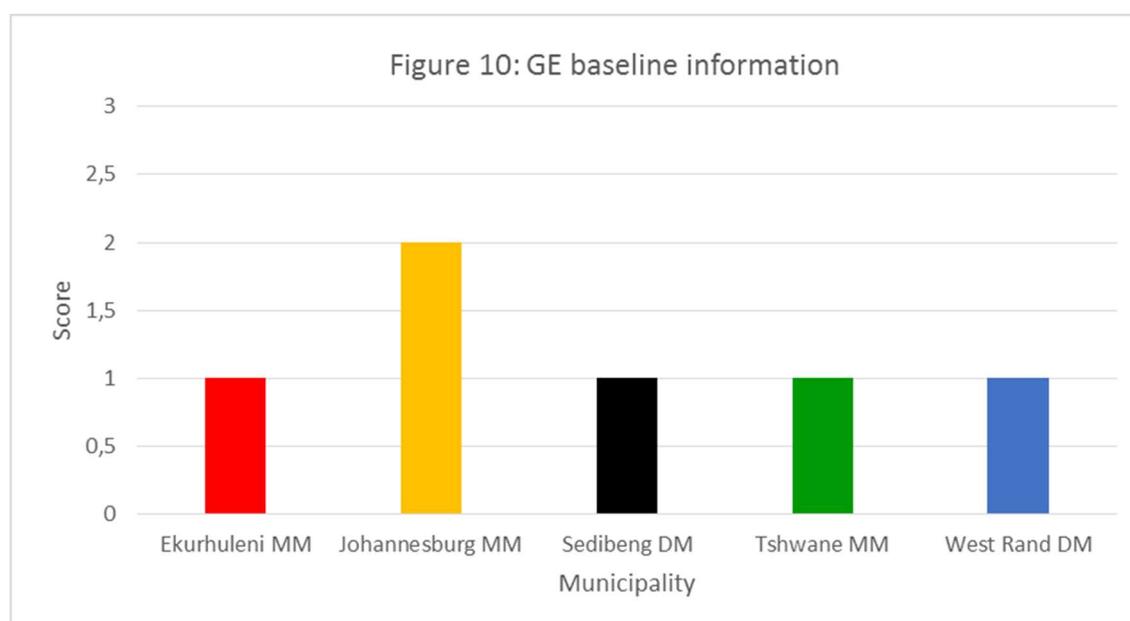
Furthermore, this specific situation at Sedibeng DM raises the critical need of defining, in very precise terms, what constitutes a GE activity for each GE theme identified in section 2.3. Yet, no municipality was able to clearly articulate an answer to this question, several highlighting that there could be green dimensions to all municipality projects or activities.



3.4 A general lack of comprehensive baseline information

Successful GE strategies (section 3.2) and activities (section 3.3) are contingent to accurate, comprehensive baseline information about GE issues, challenges, opportunities, including costs and benefits of the *status quo* as well as alternative development or land use pathways. These would support the definition of quantified targets (section 3.4), clear roles and responsibilities amongst all stakeholders (section 3.5) as well as the assessment of the required financial and human resources (sections 3.6 and 3.7) to transition to a GE.

Figure 10 summarises the MM and DM scores for GE baseline information. To our knowledge, only the Johannesburg MM has quantified baseline information about 5 GE themes, namely waste, energy, GHG emissions, land use / biodiversity / wetlands, water use and losses. Other municipalities have baseline information for less than 3 GE themes.



What's more, none of the baseline information is comprehensive, though the scores do not reflect this side of the story. For instance, the greenhouse gas (GHG) emissions inventory of the Johannesburg MM only covers scope 2 emissions (indirect emissions from purchased electricity) while that of the Tshwane MM covers both scopes 1 and 2 GHG emissions, with plans in place to also assess some scope 3 emissions. With respect to land use

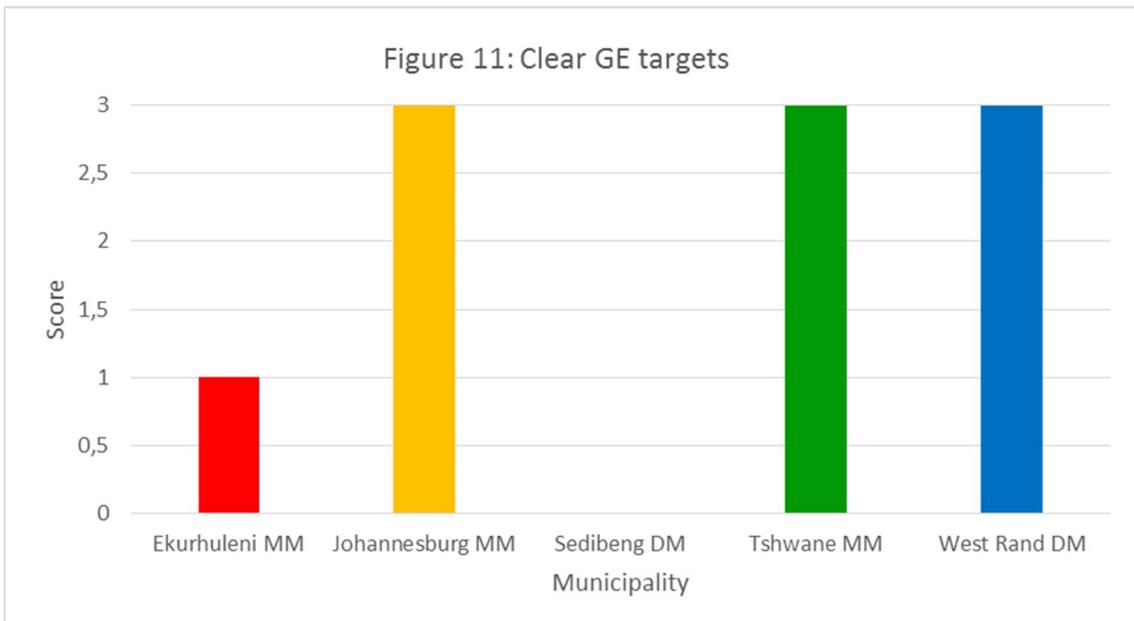
/ biodiversity / wetlands aspects, baseline information available to municipalities is limited to spatial cover maps. These tell very little about the critical information needed to assess whether a municipality adequately manages, conserves and / or restores natural capital, such as:

- Habitat integrity / fragmentation,
- Species diversity,
- Threats,
- Management performance,
- Inequalities in access to ecosystem services (e.g. clean air and water, recreation opportunities) between different urban communities,
- Sources, delivery pathways and beneficiaries of the associated ecosystem services.

3.5 The struggle to define clear, quantified targets

Johannesburg MM, Tshwane MM and West Rand DM all have clear, quantified targets for more than 6 GE themes, while, to the best of our knowledge, approximately 3 GE themes have targets in the Ekurhuleni MM. Only the Sedibeng DM has no GE target. Figure 11 illustrates the scores for each municipality.

On a positive note, several municipal projects or activities often contribute to several targets, such as renewable energy projects (e.g. biogas) which increase energy supply while reducing GHG emissions. Industrial symbiosis projects, for example in Sedibeng DM and Ekurhuleni MM, can increase resource efficiency, reduce waste generate, save costs and create green jobs simultaneously.



However, given the lack of comprehensive baseline information for most GE themes in MM and DM municipalities, one could question the relevance of some of these targets. Often, selected targets refer to the implementation of specific projects (e.g. flagship renewable energy or waste projects) rather than aiming for net positive impacts (e.g. improvements in natural habitat management performance or air quality) or overall cumulative impact reductions (e.g. reductions in vehicular traffic congestion, net GHG emissions reductions from baseline year). Given the (often) unknown scale of GE challenges they are supposed to address, current targets used might have limited contributions or might even be inappropriate. In other words, one could argue that all MM and DM tend to struggle to define clear, quantified and relevant targets for all GE themes.

3.6 Lack of clear understanding of who is responsible for what

Greening urban economies is a journey which not only involves local authorities and municipalities, but all stakeholders involved in city life, including municipal service providers, residents, businesses and civil society. This calls for multi-stakeholder and trans-disciplinary approaches to urban development pathways, taking into account the local socio-economic and environmental context.

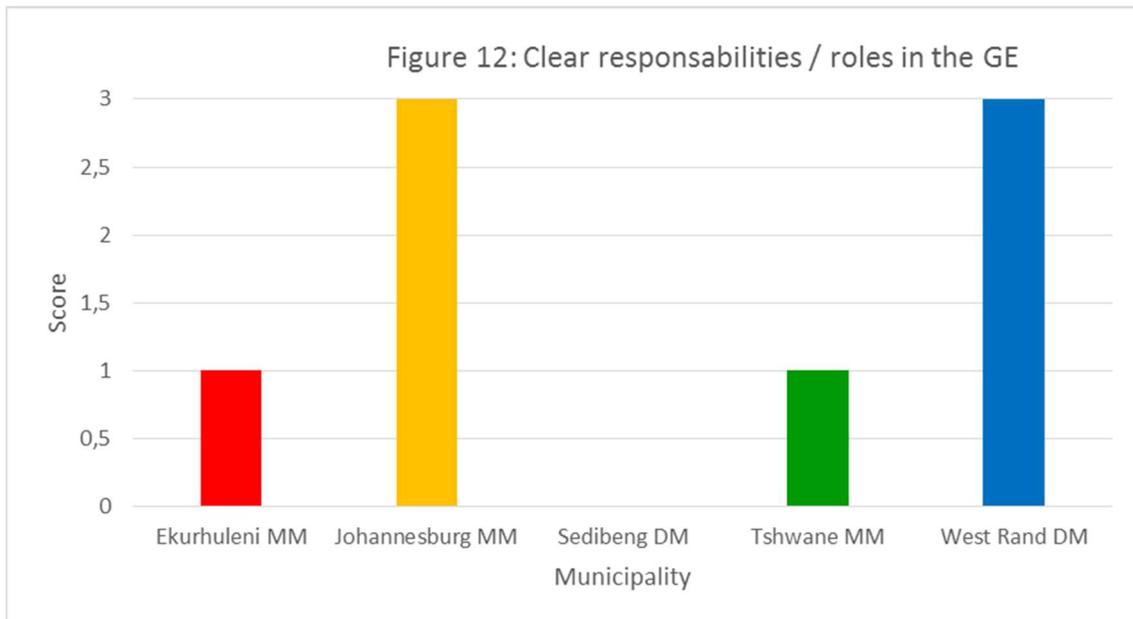


Figure 12 shows the scores of each Gauteng MM and DM municipality with respect to whether they have clearly defined roles and responsibilities for all stakeholders involved in transitioning to a GE. While Johannesburg MM and West Rand DM claim to be able to clearly articulate the roles of stakeholders for more than 6 GE themes (e.g. each Johannesburg city department or agency plays its own GE roles), other MM and DM seem to struggle more, with the Sedibeng DM highlighting the current governance challenges it faces with its Local Municipalities (LM).

Indeed, while DM are expected to play advisory and coordinating roles, they often lack the resources (see section 3.7) and clear directives / mandates to do so². They often struggle to define the exact role(s) of each party (national government and departments, Gauteng province, private sector and civil society) in addressing various GE challenges. For instance, while DM are responsible for air quality compliance (clear mandate), they often face uncertainties with respect to other GE topics. What exactly should be the roles and activities of DM in climate change mitigation and adaptation with no dedicated resources from national treasury or the Provincial Government? Should LM report to DM? Should DM oversee and / or control the budgets to ensure effective project implementation and progress towards agreed targets? These questions were raised in several meetings.

² The West Rand DM has signed Memorandums of Understanding with its Local Municipalities (Mogale City LM, Merafong City LM, Randfontein LM, Westonaria LM) to facilitate cooperation for transitioning to a GE (WRDM, 2014). However, these they remain at a high level, with broad or unspecific terms (i.e. lack of as targets and budget commitments).

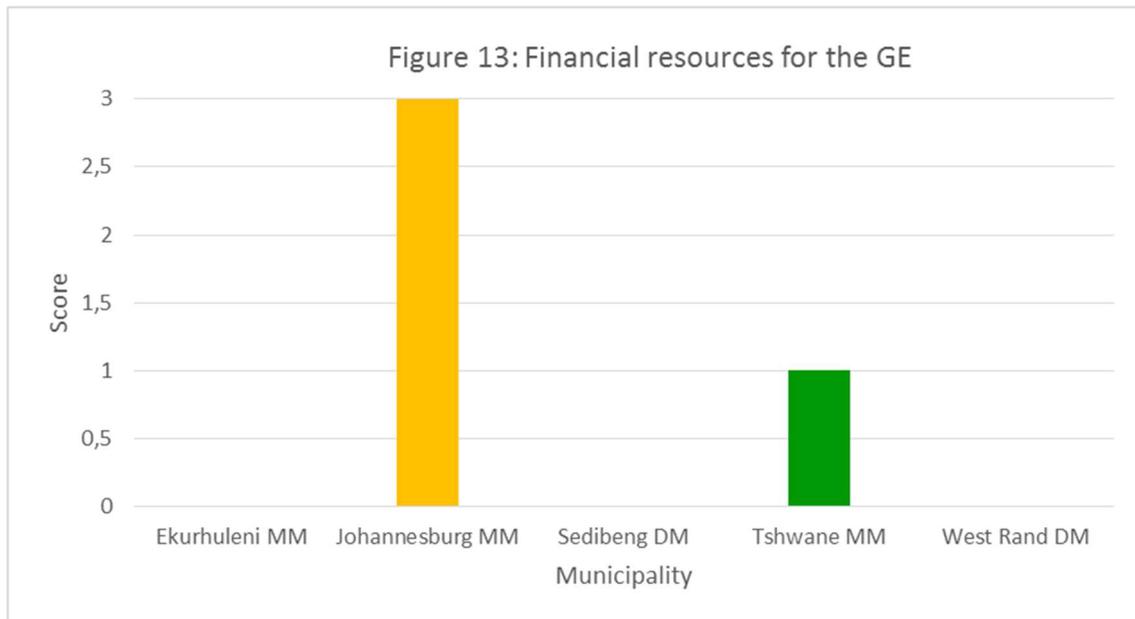
3.7 The general lack of financial resources

Apart from the Johannesburg MM which has significant revenues and has embedded GE projects as part of the mandate of its departments and agencies, other municipalities struggle to find the required financial resources to implement their GE strategies (Figure 13).

This is due to several factors:

- Lack of awareness of GE funding avenues and opportunities;
- Lack of skills to fundraise for GE projects;
- Lack of leadership support;
- Competition between departments, with GE activities often not well understood (or explained arguably) or seen as counterproductive or nice-to-have projects;
- Some GE projects, especially those focusing on energy efficiency, may lead to decreases in municipality revenues because current revenue generation models are volume-driven (i.e. not focused on overall cost-efficiency for the Province and country).

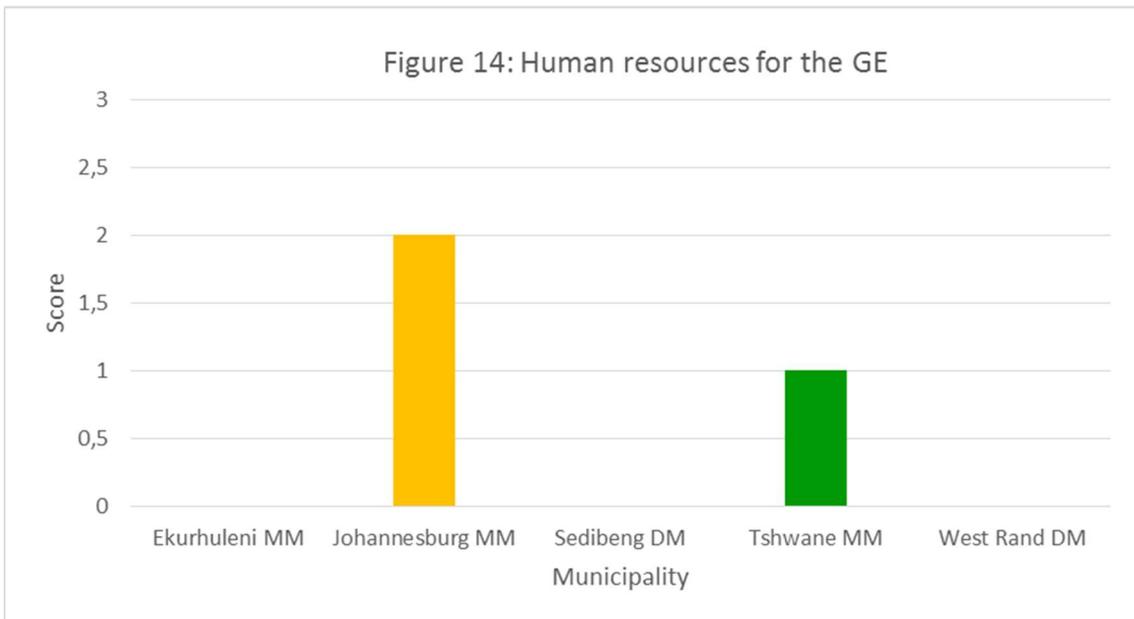
Faced with such challenges, two MM have developed interesting strategies. On the one hand, the Ekurhuleni MM has been striving to imbed environmental criteria in its Capital Prioritisation Model Process. This tool helps the municipality score and compare projects according to various criteria, such as job creation, so as to be able to select only the best ones for internal funding. On the other hand, the City of Tshwane has just developed a Sustainability Financing Strategy (CoT 2015). The Strategy aims to assist in identifying and establishing new sustainability financing relationships, funding models and processes within a specific financing framework; in partnership with the private sector and the national and international green financing / funding community. This process has also helped identify initial green project ideas with typical returns on investment of 5-20 % (CoT 2015). However, because this strategy targets external financing schemes for bankable projects, it does not address other GE themes which do not (yet) generate sufficient income given current policies (e.g. adaptation and ecological infrastructure projects).



3.8 Significant capacity building is required in all municipalities across GE themes

Figure 14 shows the general lack of skills and of human resources for most GE themes at all municipalities. The staff members of MM / DM consulted as part of this study all played an advisory and / or facilitation role to other municipality departments and partners, typically by trying to bring together all key stakeholders to implement GE projects or activities in the most cost-effective manner. Other departments or agencies are in charge of implementing projects.

In the Johannesburg and Tshwane MM, with the strong support of the Executive Mayors, the efforts undertaken to date are starting to lead to significant internal skills development, especially in terms project finance, management, procurement and performance assessment. There is also an increased understanding of what works well, and what does less so (e.g. changes in policies against water geysers in townships due to governance, project / contractor management and funding issues). Because of the rapid developments experiences with green technologies, these two municipalities also recognise the need for adaptive management towards finding innovative ways to attract the best technologies (e.g. request for information process to identify innovative project ideas at the City of Tshwane).

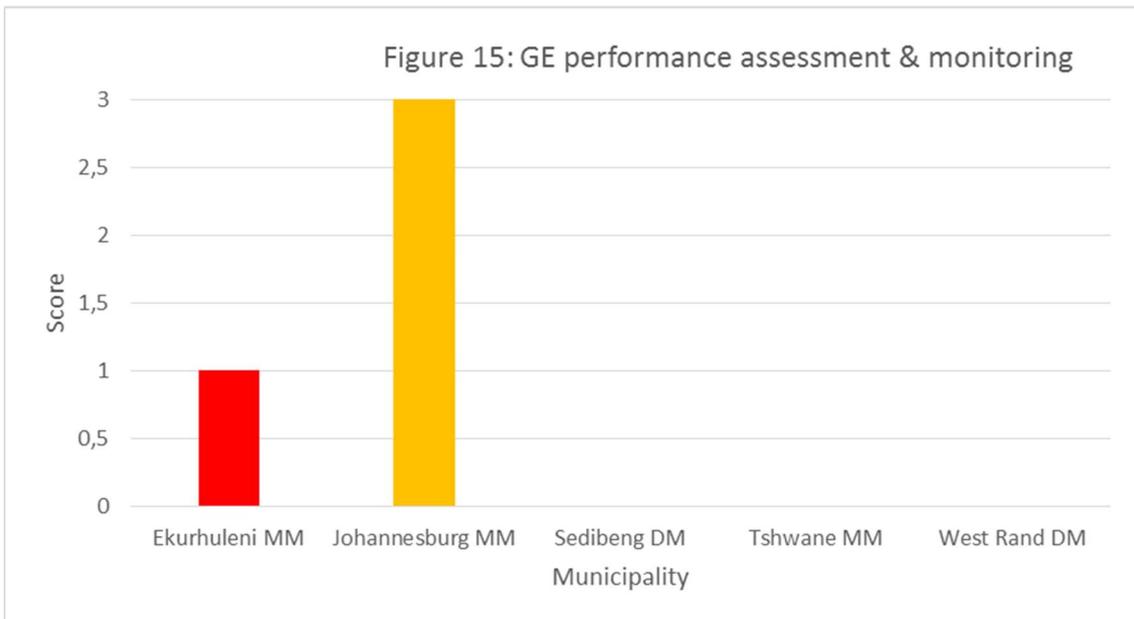


However, there is widespread lack of understanding of GE principles, challenges and benefits in many city departments, for both GE flagship projects and other GE themes. This is also affected by existing policies, rules and regulations which do not yet support GE objectives (e.g. building regulations which prevent energy efficiency measures, by-laws which prevent waste separation at source).

3.9 General lack GE performance assessment and monitoring in municipalities

Figure 15 highlights the lack of GE performance assessment and monitoring system in most MM and DM. This is particularly worrying because it prevents the Tshwane MM and West Rand DM from communicating³ clearly internally, to colleagues, management or other departments, and externally, to partners and stakeholders, the progress made, the challenges encountered and the successes achieved.

³ The Sedibeng DM does not have sufficient GE activities to warrant a performance assessment and monitoring system at this stage.

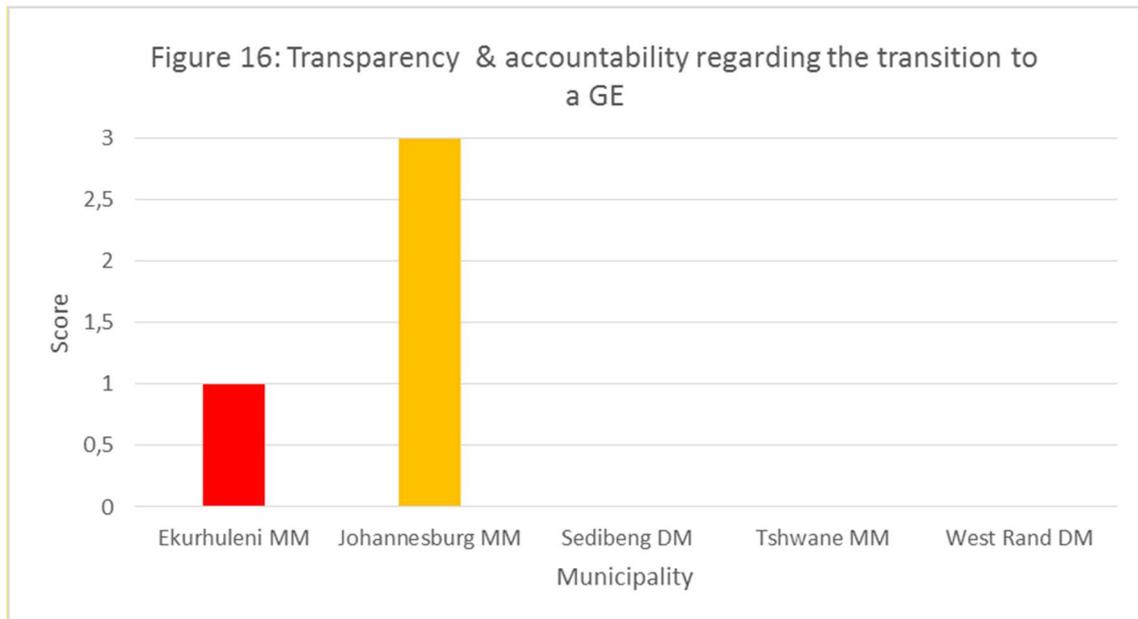


On the other hand, the Ekurhuleni and Johannesburg MM are tracking progress across two and more than 6 GE themes respectively. This is done typically through scoring the level of complementation of specific activities or projects in terms of percentage. Accordingly, one needs to emphasise that significant margins for improvement still exist for both of them (see section 4.3).

3.10 Transparency and accountability principles do not yet apply to GE activities

This criterion is linked to the previous one (2.7), as accountability to MM / DM's stakeholders would require communicating to them relevant sets of performance / impact / resource use / costs and benefits information on a regular basis. This should one of the key drivers for GE activities across MM and DM as municipalities are accountable to the residents living within their geographical boundaries. Yet, as shown in Figure 16, apart from the Johannesburg and Ekurhuleni MM, Gauteng municipalities do not disclose GE information as part of their various annual documents released to the public (e.g. SDBIP, annual reports).

Johannesburg MM's annual Integrated Report is quite comprehensive. It gives a clear, comprehensive picture of challenges and performance across several key GE themes, with useful key performance indicators on water / sanitation, energy and climate change especially.



4- Conclusions and key recommendations on possible ways forward

All interviewed municipality staff members claimed to understand the importance for their cities to transition to a GE and its two major dimensions: i.e. greening existing industries and city services while developing new green activities and jobs. As shown in the previous section, GE strategies have been adopted by most municipalities (section 3.2) and several projects are being explored and pursued, especially in waste management, renewable energy, energy efficiency (street lights, green building) and water management (e.g. infrastructure repair / maintenance to reduce water losses) sectors. While a few municipalities may appear to be ahead of the game for some comparative criteria, one needs to highlight the relatively narrow scope of these implemented GE activities. They tend to focus mostly on “low-hanging fruits” and readily bankable projects (with very little achieved to date), arguably due to the widespread lack of funds / human resources and / or the lack of leadership and support. So what could be done to improve the situation in Gauteng municipalities? Assuming it is not too late for a GE ‘transition’ (rather than a drastic transformation of the whole Gauteng urban socio-ecosystems), what types of planned state / city interventions should be actively explored to steer urban development pathways towards more sustainable, inclusive outcomes?

4.1 Towards more inclusive governance systems

First, as argued by de Oliveira et al. (2013), more environmentally sustainable and socially inclusive urban processes and outcomes will only be achieved with better urban governance. As governance is embedded in institutions, it is the foundation for building the legitimate political and social mechanisms to green socio-ecological and economic systems. GCR municipalities need governance indicators to assess the greening of their urban processes that *“go beyond the decision-making procedures and include the capacity to implement change, the results of greening the economy and final outcomes on the ground”* (de Oliveira et al., 2013).

In addition to the need for efficient and effective use of funds, property, manpower and other resources, quality service delivery and responsible fiscal policies (e.g. Hendriks 2014; Metha 1998)⁴ - all of which are challenges for most Gauteng municipalities, especially DM, this view calls for rethinking the way Municipalities conceive and apprehend their planning and budgeting, decision-making, service delivery, and communication (on all of the previous topics), in partnership with all their stakeholders so that they can co-develop shared understanding and responsibilities regarding the challenges and opportunities to possible pathways towards a GE.

For instance, recent partnerships between the City of Johannesburg and some of its previously-disadvantaged communities with respect to the co-management of various municipality services (e.g. waste collection) through community cooperatives and enterprises⁵ could be seen as a step in the right direction (City of Johannesburg Metropolitan Municipality 2014; Pikitup 2011). In other regions of worlds, many cities have attempted to improve their governance systems via the active involvement of various groups of stakeholders in various aspects of city management. For instance, under the umbrella of sustainable development, the Regional Municipality of Hamilton-Wentworth⁶, Canada, has implemented various actions since 1990 to change the relationships between the city and its stakeholders. Government, industry, community organizations and thousands of residents

⁴ Though there may be trade-offs between governing with integrity and governing effectively (e.g. de Graaf and van der Wal, 2010).

⁵ URL: <http://www.ida.org.za/index.php/latest-news/news-2014/153-august/1564-jozi-work-empowers-small-businesses> ; as at November 20, 2015.

⁶ URL: <http://www.unesco.org/most/usa4.htm> ; as at November 20, 2015.

have become empowered and involved in the development of a community vision and actions for making that vision a reality.

In essence, five steps or principles would need to be followed: (a) problem recognition - to identify all problems and issues in the city; (b) agreement - to discuss the results with all concerned stakeholders, together; (c) the solution – to co-develop a common understanding of how the recognized problems can be solved; (d) the responsibilities – to agree together who is responsible for carrying out the solution(s) ; and (e) the agreement – to make sure individuals and organizations are in agreement with the proposed approach to solve the problems. Such principles are applied in many contexts throughout the world, including in France for the development and implementation of management plans for water catchment areas and Natura 2000 sites (in compliance with the EU Water Framework and Habitat Directives respectively) (e.g. Pinton *et al.*, 2006). Their importance cannot be overemphasised in a newly democratic South Africa.

4.2 Prioritising GE challenges, sharing implementation responsibilities equitably

In addition to governance issues, many interviewed MM and DM staff members voiced a common need for the clear identification and articulation of GE priorities and implementation responsibilities at national, provincial, MM / DM and LM levels. This should be envisaged via transparent, stakeholder-based approaches to GE target development and activity prioritisation, fundraising, planning, implementation and progress monitoring. This requires collaborative leadership at all levels of public and private sector policy and decision making and should taking account the local contexts, especially inequalities in terms of human and financial resources, so to find appropriate mechanisms to direct funds where priorities have been identified.

For instance, various cities throughout the world have been successful in identifying and mapping critical biodiversity areas and ecological infrastructure and fundraising for their appropriate conservation, management and / or restoration, and this when local public administrations had no fund to do so themselves. For instance, the City of Cape Town has been implementing ground-breaking multi-stakeholder partnerships to funding the safeguarding endangered vegetation types throughout its planning domain (highlighting synergies with climate change adaptation opportunities), including in township areas such as

in the Cape Flats and where there significant development pressures such as for the Dassenberg Coastal Catchment Partnership region⁷ (e.g. City of Cape Town 2003; De Wit et al., 2010; Holmes et al., 2012). Elsewhere, such as in the cities of Toronto⁸ (Canada) and Marseille⁹ (France), biodiversity conservation through national park expansion in urban areas is driving new urban models focusing quality of life and recreational opportunities. With all the baseline information already available in the GCR on land use planning, key biodiversity areas, and ecological infrastructure (e.g. SANBI 2012; Schäffler and Swilling, 2013; Schäffler et al., 2013), with an improved understanding of their benefits to human communities and the existence many nationally threatened ecosystems (wetlands, grasslands), it is time for Gauteng MM and DM to act.

Moreover, one could also mention many world class GE initiatives, for instance in sustainable transport (e.g. Paris and London¹⁰ cost-effective mass transit systems – i.e. via well integrated public networks of bus, tube, and bicycle lanes - and intentional policies to push back the use of personal cars through more single lane roads, partial / temporary road closures and / or increases in car use taxes), climate change adaptation / mitigation through renewable energy initiatives (e.g. Aspen, Colorado, as the third US city to run on 100 percent renewable energy since September 3, 2015¹¹), food security initiatives (e.g. community gardens in Austin, Texas, produce at least 100,000 pounds of fresh food every year¹²), and innovative waste management systems based on waste-to-energy projects (e.g. gross electricity production from renewable municipal waste in Germany; Euroserv'er 2014a & b) or industrial symbiosis (e.g. Kalundborg, Denmark; Jacobsen 2006).

However, the challenge for GCR MM and DM is find solutions that are relevant at the local level, especially given that cost recovery has become a recurring, unresolved problem

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URL:

http://www.wwf.org.za/what_we_do/tablemountainfund/media/news/?5841/TMFDassenberg ; as at November 20, 2015.

⁸ URL: <http://www.rougepark.com/>; as at November 20, 2015.

⁹ URL: <http://www.calanques-parcnational.fr/fr>; as at November 20, 2015.

¹⁰ URL: <http://www.theguardian.com/cities/2015/apr/28/end-of-the-car-age-how-cities-outgrew-the-automobile>; as at November 20, 2015.

¹¹ URL: <http://ecowatch.com/2015/09/03/city-goes-100-percent-renewable/>; as at November 20, 2015.

¹² UR: <http://inhabitat.com/top-10-cities-in-the-us-for-urban-farming/>; as at November 20, 2015.

for most municipal services due to both low municipal rates and the limited numbers of rate payers (e.g. Fjeldstad 2004; “Culture of non-payment is costing Gauteng billions” by Loyiso Sidimba in the Sowetan¹³, on March 14, 2015). This is why solutions that are likely to work for the disadvantaged Gauteng communities are likely to come from the developing world, such as the development of aerial cable-car systems for public transport in low-income urban areas in Medellin, Colombia (Brand and Davila, 2011).

From this perspective, multi-stakeholder partnerships for target setting, fundraising and project implementation are critical to the implementation of many GE activities, especially those which are less financially attractive for municipalities (e.g. climate adaptation and food security projects). In the end, significant increases in financial and human resources dedicated to transitioning to greener economies, for both core service delivery projects and new opportunities, are required for both Gauteng MM and DM to adopt greener economic development pathways GE (as well as news ways for sharing such costs and associated benefits).

In addition, this calls for open, transparent and multi-stakeholder debates to find practical solutions on key barriers to transition to a GE economy, namely the need to:

- Significantly build capacity at most Gauteng Municipalities, especially on project management and fundraising skills as well as neglected GE themes.
- Address the high proportions of unallocated positions and difficulties in updating job profiles for recruitment processes (e.g. GE skills required) due to unresolved tensions with trade unions.
- Significantly review the criteria used for funding allocation for both existing activities and new projects (e.g. DBSA 2015). Indeed, several GE themes (e.g. climate change adaptation, food security, biodiversity and ecological infrastructure) are not readily bankable for cities (i.e. no financial return on investment), though there may be many benefits and beneficiaries at the local, provincial and national levels (i.e. need for new indicators – see section 4.3).
- Embed GE targets, credentials and principles in municipality procurement procedures, while working within the scope of the Municipal Public Finance Act and other relevant

¹³ URL: [file:///C:/Users/JOEL/Downloads/2015-03-14 Culture of non-payment is costing Gauteng billions SowetanLive%20\(1\).pdf](file:///C:/Users/JOEL/Downloads/2015-03-14%20Culture%20of%20non-payment%20is%20costing%20Gauteng%20billions%20SowetanLive%20(1).pdf); as at November 20, 2015.

legislations and policies. Indeed, currently, green technologies and services are more expensive than orthodox solutions and are hence very unlikely to be selected (i.e. preference always given to lowest cost bidders).

- Explore how to compensate municipalities for undertaking GE activities which contribute to the common good (e.g. reduced GHG emissions, cleaner water, protecting wetlands and high biodiversity value lands) but would inevitably result in decreases in municipal revenues. For instance, energy efficiency investments decrease electricity sales while water saving measures reduce water sales. Similarly, protecting high biodiversity value areas against urban expansion results in the loss of future property rates (i.e. high opportunity costs). Such thinking is not new: Compensation mechanisms for biodiversity conservation and environmental stewardship have been successfully implemented and are being explored in many countries in Europe and Brazil (e.g. Borie *et al.*, 2014; Maryanne 2000; Viega *et al.*, 2002).

4.3 Performance assessment, monitoring and disclosure driving city transition to greener economies

Last but not least, we argue that a potential key driver for GCR cities to cost-effectively transition to greener economies would be to develop a comprehensive, harmonised, integrated national / provincial / MM / DM / LM performance assessment and monitoring system for all GE themes for all relevant dimensions of city planning, management and service delivery, with key performance indicators allocated to key stakeholders. Indeed, there is currently no system to assess the full economic, social and environmental costs and benefits of any project within the GCR MM and DM, although this has been highlighted as a priority by the Executive Mayor of the City of Tshwane, Cllr. Kgosientso Ramokgopa (CoT 2013, p. 6): *“Improved criteria and indicators will be required to assess measure and monitor options that can enhance green economic growth. The economic value associated with social well-being and the provisioning of ecosystem goods and services is an area of intensive research. The City of Tshwane should be at the forefront of this knowledge, by stimulating research on and development in green economy indicators for social and environmental well-being, as well as incorporating defined social and environmental criteria and indicators with municipal planning and decision-making.”*

For instance, what are the benefits of energy efficiency projects, in terms of reduced GHG emissions and improved air quality? What are the full costs and benefits of a proposed urban development in terms of social, environmental and economic performance? Answering such questions would be particularly useful to promote GE themes which are currently perceived as financially unattractive (e.g. adaptation and ecological infrastructures projects). As argued by ten Brink *et al.* (2012), there must be a clear understanding of the value of nature and how to take this value into account in public and private decisions in light of the multiple benefits it provides. Managing the transition to a green economy will need to take into account not only the opportunity of win-wins, but also the risks of losses for certain groups and trade-offs across sectors and over time. This will require trust-worthy, recurring information on a range of city processes towards greener economies, including both public and private sector activities.

In addition, disclosing such information to all would support municipalities in striving to become more transparent and accountable to their residents about GE risks / challenges and opportunities, targets, resources, and progress. Among options to be considered are strengthening the sustainability / GE contents of the recurrent municipality reports (e.g. annual integrated reports, IDP, Budget and / or SDBIP), by making use of various accounting tools and reporting guidelines (e.g. Burrit *et al.*, 2002; Houdet *et al.*, 2014; IIRC 2013; WRI 2014) and assigning relevant GE key performance indicators to each department and, internally, to all appropriate levels of management or responsibility.

However, developing such a performance assessment, monitoring and disclosure system will require building capacity (e.g. key performance indicator design) and securing funds to secure skilled human resources (e.g. data collection, cost-benefit modelling), developing / sourcing the appropriate information system(s) and building long term partnerships within concerned city departments and partners (e.g. suppliers, clients, service delivery partners) for data collection, analysis and use.

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Svara, J.H. (2012) *Local governments, social equity, and sustainable communities. Advancing social equity goals to achieve sustainability*. International City/County Management Association (ICMA) and Arizona State University. 96p.

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UNDESA (United Nations Department of Economic and Social Affairs) (2012b) *A Guidebook to the Green Economy. Issue 2: Exploring Green Economy Principles.*

van den Bergh J.C.J.M. (2011) Environment versus growth — A criticism of “degrowth” and a plea for “a-growth”. *Ecological Economics* 70, 881–890.

West Rand District Municipality (2014). *Green IQ Implementation Protocol*. 38p.

WRI (2014) *The GHG Protocol Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)*. 172p.

6- Annex A – Individual MM and DM Readiness to Transition to a Green Economy Assessments

7.1 Ekurhuleni MM Readiness to Transition to a Green Economy Assessment

7.1.1 Ekurhuleni's Green Economy Strategy

Criteria rating options:

- 0- No strategy
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Ekurhuleni MM's score: 3

Rationale:

Though Ekurhuleni Metropolitan Municipality (EMM) has not yet developed a Green Economy Strategy, several GE themes are covered in the Environmental Resource Management Departmental SDBIP (CoE, 2015). This annual document highlights “*the functional areas that are given exclusively to Local Government in Parts B of Schedules 4 & 5 of the Constitution involve some form of environmental management*”. It thus covers legislative and policy mandates, notably recognising that:

- The 10th Outcome formulated from the government strategic priorities over the Medium Term Strategic Framework (MTSF) period South African Government relates to the ENVIRONMENT: “Protect and enhance our environmental assets and natural resources”.
- In terms of Outcome 10, the NDP 2030 envisages a phased trajectory over the three successive MTSF periods; the first planning, piloting and investing phase (2014-2019) focusing on the creation of a framework for implementing the transition to an environmentally sustainable, low-carbon economy.

This Departmental SDBIP also recognises Outcome 10 outputs and sub-outputs, including the goals of the National Department of Environmental Affairs (DEA) Strategic plan

for 2015/16 – 2019/20 and then introduces the Ekurhuleni 7th Mayoral Lekgotla, existing and recently development Ekurhuleni Environmental Plans, Policies and Strategies.

In short, there is a relatively clear articulation of GE-related policies from national to MM levels, and the strategic directions appear to cover all main GE themes.

7.1.2 The scope of activities of Ekurhuleni's Green Economy Strategy

Criteria rating options:

0- No GE theme covered

1- 3 or less GE themes covered

2- Between 4 & 6 GE themes covered

3- More than 6 GE themes covered

Ekurhuleni MM's score: 3

Rationale:

The EMM has activities in all GE themes. EMM initiatives include:

- Transition to low carbon economy;
- Explore green opportunities;
- Promote local energy business development;
- Ensure incentives for CDM's investment;
- Carry out spatial mapping of ambient air quality and green-house gases inventory;
- The development of a green booklet that contains environmental best practice guidelines, sustainability benchmarks, norms, standards and minimum requirements;
- Urban Management Actions around Citizen Education: Community – Prevention Education;
- Promotion of water & energy efficiency;
- Street cleaning plan;
- Greening the City with useful practical projects;
- Focus on wetlands rehabilitation and the potential for long term jobs.

EMM environmental policy “*provides both an overall framework within which to frame environmental management, as well as detailed guidance to the different entities and*

departments in the EMM who will be tasked with the implementation responsibilities. Specifically, this policy will be used to:

- spearhead sustainable development with EMM;
- improve the governance function of the municipality;
- create environmental awareness within the municipality;
- enhance a safe and healthy environment; and
- direct sustainability and responsible decision making” (EMM 2015).

In addition, EMM has launched a project which aims at “aligning the by-laws in Ekurhuleni with the environmental rights outlined in the Constitution and national environmental legislation. National Outcome 10 which refers to the protection of environmental assets, the EMM Growth & Development Strategy (GDS) focus area of environmental well-being, as well as the focus area of legislative compliance in the approved EMM Environmental Policy, with implementation through the EMM Bioregional Plan, Ekurhuleni Biodiversity and Open Space Strategy (EBOSS), the Ekurhuleni Grand Open Space Plan (GOSP) and the EMM Environmental Management Framework (EMF) are all aligned with this approach.”

7.1.3 Baseline information for Ekurhuleni’s Green Economy Strategy

Criteria rating options:

0- No baseline data

1- 3 or less GE themes with good baseline data

2- Between 4 and 6 GE themes with good baseline data

3- More than 6 GE themes with good baseline data

Ekurhuleni MM’s score: 1

Rationale:

To the best of our knowledge, EMM has access to quality baseline information for some GE themes, such as air quality, energy, and biodiversity / wetlands; though some data is outdated (e.g. energy report published in 2005; provincial strategy under development). Yet, overall, there is a lack of comprehensive, regularly collected / updated local GE data, including

costs and benefits of environmental / social inequalities (e.g. ecosystem services and dis-services supply and delivery mapping). This prevents the EMM from fully understanding all GE issues, challenges and opportunities, despite developing comprehensive sets of policies as explained in 2.2.

Ekurhuleni is host to the OR Tambo International Airport, the largest airport in Africa, and the centre of the industrial and commercial activity that is the engine of the South African economy. Obtaining comprehensive baseline information would thus be essential to effectively put South Africa on a green economy pathway.

7.1.4 Ekurhuleni's Green Economy Strategy targets

Criteria rating options:

0- No GE target

1- 3 or less GE themes with clear targets

2- Between 4 and 6 GE themes with clear targets

3- More than 6 GE themes with clear targets

Ekurhuleni MM's score: 1

Rationale:

Seven areas of impact are defined by EMM that require implementation to meet the goals of the Environmental Policy:

- Protect and conserve key natural resources;
- Raise Environmental Awareness and implement environmental education initiatives;
- Environmental principles are embedded in Infrastructure and development activities in EMM;
- Prevent and reduce pollution of land, water and air;
- Manage catchments in an integrated manner;
- Increase energy efficiency and mitigate and adapt for climate change impacts;
- Improve environmental governance.

Each area has quantified targets with different departments responsible for their effective implementation. For instance, points 2, 4, 6 and 7 outlined above are included in the

current Environmental Resource Management department SDBIP which is “*targeting improvement and refinement in areas such as ensuring a closer link between budgets and identified outcomes, improving the quality of outcomes, outputs and indicators and targets, and formally incorporating risk assessment and management in the Departmental SDBIP process*”.

However, one can question the relevance of some targets due to the lack of baseline information (2.3) in many GE areas. For instance, there is no quantified GE targets within the Aerotropolis Mater Plan.

7.1.5 Responsibilities / roles in transitioning to a GE

Criteria rating options:

0- Lack of clear roles / responsibilities regarding GE

1- 3 or less GE themes with appropriate or clear roles / responsibility and / or partnerships

2- Between 4 and 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

3- More than 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

Ekurhuleni MM's score: 1

Rationale:

Clear roles for all EMM departments and stakeholders are still being defined and worked out, as most environmental policies / plans are recent and many departments are understaffed (unfilled positions, unskilled staff, recruitment / labour union problems).

There are many challenges with the integration of GE principles and objectives in the various city departments and / or activities, including (but not limited to):

- The Environmental Resource Management (ERM) department is a very small unit, with an advisory / facilitating role;
- The fact that GE is a new concept, not well understood by all (e.g. lock-in situation, competition with other priorities, departmental hierarchical issues) ;
- The lack of clear baseline information for some GE themes (see 7.1.3) which precludes the definition of activities and associated responsibilities of involved parties for delivery.

Despite this, the ERM Department believes a lot of good work is being done at the policy level and in coordinating departments towards common goals on key issues (e.g. land use planning, air quality, green buildings).

Given that Ekurhuleni is host to the OR Tambo International Airport and is the biggest SA centre of industrial and commercial activity, the private sector should be playing a more pro-active role in greening their activities, towards becoming a role model or champion for other industrial areas of the country.

7.1.6 Financial resources for transitioning to a GE

Criteria rating options:

0- Limited financial resources

1- Limited funds but financing strategy designed for bankable projects (both internal and external funds)

2- Between 1 and 3 GE themes with sufficient funds (both internal & external)

3- More than 3 GE themes with sufficient funds (both internal & external)

Ekurhuleni MM's score: 0

Rationale:

There is a lack of internal financial resources to transition to a GE and the Municipal Financial Management Act (MFMA) is a challenge to navigate towards leveraging private funds and green technologies (e.g. lowest costs procurement favoured). Accordingly, the EMM is focusing on:

- A limited number of high profile projects (e.g. grants for clean city programme;
- Embedding environmental criteria (as incentives) in the Capital Prioritisation Model Process which scores projects and helps select the best ones for internal funding.

7.1.7 Human resources for transitioning to a GE

Criteria rating options:

0- Limited skilled GE human resources

1- 3 or less GE themes with sufficient human resources

2- Between 4 and 6 GE themes with sufficient human resources

3- More than 6 GE themes with sufficient human resources

Ekurhuleni MM's score: 0

Rationale:

According to the Environmental Resource Management Departmental SDBIP (2015), “insufficient resources and inadequate skills in terms of project management lead to poor service delivery, incomplete archiving and unacceptable assets management”. This was confirmed in discussions with staff members of the ERM Department. Human resources are thus currently inadequate to transition to a GE.

7.1.8 Performance Assessment & Monitoring for transitioning to a GE

Criteria rating options:

0- No performance assessment & monitoring

1- 3 or less GE themes covered

2- Between 4 and 6 GE themes covered

3- More than 6 GE themes covered

Ekurhuleni MM's score: 1

Rationale:

Though the EMM SDBIP has a performance monitoring framework which covers many GE areas, the lack of full baseline information (2.3) puts into question the design of the selected key performance indicators. The lack of financial (2.4) and human (2.5) resources also do.

7.1.9 Transparency & Accountability for transitioning to a GE

Criteria rating options:

0- No performance assessment & monitoring

1- 3 or less GE themes covered

2- Between 4 and 6 GE themes covered

3- More than 6 GE themes covered

Ekurhuleni MM's score: 0

To the best of our knowledge, there is no public disclosure of GE performance yet. This criteria is linked to the previous criteria (7.1.8) as accountability to EMM's stakeholders would require communicating to them relevant sets of information on a regular basis. Among options to be considered are strengthening the GE / sustainability contents of the EMM's annual reports, for instance assigning relevant GE key performance indicators to report on to each department.

7.1.10 Resources

Ekurhuleni Metropolitan Municipality (2009) *Biodiversity and Open Space Strategy (EBOSS)*.

Ekurhuleni Metropolitan Municipality (2011) *EMM Wetland Rehab Planning Prioritisation*.

Ekurhuleni Metropolitan Municipality (2012). *Ekurhuleni Growth & Development Strategy 2055*. 55p.

Ekurhuleni Metropolitan Municipality (2015) *EMM Bioregional Plan (BRP)*.

Ekurhuleni Metropolitan Municipality (2015) *IDP, Budget and SDBIP 2013/14 – 2015/16*, 162p.

Ekurhuleni Metropolitan Municipality (2015) *Annual Report 2013/14*. 562p.

Ekurhuleni Metropolitan Municipality (2015). *Departmental SDBIP 2015-16. Draft report*. Environmental Resource Management Department. 73p.

Ekurhuleni Metropolitan Municipality (2015) *Environmental Resource Management: PS-ERM 81/2013. The greening of the existing EMM by-laws*. Draft document.

Ekurhuleni Metropolitan Municipality (2015) *Aerotropolis Master Plan. 25 year plan. Land use report*. 90% DRAFT.

Other EMM policies, strategies, plans, reports:

2004 - State of the Environment report;

2005 - State of Energy report;

2005 - Air Quality Management Plan;

- 2006 - Environmental Policy;
- 2007 - Energy and Climate Change Strategy;
- 2007- Wetland inventory report;
- 2008 - LAB -Biodiversity report;
- 2008 - Environmental Management Framework (EMF);
- 2013 - Revised EMM Environmental Policy;
- 2014 - Grand Open Space Plan (GOSP);
- 2015 - EMM Bioregional Plan (BRP);
- 2015- Draft Ekurhuleni Climate Change Strategy (High level);
- 2015- Ekurhuleni Climate Change Response Plans:
 - Climate Change and Parks;
 - Climate Change, Agriculture & Food security;
 - Climate Change & Building Control;
 - Climate Change & Urban Energy.
- 2015- Sustainability Benchmark Guidelines:
 - Water Conservation Guideline - How to be water wise;
 - Food Gardens in Schools – A step by step guide to setting it up;
 - Bicycle infrastructure Guideline – Planning a bicycle friendly city;
 - Waste Management Guideline for Municipalities;
 - Guide on the importance of indigenous trees and grasslands in Ekurhuleni.
- 2015 – Draft Environmental Frameworks:
 - Catchment Management Framework;
 - Wetland Rehabilitation Framework;
 - Conservation Framework.

7.2 Johannesburg MM Readiness to Transition to a Green Economy Assessment

7.2.1 Johannesburg’s Green Economy Strategy

Criteria rating options:

0- No strategy

- 1- 3 or less themes covered
- 2- Between 4 and 6 themes covered
- 3- More than 6 themes covered

Johannesburg MM's score: 3

Rationale:

The City of Johannesburg (CoJ) published its “Green Economy Strategic Framework and Proposed Implementation Plan” in 2013. It covers all GE themes. It has a strong focus on creating thousands of new jobs and catapulting the CoJ to the cutting edge of green innovation worldwide while supporting the reduction of the City’s contribution to global warming and improving its ability to cope with a changing local climate. It also targets shifting the structure of the City’s economy towards greater greener efficiency and more responsible use of its scarce resources. Drafted as a “living document”, the Green Economy Strategic Framework recognises that the CoJ will learn through action. The CoJ is also unique in having embedded the key components of its Green Economy Strategic Framework in its Growth Development Strategy “Joburg 2040” since 2011.

7.2.2 The scope of activities of Johannesburg’s Green Economy Strategy

Criteria rating options:

- 0- No GE theme covered
- 1- 3 or less GE themes covered
- 2- Between 4 & 6 GE themes covered
- 3- More than 6 GE themes covered

Johannesburg MM's score: 3

Rationale:

The Johannesburg MM has activities in all GE themes. Johannesburg’s Green Economy Strategic Framework has identified 7 sectors for GE implementation:

- Climate Change Sector;

- Energy Sector;
- Small Scale Community Agriculture;
- Spatial Development and Land Use Management Sector;
- Waste Management Sector;
- Water Management Sector and;
- Transportation.

7.2.3 Baseline information for Johannesburg's Green Economy Strategy

Criteria rating options:

0- No baseline data

1- 3 or less GE themes with good baseline data

2- Between 4 and 6 GE themes with good baseline data

3- More than 6 GE themes with good baseline data

Johannesburg MM's score: 2

Rationale:

To the best of our knowledge, Johannesburg MM has access to baseline information for:

- Some of its greenhouse gas (GHG) emissions: i.e. indirect emissions from the generation of purchased energy (scope 2);
- Past, present and (estimated) future waste generation;
- The spatial distribution of wetlands and other natural habitats;
- Energy use per sector;
- Water use and loss.

Some partial information is also available on ecological infrastructure and biodiversity. In other words, Johannesburg MM does not yet have a comprehensive, quantified and mapped understanding of all GE issues, challenges and opportunities. For instance, inequalities in access to ecosystem services (e.g. recreation, clean air) between different urban communities have not been precisely assessed and mapped out.

7.2.4 Johannesburg's Green Economy Strategy targets

Criteria rating options:

- 0- No GE target
- 1- 3 or less GE themes with clear targets
- 2- Between 4 and 6 GE themes with clear targets
- 3- More than 6 GE themes with clear targets

Johannesburg MM's score: 2

Rationale:

Johannesburg's Green Economy Strategic Framework does not have clear, quantified targets but the CoJ SDBIPs and Annual Integrated Reports have targets for most GE themes. Each department or agency (e.g. Pikitup, Johannesburg Water) has its own targets and is responsible for achieving them.

However, the lack of comprehensive baseline information (see 7.2.3) puts into question target selection. These tend to be related to the degree of implementation of specific projects (i.e. % of activities completed) and are thus not based on actual, quantified levels of impacts achieved (e.g. reduced volumes of water consumed, GHG emissions avoided, natural habitat integrity improvement).

7.2.5 Responsibilities / roles in transitioning to a GE

Criteria rating options:

- 0- Lack of clear roles / responsibilities regarding GE
- 1- 3 or less GE themes with appropriate or clear roles / responsibility and / or partnerships
- 2- Between 4 and 6 GE themes with appropriate or clear roles / responsibility and / or partnerships
- 3- More than 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

Johannesburg MM's score: 3

Rationale:

The Department of Economic Development of the City of Johannesburg (CoJ) plays an advisory role to other CoJ departments which are in charge of implementing GE projects. Each department is responsible for implementing its own GE projects.

Yet, there are many challenges with the integration of GE principles and objectives in the various city departments and / or activities, including (but not limited to):

- The fact that GE is a new concept, not well understood by all (e.g. lock-in situation, competition with other priorities, departmental hierarchy issues), which prevents revising existing practices and activities according to new GE principles ;
- The lack of clear baseline information for some GE themes (see 7.2.3) which precludes the definition of activities and associated responsibilities of involved parties for delivery.

7.2.6 Financial resources for transitioning to a GE

Criteria rating options:

0- Limited financial resources

1- Limited funds but financing strategy designed for bankable projects (both internal and external funds)

2- Between 1 and 3 GE themes with sufficient funds (both internal & external)

3- More than 3 GE themes with sufficient funds (both internal & external)

Johannesburg MM's score: 2

Rationale:

Internal financial resources are allocated to transition to a GE, with each department using its own resources to implement its own projects. For instance, Johannesburg Water has developed a biogas plant at the Northern Wastewater Treatment Works. Such projects also include GE themes which do not (yet) generate sufficient income given current policies (e.g. adaptation and ecological infrastructures projects).

However, the full costs (and benefits) of transitioning to a GE have not been assessed so that it is not yet possible to assess whether the financial resources available and allocated address the needs or challenges.

7.2.7 Human resources for transitioning to a GE

Criteria rating options:

- 0- Limited skilled GE human resources
- 1- 3 or less GE themes with sufficient human resources
- 2- Between 4 and 6 GE themes with sufficient human resources
- 3- More than 6 GE themes with sufficient human resources

Johannesburg MM's score: 2

Rationale:

As previously explained, the Department of Economic Development plays an advisory role to other CoJ departments which are in charge of implementing GE projects. Each department is slowly building its human capacity to address GE issues through the implementation of various projects. As a result, expertise in some areas (e.g. energy efficiency, waste separation at source, biogas technologies, and mass-transit / transport systems) is growing within the CoJ staff.

However, as explained by the staff of the Department of Economic Development, there is a lack of understanding of GE principles, challenges and benefits in many city departments, for both GE flagship projects and on other GE themes. This is also affected by existing policies, rules and regulations which do not yet support GE objectives. For instance, a key challenge identified is the lack of clear criteria of what constitutes a "green job". Some staff members doing administrative and accounting work may be directly involved in GE projects. Are these green jobs? Some other CoJ staff may only spend a portion of working hours on GE-related activities. Should these be recorded as green jobs? This opens the door to discussions about the GE skills required for each job / position as GE is a cross-cutting theme which concerns all CoJ activities, from finance / accounting and project management to human resources and communication functions.

7.2.8 Performance Assessment & Monitoring for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring

- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Johannesburg MM's score: 3

Rationale:

The CoJ Department of Economic Development monitors GE project implementation and also reports to the Gauteng Province (internal document not disclosed / received to date). Besides, the CoJ SDBIP monitors project implementation for all its GE targets while the Integrated Annual Report provides a comprehensive overview of progress on all GE themes.

However, the scope of performance assessment and monitoring in the SDBIP is limited (i.e. degree of project completion expressed in % most of the times). It does not include cost-effectiveness and impact indicators. In other words, there is information on the amounts of money spent, but no information on the impacts, on the ground, of the project given GE key performance indicators.

The Integrated Annual Report, though quite comprehensive, has also room for improvement (e.g. impact / footprint indicators, externality disclosure, integrity of natural habitats).

7.2.9 Transparency & Accountability for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Johannesburg MM's score: 3

Rationale:

The CoJ SDBIP discloses project implementation progress for all its GE targets. The CoJ Annual Integrated Report also discloses progress, challenges / risks on all GE themes. Detailed key performance indicators are disclosed for some GE themes, such as waste

management, water and sanitation, energy as well as climate (GHG emissions) and biodiversity to a lesser extent. There is room to improve the CoJ sustainability disclosure.

7.2.10 Resources

City of Johannesburg Metropolitan Municipality (2011) *Joburg 2040: Growth and Development Strategy*. 63p

City of Johannesburg Metropolitan Municipality (2012) *City of Johannesburg Energy and Climate Change Strategy & Action Plan*. 59p. City of Johannesburg Metropolitan Municipality (2013) *Strategic Integrated Transport Plan Framework for the City of Johannesburg*. 142p.

City of Johannesburg Metropolitan Municipality (2013) *Regional Spatial Development Framework (RSDF 2010-11)*. 137p.

City of Johannesburg Metropolitan Municipality (2013) *Green Economy Strategic Framework & Proposed Implementation Plan*. 54p.

City of Johannesburg Metropolitan Municipality (2014) *City of Johannesburg 2013/14 Integrated Annual Report*. 391p.

City of Johannesburg Metropolitan Municipality (2014) *City of Johannesburg 2014/15 Institutional Service Delivery and Budget Implementation Plan (SDBIP)*. 198p.

City of Johannesburg Metropolitan Municipality (Unpublished) *Green Economy Project Portfolio – Version 5*. Department of Economic Development.

Pikitup (2011). *Pikitup Waste Management Services Plan (WMSP) 2011-2040*. 108p

7.3 Sedibeng DM Readiness to Transition to a Green Economy Assessment

7.3.1 Sedibeng's Green Economy Strategy

Criteria rating options:

0- No strategy

1- 3 or less GE themes covered

2- Between 4 and 6 GE themes covered

3- More than 6 GE themes covered

Sedibeng DM's score: 0

Rationale:

The Sedibeng DM has no GE strategy to date, although its Growth Development Plan recognises the Cabinet Lekgotla 12 outcomes (e.g. outcomes 7 and 10 strongly relate to GE themes).

7.3.2 The scope of activities of Sedibeng's Green Economy Strategy

Criteria rating options:

- 0- No GE theme covered
- 1- 3 or less GE themes covered
- 2- Between 4 & 6 GE themes covered
- 3- More than 6 GE themes covered

Sedibeng DM's score: 1

Rationale:

Some GE activities are being considered and / or implemented throughout the SDM, especially with respect to air quality management (beyond mere compliance towards increased energy efficiency – e.g. from coal to gas / co-generation system) and the development of new wastewater treatment infrastructure (e.g. plans for Sedibeng Regional Sewer Scheme, which currently is being revised due to budget constraints). Of particular interest is the key role that local industries are playing in the Gauteng Industrial Symbiosis Programme (GISP), with the support of the SDM and other institutions (e.g. NCPC).

7.3.3 Baseline information for Sedibeng's Green Economy Strategy

Criteria rating options:

- 0- No baseline data
- 1- 3 or less GE themes with good baseline data

2- Between 4 and 6 GE themes with good baseline data

3- More than 6 GE themes with good baseline data

Sedibeng DM's score: 1

Rationale:

To the best of our knowledge, SDM does not have access to quality, quantified and mapped baseline information for GE themes apart from SDM Conservation Plan (CPLAN) maps. There is no financial resource to do so, although the SDM is considering undertaking a Climate Change Assessment which would cover all key GE themes as well.

A lack of communication between SDM and LM may be partially responsible for this (i.e. no information from LM obtained or found).

7.3.4 Sedibeng's Green Economy Strategy targets

Criteria rating options:

0- No GE target

1- 3 or less GE themes with clear targets

2- Between 4 and 6 GE themes with clear targets

3- More than 6 GE themes with clear targets

Sedibeng DM's score: 0

Rationale:

To the best of our knowledge, SDM does not have GE targets. A lack of communication between SDM and LM may be partially responsible for this (i.e. no information from LM obtained or found). According to interviewees at the SDM, the situation is similar at the level of LM.

7.3.5 Responsibilities / roles in transitioning to a GE

Criteria rating options:

- 0- Lack of clear roles / responsibilities regarding GE
- 1- 3 or less GE themes with appropriate or clear roles / responsibility and / or partnerships
- 2- Between 4 and 6 GE themes with appropriate or clear roles / responsibility and / or partnerships
- 3- More than 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

Sedibeng DM's score: 0

Rationale:

To the best of our knowledge, there seems to be no clear understanding of who is responsible for what between the SDM, LM, provincial and national government departments regarding GE transition in the district. According to SDM staff members, GE expertise / human resources can't be located in a single department or organisation, and the current lack of articulation of roles between stakeholders should be addressed as a matter of urgency.

7.3.6 Financial resources for transitioning to a GE

Criteria rating options:

- 0- Limited financial resources
- 1- Limited funds but financing strategy designed for bankable projects (both internal and external funds)
- 2- Between 1 and 3 GE themes with sufficient funds (both internal & external)
- 3- More than 3 GE themes with sufficient funds (both internal & external)

Sedibeng DM's score: 0

Rationale:

There is a lack of internal financial resources to transition to a GE and the Municipal Financial Management Act (MFMA) is a challenge to navigate towards leveraging private funds and green technologies (e.g. proposals with lowest costs procured).

Currently, the SDM is focusing on a limited number of small educational projects and is trying to support the sourcing of funding for some flagship projects (e.g. Sedibeng Regional

Sewer Scheme). The lack of clear roles also prevents the building of strong partnerships between stakeholders for GE transition.

The need to clearly specify roles at the DM and LM levels has been advocated by interviewees, in the hope that it would be associated with sufficient funding allocation for GE project implementation.

7.3.7 Human resources for transitioning to a GE

Criteria rating options:

- 0- Limited skilled GE human resources
- 1- 3 or less GE themes with sufficient human resources
- 2- Between 4 and 6 GE themes with sufficient human resources
- 3- More than 6 GE themes with sufficient human resources

Sedibeng DM's score: 0

Rationale:

There is a lack of internal human resources to transition to a GE at the SDM (no staff member with GE skills). According to interviewees, the situation is similar at the level of LM.

7.3.8 Performance Assessment & Monitoring for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Sedibeng DM's score: 0

Rationale:

Though the SDM has a performance monitoring framework (Annual Report / SDBIP) which covers some GE areas (i.e. which project has been completed and associated amounts spent), there is a lack of clear GE-specific targets.

7.3.9 Transparency & Accountability for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Sedibeng DM's score: 0

Rationale:

To the best of our knowledge, there is no public disclosure of tangible GE performance yet. This criteria is linked to the previous criteria (7.3.8) as accountability to SDM's stakeholders would require communicating to them relevant sets of information on a regular basis. Among options to be considered are strengthening the GE / sustainability contents of the SDM's annual reports (AR / IDP / SDBIP), for instance assigning relevant GE key performance indicators to report on to each LM and relevant departments. This however would require two major improvements: (a) transparent discussions on GE priorities (baseline, targets, financial and human resources needs) at the provincial, DM and LM levels, (b) assignment of clear roles to all key stakeholders and (b) the subsequent allocation of sufficient budgets to carry out GE activities according to each party's role(s).

7.3.10 Resources

Sedibeng District Municipality (2014) *2013/14 Annual Report*. 244p.

Sedibeng District Municipality (2014) *Service Delivery & Budget Implementation Plan (SDBIP) 2014/15*. 96p.

Sedibeng District Municipality (2014) *Growth & Development Strategy – Draft 2*. 96p.

Sedibeng District Municipality (2014) *Spatial Development Framework*. 121p.

7.4 Tshwane MM Readiness to Transition to a Green Economy Assessment

7.4.1 Tshwane's Green Economy Strategy

Criteria rating options:

- 0- No strategy
- 1- 3 or less themes covered
- 2- Between 4 and 6 themes covered
- 3- More than 6 themes covered

Tshwane MM's score: 3

Rationale:

The City of Tshwane (CoT) is unique in having developed a Green Economy Strategic Framework (2013) through a Memorandum of Agreement with the Council for Scientific and Industrial Research (CSIR) and technical support from the United Nations Environment Programme (UNEP). It aims to provide a strategic guide for low-carbon, equitable economic development that can enhance Tshwane's transition to a green economy and facilitate a sustainable development path. The vision of the Green Economy Strategic Framework has been extracted from the Tshwane Vision 2055 and is outlined as follows: *"By 2055, growth and development in Tshwane is driven by an economy that supports a sustainable, vibrant, liveable and prosperous city, through integrated ecological, social, economic and spatial agendas that promote human and environmental well-being."*

7.4.2 The scope of activities of Tshwane's Green Economy Strategy

Criteria rating options:

- 0- No GE theme covered
- 1- 3 or less GE themes covered
- 2- Between 4 & 6 GE themes covered
- 3- More than 6 GE themes covered

Tshwane MM's score: 3

Rationale:

Tshwane's Green Economy Strategic Framework finalised focus themes in March 2013, and divided them into mitigation and adaptation clusters as follows:

Mitigation:

- Pollution and waste management;
- Integrated water resource management;
- Green buildings and built environment;
- Sustainable transport and improved mobility;
- Sustainable energy.

Adaptation:

- Maintenance and provision of ecosystem goods and services;
- Sustainable communities (health and social development);
- Sustainable agriculture and food security.

In other words, the Tshwane MM has activities in all GE themes.

7.4.3 Baseline information for Tshwane's Green Economy Strategy

Criteria rating options:

0- No baseline data

1- 3 or less GE themes with good baseline data

2- Between 4 and 6 GE themes with good baseline data

3- More than 6 GE themes with good baseline data

Tshwane MM's score: 1

Rationale:

To the best of our knowledge, Tshwane MM has access to quality baseline information for its:

- Greenhouse gas (GHG) emissions: i.e. direct emissions from owned or controlled sources (scope 1) and indirect emissions from the generation of purchased energy (scope 2);

- Climate vulnerability, in terms of the current exposure, sensitivity and adaptive capacity of CoT regions and sectors to the potential impacts from climate change, with a focus on extreme events.

Some partial information is also available on ecological infrastructure and biodiversity.

In other words, Tshwane MM does not yet have a comprehensive, quantified and / or mapped understanding of all GE issues, challenges and opportunities. The City Sustainability Unit (CSU) believes there is a real need to address this issue as baseline information provide the basis for improved planning and decision-making, as illustrated by the recent climate change studies commissioned.

7.4.4 Tshwane's Green Economy Strategy targets

Criteria rating options:

0- No GE target

1- 3 or less GE themes with clear targets

2- Between 4 and 6 GE themes with clear targets

3- More than 6 GE themes with clear targets

Tshwane MM's score: 3

Rationale:

Tshwane's Green Economy Strategic Framework has clear, quantified targets for most of its focus themes (CoT 2013, pp. 27, 38, 39). However, many of these targets (pp. 38 and 39, CoT 2013) are calculated from national and provincial targets on a per capita proportional share basis; which may suggest limited local stakeholder consultation (top-down approach to target setting). For instance, the South African Government has committed to procure 3 725 Megawatts of renewable energy for use in the grid by 2016, from which the City of Tshwane's share would be 210 MW by 2016.

7.4.5 Responsibilities / roles in transitioning to a GE

Criteria rating options:

- 0- Lack of clear roles / responsibilities regarding GE
- 1- 3 or less GE themes with appropriate or clear roles / responsibility and / or partnerships
- 2- Between 4 and 6 GE themes with appropriate or clear roles / responsibility and / or partnerships
- 3- More than 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

Tshwane MM's score: 1

Rationale:

The City Sustainability Unit (CSU) in the Office of the Executive Mayor plays an advisory role to other CoT departments which are in charge of implementing projects. It also plays a facilitating role by bringing together all key stakeholders to implement GE projects or activities.

There are many challenges with the integration of GE principles and objectives in the various city departments and / or activities, including (but not limited to):

- The fact that GE is a new concept, not well understood by all (e.g. lock-in situation, competition with other priorities, departmental hierarchy issues) ;
- The CSU is a relatively new unit, with an advisory / facilitating role;
- The lack of clear baseline information for some GE themes (see 7.4.3) which precludes the definition of activities and associated responsibilities of involved parties for delivery.

7.4.6 Financial resources for transitioning to a GE

Criteria rating options:

- 0- Limited financial resources
- 1- Limited funds but financing strategy designed for bankable projects (both internal and external funds)
- 2- Between 1 and 3 GE themes with sufficient funds (both internal & external)
- 3- More than 3 GE themes with sufficient funds (both internal & external)

Tshwane MM's score: 1

Rationale:

There is a lack of internal financial resources to transition to a GE. Accordingly, the CoT has developed a Sustainability Financing Strategy in 2015. The Strategy aimed to assist in identifying and establishing new sustainability financing relationships, funding models and processes within a specific financing framework; in partnership with the private sector and the national and international green financing / funding community.

The Strategy also identified initial green projects, with a total estimated investment of around R1,1 billion, to be financed by external funding sources and implemented by the private sector (i.e. off balance sheet projects). These projects have typical returns on investment of 5-20 % and are expected to generate a collective permanent job creation impact of more than 1,000 as well as substantial additional operational income for the CoT.

Yet, at this stage, no project has reached its operational phase. Besides, because this strategy targets external financing schemes for bankable projects, it does not address other GE themes which do not (yet) generate sufficient income given current policies (e.g. adaptation and ecological infrastructures projects).

7.4.7 Human resources for transitioning to a GE

Criteria rating options:

- 0- Limited skilled GE human resources
- 1- 3 or less GE themes with sufficient human resources
- 2- Between 4 and 6 GE themes with sufficient human resources
- 3- More than GE 6 themes with sufficient human resources

Tshwane MM's score: 1

Rationale:

As previously explained, the CSU in the Office of the Executive Mayor plays advisory and facilitation roles to other CoT departments which are in charge of implementing projects, typically by bringing together all key stakeholders to implement GE projects or activities in the most cost-effective manner. Under the leadership of the Executive Mayor, a lot of efforts have been made to address climate-related issues to date (e.g. energy efficiency, waste-to-energy). Expertise in these areas is growing within the CoT staff.

However, there is lack of understanding of GE principle's, challenges and benefits in many city departments, for both GE flagship projects and on other GE themes. This is also affected by existing policies, rules and regulations which do not yet support GE objectives (e.g. building regulations which prevent energy efficiency measures, by-laws which prevent waste separation at source).

7.4.8 Performance Assessment & Monitoring for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Tshwane MM's score: 0

Rationale:

The CSU recognises the importance of performance assessment and monitoring for a transition to a GE. Though the CSU was only recent set up (i.e. in 2013), its staff members believe this is now the time to design a performance assessment and monitoring system so as to assess CoT's progress towards a GE. This is supported by the view of the Executive Mayor, Cllr. Kgositso Ramokgopa (CoT 2013, p. 6): *“Improved criteria and indicators will be required to assess measure and monitor options that can enhance green economic growth. The economic value associated with social well-being and the provisioning of ecosystem goods and services is an area of intensive research. The City of Tshwane should be at the forefront of this knowledge, by stimulating research on and development in green economy indicators for social and environmental well-being, as well as incorporating defined social and environmental criteria and indicators with municipal planning and decision-making.”*

Implementing a cost-effective GE performance assessment and monitoring system might require building capacity (e.g. key performance indicator design) and securing funds to secure skilled human resources (e.g. data collection, cost-benefit modelling) and develop / source the appropriate information system(s) within all CoT departments. For instance, there is no system to assess the full economic, social and environmental costs and benefits of any project within the CoT, including GE projects (e.g. what are the benefits of energy efficiency

projects, in terms of reduced GHG emissions and improved air quality?). This would be particularly useful to promote GE themes which are currently perceived as financially unattractive (e.g. adaptation and ecological infrastructures projects).

7.4.9 Transparency & Accountability for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

Tshwane MM's score: 0

Rationale:

The CSU also recognises the importance of transparency and accountability for a transition to a GE. This is linked to the previous criteria (7.4.8) as accountability to CoT's stakeholders would require communicating to them relevant sets of information on a regular basis. Among options to be considered are strengthening the sustainability / GE contents of the CoT's annual reports, and assigning relevant GE key performance indicators to each department.

7.4.10 Resources

City of Tshwane (2012) *Metropolitan Spatial development Framework*. 33p.

City of Tshwane (2013) *Framework for a Green Economy Transition. Towards a low-carbon, climate resilient and resource efficient city*. 39p.

City of Tshwane (2014) *Greenhouse Gas Emissions Inventory 2012/2013. An overview of the City of Tshwane's carbon footprint of its 2012/2013 financial year (July 2012 - June 2013)*. Draft report. The South African Cities Network (Pty) Ltd, EcoMetrix Africa (Pty) Ltd, Mhlane Management Consulting (Pty) Ltd. 33p.

City of Tshwane (2015) *Final Annual Report 2013/14*. 336p.

City of Tshwane (2015) *City of Tshwane Vulnerability Assessment to Climate Change*. 117p.

City of Tshwane (2015) *2015/16 Service Delivery Budget Implementation Plan*. 103p.

City of Tshwane (2015) *Sustainability Financing Strategy for Green Economy Transition*. 44p.

City of Tshwane (Unpublished). *Ecological infrastructure (draft report)*. 30p.

7.5 West Rand DM Readiness to Transition to a Green Economy Assessment

7.5.1 West Rand's Green Economy Strategy

Criteria rating options:

0- No strategy

1- 3 or less GE themes covered

2- Between 4 and 6 GE themes covered

3- More than 6 GE themes covered

West Rand DM's score: 3

Rationale:

The WRDM has commissioned a Green IQ Strategy which was completed in 2012. This document comprises the working material, strategic options, evaluations and reference resources for the inclusive development of the West Rand District Municipality (WRDM) Green IQ Strategy, as well as providing insights into the new Green Economy potential for the district. *“Over the next 10 years, the WRDM will support the Gauteng green strategy by designing, managing and implementing strategic local economic programmes based on Green Economy principles, aimed at creating sustainable economic participation and growth, facilitating ranges of new Green jobs and SMME business opportunities, and through these strategies, reduce the carbon footprint of the district while inculcating knowledge systems, inclusive practices and habits which reduce environmental impacts of human activity (WRDM, 2012, p. 8).”*

It broad objectives cover all main GE themes:

- *“Promotion, facilitation and creation of dignified skills and decent jobs in the Green Economy;*

- *Promote and encourage innovation and local manufacturing in new Green technologies and businesses;*
- *Improve energy efficiency through Green technologies and public awareness campaigns;*
- *Creation of local Food Security with a primary aim of reducing poverty, and promoting food and environmental safety and vitality;*
- *Respect ecological limits, capping expansion into open areas, or the exploitation and destruction of natural resources;*
- *Initiate mechanisms for moving from complete reliance on fossil fuels through transition and evolution processes, to sustainable renewable energies;*
- *Promote the 3R's in Waste management as well as Waste minimisation, including public education and monitoring of waste-generating points, and the implementation of user/abuser programmes;*
- *Encourage community-driven co-operative participation, inclusiveness, and a sense of ownership” (WRDM, 2012, p. 9).*

The Strategy puts forward seven key priority action potentials for WRDM namely:

- Energy Efficiency (concentrated Solar Power Industry; and Solar Water Heater;
- Food Security (Agriculture);
- Water and Sanitation Management;
- Waste Management;
- Transportation;
- Spatial Planning and Land Use;
- Green Building and Built environment.

7.5.2 The scope of activities of West Rand’s Green Economy Strategy

Criteria rating options:

- 0- No GE theme covered
- 1- 3 or less GE themes covered
- 2- Between 4 & 6 GE themes covered
- 3- More than 6 GE themes covered

West Rand DM’s score: 3

Rationale:

In the short term, the WRDM Green IQ Strategy identifies four cardinal focus areas of activities:

- Energy security;
- Food security and conservation agriculture;
- Waste management and waste minimisation;
- Water management and water harvesting.

Though there are activities in all GE themes undertaken in the DM, there is a lack of information regarding the exact scope of GE activities being implemented by whom, especially with respect to how these activities differ from normal compliance-related activities (e.g. for energy, waste, air, biodiversity / land-use and water management).

7.5.3 Baseline information for West Rand's Green Economy Strategy

Criteria rating options:

0- No baseline data

1- 3 or less GE themes with good baseline data

2- Between 4 and 6 GE themes with good baseline data

3- More than 6 GE themes with good baseline data

West Rand DM's score: 1

Rationale:

To the best of our knowledge, WRDM has access to quality baseline information for some GE themes, namely air quality, biodiversity / wetlands / land use and waste, though some information might be outdated (most reports published in 2010).

Yet, overall, there is a lack of comprehensive, regularly collected / updated local GE baseline data, including costs and benefits of environmental / social inequalities (e.g. ecosystem services and dis-services supply and delivery mapping). This prevents the WRDM from fully understanding all GE issues, challenges and opportunities.

7.5.4 West Rand's Green Economy Strategy targets

Criteria rating options:

0- No GE target

1- 3 or less GE themes with clear targets

2- Between 4 and 6 GE themes with clear targets

3- More than 6 GE themes with clear targets

West Rand DM's score: 3

Rationale:

The over-arching WRDM Green IQ strategic goals are:

- To promote sustainable economic growth within the WRDM;
- To create green jobs in significant numbers in the local economy;
- To reduce unemployment and poverty within WRDM;
- To adopt sustainable natural resources consumption;
- To promote food security ;
- To implement intervention that will reduce carbon-footprint within the district;
- To preserve the natural environment for future generations;
- To engage in the rapid strategic analysis of existing value-chains and determine points of intervention;
- To initiate first-line generation projects and rigorous monitoring, evaluation of outcomes and attended adjustments, and effective communication thereof;
- To create a people-centred local economy that preserves the quality and carrying-capacity of the environment;
- To encourage inclusive participation in the evolution of the Green economy and;
- To promote innovation.

All GE themes have targets, mostly qualitative (i.e. undertaking an activity) but also some quantitative targets (e.g. % renewable energy of energy consumption).

7.5.5 Responsibilities / roles in transitioning to a GE

Criteria rating options:

- 0- Lack of clear roles / responsibilities regarding GE
- 1- 3 or less GE themes with appropriate or clear roles / responsibility and / or partnerships
- 2- Between 4 and 6 GE themes with appropriate or clear roles / responsibility and / or partnerships
- 3- More than 6 GE themes with appropriate or clear roles / responsibility and / or partnerships

West Rand DM's score: 3

Rationale:

Relatively clear roles for key stakeholders of each GE theme are identified in the WRDM Green IQ Strategy. However, Memorandums of Understanding between WRDM and Local Municipalities (Mogale City LM, Merafong City LM, Randfontein LM, Westonaria LM) remain at high, broad level (i.e. to facilitate cooperation) (WRDM, 2014).

Besides, there are many challenges with the integration of GE principles and objectives in the various LM departments and / or activities, including (but not limited to):

- The WRDM has an advisory / facilitating role while LM are implementing agents for most GE themes (apart from air quality monitoring) ; more cooperation would be needed between all stakeholders (DM, LM, national government departments, provincial government), including clear guidelines or requirements on who should do what.
- The fact that GE is a new concept, not well understood by all (e.g. lock-in situation, competition with other priorities, departmental hierarchy issues) ;
- The lack of clear baseline information for some GE themes (see 7.5.3) which precludes the definition of specific activities and associated responsibilities of involved parties for delivery.

7.5.6 Financial resources for transitioning to a GE

Criteria rating options:

- 0- Limited financial resources
- 1- Limited funds but financing strategy designed for bankable projects (both internal and external funds)
- 2- Between 1 and 3 GE themes with sufficient funds (both internal & external)

3- More than 3 GE themes with sufficient funds (both internal & external)

West Rand DM's score: 0

Rationale:

There is a lack of internal financial resources to transition to a GE and the Municipal Financial Management Act (MFMA) is a challenge to navigate towards leveraging private funds and green technologies (e.g. lowest costs offers always preferred). Funding needs are clearly highlighted in the Green IQ Strategy (2012), IWMP (2010) and Implementation Strategy for the Air Quality management Plan (2010). The Green IQ Implementation Protocol underlines the needs for the WDMR and LM to cooperate on fundraising / sourcing finance.

Currently, the WRDM is focusing on a limited number of small educational projects (e.g. jojo tanks for schools). There is a lack of information of what each LM are doing. Some studies on waste-to-energy projects have been mentioned to take place at the LM (no report found / obtained).

7.5.7 Human resources for transitioning to a GE

Criteria rating options:

0- Limited skilled GE human resources

1- 3 or less GE themes with sufficient human resources

2- Between 4 and 6 GE themes with sufficient human resources

3- More than GE 6 themes with sufficient human resources

West Rand DM's score: 0

Rationale:

There is a lack of internal human resources to transition to a GE at the WRDM (no staff member with GE skills). Human resources gaps / needs are also clearly highlighted in the IWMP (2010) and Implementation Strategy for the Air Quality management Plan (2010). The commissioning of all reports / plans to external consultants corroborates this view. The situation appears to be similar at the level of LM.

7.5.8 Performance Assessment & Monitoring for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

West Rand DM's score: 1

Rationale:

Though the WRDM IDP (2015) and SDBIP (2015) have a performance monitoring framework which covers some GE areas (i.e. which project has been completed for what amount spent), the lack of full baseline information (2.3) puts into question the design of the selected key performance indicators. The lack of financial (2.4) and human (2.5) resources also do. Besides, they are not aligned to the targets identified in the Green IQ Strategy (2012).

7.5.9 Transparency & Accountability for transitioning to a GE

Criteria rating options:

- 0- No performance assessment & monitoring
- 1- 3 or less GE themes covered
- 2- Between 4 and 6 GE themes covered
- 3- More than 6 GE themes covered

West Rand DM's score: 0

Rationale:

To the best of our knowledge, there is no public disclosure of tangible GE performance yet. This criteria is linked to the previous criteria (7.5.8) as accountability to WRDM's stakeholders would require communicating to them relevant sets of information on a regular basis. Among options to be considered are strengthening the GE / sustainability contents of the WRDM's annual reports (IDP / SDBIP), for instance assigning relevant GE key performance indicators to report on to each LM and relevant departments.

7.5.10 Resources

SANBI (2012) *Second Draft Bioregional Plan for West Rand District*. EcoSol GIS, 42p.

West Rand District Municipality (2010) *Implementation Strategy for the West Rand District Municipality Air Quality Management Plan*. SEF (Pty) Ltd., 33p.

West Rand District Municipality (2010) *Integrated Waste Management Plan (IWMP) 2012 – 2020*. SEF (Pty) Ltd., 209p.

West Rand District Municipality (2012) *Green IQ Strategy*. Dikeni Consultancy (Pty) Ltd. 170p.

West Rand District Municipality (2013) *Regional Economic Development Plan*. Kayamandi Development Services (Pty) Ltd, 203p.

West Rand District Municipality (2014) *Green IQ Implementation Protocol*. 38p.

West Rand Metropolitan Municipality (2015) *Integrated Development Plan Review. 2015/16*. 177p.

West Rand Metropolitan Municipality (2015) *Service Delivery and Budget Implementation Plan*. 24p.