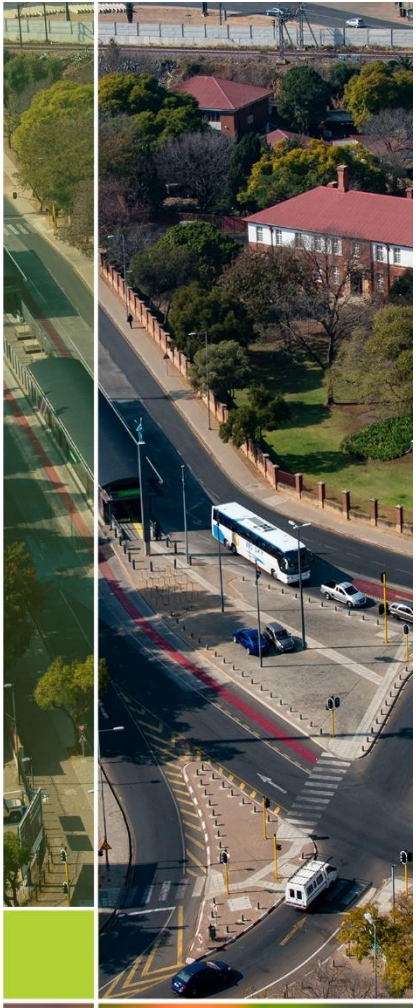

CITY OF TSHWANE

SUSTAINABILITY FINANCING STRATEGY FOR GREEN ECONOMY TRANSITION

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CITY OF TSHWANE
IGNITING EXCELLENCE

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Acronyms

DBSA	Development Bank of Southern Africa
AfDB	African Development Bank
BCFM	Base Case Financial Model
BOO	Build, Operate, Own
BOT	Build, Operate, Transfer
CAPEX	Capital Expenditure
CoT	City of Tshwane
CNG	Compressed Natural Gas
ESCO	Energy Service Company
DFIs	Development Finance Institutions
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EU	European Union
GEF	Global Environment Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GWh	Gigawatt Hour
IDC	Industrial Development Corporation
IDP	Integrated Development Plan
IPP	Independent Power Producer
KFW	Kreditanstalt Für Wiederaufbau (German Development Bank)
KWh	Kilowatt, a unit of power (1kW = 1 000 W) / hour
MRF	Material Recycling Facility
MW	Megawatt, a unit of power (1MW = 1,000,000 W)
NEF	National Empowerment Fund
PIC	Public Investment Corporation
PIM	Project Information Memorandum
PPA	Power Purchase Agreement
PV	Photovoltaic
SFS	Sustainable Financing Strategy
TFEC	Tshwane Food & Energy Centre
UN	United Nations

Executive Summary

A green economy uses appropriate technology and innovation to generate economic growth that brings inclusive benefits to society, while maintaining the ecology and natural resources upon which all life de- pends. A platform of good governance is required to guide and ensure that developments are sustainable. This was the broad focus for the Green Economy Strategic Framework, while the funding and mobilisation of resources, technology and projects desirable are the focus for the Sustainable Financing Strategy (SFS).

A green economy is characterized by substantially increased investments in sectors including renewable energy, low-carbon transport, energy-efficient buildings, clean technologies, improved waste manage- ment, improved water provision and sustainable agriculture. As City of Tshwane aims to drive investment in sustainable green development, an important aspect is to define the role of external capital as municipal finances alone will not be sufficient to close the funding gap, hence the need for leveraging. The SFS identifies financing approaches and instruments to support CoT green policies and projects to support the implementation of the green economy objectives of the city. **Chapter 1** describes the framework for the SFS.

SFS financing mechanisms are funds and instruments that are initiated, designed and or operated by the City of Tshwane to have a leveraging or catalysing effect by providing part of the total requisite funding as grant, equity, resources or assets in order to attract additional funding to invest in projects and initiatives with explicit green economy developmental impact objectives. The challenge to attract external invest- ment and investors, however, is significant and requires, amongst others, focus and prioritisation, which is outlined in **Chapter 2**. The SFS focuses mainly on the following seven key strategic areas:

- Sustainable waste management
- Sustainable water management
- Sustainable wastewater management
- Sustainable transport management
- Sustainable energy consumption
- Sustainable energy production
- Sustainable agricultural production.

The SFS is furthermore based on the following priorities:

- Focus on projects and proven technologies;
- Focus on CoT resources and assets;
- Focus on additional funding;
- Focus on job creation;

- Focus on revenue generation;
- Focus on integrated and complex cross-cutting projects; and
- Focus on proactive green project packaging.

Chapter 3 of the SFS outlines the entry points for mobilising resources: Selection of preferred funders, the Project Packaging Mechanism and an Effective Institutional Framework Mechanism. It is found that initially resource mobilisation shall focus on the main national green financing and development bank institutions, e.g. the Industrial Development Corporation (IDC), Public Investment Corporation (PIC), Land and Agricultural Bank of Southern Africa and Development Bank Southern Africa (DBSA). These financial institutions have been selected as first point of conduct for funding or preferred funders because they for example have substantial and sufficient green financial resources available and have in-depth knowledge of the South African municipal sector and a good understanding of the constraints and opportunities of South African municipalities.

In **Chapter 4** the green development opportunities are further prioritised and grouped into short term and medium term projects. The prioritisation is based on the following criteria: Accessibility of CoT assets and resources;

- Technological, practical readiness of the project and size;
- Internal alignment and readiness for project implementation
- Estimated City of Tshwane revenue generation potential;
- Cross-cutting inter-departmental projects;
- Development impact such as Job creation; and
- Additional external funding availability.

The short-term green projects (project expected to be financed within 1-2 years) are projects that are relatively low-hanging fruit projects characterised by high level of current preparedness and development, availability of tested and appropriate technology reducing project risk profile and availability of external funders. Cross-cutting inter-departmental projects are prioritised to un-lock opportunities and gain experience with this type of projects. Medium-term green projects (project expected financed within 3-4 years) are projects characterised by higher institutional complexity, lower level of preparedness, and lower-levels of interest from funders. The green economy projects selected for the CoT SFS (first round) are:

- The MRF roll-out project
- The Integrated Green CoT Fleet project
- The Waste-to-Energy (WTE) project
- The Sustainable Water & Wastewater Electricity Supply project
- The Energy Efficient CoT Lighting project

- The Renewable Energy PV Solar Power project.

Each project is summarised and described accordingly with the project brief, objectives, project location, project feasibility and estimated capital expenditure (CAPEX). In terms of the city economics theprojects are to generate an estimated income for the City of Tshwane, create jobs with potential external partner- ship and funding resource.

The six projects combined entails a total estimated Capex of around R1.1 billion for the City of Tshwane. This funding can mainly be sourced from both public and privates funding sources and projects can be implemented in partnership with the private sector parties (the CoT total Capex budget is R4.5 billion). These are sustainable projects with typical Returns on Investment (ROIs) of 5% to 20% and a sustainable, combined permanent job creation impact of more than 1,000. Substantial CoT additional income is expected during project operations.

Chapter 5 outlines the action plan for the implementation of the SFS. The action plan focuses on developing a proactive CoT approach to green project development and implementation. This involves the establishment of a centralised unit to proactively develop and package green projects for additional funding. The SFS furthermore prioritises the development of streamlined, efficient and professional internal processes and procedures for attracting additional financing.

The City of Tshwane, City Sustainability Unit in the Office of the Executive Mayor is the Central SFS Coordination Unit for the selected green economy projects requiring additional external funding. The green projects selected for central coordination by the CoT Sustainability Unit are listed in the present SFS in chapter 4. The list shall be updated semi-annually by the CoT Sustainability Unit in close cooperation with all relevant CoT departments. The key task of the CoT Sustainability Unit shall be to proactively and efficiently develop and package green projects for additional external funding. The CoT Sustainability Unit complements the existing CoT Project Management Units by focussing on selected complex, inter-secto- rial and cross-cutting SFS projects with good potential to attract additional external funding. The CoT Sustainability Unit shall start the SFS process by providing reliable background information and data. This include: Detailed CoT resource assessments for the selected focus areas; Detailed contract opportunity assessments for private sector partnering; and Detailed project prospects for the selected short-term pro- jects.

The development of streamlined, efficient and professional internal CoT processes and procedures for attracting additional external funding is achieved through the implementation of three key project packaging steps, each of which contains a number of key documents: Step 1 include gathering of key overall information and data requirements for the green project. Once collected the information shall be presented in a Council Submission (Green Project Brief) for

Council Approval; Step 2 includes gathering of key detailed approvals and documents for the green project. Once collected the information shall be presented in a CoT Project Packaging File together with the Council Resolution.; and Step 3 includes gathering of all documents required by external financing institutions for green project finance. Once collected the information shall be presented in a Project Information Memorandum File (PIMF).

1 Framing the Strategy

It is estimated that half the world's population resides in cities, with cities responsible for well over 70% of global carbon emissions and global energy consumption. As urbanization increases, it is projected that in the coming decades hundreds of trillions of dollars will be invested in urban infrastructure development, upgrade, use and maintenance.

Adequate infrastructure investment is critical to support cities like City of Tshwane to economic growth, competitiveness and attractiveness. The CoT is among the growing cities in South Africa with high potential of increased carbon emissions if sustainable infrastructure investments are not prioritized. These investments need to be leveraged to ensure the creation of sustainable cities, which reverse the trend of escalating emissions.

The CoT has embarked on a transition to a green economy with the CoT having developed a Green Strategic Framework which guides the efforts of the CoT towards sustainable development and to a green economy trajectory. The green economy offers new economic path to sustainable development, where the spheres of technology, economy, society and ecology are embedded within each other and are underpinned by systems of good governance and innovation.

The important aspects regarding scaling up the implementation of the green economy is to consider the ability and capacity of the CoT to finance the necessary infrastructure required, as financing sustainable infrastructure is seemingly a huge challenge amongst municipalities and cities in South Africa. It is with the development of Sustainability Financing Strategy (SFS) that the CoT seeks to unlock potential investments for the green economy through sustainable infrastructure. The Sustainability Financing Strategy provides a strategic guide for low-carbon; equitable economic development that can enhance transition to a green economy and facilitate a sustainable development path by identifying suitable financing instruments and approaches the CoT can follow to access capital.

A green economy offers a new economic path to sustainable development, where the spheres of technology, economy, society and ecology are embedded within each other and are underpinned by systems of good governance (see Figure below). In other words, a green economy will use appropriate technology and innovation to generate economic growth that brings inclusive benefits to society, while maintaining the ecology and natural resources upon which all life depends. A platform of good governance is required to guide and ensure that developments are sustainable. This is the broad context for the development of the Green Economy Strategic Framework, while the finance mechanisms, new sustainable technology and projects desirable are the focus for the Sustainability Financing Strategy (SFS).

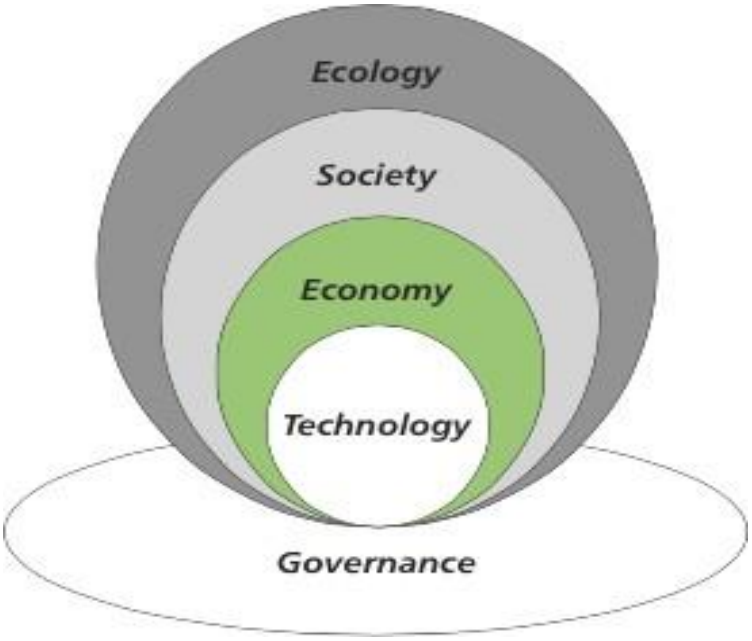

Figure 1: Green Economy Framework

A green economy is characterized by substantially increased investments in sectors including renewable energy, low-carbon transport, energy-efficient buildings, clean technologies, improved waste management, improved water provision and sustainable agriculture. As CoT aims to drive investment in a more sustainable greener development, an important aspect is to define the role of external capital as municipal finances alone will not be sufficient to close the funding gap, hence the need to leverage external funding mechanism.

The SFS identifies financing approaches and instruments to support CoT's green policies and projects, as a supporting tool for mainstreaming environmental sustainability practises and enhanced implementation of the IDP, contributes to the development and introduction of practical and realistic external financing mechanisms for the CoT green economy projects and support the implementation of the green economy objectives of the CoT.

The financing mechanisms identified through the SFS are funds and instruments that are designed, identified by the CoT to have a leveraging or catalysing effect from external funding institutions and private companies (both and local and international), to invest in projects and initiatives with explicit green economy developmental impact objectives. This financing instruments can be in a form of grants, equity and possible debt to enhance what the city already have as capital expenditure budget for IDP projects and others funded through grants from National Treasury and from own revenue.

Beyond financial leverage and risk sharing, the external funders and the private sector can add value by providing expertise and technical know-how, realising efficiency gains and long-term growth. Thus, such engagement of the private sector and external funders for green development requires the CoT to be efficiently structured and mainstreamed to foster leveraging and efficiency gains.

The challenge to attract external investment and investors is significant, and Development Finance

Institutions (DFIs), such as IDC, DBSA, AfDB and EIB, often become important external stakeholders as these offers long-term green financing which then provide opportunities for e.g. private equity funding or matching grants. Other key financial sectors, such as pension funds, commercial banks and corporate financiers, may also be instrumental in attracting external funding. The CoT can thereby supports its own resources and assets to plan and implement new funding initiatives to drive sustainable development through the mobilization of external capital.

The CoT SFS is based on the result of an analysis and stakeholder participation process. This process focused on new approaches to be undertaken by the CoT. In view of the key attributes and design features of sustainable funding mechanisms, the CoT SFS, amongst others, contributes to the following:

- **Provide** the basis for a clear mandate and investment strategy for key stakeholders on the green economy and provide transparency and certainty for private sector investors willing to invest in the city.

- **Alignment with national, provincial and municipal policies to reduce risk.** It is important that financing mechanisms are clearly linked to supporting national, provincial and municipal legislation. Funders of sustainable development require supportive policies and a stable regulatory framework. A strategy based on these policies will have a greater chance of attracting funding, as risks associated with co-investing with the municipality will be reduced

- **Identify barriers and market failures, and select focus sectors and projects.** The strategy is instrumental in overcoming specific barriers to financing sustainable development. Likely financing gaps that may be targeted include long term debt or equity suitable for utility scale renewable energy, integrated food & energy, water infrastructure, energy efficiency or waste to energy projects to mention but a few

- **Create partnerships**. The significant strategic investments needed for the transition to a green economy will only be actualised through the development of effective partnerships between government, state-owned enterprises, development finance institutions, non-governmental organisations and the private sector. A transition to a green economy will require that the CoT increase the scope and diversity of partnerships

- **Provide sustainable project ROIs (Return on Investment).** To make the strategy sustainable, the strategy is based on providing opportunities for sufficient financial return on project investment for funding to be made available

- **Create linkages with external funding markets**. In establishing external funding initiatives, CoT shall be attuned to the possibilities for attracting domestic as well as international external capital. Seeking co-investment partners will cultivate relationships with the investment community to facilitate inbound investment from e.g. Development Financing Institutions (DBSA, IDC, PIC, etc.), national and international green funds, infrastructure funds, pension funds, etc.

- **Build a strong, centralised commercially oriented municipal team.** A strong centralisedteam established with the competencies and expertise to deliver on the SFS mandate.

International and national Sustainability Financing Strategy Experiences*. Cities around the world have great potential for making a significant impact on the green economy and sustainable growth (examples include energy efficient buildings, renewable energy, efficient distribution of clean water and waste, green transport schemes, congestion charging etc.), and since the Rio Earth Summit in 1992 a large number of cities have made considerable progress toward developing sustainability programmes. Cities in many ways have led the green transition. Globally, the Renewable Energy and Energy Efficiency sector is the most popular sectors for green development and is easier to finance with new forms of green finance. Below is provided a number of national and international examples that has inspired the development of the CoT SFS.*

Hong Kong *has invested heavily in green transport networks. Hong Kong's policy approach to land-use and transport combines extensive investment in public transport infrastructure and services with complementary land-use regulations in order to tightly integrate urban expansion at high-density public transport nodes and along linear rail-based corridors. Establishing a comprehensive public transport network requires significant public investment or land value capture and can prompt high-value land development. Hong Kong's integrated property development and railway construction functions provided an effective way of funding large-scale public transport infrastructure, and the MTR Corporation rail plus property business model is an example of having infrastructure financed through capturing increased land-values on surrounding publicly-owned land. The Hong Kong owner operator of the railway / transit system (MTR) was able to recoup the cost of the rail investment from property development, even turning in a profit. This ensured that through the property development private investors were attracted and today 23% of the previous fully public company's shares were told to private investors on the stock exchange. The introduction of private shareholders ensured a strong market discipline and made the MTR more entrepreneurial and market oriented. Hong Kong has also set up a 300 million HK dollar Pilot Green Transport Fund to subsidize technologies that that would ensure emission of less gases or air pollutants. The Hong Kong government also buy electric vehicles when replacing their old fleet, and private companies assisted by expanding the charging network for electric vehicles.* ***Sao Paulo*** *in Brazil similarly has used the land value capture model to finance key infrastructure.*

Berlin, Germany, *has used a Public Private Partnership model to structure the delivery of the solar energy infrastructure. The awareness created by the publicity and promotion for the initiative has attractedmany investors. The municipality simply adds buildings on an online database, indicating the potential area available for construction of photovoltaic panels. Private developers can then develop the sites and thereafter sell the electricity to the City and private customers. Berlin also assists residential customers and offers them incentives for installing solar panels, in what is reported to be Europe's largest residential solar project generating 25,000 kWh each year. The city received funding from the European Regional Fund to develop a tool called the Solar Atlas. The atlas maps*

all the buildings in the city and advises residents of the potential of roof to be a viable solar site, taking into account slope and geographic orientation.

***Emfuleni Municipality in Gauteng** boasts a successful PPP with a water efficiency system for the Sebokeng/Evaton area. The PPP is a Build-Own-Operate (BOT) performance contract where the private party gets paid based on the water efficiencies or savings achieved from the system. This R10 million rand project is reported to have paid for itself in six months, and the municipality saved money not only from reduced water loss and pumping costs, but also through less upfront investment. Although most green projects include a higher than usual degree of uncertainty, the risks associated with the investment are diversified by joint partnerships. Green PPP's will need to overcome or integrate the requirement for flexibility to allow for speedy responses to changing and new technologies. Although the flexibility may generate costs to the transaction, without this flexibility to incorporate technological innovation during the life of a contract, PPP's loose comparative advantage to traditional forms of finance.*

***The City of Johannesburg** has earmarked R1.6 billion from a Green Bond largely for projects in the Renewable Energy and Energy Efficiency sector. The City specifically indicated that the money from the 10-year bond will be used to finance green initiatives such as the Bio Gas to Energy Project, the Solar Geyser Initiative, dual fuel buses as well as other unspecified projects that reduce greenhouse emissions and contribute to a resilient and sustainable city. The City of Johannesburg is not the only city with reported success in the uptake of green bonds. **Gothenburg in Sweden** did in 2014 take full advantage of this new area of funding their green economy transition. Gothenburg City's $76 million green bond will be used to fund transportation, energy, water and waste management projects.*

***Belo Horizonte, Brazil, and eThekwini** has attracted external funding through the Clean Development Mechanism (CDM). This, however, required going through tedious and complex administrative processes. Without seed funding however it is not likely for the CDM projects to be affordable to many developing world cities. The CDM process in particular has the added challenge that it takes years before the city receives payments through the mechanism. Belo Horizonte elected to invite private companies to tender for operations at the landfill whilst eThekwini own the landfill and also run the operations.*

The Development Finance Institutions such as the Development Bank of Southern Africa (DBSA) and the Industrial Development Corporation (IDC) in South Africa has become important sources of project finance for green infrastructure and has in recent years financed a number of green projects in cooperation with municipalities.

It is clear that cities are important investors in green infrastructure in the sectors where they derive most of their revenue e.g. transport, water, waste and buildings. This provides cities with a potential to green their financial instruments. Whilst the Financing of green infrastructure is important to facilitate a mean- ingful translation to low carbon economies in cities, it is also evident from the experiences from other cities that it takes very strong, determined and committed leadership to successfully attract funding for and implement these green projects.

2 Strategic Financing Strategy (SFS) Priorities & Focus Areas

The Strategy is based on the following definition, focus areas and prioritisations.

2.1 Sustainability Financing Strategy Definition

The City of Tshwane identifies with the United Nations Environment Program definition of a green economy, an economy that result in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. The two developmental outcomes that the green economy refers to are growing economic activity in the green industry sector and a shift in the economy as a whole towards cleaner industries and sectors with a low environmental impact compared to its socio-economic impact.

Taking from the definition of Green Economy as defined UNEP, this Sustainability Financing Strategy is meant to design and identify financing mechanism for City of Tshwane's green economy projects and thus the definitions of such financing mechanism are defined as: *Finances from multiple, additional financing instruments (such grants, equity, debt / loans), partnership models to leverage and any other resources to advance the green economy in the CoT.*

2.2 Sustainability Financing Strategy Priorities for funding and other resources

2.2.1 Projects and proven technologies

The SFS focuses on prioritised viable sustainability areas that advance the green economy for which welldefined projects can be established and developed for external financing. The SFS therefore does not focus on the wide range of other mechanisms, such as green procurement, legislation, prohibitions, fees, penalties and revenue collection, which can be designed and utilised to substantially support the introduction of a green economy. The strategy focuses mechanisms of funding and resources for possible projects which address green economy development, while at the same show viability, readiness and are marketable for external funding.

2.2.2 City of Tshwane resources and assets

The SFS focuses on prioritised viable sustainability areas that advance the green economy for which the CoT possesses valuable and marketable resources and assets, which can be utilised for green economy transition (resource beneficiation). These resources are both existing physical resources such as waste, sludge, landfill gas, land, sun, wind, water, wastewater, etc., and future resources such as future savings in consumption, e.g. water or electricity (savings are a resource as they can be valued and sold).

2.2.3 Prioritize additional funding mechanism

The SFS focuses on prioritised viable sustainability areas and projects that advance the green economy and which are fully or partially financed by sources outside of the normal CoT budget to leverage the existing CoT budget for green economy developments. SFS projects therefore do not focus on the wide range of green sustainability projects funded solely by the CoT's own resources.

2.2.4 Focus on job creation

Apart from the inherent focus of the SFS on sustainable green economy development, the SFS in particular prioritises the creation of viable green projects that substantially contribute to poverty eradication and job creation. This strategic focus seeks to ensure job creation in all sectors of the green economy. The CoT aims to facilitate the creation of 50,000 new jobs while it aims to continuously attract investment to the city.

2.2.5 Project potential for revenue generation

The SFS in particular prioritises the creation of viable green projects that contribute to additional revenue generation for the CoT. This strategic focus seeks to contribute to sustainable long-term CoT financial management.

2.2.6 Focus on integrated and complex cross-cutting projects

The SFS in particular prioritises viable green integrated projects that enhance the impact through interlinked inter-sectorial projects. This can be exemplified in the use of waste for green electricity production, which requires a combined and coordinated effort from several of the CoT's Departments. The SFS focuses on managing the often complex, cross-cutting and interdepartmental aspects of green economy development.

2.2.7 Proactive green economy project packaging

The SFS focuses on developing a proactive CoT approach to green project development and implementation. These involve to proactively developing and packaging green projects for external funding (and not just wait for random external funding options). The SFS in particular prioritises the development of streamlined, efficient and professional internal processes and procedures for attracting external financing from external investors.

2.3 Sustainability Financing Strategy Focus Areas for project implementation

The transition to a green economy requires that the CoT utilise its competitive advantage to develop a resource-efficient, low-carbon and inclusive SFS that is appropriate for CoT. The SFS specifically focuses on the seven areas below in order to enhance knowledge of the financial resources, funds and vehicles available for green-related external investment... This assists in leveraging the available economic and

financial resources in order to attract revenue on green economy projects and empower the CoT to enter investment agreements.

2.3.1 Sustainable waste management

The National Environmental Management: Waste Management Act (NEMWA) calls for the CoT to implement a waste hierarchy, the ambition to minimize waste generated, and where unavoidable, recycle and reuse waste or turn waste into energy. Given that the CoT's landfills are filling up, sustainable waste management needs to take place in a progressive manner that seeks to reduce waste generation and divert waste from landfill sites. The CoT recognises the contribution made by the private sector in the separation of waste at source and will expand this to support sustainability while promoting the creation of jobs through recycling. The CoT also recognises the need to utilise the still unutilised resources avail able at the existing landfill sites.

Resources. The CoT manages a large amount of domestic and industrial waste, which mainly is deposited at the main landfills of Kwaggasrand, Soshanguve, Onderstepoort, Hatherley, Ga-Rankuwa, Bronkhorstspruit, Temba and Garstkloof.

Collection, transportation and disposal is for 60 % contracted by the CoT to private sector service providers covering businesses and door-door domestic waste collection in all townships, some suburbs and recently incorporated municipal areas, while 30 % is covered by CoT operations using own or leased fleet (remaining 10 % covers security complexes and some businesses). The CoT collects service charges and covers the costs of the service in the whole value chain that ends with disposal and presently does not leverage on the latent value of waste: Waste as an input resource in other production processes, such as e.g. alternative sources of revenue as waste to energy project.

Opportunities. The waste resources create opportunities for externally funded green projects, green employment and the development of local green enterprises. Such enterprises relate to waste diversion and beneficiation in activities such as composting of organic waste, energy production through technologies that enable the conversion of waste-to-energy or the recovery of landfill gas. Waste management therefore provides a number of opportunities for green economy facilitation, in the short term mainly including:

- Waste minimisation, reuse and recycling (waste as asset)
- Waste to energy (waste as asset)
- Landfill gas (waste as asset).

2.3.2 Sustainable water management

Among its service delivery mandates the City of Tshwane is responsibility for water coming mainly from surface resources. About 80% comes from Rand Water, mainly the Vaal Reservoir, fed by the Vaal and Wilge Rivers, the remainder from local springs, boreholes and the Rietvlei Reservoir. Total production is about 7 million m^3 per day. About 81 % of households have in-plot piped water, about 16% piped water

via community standpipes, while about 3% have no access to piped water supply. Approximately more than 150,000 informal households in the CoT require water supply upgrading.

The CoT has established a water management strategy with the objectives to quantify existing water loss and compare with acceptable benchmarks, list all main water loss and water demand management aspects, rate the performance of the CoT, provide methods to improve on water loss and demand management and create green jobs.

Resources. The CoT services water to more than 3 million people with around 600,000 house connections through a 741 km bulk pipeline, 164 reservoirs, 42 water towers, 10,677 km of pipes, more than 260 pressure reducing installations, 133 pumps stations and 3 water treatment works. The CoT is water-scarce as both surface water and groundwater resources almost are full developed, hence the city had water restrictions to ensure water usage is monitored and accounted efficiently.

Opportunities. Water management provides opportunities for green economy facilitation. These mainly include:

- Increased utilization of own water resources (savings as asset)
- Reduction of electricity consumption at pump stations and treatment plants (savings as asset)
- Reduction of water loss (savings as asset).

2.3.3 Sustainable wastewater management

Responsibility for wastewater management lies with the CoT, though some functions including sewerage operation and maintenance and management of wastewater treatment plants in some districts, are or have been contracted to private sector operators. The CoT services around 1.8 million people or around 450,000 households with wastewater discharge connections. About 71 % of households in the CoT have flush toilets connected to sewerage, about 2% have flush toilets connected a septic tank, while the remaining 27% use a latrine, bucket or no toilet system. About 150,000 informal households in the CoT require wastewater service upgrading. Ten wastewater treatment plants are in operation including Rietgat, Babelegi, Klipgat, Temba and Sandspruit wastewater treatment plants. The CoT sewage infrastructure and wastewater treatment systems, including the power consumption and supply systems are ageing. Some of the effluent from the wastewater plants, e.g. the Rooivaal plant, is supplied to adjacent farmers as irrigation water.

The CoT wastewater treatment objectives include enhancing the ability of all municipal wastewater treatment plants to attain Green Drop Certification, and to reduce the energy demand of wastewater treatment plants through waste-to-energy initiatives and the use of renewable energy.

Resources. Wastewater treatment incurs substantial process energy costs before the wastewater safely can be released into the environment. However, the wastewater sector also entails resources that can be utilised. These include mainly sludge produced at the wastewater treatment plants and the cleansed

wastewater.

Opportunities. Wastewater management provide a number of opportunities for green economy facilitation. These include:

- Reduction of energy consumption at wastewater pump stations and wastewater treatment plants (savings as asset)
- Energy production (biogas) (sludge as asset)
- Agricultural irrigation (cleansed wastewater as asset).

2.3.4 Sustainable transport management

The transport sector has great potential for green economy development in order to reduce its carbon footprint. The construction of the Tshwane Rapid Transit System and the implementation of a city-wide non-motorised transport infrastructure mark the initial steps the CoT has taken to contribute to a low carbon future. Programmes such as Shovakalula, the roll out of cycling lanes and bicycles in townships, are programmes that are employed to improve mobility of the citizens while reducing the carbon footprint. The CoT has also recognized the importance of the efficient movement of people as a means of improving social equity, health and resilience of the CoT through the introduction of non-motorised transportation within the inner city. The CoT via its fleet procurement and lease agreement has control of an even wider range of transport vehicles from buses, trucks and cars covering all municipal sectors.

The CoT green transport objectives include sustainable mobility and connectivity through improvement in the enabling infrastructure and access to greener transportation options in CoT, enable the use of biofuels and electric transport options that offer low-carbon mobility, reclaim municipal space for walking and nonmotorised transport, expand mass transport systems, and increased use of natural gas and electric vehicles in the CoT fleet with the replacement of petrol and diesel with biofuels.

Resources. The CoT resources of relevance for external funding, include mainly CoT own large fleet (buses, taxis, trucks, heavy duty vehicles, cars, etc.), which currently mostly are running on diesel and petrol but can be retrofitted to green transport modes.

Opportunities. Transport management provides a number of opportunities for green economy facilitation. These mainly include:

- Conversion or retrofitting of municipal fleet to electricity or green fuels (savings as asset).
- Procurement of new Electric Vehicle
- Procurement of CNG propelled buses

2.3.5 Sustainable energy consumption

Energy efficient programmes providing a greener energy consumption profile are crucial for ensuring green growth and the CoT actively supports this move. The goal is to significantly reduce the impact of conventional energy generation on the environment in line with national energy efficient targets.

Demand side management measures have been employed in the CoT including the roll-out of more than 15,000 solar water heaters in Mabopane, Ga-Rankuwa, Winterveldt and Nellmaphius, the roll-out of smart electricity meters, retrofitting of municipal buildings with energy efficient technologies and the retrofitting of street lights through the installation of 3,075 energy efficient street lights. The two largest users of electricity in municipal buildings are lighting and air conditioning. These two combined account for more than half of the total building energy use. Lighting retrofits have the highest potential for energy savings, at around 15 % with air-conditioning around 2 % and water heating 1 %.

The CoT is actively involved in increased opportunities and investment in energy efficiency to reduce the existing energy demand and carbon footprint. The CoT green energy consumption objectives include the retrofitting and refurbishments of buildings and construction of new buildings for improved energy and materials efficiency, more energy efficient street lights, green retrofitting in selected municipal and other buildings to demonstrate the financial savings and other benefits of green buildings, improved metering of electricity and reduced losses from the transmission and distribution of electricity and fuels, improved demand side management by expanding CoT solar water heater programme, promoting the wide-spread use of low-energy lighting and improved building insulation.

Resources. Energy consumption in CoT buildings and other owned infrastructures is the key resource the city possesses, which can be converted to an asset through a more efficient use of energy and thereby resulting in savings.

Opportunities. The retrofitting of existing buildings can yield savings in energy use and the costs of such retrofitting are returned through long-term operational savings with reasonable payback periods. Green energy consumption provides a number of opportunities for green economy facilitation. These include:

- Retrofits and refurbishment of city owned buildings (Energy efficient buildings) (savings as asset)
- Energy efficient street lights and traffic in CoT (savings as asset).

2.3.6 Sustainable energy production

The energy sector has made a significant contribution to the global cumulative greenhouse gas emissions and new energy technologies are being rapidly deployed in an effort to reduce carbon emissions and develop a more sustainable economy. The CoT actively supports the move to alternative energy sources to significantly reduce the impact of conventional energy generation in line with the national target of 10,000 GWh of electricity generated from alternative energy resources within the next decade. The upgrade of the CoT coal power stations, particularly the Rooiwal coal power station, is planned to be turned

into a more sustainable power station by introducing the use of new combustible fuel mix compound consisting of coal waste, biomass waste and mineral and manufacturing waste. The City also piloted the first municipal hydropower station to explore the use of water to generate power and supplement the existing power supply within the City.

The CoT green renewable energy objectives include tackling the challenges of financial, institutional and regulatory barriers, which prevent the widespread implementation of renewable energy technologies and methodologies to generate electricity. Innovations of electricity generation can be embarked on using renewable energy fuels such as biogas and landfill gas from sewage and waste at municipal treatment facilities and landfill sites.

Resources. The City has several resources available for alternative energy production. These include land and buildings for solar power generation, land for energy crops, water for mini-hydro generation, organic waste and wastewater for biogas production and waste for energy generation.

Opportunities. Energy production provides a number of opportunities for green economy facilitation. These include:

- Installation of PV solar systems on land and CoT buildings (rooftops) for electricity production (land and buildings as asset)
- Biogas to electricity production from wastewater treatment plants using sludge (sludge as asset)
- Hydro power generation from water supply lines (savings as asset)
- Biogas to electricity production from organic waste (waste as asset)
- Biogas from energy crops to energy production (land as asset)
- Electricity production from landfill waste (waste as asset)
- Electricity production from landfill gas (waste as asset).

2.3.7 Sustainable agricultural production

Sustainable agriculture involves agricultural production and practices that utilise natural products and processes and is powered by green energy sources. The agriculture sector forms a critical and often undervalued component of the green economy. Sustainable agriculture aims to create food security, sustainable livelihoods and resilient ecosystems. Sustainable agricultural practices that can contribute towards developing a green economy include those that can assist in reducing the financial and carbon-intensive costs of key agricultural inputs. The CoT actively promotes the up-take of green, sustainable agriculture, e.g. through the Tshwane Food Market, and the Moringa Tree and Centre of Agro-Ecology Production projects, which all motivates communities to provide food and biomass for local markets. The CoT sustainable agricultural objectives include to develop incentives to actively promote sustainable agriculture and agro-ecology, rehabilitate currently degraded common lands and promote their sustainable use by communities and small-scale farmers, promote small-scale organic farming and farm

produce,
establish community agro-projects, local food markets and green packing houses and processing facilities that add value to local produce, and to promote urban and semi-urban agriculture.

The CoT prioritises the concepts of urban and semi-urban agriculture and agro-processing, particularly with the growing challenges the CoT faces with urban sprawl and land degradation. While the appropriate agricultural development of rural areas is vital for the green economy in the CoT, there is also significant potential for agriculture to be developed in the urban and semi-urban areas.

Resources. The CoT has access to and owns substantial parcels of agricultural land. Much of the land areas in the CoT have good potential for agricultural production due to its temperate climate and adequate rainfall, which suit a wide range of agricultural crops and animal husbandry.

Opportunities. Sustainable agricultural production provides a number of opportunities for green economy facilitation. These include:

- Biogas production for electricity, from organic waste which including livestock and food produce waste (organic waste as asset)
- Energy crop production for biogas for electricity or Compressed Natural Gas (CNG) production (land as asset)
- Establishment of integrated Food & Energy Centres (agro-villages) comprising central management and a network of small-scale BEE satellite farming systems (land as asset)
- Establishment of the Tshwane Agropolitan City, which comprise the full agricultural value chain, green energy for internal use and external sales, and sustainable CoT planning in rural andsemiurban areas (land as asset).

3 The SFS Resource Mobilization Mechanism

The Sustainability Financing Strategy provides the overall priorities, mechanisms and procedures for financing prioritised CoT green projects, and thereby provides direction and confidence to external funders in relation to political support, access to CoT resources and technology related risks of their investments. The goal of the strategy is to blend external private and public finance with CoT resources and opportunities, advances technology deployment at scale and drives green economic development to deliver an inclusive, green economy transition. The totality of the SFS and resource mobilization mechanism ispresented in Figure below.

With the ever increasing demands and opportunities for green economy transition, the CoT will not have sufficient funds for the significant investments needed to transition into a greener economy. Thus an effective resource mobilisation is necessary to unlock additional funding to implement innovative solutions and green technologies aimed at increasing resource efficiency for the city. With regards to the scenario of CoT as explained under strategic areas of SFS, resources owned by the city can be utilised in effective ways to catalyse additional funding for a green economy transition. There are financial mechanisms available from national government, such as the Green Fund or the Jobs Fund, through the Development Bank of Southern Africa that facilitate investment in the green economy. This funds can be leveraged when projects are well structured and are commercial viable to this funds or any other investor.

The entry points for mobilising resources are: the Project Packaging Mechanism, Effective Institutional Framework Mechanism followed by Selection of preferred funders. Before addressing these in detail in chapter 4 and 5, the following provides a frame of what is required in these three areas.

3.1 SFS Project Packaging Mechanism

The CoT will have to prioritise the development of streamlined, efficient and professional internal processes and procedures for attracting additional funding. This needs to be achieved through the implementation of three key project packaging steps, each of which contains a number of key documents, namely Council Approval, internal project packaging and project packaging for additional external funding (for details, see chapter 5).

However, two general key aspects of the project financing mechanism require attention, namely compliance and alignment with standard CoT financial and procurement rules, regulations (MFMA) and utilisation of the broad range of funding options for partnering with the private partners.

3.1.1 Compliance with City of Tshwane rules and regulations

The CoT shall secure that all green SFS projects are developed and implemented in accordance with standard CoT procurement rules and guidelines.

The CoT shall apply:

- The process outlined in Section 78 of the Municipal Systems Act to decide on the best institutional and financial model / mechanism to support the green economy and guide implementation and establish contracts for the green development project
- The Public Finance Management Act, 1999 (Act 1 of 1999) as the overarching framework governing public sector procurement, which states that fair, equitable, transparent, competitive and cost effective procurement system must be maintained
- The Municipal Finance Management Act 2003 (Act 56 of 2003) that governs supply chain management at local government level
- The Tshwane Integrated Environmental Policy developed with the aim of implementing environmentally sustainable green procurement policies to ensure that all CoT departments take the green environment into consideration in carrying out their respective roles and responsibilities.

The Municipal Systems Act (Act 32 of 2000) establish the Rights & duties of municipal councils: (S.4) ensures that municipal services are provided to the local community in a financially and environmentally sustainable manner, (S.11) Provide municipal services to local community or appoint service providers per S.78. Assess alternative service delivery mechanisms: Technology alternatives and viability, Funding: Internal/external operation, repairs, maintenance (skills, etc.); Impact on jobs/ job creation. (S.78) Criteria and process for deciding on mechanisms to provide municipal services (3) If a municipality decides in terms of subsection (2)(b) to explore the possibility of providing the service through an external mecha- nism it must— (b) assess the different service delivery options in terms of section 76(b), taking into ac- count (i) the direct and indirect costs and benefits associated with the project, including the expected effect of any service delivery mechanism on the environment and on human health, well-being and safety; (ii) the capacity and potential future capacity of prospective service providers to furnish the skills, expertise and resources necessary for the provision of the service; (iii) the views of the local community; (iv) the likely impact on development and employment patterns in the municipality; and (v) the views of organised labour.

In utilizing additional external funding for green projects, the CoT shall ensure that all aspects of a Municipal Systems Act S.78 assessment, which include all aspect of funding, staffing, financial impacts and risks and economic implications, is in place.

Furthermore, as green projects often require and use authorization (and zoning approval), the CoT shall, in accordance with the Municipal Finance Management Act (MFMA), ensure that council approvals are in place, and that required and approved regulatory requirements, including Environmental Impact Assessment, are in place.

In general, external financed green projects are complex and require a good understanding of legislation and good planning once the Council has approved that it shall undertake the change based on good assessment of risk and viability.

3.1.2 Utilizing a range of options for private sector partnership

Contracting of private sector partners for the implementation of external funded green projects may happen through a number of different contractual forms, from basic supply and civil works contracts to the more complex BOO (Build Own Operate) contacts, see figure below. Other contracts include technical assistance contracts, sub-contracting, management contracts, leasing and BOT (Built Operate Transfer) concessions. All these contract types are commonly used by the CoT and may also be used for green projects. Some of these contract types are briefly outlined below and examples of utilisation for external funded green projects provided.

In general, the contracting of private sector partners for implementation of external funded green projects, provide for an intelligent sharing of risk and responsibilities between the CoT and the private sector partners. The CoT, in general provides access to assets and resources, while the private partners bear the risks in relation to finance, technology, operation and outputs.

The CoT will need to be in close contact with municipalities undertaking similar external funded green project to share experiences, information and methods for private sector cooperation.

The following are typical forms of contracts the CoT will or can utilise for Green SFS projects:

Private partner involvement	Contract forms	Contract duration
Higher	BOO contract	*Longer*
	BOT contract	
	Leasing contract	
	Management contract	
	Service Provider contract	
Lower	Supply & Civil Works contract	*Shorter*

The Build Own Operate (BOO) option e.g. involves a private company granted the right to develop, finance, design, build, own, operate and maintain a green SFS project. The CoT may provide limited funding but the private-sector partner assumes the risks associated with planning, constructing, operating and maintaining the project for a specified time period and the private company retains ownership of the facility. At the end of the specified period, the private-sector partner may transfer ownership to the funding organization, either freely or for an amount stipulated in the original contract, in which case the contract

is labelled BOOT (Build Own Operate Transfer). Build Operate Transfer (BOT) involves a private company that is granted the right to build and operate a facility for a period of time. The transfer of the ownership to the CoT takes place afterwards.

Another possible method for the funding of green saving projects is the shared energy saving approach (ESCO, Energy Service Company). The ESCO shared energy approach has been applied in some municipalities and requires clarity and transparency regarding CoT assets and methodology for calculation and payment of savings. The buildings and infrastructure to have energy efficient measures implemented upon is owned by the CoT and supplied with CoT electricity. Payback times are often in excess of three years necessitating longer-term contracts.

The following are examples of projects on which the above contract forms have been used by various municipalities in South Africa:

***BOO contracts** have been used e.g. in the City of Johannesburg for a Waste to Energy Project (biogas to electricity) at Johannesburg Water's Northern Works Waste Water Treatment. The project included upgrading sludge digestion facilities (by-product biogas) to reduce the electricity consumption by replacing the Eskom supplied electricity. The biogas power plant produces 1.1 MW of power for the treatment plant. The BOO contract included a 7 years operation and maintenance (O&M) contract. BOO contracts have also been used by eThekwini for its waste to energy and landfill gas to electricity projects. Power Purchase Agreements (PPAs) have also been used as a BOO type of contract. PPAs has been used in the CoT for the Bronkhorstspruit Biogas Project (4 MW On-Grid), which includes a 10 year Power Purchase Agreement (PPA) between a private generator and user and a wheeling agreements with Eskom and the CoT. The PPA mechanism has also been used by uMhlathuze Voluntary Market Landfill Gas Project (0,4 MW On-Grid), Nelson Mandela Bay Municipality Voluntary Market Scheme (65 MW On-Grid), City of Cape Town Voluntary Market Darling Wind Farm (4,8 MW On-Grid). Similar to the PPA mechanisms is municipal on-grid contracts between the municipality and embedded energy generator. eThekwini was the first municipality to establish a formal application process for grid-tied energy generation and currently have six companies in operation. This includes co-generation projects, e.g. NCP Alcohols, where 2,8 MW of electricity is generated of which 2,4 MW is used up on site with 0,4 MW being sold back to the grid. **BOT contracts** have been used or planned by e.g. City of Johannesburg and Drakenstein for landfill gas to electricity projects and Mogale City and Buffalo City for solid waste gasification projects. **ESCO contracts** for energy efficient lighting have been used or planned by e.g. the City of Cape Town.*

3.2 SFS Institutional Framework Mechanism

The CoT SFS stimulates the green economy by enhancing the delivery of green public services and infrastructure and by providing the right institutional environment for green projects. The SFS builds organisational structures, human capacity and competence to encourage the development and implementation of green projects as highlighted above. The SFS furthermore contributes to the removal of institutional barriers and provide efficient institutional avenues for additional external investments and partnerships for sustainability / green economy.

The key issues regarding improved attraction and management of additional external funding for green

economy projects are **proactively** addressed in this strategy by establishing the following:

- A centralised unit for development and management of external SFS funding applications
- Decentralised project initiation with active project development support from the centralised unit functioning as internal CoT transaction advisor
- Proactive addressing the need for professional and timely project packaging for external funding institutions.

These issues are elaborated in the Action Plan in Chapter 5.

3.3 Selection of Preferred Funders

Leverage funding of green projects can be received from a number of different sources in a number of different forms primarily, grants, loans and mixed grant-loan schemes.

Grant Funding. At one end is grant funding from national government sources, such as the Municipal Infrastructure Grant, Urban Settlements Development Grant, Public Transport Infrastructure and Systems Grant, Electricity Demand-side Management Grant, Municipal Disaster Grant and Regional Bulk Infrastructure Grant, etc., or from international multilateral or bilateral sources, such as United Nations, European Union, Department for international Development (DFID), GiZ, Danida, Norfund, etc.

In general grant-funding opportunities can be characterised by a high degree of reactiveness and they often rely on luck. When national or international green grants become available they will be pursued, and if lucky, received. The CoT will lead the application process. Typically, grant opportunities are available only for a short period, and are normally over-subscribed therefore requiring good political or proposal writing skills.

Loan Funding. At the other end is loan funding from (i) national sources, such as Industrial Development Corporation (IDC), Development Bank of Southern Africa (DBSA), or International Finance Corporation (IFC), National Empowerment Fund (NEF), etc. or traditional banking and financing institutions such as Nedbank, Standard Bank, Investec, Old Mutual, Rand Merchant Bank, etc. or from (ii) international multilateral or bilateral sources, such as the German, Chinese or French development banks, or multilateral banks such as World Bank, Global Environment Fund (GEF), European Investment Bank (EIB), African Development Bank (AfDB), etc.

Loan-funding opportunities can be characterised by a high degree of pro-activeness and technical and project finance know-how in application. National or international loans are typically permanently available and can be pursued and received continuously (some financing institution have rounds or windows for applications). The loan funding institutions, due to the complexity and capabilities, capacity and resources required, will typically prefer a private sector partner to lead the application process (on behalf of the CoT). The funding institutions, however, naturally also prefer that the green projects are properly anchored within the municipality and within the municipality's political and legal framework.

Many of the external loan-financing institution have preferences for municipal anchored green projects for political (development banks public service development responsibilities) and technical reasons (municipalities control the resources for green development). However, these funding institutions, for interlinked and complex reasons, often find it difficult to develop and implement municipal led green projects. These issues include capacity and capabilities required for loan application and loan monitoring, political and legal preparedness for loan approval (especially if funding is provided in cycles or windows), selection of private partners, etc.

*An emerging external green loan financing mechanism is the use of **green bonds**. Green bonds are a variant of general bonds that allow public sector institutions to issue guarantees for bonds that raise money for e.g. environmental purposes, particularly long-term investments in building, energy, transport and industrial infrastructure. The advantage of the green bonds is their backing by the full faith and credit of the municipality issuing the bonds, rather than the underlying projects. However, issues persist in se- curing that the bonds only service specific targeted green projects with a transparent revenue and pay- back scheme.*

Several of the funding institutions mentioned above also provide mixed grant / loan funding for green developments, e.g. in the form of grant financing of project feasibility studies and project development and loan financing of project implementation.

Preferred (initial) funders. With the SFS stressing proactive action, large-scale utilisation and implementation of the CoT resource-base for green developments and the urgency in the need to generate green investments, developments and jobs, the CoT cannot afford only to be reactive or waiting for luck (in the case of grant funding opportunities), but need to proactively pursue funding opportunities as a strategic choice for resource mobilisation. This means that the SFS in the main focuses on the opportunities to attract additional funding and investments primarily through loans or mixed grant/loan funds, and on having private sector partners to lead the application process. This of course, does not mean that grant funding opportunities shall not be pursued aggressively by the CoT when and where they arise.

The resource mobilisation scope for the SFS therefore includes national and international external funding institutions such as:

- IDC, DBSA, PIC, NEF and other local development banks
- Nedbank, Standard Bank, ABSA and other local banks
- Investec, Old Mutual, and similar local investors
- German, Chinese, French and other development banks
- World Bank, IFC, GEF, EIB, AfDB, and other international banks.

Each of these funding institutions has their own specific, specialised and often highly complicated application and approval procedures in place. For this reason, the CoT SFS initially focuses on few of these financing institutions in order to gain internal experience and not overstretch its capacity.

Initially the resource mobilisation shall focus on the main national green financing and development bank institutions, e.g. the IDC, PIC, Land Bank and DBSA. These financial institutions have been selected as Preferred Funders for the initial SFS projects because, *inter alia,* they:

- Have substantial and sufficient green financial resources available for green funding
- Have in-depth knowledge of the South African municipal sector and a good understanding of the constraints and opportunities of South African municipalities
- Often provide on-lending from international green funding institutions (e.g. GEF, KFW, etc.)
- Have similar development objectives to the development objectives of the CoT
- Have their own (complicated) loan application and approval procedures and therefore will provide a good starting point for learning and gaining experience in working with financial institutions.

Through focussing initially on the above financing institutions the CoT also wants to align with and support the efforts of the national development banks to catalyse and support green development in South African municipalities.

IDC, PIC, Land Bank and DBSA provide loan funding and in some instances grant funding for municipal green projects. However, they all experience difficulties, of many reasons but mainly institutional capacity, in providing green funding and loans directly to municipalities, and they prefer projects that are led by a private sector actor in close cooperation or backed by a municipality and the resources the municipality make available for the green project, e.g. the extraction of gas from the landfill site. The national DFIs of DBSA, PIC, Land Bank and IDC provide the opportunity for scale and continuity in funding and funding applications.

In the event that green project funding is not available or attainable from these institutions, the CoT shall seek specific green project funding through alternative national and international green financing institutions. The CoT shall continuously screen the financing market for alternative loan opportunities. If, for example, specific green funds for specific green projects become available, e.g. specific funding for biogas plants, the CoT and the private partner shall proactively pursue such opportunities.

4 SFS Prioritized Projects

Potential areas and resources that can enhance the transition to a green economy and deliver multiple green economy benefits were outlined in the preceding chapters. Selection of the green projects to be included in the SFS is based on the overall SFS strategy and priority areas (see chapter 2). In chapter 2 an overall screening of potential green projects were undertaken based on CoT sector objectives, available resources and opportunities. In this Chapter the opportunities are further prioritised and grouped into short term and medium term projects. Various prioritised CoT developmental aspects were also considered such as environmental, economic, social and financial factors.

The prioritisation of green projects is further based on the following criteria:

- Accessibility of CoT assets and resources
- Technological and practical readiness of the project
- Project size (R50 million and above)
- Internal alignment and readiness for project implementation
- Estimated CoT revenue
- Cross-cutting, inter-departmental projects
- Job creation impact
- Additional external funding availability.

The short-term green projects (project expected financed within 1-2 years) are projects that are relatively low-hanging fruit projects characterised by high level of current preparedness and development, availability of tested and appropriate technology reducing project risk profile and availability of external funders. Cross-cutting inter-departmental projects are prioritised to un-lock opportunities and gain experience with this type of projects. Medium-term green projects (project expected financed within 3-4 years) are projects characterised by higher institutional complexity, lower level of preparedness, and lower-levels of appetite from additional external funders.

4.1 Zooming-In on Short-Term Green SFS Projects

Based on the above criteria, the following short-term projects have been included in the SFS as projects that shall receive initial attention and internal resources for project packaging. Other project may be included based on semi-annual assessment of progress, internal resource for project packaging and external funding availabilities (see also chapter 5).

This section includes a short project brief description of each prioritised project followed by an overview of all prioritised short-term green projects in relation to selection criteria, type and financial and social impact characteristics. The project brief are kept at a generalised level, and are expected to be concretised and detailed further in the Council Submission for Resolution and further processing (see chapter 5).

The green economy projects of the CoT SFS (first round) are:

- The MRF roll-out project
- The Integrated Green CoT Fleet project
- The Waste-to-Energy (WTE) project
- The Sustainable Water & Wastewater Electricity Supply project
- The Energy Efficient CoT Lighting project
- The Renewable Energy PV Solar Power project.

The above projects combined entails a total estimated CAPEX of around R1,1 billion green investment funding in the CoT by mainly additional external funding sources and implemented in partnership with the private sector parties (the CoT total CAPEX budget is R4,5 billion). These are sustainable projects with typical Returns on Investment (ROIs) of 5-20 % with combined permanent job creation impact of more than 1,000. Substantial CoT additional income is expected during project operations. The CoT income from Project Packaging fees of these projects (which can be worked into the external funding cost) is estimated at approximately R12 million.

4.1.1 The MRF roll-out project

The project builds on the following CoT asset: Waste minimisation, reuse and recycling (waste as asset) (see chapter 2).

Project brief. This project involves the roll out of multi-purpose Material Recycling Facilities (MRFs), composting plants, construction and demolition waste processing facilities in further three CoT regions. The facilities consist of the following components: An MRF with recyclables processed from a free bag system distributed by the CoT to residents; a composting facility where green waste is shredded and turned into organic compost; and a Construction & Demolition facility where building rubble is recycled into aggregates. The project roll out builds on the experiences gained from the first MRF plant at Kwaggasrand Landfill Site, which was established in cooperation with a private sector company.

Objectives. The project roll out supports the transition to a green economy in line with the Tshwane Green Economic Strategic Framework to reduce pollution, carbon footprint reduction of waste disposed at the landfill sites and support the CoT decision to partner with the private sector on green economic interventions to significantly reduce capital costs and enhance service delivery.

Other key project characteristics include:

- **Project location**. The MRF facilities shall be located at three strategic CoT locations
- **Project feasibility.** The MRF facility concept, business case and project development is based on the similar identical project developed and implemented in the CoT. Detailed feasibility study, business case and due diligence were undertaken for this project before being approved and financed.

The ROI for MRF facilities is typically around 5-10 %, which is just about sufficient to attract external loan funding

- **Estimated CAPEX costs.** It is estimated that the capital requirement from external sources for the MRF project is around R200 million
- **Estimated CoT income.** The city will only have indirect income / saving from the project. A CoT Project Packaging fee of min. R0,5 million shall be included in the funding model
- **Estimated job creation.** It is estimated that the roll out project will create around 550 permanent jobs
- **Method for external partnering.** The project shall use a similar external partnering method as utilised for similar facilities in the CoT
- **Potential external funding source.** The project shall utilise existing CoT funding experience for partnering with private sector partners for the roll out project
- **Potential for up-scaling.** If required, further facilities may be included at later stages.

4.1.2 The Integrated City of Tshwane Green Fleet project

The project builds on the following CoT assets: Conversion or retrofitting of municipal fleet to green fuels (savings as asset); Wastewater treatment plants sludge for biogas to electricity production (sludge as asset); Land for energy crop production for biogas for CNG production (land as asset); Landfill gas for bio-CNG production (waste as asset); Agricultural irrigation (cleansed wastewater as asset) (see chapter 2).

Project brief. The Integrated CoT Green Fleet project provide an outstanding opportunity to develop an integrated CoT flagship project that demonstrates the impact of the Governments Renewable Energy, Green Transport and Rural Development Policies. The project concerns the development, operation and maintenance of three large-scale 3 MW (200,000 GJ) bio-CNG plants located at the Tshwane Food & Energy Center (TFEC), a landfill site and a wastewater treatment plant. The bio-CNG plants shall be fully integrated with the agricultural development of the TFEC. The three bio-CNG plants shall produce an annual bio-CNG output of around 600,000 Gj, which shall provide green fuel to approx. 1,500 vehicles in the CoT transport fleet.

The feedstock for the bio-CNG plants shall be provided by sorghum production on 1000 ha municipal land, sludge from the selected wastewater treatment plant, and landfill gas from the selected landfill. The TFEC shall provide additional feedstock to the wastewater and landfill biogas plants to secure sustainability of these plants.

Objectives. A key objective of the TFEC is to secure that small-scale BEE emerging farmers become sustainable through strategic partnership, market access, application of the secondary producer buyingselling organization and long-term sustainability through linkages to renewable energy production. The TFEC builds its approach on international successful experiences of combining farming and renewable energy production with rural economic development. The TFEC apply and link renewable energy production to sustainable economic development in poor farming areas through supporting small

scale BEE farmer ownership and shareholding of renewable energy projects, such as bio-CNG to green fuel projects. It shall be stressed the project contribute to the diversification of the CoT energy mix away from fossil fuel based energy to renewable and clean sources for the CoT fleet. It shall furthermore be stressed that operation of the bio-CNG plants and sharing of profit from the sale of bio-CNG shall be closely linked to creating sustainable BEE small-scale farmers at the TFEC.

Other key project characteristics include:

- **Project location**. One bio-CNG plant shall be located at the Tshwane Food & Energy Centre near the Rethabiseng Township. The TFEC is located on municipal land in the prioritized green belt of industries and green settlements in the East (the Green Zoning Policy of the CoT) adjacent to the Ekandustria Estate and the Rethabiseng Township. To this shall be added 1,000 ha allocated for sorghum production. The two other bio-CNG plants shall be located at the CoT most feasible landfill and wastewater sites. A green fuel filling station shall be linked to each bio=CNG plant. A central filling station shall be locate at a central location in the CoT for CoT fleet green fuel filling.

- **Project feasibility.** The Tshwane Integrated Rural Development, Bio-CNG & Green CoT Fleet project concept, business case and project development is based on a project developed and implemented for the Lukhanyiso Food & Energy Centre, Welkom, Free State, which also contains a large-scale bio-CNG plant. Detailed feasibility studies, business case developments and external Due Diligence were undertaken for this project before being approved and financed by the Green Fund, DBSA. The ROI for bio-CNG to green fuel projects is typically around 15-20 %, which is sufficient to attract external loan funding. IDC has funded a few biogas-to-electricity projects in South Africa, which typically have a lower ROI compared to bio-CNG projects

- **Estimated project costs.** It is estimated that the CAPEX requirement for the Tshwane Integrated Rural Development, Bio-CNG & Green Fuel project is around R280 million.

- **Estimated CoT income.** The income for CoT from the integrated project relates to rental of CoT agricultural land for sorghum production, around 1000 ha and fleet petroleum savings (approx. estimated at 10%). A CoT Project Packaging fee of min. R2.5 million shall be included in the funding model.

- **Estimated job creation.** It is estimated that the Tshwane Integrated Rural Development, Bio-CNG & Green Fuel project will create around 250 permanent jobs.

- **Method for external partnering.** The project shall be linked to the existing TFEC and the Tshwane Farmers Producers Association.

- **Potential external funding source.** The project shall be packaged for IDC funding. IDC has previously funded biogas projects. Alternatively, funding shall be sourced from DBSA or other international DFIs focusing on integrated development projects.

- **Potential for up-scaling.** The project can be scaled up to include biogas extraction from the remaining un-utilised wastewater treatment plants and landfills. New Food & Energy Centres may also be established.

4.1.3 The Waste-to-Energy (WTE) project

The project builds on the following CoT asset: Waste to energy (waste as asset) (see chapter 2).

Project brief. This project involves the implementation of three 2 MW Waste-to-Energy projects at three landfill sites in the CoT. Waste sources suitable for the Waste-to-Energy process is municipal solid waste containing e.g. plastics, tyres, plants, food and meat. After Waste-to-Energy processes are completed the discharge shall be disposed of along with normal land-fill waste.

Objectives. The project supports the transition to a green economy, shall generate electricity from waste, result in a reduction of waste disposed at the landfill sites and support the CoT decision to partner with the private sector on green economic interventions.

Other key project characteristics include:

- **Project location**. The Waste-to-Energy facilities shall be located at three suitable landfill sites in the CoT.

- **Project feasibility.** The Waste-to-Energy concept is based on similar projects developed and implemented in South Africa. Project feasibility depends on the PPA offtake agreement with the CoT, why a pre-feasibility study focusing on off-take agreement shall be undertaken for this project before being approved for CoT project packaging (see chapter 5). The off-take agreement shall preferably be kept at cost-neutral levels for the CoT. A ROI for Waste-to-Energy facilities at around 10
  % is typically sufficient to attract external loan funding.
- **Estimated CAPEX costs.** It is estimated that the capital requirement from external sources for the CoT Waste-to-Energy project is around R150 million.
- **Estimated CoT income.** The project shall be income and cost neutral for the CoT. A CoT Project Packaging fee of min. R2.5 million shall be included in the funding model.

- **Estimated job creation.** It is estimated that the CoT Waste-to-Energy project will create around 120 permanent jobs, mainly for operation, maintenance and security.

- **Potential method for external partnering.** The project may use the IPP / PPA method for external partnering combined with a CoT wheeling agreement.

- **Potential external funding source.** The project may be funded by from a number of different financial institutions, including national DFIs and banks.

- **Potential for up-scaling.** The project can easily be up-scaled to include both expansion at the selected sites and new landfill sites.

4.1.4 The Sustainable Water & Wastewater Electricity Supply project

The project builds on the following CoT asset: Reduction of energy consumption at wastewater and water pump stations and treatment plants (savings as asset) (see chapter 2).

Project brief. This project involves supplies of cost-effective, sustainable electricity to CoT pump stations and treatment sites that can make the CoT larger sites independent of the national electrical supply grid. The technologies to be utilised can be natural gas, PV solar, biogas, etc., and shall be determined by the selected Independent Power Producer(s) (IPP) for the project.

Objectives. The CoT provides 7 million m^3 per day of high quality potable water to CoT citizens and centralised wastewater treatment service for about two million people. The processes are unavoidably highly electrical-energy-intensive, and it is critical that energy must be continuously available. To ensure sustainable electrical supply, the CoT shall include independent power producers (IPPs) for dedicated supplies of cost-effective, sustainable electricity to CoT pump stations and treatment sites that can make the CoT larger sites independent of the national electrical supply grid.

Other key project characteristics include:

- **Project location** The power plants shall be located at strategic key electricity consumptions pump and treatment stations in the CoT.

- **Project feasibility** The Sustainable Water & Wastewater Electricity Supply project concept is based on similar project developed in the Country, e.g. by Randwater. Detailed feasibility study, business case and due diligence shall be undertaken. Due to cost-effectiveness requirements,the ROI for alternative energy supply systems will only be around 5-10 %, which still due to size and strategic importance will be sufficient to attract external loan funding.

- **Estimated CAPEX costs** It is estimated that the capital requirement from external sources for the first phase of the Sustainable Water & Wastewater Electricity Supply project is around R325 million.

- **Estimated CoT income** The income for CoT shall be estimated during a prefeasibility study. A CoT Project Packaging fee of min. R2.5 million shall be included in the funding model.

- **Estimated job creation.** It is estimated that the project will create around 75 permanent jobs, mainly for operation, maintenance and security.

- **Method for external partnering.** The project may use the IPP / PPA method for external partnering combined with a CoT power wheeling agreement.

- **Potential external funding source.** The project may be funded by from a number of different financial institutions, including national DFIs and banks.

- **Potential for up-scaling.** The project shall cover key waste and wastewater electricity consumption locations, which can be extended to include all electricity supply and treatment requirements at later stages.

4.1.5 The Energy Efficient CoT Lighting project

The project builds on the following CoT assets: Energy efficient lights in CoT buildings and streets (savings as asset) (see chapter 2).

Project brief. This project involves the comprehensive installation of energy efficient lighting throughout the CoT. It is estimated that around 250,000 lights shall be replaced. The electricity savings achieved shall be shared between the CoT and the private partner. The energy efficient technologies involved shall amongst others include LED and CFL options.

Objectives. The energy efficient lightning project roll out shall cover the replacement of all CoT light thereby supporting the transition to a green economy in line with the Tshwane Strategic Priorities. The project shall reduce pollution, the CoT carbon footprint and support the CoT decision to partner with the private sector on energy efficient green economic interventions.

Other key project characteristics include:

- **Project location**. Energy efficient lighting shall be installed for all CoT street lights and buildings to create scale and feasibility for the project.

- **Project feasibility.** The energy efficient lighting project is based on similar identical projects developed and implemented in South African municipalities, e.g. funded by the Department of Energy. Project feasibility depends mainly on the scale of applications, e.g. around 250,000 lights, and the savings sharing agreement with the CoT. A pre-feasibility study focusing on this agreement shall be undertaken before being approved for CoT project packaging (see chapter 5). ROI for largescale energy efficient lighting projects are typically around 10-15 %, which is sufficient to attract external loan funding.

- **Estimated CAPEX costs.** It is estimated that the capital requirement from external sources for the Tshwane energy efficient lighting project is around R75 million.

- **Estimated CoT income.** The project will create substantial yearly savings for CoT. A CoT Project Packaging fee of min. R1.5 million shall be included in the funding model.

- **Estimated job creation.** It is estimated that the CoT energy efficient lighting project will create around 30 permanent jobs, mainly for maintenance and replacements.

- **Potential method for external partnering.** The project may use the Energy Service Company (ESCO) method for external partnering.

- **Potential external funding source.** The project may be funded by from a number of different financial institutions, including national DFIs and banks.

- **Potential for up-scaling.** The project can easily be up-scaled to include further CoT lights at later stages. The goal is to replace all the CoT lights to come energy efficient.

4.1.6 The Renewable Energy PV Solar Power project

The project builds on the following CoT assets: Land and buildings (roof tops) for PV solar to electricity production (land and buildings as asset) (see chapter 2).

Project brief. This project involves the establishment of a 5 MW PV solar power project in the CoT on municipal buildings (roof-tops) and or municipal land. The electricity produced shall be sold to the CoT through a Power Purchase Agreement (PPA). The PV solar plant facilities shall consist of solar panels, inverters and mounting structures.

Objectives. The project roll out supports the transition to a green economy in line with the Tshwane Strategic Priorities and Tshwane Green Economic Framework, shall reduce pollution and the CoT carbon footprint, and support the CoT decision to partner with the private sector on renewable energy green economic interventions.

Other key project characteristics include:

- **Project location**. The PV solar panel facilities shall be located at available, suitable and strategic locations in the CoT.

- **Project feasibility.** The PV solar concept is based on similar projects developed and implemented in South

Africa. Project feasibility depends on the PPA offtake agreement with the CoT. A prefeasibility study focusing on off-take agreement shall be undertaken for this project before being approved for CoT project packaging (see chapter 5). The off-take agreement shall preferably be kept at cost-neutral levels for the CoT. A ROI for PV solar facilities at around 10 % is typically sufficient to attract external loan funding.

- **Estimated CAPEX costs.** It is estimated that the capital requirement from external sources for the Tshwane PV solar project is around R90 million.

- **Estimated CoT income.** The project shall be income and cost neutral for the CoT. A CoT Project Packaging fee of min. R1.5 million shall be included in the funding model.

- **Estimated job creation.** It is estimated that the Tshwane PV solar project will create around 50 permanent jobs, mainly for operation, maintenance and security.

- **Potential method for external partnering.** The project may use the IPP / PPA method for external partnering combined with a CoT wheeling agreement.

- **Potential external funding source.** The project may be funded by from a number of different financial institutions, including national DFIs and banks.

- **Potential for up-scaling.** The project can easily be up-scaled to include further PV solar projects at later stages.

4.1.7 Project overview

The tables below provide comparative overview of all prioritised short-term green projects in relation to selection criteria, type and financial and social impact characteristics.

Table 1: Financial projections and impacts

Prioritised projects	CoT assets	Technical& practical readiness	Project size	Internal implementation readiness	CoT revenue generation	Cross cutting complexity	Job creation	External funding availability
MRF roll-out project	Waste	H	M	H	L	L	H	L
Integrated Green Fuel project	Multiple	H	H	H	M	H	H	H
Waste-to-Energy (WtE) project	Waste	H	M	H	M	L	L	H
Sustainable Water & Wastewater Electricity Supply project	Water	M	H	H	M	L	M	M
Energy Efficient CoT Lighting project	Buildings	H	L	M	H	L	L	M
Renewable Energy PV Solar Power project	Land, buildings	H	M	H	M	L	L	M

Selection criteria H: high, M: medium, L; low

Prioritised projects	CAPEX R millions	ROI %	Permanent job creation	Potential funding source	Potential partnering
MRF roll-out project	250	5-10	550	Multiple	Private project developer
Integrated Green Fuel project	280	15-20	250	IDC or similar	Private project developer
Waste-to-Energy (WtE) project	150	10	120	IDC or similar	IPP
Sustainable Water & Wastewater Electricity Supply project	325	5-10	75	DBSA or similar	IPP
Energy Efficient CoT Lighting project	75	10-15	30	Multiple	ESCO
Renewable Energy PV Solar Power project	90	10	50	IDC or similar	IPP
Total	1,089	5-20	1,075		

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4.2 Zooming-Out on Medium-Term SFS Projects

The potential medium-term green economy projects identified in the SFS for the CoT (second round) are:

- Water supply for hydro power generation (savings as asset)
- Agricultural & other organic waste, including livestock and food produce waste, for biogas for electricity production (organic waste as asset)
- Energy efficient buildings (savings as asset)
- Increased utilization of own water resources (savings as asset)
- Reduction of water loss (savings as asset)
- Establishment of Tshwane Agropolitan city (land as asset).

Additional green projects shall be included in the medium term list of SFS projects as opportunities arise, see also chapter 5.

5 Sustainability Financing Strategy Action Plan

The City of Tshwane shall implement the following to achieve a proactive and streamlined approach to green economy facilitation by the attraction of additional funding, upon approval of Strategic Financing Strategy.

The SFS focuses on developing an integrated approach to green project development and implementation. This involves the establishment of a centralised unit to proactively develop and package green projects for additional funding (not just wait for random additional funding options). The SFS furthermore prioritises the development of streamlined, efficient and professional internal processes and procedures for attracting additional financing.

5.1 The City of Tshwane: City Sustainability Unit (CSU)

The City of Tshwane has established the City Sustainability Unit (CSU) in the Office of the Executive Mayor as the central coordination and advisory unit for all the green economy and climate change action projects.

The green projects selected for central coordination by the City Sustainability Unit are listed above and the list shall be updated semi-annually by the City Sustainability Unit in close cooperation with all relevant City departments. The key task of the CoT Sustainability Unit shall be, in close cooperation with the relevant sector departments, to proactively develop and package green projects for additional external funding.

The CSU shall have the requisite capacity and permanent staff with project packaging and financing expertise to prepare projects and structure them for external funding. This shall provide the CoT with its own internal transaction advisors for project packaging, resulting in increased process efficiency to attract additional external funding. Furthermore, this dedicated capacity shall ensure that the CoT is proactive in acquiring external funding with the resultant ability as well as capacity to accurately align and streamline project preparation, packaging and development with funding cycles and opportunities of external funders. Depending on project complexity, the capacity of the unit may be enhanced by external consultants to assist the unit with project preparation. The CSU does not exist in isolation with the Project Management Unit in the city but complements it. The CSU is mainly focussing on selected complex, inter-sectorial and cross-cutting sustainability projects with potential to attract additional external funding.

The CoT Sustainability Unit shall start the sustainability project financing process by providing reliable background information and data for further detailing of the strategy. This include:

- Detailed resource assessments for the selected focus areas for the city
- Detailed contract opportunity assessments for private sector partnering

- Detailed project prospects for the selected short-term projects, including Project Information Memorandums and Base Case Financial Models (see below).

5.2 Project Packaging for Additional Funding

The CoT Sustainability Unit will lead the process of packaging projects to be marketed to attract both public and private funding. There first has to be a City of Tshwane approval process of projects to go ahead and this shall be achieved through the implementation of the following three project packaging steps, each of which contains a number of key documents.

5.2.1 Step One Council Approval

Reference to The Municipal Systems Act (Act 32 of 2000) stipulates that: The Council shall secure to: (S.11) Provide municipal services to local community or appoint service providers per (S.78): Criteria and process for deciding on mechanisms to provide municipal services (3) if a municipality decides to explore the possibility of providing the service through an external mechanism.

Step 1 include gathering of key overall information and data requirements for the green project. Once collected the information shall be presented in a **Council Submission (Green Project Brief)** for **Council Approval**. The two key documents for this first step in the project packaging process therefore are: Council Submission (Green Project Brief) and a Council Resolution.

In order to obtain the Council Resolution, a Council Submission (Green Project Brief) shall be prepared to contain, as a minimum, the following sections:

- *Green Project Brief:* A brief description of the project including the technology to be used, key inputs and outputs as well as the anticipated impact of the project
- *Objectives of the Project:* A summary of the key objectives of the project and alignment to the CoT priorities and Tshwane Green Economic Strategic Framework.
- *Project Linkages:* The various components and the linkages of the project, including the different partners or stakeholders and the contributions they bring to the project
- *Project Location:* A description of the exact location, including details on resource or land ownership, current land use, zoning status etc.
- *Project Feasibility:* This section includes result of feasibility studies and assessments in respect of the project, including assessment of the likelihood of the project attracting external funding. An indication of the Return on Investment (RoI) must be made
- *Estimated internal and external project costs:* Assessment of required internal and external cost of the project
- *Estimated Income to the CoT:* An indication of the sources and amount of expected income that the CoT

shall derive from the project

- *Estimated Job Creation:* An estimate of the number of jobs to be created by the project, indicating direct or indirect and temporary or permanent jobs created
- *Green Sustainable development benefits:* Details of the contribution of the project in relation to key green economy and carbon-resilience developments, such as greening, sustainability, carbon reductions, poverty reduction, etc.
- *Method for external partnering:* The methods for establishing a partnership between the CoT and an external partner for the development of the project, indicating the roles of each partner
- *Proposed external funding source:* Assessment of potential and preferred external funder(s). Alternative funding sources shall be listed
- *Key project packaging dependencies:* The submission shall list all outstanding dependencies to be un-locked for the project to be able to attract external funding. This includes e.g. EIA Record of Decision (ROD) approvals, approvals for electricity and water connections, approval of method to partner with an external private partner, off-take agreements, site development plans, zoning approvals, land title or land lease issues, etc.
- *Recommendations:* The submission shall be concluded with recommendations centred on obtaining the Council Approval to proceed with the project and obtain specific approvals in relation to the key dependencies.

The Council Resolution shall fundamentally contain:

- Approval to proceed with the project and seek external funding
- Approval of method for partnering with private sector partner
- Approval of project packaging development costs
- A list of approvals that must be obtained by the CoT both internal and external (regulatory approvals like EIA authorisation, Waste or air quality licenses, zoning approval, water and electricity approvals, site development plan etc.)
- Specific policy and objective linkages and recommendation for the project.

Sample content of Council Resolution. *The following is recommended regarding the green fuel project:*
- That the Council approve the green fuel project for external funding; that if external funding is not ap- proved by an external funder within three years of the Council approval, the Council approval is withdrawn.
- It is further recommended that the CoT *Sustainability Unit shall provide internal resources for and pro- ceed with project packaging for external funding of the green fuel project, which shall include: - Selection a private sector partner to cover the development, external funding mobilisation and implementation of the green fuel project; - An off-take agreement between the private partner and the CoT for the transport*

and conversion of the green fuel source production to green fuel for the CoT fleet. The off-take agreement shall preferably be kept within the cost-limits of petroleum procurement, but if not possible be kept at a maximum cost increase of 10 % compared to petroleum procurement; - A land lease for approx. 1000 ha of CoT land for green fuel feedstock production; - A CoT project packaging budget of R300,000 be allo- cated, which if the project is approved for external funding, shall be recovered in the financing package by CoT Project Development costs of R1,5 million; - Approval provided for use of wastewater effluent for the feedstock production under condition that the land made available are close to available effluent dis- charge points; - Approval is provided for electricity and water connections for the green fuel project; and

- Site development plan for the green fuel project.- It is finally noted that the green fuel project shall be anchored in the adjacent township, to the highest possible degree, in relation to employment and job creation to create an important sustainable impact, community upliftment and local social responsibility profile of the project; and be completed within a 24-month period after approved external funding.

5.2.2 Step Two Internal Project Packaging

The Municipal Systems Act (Act 32 of 2000) establishes the Rights & duties of municipal councils:(S.11) Once Council has resolved that alternative is viable, feasible, sustainable: Engineering & Concept design, Final design, Infrastructure & Equipment – bid specifications, tender (Supply Chain Regulations: procure goods & professional services transparently); Plans approval; EIA of proposed infrastructure development; Land – Council approval if Council-owned, rezoning application; Hazard Assessment (OHS Act MHI Regs), if energy production: Independent Power Producer application/ authorization; Permit/ license/authorization to operate.

Step 2 includes gathering of key detailed approvals and documents for the green project. Once collected the information shall be presented in a **CoT Project Packaging File** together with the Council Resolution. The key document output for this second step in the project packaging process therefore is the CoT Project Packaging File.

The CoT Sustainability Unit shall prepare the CoT Project Packaging File, which shall contain all required approvals and documents as specified in the Council Approval. The File shall be prepared to contain e.g. the following:

- Council Resolution
- EIA Record of Decision (ROD) or Environmental Authorisation
- Zoning compliance
- Land title and land lease
- Off-take agreement (if off-taker is CoT)
- Private Partner appointment (the CoT Sustainability Unit shall select the private sector partner in line with tried and tested legal compliant procedures and methods (either by the CoT or other municipalities)
- Other legal and financial compliance documents.

Obtaining all required approvals is a fundamentally important step in project packaging, which effectively makes the project attractive to private sector technical and funding partners with interest in developing and financing the project. Experience with external funding applications involving municipalities has shown that most projects are delayed or not implemented because the Council Resolution and other approvals either did not materialise or did not materialise in time. The CoT Sustainable Unit shall engage internally with the Council and CoT departments and externally with relevant authorities to obtain these approvals, typically before a private partner is contracted or mandated to take the project for external financing.

5.2.3 Step Three Project Packaging for Additional Funding

Step 3 includes gathering of all documents required by external financing institutions for green project finance. Once collected the information shall be presented in a **Project Information Memorandum File**. The first key document output for this third step in the project packaging process therefore is the Project Information Memorandum File, which is submitted to the financing institution.

The external partner shall prepare the Project Information Memorandum File, which shall contain all required approvals and documents as specified by the funding institution. The File shall be prepared to contain e.g. the following:

- Project Information Memorandum (PIM). The PIM contains information about the project, including overview of the project, detailed technical and financial information, project participant companies, teams, joint ventures, etc., information on all required project direct agreements (suppliers, Engineering, Procurement, Construction (EPC) contractor, operation & maintenance (O&M) contractor, legal advisor, etc.), project schedule, detailed project finance, etc.
- Base Case Financial Model (BCFM). The BCFM excel document contains excel sheets with all project calculations, costs, expenditures, income, projections, Return on investment (ROI), etc.
- Signed off-take agreement(s)
- All approvals and documents contained in the Project Packaging File
- Other legal documents, including company registration documents, etc.

The submission of the Project Information Memorandum File to the financing institution will, if accepted, typically be followed by a Due Diligence Process, which is an intensive and resource demanding process. The Due Diligence Process will require additional and detailed Green project information regarding various technical, legal, market and financial aspects of the project. The private partner is responsible for Due Diligence process management and submission of additional information. Normally additional 30-50 additional technical, financial, legal and marketing documents and report will be produced and submitted in this phase before the project is accepted (or rejected) for external finance.

If the funder is satisfied with the information provided and is convinced of the viability of the project and return on investment, the funder will issue the Terms for funding of the Green project.

Once the project is approved for funding, the funder has detailed monitoring and evaluation requirements regarding project implementation and financial management, as part of the funder's oversight responsibility. The private partner is responsible for compliance with the monitoring and evaluation requirements

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