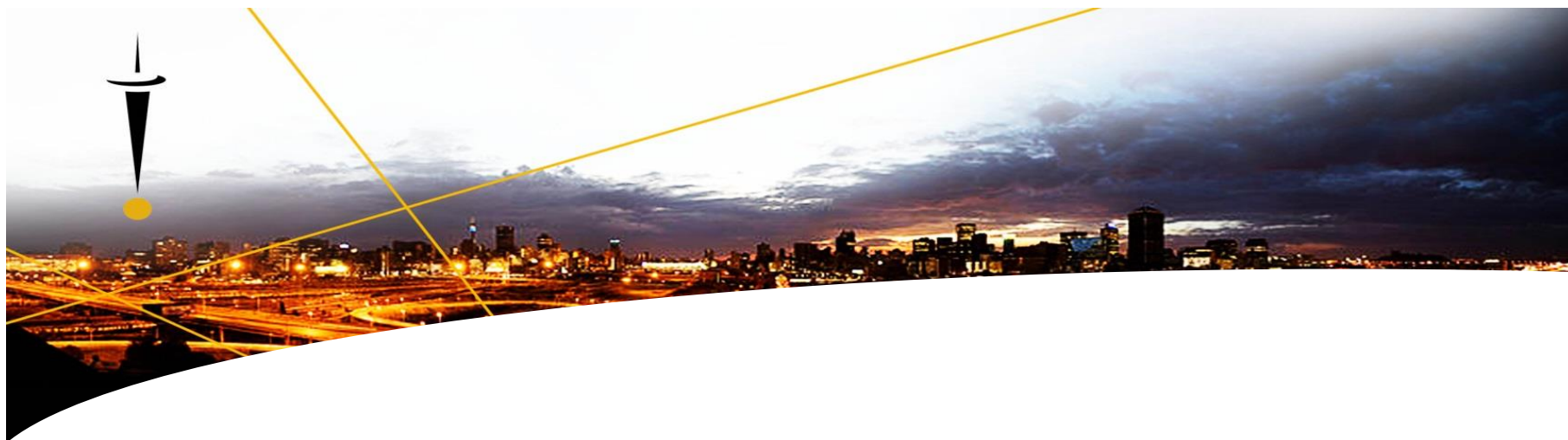




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City of Joburg

Green Bond

September 2019



Section 1

City of Joburg's Green Strategy Overview



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Climate Change Policy Framework

National Key Climate Change Policy Framework

- Climate Change is recognised globally as a potential threat to world's environment and economic development which needs to be addressed
- This is in line with the national target to reduce emissions by 34% by 2020 and 42% by 2025, as highlighted in the Integrated Energy Planning Report in 2012
- Recognition was indicated by signing of United Nations Framework Convention on Climate Change (UNFCCC) by about 150 countries in Rio de Janeiro (1992)
- South Africa ratified the Kyoto Protocol in August 1997 and acceded as a party in July 2002
- The Department of Environmental Affairs (DEA) was designated the responsibility for implementation of SA's commitments in terms of the UNFCCC.
- This facilitates National Long Term Mitigation Scenarios (LTMS) through a multi stakeholder coordination

South Africa's Response to Mitigation

- White Paper on Energy (1998)
- Renewable Energy Policy (2003)
- National Climate Change Response Strategy (2004)
- Energy Efficiency Strategy (2005)
- Long Term Mitigation Scenarios(2007)
- South African Integrated Resource Plan 2 (2010)
- National White Paper on Climate Change (2011)
- Carbon Tax Policy Paper (2013)

COJ's Strategic & Policy Response

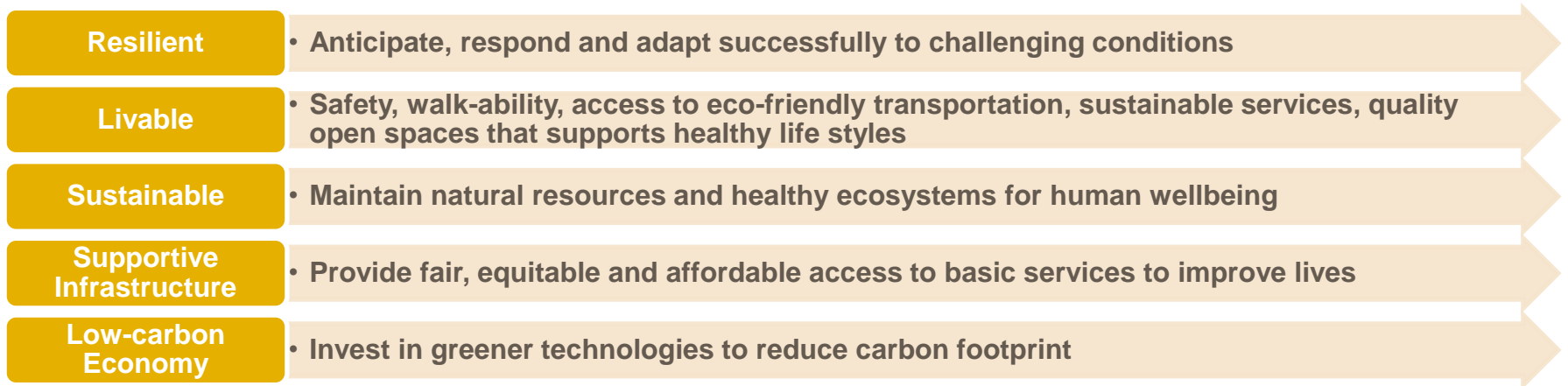
- **Joburg 2030:** (approved in 2001) broad & key focus on basic services driven by service backlogs & most apparent inequalities at the time
- **City of Johannesburg Growth and Development Strategy 2006 (Joburg GDS 2006):** move to consolidate various strategies into a corporate city-wide strategy
- **Joburg 2040 (revision of GDS 2006):** recognising community as partners; focus on resource sustainability & taking Joburg to another level (resilience, sustainability & livability)



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COJ Climate Change Policy Framework

- The City together with its residents and stakeholders, shaped a vision and plan for the future through the GDS 2040, focusing on four pillars: 1) economic growth, **2) sustainable services**, 3) human and social development and 4) good governance. The intention is to strive toward minimal resource reliance and increased preservation of natural resources. This would include:
 - **Providing a resilient, liveable, sustainable urban environment that is underpinned by infrastructure supportive of a low-carbon economy**



- To raise funding and set a further example on the importance of a green economy, the City is now pioneering a municipal “green bond” in South Africa to raise funds primarily to help respond comprehensively to climate change and sustainable management of resources

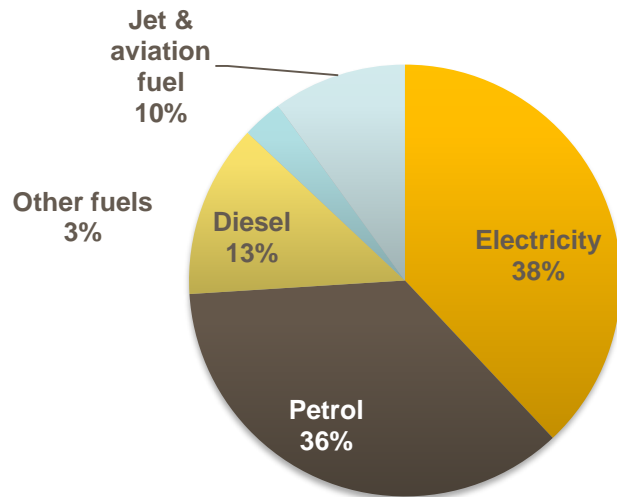


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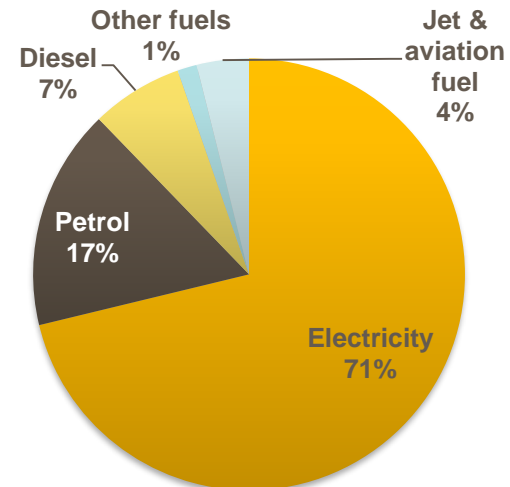
What is the “Green Economy” & why is it important?

- The City of Johannesburg (COJ) has flagged its greenhouse emissions as an area of focus to cut down on and improve in the future
- Electricity accounts for 38% of energy but 71% of GHG emissions. Petrol and Diesel accounts for 39% of energy and 24% of emissions

Energy by Fuel



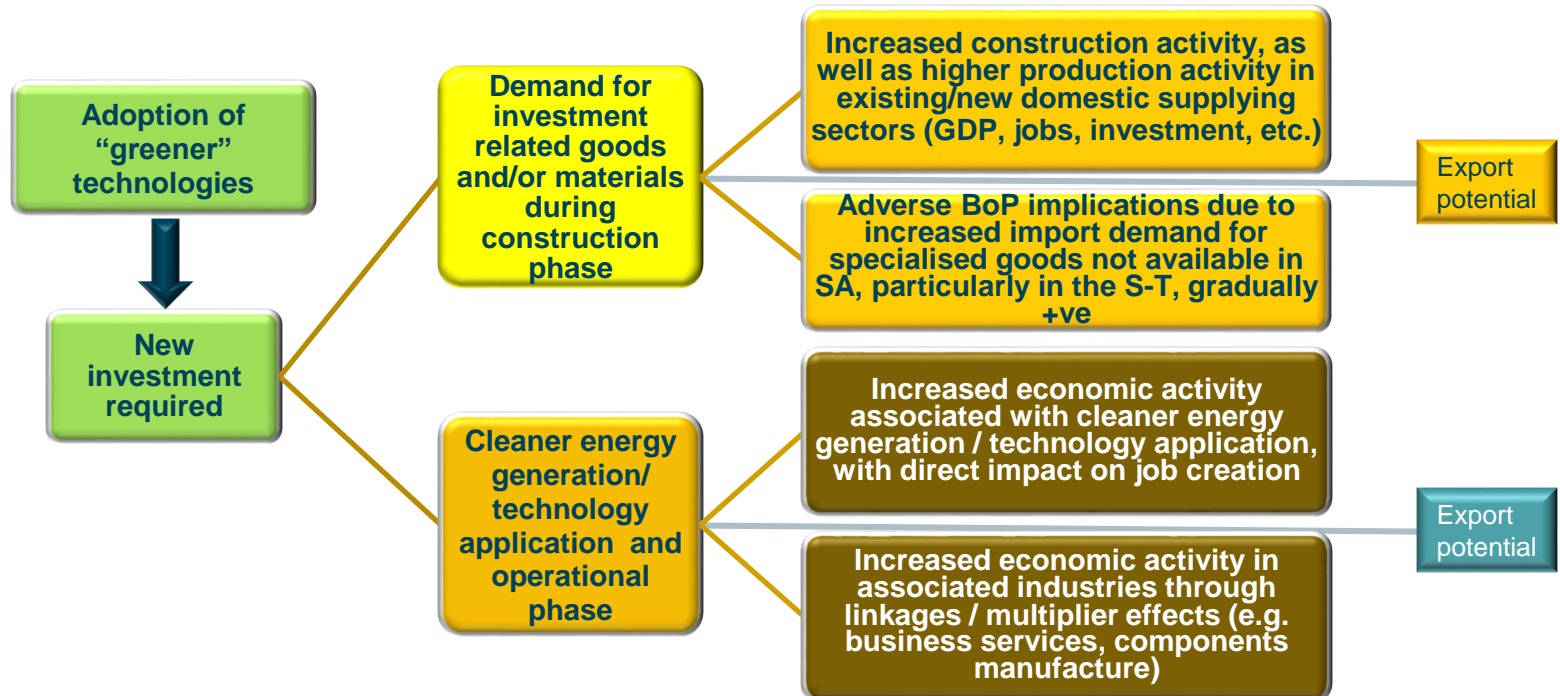
GHG Emissions by Fuel



What is the “Green Economy” & why is it important?

- The Green Economy combines economic growth and employment with a low carbon economy
- A central requirement of the Green Economy agenda is to ensure that economic benefits and jobs are generated through any adoption of greener technologies. This entails finding greening opportunities where the economic benefits (over the long-term) exceed the costs of such a transition
- An exercise is being undertaken to calculate the potential job creation that could be achieved through Green Economy interventions

Assessing the impact of introducing alternative/ renewable energy sources & clean technologies



Selection Criteria – International Benchmark

- Project selection criteria is critical to ensure that the use of proceeds qualify to be categorized as “Green”
- Categorization is typically based on efforts to **mitigate** environmental impact and **adaptation** of existing infrastructure in order to reduce environmental impact that cannot be avoided
- In the table below we have highlighted the selection criteria utilized by the largest issuers of green bonds being the World Bank and IFC

World Bank Criteria		IFC Criteria
Mitigation Projects	Adaptation Projects	
Solar and wind installations	Protection against flooding	Renewable Energy – Investment in equipment and systems which enable the use of energy from renewable resources such as solar, wind, hydro, biomass, geothermal and tidal
Funding new technologies that permit significant reduction in greenhouse gas emissions	Food security improvement and implementing stress-resilient agricultural systems (which slow down deforestation)	Energy Efficiency – investment in equipment, systems, products and services which help reduce energy consumption per unit of output, such as installing waste heat recovery systems, reducing transmission and distribution losses and producing energy efficiency motors
Rehabilitation of power plants and transmission facilities to reduce GHG emissions	Sustainable forest management and avoided deforestation	Other – investments that reduces GHG emissions in other ways, like sustainable forestry and agribusiness, capturing and flaring or use of Methane, carbon Capture and storage
Greater efficiency in transportation, including fuel switching and mass transport		
Waste management (methane emissions) and construction of energy efficient buildings		
Carbon reduction through reforestation and avoided deforestations		



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COJ Adopted Selection Criteria

Green initiatives in the City have been focused on the following sectors:

- **Power**
- **transport**
- **water &**
- **waste**

The criteria highlighted give a broad indication of projects undertaken by the City that will be funded by the Green Bond

Renewable Electricity/Power

- Grid electricity efficiency
- Grid connected electricity generation from renewable sources
- Installation of power efficient transformers in power distribution grid
- Installation of high voltage direct power transmission line
- Supply side energy efficiency improvements (transmission and distribution)
- Off-grid electricity generation
- Electrification of communities through grid extension
- Renewable thermal energy
- Solar water heating systems
- Fuel Switch - Coal/oil to gas
- Switching fossil fuels
- Waste energy recovery projects

Household and building Energy Efficiency

- Water Saving
- Demand side energy efficiency activities for installation of low-flow hot water savings devices
- Lighting
- Distribution of efficient light bulbs to households
- Demand side activities for efficient lighting technologies
- Demand side activities for efficient outdoor and street lighting technologies
- Demand side energy efficiency activities for installation of energy efficient and/or controls in buildings
- Energy efficiency and fuel switching measures for buildings
- Energy efficiency and renewable energy measures in new residential buildings
- Substituting fossil fuels based lighting with LED/CFL lighting systems
- Demand side energy efficiency activities

Transport

- Energy Efficiency
- Transportation energy efficiency activities using retrofit technologies
- Fossil fuel switch
- Fuel Switch
- Introduction of low emission vehicles/technologies to commercial vehicle fleet

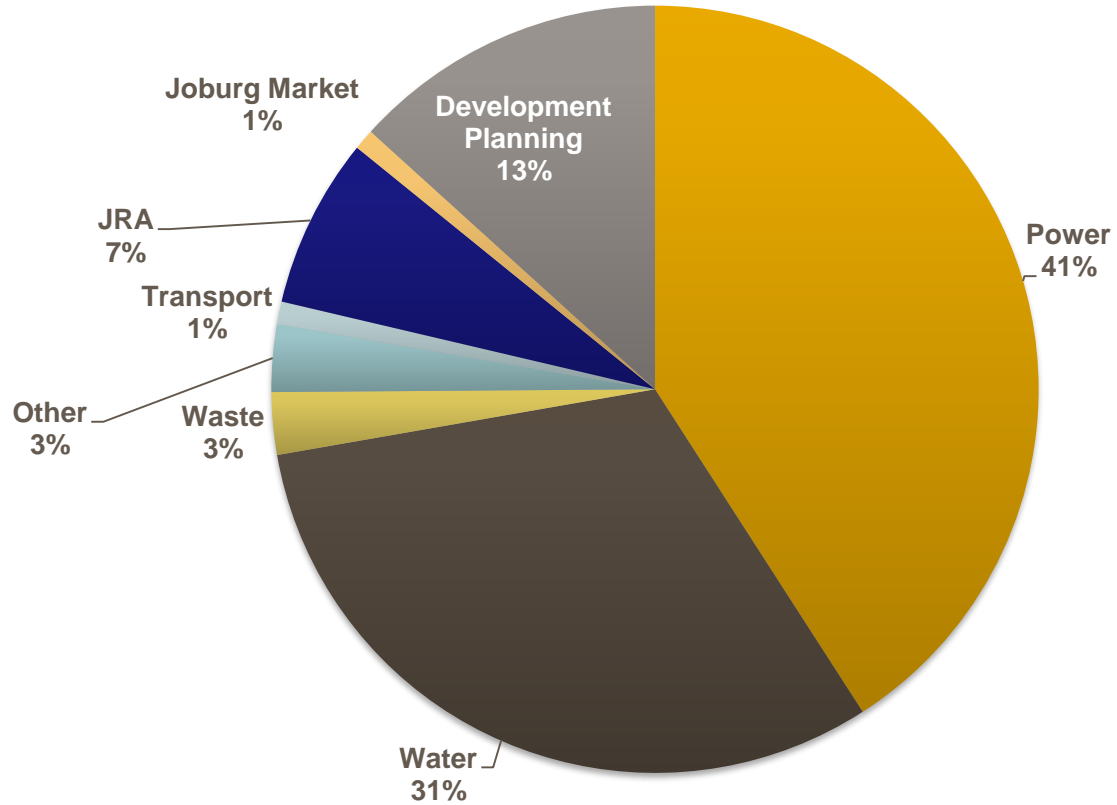
Waste Management and Wastewater

- Recovery and recycling of materials from solid waste
- Alternative treatment composting
- Alternative waste treatment processes
- Avoidance of methane emissions through composting
- Avoidance of methane emission through excavating and composting of partially decayed municipal solid waste
- Landfill Gas
- Flaring use of landfill gas
- Landfill methane recovery
- Manure and comparable waste
- GHG emission reductions through multi-site manure collection and treatment in a central plant
- Reforestation and Afforestation
- Small scale project activities implemented on wetlands
- Small scale project activities implemented on lands other than wetlands



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Projects Per Sector



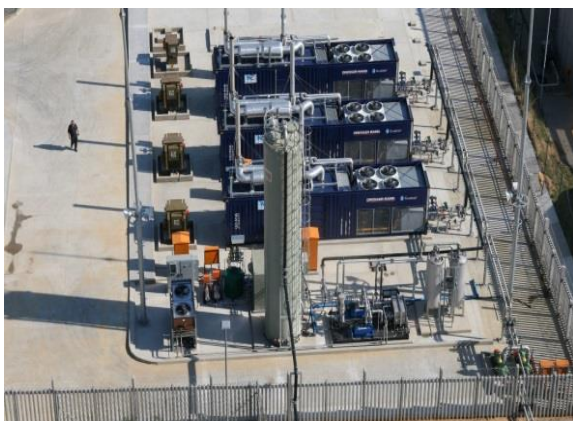
Key Projects & Infrastructure Development

	Energy Sector	Water Sector	Waste Sector	Transport Sector
Overview	A number of initiatives to distribute and utilise electricity more efficiently. In addition the use of alternative power sources has been a key focus	Focused on the preservation and conservation of the most precious resource - water	The diversion of green, building , food and residual waste away from landfills	Providing an improved and environmentally friendly public transport infrastructure /system
Key Projects	<ul style="list-style-type: none"> • Smart Meter Rollout - 42,000 smart meter, geyser control systems and energy efficiency programmes installed • Solar Water Geysers - collectively generate 22.5 GW hrs of electricity • Biogas to Energy – at our wastewater treatment plants to mitigate climate change and reduce energy costs. 	<ul style="list-style-type: none"> • Smart Meter Roll Out - water saving devices in the City's housing developments • Energy Efficiency – treatment works and on water network • Water network upgrading – reduce water losses through pipe replacement and water pressure management 	<ul style="list-style-type: none"> • Landfill Gas to Energy - reduces emissions of GHG and energy generated fed into the municipal grid • Separation at Source – targeting 470,000 households across the City to participate in recycling • City's garden sites – upgraded to accept recyclables with 950,000 households to be included in the programme 	<ul style="list-style-type: none"> • BRT • Metrobus – 150 new dual-fuel buses introduced to City's fleet. • Biogas/ diesel – a further 30 busses to be converted to natural gas/diesel
	<p>Other</p> <ul style="list-style-type: none"> • Building retrofit • Off-grid for informal settlements • Energy efficient streetlights /LED lights 		<p>Other</p> <ul style="list-style-type: none"> • Mobile crush plants at landfills to deal with builders rubble 	

Flagship Programmes

Biogas to Energy

- Johannesburg Water treats 1 billion litres of sewage per day at six wastewater treatment works with the potential to produce 9.6 MW per day of electrical energy
- The cost of electricity for WWT will treble over 7 to 10 years from R 95m p.a. in 2010 to over R 300m p.a.
- The increases will place an additional financial burden on the Water Services Authority (City) and Water Services Provider (Johannesburg Water)
- Biogas produced at the WWTW could generate about 50% of the electrical power needs through CHP generation.
- Refurbishment of existing sludge digesters
- Enhancement of biogas production by the addition of digester feed thickening, cell lysis, struvite removal and biogas to energy installations



Water Infrastructure Upgrade & Renewal

- 95 227 properties retrofitted and metered by Dec 2013
- 88 713 properties outstanding to make a total of 183 940
- 116 km of pipes upgraded/improved by 2008 km. 50 km of pipe work done in 2013/14 and 50km is remaining to make a total of 216 km
- The expenditure is R1.3 billion (Jan 2014) and about R0.5 billion is yet to be spent by end of project to make a total cost of R1.8 billion
- R753 million worth of water has been saved (June 2013) and there is still potential of additional 94 301 040kl on outstanding scope which equates to R525 million if the current Rand water tariff is applied
- The total water savings will amount to at least R1.6 billion by 2015/16 FY
- 87 SMME's appointed on the project to date





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Global Greening Initiatives – Participation

- The City has been a member of the following international organisations:
 - C40 Cities Climate Leadership Group (C40)
 - International Council for Local Environment Initiatives (ICLEI)
 - UN Habitat
- The City is also a signatory of the Durban Adaptation Charter for local Governments, where it committed to higher levels of climate change and to accelerate its adaptation efforts
- The City's Climate Change Adaptation Plan (CCAP) was one of only 29 projects globally nominated for the C40 and Siemens Climate Leadership Awards

C40 Summit

- The C40 summit takes place once a year where mayors and senior city officials from over 63 leading cities around the world come together to discuss the climate change challenges facing their cities. This year Johannesburg was selected as the first African city to host the event (4-6 February). Key points to take away include:
 - Hosting the event is clear recognition of the growing role that South Africa plays in finding solutions to the most pressing issues facing the globe and emphasizes the importance for COJ to continue leading by example
 - Urban cities pose a big threat to the climate using use two-thirds of lands energy and the generate over 70% of global CO2 emissions
 - There are a wide range of successful on-going green projects from around the world, including building efficiency standards, sustainable transport measures and other green growth practices and programmes which COJ can use to continue growing into a greener city



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Outlook

- As the largest Economic City in Africa, Johannesburg is well placed to play a critical role in the global Green Economy
- Johannesburg is undertaking a range of valuable and potentially important green initiatives, with activities spread across a wide range of departments and entities
- In line with the GDS 2040 infrastructure development in the City will be focused on providing resilient ,livable and sustainable environment that is supporting of a low carbon economy that is able to continually change and adapt, yet remain within sustainable thresholds of existence, even when confronted with complexity and uncertainty
- Projects and initiative undertaken are part of a long term strategy to be implemented across the City of Joburg
- Further initiatives are being developed and coordinated in line with the Green Implementation Plan
- Through its association with C40 and its participation to the GPC programme, the City will for the first time be in a position to produce a realistic greenhouse gas emissions baseline
- In the long-term the greenhouse gas monitoring system will assist in allocating carbon targets to the different sectors as articulated in the National White Paper on Climate Change
- In building climate change resilience the City will be partnering with various role players including the private sector, civil society and space

Credit Rating Overview

- Both Fitch and Moody’s ratings agencies retained their positive investment rating of Johannesburg during the past year. Moody’s noted the following: “Although Joburg’s liquidity remains tight... the city’s cash reserves adequately cover short-term obligations, thus supporting the high short-term rating assigned.”
- They further state that the rating reflected “recent improvements in the City’s liquidity profile and cash position.”
- The issuance will be based on the City’s rating demonstrating the strength of balance sheet

Agency	Rating	Outlook
Moody’s	A1.za/P-1.za	Negative Outlook
Fitch	AA-.zaf/F1+.zaf	Stable Outlook



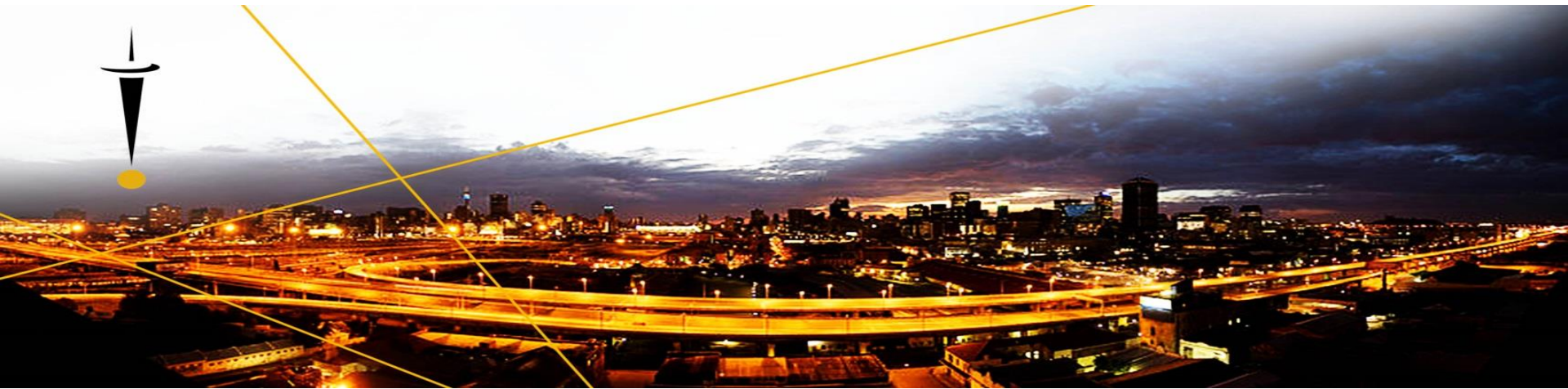
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Proposed Offering Summary

Issuer	City of Johannesburg Metropolitan Municipality
Documentation	Domestic Medium Term Note Programme
Issuer Rating	A1.za/AA-.za
Offered Securities	Senior unsecured notes
Structure of Notes	Fixed Rate
Proposed Amount	Up to ZAR 1.458 billion
Tenor (Maturity)	10 years
Companion / Benchmark Bond	R2023
Coupon (Dates)	Payable semi-annually in arrears
Issue Date	[TBC- target end of May/early June]
Settlement Date	[T+3]
Listing	JSE



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Questions & Answers