

An aerial photograph of Johannesburg, South Africa, showing a dense urban landscape with various buildings, roads, and green spaces. The image is used as a background for the text overlay.

City of Johannesburg Ebus Initiative
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EVIA Conference
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The logo for Joburg, featuring the word "Joburg" in a stylized font with a small tower icon above the letter 'o'.

Joburg

a world class African city

Introduction and Background: City (1)

- Joburg has a population of **4.4 million** and is growing (**3.4% p.a.**)
- Spread over a large area so population density is **low (2 700 per square km)**
- **23%** of economically active people are **unemployed**
- **67.4%** of households live on less than **R3200 per month** with a **large percentage** of poor household's income going towards **transport**
- Joburg contributes **56%** to **national carbon emissions** and transport accounts for 31% national energy consumption and 16% national GHG emissions (in JHB 82% 2014)

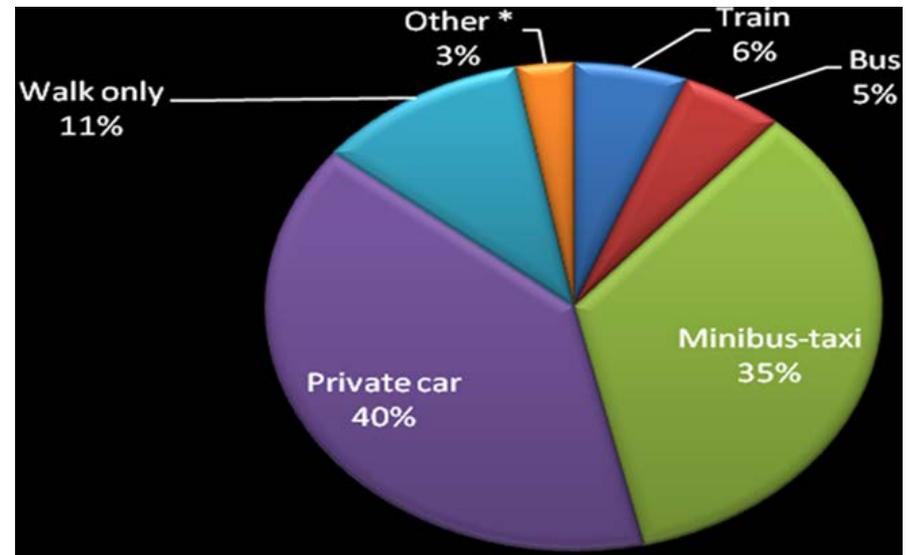


Statue of Nelson Mandela at Sandton Square

Transport modes in Johannesburg (2)

- The main modes are:
 - **Private** vehicles
 - **Mini bus taxis** (not subsidised, privately owned – organised in associations)
 - Rail (Gautrain – high class and Metrorail – for the poorest)
 - **Bus** (City bus fleet, provincial subsidised, Rea Vaya BRT)

Specific challenges arise out of our apartheid spatial legacy (poor people on the periphery) and decades of car centred, security focused planning



Main mode to work

Anchors for the Ebus Initiative (3a)

“A people-centred transport system that is transformed.”



We are guided by:

- Joburg Growth and Development Strategy 2040
 - Liveable city: Very **pro-public transport, walking and cycling (ecomobility)**
 - Radically increase public transport use
 - More compact city with future development around **public transport corridors**
 - Support economic growth
 - Actively engage the citizenry
 - Support entrepreneurship
 - **Job –intensive economy**
 - **Low-carbon city economy**
- National Public Transport Strategy
- National Development Plan

Anchors for the Ebus Initiative (3b)

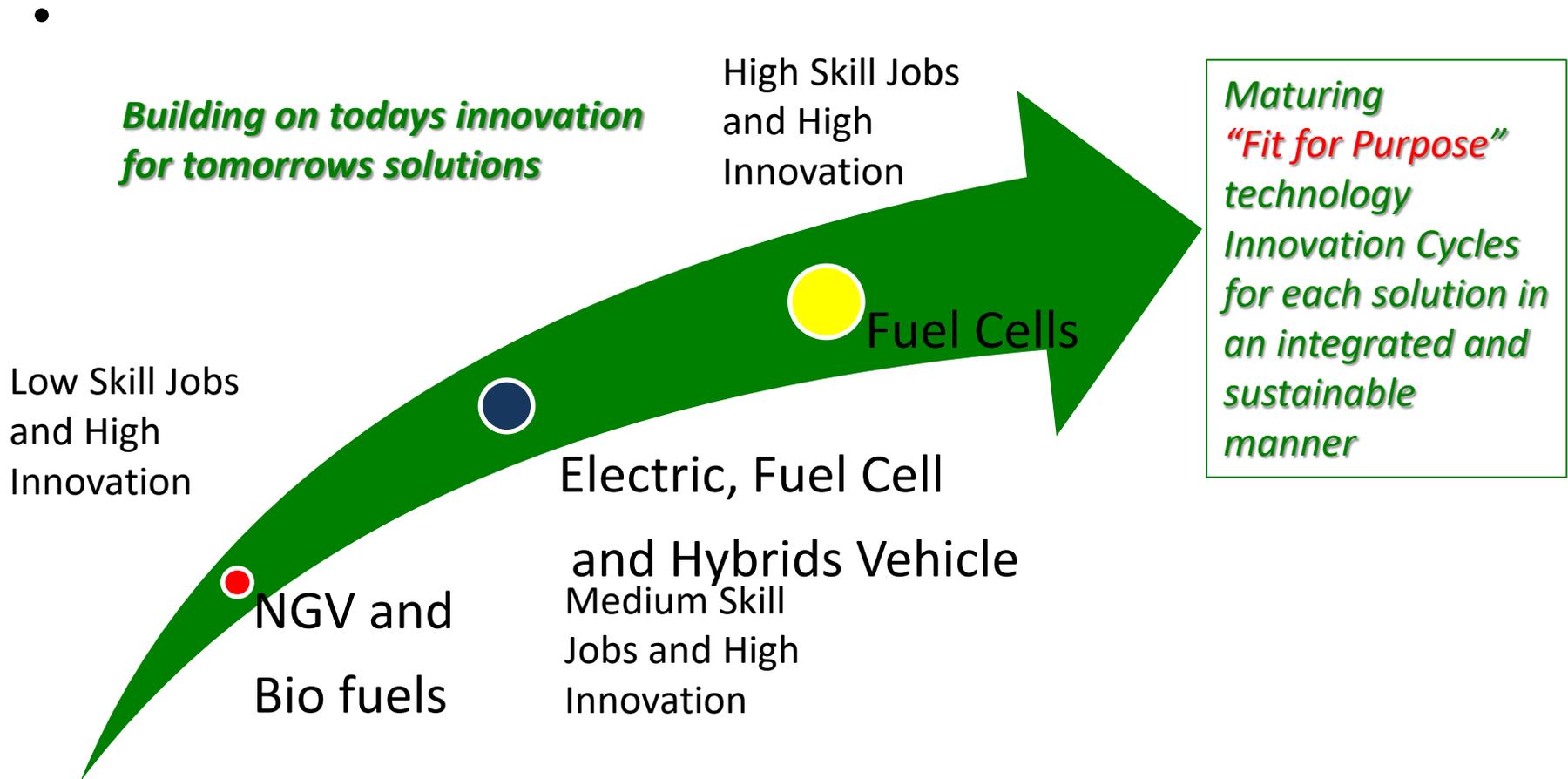
- **Previous Administration :**

- Ensuring **that all new buses** for bus rapid transit or conventional bus use a **green fuel**, including **refleeting or conversion of existing bus fleets** with a green fuel

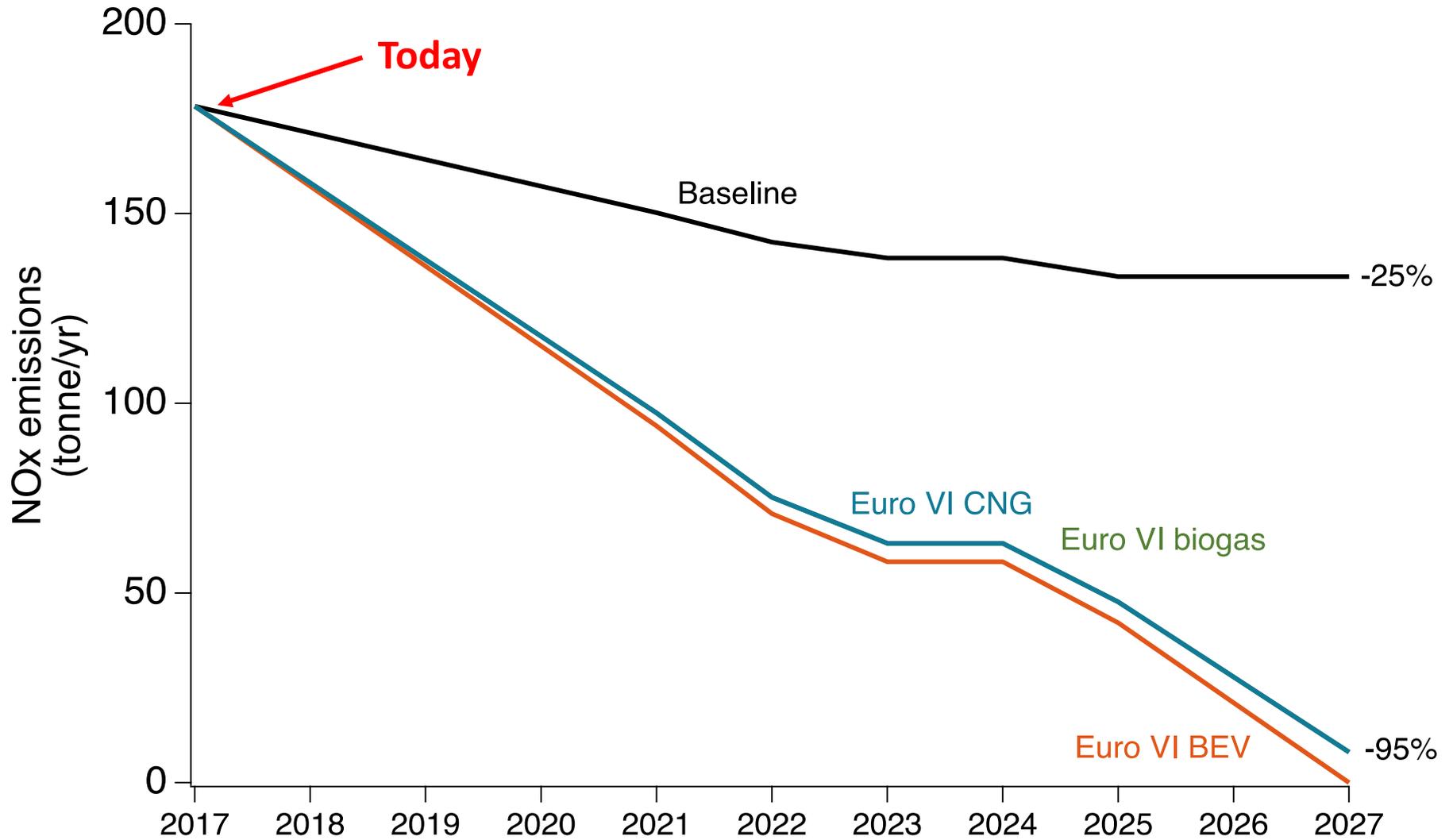
- **New Administration - A Joburg that works is a South Africa that works**

- Priority 9 Preserve our resources for future generations
- Outcome 2: Enhanced, **quality services** and **sustainable environmental practices and adoption of CoJ Climate Change Strategy**
- **IDP 2017/2018 emphasize climate uncertainty, commitment to climate change and resource efficiency (cost of different energy sources) as strategic foci**
- **Business Plan Focus - Refleeting with clean energy bus fleets, achieving environmental sustainability and environmentally friendly public transport**
- **Mayoral Commitment to C40 Charter**
- **Green Transport Strategy – places EV prominently**

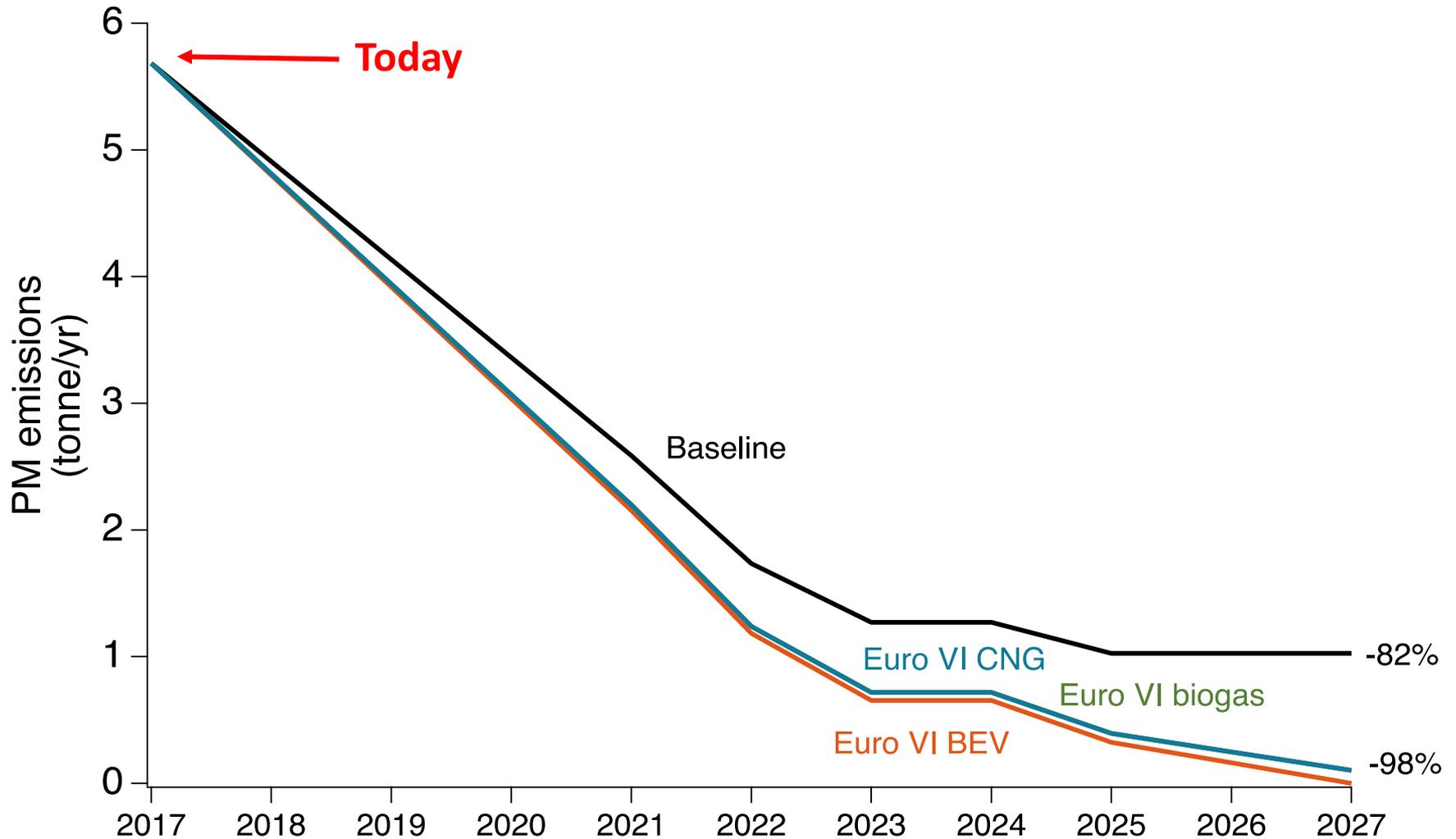
Clean Fuel Pathway to the Ebus Initiative



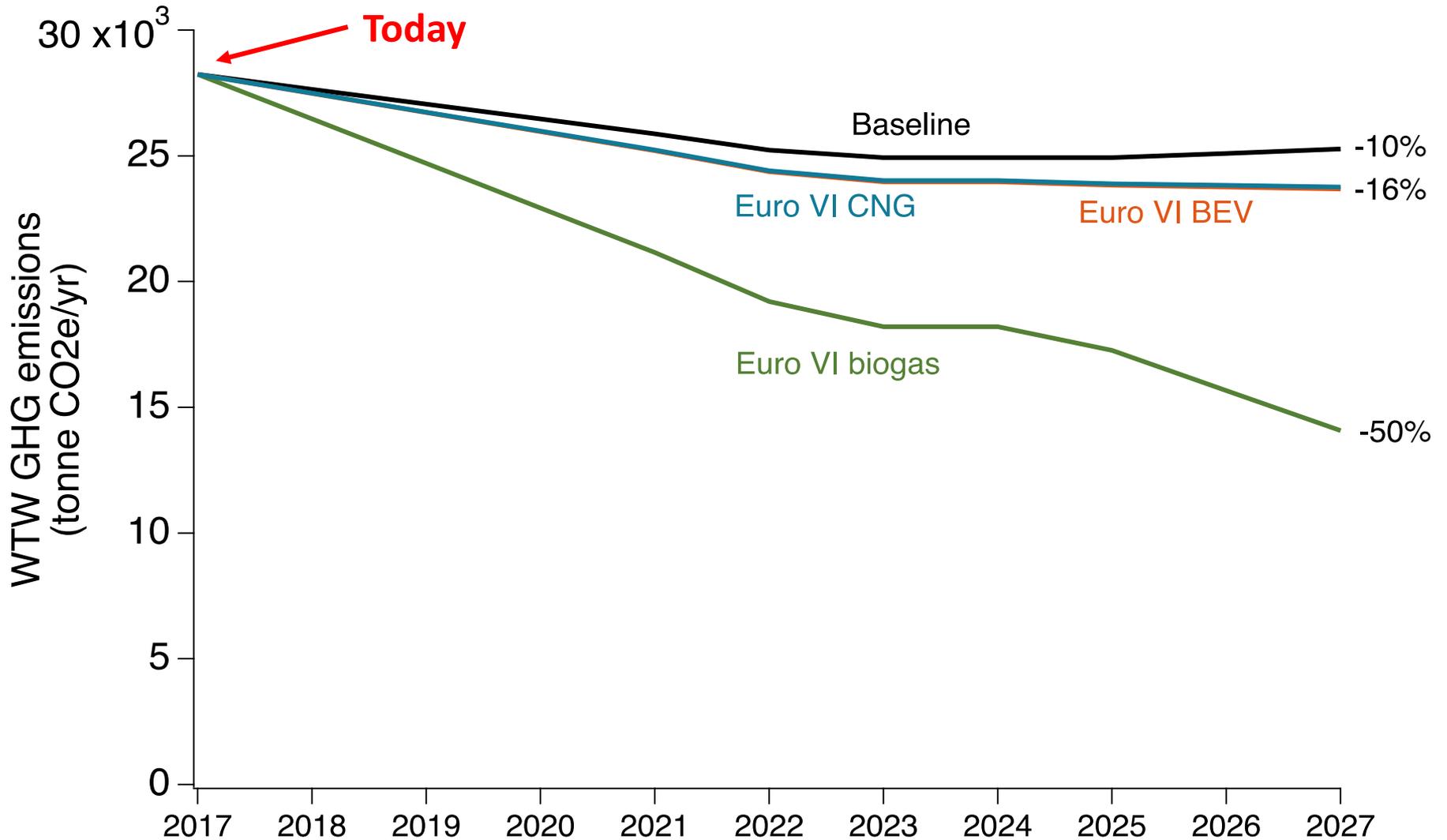
Clean Fuel Pathway to the Ebus Initiative – ICCT Report (a)



Clean Fuel Pathway to the Ebus Initiative – ICCT Report(b)



WTW greenhouse gas emissions (10)



Clean Fuel Pathway to the Ebus Initiative – ICCT Report (c)

• Europe

- Euro VI in force since 2013, mainly diesel, CNG getting stronger, Biodiesel / ED95 in Sweden
- Euro VI recognised as solid regulation providing lowest in-use emission performance
- Still small number of BEV buses, hybrids share growing, tests with H2 fuel cell
- By 2020 diesel buses «criminalised in city centres
- By 2040 – half vehicle population – electric vehicles

• India

- Decided to leapfrog to Euro VI skipping Euro V in 2021 and introduce low sulfur diesel
- Launched its electric bus

• China

- Currently Euro V, moving to Euro VI in 2020 (even stricter regulation than Euro VI)
- Leader in electric and Hydrogen Fuel Cell bus technologies

Clean Fuel Pathway – ICCT Report (d)

- **Euro VI diesel hybrid**
 - Parallel hybrid systems
 - Plug-in hybrid with extended electric range for electric inner-city operation, fast charging at endpoints of route, smaller Euro VI diesel engine
- **Trolley bus system**
 - Overhead lines throughout the route
 - Smaller diesel Euro VI diesel engine for emergency operation
- **Battery electric vehicle BEV**
 - Fully electric operation (incl. a/c)
 - Size of battery pack defines range of vehicle
 - Bus heating may be difficult
- **H2 fuel cell**
 - No large scale operation so far
 - Battery pack to balance between fuel cell output and power requirement
 - Future potential should not be neglected, all depending on fuel cell cost

Steps En route to the Electric Bus Option

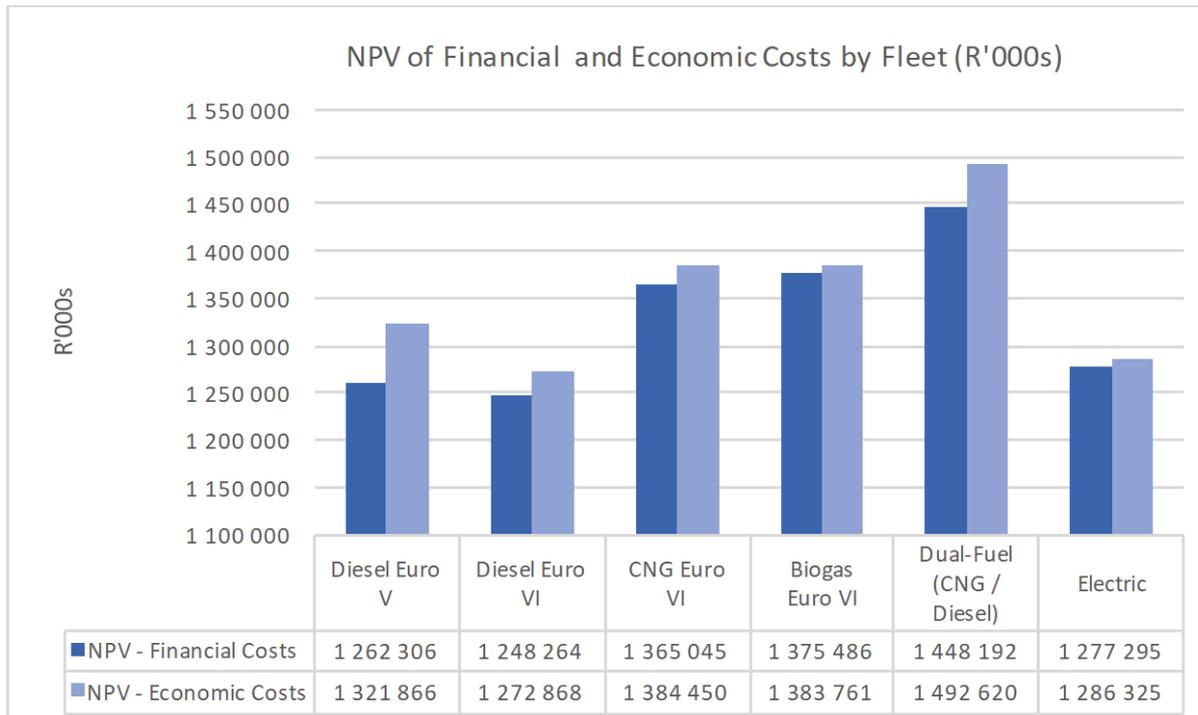
The Transport Department opted for a take-off that included the following:

The Bus Options Comparision

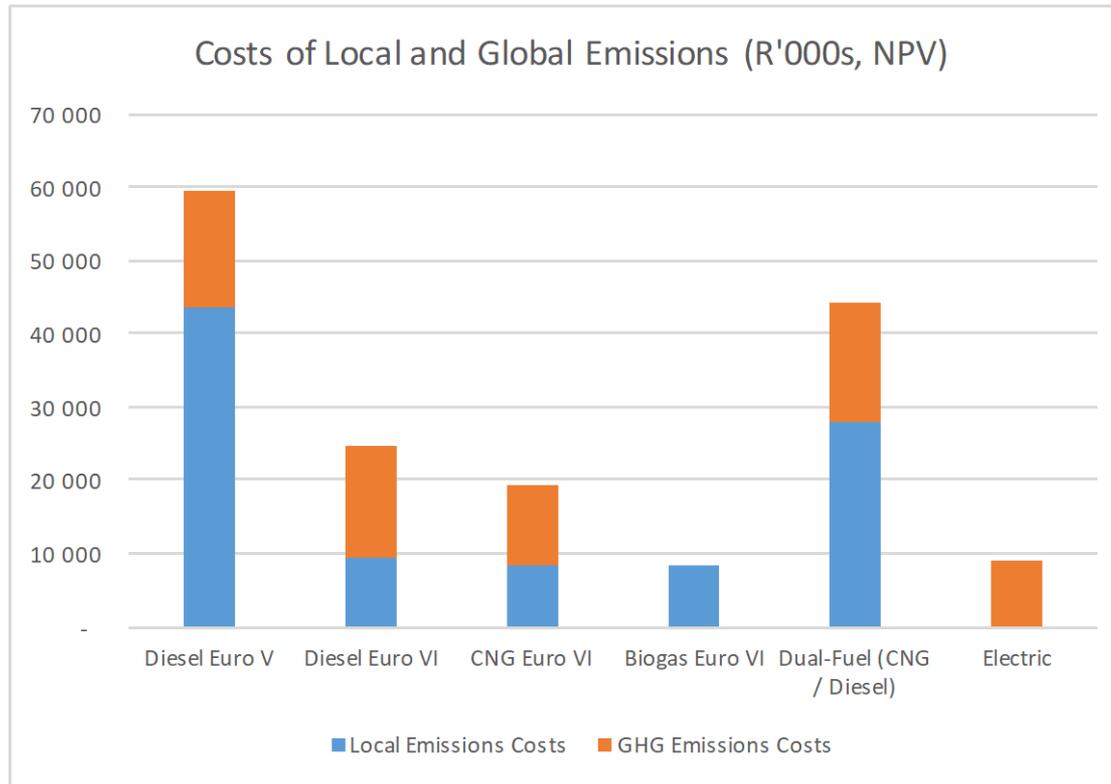
The SANEDI Proposal

The GEF Global Electric Vehicle Program

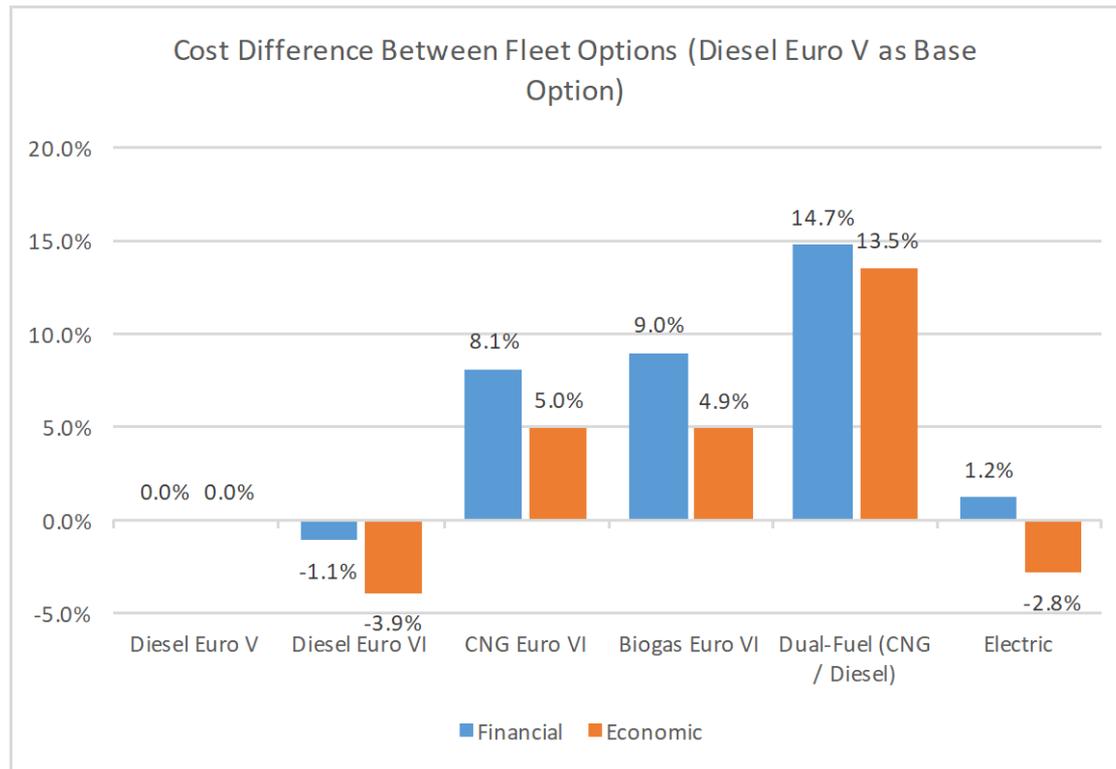
Steps en route to the Ebus Option (a1)



Steps en route to the EBus Option(a2)



Steps en route to the Ebus Bus Options (a3)



Steps en route to the Ebus Option (b)

The SANEDI Proposal

“The South African National Energy Institute (SANEDI) is proposing to the Transport Department of CoJ to implement the Electric Bus Demonstration Project, which should include, but not limited to, conducting a near term feasibility study for E-Bus and overseeing procurement process of one to four electric buses, piloting E-Bus project, monitoring and optimization of the bus operation”

Concept Proposal Developed

Program identified to conclude on all Pre-Feasibility Activities by March 2019

Steps en route to the Ebus Option (c)

The GEF Global Electric Vehicle Program

- **PROJECT INFORMATION**

- **Project Title:** Sustainable Transport through an integrated and sustainable multi-modal Rapid Transit System in the City of Johannesburg.
- **Country:** South Africa
- **Executing partners:** UNEP, DBSA
- **Other executing partners:** IEA and country representatives (national, local and agencies)

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- **PROJECT DESCRIPTION SUMMARY**

- Project Objectives
- The proposal shall advance and foster city level transport energy efficiency, emission reduction and other co-benefits through introduction and adoption of an urban-based pilot of electric buses and institutionalization of evidence-based decision making through up-scaling and integration of city public transport system

The proposal has been submitted and the outcome is being awaited.

Steps en route to the Ebus Option (d)



Steps en route to the Ebus Option (e)

	Phase 1C/NEQ	Phase 1C (a)
	What	Approx 17,2 km of trunk routes (Louis Botha, Katherine)
Stations and stops	Trunk routes	17 stations (including Phase 1A and 1B stations requiring modification to low floor)
Interchanges or terminals	Sandton Park Station Watt Street Emthonjeni Kopanong	Sandton Park Watt Street (completed 2019) Emthonjeni (completed October 2018)
Depots	Selby, Alex and Midrand	Selby and Alex (Alex parking by Oct 2018, fully completed Oct 2019)

Conclusion: Challenges in taking up the Ebus Option

In taking up an intervention like the Ebus option the challenges are:

- **Security:** What is the state of external readiness to engage such a venture iro infrastructure and local market and technical assurance that it will work
- **Institutional Change Management:** What capacities and resources are there to engage the change that would be required (people and equipment)
- **Resources:** Given the contestation for resources how do we deal with the upfront investment required both to start and carry the initiative through to conclusion.

Thank You !

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