

# USING ENERGY DATA TO REDUCE EMISSIONS AND UNLOCK CLIMATE FINANCE

Implementing a building  
energy metering programme  
in seven municipalities in  
South Africa



An Urban-LEDS II demonstration project case study



## The Urban-LEDS II project – background and context

Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II) is a global initiative which proceeds from Urban-LEDS I, which took place between 2012 and 2015. The project aimed to support local governments in emerging economies to reduce greenhouse gas emissions while assisting with local development goals.

Following from Urban-LEDS I, the European Commission funded Urban-LEDS II, which is implemented jointly by UN-Habitat and ICLEI – Local Governments for Sustainability. The project aims to reduce greenhouse gas emissions through low emission development and increase resilience through climate change adaptation actions.

Urban-LEDS II commenced in 2017 and will end 2021. It is currently active in eight countries: Bangladesh, Brazil, Colombia, India, Indonesia, Lao PDR, Rwanda and South Africa. In South Africa, it is implemented by ICLEI Africa. Eight subnational governments benefit from the project: two model cities (deep dive implementation) and six satellite cities (light touch implementation), as seen in the map.

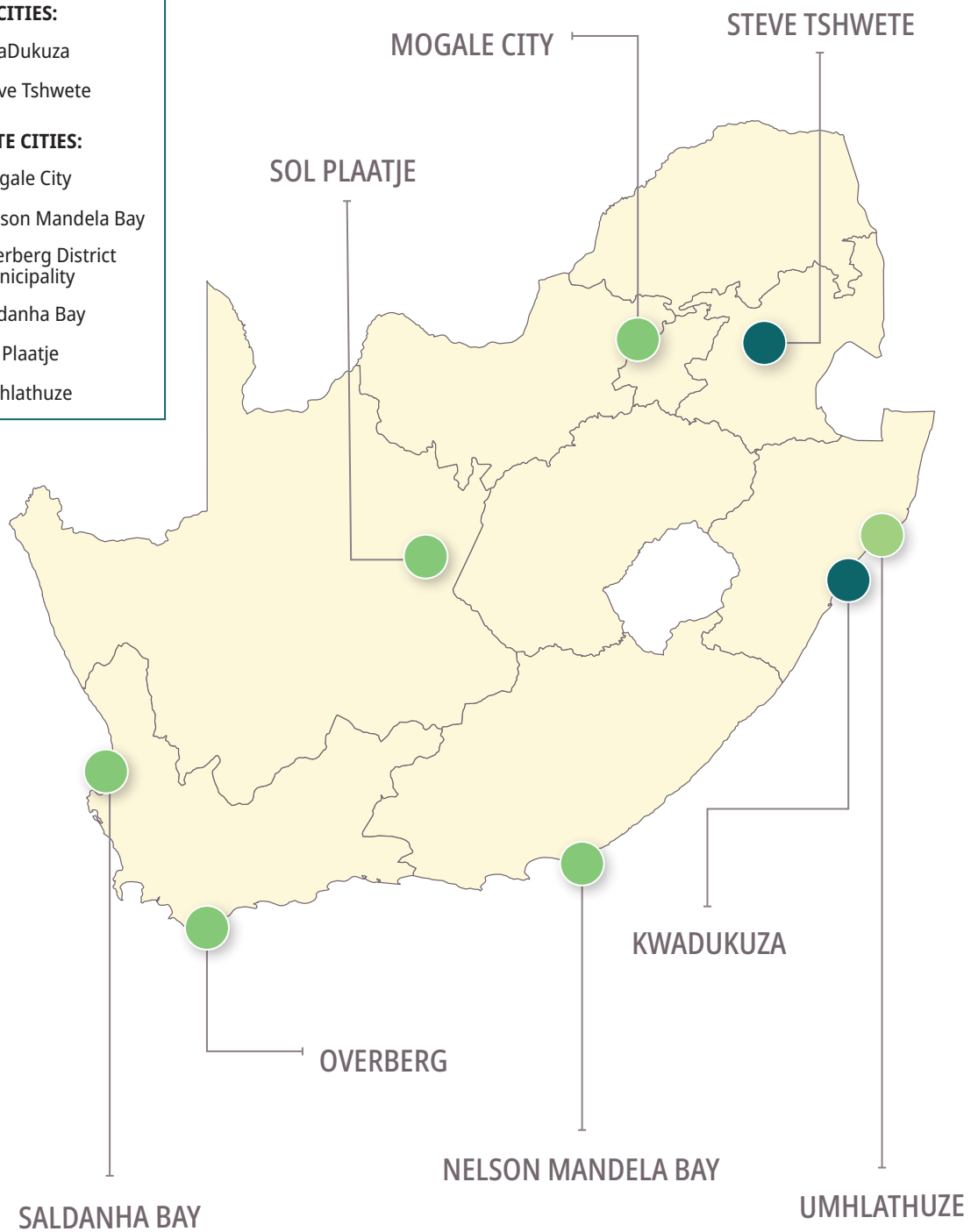
### PARTICIPATING MUNICIPALITIES

Seven of the eight South African project cities participated in the building metering demonstration project.

- KwaDukuza Local Municipality, KwaZulu-Natal Province
- Steve Tshwete Local Municipality, Mpumalanga Province
- Mogale City, Gauteng Province
- Nelson Mandela Bay, Eastern Cape Province
- Saldanha Bay Municipality, Western Cape Province
- Sol Plaatje Local Municipality, Northern Cape Province
- City of uMhlatuze, KwaZulu-Natal



- MODEL CITIES:**
- KwaDukuza
  - Steve Tshwete
- SATELLITE CITIES:**
- Mogale City
  - Nelson Mandela Bay
  - Overberg District Municipality
  - Saldanha Bay
  - Sol Plaatje
  - uMhlatuze





## Better energy data from municipal buildings can reduce greenhouse gas emissions and unlock climate finance

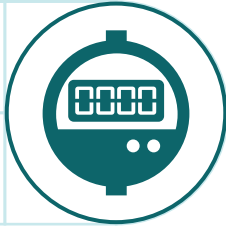
As part of their jurisdictions, local municipalities in South Africa own and manage a significant number of buildings. Through ICLEI Africa's work over the past eight years with eight subnational municipalities in the country, it has become evident that the key contributors to a municipality's greenhouse gas emissions are the municipal building portfolio. It is therefore imperative that municipalities reduce their own energy demand to improve the resource efficiency of buildings and ultimately reduce the overall greenhouse gas emissions of these cities, towns and regions.

The first step is to undertake an energy audit to understand the current consumption. However, in South Africa, few – if any – buildings in municipal portfolios are metered.

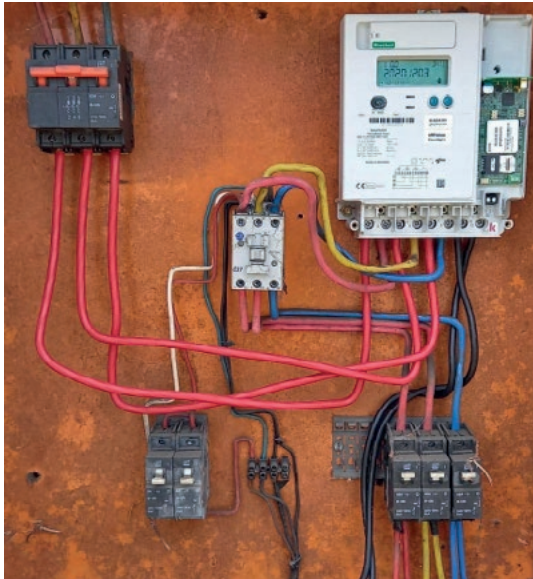
“  
SOUTH AFRICAN  
MUNICIPALITIES RARELY RECEIVE  
FINANCIAL SUPPORT FOR  
INCREASING ENERGY EFFICIENCY  
AND REDUCING GREENHOUSE  
GAS EMISSIONS.”

Because of this data gap, South African municipalities rarely receive financial support for increasing energy efficiency and reducing greenhouse gas emissions. A lack of robust energy data also reduces the quality of proposals for energy efficiency programmes that subnational governments typically submit to potential funders, further exacerbating the challenge of accessing finance.

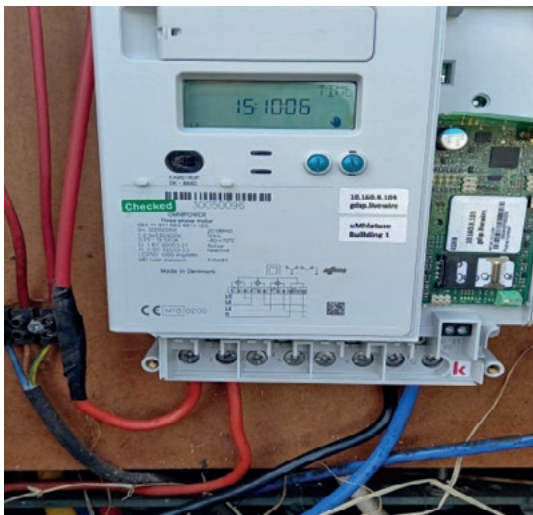




# Addressing the energy data and finance gaps by installing building meters



Mondi – Streetlights



Turnbell Empangeni

The Urban-LEDS II pilot programme in South Africa took a practical approach by installing energy meters in municipal buildings of seven municipalities. The project aimed to address these energy data and finance gaps:

- 1 Improve the availability of energy data** in municipal buildings by installing meters in at least three municipal buildings and one streetlight area for each municipality
- 2 Build capacity of government officials** in relation to energy management in municipal buildings and streetlights by training up to 24 officials from participating municipalities to collect and analyse energy data
- 3 Improve the technical skills of officials** to submit bankable proposals to potential funders by developing application templates specific to each municipality to fund energy efficiency interventions



## Driving climate action at the local level

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Climate change impacts are often observed at the local level, with municipalities experiencing the effects most severely. There is also increasing agreement that local governments have a vital role to play in mitigating climate change by curbing GHG emissions and reducing the vulnerability of city residents. In addition to addressing the energy and finance gaps mentioned above, this pilot project strengthened municipalities' climate mitigation efforts by ensuring they are able to:

- Identify major energy consumers in municipal buildings with smart meters and thereby prioritising energy efficiency interventions to ultimately reduce energy demand and GHG emissions in municipal portfolios
- Benchmark monthly consumption based on previous billing data (where available) from each building for a typical year so that the metered data can be trended against the benchmark to profile seasonal consumption patterns and anomalies
- Identify opportunities for making the energy resource use visible on a regular basis



## Demonstrating low-emissions climate resilience during a pandemic

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Cities are on the frontlines of the COVID-19 pandemic, with urban residents facing devastating health and economic impacts. Many city leaders are responding with creative solutions, recognising that actions in response to the pandemic can also make cities greener and more climate resilient. At the same time cities of all sizes are struggling to maintain essential services during the pandemic and coming out of this crisis.

South Africa in particular has been experiencing intermittent times of electricity load shedding throughout the pandemic. A safe COVID-19 recovery also addresses low-emission, reliable energy access, ultimately creating a more sustainable city. South African cities experienced first-hand the urgent need to become resource efficient and to start this process from within the city's own building portfolio. Understanding the energy consumption of municipal buildings is the first step in creating cities that not only limit greenhouse gas emissions, but are resilient to future shocks of all kinds.



## What the municipalities had to say

ICLEI Africa's climate and energy expert, who led the implementation of this project, Ms Avuyile Kewana, sat down with officials from two of the participating municipalities to reflect on the impact of the project and highlight some learnings that other municipalities might find useful when implementing similar projects.

### MS NOMONDE TYABASHE

Executive Director: Strategy, Economic Development and Planning  
at Sol Plaatje Municipality



Ms Kewana

*How does did the demo project align with the local government's development goals?*



Ms Tyabashe

There has been alignment with regards to service delivery, no matter how minimal it has been. If you talk about street lighting in particular, it means that there is provision of electricity in the public space and sustainability of that service. Through this initiative, the municipality is participating consciously in urban efficiency and renewable energy. It also contributes to the reduction of carbon footprint although the quantity hasn't been determined yet.



Ms Kewana

*What do you think should be done to ensure that future pilot programs like this one align with the municipality's development goals?*



Ms Tyabashe

It is key to understand the municipality's Integrated Development Plan (IDP) or look at the initiatives of the municipality in terms of projects implemented in previous financial years to get an appetite of the posture of the municipality when it comes to project implementation.



## MR DUMA NOKUBONGA

Director: Electrical Engineering Services, KwaDukuza Local Municipality, South Africa



Ms Kewana

*What was the value of this project to your municipality?*



Mr Nokubonga

This program has helped the municipality to accurately determine the energy load of the buildings that have smart meters installed. For example, through the 6 months' energy data collection in the civic building of the municipality, it has been noted that the energy load is not sufficient. The highest to have ever been recorded is 38 KVA, far less than what is installed. With this information, now the municipality is able to reduce the investment of obtaining a 200KvA generator, but rather install a 50KvA generator. The measurement and the monitoring of the consumption has assisted us in terms of knowing exactly what we are using instead of estimating consumptions.



Ms Kewana

*What advice can you give other local governments also interested in projects like this?*



Mr Nokubonga

- 1 Get the knowledge and skills to understand tariff, energy measurement, carbon footprint and sustainability.
- 2 For longevity, train various stakeholders from various municipal departments. Such programs are not only relevant for electricians but also environmental officers who can take the learnings from the trainings and educate the community.



Ms Kewana

*What impact will this project have on your municipality and the community?*



Mr Nokubonga

By measuring, monitoring and reducing energy consumption, the municipality is able to release more funds to be used on other projects that are impacting the community as a whole. Because there are savings in one place, more money is available to spend on other areas such as the development of housing and other services delivered efficiently.





## From the experts: Practical tips for implementing building metering projects

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Undertake site technical audits or walkthroughs to understand the energy efficiency opportunities in selected buildings



Involve relevant municipal divisions such as the electrical division, during project scoping to ensure targeted buildings do not already have metering installed



Ensure that the appointed municipal project team leader(s) have the requisite skills to ensure successful implementation





## URBAN-LEDS II PROJECT AT A GLANCE

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**Project name:**

Accelerating climate action through the promotion of Urban Low Emission Development Strategies

**Funded by:**

The European Union

**Global project coordination:**

ICLEI World Secretariat & UN-Habitat

**Implementation in Africa:**

ICLEI Africa

**Project duration:**

March 2017– October 2021

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