



Powering Progress: South Africa's Path to Low-Carbon Industrialisation



The Challenge

- South Africa is one of the most carbon-intensive developing economies in the world – it contributes **33% of the continent's total carbon emissions**.
- **The more than 400 industrial spaces across** the country are the **engine of economic growth** – but the industrial sector is also one of the **biggest contributors** to the country's increasing **GHG emissions**.
- Industrial spaces face challenges, including **energy insecurity**, reliance on outdated and **inefficient equipment**, **high energy costs** and a heavy dependence on **fossil fuel based energy**.
- Industrial spaces have **significant potential** to produce energy for **own consumption** but also to serve **nearby communities**.
- An **integrated energy approach** that promotes **low-carbon and positive energy industrial spaces (LC-PEIS)** is essential to **optimise energy consumption** and **increase the share of distributed renewable energy generation** to the benefit of the country as a whole.

The Solution: Fostering Low Carbon and Positive Energy Industrial Spaces

A flagship initiative

Key project details:

- **Budget:** €2 million
- **Funder:** Government of Flanders
- **Implementing Agency:** UNIDO
- **Key National Line Ministries:**
 - » Department of Trade, Industry and Competition
 - » Department of Electricity and Energy

Core technical partners:

- » GreenCape
- » National Cleaner Production Centre South Africa (NCPC-SA)
- » VITO (Flemish Institute for Technological Research)

Project duration: 2025 - 2028

Why this project

The project will support the **low-carbon transformation of South Africa's industrial sector** by promoting the **optimisation of energy consumption** and the **generation of distributed renewable energy** in industrial spaces. This will be done by:

- **Strengthening the policy** and regulatory framework
- **Enhancing the capacity** of key stakeholders
- **Promoting investment** in the low-carbon transformation of the industrial sector
- **Demonstrating the business case** through concrete pilot projects, and developing a pipeline of investment-ready projects.

Project Outcomes and Outputs at a Glance

Enabling environment for LC-PEIS created through strengthening the policy framework, and building capacity and partnerships.

- Assess the potential for LC-PEIS at an economic level
- Develop technical guidelines for LC-PEIS
- Strengthen capacities for LC-PEIS
- Engage stakeholders and foster partnerships to facilitate scaling up of investments in industrial spaces.

Line Departments:



Electricity and Energy
Trade, Industry & Competition



GreenCape



NCPC
INDUSTRIAL EFFICIENCY IN SOUTH AFRICA



vito

Uptake of distributed renewable energy solutions and energy efficiency accelerated in industrial spaces through the demonstration of LC-PEIS business models:

- Identify and support a pipeline of sustainable energy projects
- Implement two pilot projects to showcase the impact of LC-PEIS
- Standardise procurement guidelines and contracting templates relevant to technologies implemented and/or developed, plus other tools and guidelines as required
- Disseminate lessons and promote replication.

Contributing to key national and international initiatives toward low-carbon industrialisation

The project will directly contribute to key national and international initiatives, including the Just Energy Transition (JET), the South African Renewable Energy Masterplan (SAREM), the G20 priority on Sustainable Industrialisation Hubs, and the COP29 Green Energy Zone Pledge.

Just Energy Transition In South Africa

- **Electricity:** Promotes the adoption of decentralised renewable energy systems in industrial spaces by assessing the renewable energy potential of selected industrial areas, implementing pilot demonstration projects, and sharing lessons learned. Goal: To support replication, improve energy resilience, reduce emissions, and encourage wider uptake of renewable technologies across the industrial sector.
- **Energy Efficiency:** Enhance energy efficiency in industrial spaces by assessing their energy optimization potential, identifying a pipeline of viable energy efficiency projects and exploring contracting models involving Energy Service Companies (ESCOs) for implementation. Insights will be disseminated to support wider adoption and replication across the industrial sector.
- **South African Renewable Energy Masterplan (SAREM):** Supports SAREM's objectives by mapping the potential for renewable energy

generation across industrial spaces in South Africa, laying the groundwork for designing a large-scale renewable energy deployment project, in line with SAREM's localization goals. The role of industrial spaces in supporting local manufacturing and the localization of key segments of the renewable energy and battery value chain will also be assessed.

G20 Priority on Clean Industrialisation Hubs

- Identifies innovative business models to transform the more than 400 industrial spaces in South Africa into LC-PEIS. This is aligned with the G20's vision for sustainable/clean industrial frontier hubs that support sustainable development and reduce carbon emissions.

Green Energy Zone Pledge (COP29)

- Promotes renewable energy deployment and energy efficiency within industrial zones, supports infrastructure readiness, emphasising inclusive growth through skills development and gender-responsive training, enhancing the enabling environment for scalable green industrialization, and fostering global partnerships, positioning it as a replicable model for industrial decarbonization in the Global South.

Cross-cutting themes

A cross-cutting theme throughout the project will be the development of skills and the active inclusion of women and youth in all activities, fostering broad-based participation in the green economy. In addition, the project also addresses Agenda 2030 and the Sustainable Development Goals through its various activities.

"Through partnerships and collaboration, the project is positioned as a replicable model for industrial decarbonisation in the Global South." - UNIDO



33% - South Africa's contribution to Africa's carbon emissions



14.2% - Increase in South Africa's GHG emissions from 2000 – 2017



44% - SA industry's energy demand (2021)



74.3% - of country's electricity sourced from coal (2025)



400+ industrial spaces in South Africa

Working Towards the SDGs

