



Industrial Spaces at the Heart of South Africa's Clean Energy Future

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South Africa's industrial sector is entering a new energy era. Rising energy costs, climate commitments and investor expectations are reshaping how industries produce and consume energy. For manufacturers and industrial developers, the shift to cleaner, more efficient systems is no longer just environmental, but also strategic. Industrial spaces such as industrial parks, logistics hubs, and special economic zones are emerging as critical platforms for decarbonisation and competitiveness.

These concentrated production ecosystems consume significant amounts of power but are well-positioned to drive transformation. By integrating renewable generation, energy efficiency, storage, and digital management systems, Industrial Spaces can evolve from major energy consumers to key contributors to national energy resilience.

Through on-site generation, energy optimisation and storage, they can relieve grid pressure, stabilise supply, and deliver surplus clean electricity to local users.

Renewable energy as a competitive edge for industrial spaces

Falling renewable costs have turned solar and wind into cost-stable alternatives to grid power. On-site renewable deployment allows industrial operators to build resilience against energy tariff volatility, while reducing emissions and ensuring energy security.

Flexible business models, such as Power Purchase Agreements (PPAs) and energy-as-a-service arrangements, enable installations without upfront capital, turning tenants into prosumers who both generate and consume energy.

By producing energy close to where it's used, industrial spaces enhance grid resilience, cut transmission losses, and attract private investment that expands national clean capacity without burdening public finances.

Efficiency and integrated energy panning the fastest path to impact

Energy efficiency remains the most immediate and cost-effective decarbonisation measure. Upgrading lighting, drives, HVAC, and compressed air systems delivers quick savings and performance gains.

Coupled with digital energy management platforms, facilities can monitor usage in real time, schedule predictive maintenance, and match demand to renewable generation.

Energy efficiency and renewable together form a dynamic system, balancing variable supply with responsive demand, transforming industrial spaces into intelligent energy ecosystems.

True transformation depends on coordinated energy planning across industrial spaces, municipalities, and utilities. Integrated approaches connect renewable generation, efficiency upgrades, and infrastructure investment to optimise resource flows.

Examples include:

- Using waste heat from one process to power another
- Deploying shared battery systems for load balancing
- Coordinating peak demand reduction through shared management platforms

Such coordination replaces fragmented efforts with scalable, resilient energy systems that serve both industry and the national grid.

Governance and collaboration lead to successful integrated energy systems

Transforming energy systems in industrial spaces requires as much coordination as technology. Multi-tenant environments need frameworks for shared investment, fair benefit distribution, and transparent decision-making.

Emerging models such as energy cooperatives, shared microgrids, and public-private partnerships enable industries to jointly plan, generate, and manage energy. Collaboration also drives industrial symbiosis, where energy, water, and by-products are exchanged to reduce waste and boost efficiency.

As digital tools mature, smart meters and data-sharing platforms are making real-time monitoring, trading, and optimisation possible. Industrial spaces that adopt these systems evolve into integrated energy ecosystems.

Yet technology alone is not enough. Strong governance and supportive policies are essential to ensure joint investment, fair participation, and lasting transformation.

Industrial spaces and national decarbonisation

Industrial spaces are pivotal to South Africa's net-zero pathway because they:

- Aggregate demand to make renewable projects bankable
- Support decentralised generation and storage
- Accelerate technology deployment through shared infrastructure
- Anchor regional economies in low-carbon, resilient systems

Their transformation creates a multiplier effect: cleaner industrial operations mean cleaner power systems, lower national emissions, and a more resilient economy.

The industrial spaces of tomorrow will not simply consume energy, they will produce, manage, and optimise it intelligently.

They will combine renewable energy, efficient technologies, and smart digital systems to create self-sustaining, low-carbon industrial ecosystems that support both economic growth and climate goals.

By embracing collaboration, data-driven management, and integrated planning today, South Africa's industrial sector can secure a future of economic strength and environmental resilience. □

Sustainable Industrial Spaces Programme

Enabling the advancement of greener, low-carbon industrial spaces in South Africa through partnership

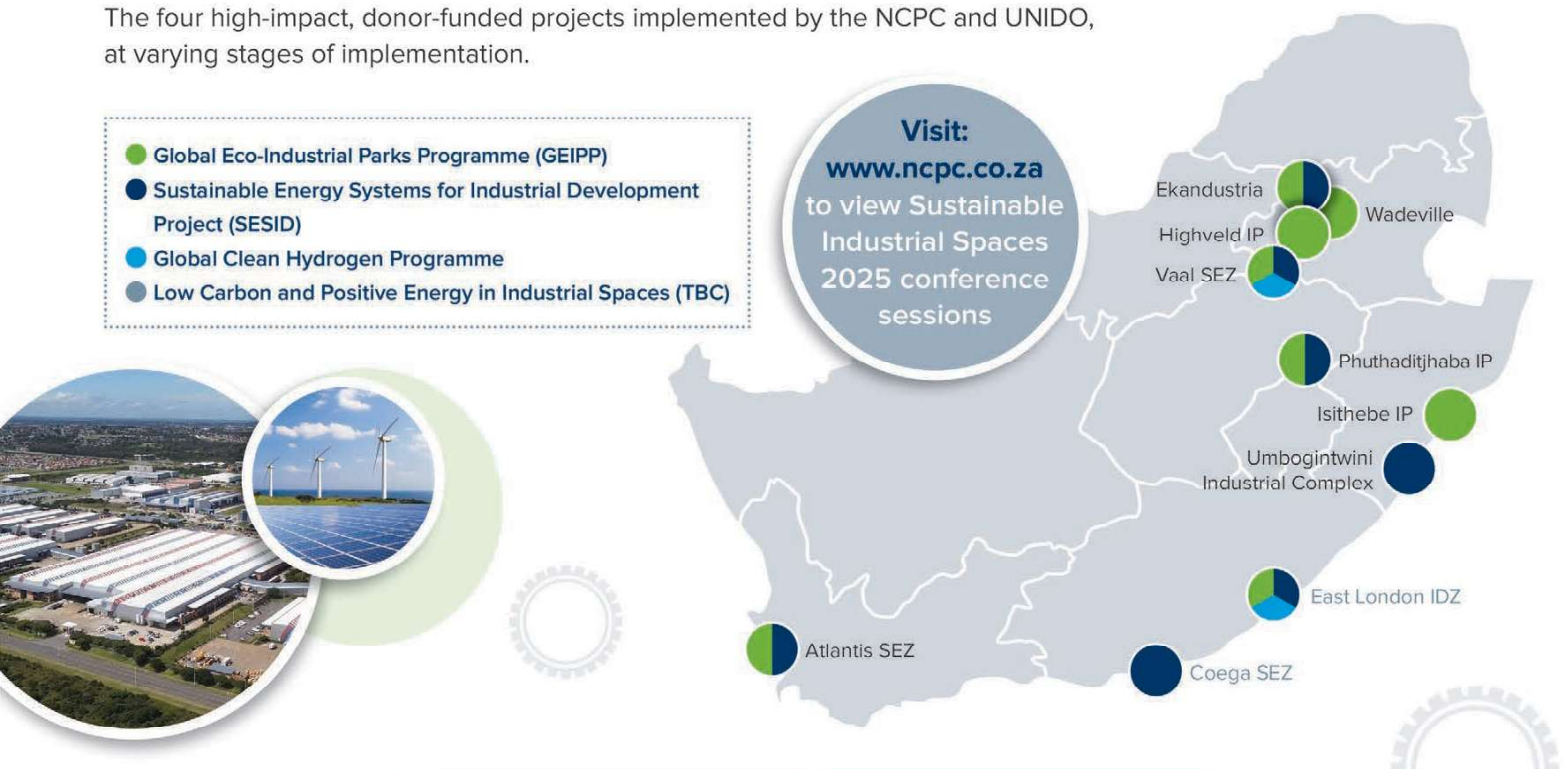
Industrial spaces are catalysts for economic growth and vital enablers of sustainable industrial development.

The National Cleaner Production Centre (NCPC) is leading national efforts to catalyse sustainable industrial development within SA's industrial spaces. Together with the Department of Trade, Industry and Competition (**the dtic**), and the United Nations Industrial Development Organization (UNIDO) the NCPC supports these economic hubs to reduce environmental impact, develop sustainable energy models and support the national vision of a low-carbon economy.

The four high-impact, donor-funded projects implemented by the NCPC and UNIDO, at varying stages of implementation.

- Global Eco-Industrial Parks Programme (GEIPP)
- Sustainable Energy Systems for Industrial Development Project (SESID)
- Global Clean Hydrogen Programme
- Low Carbon and Positive Energy in Industrial Spaces (TBC)

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