



A GREEN ECONOMY INDUSTRY AND TRADE ANALYSIS: ASSESSING SOUTH AFRICA'S POTENTIAL

South Africa has embraced the shift to a green economy to attain inclusive, equitable and sustainable growth and development. From a trade and industry perspective specifically, the transition materializes through two complementary streams, which go hand in hand: the development of new, green industries and the greening of existing, traditional industries.

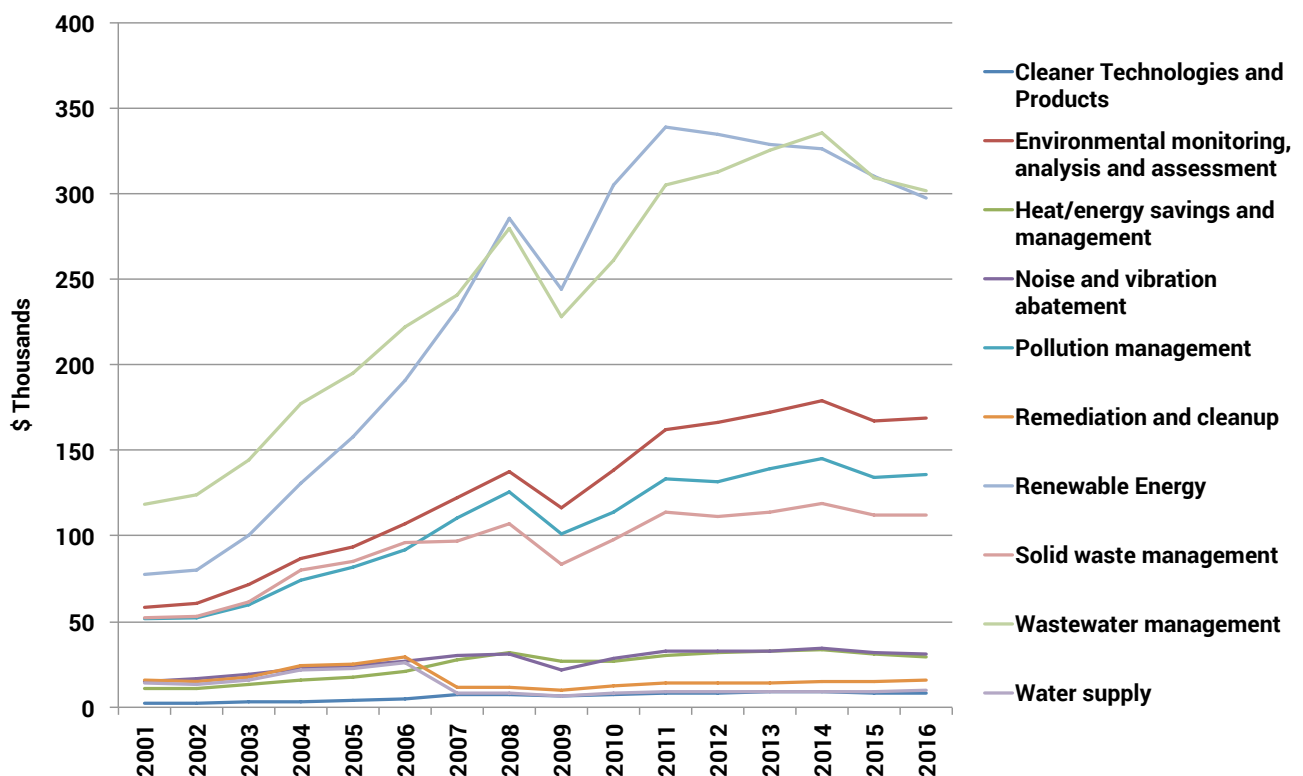
Within this framework, an analysis focused on the development of new trade opportunities for green industries in South Africa, both for import substitution and for exports. The main objectives were to:

- identify and assess economic sectors that offer particular trade opportunities from the perspective of green industrial development;
- inform a subsequent sector-specific assessment of opportunities at the green industry and trade nexus; and
- provide recommendations for policymakers on how to harness the identified opportunities in key sectors.

EXPLORING GREEN TRADE OPPORTUNITIES FOR SOUTH AFRICA

While no international definition has been agreed on, green trade can be defined as the import and export of goods and services that are produced using value chains with enhanced sustainability of transport, production, use, maintenance and end-of-life cycling. Global trade in green goods grew rapidly between 2001 and 2015, with global demand increasing 307%, compared to a total trade demand rising 160%.

World imports of green goods, from 2001 to 2015

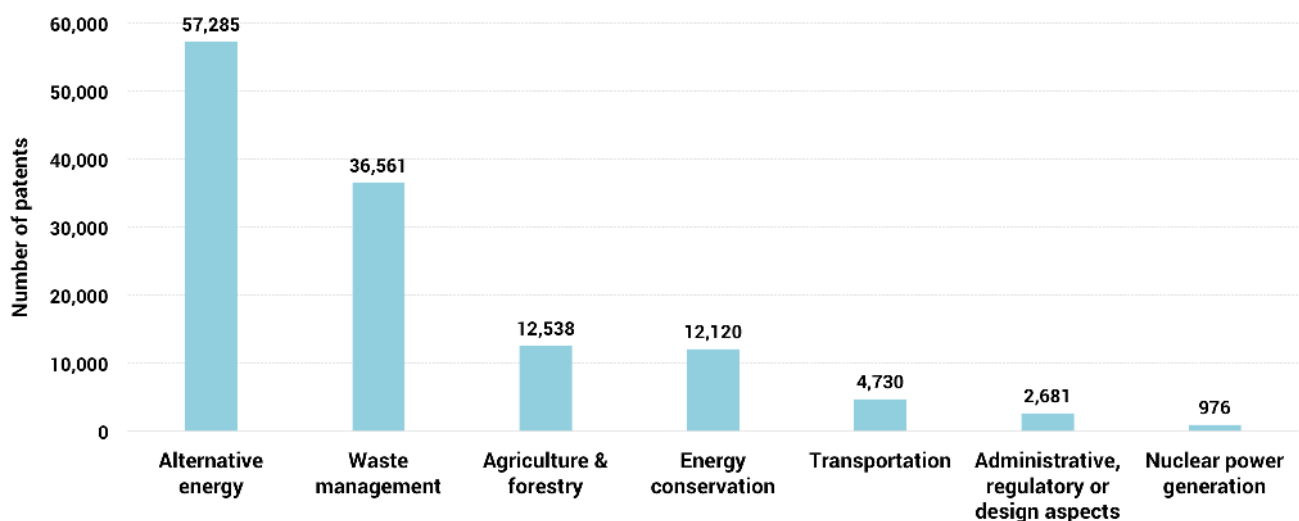


Source: Authors' calculations, based on Trade Map data.

The import-substitution of products sourced for large government programmes (for renewable energy and public transport for example) as well as the use of sustainable alternatives (such as biogas and bio-composite materials) to conventional products appear as South Africa's best green trade opportunity. On the export side, while the dynamic global market is booming, competing in this market will require creating local demand for green products, as well as helping exporters navigate the complexities of a global market place distorted by multiple government interventions and trade barriers.

Local dynamics in South Africa indeed play a driving force in developing green industrial and trade capacity. South Africa's transition to a green economy has largely been supported by imports. In the longer run, it is critical that the transition relies, as much as possible, on domestic manufacturing and triggers some exports. In the absence of industry data, an analysis of South African patenting activity helps inform the level of local capabilities in the country. South African patenting data show that there is significant research and development (R&D) in green technologies.

Number of patents (granted and pending) for green technologies across sectors in South Africa from 1977 to 2016



Source: Authors' composition, based on data from the Companies and Intellectual Property Commission

Despite the persistence of trade barriers limiting market access, this trend suggests the existence of numerous opportunities. From a South African perspective, this has not yet been translated into substantial exports, except for traditional strongholds. By contrast, the rollout of renewable energy technologies has triggered large imports into the country. South Africa's trade performance, government policy priorities and R&D capabilities, however, offer interesting insight into possible green industrial and trade development opportunities. To understand such potential, a more in-depth analysis of specific opportunities was conducted across five sectors, based on policy review and analysis, stakeholder consultation, and trade and industry data analysis. This work was structured around an exploratory phase and subsequently identified a shortlist of high-potential sectors.

EMBEDDED GENERATION TECHNOLOGIES

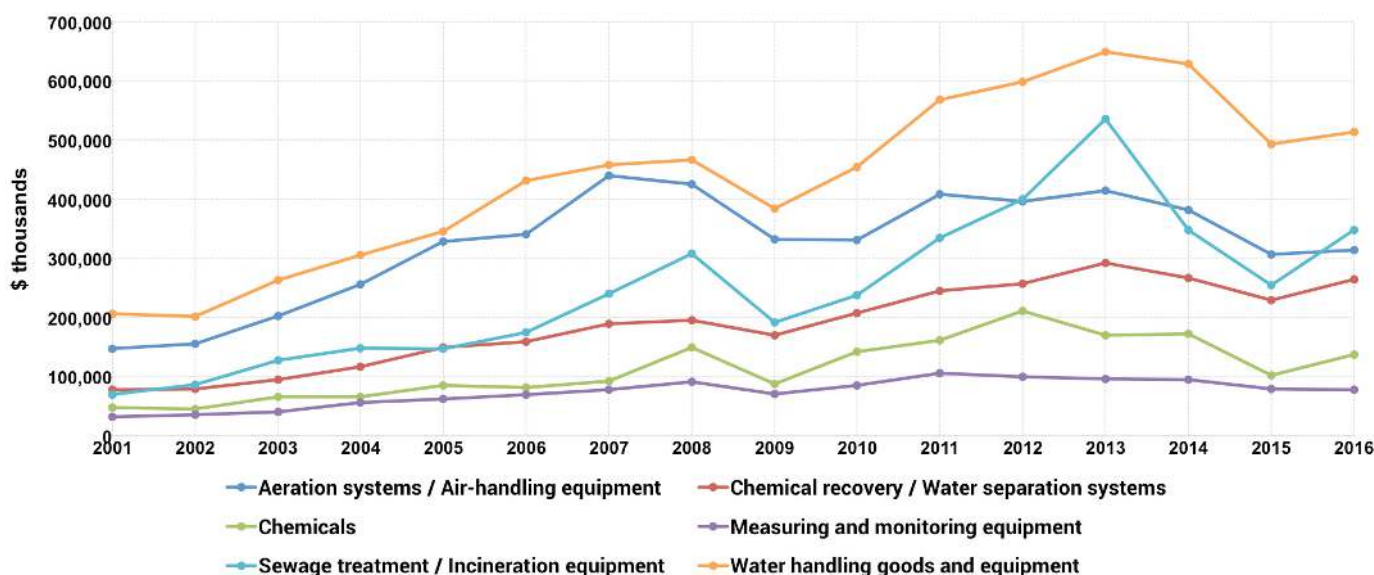
The analysis of the two core components of small-scale embedded generation (SSEG) systems, namely solar power systems and smart meters, reveals a large but complex global market. Rapid trade growth is counterbalanced by a strong role for the state in the rollout of SSEG systems, which results in a market distorted by serious non-tariff barriers like local procurement programmes and subsidies. These distortions, combined with an extremely competitive global market, limit (but do not close) export opportunities for South African firms, and demand careful targeting of export promotion strategies.

Import substitution is likely the greater opportunity for South Africa, underpinned by local content designation already in place for solar power systems and smart meters. Unlocking this potential will require completing the regulatory framework for SSEG, including developing national rules for municipalities, aligning standards for installation and for meters, and adjusting planning processes to create a stable market for embedded generation.

WATER TECHNOLOGIES

Water demand has increasingly been exceeding supply in South Africa and this gap is projected to grow. Water technologies, both for water treatment and water conservation, have a significant role to play. Despite some local capabilities, South Africa's imports of water technologies are higher than respective exports, presenting opportunities to expand the local manufacturing capability for import substitution as well as exports.

South African imports of various water technologies, from 2001 to 2016



Source: Authors' composition, based on data from the Companies and Intellectual Property Commission

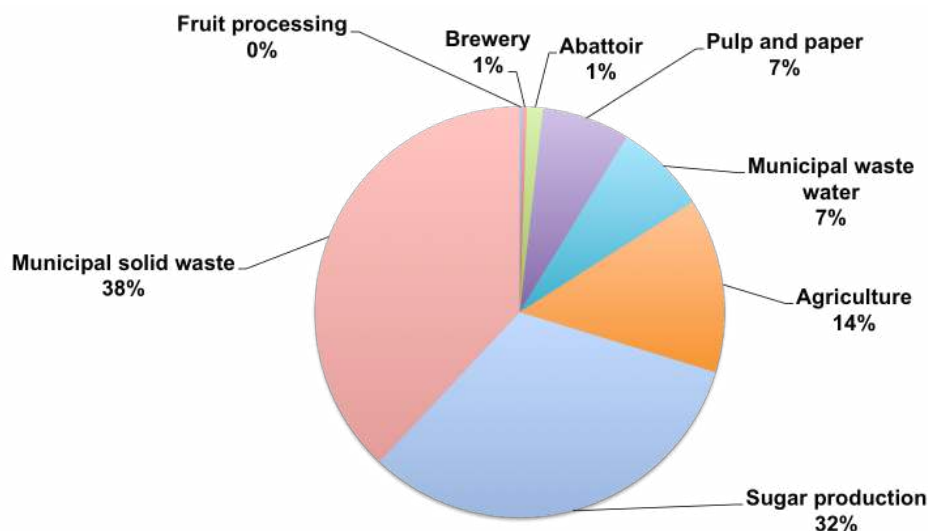
South Africa already has the R&D and technological capacity for most water technologies, though the government must provide more incentives and support to grow the sector. Demand for local technologies should be boosted through greater local procurement of water technology components. Locally appropriate, efficient, and affordable water technologies should also be promoted in South Africa, notably through increasing funding for R&D and technology commercialisation.

THE BIOGAS-TO-TRANSPORT VALUE CHAIN

Compressed biogas (CNB) and compressed natural gas (CNG) have been identified as an economically feasible means to reduce the dependence on (imported) crude oil while decreasing greenhouse gas emissions. Public transport systems as well as fixed route fleets, such as dump trucks, are prime candidates for conversion. However, the market for CNG and CNB as a transport fuel remains stagnant, due to insufficient infrastructure and a lack of demand for vehicular gas. Nevertheless, municipal solid waste has been identified as a significant possible source of biogas, indicating an opportunity to enhance economic, environmental, and human development, while tackling waste management issues and creating additional jobs.

To take off, the South African biogas-to-transport value chain requires tremendous commitment from the government (notably through local procurement) as well as favourable regulatory and legislative frameworks to transition the industry from its infancy into a thriving local manufacturing base.

Potential sources of biogas in South Africa



Source: Authors' compilation, based on EcoMetrix Africa, 2016

BIO-COMPOSITE MATERIALS

Biocomposites, materials made from natural plant and animal materials/extracts, represent a broad and rapidly developing set of interrelated technologies with a vast range of applications. For example, the rollout of biopolymers would allow biocomposite manufacturers to tap into a global market valued at \$175 billion.

For biocomposites to become competitive in a global plastics market that is highly efficient and underpinned by low petroleum prices, investment in the various biocomposite technologies will be needed. The vast range of biocomposite technologies, all of which are at different stages of efficiency, will require targeted and long-term R&D support to manage the high risks intrinsic to a technology at an early stage in its development. In addition, investment in technology needs to be aligned with efforts to develop a viable supply of inputs from agricultural or waste sources.

CONCLUSIONS

Ultimately, the opportunity to develop green industries and trade-related opportunities in South Africa, both for import substitution and export purposes, is promising. Ensuring that these opportunities materialize and translate into local economic development will, however, require substantial support from the South African government and active collaboration between public and private entities.

From a trade and industrial policy perspective, the growth of water technology manufacturing appears to be the most favourable opportunity for the country in the short term. In the longer run, establishing local expertise and capabilities in biocomposites emerges as a key opportunity, provided the state and the private sector make long-term commitments. By contrast, developing the biogas-to-transport value chain and manufacturing embedded generation technologies are less an industrial policy problem than a case of unlocking demand through state procurement and by enabling regulatory frameworks.

The full report and supplementary materials can be accessed from

<http://www.un-page.org/south-africa>