

CIRCULARITY IN PLASTICS IN SOUTH AFRICA

From linear to circular – opportunities in a circular economy for plastics in South Africa



A circular economy for plastics has projected net economic and job creation benefits in both developed and developing country settings. South Africa has good potential to realise the benefits in a circular economy for plastics, building on expertise in both the plastics production and recycling sectors. This series of 10 briefs provides the context of the plastics industry in South Africa and highlights opportunities in a circular economy: Part 1 of 10

The South African plastics industry is on the verge of change

Energy supply to the South African economy is dominated by coal, which is the feedstock for the majority of energy supply in the country at 74% in 2021, and the largest feedstock for plastics production locally. Additional fossil fuel sources for plastics in South Africa include oil and natural gas, also non-renewable resources. Furthermore, as South Africa transitions to renewable energy sources and aims to reduce greenhouse gas emissions, there may a shift from coal for energy generation to plastics and chemical production.

The value of the plastics industry to the South African economy is noteworthy, with a multiplier effect of 3.7 for every job created, and for every South African Rand (ZAR) invested in industry growth, a multiplier of 3.5. The industry provides income for an estimated 60 000 people, and the industry market size is estimated to be ZAR 70 billion (\$4.5 billion at \$0.0064 to the ZAR). Given the dependency of the South African plastics industry on fossil fuels, including local coal, the development of a circular economy for plastics in South Africa is closely linked to the Just Energy Transition. South Africa’s Materials Transition for plastics must likewise be carefully planned and enabled to retain the economic contribution and ideally boost job creation in the plastic value chain.

The plastics value chain in South Africa

The plastics material flows and value chain in South Africa largely reflect a linear economy, with a focus on (Figure 1)

Virgin polymer production

- o Imports of polymer at 67% of local virgin polymer production; and
- o Exports of virgin polymer at 46% of local production.

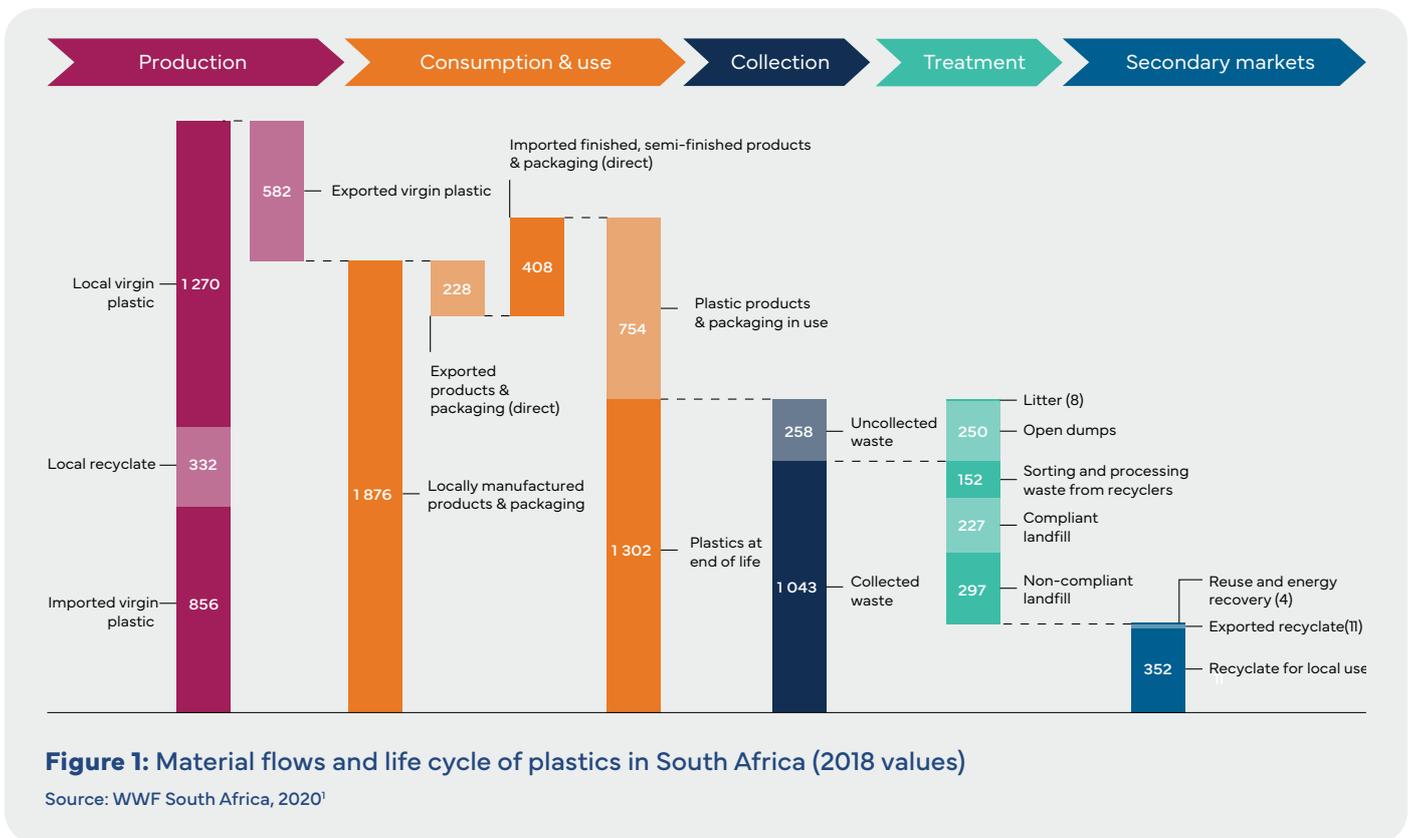
Products and packaging

- o Local conversion into products and packaging;
- o Imports of products and packaging (including estimates of filled packaging) at 22% of local production; and
- o Export of packaging and finished products estimated at 12% of local production.

End of life

- o An estimated 63% of plastics locally converted and imported (excluding exports) reach end of life annually, of this:
 - Uncollected - ~20%

- Collected – an estimated 80% of the end of life plastics are collected for disposal, including sorting waste from collectors of recyclables.
- Recycled – an estimated 27% of end of life plastics are returned to the plastics value chain in new products (including packaging).



Losing in a linear economy

The current largely linear economy in plastics, with a focus on virgin polymer production and limited cycling of plastic resources in the economy, is unsustainable for many reasons including high greenhouse gas emissions associated with a linear economy, straining the already limited capacity and infrastructure to manage plastics at end of life, the finite availability of landfill capacity, and the high extent of leakage into the environment.

Significantly, a largely linear plastics value chain represents lost value to the South African economy, not only in 'lost' resources, but in additional further wastage of resources to handle, clean-up and landfill plastics. Studies in both developed and developing country settings also indicate that a circular economy in material flows represents a net gain in income opportunities. Therefore, protecting jobs in perpetuating a current linear economy is likely to limit additional growth in income opportunities in a more circular economy for plastics in South Africa.

Opportunities in a circular economy

A circular plastics economy in South Africa (Figure 2) represents market opportunities in:

1. plastics derived from organic residues (whether bio-polymers, such as bio-PET; or bioplastics)
2. processes to increase recycled content into plastic products (creating the much-needed demand for the plastics recycling sector),

3. circular business models, including:
 - a. reuse/refill models for plastic packaging
 - b. re-manufacturing opportunities in plastic sectors other than packaging
4. additional opportunities in collection, sorting and aggregation of plastics at the end-of-first-life.

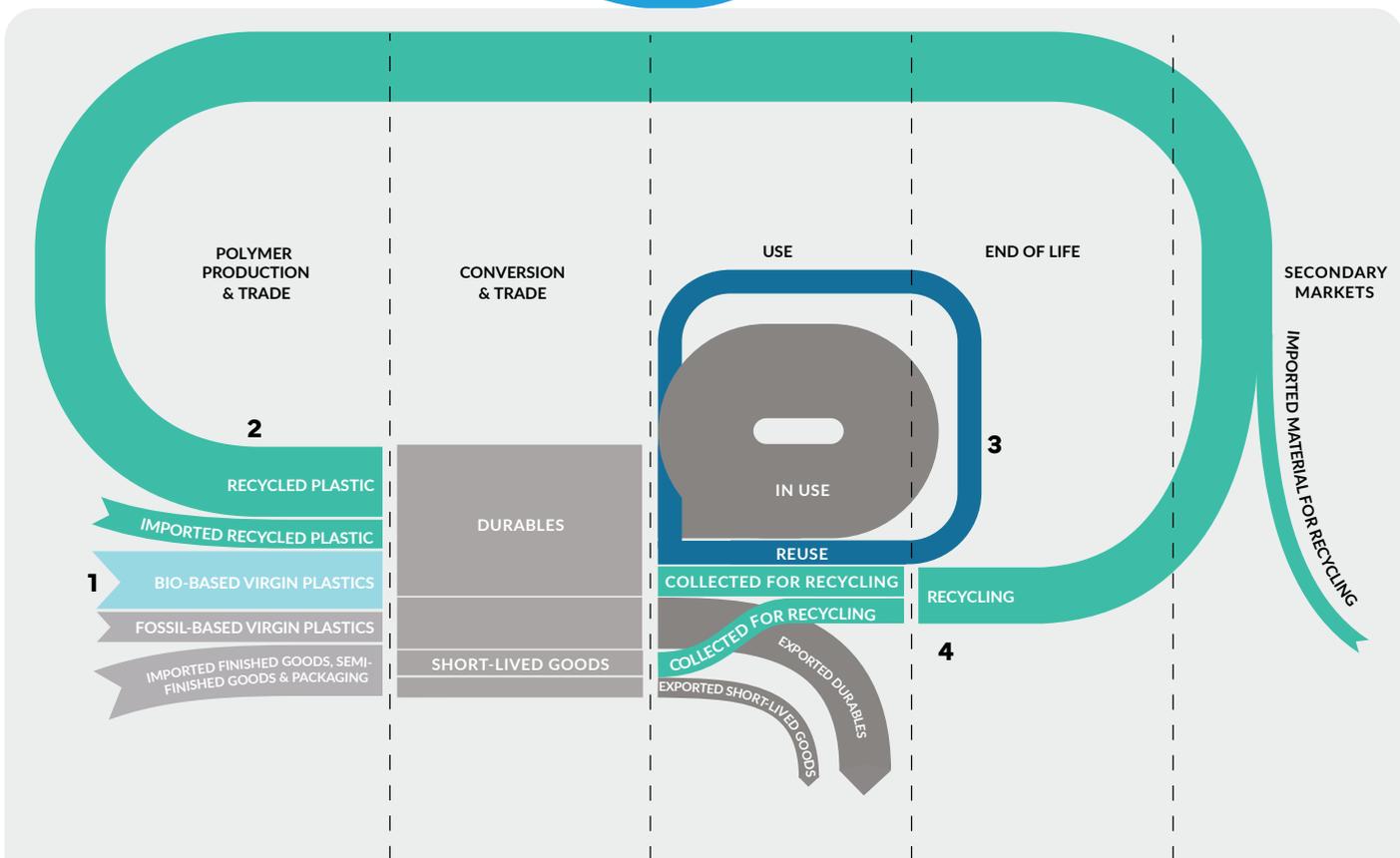


Figure 2: Snapshot of a circular economy for plastics in South Africa, with market opportunities identified

Adapted from: WWF South Africa, 2020¹

This summary is an extract from the report “*Market assessment of circular plastics opportunities in packaging, construction, agriculture and the automotive industry*”, which forms part of a series “*Circularity in the plastics value chain in South Africa – opportunities and barriers*”. The reports in the series are:

- o **Part 1:** The Plastics Landscape in South Africa – Mapping value chains and key players.
- o **Part 2:** South African enabling environment for a circular economy for plastics – a scan of best practice and current local and international policies and legislation.

- o **Part 3:** Market assessment of circular plastics opportunities in packaging, construction, agriculture and the automotive industry.
- o **Part 4:** A focus on increasing recycled content in packaging through multi-layer conversion.
- o **Part 5:** Advanced recycling technologies in South Africa – status quo and potential.
- o **Part 6:** Alternatives to problematic plastic packaging in South Africa.
- o **Part 7:** The current state of waste plastics management in South Africa.
- o **Part 8:** Realising opportunities for a circular economy for plastics in South Africa: actions for the short, medium- and long-term.

The individual reports and a summary of the entire series can be accessed by contacting the GreenCape Circular Economy team via circulareconomy@greencape.co.za.

The series is a product of the staff of the World Bank in collaboration with a research and analysis team comprising of GreenCape, the African Circular Economy Network (ACEN) Foundation, the South African Plastics Recyclers’ Organisation (SAPRO), WRAP, and WWF South Africa. Financing for this work comes from the **PROBLUE Trust Fund**.