

CIRCULARITY IN PLASTICS IN SOUTH AFRICA

Realising opportunities for a circular economy for plastics in South Africa: Actions for the short- medium- and long-term



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 10 of 10

This brief sets out a series of recommendations that could be implemented by government and industry to drive a more circular economy for plastics in South Africa.



The transition to a circular economy for plastics in South Africa

A circular economy for plastics in South Africa has the potential to deliver many benefits, including economic development and job creation, a reduced burden of waste management, decreased greenhouse gas emissions, and reduced leakage of plastics into the environment.

The transition from a linear to a circular economy for plastics needs to include upstream elements of a circular economy which have not received much attention in South Africa. These include:

- o Designing plastic products and materials for multiple lifetimes;
- o Alternative business models to deliver products and services (including reuse/refill models); and
- o The inclusion of recycled content.

This additional focus on 'upstream' from product conceptualisation to design of products and business models for optimum circularity will result in reductions or even phasing out of certain plastic streams, as materials with no potential for circularity are phased out, and recycled content replaces a proportion of virgin plastic.

Furthermore, to address the high carbon-intensity of South African-produced plastics which are largely derived from coal, as well as to shift towards renewable resources, deriving plastics from organic residues (whether as bio-based polymers identical to traditional polymers or as bioplastics) could be a focus for medium to long-term development for the plastics industry in South Africa. Such development cannot occur without additional funding or being incentivised through policy and regulation.



The transition to a circular economy for plastics in South Africa

Therefore, in a future circular economy for plastics in South Africa, feedstock to the plastic industry would be renewable (likely derived from organic residues), the polymer mix synthesised will be different, as will some of the products and business models, and therefore part of the systems to handle plastics at the end of first life. Such a large transition would need to be governed through policy and regulation and supported through additional funding to effect the transition.

As in any such change, specific business models or products manufactured may no longer have a place in the economy, while some new business models and products or services may flourish. The transition of industry sectors and skills is vital to secure the economic value, including growth and jobs, in a circular economy for plastics.



Making it happen

Short-term – existing levers to drive circularity in four of the five largest plastics markets in South Africa

In the short term, existing enablers, whether in the policy, regulatory or industry spheres, can be strengthened to support growth in a circular economy for plastics. These include to:

- o Leverage legislated extended producer responsibility (EPR) regulations in packaging to (a) drive separation at source of **all wastes**, and increase collection of plastics, and (b) institute measures to conserve limited landfill capacity, such as increasing landfill gate fees
- o **In plastic packaging:** Strengthen mandatory extended producer responsibility and voluntary industry initiatives such as the **South African Plastics Pact** to drive design for circularity, reuse, recycling and inclusion of recycled content.
- o **In construction:** Leverage South Africa's Preferential Procurement Policy and specific designated products for public procurement, South African Bureau of Standards (SABS) material and product specifications, green procurement policies in the public sector, as well as the use of existing tools such as the Green Star Rating Tool to promote circularity in construction and specifically improve recyclability and the inclusion of recycled content.
- o **In agriculture:**
 - Develop **CropLife South Africa's** network of recyclers to recover additional agricultural plastics to improve recycling of agricultural plastics,
 - Drive material substitution from plastics to materials that do not pollute the environment through agricultural accreditation schemes.
- o **In the automotive industry:** Expand the localisation and transformation targets in the **Automotive Sector Master Plan**, developed under the auspices of the Department of Trade, Industry and Competition (the dtic). In order to include circularity in specific targets to catalyse investment by the automotive industry to enable improved recyclability as well as inclusion of recycled content.



Research, development, and innovation at national scale

In the short-to medium-term (and ongoing) it is essential to provide the evidence base, technologies and innovation to move towards a circular economy for plastics in South Africa through strengthening the following programmes by, for example, provision of funding for expansion and integration:

- o The Department of Science and Innovation's (DSI) Decadal Plan for Science, Technology and Innovation for a Circular Economy (under development). This plan is expected to present a roadmap for the development of an evidence-based pathway to a circular economy for South Africa.
- o Science, Technology and Innovation for a Circular Economy (STI4CE) delivered by the CSIR and funded by the DSI to explore opportunities in a circular economy in South Africa, starting with a high level analysis of the following sectors: agriculture, energy, human settlements, manufacturing, mining, mobility, and water; and followed by more detailed analyses of agriculture, manufacturing and mining.

- o The DSI-CSIR Waste Research Development and Innovation (RDI) Roadmap which is focussed on research to improve the recovery and beneficiation of secondary materials, and which has fed into economic assessments of the bio economy in South Africa.
- o Chairs in Waste and Society, and Waste and Climate Change at universities, specifically instituted to perform research to inform policy and regulation in South Africa.



Research, development, and innovation – sectoral scale

Research, development and innovation is also required at a sectoral scale to address challenges and unlock opportunities for circularity for plastics in South Africa. Recommendations to accelerate these include:

- o **Increasing funding for sector-specific RDI in the automotive industry.**

The automotive sector has highlighted the need for research, development, and innovation (RDI) capacity, noting limited funding available through existing government funding mechanisms for research and innovation. Given the limited funding available in SA through the public sector, and to a lesser degree through the private sector, it is recommended that specific industry focus areas be selected to align with national development goals, as well as identified focus areas in both the Automotive and Plastics Industry Master Plans, ie the localisation of PP manufacturing, as well as the inclusion of local recycled content in PP products.

- o **Accelerate the development of renewable feedstock for the plastics industry by co-ordinating between Sugar Industry Master Plan and the Plastics Industry Master Plan, and supporting further research and piloting of plastics produced from organic residues.**

Existing initiatives include the Master Plan process of the dtic, including the Plastics, Sugar Industry and Automotive Master Plans. The development of renewable feedstock for the plastics industry is highlighted in the Sugar Industry Master Plan, and is referenced alongside the further developing bio-economy RDI hub at the CSIR, which extends the assessment of feedstock beyond the sugar industry residues. This bio-economy focus at the CSIR allows additional funding beyond dtic incentives to be accessed in the development of renewable feedstock for the plastics industry in South Africa.



Research, development, and innovation – sectoral scale

- o **Explore similar partnerships with other sectors to pool resources of funding and expert working groups to break down barriers and drive growth for a circular economy for plastics in South Africa.**

Other such partnerships in the other sectors could be explored to supplement available funding to drive RDI for circularity in other plastics sectors.



Medium- to long-term interventions to drive circularity in plastics (supported by the above RDI mechanisms)

- o Institute extended producer responsibility in the other large plastics sectors (construction, agriculture and the automotive industry) through extensive stakeholder consultation and socio-economic impact assessment studies.
- o Include plastics in the electronics, electrical and lighting sectors in the current mandatory EPR system.
- o Drive the inclusion of recycled content in plastic products:
 - Develop food-grade recyclate in the polyolefins (HDPE, LDPE and PP) –this may be possible to initiate within 5 years if there is brand owner demand.

- o Phase out plastics that have limited to no potential for circularity:
 - Examples for packaging: PS used on-the-go which has a high leakage rate into the environment), and a low recycling rate compared to other polymers, and PVC used in packaging applications which is not recycled.
 - Such phasing out could be enabled by EPR fees that take into account ease of recyclability as well as collection. This may be very effective to incentivise a shift away from PS and PVC packaging due to the difficulty in recovering and recycling these streams in South Africa.
- o Manufacture renewable feedstock for plastics in South Africa from local organic residues.



Drive maximum circularity in the region by enabling regional plastic flows for

- o Develop and implement a circular economy strategy for the region to facilitate inter-country trade of post-use plastic from countries with limited recycling infrastructure to countries with recycling infrastructure.

This needs to include a strategy to limit imports and trade of plastic applications that cannot be recycled or reused i.e., those that have a low market value at end-of-life. Such strategy development would fall under the auspices of the dtic.

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.

**The SA
Plastics
Pact**

 **GreenCape**