ADVANCING **CIRCULAR ECONOMY** IN SOUTH AFRICA

Barriers, Opportunities and Recommendations for Advancing Circularity in Plastic Packaging and Single Use Plastic Products

SUMMARY REPORT

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ACRONYMS

AHP	Absorbent Hygiene Product
ARO	African Reclaimers Organisation
BUSA	Business Unity South Africa
BBC	Black Business Council
CE	Circular Economy
CGCSA	Consumer Goods Council of South Africa
COGTA	Department Of Cooperative Governance and Traditional Affairs
COPCO	The Compostable Plastics Council
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organisation
CSP	Cities Support Programme (National Treasury)
DALRRD	Department of Agriculture, Land Reform and Rural Development
DfC	Design for Circularity
DFFE	Department of Forestry, Fisheries and the Environment
DfR	Design for Recycling
DHET	Department of Higher Education and Training
DPME	Department of Planning, Monitoring and Evaluation
DSBD	Department of Small Business Development
DSI	Department of Science and Innovation
EIA	Environmental Impact Assessment
EMF	Ellen MacArthur Foundation
EPR	Extended Producer Responsibility
EPS	Expanded Polystyrene
EPSASA	Expanded Polystyrene Association of South Africa
HDPE	High-density polyethylene
IndWMP	Industry Waste Management Plan
IPSA	Institute of Packaging SA
ITAC	International Trade Administration Commission of South Africa
IUCN	International Union for Conservation of Nature
IWMP	Integrated Waste Management Plan
IWMSA	Institute Of Waste Management South Africa
KPIs	Key Performance Indicators
LCA	Life Cycle Assessment
LCSA	Life Cycle Sustainability Assessment
(L)LDPE	(Linear) Low-density polyethylene
merSETA	Manufacturing, Engineering and Related Services Sector Education & Training Authority
MFMA	Municipal Finances Management Act
MRF	Materials Recovery Facility
NBI	National Business Initiative
NEPAD	New Partnership for Africa's Development
NRCS	National Regulator for Compulsory Specifications
NRF	National Research Foundation
OPRLs	On-Pack Recycling Labels
ORASA	Organics Recycling Association of South Africa
PCR	Post-Consumer Recyclate
PE	Polyethylene
PET	Polyethylene terephthalate
PETCO	The South African PET Recycling Company
	Life Cycle Assessment
PFMA	Public Finance Management Act 1 of 1999
Plastics SA	Plastics SA (umbrella body for the South African plastics industry)
Polyco	Plastics Responsibility Organisation NPC
PP	Polypropylene
PPP	Public-private partnership
PRO	Producer Responsibility Organisation
PS	Polystyrene
PVC	Polyvinyl chloride
RDF	Refuse-Derived Fuel
RDI	Research, Development and Innovation
SABS	South African Bureau of Standards
SALGA	South African Local Government Association
SANAS	South African National Accreditation System
SANS	South African National Standards
SAPRO	South African Plastics Recycling Organisation
SARS	South African Revenue Service
SASOL	South African Coal, Oil and Gas Company
SAVA	The Southern African Vinyls Association
SAWPA	South African Waste Pickers Association
SMME	Small, Medium & Micro Enterprise
The dtic	The Department of Trade, Industry and Competition
UNIDO	United Nations Industrial Development Organisation
WEF	World Economic Forum
WtE	Waste-to-Energy
WWF-SA	World Wide Fund for Nature – South Africa

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01

BACKGROUND & SCOPE

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Plastic is an incredibly useful and versatile material, which brings significant value to society, and provides a number of environmental benefits as compared to alternative types of materials. However, leakage of plastics to the environment is becoming an issue of increasing global concern.

Transitioning to a circular economy (CE) for plastics is widely acknowledged as being critical for addressing the issue of plastic leakage, while potentially bringing a range of additional socio-economic and environmental gains. The resolution adopted at UNEA5.2 to develop a legally binding global treaty (by 2024) for addressing plastic pollution, will provide a strong global driver for the transition to a circular plastics economy.

The World Bank Group appointed CSIR to conduct a study to map and assess existing activities around the circular economy of plastics in South Africa, and to support the South African Government in developing a roadmap to advance the circularity of plastics.

The **objectives** of this assignment were:

- to provide a comprehensive overview of current circular economy initiatives in SA (see the accompanying **baseline report**);
- to frame the circular plastics economy in the SA context; and
- to inform the development of a roadmap for advancing a circular plastics economy in SA, by providing a set of recommended short-, medium- and long-term interventions required to transition towards a circular economy pathway.

Given this focus on reducing leakage of plastics to the environment, a decision was made to delimit the **scope** of the study primarily to **plastic packaging and other single use plastic items;** which are particularly problematic from a leakage perspective.

Consistent with the original Extended Producer Responsibility (EPR) notice to producers of paper, packaging and some single use products (DFFE, 2020), we define packaging and single use plastic as follows:

- **packaging:** any material, container or wrapping used for the containment, transport, handling, protection, promotion, marketing or sale of any product or substance, which may be primary packaging, containing the actual product; or secondary packaging or tertiary packaging, typically containing products already packaged in primary packaging; and
- **single-use plastic:** disposable plastics (petrochemicals, compostable or biodegradable), that are commonly used for plastic packaging [or for] items intended to be used only once before they are thrown away or recycled, including but not limited to food packaging, bottles, straws, containers, tubs, cups and cutlery.

Other single use items that are not currently covered under the EPR Regulations, but which were raised by stakeholders as being of particular concern (e.g. absorbent hygiene products (AHPs), such as nappies), are also included.

However, given the significant cross-sectoral linkages between plastic packaging and other applications of plastic, and with other materials; as well as broader socio-economic and environmental challenges; it is critical to adopt a systems view of the circular economy. Indeed, one of the key recommendations is for an evidence-based, cross-sectoral circular economy roadmap for South Africa (beyond only plastics) to be developed.

This **summary report** highlights the recommendations derived from the study, based on extensive stakeholder engagement and desktop analysis. The intention is for these recommendations to be used to inform an evidence-based roadmap for a circular plastics economy, linking to a broader cross-sectoral circular economy roadmap for South Africa; in conjunction with other evidence. For more detail on how these recommendations were derived, including an in-depth analysis of the various barriers and opportunities identified for advancing the circular economy, please refer to the **full report.**

02

THE NEED FOR A CIRCULAR PLASTICS ECONOMY IN SOUTH AFRICA

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SA is plagued by stagnant GDP growth, significant unemployment, and persistent poverty and inequality. The COVID-19 pandemic has led to a further deepening of this crisis; and highlights the urgency for a new model of economic development to drive the post-pandemic recovery.

The prevailing economic development paradigm can be described as a linear, 'take-make-waste' model. Resources are extracted from the environment and used to make products, which are often used for only a short period of time, before being discarded back into the environment (EMF, 2020; UNIDO, 2017). Vast amounts of material and energy are used; while significant emissions and waste are generated.

In the case of plastic, recycling rates are relatively high in SA; with an effective recycling rate of between 14% and 22%, depending on the source and methodology (IUCN-EA-QUANTIS, 2020; Plastics SA, 2021; Van Os and De Kock, 2021; written input, 7 July 2022). Figure 1 provides a schematic representation of the current plastics value chain in South Africa.

However, population growth, urbanization, and income growth have resulted in increasing levels of waste generation in South Africa, the management of which is a challenge for municipalities, many of whom are struggling to maintain basic service levels. According to Statistics South Africa (2022); an alarming 37% of households do not have access to a refuse removal service, while 29% of plastic waste in SA is reportedly not collected (Rodseth et al., 2020; Russo et al., 2022). As such, a significant proportion of plastic waste is disposed via open dumpsites or open burning (Russo et al., 2022), or is directly littered. Even in the case of waste entering the formal waste management system, the majority of landfill sites are non-compliant with the norms and standards required to ensure effective containment of waste (Von Blottnitz et al., 2017; Nahman, 2021; Plastics SA, 2022).

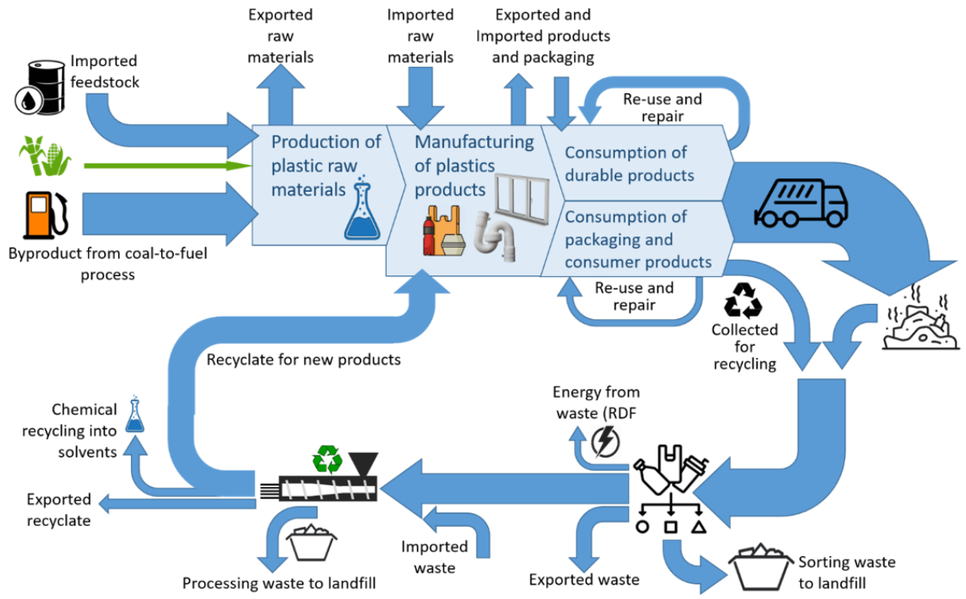

Figure 1: Representation of the SA plastics value chain in 2020 (Source: Plastics SA, 2022).

This lack of effective waste management systems gives rise to significant leakage of waste into the environment. A recent study (Verster and Bouwman, 2020) estimates that approximately 440,000 tonnes of unmanaged plastic waste leaks into the environment each year in South Africa, of which 15,000 – 40,000 tonnes reaches the oceans. The majority remains in the terrestrial or freshwater environment, or is subject to open burning (Russo et al., 2022).

Given the complexity of the problem, there is no 'silver bullet' for reducing the leakage of plastics to the environment. Instead, as highlighted by the global Breaking the Plastics Wave (BPW) study (PEW and SystemIQ, 2020), as well preliminary results from application of the Plastics to Ocean (P2O) model in South Africa (Russo et al., 2022); a system change is required, incorporating a suite of upstream and downstream interventions (see Figure 2).

The **circular economy** is recognized globally as an opportunity to reframe economic development and unlock new opportunities for growth and employment; while achieving global commitments relating to climate change and sustainable development, and reducing the negative impacts associated with both resource extraction and waste, including leakage of plastics to the environment. In short, it supports improved socio-economic development and well-being, while reducing environmental and human health impacts.

In contrast to the linear economic model, a circular economy "entails **keeping materials** and **products in circulation for as long as possible** through practices such as reuse of products, sharing of underused assets, repairing, recycling and remanufacturing" (Schröder, 2020). It is based on three principles: **Design out waste and pollution; keep products and materials in use; and regenerate natural systems** (EMF, 2017a).

Contrary to how the concept is often perceived, a circular economy is about more than simply improved waste management and recycling (although these are both still critical). It instead involves a systemic shift away from the traditional linear 'take-make-waste' economy; and encompasses a radical transformation of the ways in which resources are used and products are designed, and of the relationship between producers and consumers.

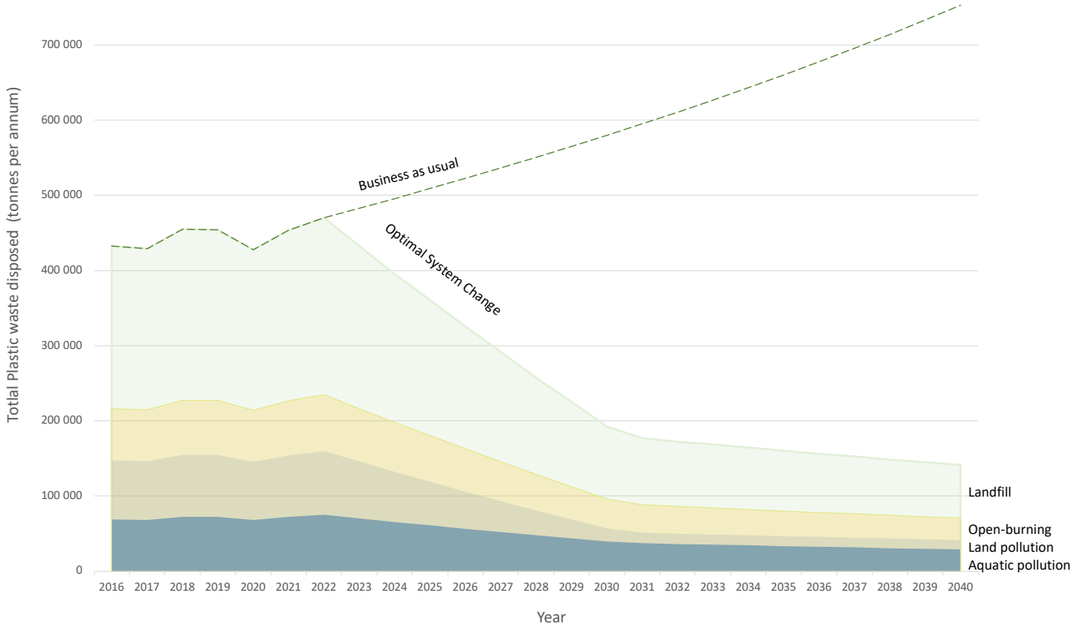

Figure 2: Initial findings from application of the P2O model in SA, showing that a system change is required to significantly reduce plastic leakage (Source: Russo et al., 2022).

In the case of plastics specifically, recycling "is only one of a suite of interventions required across the plastics life cycle. Others include elimination of unnecessary and problematic plastic items, product design for reuse and new product delivery models such as own-container dispensing schemes" (Sadan and De Kock, 2020). A circular economy for plastics is about keeping plastic materials circulating in the economy (and out of the natural environment) for as long as possible (EMF, 2017b); primarily through "recognising and capturing the value of plastics as a resource offering benefits to the economy, the environment and society in general" (Plastics SA, 2022).

In particular, a CE approach places an emphasis on upstream interventions, including rethinking and redesigning products and packaging, in such a way as to reduce the amount of waste generated in the first place, and to ensure that products and materials are reusable or recyclable at end of life. Specifically, the emphasis is on ensuring that all plastic items and materials have an economic value, increasing the likelihood that they will be recovered and circulated within the economy, and kept out of the natural environment.

Examples from other countries highlight that it is possible to add value to materials multiple times; and that business models and technologies that allow for plastics to be kept in circulation are economically attractive, and help to create employment (Plastics SA, 2022).

In South Africa, Benn et al. (2022) estimated the macro-economic impacts of moving toward a circular plastics economy (focusing on plastic packaging), in comparison to a Business as Usual trajectory. Results from the study suggest that, relative to business as usual, transitioning to a circular economy for plastic packaging by 2050 would result in increased economic activity; giving rise to a benefit of USD 7.2 billion (approximately R 115 billion) in additional GDP growth. In terms of impacts on employment, it finds "an overall increase in the demand for both skilled and unskilled labour, which suggests that there is strong potential for an inclusive circular plastics transition" (Benn et al., 2022).

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03

VISION FOR A CIRCULAR PLASTICS ECONOMY IN SOUTH AFRICA

For the purposes of this study, **a vision for a circular plastics economy in South Africa** was developed, by drawing on both relevant international and local literature, as well as engagements with representatives of key stakeholder groups (see Section 2).

The vision formulated for the purposes of this study was as follows:

South Africa has a **thriving, equitable** and **inclusive circular plastics economy**, which is **driven by innovation, and generates well-being** for **society and the environment.**

The circular plastics economy is characterized by the following **principles:**

- **designing out** plastic items that are either **problematic**[1] or **unnecessary**[2] (or both);
- all plastic products are **reusable, recyclable,** or **compostable**[3] in the South African context;
- plastics[4] **are circulated within the economy (at their highest value**[5], and **for as long as possible)**, and **kept out of the natural environment**;
- **decoupling**[6] plastic production from the consumption of finite resources, in favour of using **recycled materials**;
- there is **collaboration** across the value chain. All role-players are engaged and active in keeping plastic in the economy and out of the environment; and
- there is a **just transition**[7] to the circular economy; the health, safety and livelihoods of all role-players across the value chain are respected.

For the purposes of this vision, some relevant definitions and clarifications are as follows:

1. **problematic plastic items:** Items which, according to relevant scientific evidence:
   - are not reusable, recyclable (technically and/or economically) or compostable;
   - contain, or their manufacturing requires, hazardous chemicals that pose a significant risk to human health or the environment;
   - hinder or disrupt the recyclability or compostability of other items; and
   - have a high likelihood of being littered (EMF, cited in SA Plastics Pact, 2021a).
2. **Unnecessary plastic items:** Items which, according to relevant scientific evidence, can be avoided (or replaced by a reuse model), while maintaining utility. They have limited social utility, for which no alternative is required, and can be phased out without significant behavioural or infrastructural change (EMF, cited in SA Plastics Pact, 2021).
3. **Compostable plastics** are only suitable for specific targeted applications (EMF, 2021); and in closed loop and controlled systems, where there is no risk of mixing with the recycling stream, and where the requisite collection and composting infrastructure is in place. Such materials must be proven to be compostable in the SA context; and to match or exceed conventional plastics in terms of functionality, socio-economic outcomes and environmental performance across the life cycle.
4. **Circulating plastics** includes both reuse of plastic products, as well as effective collection and recycling of plastic materials through multiple life cycles.
5. **Highest value** means:
   a) maintaining the integrity of plastic products for reuse for as long as possible; and, when reuse is no longer possible; and
   b) maximising the utility of plastic materials, in terms of the range of applications for which the material can be used in its next life, and the potential for further recovery and recycling.

   For example, clear or white bottles should be reused as often as possible; and when reuse is no longer possible, they should be recycled back into clear or white products or packaging, rather than into black or dark colored items (such as refuse bags). In particular, down-cycling into composites of plastic with other materials, where there is limited potential for recovery and recycling of the plastic materials thereafter, should be avoided (meeting participants, 29 July 2022).
6. **Decoupling** in the context of plastics means gradually reducing inputs of finite resources (such as virgin materials from fossil fuels sources) per unit of plastic produced; first and foremost through the use of recycled inputs; and over time through switching to renewable feedstocks, where proven to be environmentally beneficial and to come from responsibly managed sources (EMF, 2021).

7. The concept of a **Just Transition** still needs to be contextualized for the case of the circular plastics economy; rather than simply transferring the existing definitions used in the context of coal mining and climate change (written input, 5 August 2022).

Table 1 illustrates how the first four principles of the vision can be translated into **four broad strategies** for driving a circular plastics economy (**rethink** and **reduce, redesign, reuse** and **recycle**). In addition, **improved collection** is critical for ensuring recovery of materials for recycling, while **controlled disposal** to engineered landfills will still be required for any residual waste that cannot be reduced, designed out, reused or recycled. The final two principles, relating to collaboration and inclusivity, are cross-cutting.

Table 1: Strategies for driving a circular plastics economy arising from the vision

CE Strategies	Linkages to the Circular Plastics Economy Vision
1. Rethink and reduce	• Designing out unnecessary plastic items • Innovation and alternative delivery models
2. Redesign	• Designing out problematic plastic items • All plastic products are reusable, recyclable or compostable in SA
3. Reuse	• Innovation and alternative delivery models • Circulating materials at their highest value and for as long as possible • Keeping plastic out of the natural environment
4. Recycle	• Circulating materials at their highest value and for as long as possible • Decoupling - using recycled materials • Keeping plastic out of the natural environment
5. Controlled disposal	• Keeping plastic out of the natural environment

The circular economy vision and principles, and the translation of this vision into a framework of broad circular economy strategies, is illustrated in Figure 3.

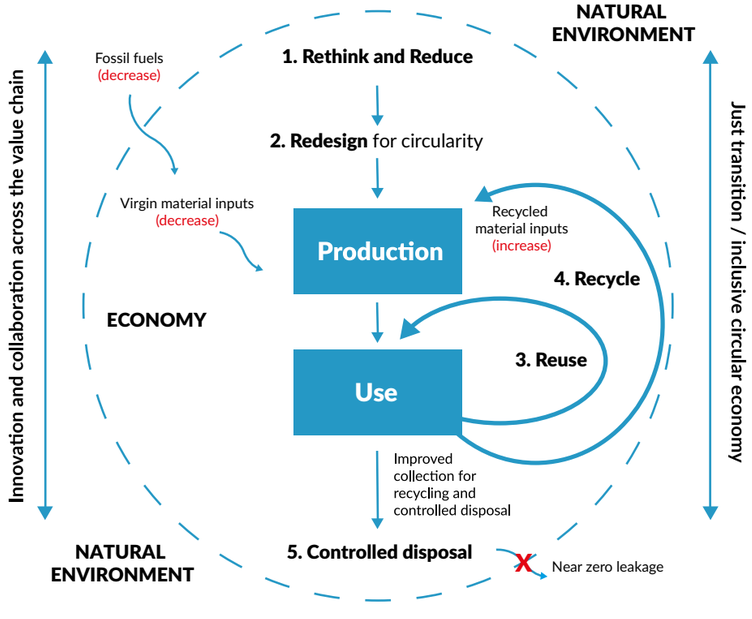

Figure 3: Conceptual framework for a circular plastics economy

The numbering of the circular economy strategies (1 – 5) reflects the prioritisation of interventions; with greater emphasis being placed on upstream interventions (rethinking, reducing and redesigning) over downstream interventions (recycling and controlled disposal). In order to drive a circular economy and reduce leakage of plastic to the environment, it is crucial to focus on upstream measures such as reducing and redesigning, rather than relying primarily on end-of-pipe interventions. For example, the global Breaking the Plastic Wave study found that reducing plastic production and consumption is the least cost and most-effective single strategy for reducing plastic pollution (PEW and SystemIQ, 2020). This is particularly relevant to the SA context, where the poor state of waste collection and disposal suggests that an over-reliance on end-of-pipe waste management will not be effective. Instead, reducing the amount of waste being generated in the first place, through upstream interventions, is crucial to reduce leakage of plastics to the environment.

04

RECOMMENDATIONS FOR ADVANCING A CIRCULAR PLASTICS ECONOMY IN SOUTH AFRICA

This section presents the key recommendations arising from the study for advancing the circular plastics economy, with a specific focus on plastic packaging and other single use plastic products. For more detail on how these recommendations were derived, including an in-depth analysis of barriers and opportunities, please refer to the full report.

The broad range of required actions clearly shows that there is no 'silver bullet' to address the challenge of plastic leakage, and that no single role-player can bring about the required changes in isolation. Instead, system-wide interventions are required; through a concerted, collaborative effort among all role players, all working towards a shared vision.

The recommendations are grouped under ten broad themes, which provide an indication of the underlying key messages:

a) adopting a common vision and roadmap for the circular economy;
b) creating an effective enabling environment;
c) improved waste collection and management to ensure recovery of recyclables and elimination of leakage;
d) designing out unnecessary and problematic plastic items;
e) driving design for circularity;
f) scaling up reuse models;
g) further development of recycling capacity where required;
h) driving demand for post-consumer recyclate;
i) improved communication, education and behavioural change; and
j) promoting inclusivity and a just transition.

Specific recommended actions under each theme are listed in Table 13. The "CE strategy" column provides an indication of which specific circular economy strategies (**rethink** and **reduce, redesign, reuse** and/or **recycle**) each recommendation relates to, which also highlights the cross-cutting nature of many of the required interventions.

Table 2 also proposes suggested timeframes for the required actions[1]. Included among the recommendations are some immediate next steps required to translate the proposed interventions into a roadmap for a circular plastics economy, in conjunction with other required evidence; linking to a cross-sectoral circular economy roadmap for South Africa. Finally, Table 13 suggests potential role-players who could be responsible for actioning each of the recommendations. However, the suggested timeframes, roles and responsibilities will require further stakeholder consultation, as part of the process of developing the proposed roadmap.

Table 2: Summary of recommended actions/interventions, and proposed timeframes and responsibilities

A: Adopting a common vision and roadmap for the circular plastics economy

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
A1	**Identify an appropriate custodian for a circular plastics economy roadmap,** within the context of the Plastics Industry 2020 Master Plan for Growth. Potential custodians include DSI (during the initial R&D stages), and thereafter to be taken over by the dtic, the Presidency, or an inter-ministerial grouping.	X	X	X	X	Immediate	All role players to agree on relevant custodian

[1] In some cases, a specific time period is indicated; in other cases, timeframes are indicated as short term (approximately 0-3 years), medium term (≈ 3-5 years), or long term (≈ 5-10 years).

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
A2	**All role-players to adopt an agreed, common vision for the circular plastics economy;** to guide collective action and ensure alignment and collaboration. The vision framed in this report could be used as a starting point for further discussion.	X	X	X	X	6 Months	Custodian identified in # A1; in consultation with all role-players
A3	**Conduct further research required to inform the circular economy roadmap,** including evidence on: - the overall net benefit/cost of transitioning to a circular economy across all sectors (beyond only plastics), taking into account socio-economic and environmental outcomes; - the (cost-)effectiveness of each intervention strategy (reducing, redesigning, reusing and recycling) in reducing plastic leakage; as well as their economic and social impacts; to inform specific targets (desired material flows); building on existing research; and - While not part of the long-term circular economy vision (and while the emphasis must be on reducing and redesigning); there is also a need for research to assess the suitability of RDF and other WtE technologies in the SA context (as compared to landfilling); at least as an interim measure; and under what conditions; to deal with residual waste that cannot be designed out, reused or recycled.	X	X	X	X	1-2 years	DSI, research entities, academia
A4	**Develop a circular plastics economy roadmap;** linking to a cross-sectoral circular economy roadmap for South Africa, based on sound scientific evidence (see # A3); and a systems thinking approach, taking into account cross-sectoral linkages. The roadmap should draw on the recommendations provided in this report, as well as other required evidence; and specify metrics/indicators to measure progress; as well as targets, timelines and roles and responsibilities. It must put in place measures to ensure accountability, and for monitoring, evaluation and reporting on progress in a transparent manner.	X	X	X	X	2-3 years	Custodian identified in # A1, in consultation with all role-players
A5	**Invest in capacity and infrastructure to conduct further required R&D and testing** to provide the evidence-base for the circular plastics economy; including: - development of an accredited testing facility to test barrier properties of new materials, and their ability to maintain shelf life; and - development of guidelines, capabilities and datasets for conducting LCA/LCSA studies in the SA context; including the potential development of a national LCA database.	X	X	X	X	Start in short term; medium term for national LCA database	DSI, NRF, research entities, academia, Plastics SA, the dtic, SANAS

B: Creating an effective enabling environment

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
B1	**Government to provide a clear policy direction and create a leaner, more effective enabling environment** to support the circular economy vision and roadmap. In particular: - policy alignment is required between the key government departments; as is consistency in definitions and interpretation of laws, regulations, classifications etc. between departments, spheres of government and pieces of legislation; and - policies and regulations must be evidence-based, streamlined and coherent; aimed at sending clear policy signals, easing regulatory burdens, stimulating private sector investment, and unlocking innovation.	X	X	X	X	Immediate, ongoing	Relevant national government departments including DFFE, the dtic, DSI, National Treasury, CoGTA
B2	**Review and update the definition of waste, waste classification regulations, and municipal by-laws, as well as EIA and licensing requirements** for certain types of facilities; to be more supportive of a circular economy; specifically: - updating the definition of waste so that source-separated waste for recycling is no longer viewed as waste that needs to be collected by the municipality; - updating municipal by-laws (following the updated model by-law on the Integrated Waste Management Planning Portal) to remove the assignment of ownership of waste to municipalities; - developing an end-of-life protocol to clarify at what point during recycling or composting does waste cease to be 'waste'; - consider putting in place a system allowing for General Technical Assessments instead of full EIAs for certain types of activities / technologies; and - Relaxation of licensing requirements for recycling facilities and/or replacement with general norms and standards, so as to ease the regulatory burden for development of recycling infrastructure.				X	Immediate	DFFE, municipalities
B3	**Improved regulation and quality control of imported products and materials,** with strict monitoring and enforcement (e.g. through declarations by importers to PROs); to assess conformance with stated HS/tariff codes, and compliance with relevant standards and specifications; so as to ensure imports are held to the same standards expected of local manufacturers (e.g. in terms of inclusion of PCR content, design for circularity, avoiding problematic materials, etc.).		X		X	Review of regulations in short term; ongoing monitoring	ITAC, the dtic, SARS, SABS, NRCS, Plastics SA, PROs
B4	**Develop evidence-based standards** relating to reusability, recyclate quality, and the use of recycled content in products and packaging; as well as for new types of materials that may arise.		X	X	X	Medium to long term	SABS, NRCS, Plastics SA, SAPRO, DFFE, the dtic
B5	**Independent, standardized testing, verification and certification for all products claimed as recyclable, compostable or biodegradable; as well as clear, standardized labelling** (see also # I1); to provide assurance of verified recyclability/compostability in SA conditions, inform end-of-life management, and reduce the risk of compostable materials entering the recycling stream.		X		X	Ongoing	Plastics SA; CSIR; SABS; NRCS; DFFE COPCO; PROs

C: Improved waste collection and management to ensure recovery of recyclables and elimination of leakage

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
C1	**Drastically improve the state of waste collection services and ensure proper disposal in fully compliant landfill sites;** to ensure that all recyclable materials are collected and that any remaining waste that can no longer be reduced, reused or recycled is at least collected and safely disposed in an engineered landfill site, in order to prevent any leakage of waste to the environment.				X	Immediate, ongoing	DFFE, provincial government, municipalities, SALGA
C2	**Conduct research regarding the feasibility of alternative systems for the collection, recovery and aggregation of source-separated waste** (e.g. separate collection, drop-offs, aggregation centres, beneficiation centres, product take-back or buy-back systems, deposit-refund systems, reverse vending machines; etc.); taking into account differing local and socio-economic contexts across South Africa, cost-effectiveness, impacts on employment and on informal waste pickers, etc.				X	Immediate	DSI, research entities, academia, consultants, PROs, waste picker associations
C3	**Implement separation at source, as well as appropriate, inclusive systems for the collection, recovery and aggregation of source-separated recyclables of sufficient volumes and quality for recycling;** taking into account the feasibility of different systems in different contexts, impacts on employment and on informal waste pickers; etc. (see # C2). This will require, among others: - investment in the required infrastructure for collection and recovery (e.g. conveniently located drop-off sites, MRFs, buy-back centres / mobile buy-back centres); - funding or subsidization of sorting and baling activities; - ensuring inclusive system design (see # J1); and - education and awareness raising (see # I2), as well as incentives/ behavioural change interventions (see # I3), to encourage participation.				X	Short term, ongoing	Municipalities, waste collectors (formal and informal), producers / PROs
C4	**Ensure close collaboration between municipalities, waste collectors (formal and informal), and producers/PROs to enable collection of recyclables** as per the 2020 NWMS, and to meet the EPR targets for collection and recycling. For example, a platform/roundtable discussion session could be created for industry and municipalities to unpack the NWMS and the EPR regulations to determine linkages and alignment; how implementation should be supported; and to clearly delineate roles and responsibilities, particularly around the collection of recyclables.				X	Immediate (roundtable discussion); ongoing collaboration	DFFE, CoGTA, SALGA, provincial government, municipalities, waste collectors (formal and informal), producers / PROs, SA Initiative to End Plastic Waste, SA Plastics Pact
C5	Facilitate the establishment of longer-term contracts between municipalities and private enterprises; so as to encourage investment in MRFs and other infrastructure, and/or to ensure surety of supply and sufficient volumes to enable economies of scale; e.g. by: - lobbying for special dispensation from Treasury to allow municipalities to sign long-term agreements with private sector operators; - training and guidelines for municipal officials to navigate the MFMA to enable entering into longer term contracts and PPPs; and - sharing of experiences between municipalities, and with potential private sector partners.				X	Immediate, ongoing	National Treasury, municipalities, private sector waste management companies, PROs, SALGA

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
C6	**Measures to improve landfilling standards and increase disposal costs; so as to incentivize diversion of waste towards alternatives, while reducing leakage.** For example: - licensing of landfill sites, and improved monitoring and enforcement of compliance with license conditions and with the Norms and Standards for Disposal of Waste to Landfill; - training/capacity development for municipal solid waste departments in the application of full cost accounting and cost-reflective tariff setting, and enforcement of implementation; - awareness raising regarding the benefits of diversion of waste from landfill; supported through changing KPIs to incentivize diversion of waste from landfill toward appropriate alternatives; and - conditional grant funding to upgrade landfills (e.g. through a dedicated Waste Infrastructure Development Fund); with the provision of funding conditional on sites being fully compliant with license conditions and Norms and Standards, the application of full cost accounting, and the degree to which waste collection and disposal tariffs are cost-reflective.				X	Immediate, ongoing	National Treasury, DFFE, provincial government, municipalities, SALGA, IWMSA, PROs
C7	**Put systems in place to enable tracking, recovery and sustained circulation of materials through all sectors of the economy.** In particular: - put effective systems in place to ensure tracking and recovery of plastic materials at end of life in applications not currently covered by EPR; and - in the medium to long term, EPR schemes for other applications of plastic could be considered, where appropriate.				X	Medium term. Additional EPR to be considered in the medium to long term	Producers, DFFE

D: Designing out unnecessary and problematic plastic items

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
D1	**Multi-stakeholder dialogue to agree on the criteria for identifying unnecessary and problematic plastic items,** building on the work of the SA Plastics Pact; **and to develop a preliminary list of items to be considered for designing out** (pending the outcomes of research to assess the impacts of doing so).	X	X	X	X	Immediate	DFFE, DSI, the dtic, Plastics SA, SA Plastics Pact, CSIR
D2	**Scientific research to assess the impacts of designing out unnecessary and problematic items.** Specifically, evidence is required regarding: - the socio-economic and environmental impacts of phasing out unnecessary items; including net impacts on employment and GDP; - the relationship and trade-offs between packaging and food waste for different food items; in terms of socio-economic and environmental impacts and preserving shelf life;	X	X	X	X	1-2 years	DSI, research entities, academia

#	Required Action / Intervention	CE Strategy: Reduce	CE Strategy: Redesign	CE Strategy: Reuse	CE Strategy: Recycle	Proposed Timeframe (from Sept. 2022)	Proposed Role-players
	- the potential for alternative delivery models (including reuse models); in terms of socio-economic and environmental impacts; while maintaining functionality and shelf life; and - the social, economic and environmental impacts of different materials across their life cycles; and the ability of alternatives to maintain functionality and shelf life; as well as assessment of the reusability, recyclability or compostability of potential alternative materials in the SA context, and the existence of effective waste collection and treatment infrastructure (see also # B5).						
D3	Based on the evidence provided under # D2; **finalize an agreed list of unnecessary and problematic items to be designed out; and develop an evidence-based policy approach and guidelines for addressing them** (e.g. through phasing out unnecessary items, alternative delivery models, redesign, or material substitution). This should include: - guidance on the amount of packaging required for different classes of products ('right-weighting'); taking into account the packaging required to maintain integrity of the product and preserve shelf life; - guidance on the criteria against which potential alternative materials should be assessed (including socio-economic and environmental impacts; functionality (including ability to maintain shelf life); reusability, recyclability or compostability; the existence of effective waste collection and treatment infrastructure; etc.); - clear, agreed definitions for terms such as recyclable, biodegradable and compostable; - guidance for brand owners to easily assess whether materials/ packaging are recyclable / compostable, and under what conditions; - guidance on the requirements regarding verification, certification and labelling of alternative materials claimed as being recyclable, biodegradable or compostable; and - guidance on the specific applications for which compostable plastic materials are suitable; and the conditions under which they could be considered.	X	X	X	X	2-3 years	DFFE, DSI, the dtic, Plastics SA, SA Plastics Pact, CSIR

E: Driving design for circularity

#	Required Action / Intervention	CE Strategy: Reduce	CE Strategy: Redesign	CE Strategy: Reuse	CE Strategy: Recycle	Proposed Timeframe (from Sept. 2022)	Proposed Role-players
E1	**Internal and collective commitments among brand owners and retailers to drive redesign for circularity** (including designing out problematic materials, design for reuse, design for recycling, and desi gn for inclusion of PCR content); supported through engagement with PROs, guidance from converters, education and awareness within organisations, the development of a stronger value proposition for investment in redesign, and the development of relevant KPIs.		X	X	X	Immediate, ongoing	Brand owners, retailers, PROs, converters, SA Plastics Pact
E2	**Standardize the materials used for specific applications;** so as to simplify communication and eliminate confusion, and to allow for a more streamlined and efficient recycling system, with improved economies of scale.		X		X	Short term	Plastics SA, SAPRO, PROs, SA Plastics Pact
E3	**Expand the existing Design for Recycling guidelines into evidence-based Design for Circularity guidelines;** providing guidance relating to: - design for reuse (e.g. design containers for easy emptying, cleaning and filling; to retain their integrity after multiple uses; and to be safe for reuse); - design for recycling; with an emphasis on designing for multiple lives (e.g. designing products and packaging so as to maximize their recovery potential and opportunities for further recycling at end of life; and avoiding design choices that limit recovery potential and further recycling applications); and - designing for the inclusion of PCR content.		X	X	X	Short term	Plastics SA, Packaging SA, PROs, SA Plastics Pact
E4	**Application of eco-modulated EPR fees based on the application of Design for Circularity principles;** including: - design for reuse; - design for Recycling, including recyclability of the material (specifically avoiding the use of problematic, difficult to recycle and non-recyclable materials), and other DfR principles; - design for multiple life cycles; and - the % of post-consumer recyclate (PCR) content, where applicable (e.g. for non-food contact applications).		X	X	X	Medium term	PROs
E5	**Private sector organisations to specify requirements for the incorporation of Design for Circularity principles in their procurement policies.**		X	X	X	Medium term	Private sector
E6	**Public procurement regulations to be updated to specify requirements for the incorporation of Design for Circularity principles.** A platform could be developed to share examples of green procurement practices (e.g. among municipalities).		X	X	X	Medium term	National Treasury

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F: Scaling up reuse models

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
F1	**Conduct research relating to reuse and refill models** (building on existing research); aimed at: - understanding consumer attitudes, perceptions and behaviour towards the reuse of packaging, and regarding the uptake of reusable packaging options and reuse/refill systems; - providing information on the socio-economic and environmental benefits of reuse as compared to recycling in the SA context; e.g. through the inclusion of reuse options in LCA/LCSA studies; - identifying specific types of products or packaging that are amenable to reuse models or reusable alternatives; taking into account functionality, environmental and socio-economic impacts (see # D2), health and safety issues (e.g. contamination risks), etc; and - exploring the various types of reuse and refill models, and evaluating their appropriateness to the SA context; specifically focused on: o practicality in the SA context; taking into account constraints relating to the costs and logistics of setting up return schemes, the wide reliance on public transport, lack of access to water for washing, etc. o ensuring inclusive design; taking into account affordability, impacts on informal waste pickers, etc. o ensuring that current recycling efforts are not hampered.			X		1-2 years	DSI, research entities, academia, consultants, PROs, SA Plastics Pact, WWF-SA, Plastics SA, waste picker associations
F2	**Provide support for the development and implementation of reuse and refill initiatives; e.g.:** - dedicated funding or support programmes for reuse initiatives; and - Awareness and support for brand owners and retailers to identify and adopt suitable reuse and refill models; and to put in place systems enabling return (or repair) where appropriate.			X		Ongoing	PROs, DFFE, SA Plastics Pact, DSI (Waste RDI Roadmap)
F3	**Multi-stakeholder engagement to drive awareness around reuse models and achieve scaling.** In particular: - the designers of reuse/refill models should engage with suppliers, producers, brand-owners and retailers to raise awareness, drive change, put the required systems in place, and achieve scaling; - brand-owners and retailers should engage with consumers to make them aware of available reuse/refill models and reusable packaging options; and encourage them to make use of such systems, and to request reusable options at point-of-sale, and - brand-owners and retailers should create awareness among consumers that many types of plastic packaging and other items typically discarded after a single use can in fact be reused; and encourage them to reuse such items as many times as possible, before recycling.			X		Ongoing	Designers of reuse models, suppliers, producers, brand-owners, retailers, CGCSA
F4	**Add reuse targets for certain classes of plastic packaging (where feasible) within the EPR Regulations;** informed by dialogue with relevant role-players to assess feasibility.			X		Medium term	DFFE, PROs, SA Plastics Pact

G: Further development of recycling capacity where required

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
G1	**Funding / incentives for the development of processing technologies, infrastructure and additional recycling capacity** where required (e.g. through public sector funding, the creation of an enabling environment to incentivize private sector investment, or through EPR). Funding should preferably be on a cost-sharing basis; and could take the form of grant funding (particularly for SMMEs), incentives (e.g. tax credits), or the application of conventional commercial financing models (e.g. loans) with preferential rates.				X	Ongoing	National Treasury, DFFE, the dtic, DSBD, PROs, financing institutions
G2	**Investment in innovative solutions to enable improved quality and grading of recycled polymers;** e.g. tracking and tracing of recyclate supply chains; sorting and washing technologies to deal with mixed / contaminated waste; as well as improved processing technology and quality management systems; to ensure a consistent supply of good quality PCR.				X	Medium term	PROs, the dtic
G3	**Conduct research to assess the feasibility and suitability of developing processing technology for more difficult to recycle waste streams and more advanced forms of recycling in the SA context;** e.g. food-grade recycling (including the feasibility of setting up closed-loop collection and recycling systems for food-grade polyolefins); chemical recycling; etc.				X	Medium term	PROs, DSI, NRF, research entities, academia
G4	**Investment (e.g. through EPR) in the development of processing technologies for more difficult to recycle waste streams and more advanced forms of recycling,** where found to be feasible and suitable in the SA context (see # G3).				X	Long term	PROs, the dtic

H: Driving demand for post-consumer recyclate

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
H1	**Invest in the development of further capacity for independent verification of PCR content,** to enable simple and cost-effective verification for a wider range of products; and an associated labelling system to provide assurance of verified PCR content.				X	Immediate	Plastics SA, SAPRO, PROs, the dtic, SANAS
H2	**Develop a brief (1-2 page) evidence-based guideline identifying suitable end-markets for PCR.** Criteria for the identification of such end-markets could include, among others: - legal, technical and economic feasibility of including or increasing PCR content in the product; - impact in terms of the quantity of PCR that could be absorbed / virgin inputs that can be replaced; - avoiding the development of new unnecessary or problematic products (see # D3); and				X	Short term	SA Plastics Pact, SA Initiative to End Plastic Waste, SAPRO, the dtic

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
	- likelihood that the material will be recovered and recycled again at end of life in the new application; e.g. based on: o the range of further applications in which the material can be used once it reaches end of life; i.e. keeping material at its highest possible value (in terms of utility for further recycling applications), and avoiding applications with limited further recovery and recycling potential. o whether systems are in place enabling recovery at end of life in the new application. o technical and economic feasibility of recovery, separation and recycling of materials at end of life.						
H3	**PROs, brand-owners/retailers, converters, recyclers and virgin polymer producers to collaborate to drive demand for PCR as a substitute for virgin inputs;** e.g. by developing, trialing and implementing products containing PCR, and developing end use markets.				X	Short term, ongoing	PROs, brand-owners/retailers, converters, recyclers, virgin polymer producers
H4	**Brand-owners and retailers to specify requirements for PCR content in their products and packaging;** particularly for non-food contact applications.				X	Short term, ongoing	Brand-owners and retailers
H5	**Where feasible, add mandatory phased targets for the inclusion of PCR in products and packaging within the EPR Regulations,** with an initial focus on non-food contact applications. Feasibility to be assessed in consultation with PROs; taking into account legal/technical/economic constraints for PCR inclusion, and the existence of capacity for independent verification of PCR content (see # H1).				X	Medium term	DFFE, PROs
H6	**Private sector organisations to specify requirements for the inclusion of PCR content in their procurement policies,** based on the guidelines proposed in # H2.				X	Medium term	Private sector
H7	**Public procurement regulations to be updated to specify requirements for the inclusion of PCR content,** based on the guidelines proposed in # H2. For example, identified products purchased using public funds could be required to include a minimum % of PCR; alternatively, the actual % of PCR content in the product could be factored into the procurement score. A platform could be developed to share examples of green procurement practices (e.g. among municipalities).				X	Medium term	National Treasury

I: Improved communication, education and behavioural change

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
I1	**Mandatory application of a harmonized On-Pack Recycling Label (OPRL) system across all products and packaging (including compostable plastics, as well as non-plastic products and packaging);** based on clear, agreed definitions of key terms (recyclable, recycled, compostable etc.). This system should build on the existing OPRL initiative underway through WWF-SA and the SA Plastics Pact, and be linked to the awareness and education campaign discussed under # I2.				X	Immediate, ongoing	SA Plastics Pact, WWF-SA, brand owners, retailers, the dtic
I2	**Develop an evidence-based, credible, and ongoing awareness and education campaign;** with a clear and consistent message for all role-players, based on the research proposed under # A3, D2, etc. Include information on: - what is meant by a circular economy (in general, and with specific reference to plastics); - clear, unambiguous definitions for terms such as single use, reduce, reuse/reusable, recycle/ recyclable, biodegradable/ compostable, etc., to ensure agreement and alignment on definitions; - an understanding of the benefits of plastic; and a mindset change away from seeing material substitution or recycling as silver bullets; towards understanding that all materials have value, but need to be designed and used in a more circular way, with an emphasis on reduction and reuse; - the impacts of different material choices; so as to simplify comparison and facilitate more sustainable choices for producers and consumers; and - the benefits of using PCR content in products; and of purchasing products with a higher PCR content. This message should inform communication at all levels (although different role players would be involved in dissemination, depending on the target audience); to ensure that consistent information is being shared, and to avoid confusion and misinformation. For example, brand owners and retailers should educate consumers around: - differences between reducing/reusing/repurposing/recycling; and the benefits of reducing/reusing over recycling; - the differences between biodegradable, compostable and recyclable; emphasizing that products claiming biodegradability/compostability will only do so under certain conditions, and can contaminate the recycling stream; and - what can and can't be recycled (linked to the OPRL system proposed in # I1); how to separate their recyclables, where to take them, the importance of supporting informal collectors, etc.	X	X	X	X	Short term, ongoing	Central message to be developed by the dtic, DFFE, PROs, WWF-SA and SA Plastics Pact (working in collaboration); and then communicated via existing education initiatives, municipalities, brand owners, retailers, schools, media etc.
I3	**Incentives and behavioural change interventions** (e.g. behavioural 'nudges'), aimed at: - addressing unsustainable consumption patterns and lifestyles; - reducing the consumption of unnecessary items (e.g. avoiding the provision of 'free' plastic cutlery, straws, bags etc. as the default option; and likewise for non-plastic products); - promoting DfC and the use of PCR content in production; and incentivizing consumers to choose products that have been designed for circularity and have higher PCR content; - promoting reuse of plastic packaging and other items (e.g. discounts for reusing containers/bags, own-container dispensing systems with lower prices relative to packaged products, visible messaging outside the store reminding consumers to bring their reusable containers/bags, etc.); - incentivizing return of items for reuse or recycling (e.g. through product take-back / buy-back systems, deposit-refund systems, reverse vending machines, etc.); and - encouraging participation in separation at source, or bringing recyclables to drop off facilities.	X	X	X	X	Ongoing	PROs, brand owners and retailers, CGCSA, media, municipalities

J: Promoting inclusivity and a just transition

#	Required Action / Intervention	CE Strategy				Proposed Timeframe (from Sept. 2022)	Proposed Role-players
		Reduce	Redesign	Reuse	Recycle		
J1	**Ensure integration of informal collectors within collection and recovery systems** (including separation at source, see # C3); through implementation of the Waste Picker Integration Guidelines; and as per the requirements of the EPR Regulations, including payment of a collection service fee.				X	Short term, ongoing	Municipalities, industry, PROs, CSOs, waste picker associations
J2	**Ensure inclusion of the informal sector within the circular economy more broadly;** e.g. by: - including the informal sector in decision making and policy making processes; and - expanding the Waste Picker Integration Guidelines to cover other circular economy activities undertaken by the informal sector.	X	X	X	X	Ongoing	DFFE, DSI, CSOs, waste picker associations
J3	**Develop decentralized, local solutions appropriate for areas located far from recycling markets** (especially rural areas); e.g. development of local value adding/recycling capacity and local markets; to enable local economic development.				X	Ongoing	DALRRD, provincial government, district and local municipalities
J4	**Safeguarding of livelihoods and employment, e.g. through retraining and reskilling of workers** to transition toward new and emerging activities, and the development of transferable skills.	X	X	X	X	Ongoing	Relevant industry associations, DHET, merSETA, BUSA, BBC, Unions, NBI, education and training institutes

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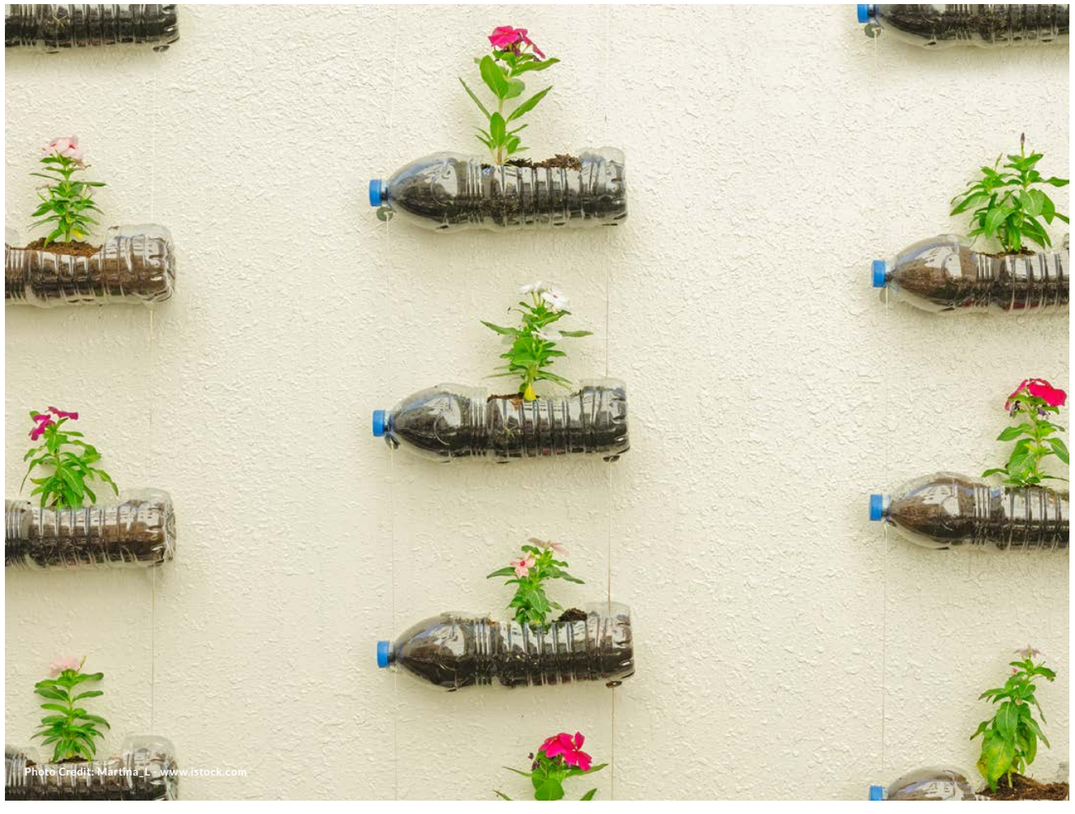

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