



Packaging SA Industry Waste Management Plan – Federation of Plans –

DRAFT FOR PUBLIC COMMENT

Stakeholder Engagement 20 July 2018 - 20 August 2018



Call for public comment on Packaging South Africa Industry Waste Management Plan

The National Department of Environmental Affairs (DEA) issued the Section 28 Call for Industry Waste Management Plans on 6 December 2017. In response, Packaging South Africa has drafted a consolidated multi-stream Industry Waste Management Plan for the paper and packaging sector based on the Extended Producer Responsibility (EPR) Model. The Packaging SA EPR Plan will be submitted to the DEA by 05 September 2018.

Representation by all stakeholders, members and non-members is integral to the transparency and participative nature of such a process. We invite interested parties to submit written representations or objections within the 30-day consultation period culminating on 20 August 2018.

To view the Plan online:

<http://www.jgafrika.com/projects/#public-participation>

<https://www.packagingsa.co.za/waste-management-plan>

Written representations, support and/or objections must be sent to: PSA@jgafrika.com

This document has been drafted by Sally-Anne Käsner and Bonté Edwards from JG Afrika (Pty) Ltd, on behalf of Packaging SA and the representative PROs.



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The **PACKAGING SA** EPR plan has taken a great deal of effort to compile with the input from a variety of stakeholders to date and these are acknowledged here. It is with further input from the public and interested parties that will further contribute to ensure that a successful plan will be submitted.

<p>City of Cape Town – Alison Davison, Barry Coetzee, Ian Oliver, Thembalani Mandindi, Noel Johannessen</p> <p>Sustainable Retailers Forum - represented by the Moss Group</p> <p>Consumer Goods Council of South Africa – Patricia Pillay</p> <p>SALGA – Balanganani Nengovhela</p> <p>Department of Trade and Industry (the dti) – Ilze Baron, Annelize van der Merwe, Gerhard Fourie</p> <p>BMi Research - Gareth Pearson, Dana Braithwaite, Marilyn Nel, Cleide Tinga</p> <p>CSIR – Prof Linda Godfrey, Dr Suzan Oelofse, Anton Nahman, Douglas Trotter, Ravini Moodley, Tanya du Toit</p>	<p>Plastics SA – Anton Hanekom, Douw Steyn</p> <p>WastePlan - Bertie Lourens</p> <p>National Cleaner Production Centre – South Africa (NCPC-SA) - Ndivhuho Raphulu</p> <p>GreenCape – Quinton Williams, Sam Smout</p> <p>University of the Witwatersrand (Wits) - Dr Melanie Samson</p> <p>University of the Western Cape (UWC) - Prof Catherina Schenck</p> <p>Department of Environmental Affairs and Development Planning (DEA&DP) – Eddie Hanekom, Marius Venter, Belinda Langenhoven, Dean Gilbert</p> <p>Tourism Business Council of South Africa (TBCSA) - Boitumelo Moleleki, Jodene Erasmus</p> <p>Producer Responsibility Organisations (PROs) and respective Board Members: Packaging SA, Polyco, PETCO, MetPac-SA; Polystyrene Association of South Africa, SAVA, PRASA/PAMSA, The Glass Recycling Company</p>
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Executive Summary

Packaging South Africa (**PACKAGING SA**) has drafted an Integrated Waste Management Plan (Plan) in response to Government Notice 41303 dated 6 December 2017 calling on the paper and packaging industry, electrical and electronic industry and lighting industry to develop and submit Industry Waste Management Plans (IndWMPs). The Plan needs to adhere to the requirements as included in the National Environmental Management: Waste Act, 59 of 2008 (NEMWA), Section 30(2) as well as what has been proposed in the abovementioned Notice issued in the Government Gazette.

It is important to note that whilst a 5-year implementation IndWMP has been drafted, the plan is part of a bigger Extended Producer Responsibility (EPR) strategy to transition South Africa's waste sector toward a more Circular Economy. The longer-term vision is to stimulate a secondary economy which would bolster additional employment and transformation opportunities through the development of supplementary material markets.

A question that this EPR Plan needs to answer is:

“How can an EPR Plan respond to the needs of South Africa and stimulate an economy that can foster meaningful work opportunities; encourage partnerships and provide a platform for transformation?”

The Paper and Packaging Industry has already been achieving great successes in terms of the recovery of recyclables and diverting waste materials from landfill. These systems have been operated by Producer Responsibility Organisations (PROs) funded by Industry on a voluntary basis.

The PACKAGING SA EPR Plan goes much further and embraces the opportunity for the paper and packaging industry to participate in social and economic transformation.

This EPR Plan wants to collaborate with Government to achieve its objectives of economic transformation and economic growth through a diversified industry. The intention is to build resilience to external factors (i.e. raw material imports and price fluctuation) over time by influencing the transition to the types of paper and packaging materials that have inherent value to be collected, transported, recycled / beneficiated into new products and new markets.

Federation of Plans

PACKAGING SA and PROs formed the Federation of Plans in response to Government Notice 41303 dated 6 December 2017 calling on the paper and packaging industry, electrical and electronic industry and lighting industry to develop and submit Industry Waste Management Plans (IndWMPs). The Federation of Plans therefore includes the following paper and packaging material streams:

- Glass (represented by The Glass Recycling Company (TGRC))
- Paper & Board (represented by PAMDEV¹)
- Metals (represented by MetPac-SA)
- Polyolefins (represented by Polyco)
- Polyethylene terephthalate (represented by PETCO)

¹ PAMDEV is a non-profit special purpose vehicle established for the purpose of becoming the Paper Producer Responsibility Organisation of the Paper Manufacturers Association of South Africa (referred to as “PAMSA”) and the Paper Recycling Association of South Africa (referred to as “PRASA”).

- Polystyrene (represented by the Polystyrene Association of South Africa)
- Vinyls (represented by South African Vinyl Association – SAVA)

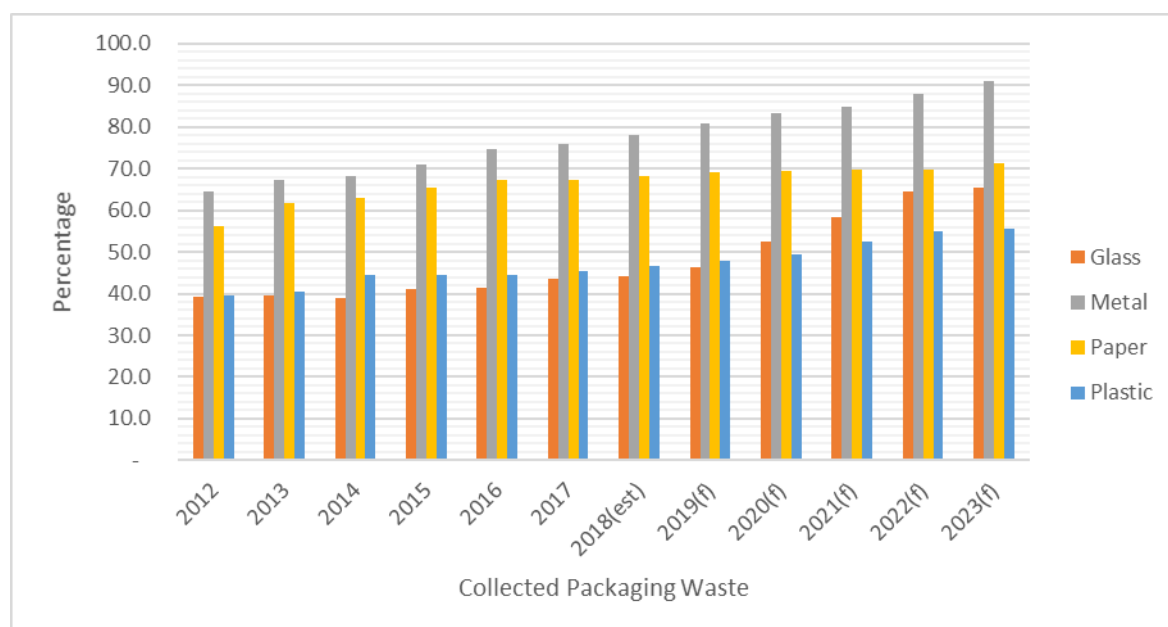
The purpose of a Federation of Plans is to provide a multi-stream approach to a complex problem, i.e. waste streams are often mixed, even source separation schemes are generally implemented on a commingled (i.e. dry recyclables) basis.

Approach

The approach that will be undertaken in the fulfilment of the Federation of Plans is via Extended Producer Responsibility (EPR) considering the full value chain of paper and packaging material.

It is important to note that in 2016, 58% of packaging waste material was collected for recycling in South Africa through the existing PRO voluntary EPR Programmes that are currently in place.

This is a relatively high collection rate when compared to international standards.

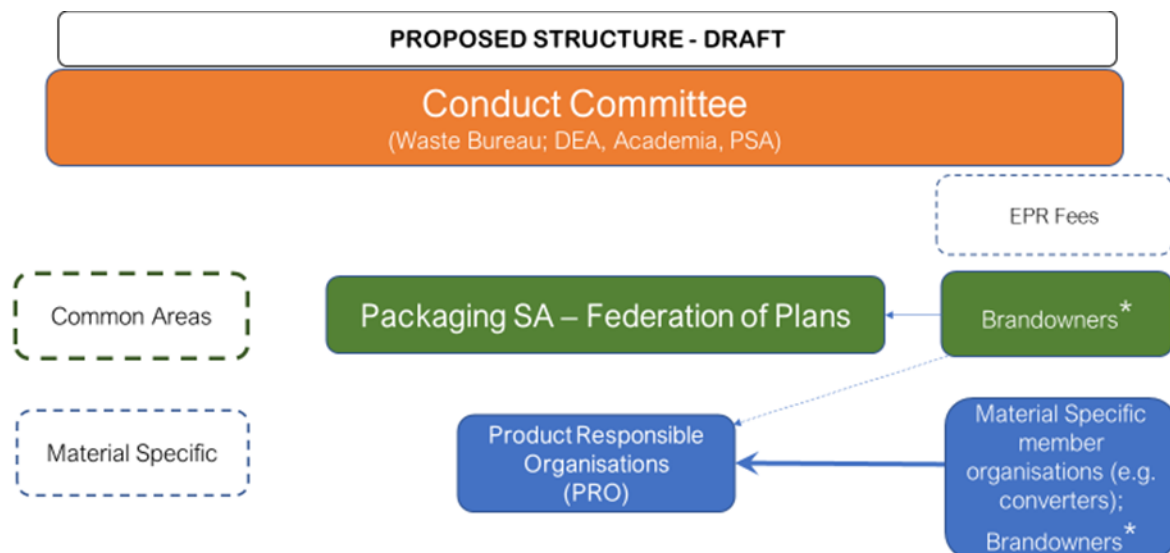


Collected paper and packaging materials to date and forecasted (Bmi, 2018)

The figure above represents the progress made to date under the voluntary EPR programme and the forecasted figures leading to 2023, based on the what is proposed in this EPR Plan.

The proposed **PACKAGING SA** EPR Structure has a focus on transformation throughout the levels of the operation. A conduct committee oversees the operation of the implementation of the EPR Plan to ensure that targets are being met and projects are being implemented.

The **PACKAGING SA** Board requires the board members along with the mandatory fiduciary duties, to elect a Governance sub-committee to ensure that the EPR fees collected are being used responsibly as well as ensuring ethical practice in the implementation of the plan.



The EPR Plan includes the establishment of Technical Working Groups for fixed, short periods of time to work on very specific tasks. Individuals participating in these groups are expected to have the time, interest, and commitment to participate in the production of deliverables assigned to the group. These groups will work on topics of strategic importance.

The implementation of the EPR Plan will be undertaken by **PACKAGING SA** in collaboration with the PROs.

Obligated members to the EPR Plan include:

- Brand-owners
- Retailers²
- Converters;
- Producers; and
- Importers


EPR fees will be paid according to material stream on a rand per tonne basis by:

- All importers of packaging (filled/unfilled). This EPR Fee is paid directly to **PACKAGING SA**.
- All converters, producers, manufacturers and brandowners for local packaging. This EPR Fee is paid directly to the PRO responsible for the specific material stream.

PACKAGING SA Proposed Budget

An overview of the budget is presented below with the detail provided in Section 4.

² This includes online retailer platforms

		EPR Plan				
		2019	2020	2021	2022	2023
Income / Revenue		411 973 130	529 197 228	574 648 166	639 707 724	697 041 578
	Year 1 excess carried into Year 2 (See Note 1 below)	24 391 173				
Expenses		387 581 957	529 197 228	574 648 166	639 707 724	697 041 578

The focus of the implementation activities is around transformation and inclusive growth. Areas include:

- Black Industrialist Scheme Support
- Data collection and management
- Municipal Fund - *Separation at Source; Material Recovery Facilities (MRFs)*
- Informal sector integration
- Packa-Ching
- National Awareness and Education Campaign
- Design for a Circular Economy
- Research and Development

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1 Introduction

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A question that this EPR Plan needs to answer is:

“How can an EPR Plan respond to the needs of South Africa and stimulate an economy that can foster meaningful work opportunities; encourage partnerships and provide a platform for transformation?”

1.1 Social and economic transformation

The Paper and Packaging Industry has already been achieving great successes in terms of the recovery of recyclables and diverting waste materials from landfill. These systems have been operated by Producer Responsibility Organisations (PROs) funded by Industry on a voluntary basis.

The total market value of the packaging sector is approximately R67 billion and contributes about 1.2% to the Gross Domestic Product (GDP), so how can this impact on the economy be leveraged to assist in alleviating poverty and inequality within the sector, which is currently perceived to be dominated by multinational companies and large-scale waste management companies. The latter is seen as an opportunity for the development of business partnerships and the building of new enterprises.

However, the **PACKAGING SA** EPR Plan goes much further and embraces the opportunity for the paper and packaging industry to participate in social and economic transformation.

Speaking at the Nedlac Labour School in Pretoria on Tuesday (30 January 2018), President Cyril Ramaphosa said that the key priority was the creation of decent work on a scale that makes a decisive impact on poverty and inequality. This will require far higher levels of economic growth and sustained investment by both the public and private sectors in productive economic activity, he said.³

The above statement is a bold vision and linked to the National Development Plan (NDP) and Vision 2030 for the country. The NDP aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society⁴. The NDP also recognises the importance of improving the quality of the economy for the purposes of both sustainability and impact on inclusion.

³ Staff writer. 2018. Business Tech. <https://businesstech.co.za/news/business/222155/ramaphosas-plan-for-radical-economic-transformation-and-tackling-unemployment/>. 31 January 2018

⁴ South African Government. 2018. <https://www.gov.za/issues/national-development-plan-2030>

A more dynamic growth requires South Africans to work together to implement measures that can create a united society and an inclusive economy that is characterised by equality and creates more and sustainable employment and equitably shares the wealth produced⁵.

A number of policies, regulations and requirements in order to assist the transformation including have been developed over the years, including, but not limited to:

- **The National Industrial Policy Framework (NIPF)** articulates South Africa's overarching approach to industrial development. The re-industrialisation trajectory is implemented through successive Industrial Policy Action Plan (IPAP) iterations that respond to change in global and domestic economic opportunities and dynamics. The IPAP guides South Africa's industrial development path towards sectors and capabilities, which will provide sustained inclusive growth and increase participation of marginalised citizens and regions. This is an acknowledgement that if no special measures are put in place, the country cannot industrialise rapidly and become globally competitive, but will instead continue deepening apartheid patterns of economic development and wealth distribution. The IPAP also outlines specific measures that are required to achieve a more dynamic and sustainable economic growth, which is a core goal of the NDP.
- **The B-BBEE Amendment Act, 2013 (Act No. 53 of 2003).** Government's fundamental objective is to create a transformed adaptive economy that is characterised by high levels of growth, job creation and enhanced economic participation by the majority of the population. Government has made significant strides and substantial progress in addressing the above challenges. The B-BBEE Act is an intervention to address the systematic exclusion of the majority of South Africans from full participation in the economy. No amount of revision of history can eradicate the reality of systematic and institutionalised disempowerment of communities and individuals. The underdevelopment of black South Africans took the form of systematic destruction of their productive assets, deliberate denial of access to skills and jobs and a range of interventions to prevent self-employment and entrepreneurship. In combination, these policies restricted and suppressed the wealth and skills endowments in black communities, thereby structurally inhibiting their participation in a legislatively race-based economy.
- **Preferential Procurement Policy Framework Act (PPPFA) (Act 5 of 2000) and subsequent Regulations, 2017.** In realising that it possesses a significant amount of purchasing power, Government has introduced the PPPFA to expand its base of suppliers to achieve broader economic developmental goals. Given its economic significance, public expenditure has the potential to influence the economy in terms of production and consumption on a large scale. Therefore, public procurement is one of the key strategic levers for industrial development objectives in the IPAP.

This EPR Plan has taken cognisance of all that is outlined above, and is further committed to the Black Industrialists Policy and this EPR Plan seeks to engage meaningfully to change.

⁵ The dti. 2018. The Black Industrialist Policy.
http://www.thedti.gov.za/financial_assistance/docs/BI_Policy2015.pdf.

The following extract is taken from the **Black Industrialists Policy** (Department of Trade and Industry):

South Africa's current socioeconomic predicament is firmly rooted in its past and requires measures that will change the historic imposition of inequality and economic disenfranchisement by colonial and apartheid administrations. To this effect, the National Development Plan (NDP) acknowledges that transforming the economy also means changing the patterns of ownership and control. To date, efforts to transfer ownership of productive assets have not yielded the desired results, with employee share schemes playing a relatively minor role. A bolder approach and clearer targets are required (NDP – 2030, 2012: 31). The Black Industrialists Policy is a key part of Government's broad industrialisation initiatives to expand the industrial base and inject new entrepreneurial dynamism into the economy. It calls for bolder policy interventions on the part of the state to expand the industrial base of the country and grow the economy through dedicated support to black industrialists, as highlighted in the latest iteration of the Industrial Policy Action Plan (IPAP). (page 6).

The Black Industrialists Policy (BIP) is part of Government's broad industrialisation initiatives to expand and transform the industrial base and inject new entrepreneurial dynamism into the economy. It calls for bolder policy interventions on the part of the State to coordinate key policy instruments through dedicated support to black industrialists (BIs) as highlighted in the latest iteration of the IPAP. The Presidency will play a leading role in providing overall oversight of the Black Industrialists Policy. Other key institutions will include Cabinet and the different cluster departments, with the Presidential Advisory Council on B-BBEE playing an advisory role. the dti, being the custodian of the policy, will be responsible for coordinating implementation. The Minister of Trade and Industry will report to Cabinet biannually on the implementation of the policy, its achievements and emerging challenges. (page 10)

*The **private sector** has an important role to play in facilitating economic inclusion through among others, supplier development providing off-take agreements, assisting new comers to adhere to standards and quality requirements and establishing the necessary industry networks. South African and multinational corporations can play a significant role as a vehicle for black industrialists to access international markets by enabling Black Industrialists to be part of local and global supply chains. Participation in such supply chains can lead to technology transfer and more efficient business models, thereby raising the international competitiveness of black industrialists. (page 25)*

The Paper and Packaging Industry forms part of the productive sectors identified by the Black Industrialist Policy. The EPR Plan can play a direct role in supporting measures (as outlined in the BIP, page 25 and 26⁶), including:

- **Training and capacity building** – through upskilling and mentorship programmes with industrial partners
- **Matchmaking and information sharing** – the EPR Plan has included the development of a database in order to consolidate information (e.g. informal and formal sector collector; materials collected; obligated and participating industries; buy-back centres and Material Recovery Facilities (MRFs); Brand owners etc.) in an attempt to geographically identify where potential gaps in the market are and where efforts need to be increased to provide additional service thereby opening new potential markets.
- **Research and Innovation Support** – a strong focus of the EPR Plan especially for problematic materials. There are potential beneficiation opportunities where the BIS would be a perfect fit for new enterprise development.
- **Quality Standards and Productivity support** – A specific enterprise development project has designed a quality system in order to build in a quality system whereby the enterprise would be able to meet the rigorous standards of ISO9001:2015 at the end of the incubation period.

⁶ http://www.thedti.gov.za/financial_assistance/docs/BI_Policy2015.pdf

This would assist with building confidence in locally manufactured products especially for the export market.

Therefore, this EPR Plan wants to collaborate with Government to achieve its objectives of economic transformation and economic growth through a diversified industry. The intention is to build resilience to external factors (i.e. raw material imports and price fluctuation) over time by influencing the transition to the types of paper and packaging materials that have inherent value to be collected, transported, recycled / beneficiated into new products and new markets.

1.2 A phased approach

This EPR Plan attempts to implement strategies from the ground up as well as at the top of existing industries. This acknowledges that skills and new enterprise development can take time and individuals / cooperatives / small business may not necessarily be ready to enter into programmes or support offered by programmes such as the BIS immediately. Therefore, a programme will be developed in direct consultation with the DEA Waste Bureau and the Department of Trade and Industry (dti) in direct response to the BIP to ensure a phased and supportive approach.

In the same light, changing structures in big Corporate or Multinational companies can take time, and needs to be phased in to ensure stability. **PACKAGING SA**, as a membership-based organisation and operating as a Not for Profit Company (NPC), does not necessarily have direct influence over these individual companies.

PACKAGING SA supports the principle of transformation in alignment with the Codes of Good Practice of dti. **PACKAGING SA's** approach to transformation will entail the development of an action plan that will include the consideration of guidelines, engagement with the relevant stakeholders to produce a strategy as well as performance indicators. The goal is to support employment equity at senior management level. Strategies such as head hunting succession planning will be considered and supported. This is to redress historic inequality and to facilitate broader social development of all South Africans.

PACKAGING SA, as a NPC, does not necessarily have direct influence into these individual companies. As such, the focus in these instances will be on engagement and securing buy-in.

1.3 Alignment with the National Pricing Strategy for Waste Management

Government Gazette 1353 dated 06 December 2017 in Section 6(m) stated that the submitted Industry Waste Management Plan (IndWMP) must “*be aligned to the National Pricing Strategy for Waste Management (Extended Producer Responsibility; government managed model) as published under Government Notice 904 of 11 August 2016*”.

It is noted in the Pricing Strategy that the potential approach to collect EPR fees would be through the Customs and Excise Act, 1964, as amended. The current Plastic Bag levy is collected via this mechanism at 12c per bag through Part 3A as an environmental levy. A Tyre levy is being collected via Part 3E at a cost of R2.30 per kilogram from September 2017 (prior to this the Tyre levy was being paid directly to REDISA).

Here are 2 levy collection methods – one through the customs and excise act originally, i.e. the plastic bag levy; and the other, the tyre levy, initially through a DEA appointed Management Company. Both have not necessarily been successful and have had many challenges.

The plastic bag levy was introduced 14 years ago and has raised close to R2 billion; however only around half is reported to have been used for developing the recycling economy as originally intended⁷. Levies collected in this way cannot be ring-fenced and therefore the revenue collected can be used for other priorities identified by government.

The REDISA managed plan, a plan not designed or managed by the obliged industry, whilst the plan itself was a good one, was poorly managed. Buyisa e-bag, similarly a scheme not designed or managed by the obliged industry, also failed.

Based on the above-mentioned examples, valuable lessons should be learnt and it is believed that through putting adequate, transparent processes in place as presented in this EPR Plan, an obliged industry led and managed model will be the best approach.

The basis of the submission of the **PACKAGING SA** EPR Plan is an Industry led, Industry funded Model. Whilst this may seem in contravention to the requirement of the Gazette as stated above, it is believed that it is the most appropriate model to follow and will serve to meet the objectives and intentions of the NEMWA requirements.

“Policymakers should ensure that taxes are not increased merely so as to satisfy revenue collection needs without consideration of the long-term fiscal impacts of the whole tax system.”⁸

1.3.1 General challenges in the Packaging Industry⁹

The local packaging industry experienced minor growth. In recent years, the South African packaging landscape saw a lot of international packaging companies coming into the market either through acquisition or through new plants.

The capacity of the industry to adapt to market changes will be tested by additional challenges, including price volatility and rising costs of raw materials such as aluminium, plastic and paper caused by the demand-supply cycles that are typical of these materials mean increased costs for the production of consumer packaging and reduced margins for manufacturers. The search for cheaper substitutes will therefore need to become more widespread.

A statement by Deloitte, said that highly fragmented markets caused by the presence of several players in South Africa, as well as internationally, has disrupted and hindered the growth of the overall packaging market, as intense price competition has led to vendors reducing the prices of products to remain competitive¹⁰.

1.3.2 Tax burden on society

There is a real concern that an additional tax through the implementation of an environmental levy on paper and packaging, will have negative unintended consequences, including, but not limited to:

⁷ Rogers, G. 2018. Only half of plastic bag levy has gone to support recycling. Business Day. <https://www.businesslive.co.za/bd/national/2018-03-19-only-half-of-plastic-bag-levy-has-gone-to-support-recycling/>

⁸ Visser, A. 2018. Corporate tax in need of review. <https://www.moneyweb.co.za/moneyweb-opinion/columnists/corporate-tax-rate-in-need-of-review/>

⁹ BMi, 2018

¹⁰ Deloitte. 2018. Growth of SA's and Africa's packaging markets assured by socio-economic factors. <https://www2.deloitte.com/za/en/pages/manufacturing/articles/packaging.html>

- Increase in costs for consumer goods across the board. A generalised packaging levy based on the customs and excise act is likely to be higher than the cost of an EPR fee managed by the industry. Therefore, like the tyre and carrier bag levy, it will impact all consumers as industry will pass this onto the price of goods.
- The levy will not be ring-fenced and therefore the intended use for the levy will not be realised for stimulating the paper and packaging recycling economy and developing secondary economies.
- The current voluntary Producer Responsibility Organisations (PRO) active in the driving the recovery and recycling of paper and packaging material, may face real challenges and potentially need to close operations if they lose access to their full funding requirement. This would have dire consequences for recyclers, especially smaller to medium enterprises that are being supported directly by the PROs.
- Should this levy be managed by government, industry may reduce efforts in the recovery of paper and packaging as a means to reduce costs, as technically, the government would be in charge of managing the EPR system. This perceived shift in responsibility could result in a decrease in recycling rates and collectors losing their source of income, amongst others.

1.3.3 Industry led-Industry Managed EPR Plan

It is therefore, for the above listed reasons and motivation that this EPR Plan is submitted as an Industry Led-Industry Managed Model. As you work through this Plan, you will note that various measures have been put in place to build on the successes of the existing voluntary systems already in place and mitigate the potential repeat of some of the challenges of the Tyre and Plastic Bag levy models, as the PACKAGING SA EPR Plan is an Industry Led-Industry Managed model.

Whilst this EPR Plan may be an Industry Led-Industry Managed Model; the intention is to work closely and in collaboration with Government to achieve common goals of social and economic transformation through inclusive growth.

2 Packaging South Africa

The Packaging Council of South Africa (PACSA) was founded in 1984 and rebranded in 2015 as **PACKAGING SA**. **PACKAGING SA** is a registered NPC (Registration number: 1985/001427/08). Its members are in two broad categories, Converters and Associates. The Converters represent some 70% of the revenue generated by the industry. Associates are in effect the major raw materials suppliers, PROs, brand owners, retailers and other organizations and associations with interests in the packaging industry. Collectively the packaging industry directly employs some 100 000 people in South Africa.

One of the main objectives of the **PACKAGING SA** is to promote standards for the packaging industry which meets the mutual criteria of the industry, the Community and Government to increase technical competence.

PACKAGING SA also:

- Supports education & training programmes to improve the technical competence of individuals & companies engaged in packaging.
- Supports programmes & policies relating to the protection and improvement of the environment through the conservation of resources, control of litter and effective solid waste management, including recycling of resources, recovery & separation thereof.
- Supports conferences, exhibitions and programmes aimed at improving understanding & awareness by Government, industry, commerce, unions, educational establishments & the public.
- Provides a central reference point for the packaging industry for services to members, government and other organisations on economic and legislative aspects of the industry.
- Co-operates with other professional trade associations, institutions and bodies with interests in packaging & act in bring these together with common interest in specific issues.
- Creates and maintains a meaningful basis of continuing dialogue between Government, local authorities, commerce & industry on matters pertaining to or affecting the packaging industry.
- The sector aims to minimise the packaging and paper waste sent to landfill through the support of material reduction, recycling, recovery and other related activities with the vision to strive for zero packaging and paper waste to landfill.

PACKAGING SA therefore has a broad mandate in the paper and packaging industry and therefore is well paced to oversee the implementation of the EPR Plan covering multiple material streams and industry role players.

2.1 Federation of Plans

PACKAGING SA and PROs formed the Federation of Plans in response to Government Notice 41303 dated 6 December 2017 calling on the paper and packaging industry, electrical and electronic industry and lighting industry to develop and submit Industry Waste Management Plans (IndWMPs). The Federation of Plans therefore includes the following paper and packaging material streams:

- Glass (represented by The Glass Recycling Company (TGRC))
- Paper & Paper Packaging (represented by PAMDEV¹¹)

¹¹ PAMDEV is a non-profit special purpose vehicle established for the purpose of becoming the Paper Producer Responsibility Organisation of the Paper Manufacturers Association of South Africa (referred to as “PAMSA”) and the Paper Recycling Association of South Africa (referred to as “PRASA”).

- Metals (represented by MetPac-SA)
- Polyolefins (represented by Polyco)
- Polyethylene terephthalate (represented by PETCO)
- Polystyrene (represented by the Polystyrene Association of South Africa)
- Vinyls (represented by South African Vinyl Association – SAVA)

The purpose of a Federation of Plans is to provide a multi-stream approach to a complex problem, i.e. waste streams are often mixed, even source separation schemes are generally implemented on a commingled (i.e. dry recyclables) basis.

2.2 Approach

The approach that will be undertaken in the fulfilment of the Federation of Plans is via Extended Producer Responsibility (EPR) considering the full value chain of paper and packaging material, refer to **Figure 1** for a simplified overview.

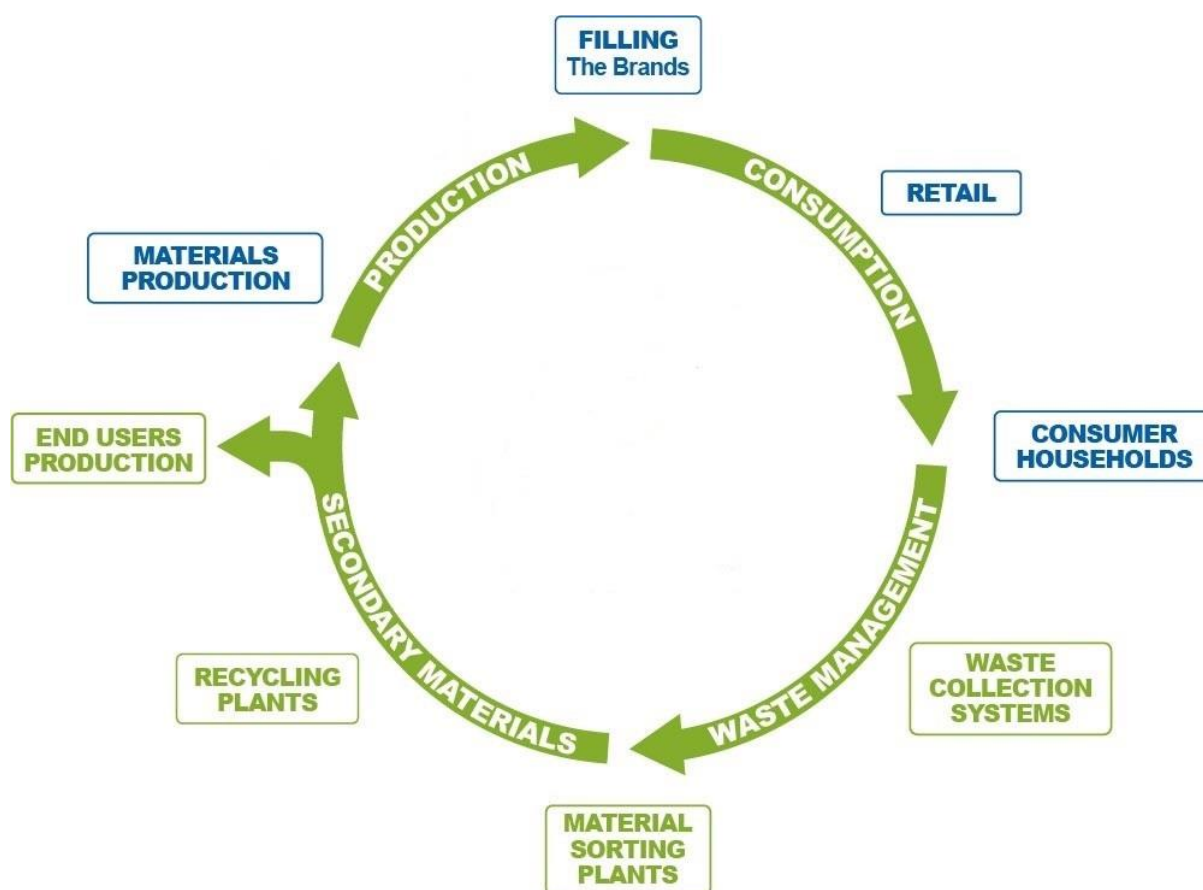


Figure 1: Paper and Packaging material value chain¹²

The **PACKAGING SA** Federation of Plans recognises the complexity within the local (South African) context especially in terms of collection, transport, recovery, reprocessing (recycling) of materials, secondary markets and the demand of recyclables, recyclate and developing end-use markets. A

¹² Adapted from CEFLEX. <https://ceflex.eu/>

multi-pronged approach therefore is proposed through multi-level projects with the driver being social and economic transformation.

The Plan further recognizes that the proposed EPR scheme has a role to play (financial and/or organisational) across the entire material value chain including working together with municipalities and the informal sector. The focus is on packaging and paper materials generated at both pre- and post-consumer level, with an emphasis on post-consumer (household) as opposed to pre-consumer (industry) level where the latter is considered to already be well managed through private initiatives and existing company systems.

Further to EPR and acknowledging the complexity, the **PACKAGING SA** Federation of Plans has a longer-term vision in line with the National Development Plan's Vision 2030 as well as Global Goals including the Millennium Development Goals, of which South Africa is a signatory. Therefore, the EPR Plan takes cognisance of the global market forces which impact the local paper and packaging markets through raw materials imports and ready filled and unfilled packaging imports.

The EPR Plan whilst recognising the role of the waste hierarchy, we need to do more and proposes that a Circular Economy approach is undertaken.

Refer to **Figure 2**. The popular "butterfly diagram" as presented by the Ellen MacArthur Foundation to represent the Circular Economy Model has been adapted to include people. Often the focus is on the material and biological cycles only; however, the human element cannot be overlooked, especially in a South African context.

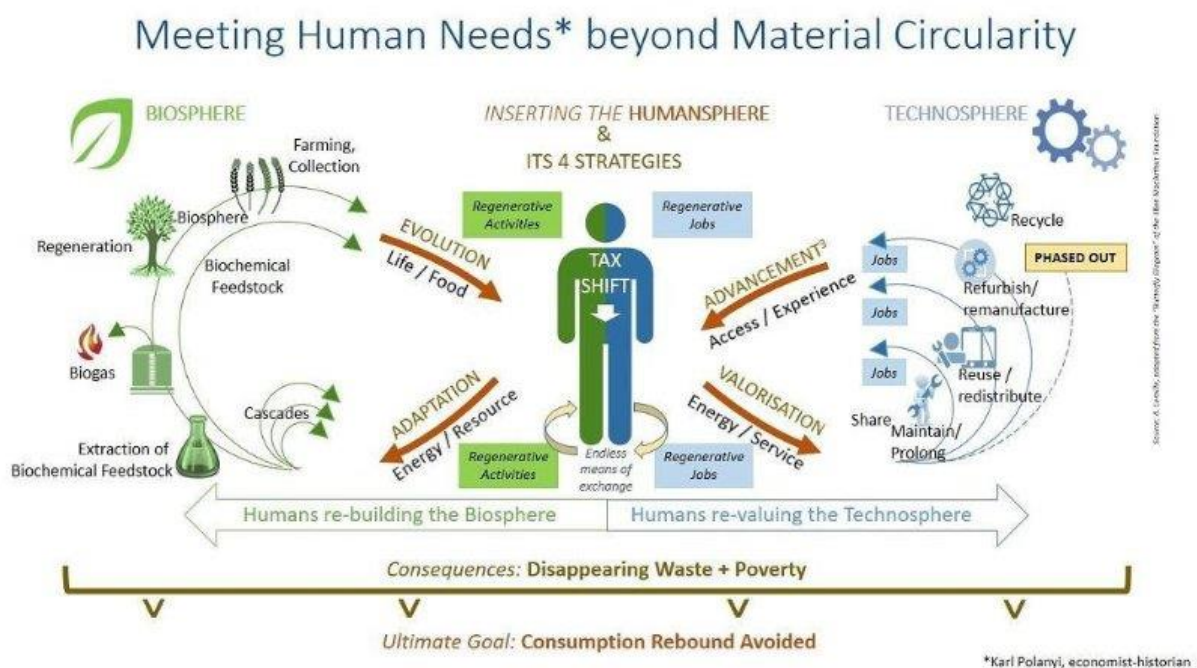


Figure 2: Transitioning to a circular economy 2.0 (Lemille, A.)

The paper and packaging industry and the associated waste sector is complex and has organically formed with many different layers in the system, including formal and informal economies. It is for this reason that the approach to this EPR Plan is far broader than the conventional EPR Plans in place internationally. There are many aims of developing a broader and people-focused EPR Plan:

- Build new opportunities from the ground up through collaboration, partnerships and mentorship programmes.
- Transform the industrial sector through innovation and the development of new end-use markets for recycle.
- Transform the post-consumer waste sector to be more inclusive.
- Through a circular economy approach, it is likely that this EPR Plan could stimulate alternative support services required beyond waste, for example, the focus on renewable energy has stimulated the need for further expansion of Photo-voltaic (PV) panel suppliers.

EPR is not a new concept or approach in South Africa and voluntary programmes have been in place for most of the material streams already, i.e. metals, glass, polyethylene terephthalate (PET); polyolefins, paper and polystyrene. Evidence suggests that voluntary industry initiatives are more effective than mandatory, government-imposed regulations (as in the plastic bag industry) in stimulating recovery and ultimately recycling¹³.

It is important to note that in 2016, 58% of packaging waste material was collected for recycling in South Africa through the existing PRO voluntary EPR Programmes that are currently in place.

This is a relatively high collection rate when compared to international standards.

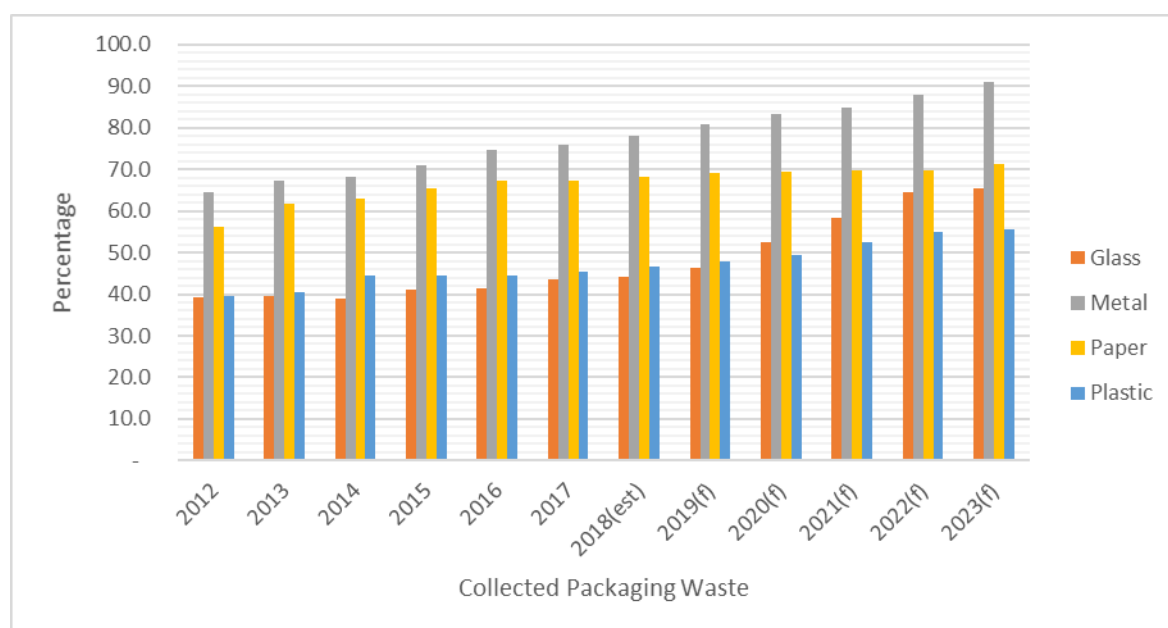


Figure 3: Collected paper and packaging materials to date and forecasted (Bmi, 2018)

Figure 3 represents the progress made to date under the voluntary EPR programme and the forecasted figures leading to 2023, based on the what is proposed in this EPR Plan.

¹³ Nahman, A. 2010.

Table 1: Paper and Packaging Consumed and Collected 2012-2016 (BMi, 2018)

TOTAL COLLECTED PACKAGING MATERIAL - '000 TONNES															
	2012			2013			2014			2015			2016		
Packaging Type	Consumption (tonnes)	Collected (tonnes)	% Collected	Consumption (tonnes)	Collected (tonnes)	% Collected	Consumption (tonnes)	Collected (tonnes)	% Collected	Consumption (tonnes)	Collected (tonnes)	% Collected	Consumption (tonnes)	Collected (tonnes)	% Collected
Glass	865.4	339.2	39.2	809.3	320.9	39.6	734.8	286.0	38.9	678.6	278.6	41.1	686.5	285.0	41.5
Metal	230.2	148.7	64.6	227.8	153.2	67.2	226.2	154.0	68.1	214.4	152.3	71.0	194.5	145.3	74.7
Paper	2 051.8	1 151.3	56.1	1 897.9	1 169.3	61.6	1 685.3	1 063.1	63.1	1 832.2	1 196.0	65.3	2 082.3	1 399.0	67.2
Plastic	734.1	291.0	39.6	780.8	315.8	40.4	791.1	351.5	44.4	818.6	365.2	44.6	865.7	385.8	44.6
Total	3 881.4	1 930.2	49.7	3 715.8	1 959.1	52.7	3 437.3	1 854.6	54.0	3 543.8	1 992.1	56.2	3 829.0	2 215.1	57.9

Table 2: Paper and Packaging collection forecast (BMi, 2018)

Collection forecast															
	2017			2018(est)		2019(f)		2020(f)		2021(f)		2022(f)		2023(f)	
Packaging Type	Consumption (tonnes)	Collected (tonnes)	% Collected	Collection forecast (tonnage)	%	Collection forecast (tonnage)	%	Collection forecast (tonnage)	%	Collection forecast (tonnage)	%	Collection forecast (tonnage)	%	Collection forecast (tonnage)	%
Glass	758.8	330.7	43.6	346.5	44.0	374.5	46.4	431.6	52.5	491.2	58.4	553.2	64.6	586.2	65.4
Metal	183.3	138.9	75.8	140.5	78.2	145.2	80.8	149.2	83.4	153.5	85.0	157.3	87.9	166.0	91.0
Paper	2 067.1	1 393.6	67.4	1 407.0	68.3	1 434.7	69.0	1 406.8	69.6	1 381.7	69.7	1 397.6	69.8	1 395.2	71.2
Plastic	867.8	395.1	45.5	412.7	46.6	433.7	48.0	460.3	49.4	492.5	52.6	531.9	54.8	555.6	55.4
Total	3 877.0	2 258.3	58.2	2 306.6	59.0	2 388.1	60.1	2 448.0	61.9	2 518.9	63.9	2 640.0	65.8	2 703.1	66.9

The industry acknowledges that with the assistance of a legislated requirement to belong to an approved plan, it will require current free-riders and imported materials to be obligated to participate in an approved EPR scheme.

The materials covered by this Plan are purchased every day by consumers irrespective of their income levels. As implementation costs incurred by producers and/or others in the material value chain of packaging will ultimately be included in product prices it is imperative that the Plan delivers its objectives as cost-effectively as possible.

A large number of organisations and individuals already work closely with municipalities i.e. the collection and sorting of waste. Many do an excellent job, generating materials for recycling and providing numerous people with an income. Collection arrangements within each municipality will need to involve these enterprises. The involvement of these varied enterprises, together with the wide range in income levels and different types of housing in SA, means that collection and sorting models may vary significantly between municipalities. The Plan therefore cannot be simply based on a single “one size fits all” model.

The EPR Plan illustrates how producers intend to grow existing markets for recycled materials and develop new markets to deal with the additional tonnages of good quality recyclable materials that will be collected. For this objective to be realised, it is essential that materials delivered for recycling are clean and uncontaminated. This requires recyclable materials to either be separated at source when collected, and/or delivered to a local buyback and sorting centre and/or delivered to a larger-scale clean material recovery facility (MRF) where materials are sorted through a combination of manual and mechanical means.

Experience around the world highlights the difficulty of tracking the consumption, collection and recycling of packaging and paper accurately. The statistics provided by BMi Research are the best independent source of data currently available in SA - all data will continue to be cross-checked and refined during the life of the EPR Plan. Implementation of the EPR Plan will build on the many successful existing programmes and initiatives that have been voluntarily undertaken by the various packaging and paper PROs in SA.

Key performance areas necessary for the Plan to succeed include the development of appropriate collection systems for packaging and paper from households (‘supply-side’). Mandatory separation at source is imperative to ensure that recyclers get better quality and a higher quantity of materials. Source separated materials further ensures that the recyclables stay cleaner, which makes them less contaminated and easier to recycle as well as creating better working conditions. Recyclables delivered to a “dirty” MRF co-mingled with organics and other fractions of waste suffer from contamination making them either less valuable or completely useless.

The development of sufficient end-use markets to achieve or exceed recycling targets to raise the ‘demand-side’. This is the responsibility of the individual PROs. The issues facing each material or substrate are different, so the tasks to be undertaken by each PRO varies. Therefore, each material will continue to be represented by a specific PRO and set its own strategy to support or facilitate design for recycling, collection systems, processing and conversion strategies.

The development and expansion of new and existing end-use markets for recyclable materials remains a key priority as it will encourage the roll-out of new collection systems by guaranteeing an outlet for the collected materials and providing a stable income for a growing number of collectors.

There can be no single collection and separation model and the collection arrangements need to be tailored to the local situation. Arrangements will differ, taking into account circumstances such as existing infrastructure, community and municipal needs, transport distance, population density, income levels and housing types as well as the approach of municipal officials towards such issues as public/private partnerships.

South Africa straddles the developing and developed worlds and the EPR Plan recognises the vitality and flexibility of the informal sector and the organisational and financial strength of formal waste management sector. In South Africa, as elsewhere in the developing world, informal collectors will play a key role in collection. This is desirable both as it provides an effective and flexible way to create employment opportunities and entrepreneurship.

The economic drivers of recycling are embedded in the industry it affects, the basic costs of recycling are for the collection, separation, cleaning and transport of recyclable materials with the location of recycling centres and the quality of the recyclates, being intrinsically linked. The less waste that reaches landfills, the greater the saving for municipalities.

For recycling to be successful it is important to focus on generating local economic benefits, however these depend on the volume and quality of recyclable materials that can be collected, the market for these materials as well as incentives and available technology. Recycling adds value to waste and creates jobs by stimulating a secondary economy. To ensure that packaging material is collected for recycling better collection systems are required, while stimulating the demand for the materials and this will require investment, research and development and testing of potential solutions.

The recovery of resources from waste, through recycling and recovery activities, allows for valuable materials or energy to be re-introduced into the economy, while also reducing the costs and externalities associated with virgin raw material extraction.

International literature suggests that waste should not be conceived as a 'waste' and it should rather be regarded as a resource. Design is also shifting from the concept of general material usage to planning for recycling and reuse within closed-loop systems. Some literature refers to this as Design for Environment (DfE) and this is often combined with extended producer responsibility (EPR) schemes. An increasing trend is to design products with cognisance of their future dismantling or remanufacturing and it is that **PACKAGING SA** is proposing a Circular Economy framework for the EPR plan.

3 Proposed PACKAGING SA EPR Structure

3.1 A focus on Transformation

The proposed **PACKAGING SA** EPR Structure aims to provide the most efficient and cost-effective model to ensure transparency, good governance and ethical conduct. The tiers of operation are therefore limited to:

- An Oversight or Conduct Committee
- **PACKAGING SA** (Board and Operations)
- The Material Streams represented by the respective PROs

The relationship between the different tiers will be governed by Service Level Agreements (SLA) and a behaviour charter to ensure good governance and accountability. Every tier of the structure will commit to a transformation target in an attempt to be representative of the population of South Africa over the 5 year period.

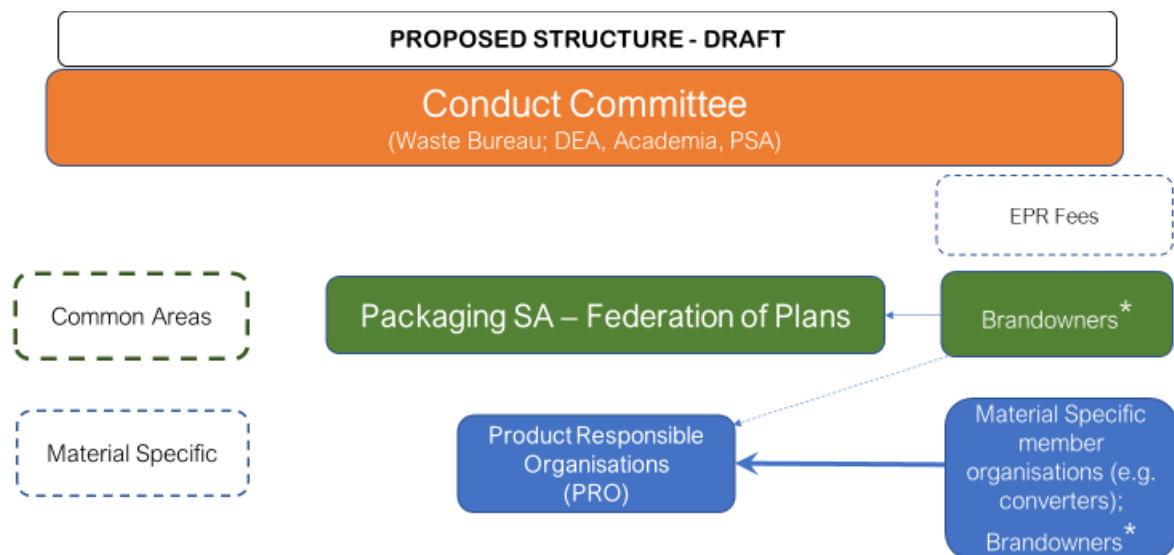


Figure 4: Proposed Structure

3.2 Conduct Committee

The intention of the Conduct Committee is to provide a multi-stakeholder oversight role to monitor the implementation of the **PACKAGING SA** EPR Plan. The Conduct Committee will include representatives from the Department of Environmental Affairs (the DEA) and the Waste Bureau and Academia. Transparency is the core to the implementation of the **PACKAGING SA** EPR Plan in line with the Competitions Act, Act 89 of 1998 (as amended).

The role of the Conduct Committee will be to ensure that:

- Members of the **PACKAGING SA** EPR Plan are operating within the ethics and conduct as required and set by the **PACKAGING SA** EPR Plan. A behavioural charter will be drafted for each level of participant including; the Conduct Committee Members; **PACKAGING SA** and

respective Board Members¹⁴; the PROs; contributing members of the EPR Plan, e.g. converters, retailers and brand owners

- The EPR Plan as described within this document are adhered to
- The targets set out in this EPR document are met
- Annual reporting takes place
- Data and information is verified by independent third parties
- Annual audits take place by a reputable third party BBBEE certified audit company, with the aim of ensuring an audit trail that indicates that the funds are used for their prescribed purposes.
- Ensure funds are spent in line with the approved budget

3.2.1 Packaging South Africa (PACKAGING SA) – Board

The **PACKAGING SA** Board currently consists of the following:

Name	Company / Organisation
1. Adri Spangenberg	Polystyrene Association of SA
2. Andre de Ruyter	Nampak Limited
3. Anton Hanekom	Plastics SA
4. Arnold Vermaak	Constantia Afripack
5. Bernhard Mahl	Safripol
6. Bill Marshall	IPSA
7. Bruce Strong (Chairman)	Mpact
8. Cheri Scholtz	PETCO
9. Dave King	Shave & Gibson
10. David Drew	Alpla
11. Gavin Jackson	Pailpac
12. Grant Page	SRF Limited
13. Ian Victor	MCG Industries
14. Jane Molony	PAMSA
15. Jeremy Mackintosh (Vice Chairman)	Polyoak Packaging
16. Kishan Singh	Metpac-SA
17. Ken Webb	Rheem
18. Mandy Naude	POLYCO
19. Michael Prinsloo	Collect-a-Can
20. Mike Arnold	Consol Limited
21. Riccardo Benedetti	Hulamin
22. Richard Trickett	Huhtamaki SA
23. Richard Wells	Sappi
24. Robin Moore	RPC Astrapak
25. Shabeer Jhetam (Executive Director)	Packaging SA
26. Steve Thobela	Printing SA

The Chairperson tenure is for a period of 4 years and new Directors are eligible to the Board every 3 years. The current Chairperson has recently been elected (2018) and therefore has a tenure until 2022.

The current Board will require more diversified representation to represent contributors and participants to the EPR Plan (e.g. Converters, Brand owners, Retailers, Transporters / logistics / collection¹⁵). The Board and EXCO will also commit to transformation targets over the 5-year plan.

¹⁴ Also governed by the Companies Act, Act 71 of 2008

¹⁵ Whilst the intention is to represent, it is not to have an overinflated board.

The following is proposed during the implementation of the EPR Plan:

- Identify a transformation target in Year 1 for implementation by end year 5, i.e. set a minimum transformation target, with a focus on Board and EXCO to be represented by previously disadvantaged individuals (PDIs).
- **PACKAGING SA** will use every attempt to only use suppliers that have a good BBBEE rating Level (minimum of Level 4 preferable); and would need to motivate for lower levels.

Transformation Plan

Directors of the Board have a 3-year cycle and are all non-executive and voluntary. Director's will need to identify appropriate PDI candidates within their organisation to put forward for the next Board Level position. Should that person require mentoring or additional skills in order to fulfil this function, then the individual would be brought in to attend Board meetings and then could become an official non-executive Director to replace outgoing Directors (e.g. after a 3-year cycle). This provides adequate time for identified persons to be upskilled, if required, and contribute meaningfully to the operation of **PACKAGING SA** Board going forward.

3.2.2 Governance

Good governance is essential with the implementation of a plan such as the **PACKAGING SA** EPR Plan. Within the Board of Directors, a Governance Sub-Committee will assure members (EPR Fee contributors) that their fees are being used responsibly and for the intended purpose. Effective Governance means an effective board of directors, which in turn leads to a more functional and efficient non-profit organization.

The roles of the Board of Directors in terms of good Governance will be to:

- Set norms, strategic vision and direction and formulate high-level goals and policies
- Oversee management and organizational performance to ensure that the organization is working in the best interests of the public, and more specifically the stakeholders who are served by the organization's mission
- Direct and oversee the management to ensure that the organization is achieving the desired outcomes and to ensure that the organization is acting prudently, ethically and legally.
- Monitoring the Transformation process at Board Level and with suppliers.
- Reporting on the transformation to the Oversight/Conduct Committee.

3.2.3 **PACKAGING SA** - Operations

PACKAGING SA will work in close collaboration with the PROs to implement projects as well as have a national operations team to coordinate and implement common or macro level projects covering all material streams over the 5-year implementation of the EPR Plan.

3.3 Producer Responsibility Organisations (PRO)

Each material stream will be represented by an existing PRO. Many of these existing PROs have been operating on a voluntary basis for many years and have achieved great success with demonstrable recovery and recycling rates. The **PACKAGING SA** Federation of Plans presents a unified plan incorporating all the PRO contributions and projects to be undertaken.

Transformation plan

Each PRO will need to submit a Transformation Plan to **PACKAGING SA** to provide an overview of how they will transition the current PRO structure to a more diversified and representative board and operating structure. Each PRO will need to undertake a BBBEE level certification at the outset (if not already conducted) and then put a plan in place as to how the structure and positions will be filled over the 5 year EPR plan. Many of the PROs, however are very small organisations and do not carry a big staff complement or budget. Whilst this is the case, there must be a commitment to transformation presented.

3.4 Technical Working Groups

Technical Working Groups are brought together for fixed, short periods of time to work on very specific tasks. Individuals participating in these groups are expected to have the time, interest, and commitment to participate in the production of deliverables assigned to the group. These groups will work on topics of strategic importance. It is expected that no more than 2 working groups will convene each year. The size and composition of group participation will be dependent on the group's task. Technical working groups will typically include professionals within the respective (identified) industry / field of expertise; academia and government.

3.4.1 Technical Working Groups – Packaging Sector

Working groups to be arranged under **PACKAGING SA** with the relevant or all PROs. These working groups may be held bi-annually and should consist of:

- Packaging Design & Design for Recycling with the aim of transitioning to a Circular Economy
- Implementation of necessary standards, e.g. the SANS 154 Food Contact Standard for Recycled Plastics: Part 1 PET that PETCO has already initiated with the South African Bureau of Standards (SABS)
- Re-use and Recovery Working Group
- Research and Development

3.4.2 Technical Working Groups – Collection & End-of-Life Solutions

Working groups to be arranged under **PACKAGING SA** or where relevant directly via the respective PRO, with members consisting primarily of those in the Collection, Recycling and Recovery value chains as well as Municipal representatives. These working groups will be held bi-annually and should consist of:

- Energy Recovery Forum
- National Awareness Working Group

- Collection & Sorting including MRFs, Kerbside collection and Buyback Centres
- Informal sector & Reclaimer support

3.5 Obligated parties to the EPR Plan

Obligated members to the EPR Plan include:

- Brand-owners
- Retailers¹⁶
- Converters;
- Producers; and
- Importers

¹⁶ This includes online retailer platforms

4 Financial Model

The implementation of the EPR Plan will be managed by **PACKAGING SA** with active project implementation of projects being done by both **PACKAGING SA** and the PROs. The Federation of Plans Model therefore presents a consolidated budget.

The budget is determined by the EPR fees raised based on a Rand per tonne for locally manufactured and imported filled or unfilled packaging as well as Membership fees attracted by **PACKAGING SA**.

4.1 EPR Fees

EPR fees will be paid according to material stream on a rand per tonne basis by:

- All importers of packaging (filled/unfilled). This EPR Fee is paid directly to **PACKAGING SA**.
- All converters, producers, manufacturers and brandowners for local packaging. This EPR Fee is paid directly to the PRO responsible for the specific material stream.

The proposed EPR Fees are as follows:

Table 3: EPR Fees per material stream¹⁷

EPR Fees (Rand per Tonne)						
Material	Categories (if applicable)	2019	2020	2021	2022	2023
PET	Total EPR Fee Bottles	R 901	R 1 189	R 1 169	R 1 185	R 1 071
	Total EPR Fee Edible Oil	R 604	R 830	R 989	R 1 250	R 1 255
	Total EPR Fee Thermoforms	R 740	R 966	R 1 019	R 1 295	R 1 538
Polyolefins	Rigid and Flexible	R 250	R 250	R 250	R 250	R 250
	Multi-layer & Carrier bags	R 420	R 420	R 420	R 420	R 420
	Recyclate	R 100	R 100	R 100	R 100	R 100
Glass	Cullet	R 37	R 39	R 41	R 43	R 45
Metals	Steel/Aluminium	R 100	R 105	R 110	R 116	R 122
Polystyrene		R 150	R 158	R 165	R 174	R 182
Vinyls		R 150	R 158	R 165	R 174	R 182
Paper		R 3.5	R 3.7	R 3.9	R 4.1	R 4.3

NOTES:

- All importers of packaging (filled/unfilled) will be required to sign a compliance agreement with **PACKAGING SA**. Under this agreement, all quantities of packaging that is put into circulation is reported to **PACKAGING SA** on a quarterly basis and the importer pays the

¹⁷ It is important to note that in terms of Glass, in excess of R1 billion in annual operational costs by some of the most recognisable brand owners has been invested in the returnable bottle system. In terms of Paper, R 2.97 billion rand was spent by the sector during 2017 on collecting, purchasing, baling, and transporting waste paper in order to recycle it. (this excludes exported waste paper)

corresponding EPR Fees, while at the same time transferring to **PACKAGING SA** the legal obligations stipulated by the **PACKAGING SA** EPR Plan for these quantities of packaging.

- All local packaging Producers which includes Converters and Brandowners (in terms of the Section 28 Notice definitions) will be required to sign a compliance agreement with the relevant Material Specific PRO. Under this agreement, they report all quantities of packaging they put into circulation to the respective PRO on a quarterly basis and pay the corresponding EPR Fee, while at the same time transferring to the respective PRO the legal obligations stipulated by the collaborative **PACKAGING SA** EPR Plan for these quantities of packaging.
- Retailers will be indirectly responsible for ensuring that their local suppliers who place products on the shelves are compliant with the **PACKAGING SA** EPR Fee.
- Multi-national and National Brandowners will be responsible for ensuring that imported products and packaging are compliant with the **PACKAGING SA** EPR Fee. Reporting compliance should be included in their annual sustainability reporting.
- Retailers have a direct responsibility for ensuring that their Housebrands that are imported are compliant with the **PACKAGING SA** EPR fee. This will be managed by the Retailer providing specifications around the packaging requirements. Declarations on the weight of packaging will be a requirement and will need to be submitted to the **PACKAGING SA** in order for the EPR fee to be calculated based on the material streams being imported. The EPR Fee per material stream is the same as the local EPR fee and the current bar code system can provide a product to weight ratio as a minimum. A phased approach would be taken and an average EPR Fee (R/t) will be levied to the Retailer until more specific data per material type can be declared.
- Each PRO will report aggregated data of EPR Fees collected on a per tonnage basis to **PACKAGING SA** on a quarterly basis.

The EPR Fee is directly linked to the tonnage of a specific material stream being placed on the market in the form of paper or packaging material. The EPR Fee is paid per material stream for all material streams. Converters/brandowners and manufacturers etc. cannot select which material stream they wish to pay for and will be required to pay for all material streams that make up the packaging of a product.

Examples: PET bottle with polypropylene lid, polystyrene punnet with flexible plastic wrapping, PET punnet with cardboard label.

4.2 Membership Fees

The Section 28 Notice requires that a producer register with at least one industry waste management plan. Registration with and subscription to any additional industry waste management plan will be voluntary.

Once the EPR plan is approved, Producers (including Converters and Brandowners) will be legally required to register as a primary member with **PACKAGING SA**. Membership with material specific PRO's will be on a voluntary basis and will be regarded as a secondary membership. This will be encouraged as many Producers are founding members of the current PRO's and therefore instrumental in the existing projects that will continue with the approval of this plan. The aim of the

two-tiered membership structure is to allow existing relationships to continue while at the same time fostering an integrated approach to managing the paper and packaging material streams.

Membership fees applicable to **PACKAGING SA** are as follows:

Member Type	Amount per annum
Converters (Based on turnover)	
<R100 m	R22 000
R100-R500m	R28 000
R500-R1b	R58 000
R1-2b	R92 000
R2-3b	R146 000
R3-5b	R340 000
>R5b	R560 000
Brand owners / Retailers	R28 000
Retailers	R28 000
Raw Material Suppliers	R48 500
Associates ¹⁸	R12 000
PROs ¹⁹	R42 500 / R18 000

Membership fees will be subject to annual inflationary increases.

4.3 Budget

A budget has been drafted in collaboration with all the PROs to ensure that a consolidated approach is provided for the implementation of the EPR Plan. Every attempt has been made to be as accurate as possible. Refer to **Table 4**.

The budget figures are based on the EPR Plan being implemented from early 2019 for a period of 5 years pending DEA approval of this Plan.

The budget consists of EPR Fees, membership income and income from imported packaging. These figures are based on the current available information which is fairly sound and consistent for the local market. There are some gaps in information regarding imported packaging which the EPR Plan has accounted for and has built in a phasing in to allow for importers of finished goods.

4.3.1 Black Industrialist Scheme support

The budget has included an annual spend on providing support to the BIS. The intention here is to assist with the identification of potential existing or new entrants into the Paper and Packaging Manufacturing sector specifically in recycling and the secondary materials markets. The reason for this is to ensure that end-use markets are developed locally to ensure that there is an off-take for the recyclables and the recyclate.

A close working relationship with the dti, the DEA and the Waste Bureau is intended in this regard.

¹⁸ Associates include – education bodies / other affiliated associations but do not manufacture

¹⁹ Membership allocated dependent on size of the PRO and associated market share

4.3.2 Municipal Fund

The Municipal Fund is an amount in the budget that will allow for engagement and collaboration with local government, i.e. local municipalities. This annual amount is specifically for projects undertaken in a municipal area and projects included thus far are:

- Separation at source
- Infrastructure
- Equipment
- Operational assistance


Fixed amounts are not set specifically for any of the above items; however, the total annual amount is set. The intention here is that there needs to be a degree of flexibility in order to identify the most appropriate project for implementation in an area.

4.3.3 Waste Pickers

As with the Municipal Fund, a set amount has been allocated on an annual basis for Waste Pickers. A set figure is included to ensure that there is ongoing engagement – outside of project or support spend. The intention behind this is that the potential projects identified at this early stage, may in fact need to shift to better align with the needs of the Waste Pickers. The main aim of this segment of the budget is to provide an inclusive approach and ensure ongoing budget allocation.

Other aspects of the budget are discussed under “**Section 5 Implementation**”.

Table 4: PACKAGING SA Proposed EPR Plan Budget

		EPR Plan				
		2019	2020	2021	2022	2023
Income / Revenue		411 973 130	529 197 228	574 648 166	639 707 724	697 041 578
Year 1 excess carried into Year 2 (See Note 1 below)		24 391 173				
Expenses		387 581 957	529 197 228	574 648 166	639 707 724	697 041 578
Projects / Programmes to be implemented / Expanded						
Black Industrialist Programme Support (See Note 2)		15 000 000	17 378 093	11 500 000	7 500 000	12 000 000
Municipal Fund (S@S; Infrastructure etc) (see Note 3)		49 661 203	85 361 536	54 085 830	83 867 018	63 456 782
Waste picker / Informal Collectors		8 650 000	8 567 000	9 901 770	10 405 314	8 928 692
Phase 1: Research Assignment and Engagement with Waste Pickers - Continued engagement.						
Phase 2: Development of Waste Picker App - Outsource - Request for proposals from BEE service providers only (Year 1-2)						
Phase 3: Onboarding and Roll out of the Waste Picker App - outsourced (probably Year 3-4)						
Phase 3: Maintenance and monitoring of the App (Year 4-5)						
Waste picker training, Equipment, conference, , data/wifi, Maintenance						
National Education and Awareness Campaign		43 410 588	58 955 381	63 374 373	70 774 093	81 299 844
Clean up & Recycle SA - River, Catchment & Marine Projects						
Collaborative and Association networks (e.g. African Marine Waste Network; Plastics SA; CGCSA etc)						
Schools competition						
Training / Support / Mentorship Programmes		116 840 939	159 987 229	214 774 688	229 860 328	276 525 902
Enterprise Development / Equipment / Infrastructure development		81 297 410	118 053 031	125 649 114	133 747 954	142 198 989
Collector Equipment						
Skips, scales, bulk bags, steel drums, gloves and goggles						
Paper recycling fund						
Equipment (balers)						
Enterprise development						
Existing recycling sector funding						
External Business skills development						
Quality funding ISO projects						
Servicing Outlying Areas						
Development of consolidated database (Outsource- Request for proposals from BEE service providers only) - year 1-2		1 800 000	1 980 000			
Annual Maintenance and update of the consolidated database				550 000	550 000	550 000
Design for Circular Economy (updated guidelines and industry workshops held 2 x per year)		1 200 000	1 250 000	1 500 000	1 575 000	1 600 000
R&D for end-use markets/Beneficiation		7 396 305	9 785 954	17 656 779	20 679 957	23 675 857
Project Incubation		2 000 000	3 100 000	5 255 000	5 517 750	5 793 638
Forestry Support Programme		785 000	785 000	785 000	785 000	785 000
Packa-Ching (NPC - B-Corp)		3 981 000	4 661 000	6 571 000	7 421 000	8 710 400
Admin and operating (overall)		55 559 512	59 333 004	63 044 613	67 024 310	71 516 476
Notes:						
1. It is anticipated that there will be a small surplus in Year 1 as there will be some lead time to initiate certain projects. This amount will be carried over to Year 2.						
2. It is anticipated that in Year 1 and 2 will see bigger investment, with a smaller spend in Year 3 and 4. The final year will see a slight increase again.						
3. A cyclical approach is foreseen for the municipal fund, with Year 1 and 3 being lead in to projects and Years 2 and 4 being implementation and support.						

5 Implementation – A focus on Transformation & Inclusive Growth

The **PACKAGING SA** EPR Plan has been designed on a bold vision to further the current South African Packaging economy to a more circular economy by 2030. Therefore, this plan could not only be designed only around a 5 year implementation plan, but rather is a 5 year plus plan and a bold 2030 vision.

A number of projects are outlined within this section with a common theme of a focus on transformation and inclusive growth. **PACKAGING SA** are aware that there are many changes required across the sector including within current internal structures as well. **PACKAGING SA** are therefore committed to this change and welcome the participation and collaboration opportunities that this EPR Plan outlines.

The **PACKAGING SA** EPR Plan is a consolidation of all the PROs already in existence. Projects detailed within this EPR Plan include the common national priorities some of which have already been identified through various mechanisms such as the Waste Phakisa, as well as Material specific projects. There are also certain common national priorities that may also be implemented by a specific PRO but cover more than one material stream because projects have already been initiated.

5.1 Black Industrialist Scheme Support

Recycling is an integrated process that begins with recyclable material collection from locations such as households, drop-off points, construction and demolition centres and businesses. After collection, these recyclable materials go through a thorough sorting process to separate various materials as well as different quality goods. For plastic, paper, metal and glass, collected items go through a rigorous process to be usable as a raw material to produce new goods. From the collection of materials to selling them, recycling businesses need varying degrees of skilled and semi-skilled employees to perform recycling industry jobs.

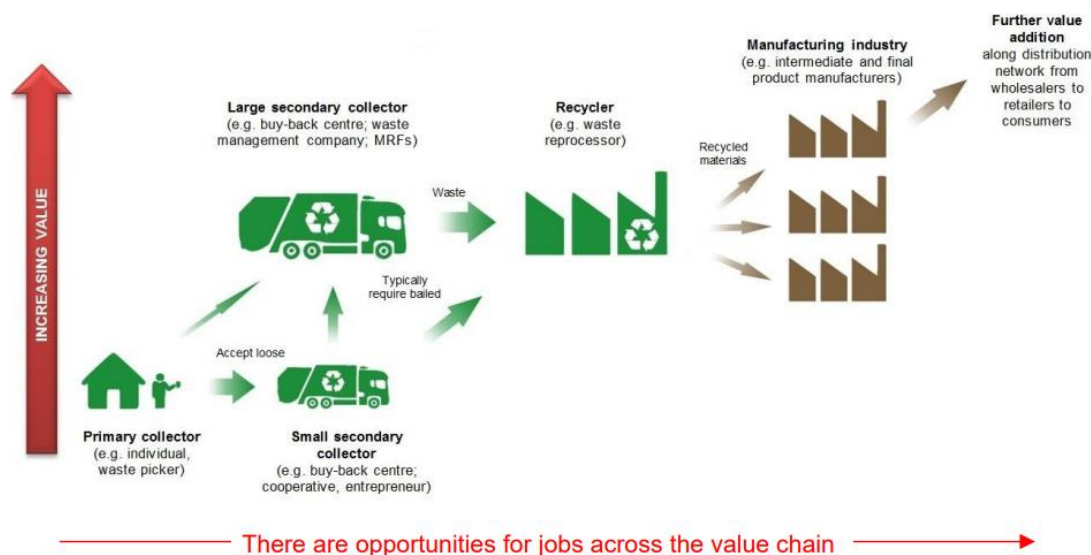


Figure 5: Potential enterprise development opportunities (Godfrey, L. 2014²⁰)

Budget has been set aside to work with the dti, IDC and the Waste Bureau to identify potential candidates that can be supported as new entrants into the paper and packaging material value chain

²⁰ Godfrey, L. 2014. Are there jobs in recycling The Formal and Informal Sector – Status Quo and Opportunities

through the Black Industrialist support programme implemented by the dti. As it is not possible to know who, or what these ventures will be, a set amount has been set aside at this stage. There are multiple potential entry points along the whole material value chain to develop new enterprises.

An extract from the dti's Black Industrialist Scheme (BIS) Programme Guidelines, page 4:

3.2 A black industrialist refers to a juristic person, which includes co-operatives incorporated in terms of the Companies Act, 2008 (as amended) that are owned by black South Africans as defined by the Broad-Based Black Economic Empowerment (B-BBEE) Act, that creates and owns value-adding industrial capacity and provides long-term strategic and operational leadership to a business. A black industrialist can be a natural person.

3.2.1 The following are characteristics of a black industrialist:

- a) high levels of ownership (>50%);
- b) dominant black ownership and management control may be considered for projects that are deemed strategic by the dti, but may need to include other shareholders to attract relevant skills, finance and scale-up the investment opportunities;
- c) exercises control over the business;
- d) takes personal risk in the business;
- e) does business in the manufacturing sector with particular reference to IPAP focus areas; and
- f) f. makes a long-term commitment to the business and is a medium- to long-term investor

The BIS refers to key focus areas of the programme and sectors that may be applicable within this EPR Plan could include Industrial Infrastructure; Pulp, Paper and furniture; Chemicals Pharmaceuticals and Plastics; Manufacturing related logistics; and Designated sectors for localisation.

To qualify, there are mandatory requirements that a candidate must meet, including:

- *Be a registered legal entity in South Africa in terms of the Companies Act, 1973 (as amended) or the Companies Act, 2008 (as amended); the Close Corporations Act, 1984 (as amended) or the Co-operatives Act, 2005 (as amended).*
- *Be a taxpayer in good standing and must provide a valid tax clearance certificate at assessment and before the grant is disbursed.*
- *Be involved in starting a new operation or in expanding or upgrading an existing operation or the acquisition of an existing business/operation.*
- *Be aligned to the productive sectors of the economy within the identified sectors as outlined in section 3.4 above.*
- *Have more than 50% shareholding and management control.*
- *Have a valid B-BBEE certificate of compliance.*
- *Be directly involved in the day-to-day running of the operation and must have requisite expertise in the sector.*
- *Have a project with a minimum investment of R30 million.*
- *Undertake a project that should result in securing or increasing direct employment.*

In addition to the mandatory conditions, the black industrialist will have to achieve other criteria (a minimum of four) to participate in the programme, including:

A. Employment Securing/retaining or increasing direct employment

B. Market Share New business/operations: Securing market share for the entity; or Existing business/operations: Increase market share for the entity

C. Quality Improvement Reduction of relative prices and/or increasing the quality of products to consumers

D. Green Technology and Resource Efficiency Improvements Savings or better use of energy or materials and/or cleaner production improvement and/or waste management improvement and/or water usage improvement and/or use of renewable energy

E. Localisation Increasing the localisation of production activities (diversification and exports)

F. Regional Spread Projects should be located in rural areas or areas with unemployment higher than 25%

G. Personal Risk Demonstrate own financial and/or non-financial contribution to the business

H. Empowerment Achieve at least a level four B-BBEE contributor status as per revised B-BBEE Codes of Good Practice published in October 2013 (as amended)

The budget amount has been set aside based on a grant / seed capital for a new entrant or to assist with enterprise development, with a special focus on assisting existing and new entrants into recycling and secondary materials markets.

Initially the identified candidate may not meet the required qualifying criteria for the BIS, therefore, this finance could also be used to develop or provide the necessary partnering and / or the initial capital investment required to qualify.

5.2 Data collection and management

The voluntary EPR system currently in place provides annual reports generated by a third party (BMi) detailing the packaging market, collected and recycled tonnage. This information is largely based on industry supplied information and import and export data via ITAC²¹.

The EPR Plan intends to extend the reach of the data but implementing a rigorous database which would include the complete material value chain. The database would require various levels of entry for the different contributors including informal collectors and recyclers.

The database would also assist with annual reporting that will be required by **PACKAGING SA** to the Waste Bureau.

The development of the database has been included into the budget and would be outsourced to a company with a good BBBEE certification (i.e. Level 1 to 4 BBBEE is preferred, but may not be available). Should there not be a company that can meet this criterion, there will be a requirement in the Tender document requiring at least 30% be sub-contracted to a SMME and / or a mentoring / internship programme in order to upskill candidates.

There will be a need to provide support and ongoing maintenance, and this would again have the above-mentioned requirements.

After 5 years, information from the database would be able to provide (aggregated data):

- Number of informal collectors, location, what materials were collected, quantities (tonnages) and income generated
- Location of buy back centres participating in the **PACKAGING SA** EPR Plan

²¹ The International Trade Administration Commission of South Africa (ITAC) is a schedule 3A Public Entity established in terms of the International Trade Administration Act, No 71 of 2002, and came into force on 1 June 2003.

- Location of material recovery facilities (MRF) and who owns and operates these
- Number and location of formal collectors
- Quantity and type of imported products and packaging
- Quantity of exported recovered material types
- Number of recyclers/processors
- Number of new / additional secondary processing facilities established
- End-use markets developed
- Permanent/part-time/decent work opportunities created²²

5.3 Municipal Fund

It is important to state that the EPR Plan requires flexibility in the approach here and therefore, has set up a **Municipal Fund** which is an amount that then can be accessed for use for Separation at Source Programmes or the financing of infrastructure, e.g. the building of MRFs; or mechanical equipment for existing municipal facilities etc.

5.3.1 Separation at Source

The intention is to collect dry recyclables from the household level and ultimately provide this to all households within the metropolitan areas and secondary cities. ***Whilst this may be the intention, the reality is that the approved plan will only be for 5 years and therefore, it is unlikely that all households will be covered.***

Areas for inclusion in a source separation project will be identified in close collaboration with municipalities. The intention is to focus in Metropolitan and Secondary Cities within this 5 year EPR Plan, and further to this, **PACKAGING SA** will find the most appropriate solution to an area through:

- Discussions with the DEA / Waste Bureau to identify the most ready Metropolitan / secondary Cities. A broad Status Quo Assessment is currently underway to detail this information and therefore, it is reasonable that the outcomes of this process should be used by **PACKAGING SA** as opposed to re-doing any investigations.
- Conducting a more focussed and localised status quo assessment of the selected area to understand the current waste management service including formal and informal collectors (municipal/contracted/informal collectors)
- Engagement with informal and formal contractors – directly and through organisations like the South African Waste Pickers Association (SAWPA); WEIGO, groundWork as well as researchers currently active in this area, i.e. Dr Melanie Samson²³ and Professor Catherina Schenck²⁴.
- Propose most effective method for the **PACKAGING SA** EPR Plan to recover the dry recyclables, for example:
 - 2 bag system (dry and residual waste)
 - Informal or formal collectors or a combination of both
 - Buyback centre, Municipal or private MRF, sorting facility, etc.

²² There is a difference between permanent / part-time and decent work and there would need to be a description of the qualifiers developed in the database, e.g. a person may have decent work and not be a permanent employee.

²³ Dr Melanie Samson is a senior lecturer in Human Geography at Wits and is currently developing a Guideline Document for the Integration of the Informal Sector

²⁴ Professor Catherina Schenck DST/NRF/CSIR Chair in Waste and Society, Department of Social Work, University of the Western Cape

- Implementation, reporting and monitoring.

In order to ascertain what the potential budget inclusion figure, the CSIR were approached in terms of the Separation at Source Costing Model referred to as SASCOST (Nahman, 2018). Whilst the tool is still in development, the intention was to obtain an indication of what the potential costs would be for a weekly service based on 2 collection scenarios (separated recyclables collected in a 4 tonne caged truck (separate vehicle option), or in a trailer hitched to the back of the normal waste collection vehicle (truck & trailer option)). It is noted that neither of these scenarios includes informal collectors, but the plan takes cognisance of this.

5.3.2 Material Recovery Facilities (MRFs)

Material Recovery Facilities can be of the large, high capital-intensive variety (R250m+), or of the medium sized capacity (~R30m) or small buyback centre with sorting facilities (R7m).

The range, scope and nature of interventions requires coordination with municipalities over the five-year period, including a legal framework for intervention in separation at Source.

In the interim our Plan for MRFs consists of allocating funds for such interventions which will be used to fully support a few MRFs.

5.4 Informal sector integration

The informal sector collectors, including street waste pickers and landfill waste pickers, currently play an important role in the recovery of recyclables. Many studies have been conducted over the years and research is ongoing to understand how this sector can be included more formally into the system.

Research thus far includes the following areas that need to be included with informal sector integration:

- Recognition for the service they provide,
- Participation in the system in a way that they are not ostracised,
- Source separation would make it easier to collect recyclables that are cleaner and have a measure of pre-sorting,
- Safe and dignified working conditions to sort recyclables, store material and have access to facilities, and
- Maintain inclusivity within the broader system.

The intention of the EPR Plan would be to work closely with the informal sector so that over time, informal collectors will no longer need to pick off a landfill site and secondly from dirty kerbside bins. This is a longer-term vision of the EPR Plan and one that will require a platform of inclusion; participation; mentorship and entry to market.

A budget has been allocated to work closely with this sector through existing networks to understand their needs and the most appropriate entry point; however, the first port will be registration of informal collectors through the development of an application for more secure payment, i.e. a **cashless system** to minimise the risk of carrying cash. Through this platform, there will be various entry points for mentorship programmes should the collector / waste picker want to engage on a more formal level.

The number of waste pickers vary, and one of the intentions of the cashless registration platform would be to start understanding the true number of waste pickers and generally where they are

located. This information could also then inform additional strategies to assist the informal sector integration.

The intention is to also roll-out free Wi-Fi at registered²⁵ buy-back centres. During discussions with various role-players it was confirmed that many (if not most) waste pickers have mobile phones and many are smart phones. Therefore, the intention would be to provide free Wi-Fi zones so that the waste pickers can be connected.

5.5 Packa-Ching

The EPR Plan already has projects that are currently underway or in the process of being finalised. An example of Packa-Ching (<http://www.packaching.co.za>) is a flagship project of the plan and discussions with a big Retailer are underway to roll-out 40 Packa-Ching Owner Managed Kiosks around the country with the focus being on Black Ownership. Packa-Ching is essentially a mobile buy-back centre and accepts all material streams. It uses a cashless system to pay individuals directly for their materials collected.

The budget includes roll-out, from Year one, the establishment of **10 new kiosks per annually**. This would result in 10 new Black Business owners per year, and countless opportunities for income for a number of community members.

Where appropriate, Packa-Ching will be linked to other projects, for example:

- to meet the needs of a buy-back centre to the Informal Sector, and
- if identified as a need by the status quo assessment, it could serve as an interim solution for municipalities who may require a more immediate and shorter-term solution as MRF or buy-back centre infrastructure is developed.

5.6 National Awareness and Education Campaign

An integral part to the adoption of a mandatory EPR Plan for paper and packaging waste in South Africa will require a strategic awareness campaign. There will be a need to be multi-dimensional as there will need to be a clear and consistent message. This EPR Plan is not only about increasing collection and recycling rates and cleaning up the environment. It has a broader vision of social and economic transformation through the programmes listed within this plan, including:

- integration of the informal sector / waste pickers;
- providing various entry points for upskilling waste pickers;
- stimulating end-use markets which will in turn stimulate the collection and recycling rates;
- enterprise development, i.e. providing support to PDI recyclers (existing and new entrants)
- encourage good (appropriate) design of packaging materials and understanding the true meaning of a material being recyclable.

Part of the national awareness campaign needs to address the issue of recyclability, as there appears to be confusion in the market about this. The following four conditions should be met for a product to be considered recyclable:

- The product must be made with a material that is collected for recycling, has market value and/or is supported by a mandated program

²⁵ Registered with **PACKAGING SA**

- The product must be sorted and aggregated into defined streams for recycling processes
- The product can be processed and reclaimed/recycled with commercial recycling processes
- The recycled material becomes a raw material that is used in the production of new products.

Budget has been allocated to develop a clear communication and marketing strategy within the first year in collaboration with National DEA and the Waste Bureau to ensure that messaging is consistent.

Year 2-5 will be the implementation of the Marketing Strategy.

In order to ensure that there are still campaigns in place at the start of the first year of the EPR Plan, partnerships will be continued with a number of organisations, including:

- Clean up & Recycle SA - River, Catchment & Marine Projects
- Collaborative and Association networks (e.g. African Marine Waste Network; Plastics SA; Consumer Goods Council of South Africa (CGCSA) amongst others)

5.7 Design for a Circular Economy

Design for recycling Guidelines documents have been designed by **PACKAGING SA** with the latest iteration released in October 2017. **PACKAGING SA** presents all packaging material and therefore is well placed to transition the design to include the broader vision of Designing for a Circular Economy. The intention would be to link in with International organisations that are already engaged as the packaging market is not localised within South Africa but very connected to international networks. Packaging is imported by brand owners and retailers (filled or unfilled) and there is a need for brand owners and retailers to start to state the required minimum standards for imported packaging, i.e. local recyclability would be a great start!

The Design for a Circular Economy Guideline will therefore be a collaborative effort across the value chain to ensure that all role-players and aspects are included into the specification decision making matrix. Packaging can be complex and whilst being used to ensure product integrity; it is also used to “sell” the product and set apart from other brands.

Budget has been provided for the development of this Guideline and for the provision of 2 workshop sessions per year.

5.8 Research and Development

A big focus of the R&D component of the EPR Plan is on stimulating secondary markets / end-use demand for additional recycle into the market. Part of this process will be linked to the black industrialist programme as the intention is to stimulate this growth in line with enterprise development and additional Black owned recyclers and / or new end-use markets.

Material beneficiation in the form of waste to energy cannot be ignored. It is not necessarily a priority area as in terms of the waste hierarchy, the recovery of energy from waste is far down the list of priorities.

R&D will be undertaken to assess whether there is a need (or desire) to “Brand” the EPR system to achieve great awareness and / or to provide a sense of assurance to consumers about the product choices they are making. Research would be necessary to understand what the intention and aim of the branding would be.

6 Overview of the PROs

The EPR Plan is a collaborative effort and would not be achievable without the PROs. This section provides an overview of the PROs and their respective roles in the EPR Plan.

6.1 Glass

Implemented by The Glass Recycling Company (referred to as 'TGRC') a registered Not for Profit Company (referred to as 'NPC') (registration number 2005/024564/08).

This Industry Waste Management Plan (referred to as the 'IndWMP') was prepared by TGRC on behalf of its members as a shared industry perspective on diverting glass packaging from landfill.

TGRC is South Africa's official Producer Responsibility Organisation (referred to as 'PRO') for promoting glass recycling. It was established following a Memorandum of Understanding signed in 2005, with the DEA. It is funded by its shareholders who manufacture container glass or package their products in glass. TGRC is a proud level 1 Broad-Based Black Economic Empowerment (referred to as 'B-BBEE') contributor. It is committed to transformation and the inclusion of the informal sector. This has been one of its core tenets since it commenced operating.

Its role is to increase the recycling of glass packaging and the reuse of returnable glass bottles in South Africa. This is achieved by focusing on the promotion of the recycling of non-returnable glass packaging and the reuse of returnable bottles, entrepreneur development and job creation, capacity building and development of synergies with all levels of Government as well as Non-Governmental Organisations. To date, through the glass packaging industry's efforts as supported by TGRC, industry and TGRC have managed to increase the glass recycling rate in South Africa from 18% in 2005/6 to 41.5% as of 2016/17.

a) Stakeholders Involved in the IndWMP

This IndWMP is focused on the management of post-consumer waste in the glass packaging industry. For this reason, although only '*producers*' are legally required to subscribe to the IndWMP, the IndWMP encompasses all commercial activities in the glass packaging value chain and companies engaged in these commercial activities including -

- Glass container manufacturers;
- Filling operations/Bottlers;
- Brand-owners;
- Retailers, wholesalers and the hospitality industry;
- Suppliers;
- Importers of primary or secondary glass packaging; and
- Collectors, sorters and recyclers of glass. It is important to note that, in the case of the glass packaging industry, glass recycling is done by the glass container manufacturers. These manufacturers purchase, collect, clean/decontaminate and optically sort used glass packaging which they then use in conjunction with virgin batch to manufacture new glass packaging. Glass recovered for recycling is referred to in the industry as 'cullet'.

This IndWMP also encompasses the end consumer in so far as the measures and programmes associated with awareness creation are targeted at changing consumer behaviour.

Other identified stakeholders include –

- National, provincial and local government (including the DEA, the Department of Trade and Industry and the provincial, local and metropolitan municipalities);
- Business;
- Labour; and
- Groups representing the informal collectors and waste pickers;

The anticipated roles and responsibilities of these stakeholders under this IndWMP are outlined in the full IndWMP prepared by the glass packaging industry.

b) Period Covered by the IndWMP

The starting date of the IndWMP is taken as 01 January 2019. It will only become fully operational once reviewed, updated and accepted by key stakeholders including the DEA and approved by the Minister of Environmental Affairs. The IndWMP covers a five-year period from 01 January 2019 to 31 December 2023.

c) Scope

The scope of the IndWMP has been defined as –

Glass packaging that enters the waste stream in South Africa where glass packaging refers to glass containers used for or in connection with 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, typically containing products already packaged in primary packaging.

Given that the intention of the IndWMP is to divert glass packaging from landfills, it does not distinguish between locally manufactured and imported glass packaging.

Note that the handling of glass packaging that contains hazardous material is not included within the scope of this IndWMP. This will be governed by other regulations as gazetted by the DEA.

d) Boundary

The boundary has been defined as –

Commercial activities responsible for the production, use, reuse, recovery and recycling of glass packaging where glass packaging refers to glass containers used for or in connection with 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, typically containing products already packaged in primary packaging.

This boundary definition is based on the definitions from the Waste Act and the regulations. The Waste Act and the regulations refer to *a category of person or industry*. The Waste Act further defines an industry to *include commercial activities, commercial agricultural activities, mining activities and the operation of power stations*.

The commercial activities responsible for the production, use, reuse, recovery and recycling of glass containers are as follows –

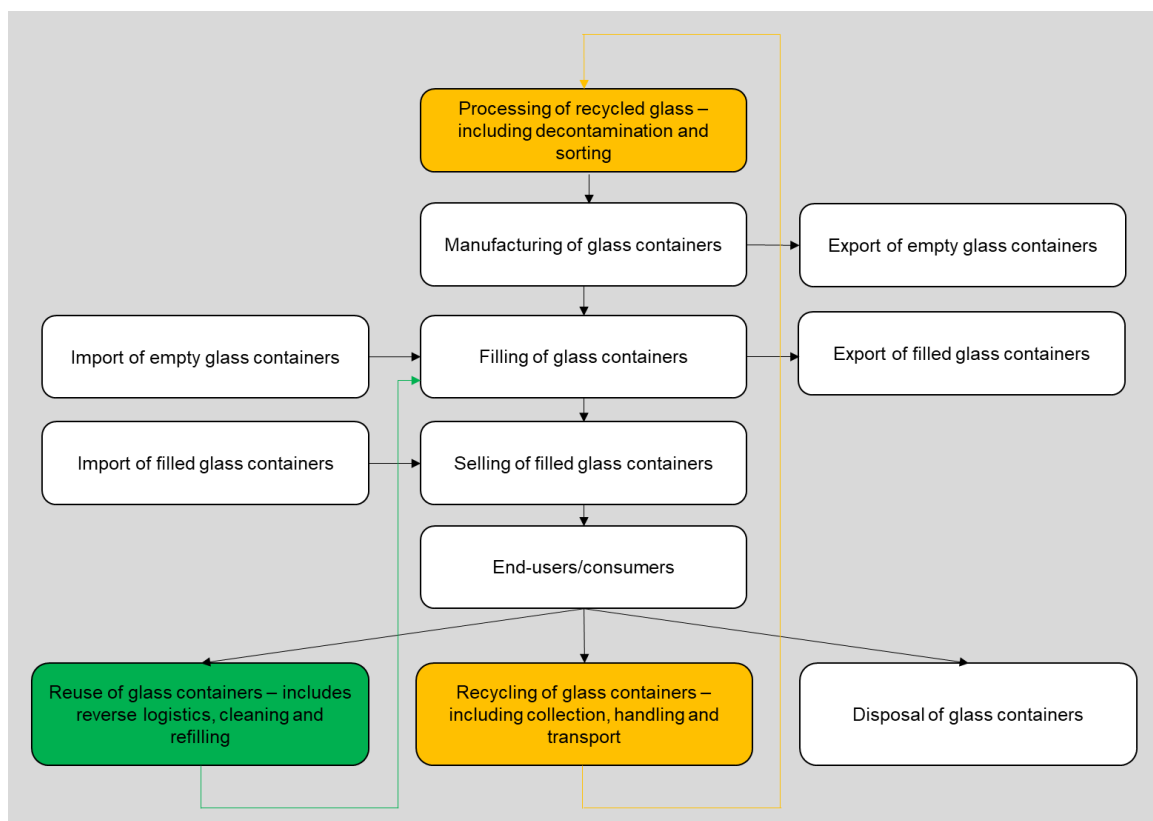


Figure 6: Commercial Activities Involved in the Production, Use, Reuse, Recovery and Recycling of Glass Containers

From the above exhibit, the commercial activities include -

- Manufacturing of glass containers (including export and import of empty glass containers);
- Filling of glass containers;
- Selling of filled glass containers (including export and import of filled glass containers);
- Reuse of glass containers (including reverse logistics, cleaning and re-filling);
- Recycling of glass containers (including collection, transport, sorting, crushing, decontaminating and optical sorting); and
- Final disposal of glass containers.

The end-user or consumer is included in so far as the objective of some of the proposed measures and programmes is to change the behaviour of the consumer.

Importers of primary and secondary glass packaging also fall within the boundary as imports enter the waste stream in South Africa. The measures and programmes that fall under this IndWMP will not differentiate between locally-manufactured and imported glass packaging. As such, importers of primary and secondary glass packaging will be included in the boundary.

The anticipated roles and responsibilities of the stakeholders under this IndWMP are outlined in a subsequent section of this IndWMP.

e) Existing Initiatives

The industry has already made significant strides in terms of diverting glass packaging from landfill, giving cognisance to the waste management hierarchy and prioritising reduction, reuse and then

recycling of glass packaging. The status quo in terms of glass packaging reuse and recycling is outlined in this section –

REDUCE - Light-Weighting of Glass Containers

Light-weighting or right-weighting as it is sometimes called is defined as ‘*a process of packaging design and production to optimise packaging weight, whilst taking into account the requirements of all stakeholders in the supply chain, including manufacturers, brand-owners, fillers, retailers, consumers and the environment*’ (Watts, September 2008).’ It gives effect to the waste management hierarchy by prioritising reduction over reuse and recycling.

The South African glass packaging industry has made great strides in terms of light-weighting. Glass containers are over 40% lighter than they have been 40 years ago (Consol, Produce and Process Innovation, 2018). By focusing on reduction, the glass packaging industry has been giving priority to the waste management hierarchy for several years.

In addition to reducing waste, light-weighting has other environmental and economic benefits. Environmental benefits include reduced raw material and energy consumption. In glass container manufacturing, energy consumption is proportional to the weight of the container so any reduction in weight would lead to a saving in energy (Lonsway, 2006). In addition, air pollution is reduced in both the manufacturing process and transport of the glass containers. This includes a reduction in GHG emissions which is one of South Africa’s priorities, given its high per capita emissions and associated commitments made under the Paris Agreement. Light-weight glass containers also retain the properties of the heavier containers, being fully recyclable and chemically inert (Fenton, Emhart Glass and Wiegand Glass) (Vetropak, 2018).

South Africa’s achievement in terms of light-weighting has been supported by brand-owners and manufactures who have invested in designing new containers and labels, equipment to manufacture and fill these containers etc. The considerable progress in light-weighting by the industry is evident in the increase in units filled and sold over time without the same increase in container glass procured from manufacturers.

Due to the significant reductions made to date, there is limited room for light-weighting further without a step change in technology. Developments in terms of coatings and surface treatments are also important for the protection of glass as are developments in the ability of the filling lines to handle containers of a lighter weight and the transportation of these containers. The industry continues to invest in research and development in this regard. Given this, the focus of this plan is not on further light-weighting as it is not expected that this will lead to significant reduction in the next five-year period.

REUSE – Returnable Systems

The industry has prioritised the reuse of glass packaging in alignment with the waste management hierarchy. In South Africa, we have robust returnable systems in place where consumers can return certain glass bottles for monetary compensation. Brand-owners responsible for some of the largest returnable systems in South Africa report a returns rate of greater than 85%.

Glass bottles that are designed to be used more than once are referred to as returnable bottles (referred to as ‘RBs’) or multiple-use bottles. Returnable systems allow consumers to return used glass bottles to retailers for a cash refund. Retailers pay the deposit to the consumer for the returned bottle and are, in turn, refunded by the brand-owner. This deposit serves as an incentive to encourage the

end user to practice good waste management. Returned bottles are then collected, transported, washed and cleaned, inspected and refilled.

Returnable bottles can be used up to a maximum of thirty times before needing to be recycled (Consol, Sustainability and Recycling, 2018). Reuse of glass bottles reduces the manufacture of new glass, limiting it only to meeting growth in demand and replacing non-returnable and damaged returnable bottles. However, it is important to note that it is not feasible for all bottles to be returnable. Feasibility is dependent on the volumes and the market into which the product is sold.

The reuse of glass packaging has several positive environmental impacts. It reduces energy consumption, air pollution, solid waste and water pollution (WRAP, Single Trip or Reusable Packaging - Considering the Right Choice for the Environment, 2010). Various lifecycle assessments have shown that returnable bottles can have a reduced dependency on raw material and energy compared with single-use bottles. (WRAP, Single Trip or Reusable Packaging - Considering the Right Choice for the Environment, 2010). However, it is important to note that this is dependent on the number of cycles performed by the returnable bottles (Mata, 1999). In addition, the return trip distance for returnable bottles has an impact on the magnitude of the environmental benefit. Longer distances tend to favour single-trip packaging, shorter distances tend to favour reusable packaging (WRAP, Single Trip or Reusable Packaging - Considering the Right Choice for the Environment, 2010).

Over decades, the industry has invested in the infrastructure required for robust returnable systems. Investment has also encompassed capital investment in filling plants to allow for the returned bottles to be washed and reused and investment in the infrastructure required for reverse logistics. Industry also carries the operating costs of these returnable systems which includes equipment, transport, labour, energy, water etc. The returnable schemes are also accompanied by awareness campaigns that target consumers of returnable bottles, encouraging them to return empty bottles.

Many of the returnable systems have been in place for decades in South Africa. These systems not only create jobs, but they have also driven the growth in other markets (such as the crate industry), creating businesses, jobs and contributing to South Africa's Gross Domestic Product (referred to as 'GDP'). Not only has industry invested in the returnable system, but it continues to do so to increase the return rate.

Given the current high return rates and the fact that brand-owners are already actively engaged in improving returnable systems, the plan will not focus on returnable systems, but rather on recycling where there is possibly more room for improvement.

RECYCLE - Recycling of Glass Containers

Glass is infinitely recyclable with no loss in strength or quality. In South Africa, glass is recycled back into glass containers, without downcycling. Bottle-to-bottle recycling, as it is termed, has the advantage of yielding significant environmental benefits over the use of glass into other downcycled products such as road aggregate etc.

Recycling of glass involves sorting, crushing and transporting to the glass container manufacturers where the cullet is often further cleaned/decontaminated, optically sorted for colour, melted and used to produce new glass containers in combination with virgin batch/raw materials.

The recycling of glass has many environmental benefits. The use of recycled glass in glass container manufacturing results in a decrease in air pollution. Studies have shown that for every 10% of cullet used –

- Particulate emissions are reduced by 8%;
- Nitrogen oxide emissions are reduced by 4%; and
- Sulphur oxide emissions are reduced by 10% (Lonsway, 2006).

In South Africa, it is estimated that for every tonne of cullet used, between 246 and 272 kg of carbon dioxide equivalent is saved in the glass container manufacturing process. This includes a reduction in process emissions from reduced raw material usage and savings in energy in the melting process. This value is much higher if considering the emissions saved over the lifecycle of glass. A lifecycle assessment by British Glass indicated that 670 kg of carbon dioxide equivalent is saved per tonne of cullet used. (British Glass, 2018).

Primary energy demand reduces with the use of cullet. Less energy is used to melt the recycled glass than to heat the raw materials to the point where they react to form glass. It is estimated that it takes 40% more energy to make glass from virgin batch than to use recycled glass (Lonsway, 2006). According to the Glass Packaging Institute, energy costs are reduced by about 2 to 3% for every 10% cullet used in the manufacturing process (Glass Packaging Institute, 2018). This is further confirmed by several other sources.

Recycling also reduces raw material consumption. For every tonne of cullet used in manufacturing, it is estimated that 1.2 tonnes of raw material are saved. A reduction in raw material consumption reduces the need for quarrying and preserves land (Berryman, 2018). Recycling also diverts glass from landfill. This has the added benefit of conserving landfill space.

Glass recycling leads to the creation of jobs. The glass needs to be sorted, collected, transported, received and processed. Employment in the recycling sector in 2012 was estimated at 29 833 formal jobs, with 2 to 3 times this number in the informal sector (Department of Science and Technology and Centre for Scientific and Industrial Research, 2013). It is estimated that there 12.7 jobs (both formal and informal) for every 1 000 tonnes of glass recycled. This number has been determined based on data collected from the industry on payments made to vendors for cullet and volume of cullet purchased. It has been calculated based on the assumption that one job is created for every R31 500 (R3 500 per month for 9 months of the year) paid to vendors.

In 2016/7, the industry recycled 319 655 tonnes of cullet. This equates to –

- A reduction in GHG emissions of between 78 635 and 86 946 tonnes of carbon dioxide equivalent in the glass container manufacturing process;
- A reduction in GHG emissions of 214 169 tonnes of carbon dioxide equivalent when considering the lifecycle of glass;
- A reduction in raw material consumption of 383 586 tonnes; and
- In excess of 4 000 jobs, considering glass alone (not including other packaging materials/streams).

Over the years, manufacturers have made a significant capital investment in the glass recycling industry. This includes –

- Acquiring and installing new cullet plants and upgrading existing cullet plants to sort to finer fractions etc. in order for unsorted cullet received from the market can be used which, in turn, makes recycling easier for the public as it negates the need for the consumer and collector to sort glass into its different colours at source;

- Establishing the infrastructure needed to collect cullet and transport it to where it can be used; and
- Establishing businesses such as owner-driver schemes and the like to facilitate the collection of cullet.

The capital investment is reflected in the investment in cullet plants which is estimated at approximately R405 million. The investment in the cullet plants has allowed for post-consumer cullet, which is typically not sorted by colour, to be used. It has also allowed for finer fractions of cullet to be used, thereby diverting these finer fractions from landfill.

Not only have the glass container manufacturers made a significant capital investment to enable recycling of glass, but they also fund the costs associated with operating the cullet plants and the collection and transport of cullet to the processing plants. The glass container manufacturers also continue to purchase cullet from buy-back centres and entrepreneurs who either collect themselves or who purchase from informal collectors and waste pickers. Without the manufacturer/s and sufficient demand for container glass, glass recycling in South Africa would cease to exist.

Since the inception of TGRC in 2006/7, South Africa has seen an increase in the glass recycling rate for South Africa -

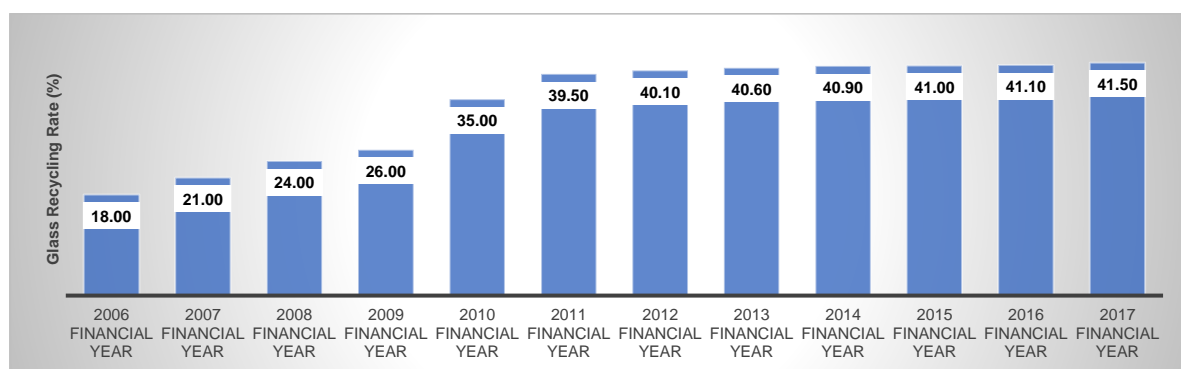


Figure 7: Recycling Rate in Percentages from 2005/06 (01 July 2005 to 30 June 2006) to 2016/17 (01 July 2016 to 30 June 2017)

The increase in the glass recycling rate over the years can be attributed to the efforts of the glass packaging industry. Some of these efforts include –

- Educating, enabling, encouraging and inspiring individuals to separate their glass and deposit it in a glass bank; and
- Uplifting impoverished communities by creating income generating opportunities and skills development in the recycling sector.

These efforts have been funded by industry. For example, brand-owners responsible for returnable systems invest an estimated **R1 billion** per annum into these systems. TGRC and its various activities are currently funded through the collection of a voluntary levy paid by brand-owners who purchase glass containers from the glass container manufacturers. Glass container manufacturers contribute in terms of purchasing cullet from the market and investing in cullet plants. This represents their investment in the recycling industry. The levy is in line with the voluntary EPR fee contained in the National Pricing Strategy for Waste Management. The glass packaging industry has operated a voluntary EPR scheme successfully since the inception of TGRC. This voluntary EPR scheme was initiated under a Memorandum of Understanding with the DEA. It is proposed that this will continue going forward under the IndWMP.

f) Challenges

The focus of this plan is on increasing the recycling rate. In order to do this, it is important that the challenges associated with increasing the recycling rate are understood. These challenges are briefly outlined below -

- There are thresholds in terms of how much cullet can be used by a glass container manufacturer as a proportion of the batch fed into a furnace. Some raw material or virgin batch is always required when producing glass. These thresholds mean that the glass container manufacturers are limited in terms of how much cullet they can use.
- The colour split of the glass collected from the market is different to the colour split of the glass produced. Percentage-wise, 18% of the glass produced is amber, 37% is flint and the remaining 45% is green glass. On the other hand, only 11% of the cullet collected from the market is amber, 20% is flint and the remaining 69% is green and mixed cullet. The high percentage of green and mixed cullet results from glass containers being crushed into small pieces or getting broken during collection and transport. Some of these small pieces are too fine to be optically sorted and end up being mixed cullet. Also, all decorated glass and glass with Pressure Sensitive Labels (referred to as 'PSLs') attached ends up being mixed cullet irrespective of whether the base glass is flint or amber.
- The glass packaging industry experiences a 'colour imbalance.' This refers to the geographical disparity between manufacturing and consumption as far as colour is concerned. For example, much of the green glass is manufactured in the Western Cape, but consumed in Gauteng. The green cullet then needs to be transported back to the Western Cape for use in the manufacturing process. The cost of transport in relation to the economic value of the cullet poses a challenge. This 'colour imbalance' challenge is not unique to South Africa. It is an international phenomenon. However, in other countries, distances may be shorter, reducing the cost of transport. This, in turn, allows for it to be feasible to transport the different colours of cullet between areas and countries as the need dictates.
- Collecting glass from outlying areas can be a challenge, particularly when these areas are not situated close to the manufacturing facilities. In some cases, this challenge is exacerbated by low volumes being available in these areas, the informal nature of the scrap market and the low quality of the glass collected. This makes it very costly for glass to be transported and recycled from outlying areas.
- Currently, cullet is used in bottle-to-bottle recycling. Bottle-to-bottle recycling has the benefit of realising the full environmental and economic benefit of this cullet. In many other countries around the world, only a portion of this cullet is used in bottle-to-bottle recycling with some being used in downcycled applications such as for aggregate. Although this has a reduced environmental benefit, it does mean that the glass recycling rate is not as dependent on how much cullet can be absorbed by the glass container manufacturers. Alternative markets for cullet should be further investigated in South Africa. However, one of the challenges that would need to be overcome is that the price paid for cullet in these markets appears to be insufficient to justify the recovery of this glass.
- The majority of consumers in South Africa don't practice separation at source and recycling. There is no mandated and enforced separation at source and separate collection of recyclables. This typically means that the post-consumer glass ends up being landfilled unless

recovered by informal collectors/trolley-pushers (collecting door-to-door) and/or waste pickers (operating from landfills). In many cases, by the time the glass packaging has reached the landfill, it is broken and becomes irretrievable.

The idea behind the measures and programmes that form part of this IndWMP is to address some of these challenges. It is important to note that realising an increase in the glass recycling rate is dependent on mandated and enforced separation at source and separate collection of recyclables. We understand this to be the role of national, provincial and local government.

g) Proposed Programmes and Measures

The primary objective of this IndWMP is to increase the diversion of glass packaging from landfill. The primary objectives will be achieved in a manner that prioritises transformation, inclusion of the informal sector and the creation of businesses and jobs. These objectives are in line with TGRC objectives both now and since it was established. The measures and programmes are as follows –

- a) Programme 1 - Currently, the biggest barriers to recycling in South Africa are the lack of mandated and enforced separation at source, and door-to-door collection of recyclables. The introduction of mandated and enforced separation at source is critical if the glass recycling rate is to be increased. As such, the focus of Programme 1 is separation at source. It requires that national government mandate separation at source and local government enforce this to ensure compliance by households. It also requires that local government implement separate collection of recyclables from households (door-to-door collection) and sort recyclables. Industry will assist in terms of designing MRFs, identifying black-owned and managed enterprises to own and manage the MRFs, providing training and mentorship to these black-owned and managed enterprises and purchasing the cullet from the MRFs.
- b) Programme 2 - The glass packaging industry acknowledges the key role that local government plays with regards to the collection, processing and disposal of waste. The provision of solid waste management services is primarily a local government function. Local governments are focused on ensuring sustainable delivery of services, subject to national and provincial regulations and standards. As such, TGRC views collaboration between local government and the glass packaging industry as essential for the achievement of the primary objective of this IndWMP. With this in mind, Programme 2 involves the development and implementation of business plans for glass packaging recycling for specific metropolitan municipalities, in collaboration with these metropolitan municipalities. Under Programme 2, industry will initiate and fund the development of a business plan and will support in terms of designing MRFs, identifying black-owned and managed enterprises to own and manage the MRFs, providing training and mentorship to these black-owned and managed enterprises and purchasing the cullet from the MRFs. At a Packaging SA-level, funding will be made available to assist with the implementation of the business plans. See the overarching Packaging SA plan for more detail. It is assumed that Programme 2 will have reached over 8.7 million people by year 5, resulting in approximately a third of these people participating in separation at source.
- c) Programme 3 - Separation at source and door-to-door collection of recyclables is typically complemented by clear communication to households about what can and cannot be placed in each bin. Countries with high recycling rates often have awareness campaigns in place that educate the general public about recycling and promote good practices in the value chain that enhance recoverability and recyclability of glass packaging. To raise national awareness, since its inception, TGRC has been engaged in awareness creation activities. It has successfully

implemented public awareness campaigns nationally which have reached millions of individuals, changing behaviour and increasing the glass recycling rate. TGRC will continue this national awareness campaign. It is assumed that Programme 3 will reach 25 million people per annum, resulting in a tenth of these people participating in separation at source by year 5.

- d) Programme 4 - TGRC has and will continue to support existing and new entrepreneurs (buy-back centres) with necessary equipment, training and mentorship to promote the development of sustainable businesses. This support is provided in the form of equipment, training and mentorship. A portion of the budget will be allocated to enterprise development and support of entrepreneurs within the municipalities with which TGRC collaborates under Programme 2. It is assumed that Programme 4 will support 50 new entrepreneurs a year, servicing an additional 23 000 households per annum.
- e) Programme 5 - Since 2013, TGRC has been engaging with teachers and learners to educate them on the benefits of separation at source and recycling. Given that schools often act as community centres, engaging with teachers and learners will have a ripple effect on the communities in which the schools are located, leading to behavioural change at household-level. Under Programme 5, TGRC will continue its school's competition in an effort to educate both teachers and learners, changing behaviour at schools, at homes and in communities. Where feasible, it will also focus on schools within the municipalities with which it collaborates under Programme 2. It is assumed that Programme 5 will have reached an additional 50 schools and 15 000 learners by year 5, resulting in approximately 25 000 people participating in separation at source.
- f) Programme 6 - In the calculation of the theoretical maximum glass recycling rate, it was acknowledged that the collection of cullet from outlying areas is needed to increase the glass recycling rate. Although some cullet is already collected from outlying areas, these collections are subsidised by the industry as it is currently not feasible to collect from these areas primarily due to the cost incurred in collecting and transporting cullet to the glass container manufacturers in relation to the economic value of glass. In addition, there is a geographical disparity between manufacturing and use of glass as far as colour is concerned. To achieve a higher glass recycling rate, it is necessary for some colours of glass to be transported from the area of collection to the area where it can be recycled. Programme 6 is focused on covering the additional costs associated with servicing outlying areas so that cullet is collected from all geographical areas. It is also focused on covering the additional costs required to transport cullet from the area of collection to the area where it can be recycled.
- g) Programme 7 – This programme involves investigating the feasibility of using cullet in alternative markets. The use of cullet in other markets is common practice around the world, but further research is required to unpack whether cullet can be used in these applications in South Africa and the feasibility thereof.

h) Anticipated Impact of the Proposed Programmes and Measures

The anticipated impact of **Programme 1** is as follows –

Table 5: Targets under Programme 1

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Additional cullet recovered each year (tonnes/annum)	27 976	57 148	59 554	62 010	33 033
Number of jobs created each year	355	726	756	788	420
Number of jobs allocated to historically-disadvantaged individuals each year	284	581	605	630	336
Number of jobs allocated to those already operating in the informal sector each year	178	363	378	394	210
Number of business created each year	233	476	496	517	275

The glass recycling rate target under **Programme 1** is calculated as follows –

Table 6: Glass Recycling Rate Target under Programme 1

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Glass Recycling Rate	46,4%	52,5%	58,5%	64,6%	65,4%
Cullet Recovered	374 454	431 601	491 156	553 166	586 200
Domestic Glass Production	1 009 689	1 029 883	1 050 481	1 071 490	1 121 850
Direct Exports	80 996	82 616	84 268	85 954	89 994
Indirect Exports	154 577	157 668	160 822	164 038	171 748
Direct Imports	7 329	7 475	7 625	7 777	8 143
Indirect Imports	25 126	25 629	26 142	26 664	27 918

The anticipated impact of **Programmes 2 to 7** is as follows -

Table 7: Targets under Programmes 2 to 7

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Total number of people reached by collaboration with municipalities	-	2 812 305	2 850 536	5 778 573	8 785 690
Total number of people reached by collaboration with municipalities that participate in separation at source	-	562 461	855 161	1 733 572	2 928 563
Total number of people reached by the national public awareness campaign	25 000 000	25 000 000	25 000 000	25 000 000	25 000 000
Total number of people reached by the national public awareness campaign that participate in separation at source	500 000	1 000 000	1 500 000	2 000 000	2 500 000
Number of additional entrepreneurs assisted	50	50	50	50	50
Number of new schools participating in the Programme on Education each year	10	10	10	10	10
Number of additional learners participating in the Programme on Education each year	3 000	3 000	3 000	3 000	3 000
Additional cullet recovered each year (tonnes)	17 782	23 293	20 715	26 586	29 890
Number of jobs created each year	226	296	263	338	380
Number of jobs allocated to historically-disadvantaged individuals each year	181	237	210	270	304
Number of jobs allocated to those already operating in the informal sector each year	113	148	132	169	190
Number of business created each year	148	194	173	222	249

The glass recycling rate target under programmes 2 to 7 is as follows –

Table 8: Glass Recycling Rate Target under Programmes 2 to 7

Description	Year 1	Year 2	Year 3	Year 4	Year 5
Glass Recycling Rate	43%	45%	46%	49%	51%
Cullet Recovered	337 447	360 740	381 455	408 042	437 931
Domestic Glass Production	985 063	1 009 689	1 029 883	1 050 481	1 071 490
Direct Exports	79 021	80 996	82 616	84 268	85 954
Indirect Exports	150 807	154 577	157 668	160 822	164 038
Direct Imports	7 150	7 329	7 475	7 625	7 777
Indirect Imports	24 514	25 126	25 629	26 142	26 664

The assumptions used to determine the above targets are outlined in the full IndWMP prepared by the glass packaging industry. The above targets are subject to change if any of the assumptions do not hold.

i) Transformation

In terms of transformation, as the glass packaging industry, we understand the importance of having an economy that can meet the needs of all economic citizens in South Africa in both an equitable and sustainable manner. We understand that this is only possible if we prioritise transformation and the implementation of the Codes of Good Practice under the B-BBEE Amendment Act (Act No 46 of 2013).

TGRC, South Africa's official organization dedicated to promoting and raising awareness of the benefits of glass recycling and reuse, has and will continue to prioritize transformation in all its activities. TGRC supports and will continue to support both existing and established entrepreneurs operating in the recycling sector in South Africa. Over the past 12 years, TGRC has equipped and/or trained an estimated 6 000 entrepreneurs with in excess of 80% of these entrepreneurs being historically-disadvantaged individuals. In addition, TGRC's engagement with schools via its annual school's competition as well as its recycling-related awareness creation activities cover citizens across all LSMs. TGRC is a proud level 1 B-BBEE contributor.

TGRC's shareholders also prioritise transformation and will continue to focus their efforts on increasing participation of historically-disadvantaged individuals in both ownership as well as management.

Under this IndWMP, we understand transformation to encompass –

- I. Enterprise development – the development of black companies and/or the capacity of these companies;
- II. Skills development – the development of employees of an enterprise; and
- III. Preferential procurement or supplier development – procurement from black-owned and/or empowered enterprises.

Management control also forms part of enterprise development. It speaks of the right or ability of historically-disadvantaged individuals to direct or control these enterprises.

The transformation objectives of this IndWMP are as follows –

- I. Enterprise Development –
 - In excess of 80% of the businesses created through this IndWMP should be majority black-owned and managed.
 - In excess of 80% of the businesses supported, through provision of equipment, training and/or mentorship, under this IndWMP should be majority black-owned and managed.
- II. Skills Development -
 - In excess of 80% of jobs created as a result of the implementation of this IndWMP should be allocated to historically-disadvantaged individuals.
 - In excess of 80% of people trained under this IndWMP should be historically-disadvantaged individuals.
- III. Supplier Development
 - Where possible, equipment procured for use by enterprises will be sourced from majority black-owned and managed companies.
 - Where possible, services required should be provided by majority black-owned and managed companies.
 - In the absence of the existence of majority black-owned and managed companies, the B-BBEE contributor status of suppliers of goods and services will be prioritized in the procurement decision and in conjunction with price.

6.2 Paper and Paper Packaging

a) Person Responsible for Preparing the Industry Waste Management Plan

This Industry Waste Management Plan (referred to as the “IndWMP”) was prepared by PAMDEV as a shared industry perspective on diverting paper and paper packaging from landfill. PAMDEV is a non-profit special purpose vehicle established as the Paper Producer Responsibility Organisation of the Paper Manufacturers Association of South Africa (referred to as “PAMSA”) and the Paper Recycling Association of South Africa (referred to as “PRASA”).

PAMSA, established in 1992, promotes the production of pulp and paper within South Africa using both renewable virgin fibre and recovered paper fibre as a raw material. It also works in collaboration with industry associations both locally and around the world. Of priority to PAMSA is the sustainable management of forests and paper production as an efficient and cost-effective solution to mitigate climate change. Core focus areas include environmental legislation, advocating for renewable biomass-based energy, enhancing education and skills development, promoting transformation and including historically disadvantaged individuals as well as investing in research and development.

PRASA, a subsidiary of PAMSA, represents processors and manufacturers of recovered paper fibre. For the past 13 years, the organisation has sought to divert recoverable paper from landfill by progressively increasing the paper recovery rate through an array of awareness programmes with schools, business and government. PRASA also presents entrepreneurship training courses and engages all tiers of government to inform policy, educate officials, and upskill communities. In these ways, PRASA demonstrates its commitment to creating more effective, efficient waste management systems.

b) Stakeholders Involved in the IndWMP

This IndWMP is focused on the paper and paper packaging industry and encompasses all commercial activities in the value chain and companies engaged in these activities. This includes –

- Paper and paper packaging manufacturers (paper manufacturers, corrugators and converters);
- Importers of primary and secondary paper and paper packaging;
- Brand-owners and retailers that use or sell paper and paper packaging; and
- Collectors, transporters, balers, buyers and sellers of recoverable paper and paper packaging.

c) Timeline

The regulation governing this IndWMP (Government Notice No. 1353) was published on 06 December 2017. It requires that a producer prepare and submit an IndWMP or subscribe to an IndWMP within nine months from the date of publication of the Notice. For this reason, the starting date of the IndWMP is 01 January 2019. The IndWMP covers a five-year period from 01 January 2019 to 31 December 2023.

It is important to note that it will only become fully operational once reviewed, updated and accepted by key stakeholders including the South African Department of Environmental Affairs (referred to as “DEA”).

d) Scope

The scope of the IndWMP has been defined as: -

Paper and paper packaging that enters the waste stream in South Africa where: –

- *Paper means any substance made from wood pulp, rags, straw, or other fibrous material for writing, printing, or as a wrapping paper; and*
- *Paper packaging refers to paper used for or in connection with 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, typically containing products already packaged in primary packaging.*

Given that the intention of the IndWMP is to divert paper and paper packaging from landfills, it does not distinguish between locally manufactured and imported paper and paper packaging.

The scope is based on the definitions from the Waste Act and the regulations as follows: –

"Waste" means any substance, whether or not that substance can be reduced, re-used, recycled and recovered,

- a) *That is surplus, unwanted, rejected, discarded, abandoned or disposed of;*
- b) *Which the generator has no further use for, for the purposes of production;*
- c) *That must be treated or disposed of; or*
- d) *That is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—*
 - (i) *A by-product is not considered waste; and*
 - (ii) *Any portion of waste, once re-used, recycled and recovered, ceases to be waste.*

"Packaging" means any material, container or wrapping, used for or in connection with 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, typically containing products already packaged in primary packaging but excludes: –

- *Shipping containers used solely for the transportation of any consumer commodity in bulk to manufacturers, packers, or processors, or the wholesale or retail distributors thereof;*
- *Packaging made of timber and textile; or*
- *Plastic pallets and industrial bulk containers (IBCs) with a capacity exceeding 1 000 litres.*

"Paper" means any substance made from wood pulp, rags, straw, or other fibrous material used for writing, printing, or as a wrapping material.

Tissue is excluded from the scope of this IndWMP. Although tissue manufacturers use recovered paper to produce tissue, the tissue itself is not used as a wrapping material and it is not recoverable. As such, the focus of the plan is predominantly on printing and writing and packaging grades of paper.

e) Boundary

The boundary of this IndWMP has been defined as: -

Commercial activities responsible for the production, use, reuse and recycling of paper and paper packaging.

This boundary definition is based on the definitions from the Waste Act and the regulations as follows: –

The Waste Act and the regulations refer to *a category of person or industry*. It is assumed that *industry*, in this case, would refer to the *Paper and Paper Packaging Industry*.

A definition for an industry is provided in the Waste Act: –

"Industry" includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations.

The commercial activities responsible for the production, use, reuse and recycling of paper and paper packaging are: –

- Paper and paper packaging manufacturers (paper manufacturers, corrugators and converters);
- Importers of primary and secondary packaging;
- Brand-owners and retailers;
- Collectors, transporters, balers, buyers and sellers of recoverable paper and paper packaging.

These commercial activities are within the boundary of the IndWMP.

However, it is noted that the regulations require that a producer prepare and submit or subscribe to an IndWMP only where: –

"Producer" means any person or category of persons or a brand-owner who is engaged in the commercial manufacture, conversion, refurbishment or import of new and/or used paper and paper packaging material.

The anticipated roles and responsibilities of the stakeholders under this IndWMP are outlined in a subsequent section of this IndWMP.

f) Objectives

This IndWMP aims to build upon the achievements of the industry to date so as to unlock additional volumes for recovery and recycling; this can only be unlocked with the support and involvement of local, provincial and national government. The anticipated differentiated roles of government and industry are unpacked in this IndWMP.

The primary objective of this IndWMP is to increase the recovery rate of paper and packaging, thereby diverting paper and paper packaging from landfill through: –

- Raising awareness regarding the re-use, recovery and recycling of paper and paper packaging waste;
- Facilitating the creation of businesses and jobs; and
- Offering relevant training and development to individuals involved in the recycling industry.

In achieving the objective, social responsibility and transformation will be prioritised. This is in line with the objectives of PAMDEV, PAMSA and PRASA.

g) Existing Initiatives

The industry has already made significant strides in diverting paper and paper packaging from landfill, giving cognisance to the waste management hierarchy, whilst prioritising transformation and the inclusion of historically disadvantaged individuals.

The paper recycling industry is not new to South Africa. Recovered paper has been used as a raw material in paper, paper packaging and tissue production since 1920. South African companies have invested significantly in infrastructure and programmes to support effective recovery and efficient recycling.

Although it is difficult to estimate the investment in recycling infrastructure, it is evident from –

- The number of paper mills that use recovered paper – approximately 65% of the paper mills in South Africa use recovered paper, and some of them make use of recovered paper alone. **55.9% recovered paper was used in paper produced in South Africa.**
- The recycling infrastructure – recycling centres, buy-back centres, paper banks, balers and vehicles.
- The growth in the recovery rate over the last few years. **In 2017, 70.7% of all recoverable paper was recovered for recycling.** This is illustrated below –

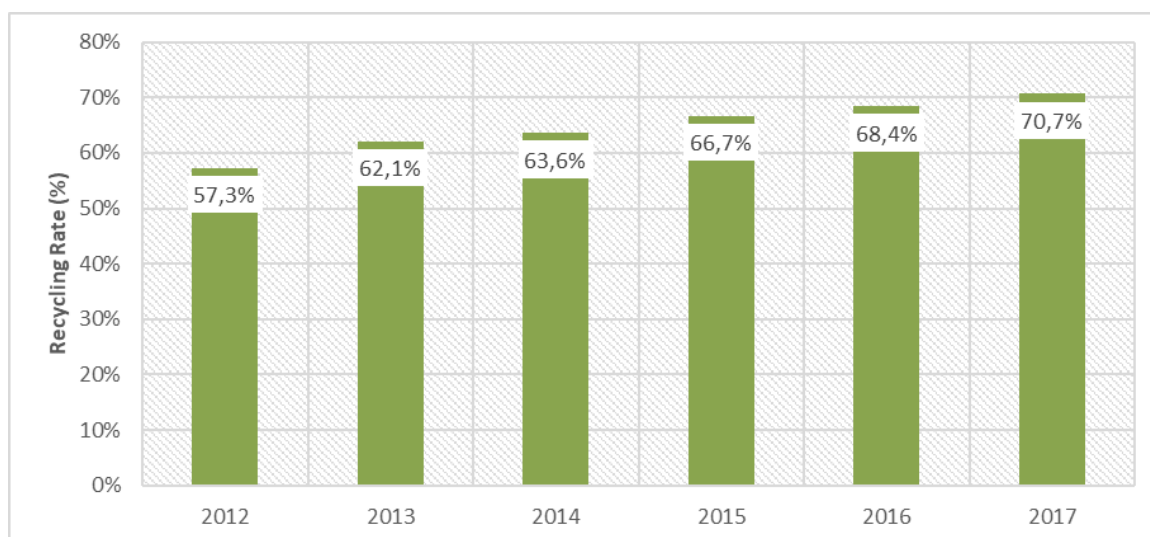


Figure 8: Paper recovery rates for South Africa

Note that the rate is reported as a percentage of recoverable paper. Some paper products cannot be recovered for recycling because they are kept for long periods of time (books) or archived (records); whilst others are contaminated or destroyed when used, including cigarette papers, tissue and hygienic paper.

Paper fibre can also only be recycled between five and seven times for use in a variety of new paper products, but not in all applications. Some products, however, require larger amounts of fresh fibre. According to PRASA, in 2017, 75% of paper consumed is recyclable; a net of 8% leaves SA through the export of trade and agricultural products; and the remaining 17%, such as tissue and wax paper, is unsuitable for recovery or cannot be recovered.

The industry, through PRASA, has initiated and funds various measures and programmes administered by PRASA, including education and training, awareness and marketing initiatives, through which PRASA focuses equipping and upskilling predominantly historically disadvantaged individuals. Some measures of these are outlined briefly below –

Entrepreneurship Training

PRASA has developed a four-day entrepreneurship course that is aimed at creating sustainable waste recovery businesses by equipping entrepreneurs or business owners with the knowledge and skill to start and run businesses. The focus of the training has been primarily on individuals already collecting recyclables such as paper and cardboard. These individuals are trained on business fundamentals, including starting a business, business structures (like co-operatives), finance and the creation of business plans.

From 2012 to date, more than 6,036 individuals have been trained, all of whom are from the historically disadvantaged sector. PRASA offers mentorship and evaluation through a follow-up workshop with the trainees about three months after they have attended the course. A one-day training workshop is offered to municipalities to assist with understanding separation and what is and what is not recyclable.

The PRASA-developed training material is currently being certified as an NQF Level 3 course.

Schools Awareness Programme

PRASA also conducts awareness creation and training at schools. School teachers are provided with printed manuals that contain classroom activities and learner worksheets using paper as the medium to drive the recycling message. PRASA also contracts a number of individuals to visit the schools with the recycling message. **The project has been successfully carried out nationally at 7,778 schools, reaching 134,000 educators and four million learners.** Judging by the number of schools actively involved in recycling, it is evident that this project has resulted in children being more aware of this all important behaviour.

PRASA also reaches schools through making its curriculum material available on the e-Classroom website. The material is in a printable format and can be used as an educational resource for children, parents and teachers. **Since the website went live in 2011, there have been more than 600,000 unique users with 300 new subscribers per day and annual page views of over 10.5 million.**

Awareness Creation

Apart from providing training, PRASA is involved in education, awareness-raising and marketing activities. **All opportunities to promote paper recycling are maximised, including exhibitions across South Africa, presentations to promote recycling and waste separation at conferences and forums and interactions/lobbying with government and municipalities.** PRASA has also developed branding and marketing material encouraging recycling. This material is made available on its website.

Other Activities

In addition to the activities administered by PRASA, some of the member companies have also initiated measures and programmes to increase the recycling rate and raise awareness. These include, amongst others,

- Kerbside collection schemes in certain areas;
- Education and pick-up programmes at schools and community organisations;
- Training and equipping entrepreneurs – owner-driver schemes and others; and
- Awareness campaigns.

Member companies also purchase waste paper from informal collectors, co-operatives and small, medium and micro enterprises, thereby supporting these individuals and entities. Many of these individuals are historically disadvantaged, and many of the entities are majority black-owned.

Over the years, there has also been a reduction in paper consumed per person. In 2012, 23.9 kg of printing and writing grades/person and 24.0 kg of packaging grades/person were consumed. This reduced to 15.3 kg of printing and writing grades/person and 21.6 kg of packaging grades/person as reported in 2017. Using the population reported for 2017, the reduction is calculated to be 482,721 tonnes of printing and writing grades and 135,486 tonnes of packaging grades. This reduction can be attributed to several factors.

From the Figure indicating Paper recovery rates for South Africa, there is an increasing trend in the recovery rate, which is indicative of additional investment and growth in the industry. **The South African paper recovery rate ranks well alongside other developing and developed economies.** The European Paper Recycling Council reports a 72.5% recycling rate (based on consumption); it aims to achieve 74% by 2020 through a renewed focus on separate collection of paper for recycling. The American Forest & Paper Association reports a 65.8% recycling rate (based on supply) in 2017, with the objective of achieving 70% by 2020.

h) Challenges

Despite the high recovery rate, there may be an opportunity to increase it further. Much of this rests with recovering printing and writing grades of paper. This however presents a huge challenge due to lack of separation-at-source, door-to-door collection schemes and ease of contamination. Some of the major challenges associated with increasing the diversion of paper and paper packaging from landfill are outlined below -

Currently, the biggest barriers to recycling in South Africa are the **lack of mandated and enforced separation-at-source, and door-to-door collection of recyclables**. Countries with high recycling rates and robust recycling practices have introduced both separation-at-source and door-to-door collection of recyclables.

Awareness is seen to be the cornerstone of any recycling programme. If done properly, it can change behaviour, create a moral drive behind recycling efforts and ultimately lead to supply-driven, as opposed to demand-driven, recycling. There are numerous examples of awareness programmes, but those that use a combination of methods/media reach a wider audience, which usually makes them more effective. Although there are some awareness initiatives active in South Africa, it is vitally important that any recycling programme focuses firstly on co-ordinating and up-scaling awareness efforts.

In addition to mandated and enforced separation-at-source, door-to-door collection of recyclables and awareness creation, there are **legislative barriers to recycling**. Facilities operating in the recycling industry are subject to a myriad of legislative requirements from national, provincial and municipal government with which they need to comply. The **timelines, man-hours and costs associated with compliance** often create a barrier to entry into and growth in the industry, especially for co-operatives and micro enterprises.

Buy-back centres need to be created near sufficient waste volumes to ensure commercial sustainability and viability. These areas are typically not zoned for such enterprises, and/or land availability is a challenge. The result is that these areas either remain un-serviced or collectors must transport recovered paper great distances to suitable buyers, thereby impacting the economics of collection.

The need for sufficient waste volumes means that many retailers, manufacturers and large offices in the major metros are already serviced. However, households and smaller offices may not have door-to-door collection of recyclables as it may not be feasible to collect from these areas. Servicing these un-serviced areas would increase the rate of recovery and recycling.

The industry is also impacted by a shortage of skills and a lack of formal training regarding technical aspects of business needed to maximise profits from day-to-day activities and run micro enterprises.

i) Programmes and Measures

The industry has identified and plans to implement **five targeted and focused measures and programmes** under this IndWMP to address some of the identified challenges. All of these are focused on transformation and give priority to historically disadvantaged individuals.

Programme 1: Collaboration with Municipalities for Separation-at-Source and Separate Collection of Recyclables for Households and Businesses

Municipalities play a pivotal role in the collection, processing and disposal of waste. The provision of solid waste management services is primarily a function of local governments which are focused on ensuring sustainable delivery of services, subject to national and provincial regulations and standards. With this in mind, collaboration between industry and municipalities is important for increasing diversion from landfill. Programme 1 is focused on collaboration between industry and municipalities. Under Programme 1, PAMDEV will identify and collaborate with municipalities to develop and implement business plans for separation-at-Source and the separate collection of recyclables for households and businesses.

In terms of the development of the business plans, PAMDEV will appoint and pay for a consultant to develop the business plans. PAMDEV and its members will also contribute their knowledge, expertise and time, working closely with the identified municipalities and consultant. During this process, PAMDEV will prioritise the creation of enterprises and jobs, transformation and the inclusion of historically disadvantaged individuals. Focus will also be placed on incorporating the informal sector into the business plan.

In terms of the implementation of the business plans, PAMDEV and its members will again contribute their knowledge, expertise and time, working closely with the identified municipalities. PAMDEV will assist in identifying black-owned enterprises or historically disadvantaged individuals to collect and sort recyclables. PAMDEV will also assist in training and mentoring personnel in these enterprises, and individuals, so that they have the necessary training and skills to run sustainable businesses.

PAMDEV will not directly fund the implementation of separation-at-Source and separate collection of recyclables. However, it will assist in identifying possible funding options (i.e. reallocation of funds within the existing solid waste management budget, increasing solid waste management charges, using revenue from the sale of paper and paper packaging, sourcing funding from other government departments, donor organisations and non-governmental organisations) and accessing these funds on behalf of the municipalities. The intention is for all additional paper and paper packaging recovered, as a result of this implementation in the identified municipalities, to be purchased by members of PAMDEV and the money paid by these members to be used to cover the costs associated with the collection of the paper and paper packaging.

It is important to note that the success of this programme is dependent on the active participation of the identified municipalities. It is also anticipated that the municipalities will implement the business plans with support in the form of knowledge, expertise and time from PAMDEV.

Programme 2: Public Awareness Campaign

Although industry already engages in public awareness activities, there is a need to co-ordinate and scale-up these activities, engaging more with the public through different media to reach a wider audience. This is particularly important, given that the cornerstone of any recycling programme is a well-designed and effective public awareness campaign. Recycling at household- and business-level is not mandatory and, therefore, is dependent on creating a moral drive that leads households and businesses to change behaviour. This is the primary objective of any awareness campaign. Other objectives include increasing support, changing negative perceptions and educating the public on recycling and what can and cannot be recycled.

Given the importance of awareness, Programme 2 is centred on the design and implementation of a public awareness campaign. It aims to give effect to the waste management hierarchy, encourage the end user to practise good waste management and to raise national awareness regarding the management of paper and paper packaging, as per the requirements of the regulation.

Programme 2 will have a focus on both households and businesses. It is acknowledged that businesses use a substantial portion of the printing and writing grades. Although some businesses are already serviced by a collector and recycle, it is still through that there is scope for the recovery of more paper from businesses.

Programme 3: Skills Development

The industry has identified a need for more formal education and training. Programme 3 involves scaling up the entrepreneurship training course to one training session per month. In addition to the training, under Programme 3, PRASA will also act as a business incubator for the trainees. The purpose of the incubator will be to allow the entrepreneurs to graduate into the mainstream economy through the support provided by the incubator. The business incubator will provide trainees with business development services (including business advisory services, business registration assistance, coaching and mentoring, training, production efficiency and improvement, and evaluation) and market access. Business advisory information, coaching and mentorship, and evaluation will be offered to trainees in workshop settings after the training. It will also be offered through dedicated individuals appointed for this purpose.

The training will be accessible to anyone who applies, but preference will be given to historically disadvantaged individuals who are already operating in the recycling industry.

Programme 4: Paper Recycling Fund

The industry has identified the need for a fund which can be accessed by signatories of the IndWMP for the purposes of establishing buy-back centres, owner-driver schemes and/or equipping informal collectors. Programme 4 focuses on the development, implementation and administration of this fund. It is important to note that this fund focuses specifically on unlocking areas/rural collections that are not currently feasible.

Some of the initial guiding principles of the fund will include –

- Accessibility to all stakeholders that have signed onto the IndWMP;
- Offering cash grants or special loans or a combination of both, depending on the needs of the applicant;
- Calling for applications in funding windows/bid windows, with a capped amount of funding on offer;

- Broad-Based Black Economic Empowerment (referred to as “B-BBEE”) and the inclusion of historically disadvantaged individuals, integration of informal collectors, job and business creation, experience and track record, sustainability and additionality;
- Supporting or establishing co-operatives or black-owned Small, Medium and Micro Enterprises (referred to as “SMMEs”);
- Competitiveness in nature so all applicants will need to demonstrate value for money and only the top applications will be selected;
- Board members and administrators who are company-agnostic/independent; and
- Strict monitoring, reporting and verification requirements for all projects that access funding to ensure effectiveness.

Only applicants who meet the funding requirements will be considered.

It will be important that stakeholders are equipped to apply for the fund. As such, support for co-operatives and SMMEs will be provided by PAMDEV (i.e. in the development of the business plan).

Programme 5: Forestry Support Programme

As mentioned, PAMDEV has identified a programme to assist historically disadvantaged small-scale farmers. Under this programme, PAMDEV will support Forestry South Africa’s (referred to as “FSA”) dedicated unit that organises, co-ordinate and capacitates small-scale timber growers and new entrants into the sector. It works by providing a grant to growers to assist them in establishing their farms. It also provides support through a strategic partner and a community-based contractor. The unit targets unemployed youth and owners of small-scale timber plantations who are struggling to reach optimal yields and, therefore, sound financial performance. The main objective of the programme is to create jobs.

The budget required to implement these programmes and measures is provided in the full IndWMP for the paper and paper packaging industry. This budget is for the implementation of these programmes and measures and not for the existing paper recycling efforts. In 2017, the industry spent R2.97 billion on collecting, purchasing, baling and transporting waste paper in order to recycle it. The industry will continue to invest in these activities. This investment sits outside of the budget quoted for the implementation of the programmes and measures under this IndWMP.

j) Targets

The targets on diversion from landfill, job creation, the promotion of small businesses, training and development, including the meaningful participation of the historically disadvantaged individuals under this IndWMP, are tabulated below –

Table 9: Targets Under this IndWMP

Target	2017 Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Additional paper and paper packaging diverted from landfill per year as a result of the programmes (tonnes/annum)		1 134	19 450	39 165	60 995	84 743	205 487
Cumulative additional paper and paper packaging diverted from landfill per year as a result of the programmes (tonnes/annum)		1 134	20 583	59 748	120 743	205 487	
Total paper and paper packaging diverted from landfill per year as a	1 282 120	1 283 253	1 302 703	1 341 868	1 402 863	1 487 607	

Target	2017 Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
result of existing efforts and the programmes (thousand tonnes)							
Potential additional job creation as a result of the programmes (not directly created by PAMDEV, but created as a result of the implementation of the programmes)		29	207	215	238	258	946
Of the jobs created, the number filled by historically-disadvantaged individuals		23	166	172	190	206	757
Of the jobs created, the number filled by those operating in the informal sector		14	103	107	119	129	473
Number of individuals trained and mentored each year		40	240	240	240	240	1 000
Number of trainees who are historically disadvantaged individuals		32	192	192	192	192	800
Number of trainees who operate in the informal sector		20	120	120	120	120	500

Based on the targets above, the annual projections over a five-year period have been provided for: –

- Quantities and types of waste generated from locally manufactured products and products imported that will become waste and will be managed through the IndWMP;
- Quantities of waste that will be re-used, recycled or recovered; and
- Quantities of waste that will be disposed of.

These annual projections are as follows: –

Table 10: Annual Projections under this IndWMP

	2017 Baseline Year	Year 1	Year 2	Year 3	Year 4	Year 5
Waste re-used, recycled or recovered (tonnes/annum)	1 282 120	1 283 253	1 302 703	1 341 868	1 402 863	1 487 607
Waste that enters the landfill (tonnes/annum)	531 560	575 572	562 292	540 517	496 838	436 859
Recycling rate (%)	70,7%	69,0%	69,9%	71,3%	73,8%	77,3%

The targets and annual projections have been determined based on several assumptions. See the full IndWMP prepared by the paper and paper packaging industry for more detail. Any changes to these assumptions will result in changes in the targets. Achievement of the targets is reliant on collaboration from industry, local and national government. None of the programmes can be successfully implemented without support from national government and active participation of the municipalities.

k) Industry Representation

Industry representation and participation will be addressed by encouraging all PAMSA and PRASA members to subscribe to the IndWMP. In addition, PAMDEV will encourage all corrugators, converters and printers to subscribe to the IndWMP. PAMDEV will engage with brand-owners and retailers to present the IndWMP and encourage subscription to the plan.

6.3 Metals

Implemented by the MetPac-SA, which is a Non Profit Company (NPC), defined in Section 21 of the Companies Act No. 61 of 1973, with registration number 2017/216419/08.

MetPac-SA acknowledges that metal packaging is part of a mixed waste stream consisting of assorted packaging material types and therefore endeavours to work closely with the other Producer Responsibility Organisations (PRO's) under the banner of Packaging SA to ensure that packaging as a whole is addressed on a macro level, while focusing on metal packaging at a micro level.

The MetPac-SA Plan will be submitted as part of the Packaging SA EPR Plan that will be submitted to the Minister for approval. The combined plan will provide a holistic and truly integrated approach to the management of packaging within South Africa, based on circular economy principles.

The chosen framework for implementing the MetPac-SA Extended Producer Responsibility (EPR) scheme to achieve the objectives of the Product Plan aims to ensure least cost to society, industry and government, including operational costs for collection, administrative costs and compliance costs.

MetPac-SA, was created towards the end of 2016, with the aim of bringing together the entire metal packaging value chain in South Africa to provide the metal packaging industry and present the industry's views, make recommendations and present a unified voice.

The establishment of MetPac-SA as a PRO is relatively recent, however the metals industry has been recovering used metal packaging in the form of steel and aluminium used beverage cans (UBC) for a number of years.

The steel industry, involved in can production, such as Iscor (now AMSA), Metal Box (now Nampak) and Crown Cork founded the Collect-a-Can Company (initially called Steelrec (Pty) Ltd and renamed in 1993) as a joint initiative for the recovery of steel used beverage cans for recycling in 1976. The company was recognised as a pre-eminent recycler of Southern Africa and was unique in the world, it had a can recovery rate of 63.7% in Southern Africa in the year 2000/1. Collect-a-Can paid cash for cans recovered by consumers, collectors, small businesses, individuals, schools, charity organisations and church groups, which served as an incentive to those recovering cans.

Collect-a-Can subsidised the collection system and a variable rate, which was fixed for about 18 months, was paid for each tonne of material that is delivered to either the depot or the steel mill. The price paid was dependent on the quality of the cans. Collect-a-Can's recovery rate for all the steel beverage cans sold in Southern Africa grew from 18% in 1992 to 63% in the 1998/99 fiscal year. Collect-a-Can estimated that their initiative provided up to 30 000 jobs. Collect-a-Can continues to operate and is supported by ArcelorMittal South Africa and Nampak Bevcan (a division of Nampak), as a not for profit organisation focussing mainly on beverage cans as well as diversified metal packaging.

Since 2013, more than R1.258 billion in capital investments have been made by industry players such as ABInbev, Coca-Cola Southern Africa, Nampak Bevcan and Hulamin to convert the beverage can industry from steel to aluminium. This program of conversion took two to three years to complete. The aluminium used beverage can is one of the most recycled packaging products globally and the metal packaging industry is well positioned to work with all industry role players to ensure that the success achieved with the steel can is carried through to the aluminium can.

Metpac-SA was established towards the end of 2016 by the stakeholders and role-players in the metal packaging industry to address all metal packaging as a whole.

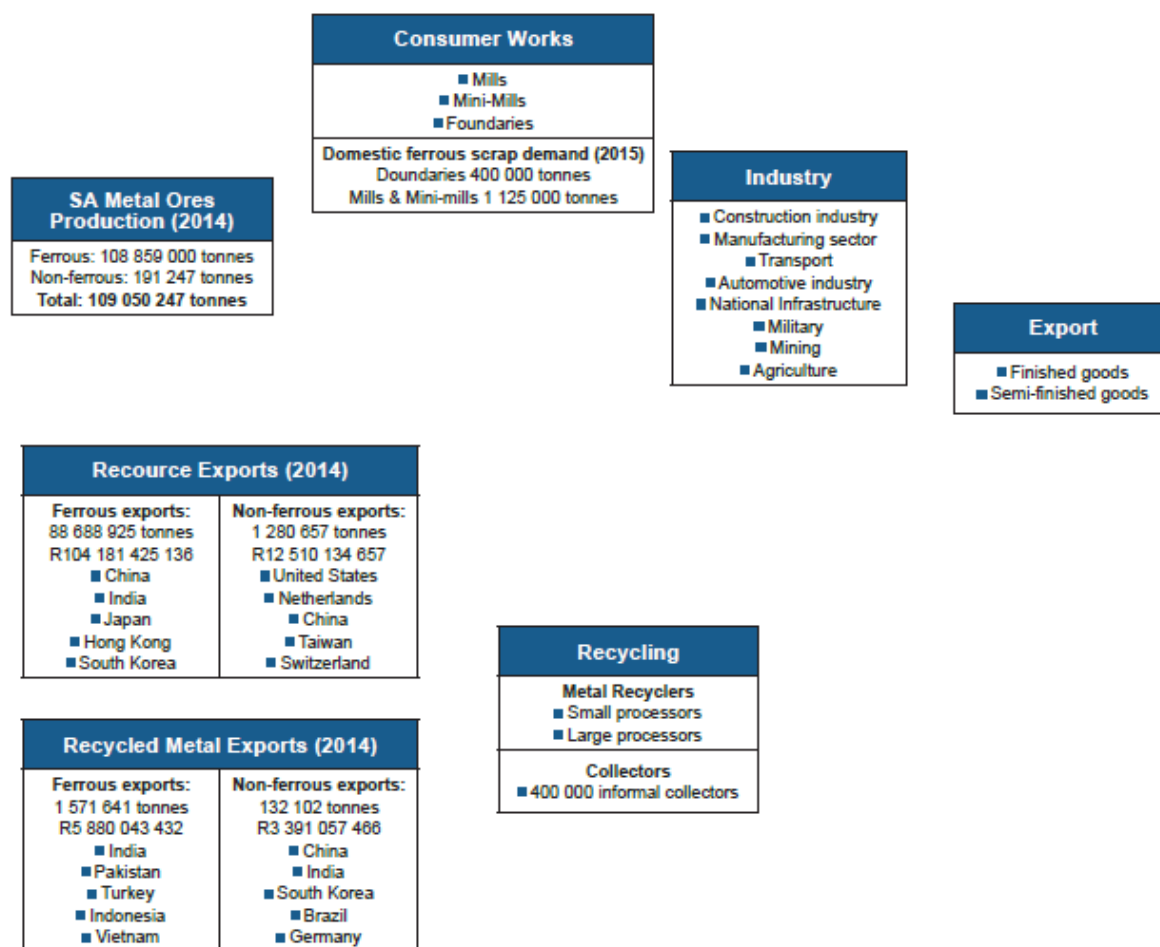


Figure 9: The Metals Value Chain (Tutwa Consulting Group, 2017)

It is also important to understand that the metal industry is highly complex and subject to global market forces and fluctuations which impact strongly on the prices, volumes and trading of scrap metal including packaging materials. In South Africa, the government regulates recycled metals exports through the Price Preference System (PPS), administered by the International Trade Administration Commission (ITAC). The following key items are worth noting (Tutwa Consulting Group, 2017):

- There is massive global demand for recycled metals.
- South Africa is a net exporter, however at an aggregated level, recycled metals imported from South Africa account for less than 2% of the total recycled metals imported globally, an average of 1.8 million tonnes.
- The global demand for South African scrap and recycled metals was slightly higher than the global average between 2011 to 2014 but in 2015, a sharp decline occurred. This can be partially explained by the global decline in imports of scrap and recycled metals, coinciding with the PPS. However, the continuing decline in 2015 points to other factors, possibly domestic.
- The South African metals recycling industry is predominantly demand driven by the domestic consumer works sector, even more so under the PPS, South African metal recyclers face

systemic pressure, owing to a combination of factors arising from the upstream resources suppliers, or mining industry, and downstream consumer works and industry sectors.

- South Africa's tightly regulated market controls recycled metals exports. With the declining domestic demand there are potential negative implications for the continued collection of metal waste and scrap metals, particularly for the informal collectors who are an important source of supply to the formal recycling sector.
- Metal ores producers, have the option to export under free market conditions, scrap metal recyclers cannot as they are restricted by the PPS.
- PPS imposes lower domestic prices on recycled metal producers, but does not address the costs of transportation and results in a disincentive to collect, process, and sell scrap domestically. It is, therefore regarded as self-defeating.
- The Tutwa Report notes that the recovery of obsolete scrap metal is the livelihood for a large pool of informal employees in South Africa, with estimates varying from 100 000 to 450 000 with an estimated 10,000 people directly employed in the formal SA metal recycling sector.

It is important to understand the context of packaging within the overall effects of a declining metal manufacturing industry, along with the potential detrimental effect of the PPS and ensure that EPR measures put in place for metal packaging are seen in a positive light, to support the recycling sector while providing resilience along the value chain.

The Waste RDI Roadmap states that it is worth noting that, in South Africa prices are lower than international spot prices against which scrap metal prices in South Africa are benchmarked and provides the following example: *"average international spot prices over November-December 2013 for ferrous scrap according to the Metal Bulletin (<http://www.metalbulletin.com/My-price-book.html>) were R4,199 per tonne; and R45,556 per tonne for non-ferrous metals (based on aluminium, copper and brass and non-ferrous alloys only); giving a weighted average of R9,989 per tonne. However, given both the 20% discount for local recyclers, as well as the costs associated with transport etc., local prices can be expected to be somewhat lower than the international prices."* The Roadmap concluded that the preference prices from ITAC can therefore be seen as indicative of the prices received for scrap metals locally, and are therefore used as a higher estimate of the unit values for metals.

Metal Packaging Industry Structure in South Africa

The BMi 2018 Packaging Overview provides the performance of the metal packaging market in South Africa in terms of tonnages and value:

Table 11: Value and performance of the Metal Packaging Market in South Africa (BMi, 2018)

	Tonnes	% of Total	Value (R)	% of Total
Cans	162 000	74.7	R 4 421 000 000	77
Closures	18 000	8.2	R 797 000 000	13.9
Drums and Pails	37 000	17	R 526 000 000	9.2
TOTAL	216 000		R 5 744 000 000	

It is important to note that this includes imports and exports and should not be viewed in isolation as the metal industry is subject to international pressures and market forces. BMi reports that the metal industry contracted by 5.8% in volume and 0.8% in value in 2017.

The annual production volumes as provided by BMi are included below. These figures include imports and exports but also show a volume decline from 2013 to 2016 as the industry shifted from steel cans to aluminium.

Table 12: Annual production volumes for Metal Packaging

Year	Cans		Closures		Drums & Pails		Total	
	000 Tons	% Change	000 Tons	% Change	000 Tons	% Change	000 Tons	% Change
2007	245	0.2%	18	18.7%	51	0.9%	314	1.2%
2008	241	-1.6%	16	-9.4%	49	-4.1%	306	-2.5%
2009	230	-4.5%	15	-7.5%	48	-1.9%	293	4.2%
2010	231	0.2%	16	6.4%	51	6.3%	297	1.5%
2011	219	-5.0%	17	9.7%	48	-6.3%	284	-4.4%
2012	207	-5.5%	18	0.6%	40	-15.7%	265	-6.8%
2013	202	-2.4%	18	1.0%	39	-3.9%	258	-2.4%
2014	184	-8.8%	18	3.4%	40	3.2%	243	-6.1%
2015	188	1.8%	19	2.9%	41	2.3%	247	2.0%
2016	175	-6.7%	19	0.6%	36	-12.9%	230	-7.1%
2017	162	-7.7%	18	-5.9%	37	3.7%	216	-5.8%
2018e	154	-4.8%	16	-8.4%	38	3.5%	208	-3.7%

The forecast tonnages as calculated by BMi in 2017, are provided below.

Table 13: Forecast metal packaging tonnages (BMi, 2017)

	2018f	2019f	2020f	2020f
Metals	200 500	214 600	212 600	220 500

A focus on transformation

The overarching aim of the plan is to stimulate the economy through the increased collection and recycling of metal packaging building on existing programmes, creating new ones and thereby creating additional ownership and employment opportunities. MetPac-SA Board members and member organisations have focussed a large portion of their business in terms of stimulating the market to open opportunities for previously disadvantaged individuals through many of their programmes.

MetPac-SA aim to focus on bringing about transformation within the metal packaging industry, across the entire value chain as follows:

- Ensure transformation takes place within the MetPac-SA Board in the first 5 years of the EPR Plan to ensure that it is more representative. Board member roles such as the Chair and Vice-Chair will be rotational roles to ensure effective skills and institutional knowledge transfer.

- Transformation will be a requirement for any potential project that is required and needs investment in terms of financial, technological or infrastructure support.
- The transfer of skills will be facilitated to ensure that new candidates are mentored and supported to allow them to effectively run a mechanical recycling operation in terms of the technical, financial, management and commercial skills
- Mentorship and training in terms of obtaining and managing the working capital required to start and operated a mechanical recycling operation
- Mentorship and training in terms of operating the business from an operational perspective will be provided.

Ownership and employment opportunities

Collection, Transport and Recycling

MetPac-SA will focus in transformation within the collection sector by rolling out projects that add value to collected metal packaging materials. The main value add is created by aggregating metals and therefore the provision of mobile balers will ensure more effective collection, transport and recycling.

MetPac-SA will fund the provision of balers (minimum of 2 per year). The projects will be identified by the Board and will either run in conjunction with existing projects and managed by the relevant member organisation or by Packa-Ching for example. Where appropriate, bulk bags and trolleys may be provided to allow collectors to bring collected material to the aggregation points.

Recipients of the balers will be required to report their volumes and progress on a six-monthly basis to MetPac-SA. MetPac-SA will provide training on the use of the equipment and annual maintenance support for the first 2 years.

Training and Mentorship programmes

MetPac-SA will develop a training and mentorship programme that will be overseen by the board, Packaging SA, industry and PRO members as well as any other stakeholders.

a. Bursary

MetPac-SA will provide one bursary per year to a historically disadvantaged applicant for tertiary education within the relevant metals or packaging sector. The student will be provided with the opportunity to undertake paid vacation training at a MetPac-SA board member organisation. The necessary mentorship and educational support will also be provided by Board Members and their organisations.

The Bursary will include tuition fees and a stipend to cover accommodation and living expenses to allow full-time study for the year.

b. Entrepreneurship training

MetPac-SA will, through its member organisations, run an entrepreneurship training programme, focussed on small collectors in the formal and informal sector. The aim will be to develop the entrepreneur to a level that they are able to aggregate their collected materials to increase the value of their operations.

The programme will aim to train a minimum of 3 entrepreneurs per year from the first year of implementation of the plan.

Proposed Projects as part of MetPac-SA's EPR Plan Implementation

It is important to note that MetPac-SA's members are undertaking a number of existing projects with the support of MetPac-SA. The aim would be to grow these projects where possible and include transformation in all possible aspects to assist in achieving the objectives of the PRO and member's EPR responsibilities.

Driving Membership and establishing an up to date database

MetPac-SA is a relatively recently established PRO and as metal packaging previously only focused on UBC's there is a large portion of the metal packaging industry in South Africa that is not yet actively participating in EPR obligations or as a member of the PRO.

MetPac-SA is therefore already undertaking a membership drive and the aim is to spend the first year ensure that all the key players and companies in the metal packaging industry understand their obligations in terms of the legal requirements to belong to the IWMP. This drive will also serve to provide information with regards to the benefits of belonging to the plan and an understanding of their EPR obligations.

The membership drive will serve to update the database not only in terms of obliged parties but also stakeholders and role-players within the industry who want to participate on a voluntary basis. The updated database will feed into the consolidated database under the Packaging SA macro structure.

Data and information

Tying in closely with driving membership and establishing a database of members and stakeholders to capture the metal packaging value chain, will be MetPac-SA's goal of developing a database that collates reliable data within the packaging industry in terms of types and volumes of metal packaging produced locally and imported as well as the actual recycling statistics.

The metal packaging industry's recycling statistics are not always clear as metal packaging is often mixed with scrap metals for recycling and once smelted can be reused for anything. i.e. car parts can be used for example to make metal cans and cans can be used to make other metal goods. While this is one of the reasons metal packaging has an inherent value, and contributes to the high recycling rates, it provides an obstacle for accurate data collection when one focusses only on the packaging aspect.

The metal packaging industry therefore needs a clear understanding of packaging numbers (in terms of weight and numbers) at various points within the value chain and very specifically to understand the following:

- Metal packaging items produced locally.
- Metal packaging items imported (empty and filled items but excluding raw materials still to undergo further processing).
- Metal packaging items collected and recovered.
- Metal packaging recycled for packaging vs recycled for other metal products.

The BMi research that has been undertaken over the years takes a high-level look at packaging and requires a more detailed understanding of industry specifics and nuances which MetPac-SA aim to address to obtain a full and detailed picture of the metal packaging industry.

With this data, MetPac-SA will understand the full value chain and be able to undertake a gap analysis which will form an integral part of other projects with this plan and the Federation of Plans, such as how best to work within Municipalities or Industry to ensure the best collection rates possible.

In addition to this, once the data has been obtained during year one, it can be mapped locating different activities geographically, providing a spatial analysis of the data that has been collected to inform the gap analysis. This would serve to inform other projects within the plans in terms of collaboration between PRO's and material streams indicating for example where buy-back centres, balers or aggregation points are required.

In addition, areas where the informal sector can be incorporated or where they require support (e.g. trolleys, access to buy-back points or direct market access) will be identified.

It is envisioned that the gap analysis and spatial analysis will be completed by the middle of the second year.

This is also a critical component that will feed into and inform the smartphone database and Application that will be developed under the Federation of Plans.

Ensuring value is added by aggregation

The metal recycling industry understands that profit is made where value is added to the collected recyclable materials. Scrap dealers add value to the material by aggregating collected metals for recycling. This is a critical step as the volumes of metal packaging are relatively small when compared to other scrap metals or other packaging materials.

It is envisioned, that providing bulk bags, trolleys and placing balers for metal and other recyclable materials at key locations will allow small and micro collectors with the opportunities to add value to the material that has been collected. It is likely that this approach will be undertaken at strategic centralised locations and in conjunction **with the roll-out of Packa-Ching under the Packaging SA EPR Plan.**

Knowledge sharing platform

The aim of MetPac-SA will be to provide a knowledge sharing platform to companies involved in the import, production and use of metal packaging in terms of

The Knowledge sharing platform will also be used to work with the various government departments such as Treasury, DEA and Dti as well as the National Cleaner Production Centre of South Africa (NCPC-SA) metals sector to ensure that MetPac-SA provides the necessary support to all role-players in the value chain from collectors to recyclers to ensure that the required quantity of metal packaging is returned to the manufacturing industry.

Problematic Material/Packaging working group for Metals

MetPac-SA will form a working group to participate in research and development in problematic waste streams such as paint cans, multi-layer materials or foil heat trays. Where redesign and removal or phasing out of these materials from the packaging stream is not possible, the research will focus on:

- Redesign of the packaging for easier collection and recycling.

- Recycling systems for these material streams
- Technology developments to increase the recycled content in metal packaging
- Technological and infrastructure requirements to assist in increased collection volumes and aggregation.

This working group will work in conjunction with R&D from the other PRO's such as PamDev and Polyco to address the issues that need to be addressed with Tetrapak or other multi-layers as the expertise with regards to each material contained will be required.

Packaging SA will coordinate Research and Development at a national and broader packaging level, which MetPac-SA will participate in from a metals perspective.

Current EPR Initiatives

This section describes the current EPR initiative being undertaken by the MetPac-SA Board Members. With the implementation of the plan, these initiatives would be grown with the support of MetPac-SA and replicated with other members where possible, with the ultimate aim of pushing transformation within the industry.

MetPac-SA Board Member Organisations are currently focusing on the following:

- Minimise and recycle waste generated by their operations as well as post-consumer waste. The percentage collection and recovery of metal packaging material over the past several years has improved incrementally from an estimated 67% to 73%.
- Reducing resource use through lightweighting;
- Commitment to an on-going process and targets to systematically increase the content of recycled beverage can material into their base material (steel and aluminium).
- Continued support for Collect-A Can
- Systematically engaging on resource reduction over the years by means of:
- Down-gauging tinplate/cans
 - Use of double reduced tin plate^[1] which uses less steel
 - Switching from ring pull ends to peel off ends on certain packaging types.
 - Reducing the aluminium layer required for laminates and
- Light-weighting of steel cans and ends.
- Conversion of the local beverage can industry, from tinplate to aluminium cans, reducing the overall weight of a can, and using a material that has a higher value increasing collection and driving up recycling rates.
- Supporting collectors (e.g. baling and sorting equipment).
- Determining how many suppliers require balers and how many units should be invested in and launched.
- Undertake further research into specific solutions (e.g. the specifications of the mobile baler) as well as the economic models underpinning them.
- Providing support to other collection schemes and systems such as Packa-Ching.
- Introduction of reusable drums and returnable drums with the ultimate aim of a drum leasing system, illustrating truly circular economy thinking which would make South Africa a leader in this packaging type and proposed system.

Summary and Future Collaborative approach

One of the aims of the data collection will be to provide support and input into future projects such as those listed above as MetPac-SA and its members will have a better understanding of the types of metal packaging that require support and further projects to address areas where recycling rates are not being achieved e.g. steel food cans.

There are a lot of synergies between the PRO's projects taking place at a micro-level, Packaging SA's macro projects and PRO members. MetPac-SA would provide a platform for open discussion to ensure that these opportunities are maximised in terms of environmental benefits and job creation without transgression of the Competitions Act or sharing of competitor's information.

6.4 Polyolefins

The Polyolefin Recycling Company (Polyco) was established in 2011 and registered as a Not for Profit Company (NPC) (Registration number 2011/009920/08) by a responsible group of South African Polyolefin Packaging Converters to demonstrate to Government their commitment to EPR through a focus on reducing the amount of polyolefin material going to landfill by increasing the sustainable collection, recycling, recovery and beneficiation of polyolefin plastics.

Polyco represents the largest plastic polymer group in South Africa and includes:

- Polymer code 2 - High density polyethylene (HDPE)
- Polymer code 4 - Linear Low and low-density polyethylene (LL/LDPE)
- Polymer code 5 - Polypropylene (PP)
- Polymer code 7 - Multilayer materials

Polyolefin materials are used in consumer goods, structural plastics, food packaging and industrial products.

The Polyco Plan will provide polyolefin waste solutions to both metro and rural areas and will bolster enterprise development, job creation and transformation opportunities within the sector. The Plan represents the interests of packaging converters, brand owners, retailers, collectors (formal and informal), recyclers and importantly, consumers.

Polyco's Purpose, Passion and Achievements to date

Polyco's purpose is to support the creation of a society where litter is minimised and the value of waste is maximised, through facilitating the responsible management of used polyolefin plastic packaging material.

Polyco are passionate about the environment and explore the possibilities, challenge conventional thinking and strive to overcome obstacles.

The aim is to focus on the diversion of plastic packaging from landfill by increasing collection rates, growing recycling volumes; targeting zero plastic waste to landfill by 2030:

- Supporting existing and encouraging new polyolefin collection and recycling networks.
- Achieving sustainable growth in polyolefin plastic recycling.
- Promoting consumer education and awareness programmes.
- Developing value chain projects to stimulate end use demand.

In terms of achievements to date, Polyco have created real value by facilitating recycling economy growth in creating more than 3600 jobs. They have spent R29 million and diverted 48000 tons of polyolefin materials from landfill.

Current achievements have been accomplished by means of a voluntary Extended Producer Responsibility (EPR) levy from its member organisations that are the polyolefin packaging converters in South Africa. The polyolefin plastics industry in South Africa has demonstrated that it is capable of meeting government's environmental obligations since 2011 through a voluntary system. It is envisaged that the approval of the IWMP will assist the federation of plans to ensure that true EPR is implemented when the whole value chain will be required to contribute to the EPR fee.

The total polyolefin packaging market in 2017 was around 600,000 tons which consisted of Rigid, Flexible, Multi-layer and Carrier bags (refer to **figure below**).

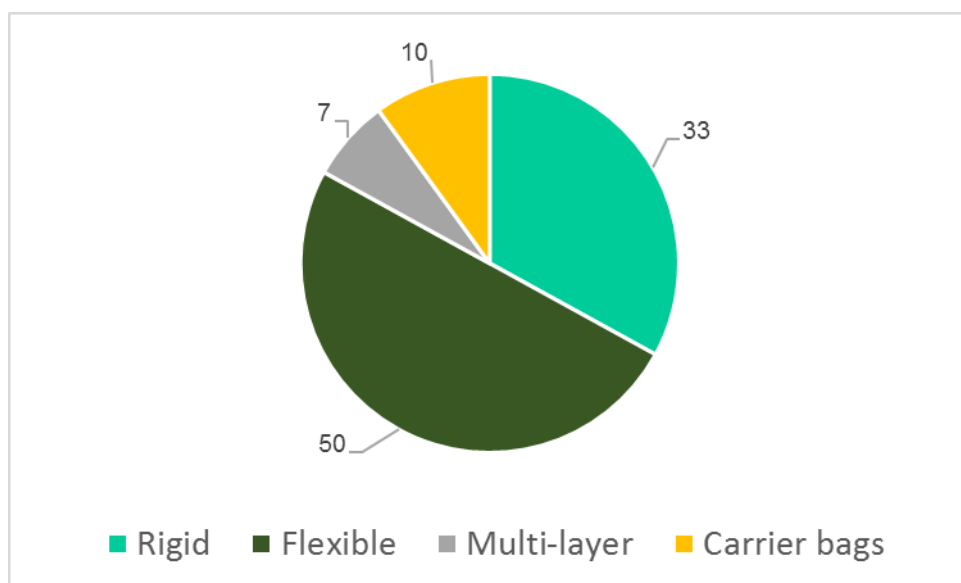


Figure 10: 2017 Polyolefin packaging market

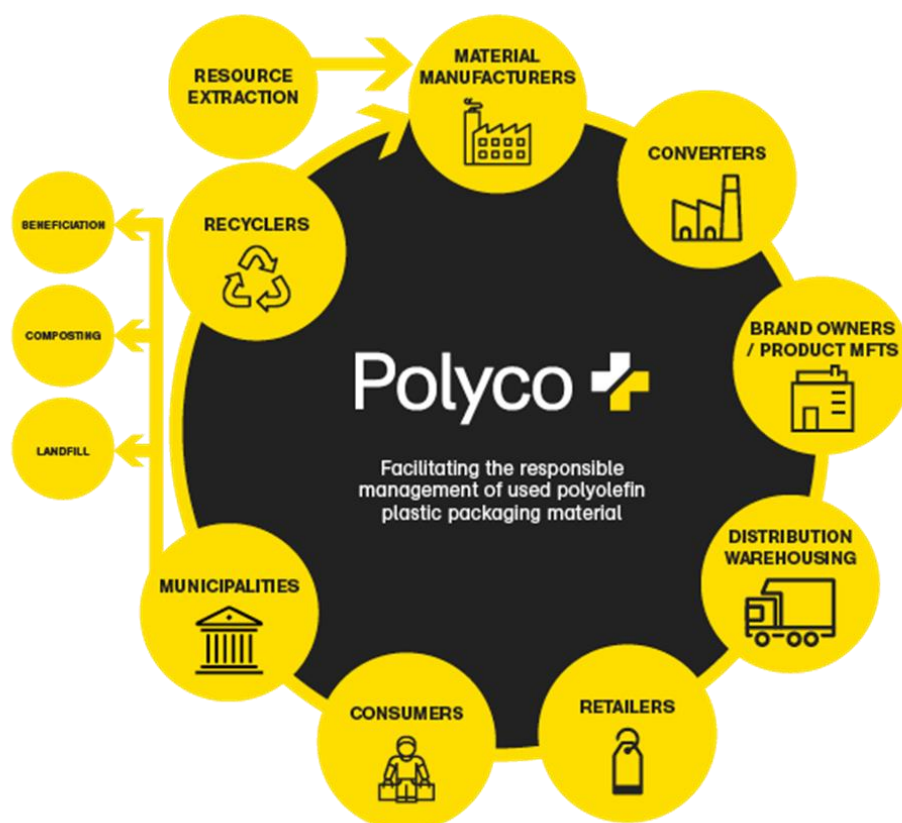


Figure 11: Polyolefins material value chain

The development of the EPR plan was guided by the outcomes of the Phakisa²⁶ which included a number of recommendations to take forward. Whilst the outcomes of the Phakisa have not yet been ratified, they were still used as a base to work from for the development of the Polyco EPR plan:

- 17 MRFs operated by 17 SMMEs
- Increased diversion of total packaging from landfill
- Establish 9 Transfer Stations per metro
- Increase first line recyclers
- Increase job creation opportunities in the packaging sector
- Integrate informal collectors
- Transform the industry

Purpose of the Polyolefin EPR Plan

The main components of the EPR Plan are to:

- Minimise polyolefin plastic packaging in the environment through Consumer Education and Awareness and implementing environmental pollution prevention solutions
- Minimise polyolefin plastic packaging through research and development for challenging waste streams and designing products for recyclability;
- Minimise polyolefin packaging going to landfill through the investment in collection equipment and infrastructure;
- Maximise polyolefin plastic packaging material being recycled through investment in recycling equipment and quality management systems; quality critical end-use market development; and implementing the value chain for market growth; and
- To support transformation of the recycling sector through grant funding to support value chain development and the progression of Small, Medium and Micro Enterprises (SMMEs); and skills development support.

EPR Fee

To meet the targets of the EPR plan the current levy model will change to an EPR Fee contribution paid by the convertor / producer. The EPR fee is assumed to be static for the 5 year period of the plan. These are represented as follows:

Table 14: Polyolefin EPR Fee

Polyolefin	EPR Fee	Notes
Rigid and Flexible	R250/ton	It is anticipated that there will be a participation rate of about 75% for HD/LD/PP rigid and flexible volumes for year 1. It is envisaged that the participation rate will increase to 90% by year 5.
Multi-layer & Carrier bags	R420/ton	
<u>Carrier bag Note:</u> Due to the government tax being in place on the carrier bags, the funding mechanism for carrier bags still has to be agreed to avoid double tax on convertors. A rebate scheme is being proposed whereby the convertor pays Polyco the EPR fee directly and pays the balance of the bag tax to government with proof of payment to Polyco.		

²⁶ Phakisa is a government lead approach to waste and chemical management in South Africa, the aim is to bring about rapid and meaningful change within the industry

Polyolefin	EPR Fee	Notes
Recyclate	R100/ton	The assumption is that there would be full participation from year one. The reason for the inclusion of an EPR fee on recycled product is that this material will still need to be collected and recycled once it has been put on the market. However, there is a reduced rate as an incentive to use more recyclate.

The EPR fee would therefore generate a revenue in order for Polyco as the PRO responsible for the implementation of the polyolefin specific material stream plan.

Total revenue will be to the value of R780 million over the 5 years. 78% of this revenue will be allocated to polyolefins directly with 11% equal share to Multi-layer and Carrier bags.

It is important to note that as Polyco are registered as a NPC, revenue is equal to expenses. Expenses include operating costs of 11-13% of the total revenue collected over the 5 years. All other revenue is used directly for EPR implementation projects, including job creation, development of SMMEs and stimulating the polyolefin diversion from landfill and recycling.

The EPR plan has ambitious targets in terms of increasing the collection rate, investing in transformation and job creation and lastly providing investment support.

Collection growth rate	Transformation spend	Job Creation	Investment support
44% to 54% within 5 years	Value chain progression – (SMME Development) - R325 million (Over 5 years) - Skills Development R35 million (Over 5 years)	Direct Jobs: >2 000 (over 5 years) In-direct Jobs: >1 500 (over 5 years)	R 625 MILLION Invested in 5yrs

Investment Support:		
Infrastructure:	R460 MILLION	Grants: R155 million Loans: R305 million
Skills Development	R35 MILLION	Focus on industry critical skills
Environment & Awareness	R60 MILLION	Reducing waste entering the environment
R&D / Quality:	R70 MILLION	Investigating solutions & driving within the industry

Project and sector focus areas include:

Project / Sector Focus	Description
SMME Expansion	Equipment (e.g. bakkie, trailer scale and cages) and an amount provided for working capital for current collectors (around 23 are budgeted for).
Collector to granulator	Equipment (wet granulator, wash plant, squeezer) and working capital. Around 9 recipients are budgeted for.
Granulator to small granulator	Equipment (e.g. extrusion, squeezer, filling hopper and bagger, sorting system, wash plant, water reticulation system and wet granulator) and working capital. A Grant funding and Interest free loan model for around 9 recipients has been budgeted for.

Project / Sector Focus	Description
Small recycler to larger recycler	Equipment (e.g. extrusion line, granulator, sorting system) and working capital for this category - A Grant funding and Interest free loan model for around 9 recipients has been budgeted for.
Plank convertor rural / metro	Equipment (e.g. washing plant and squeezer, extrusion plus carousel and molds) and working capital for this category. Intention is that 5 candidates partner with an existing recycler and part funding in the form of an interest free loan would be applied.
Virgin substitution (refer enablers)	This is the support for equipment, quality systems and R&D to produce a recycled pellet that can replace virgin polymer. This was R15mill p.a. for one end use development platform per year
Street pickers / waste reclaimers (informal)	Provision of trolleys and PPE to 2500 street pickers over the 5 years
Formal collectors	17 applicants included here to be provided with equipment (e.g. sorting stations, conveyors) to the value of R2 000 000 in the form of grants and interest free loans.
Quality / ISO tiered	Each of the applicants (excluding the SMME expansion) will have an amount available to implement quality systems. This is a grant but if the applicant is unsuccessful with the implementation then the money is repayable to Polyco. The intention with this, it to raise quality standards and increase the inherent quality of recovered / recycled material which in turn will assist to establish quality end-use market demand.
R&D linked projects	Currently these are all allocated to multilayer packaging as this is one of the biggest challenges.
Project innovation & incubation	This category of spend allows for the incubation of projects that will have bearing across the range and has been allocated in the proportion of the volumes, e.g. Packa-Ching.
Environmental projects	40% of the repaid loans funding will used to fund the environmental projects.
Contribution to Packaging SA Federation of Plans	This is based on 10% of the EPR fee and is the contribution to implement the macro projects at the Packaging SA Federation level. The quantum will be reviewed annually.

Grant applications and Transformation Support

In terms of building sustainable businesses, the EPR Plan also includes a Grant funding application avenue for new entrants into the market. Part of the grant funding application is a minimum Broad Based Black Economic Empowerment (BBBEE) Level of 51% black owned business:

- **100% BBBEE** - Applicants in this category will qualify for 50% of their funding to be in the form of a grant up to an amount of R4m, the balance will be in the form of an interest free loan over 60 months.
- **51% BBBEE** - Applicants in this category will qualify for 25% of their funding to be in the form of a grant up to an amount of R4m, the balance will be in the form of an interest free loan over 60 months.

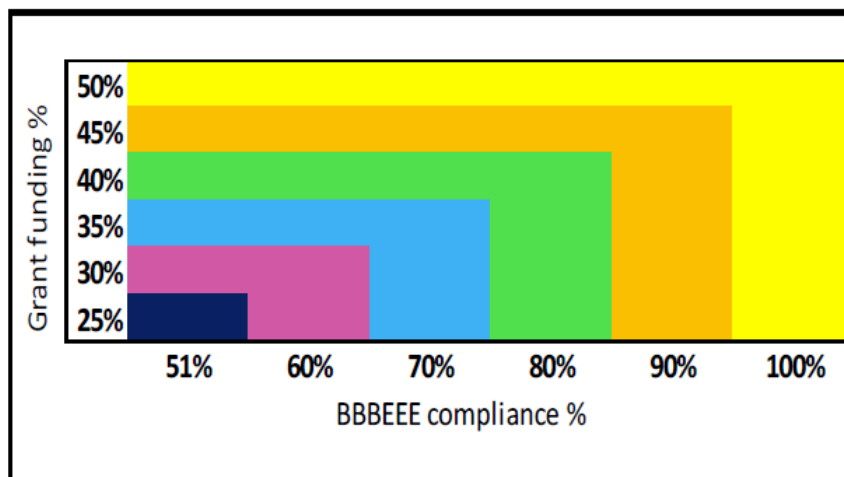


Figure 12: Polyco Grant funding support table

The transformation spend is not a stand-alone category. This represents a summary of the total of actual project funding of R323.7mill + skills development R32.4mill rounded to R325mill and R35mill or R360mill in total for presentation. This is further to demonstrate the commitment of the plan towards real industry transformation.

Pollution Prevention

This is the sum of the environmental spend through Plastics SA and other industry entities of R31.7million. This environmental spend is the Polyco contribution to Plastics SA for the execution of:

- Waste management and recycling projects,
- Education, training and awareness projects,
- River litter and booms/traps,
- Clean-up and Recycle SA initiatives as well as Global and National networks (Global plastics alliance; African Marine Waste Network; Marine and Coastal Education Network).
- The carrier bag awareness campaign R11.1mill is aimed at creating awareness around the use of these carrier bags. They can be re-used several times before being recycled.
- The Polyco activity spend of R14.1mill represents the spend associated with PR/Marketing, workshops and exhibitions as well as professional consulting fees, giving a total of R56.9mill which was rounded to R60mill for presentation.

Research and Development (R&D)

R&D linked projects to the value of R39.2million is envisaged, with the spend largely aimed at finding sustainable solutions for the recovery and processing of the multi-layer streams of product. This includes finding alternative barrier films that would not render certain multi-layer substrates unrecyclable.

- Quality/ISO tiered implementation projects R6.1mill. These projects were aimed at raising the quality of the products being offered in the market place.
- Project incubation R21.7mill. This was for incubating projects like a Packa-Ching type initiative. These projects would allow for a project to be run through a pilot process before being put out on the market. This could include Apps for smart phones for informal collectors etc. totaling around R70million.

Challenging waste streams

Within the polyolefin material stream there are many challenging waste materials that are currently getting a lot of media attention due to the amount found in the environment, especially marine and river systems. These include Multi-layers, carrier bags and items that are too small for recovery, i.e. single use plastic consumables.

The Polyco EPR plan includes budget to research alternatives and / or end-use markets for these materials. There are a few identified solutions currently being undertaken, and these would be further encouraged and rolled out, e.g. plank production specifically for multi-layers. International collaboration will also be undertaken with CEFLEX (<https://ceflex.eu/>), *CEFLEX is the collaborative initiative of a European consortium of companies and associations representing the entire value chain of flexible packaging, whose mission is to make flexible packaging more relevant to the circular economy by advancing better system design solutions via collaboration of companies representing the entire value chain.*

In terms of carrier bags, the EPR plan includes assisting industry to develop product specifications for design of carrier bags that are more recyclable; increase awareness, encourage re-use and recycling of carrier bags.

Items that are currently too small and which do not presently get recycled; R&D will focus on re-design and look at biodegradable (**home compostable**) polymer options.

IWMP Enablers

A number of key enablers include enhanced value proposition of recycled polymers and the implementation of quality standards.

Enhanced value proposition of recycled polymers

It will be important to focus on quality critical end-use markets to enable resistance to economic fluctuations which are currently present in the recycling industry. The aim is to develop consistent good quality recycled pellets which can achieve a target minimum price of 80% of the virgin price, creating enhanced margins for the recycler which will facilitate further investment in their operations. The focus will be new market and demand creation for recycle material.

Implement quality standards

Polyco will implement a tiered quality system approach based on the ISO 9001:2015 standard. A model has been developed to facilitate a progressive movement into the quality system from the ground up. Budget has been allocated specifically to assist all applicants for grant and interest free funding to implement this system.

There are many benefits with a system like this including, but not limited to:

- Improved administrative and production quality
- Improved output quality of recycle
- Support and mentoring assistance to improve rating
- Aligned to International standards
- Improved data capturing




REQUIREMENTS		Leadership	Operations	Improvement	Context	Support	Planning	Performance
GOLD - LEVEL		✓	✓	✓	✓	✓	✓	✓
SILVER - LEVEL		✓	✓	✓	✓	✓	✓	
BRONZE - LEVEL		✓	✓	✓				

Figure 13: Polyco Quality Management System Approach

This initiative ties in to EPR Plan supporting the BIS Policy measure: Quality Standards and Productivity support.

Pollution prevention approach

Polyco supports and collaborates with other industry organizations to implement prevention and clean up solutions. One of the organisations, is Plastics SA who have identified targeted campaigns to assist with Design for recycling guidelines as well as targeted clean up campaigns. Ongoing support has therefore been included into the plan and specifically for ongoing clean up campaigns as a response to track and remove litter from catchment areas to the sea. Coastal and inland hotspot areas will be focused on including:

- KwaZulu Natal - uMngeni River Catchment
- Eastern Cape - Swartkops Estuary
- Western Cape - 4 Kader Asmal Integrated River Catchment- Blackriver and Canals
- Gauteng - Sabie - River Catchment and Kruger National Park

Behavioural change and charter commitment

The most challenging aspect of the plan, is behavioural change. Product design is important and thereafter, consistent labelling on all packaging whether local or imported will need to be a focus. As with pollution prevention, Polyco will collaborate with existing organisations to assist with the messaging to raise knowledge and awareness that leads to actual behaviour change.

Compliance with the requirements of the EPR plan will also require all members of the EPR plan to sign and commit to a behavioural charter.

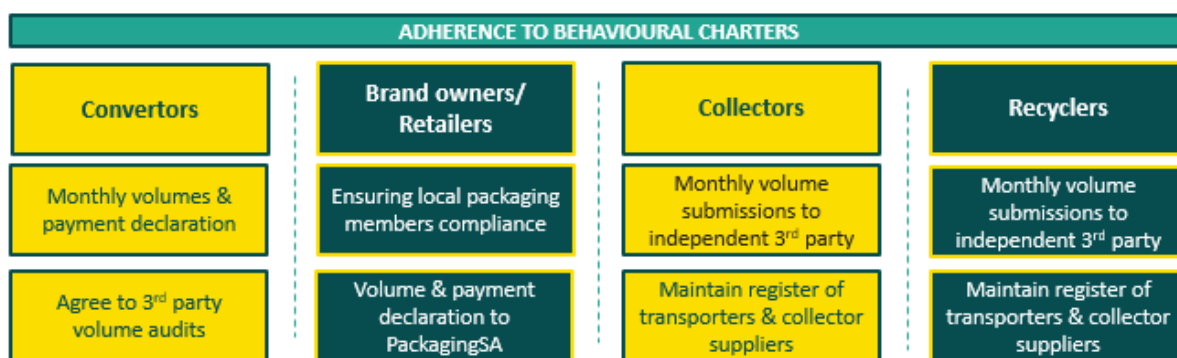


Figure 14: Polyco Behavioural Charter

Packaging Converters

- To consent to a monthly raw material supplier invoice on behalf of Polyco for the EPR fee based on our monthly resin purchases of HD, LD/LLD and PP. The payment terms will be per your current Raw Material Supplier payment terms.
- To agree to confidential client information, (member contribution age analysis), being passed to an independent 3rd party auditor, for the sole purpose of tracking the EPR fees outstanding and the recovery thereof.
- To commit to honestly declaring all imported polymer to Polyco on a monthly basis and paying the EPR fee. Terms for Import Declaration payments are 30 days from date of Polyco invoice.
- To agree, in the case of Multi-Layer packaging, to provide accurate details to Polyco, of the monthly sales volumes of such finished film sold. The payment terms are 30 days from date of Polyco invoice.
- To commit to integrate sustainability into the process of designing, manufacturing and selling packaging products.

Collectors

- To comply with the requirements of the IWMP.
- To provide monthly figures of collected volumes and sources of waste to an independent 3rd party auditor.
- To provide details of your waste storage locations.
- To maintain a register of all collectors and transporters supplying your business.
- To comply with the norms and standards as per the IWMP.

Brand Owners/Retailers

- To specify packaging converter membership to Polyco as a Procurement Criteria on local polyolefin packaging, to ensure compliance.
- To integrate sustainability into the process of designing, selecting and selling packaged products.
- To include on-pack labelling and/or polymer identification codes on all products.

- To collaborate with PRO's on projects that achieve sustainability targets in line with Sustainability Development goals.
- To grow recycled polymer content in non-food applications.
- To commit to responsible buying and selling to improve sustainability of packaged products.
- To communicate positive recycling messages to consumers at point of sale.
- To operate in-house sustainability programs.

Recyclers

- To comply with the requirements of the IWMP.
- To maintain a register of all collectors and transporters supplying your business.
- To provide monthly figures of recycled volumes sold and average prices to an independent 3rd party auditor.
- To focus on quality improvement initiatives in your organisation.
- To implement sustainable business practices in your organisation.

A focus on transformation

The overarching aim of the plan is to stimulate the economy through the increased collection and recycling of Polyolefins, thereby creating additional ownership and employment opportunities. Polyco has focussed a large portion of their business in terms of stimulating the market to open opportunities for previously disadvantaged individuals through many of their programmes.

Polyco have implemented a business skills development fund which will be provided to all previously disadvantaged successful project partners to support sustainable growth in their business and to maximise their business potential. The business skills development fund will enable the following skills transfer:

- The transfer of skills to effectively run a mechanical recycling operation in terms of the technical, financial, management and commercial skills
- Mentorship and training in terms of obtaining and managing the working capital required to start and operated a mechanical recycling operation
- Mentorship and training in terms of operating the business from an operational perspective
- Additional Staff positions at Polyco for operations

Polyco was previously an exempt organisation as the turnover was under R10million. However, Polyco is undergoing a certification process presently to ascertain the BEE level. Currently the organisation employs 8 people nationwide and this will be increased to a further in order to implement the EPR Plan.

Position	Current	Proposed Staff required
CEO	X	
Business support manager	X	
Business development manager	X	
Financial manager	X	
Packa-Ching project co-ordinator	X	
Admin/marketing assistant	X	
Packa-Ching supervisor	X	
Office cleaner	X	
PR - Marketing		X

Position	Current	Proposed Staff required
<i>Business dev (KZN) x1</i>		X
<i>Business dev (EC) x1</i>		X
<i>Business dev (OFS) x 1</i>		X
<i>Business dev Lim) x1</i>		X
<i>Finance clerk</i>		X
<i>Buying clerk</i>		X
<i>Technical advisor</i>		X
<i>Business support/End use development manager</i>		X
<i>Compliance auditor</i>		X

Summary of the EPR Targets

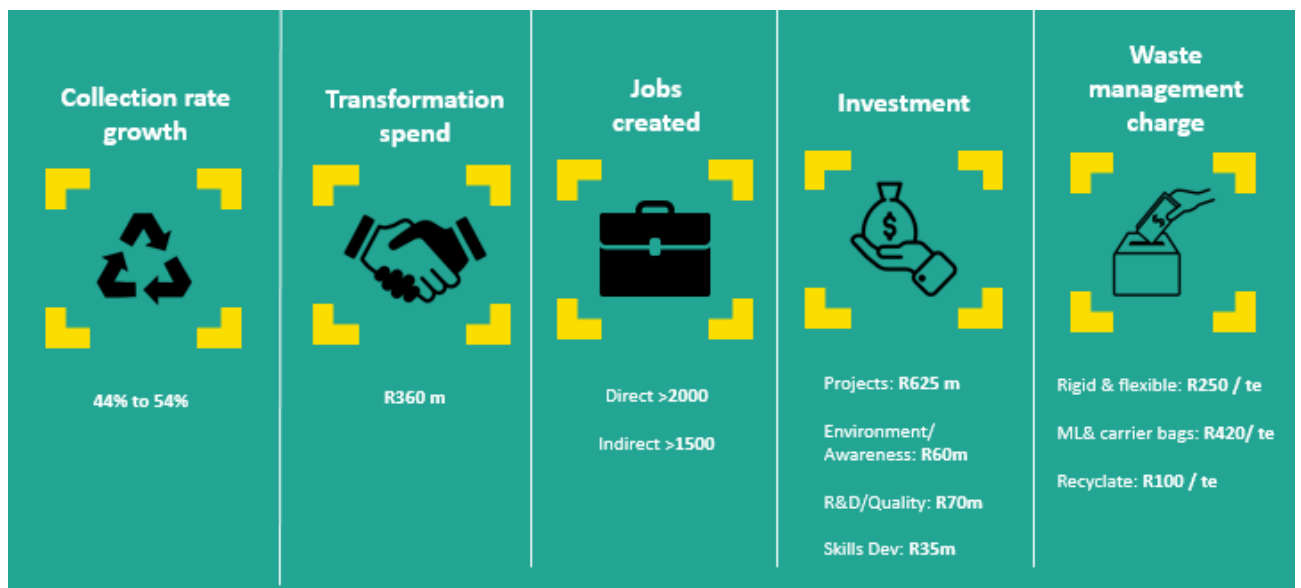


Figure 15: Polyco Summary of EPR Targets

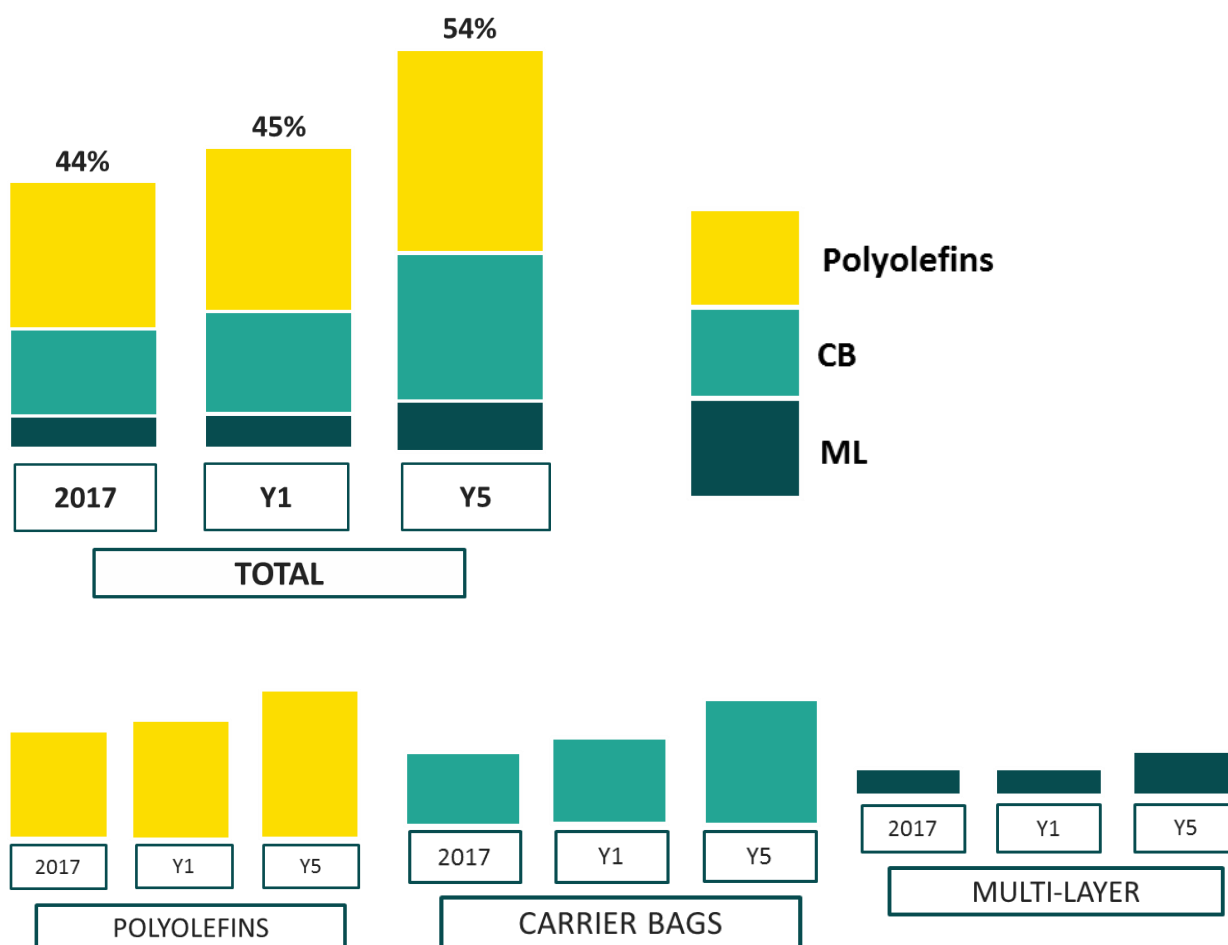


Figure 16: Polycollection rate projections

6.5 Polyethylene terephthalate

Implemented by the PETCO registered NPC (registration number 2004/032347/08).

The PET Recycling Company NPC T/A PETCO, is pleased to present this Industry Waste Management Plan for the PET Sector, as part of the Federation of Plans submission under PackagingSA.

Our Plan proposes the following:

1. That PETCO continues to be **governed** by a Board of Directors comprising the full value chain of the obliged industry.
2. We propose several measures to ensure ongoing engagement with the **Department of Environmental Affairs** and the **Waste Management Bureau**, including regular reporting and the establishment of an Advisory Board on which they will sit.
3. Our **product scope** covers PET Bottles and proposes extending this to Edible Oils and Thermoforms. We are willing to include PET Strapping if necessary.
4. As part of the **Federation of Plans**, PETCO will fund and conduct PET-specific activities and will fund and where appropriate, also conduct, multi-material activities e.g. equipping and training buyback centre SMMEs.
5. Our tonnage-based **targets** are to increase Bottle, Edible Oil and Thermoform rates from 65%-72%, 0%-39%, and 0%-35% respectively; and spend approx. R400m on transformation.
6. **Job creation** is a key component that results from increased recycling tonnages.
7. Our **budget** is approximately R1.5bn over 5 years.
8. We are proposing that we continue with our successful **self-funded EPR Fee model** which on average is projected to be approximately R1000/tonne of raw material. This presents the lowest risk to all stakeholders, negates the need for PET EPR funding becoming a drain on the National Fiscus, and is the most cost- efficient solution for society.
9. **Members will be required** to undertake measures to improve recyclability of their products.
10. Our **Transformation** Strategy addresses all elements of the recycling value chain and supporting environment. This includes targeting the establishment of a Black Industrialist.
11. A comprehensive **National Awareness** programme is based on our 14-year history of successfully improving awareness of PET recycling, sustainability, and the circular economy.
12. We will continue to support the PET recycling chain via our **Market Demand** programme, assisting it to weather economic downturns.
13. We will continue with supporting **Collectors** with multiple interventions including training and equipment.
14. Our **Municipal Support** programme includes budget for Material Recovery facilities, training, and skills development, and proposes establishing a framework for longer-term separation at source rollout.
15. We're proposing comprehensive **Waste Picker and Informal Sector Support** and integration.
16. We have budgeted for a **Separation at Source** funding, accessible by municipalities, collectors, waste picker groups/co-ops and other entities.
17. Ongoing formal river and beach **clean-ups** are included in this Plan.
18. Our **Industry Best Practice** programme addresses the waste hierarchy, industry and stakeholder collaboration, research & development, and design for recycling, amongst others.
19. The **regional secondary resources economy** is addressed.
20. Our plan sets out the **Roles and Responsibilities** of all stakeholders.

Our track record to deliver results

To date, South Africa has one of the highest audited PET Bottle recycling rates in the world. We grew purchases of bottles for recycling from 9 800 tonnes in 2005, to 93 235 tonnes in 2017. This corresponds to bottle recycling rates of 16% and 65% respectively. We've grown the local beneficiation of postconsumer bottles with only a small percentage (approx. just 4% in 2017) being exported for processing elsewhere. This is a valuable driver of local job creation.

We've supported the growth of the recycling industry from 1 recycler in 2005, to 6 in 2017, resulting in approximately R1bn of infrastructure investment in PET recycling to date. We have trained thousands of entrepreneurs and supported hundreds of SMMEs with personal protective equipment, scales, cages, trailers and baling machines.

We've worked with countless municipalities, schools, local NGOs, international organisations and South African government officials, as well as other Producer Responsibility Organisations, to make interventions across the value chain and the length and breadth of South Africa.

We have achieved these results through partnerships with all these entities and many individuals. This has made a tangible positive impact on the lives of South Africans, contributed significantly to the economy, and minimised the impact of post-consumer PET on the environment.

PETCO is well-placed to continue delivering results in this next stage of South Africa's environmental legislation i.e. mandatory Extended Producer Responsibility for packaging products.

Approach

Our approach in this Plan is to support the entire ecosystem of recycling, represented by the schematic below and detailed in this Industry Waste Management Plan.

Selection of PETCO's PET Plan interventions



Figure 17: PETCO activities across the product / recycling value chain

Product scope to date

Since 2004, PETCO's membership has consisted solely of PET Bottle producers i.e. those who voluntarily fund our activities have produced products in PET Bottle form, and we have consistently sought to recruit broader membership.

In the past, PETCO's membership consisted of those in the beverage sector only, and as more and more products are being bottled in PET, the scope of our members' products has changed to include various products in the food, household, and personal care sectors. Hence we refer to PET Bottles rather than PET Beverage Bottles, as was the case in the past.

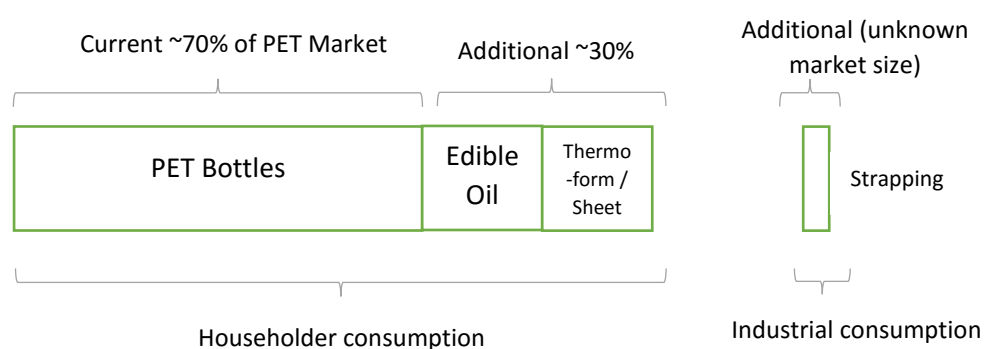
PET Bottles make up approximately 70% of the total PET market. Our recycling statistics to date have reflected PET Bottles, but from time to time we have reported on figures for the entire PET market, because we have that information and it is often requested of us.

Proposed product scope

Our Plan proposes that PETCO be responsible for all packaging products made of PET. This includes our existing product scope of PET Bottles i.e. soft drinks, water bottles, foodstuffs, household and personal care. Our current membership comprises approximately 90% of the tonnage of this sector in South Africa.

We also are proposing inclusion of edible oil products (e.g. cooking oil) and the thermoform and sheet sectors (trays, blister packs etc). These sectors have not currently elected to be part of the voluntary PETCO model.

For selected producers of PET strapping (used for tying bales, stacks of bricks, poles and other such items), we are willing to include them in our Plan. We have had a request from a strapping producer to be included in the PETCO Plan.



The solution for recycling of these additional products will lie with the current PET Bottle recycling chain. In many cases they also form an end use for PET Bottle recycling and provide a closed-loop solution.

Targets

Targets are presented here for ease of reference, although these are highly dependent on several factors listed in Key Assumptions – most notable being access to funding.

We recognise that:

Through PETCO's efforts since 2004, we have PET Bottle Recycling rates that are already substantial for the PET Bottle Sector. The recycling rates for Edible Oils, Thermoforms and Sheet and other items are starting off a low or near-zero base.

As for Job creation figures, we have been using calculated figures up to this point. Targets and progress will be measured via a mix of calculation, estimates and actuals as reported.

Transformation, participation in the economy and moving individuals up the value chain have been known to us, but not formally tracked for reporting purposes.

Targets all assume a 1 January 2019 start date pending DEA approval of this Plan.

Tonnages

Calculation of market tonnages consist of tonnages of raw material and preforms purchased and imported. We will need to estimate and rely on declarations for the tonnage of imported finished goods until such time as systems are in place at member organisations to record this.

Recycling tonnages processed are based on independently audited figures of post-consumer PET purchases at the gate of recyclers. We also include the exports of PET waste obtained from the South African Revenue Service (SARS) statistics services.

PET Bottles (in kilotonnes)

Table 15: PET Bottle tonnage targets

	2019	2020	2021	2022	2023
Waste Generated	169	183	197	213	230
Waste recycled	117	128	140	153	166
Waste Disposed	52	55	57	60	64
Recycling %	69%	70%	71%	72%	72%

PET Edible Oil (in in kilotonnes)

Table 16: PET Edible oil tonnage targets

	2019	2020	2021	2022	2023
Waste Generated	37	40	43	47	51
Waste recycled	3	6	10	16	20
Waste Disposed	34	34	33	31	31
Recycling %	8%	15%	23%	34%	39%

PET Thermoform (in kilotonnes)*Table 17: PET Thermoform tonnage targets*

	2019	2020	2021	2022	2023
Waste Generated*	53	57	61	66	72
Waste recycled	3	6	10	16	25
Waste Disposed	50	51	51	50	47
Recycling %	6%	10%	16%	24%	35%

*Note that volumes of imported finished goods may be significantly different from our estimates, thus changing market size.

Job Creation

Over 5 years, we estimate that the number of jobs in the PETCO-supported projects will grow from approximately 2400 jobs, to 3110 jobs, thus creating approximately 710 new jobs. Income opportunities are estimated to grow by 75 000.

Job creation in the wider recycling economy is notoriously difficult figure to measure, especially in the informal sector.

We are proposing to use 2018 as the baseline year, pending DEA approval of this Plan, and measure progress against this baseline. Please note methodology for each entry. There are many thousands of jobs sustained at collector level in MRFs, buyback centres, and waste management companies that are not listed in this Plan, as the numbers are unknown. We will continue working with researchers, PROs and other stakeholders to better survey and calculate the number of jobs sustained by recycling across material streams.

Table 18: Job creation targets over 5 years

Jobs from PETCO activities	Method	PETCO 2018 Baseline	Number at 2023
Recyclers	Estimated/Surveyed	1 400	1 700
Collectors (PETCO Projects)	Estimated/Calculated	1 000	1 300
Material recovery facilities	Estimated	0	80
River and beach clean-ups (formal programme)	Estimated	0	30
Total		2400	3110

Table 19: Income opportunities created over 5 years

Income Opportunities - wider sector		2018 Baseline	Number at 2023
Collectors / Waste pickers (see calc below)	Calculated	70 000	145 000

Recyclers

Recyclers employ a mixture of full- time, permanent, contract, part-time staff and casual labour.

Our conservative estimate based on surveyed data is that full time equivalent (FTE) equivalent jobs amount to approximately 1400 at present, growing to 1700 by year 5.

Collectors – PETCO specific projects

We estimate that of our 60 or so current supported projects, that they employ 1000 FTE staff between them. Again this is a mixture of employment types. Our spend on Collectors focuses on SMMEs, and we estimate that a R500 000 spend generates approximately 20 jobs. These jobs are, however, sustained by multiple material streams, with PET often as the key stream that provides a large portion of gross profit. Of these 20 jobs, PETCO proposes to claim 5 of them as sustained jobs. Note we are excluding training spend, Separation at Source funding, formal clean-up contract and ongoing business support from this calculation.

Therefore, for every R500 000 of spend on collection businesses, PETCO calculates 5 FTE jobs will be created by PET recycling.

Material Recovery Facilities

We are proposing the funding of an equivalent of two Material Recovery Facilities, each employing 40 FTE staff, thus totalling 80 FTE jobs.

River and beach clean-ups

We are proposing a total of 8 ongoing clean-up contracts, which between them should be able to support 32 FTE jobs.

Income opportunities: Waste Pickers and the wider collection sector

To date we have consistently used an “income opportunity” calculation figure based on the growth of PET tonnages recycled. Collectors and waste pickers handle multiple materials, and their income stems from multiple sources.

Our calculation assumes that one waste picker collects 200 bottles per day, for 240 days per year (and collects other materials). This equates to 1.45 tonnes per year of PET bottles per year (at 33 000 bottles per tonne) and is one “income opportunity”. We propose continuing to use this methodology as a basis for collection of all PET products, however we recognise that a better method of job creation should be pursued.

Promotion of Small Business, Training & Development, and participation of PDIs

These targets as called for in the Section 28 notice are tightly integrated and are best reflected in the spend targets.

For promotion of Small Business, of the approximate R48m for Collection projects, 80% will be spent on small businesses over 5 years.

Our Training and Development spend across Collectors, Waste Pickers and Municipalities is approximately R10m over 5 years.

Participation of Previously Disadvantaged Individuals. Throughout our plan, we highlight transformation opportunities as part of our Transformation Strategy.

1. We are targeting approximately 26% of the PETCO Budget on Transformation spend.
2. Target the establishment of a Black Industrialist / black-owned recycler or other value-added activity.
3. Our Collector projects target is 90% spend on black-owned companies / co-ops.
4. Waste Picker spend is almost exclusively on HDIs, although we will not exclude non-South Africans.
5. Contracted River and Beach clean-ups will prioritise employment of HDIs.
6. HDI researchers prioritised for our research spend, particularly at Master's level.
7. Encourage PETCO's obliged industry members to nominate HDI's to represent them on the Board of Directors.
8. And other measures as highlighted through this Plan.

Budget

The cost of administering the PET Industry Waste Management Plan is presented below.

We recognise that it is important to keep the administrative cost as low as possible, and that PETCO maintain a not-for-profit status. This ensures that the maximum amount of funding made available for recycling flows to the recycling value chain and achieves the desired results.

Note that this budget assumes a start date of 1st January 2019 pending DEA approval of this Plan.

Our budget comprises the funding of our PET-specific programmes and of funding and execution of multi-material programmes as part of the Federation of Plans.

Please see the *Integration with PackagingSA Federation of Plans* section for info regarding PET Activities and Federation Activities.

Table 20: PETCO Budget contribution to the PACKAGING SA EPR Plan

All in Millions ZAR	2019	2020	2021	2022	2023
Income / Revenue	R 193.2	R 276.0	R 303.7	R 358.8	R 379.9
Expenses	R 193.2	R 276.0	R 303.7	R 358.8	R 379.9
PET Specific Activities (subtotal)	R 128.1	R 171.4	R 224.9	R 236.2	R 283.4
<i>Demand Support</i>	R 107.6	R 149.6	R 172.7	R 212.5	R 258.1
<i>Black Industrialist</i>	R 1.0	R 1.0	R 30.0	R -	R -
<i>Admin and operating</i>	R 19.5	R 20.8	R 22.2	R 23.7	R 25.3
Federation Activities (subtotal)	R 65.1	R 104.6	R 78.8	R 122.6	R 96.5
<i>National Awareness</i>	R 25.0	R 26.5	R 28.1	R 29.8	R 31.6
<i>Collection (Collectors, Waste Pickers, Municipalities, Sep at Source)</i>	R 34.1	R 71.6	R 43.9	R 85.4	R 57.0
<i>Other projects incl R&D</i>	R 6.0	R 6.5	R 6.9	R 7.4	R 7.9

Transformation Spend

The total transformation spend of the PETCO plan is approximately R394m, or 26% of the budget.

The Demand Support programme underpins the entire recycling value chain and is required in order for all other activities to be sustainable. When considering the Transformation spend as a percentage of the PETCO budget (not including the Demand Support programme budget), then the proportion of Transformation spend rises to approximately 60% of this portion of the budget.

Financing

It is understood that adequate, long-term, secure and timely financing of PETCO is crucial to the organisation fulfilling its obligation of behalf of producers, fulfilling the mandate of the Department of Environmental Affairs, and sustaining thousands of existing and new jobs.

We recognise that:

1. Producers should fund activities which are carried out to fulfil their Extended Producer Responsibility obligations.
2. Most producers do wish to fund these activities (as evidenced by PETCO's history). A minority do not.
3. The mandate of the Department of Environmental Affairs to maintain and improve the state of the environment is pressing, whilst creating jobs and transforming the economy.
4. The financing mechanism chosen can have a major negative financial impact on producers themselves, consumers of the products in question, and society who may be left with the problems associated with waste.
5. PETCO is already self-sufficient in terms of raising funding – and to date has not required any Government assistance.
6. PETCO does not wish to become a drain on the national fiscus and to be reliant on state resources for its operation.
7. National Treasury does not ring-fence funding.
8. Any taxes imposed on the basis of the Section 28 EPR legislation would be collected via the South African Revenue Service, then be disbursed by National Treasury. Funds may then be passed on to the Department of Environmental Affairs, who may then pass it onto the Waste Management Bureau, who may then fund organisations such as PETCO.
9. National Treasury has indicated that with existing obligations (i.e. not considering the funding of PETCO), there is an estimated revenue shortfall of many billions of rands over the foreseeable future, and it is irresponsible to ignore the risk that funds flowing into National Treasury will be diverted to existing national expenditure obligations, rather than find its way back to Producer Responsibility Organisations (PROs) via DEA and the Waste Bureau.
10. National Treasury is actively seeking additional revenue streams to fund the current deficit.
11. To date, there have already been 2 recycling schemes (Buyisa-e-bag and REDISA) which were neither run nor self-managed by the obliged industry and both have failed.

For these reasons, we believe it is a considerable risk to the DEA's and PETCO's mandate should PETCO lose access to its funding mechanisms and be required to rely on state funding for operation. The risk of substantial negative effect of additional taxes on producers and consumers, with consummate risk in PETCO not realising its funding requirements, is also very high. The risk to disruption and reduced income and job losses within the collection and recycling value chain is also high.

PETCO proposes to continue raising an EPR Fee directly from its members. This amount is applied to the raw material and pre-form purchases, both locally produced and imported. PETCO has been able to do this successfully since inception in 2004.

With regards to finished imported goods, importers will pay the equivalent EPR fee to PETCO based on the material composition of the product. Importers of finished goods may opt to pay the full fee to the Federation of Plans, who in turn will pay the PET EPR over to PETCO.

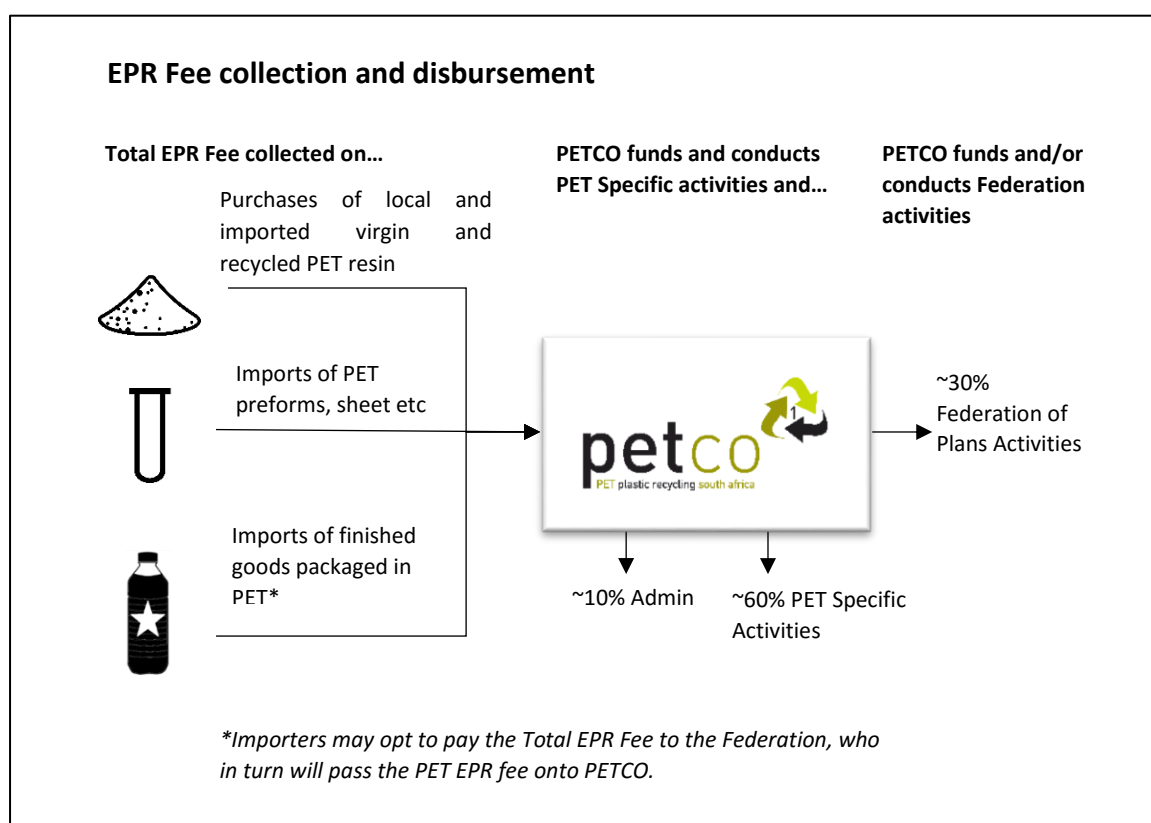


Figure 18: PETCO funding flow of collected fees

Table 21: Differentiated Fees based on product category

	2019	2020	2021	2022	2023
Total EPR Fee Bottles	R 901	R 1 189	R1 169	R 1 185	R 1 071
Total EPR Fee Edible Oil	R604	R830	R 989	R 1 250	R1 255
Total EPR Fee Thermoforms	R 740	R 966	R 1 019	R 1 295	R1 538

Note that these fees assume a start date of 1st January 2019 pending DEA approval of this Plan.

We are proposing differentiated fees based on product category, broadly divided into Bottles, Edible Oil and Thermoforms. The reason for differentiated fees is that the Demand Support required to support recycling of these products varies, and the recycling rate for each category varies as well. The recycling of Edible Oil bottles and Thermoforms is costlier than of bottles, however their recycling rates start from effectively zero tonnes, steadily growing to include a greater proportion of the total tonnage placed on the market. As their recycling rates approach those of PET Bottles, their higher cost of recycling starts to reflect in later years.

The EPR Fees collected on all products are jointly and evenly used to fund all programmes outside of the Demand Support Programme. It is only for the Demand Support programme where costs are apportioned to reflect the differentiated cost of providing support to the PET recycling value chain for the product category. This will incentivise designers of those products to improve the recyclability of those products, in order to reduce the Demand Support required and thus reduce the EPR fee for their products.

As noted in the Member Requirements section, where designs of specific product lines prove to be consistently difficult to recycle, then PETCO may raise the fee on those products within a category to compensate for the additional Demand Support they require. An example may be bottles that are highly pigmented, or that have labels that are difficult to remove etc. In all instances, we will seek to provide producers with the opportunity to improve recyclability prior to implementing higher EPR fees. It must be stressed that PETCO's overarching mandate is to ensure the success of the PET Industry Waste Management Plan for the benefit of all its obliged industry members, broader society and the environment.

Transformation

Transformation is an imperative in the South African economy. PETCO's approach is promote transformation across the recycling value chain, and into the wider EPR scope of work.

We recognise that a diverse range of people have value to add to the collective development of South Africa, and all should have equal opportunity to participate in its development. It will ensure robust and sustainable growth of the recycling economy and will serve to support a broader cross section of South Africa, benefitting all who call it home, particularly for the previously disadvantaged and is in line with the National Development Plan.

Transformation Strategy

Our Transformation strategy is to look at every component of the recycling value chain and the implementation of our Plan, and to ask the question: "How can we drive Transformation here?"

You will see throughout the plan that we highlight where additional Transformation opportunities exist.

Recycling

A key aspect of Transformation in this PET plan is to target the introduction of a new, black-owned recycler. The nature of PET recycling is that they are often large-scale, capital-intensive businesses and the most successful have come from a long line of recycling expertise built up over generations.

To maximise the chance of success of a new, black-owned (at least 51%) recycler, we will seek a partnership with the dti's Black Industrialist programme with PETCO as the Subject Matter Expert to secure the necessary capital outlay for such a company. We envisage providing the black-owned recycler with an additional financial support, over and above the applicable financial end-use support that they would receive as a recycler. This may be for specific time period, or for a certain tonnage, or as a once off contribution depending on the needs of the business. This will further de-risk the business and assist it in the crucial early stages.

We must acknowledge that setting up companies, including new recycling companies, is extremely difficult, even when the economy is good. With this noted, we will also explore the establishment of black-owned, value added companies within other parts of the value chain should the establishment of a Black Industrialist in recycling provide to be unviable or not be able to attract investors. A key driver of recycling is demand throughout the chain, and we believe opportunity exists to establish a Black Industrialist even further up the value chain i.e. a producer who uses recycled material as input to make strapping, textiles etc.

Further to driving the establishment of a black-owned company, we will require all existing recyclers to put forward a transformation plan of their own.

Collectors

We will continue to support the efforts of new and existing collection businesses and buy back centres. Our approach is to provide training and equipment, as well as business support. We have a package of interventions depending on the size of the collector, with each intervention designed to move the business up a level – from small, to medium to large in terms of monthly tonnage. We also ensure that collection businesses have a market to sell to, by supporting their customers to purchase their material via our Demand Support programme. Steady and continued growth of demand underpins the sustainability and growth of collection businesses.

For this five-year period, we will concentrate most of our Collection Funding on small and medium businesses and will target a of spend of 90% on black-owned businesses.

Waste Pickers

Waste pickers form a link in the value chain as crucial as any other. Their needs are varied and urgent. No set of interventions can be crafted without their input. We recognise that PETCO has a crucial role to play in their Transformation to be more successfully integrated into the recycling value chain.

Firstly, we ensure continued growth of the PET recycling market and demand for waste pickers' products via our Demand Support programme. Without this continued demand, all other interventions are at high risk of failing.

Secondly, our interventions are aimed at increasing waste pickers volumes whilst operating in a safer environment. Apart from increasing incomes by supplying training and equipment, we need to address several additional challenges that waste pickers face. To this end, we are proposing that funding is spent on providing access to market information, establishing more Waste Picker Associations, providing a platform to access Social Services and health care such as mobile clinics.

Our interventions are designed to allow waste pickers to grow their tonnages and start accessing the interventions we have identified in our Collectors programme, and thus start fully integrating into the economy. We feel this is the best way to uplift this sector of the economy.

Separation at Source Funding

In our budget, we are setting aside a substantial portion of funding to contribute to separation at source programmes. These funds will be open to municipalities, waste management companies, collectors, and organised waste picker entities (e.g. in co-op's) who are running separation at source programmes. It must be noted that our approach is to get waste pickers organised to the point where

they can be considered Collectors as per our above programme, who can then be developed to the point of being “tender-ready” and are able to render separation at source services to residents. A good example of this is the Vaalpark Separation at Source pilot project in Sasolburg, Free State. We will target a 90% spend on black-owned businesses.

Skills Development

We believe transformation incorporates skills development as a key element to equipping South Africans with the necessary tools to empower themselves whilst enabling the recycling sector to grow.

Further to the training proposed in the Collections and Waste Picker programmes, and the Subject Matter Expert support that PETCO will provide to the Black Industrialist, we propose several internship programmes to broaden the pool of skills available to the recycling and EPR industry.

PETCO will have its own internship programme to expose young professionals to the work that we do and our method of carrying out our programmes with high impact and integrity. We will also facilitate internships with our recycling partners and collector beneficiaries to give people hand-on experience on the sorting and processing side of the recycling value chain.

We’re also proposing several skills development initiatives with municipal officials, further detailed in the relevant section of this plan.

PETCO’s internal transformation

PETCO currently has a level 8 BBBEE score, and we will target an improvement to level 4 by the end of the 5 year period.

PETCO’s BBBEE score was verified in 2017 by Empowerdex. Where we score exceptionally well is in Enterprise & Supplier Development, and Socio-Economic Development. Our Skills Development Scoring could do with much improvement and we are already targeting improvements in this area. This is where a bulk of our improvement will practically come from. Management & Control (a smaller contributor to the overall score) can also be improved, although we look to maintain low staff levels and low staff turnover within PETCO to reduce overheads and maximise funding that flows to the recycling value chain. We will target improvements in this area and have been steadily doing so for some time. We will continue to encourage our members to nominate Historically Disadvantaged Individuals to represent them on the PETCO Board of Directors. Our Ownership score is not applicable.

6.6 Polystyrene

Implemented by the Polystyrene Association of South Africa which is a non-profit, producer responsibility organization (PRO), that has actively been involving members across the value chain in the recycling of polystyrene in South Africa over the past 9 years.

Polystyrene Association of South Africa, in conjunction with Packaging SA has drafted an Integrated Waste Management Plan (Plan) in response to Government Notice 41303 dated 6 December 2017 calling on the paper, packaging industry, electrical and electronic industry and lighting industry to develop and submit Industry Waste Management Plans. The Plan needs to adhere to the requirements as included in the National Environmental Management: Waste Act, 59 of 2008 (NEMWA), Section 30(2) as well as what has been proposed in the abovementioned Notice issued in the Government Gazette.

It is important to note that whilst a 5-year implementation IWMP has been drafted, the plan is part of a bigger Extended Producer Responsibility (EPR) strategy in order to transition South Africa to a more Circular Economy. The longer-term vision is to stimulate a secondary economy which would bolster additional employment opportunities through the development of supplementary material markets.

Polystyrene Association of South Africa acknowledges that polystyrene packaging is part of a mixed waste stream consisting of assorted packaging material types and therefore endeavours to work closely with the other Producer Responsibility Organisations (PRO's) under the banner of Packaging SA to ensure that packaging as a whole is addressed on a macro level, while focusing on polystyrene packaging at a micro level.

The Polystyrene Plan will be submitted as part of the Packaging SA Industry's Integrated Waste Management Plan that will be submitted to the Minister for approval. The combined plan will provide a holistic and truly integrated approach to the management of packaging within South Africa, based on circular economy principles.

The chosen framework for implementing the Polystyrene Extended Producer Responsibility (EPR) scheme to achieve the objectives of the Product Plan aims to ensure least cost to society, industry and government, including operational costs for collection, administrative and compliance costs.

It is the purpose of the Polystyrene Association to address all polystyrene packaging streams - whether it is the large and easily recognized protective packaging (EPS) or the smallest and not well-known coffee cup lid (HIPS).

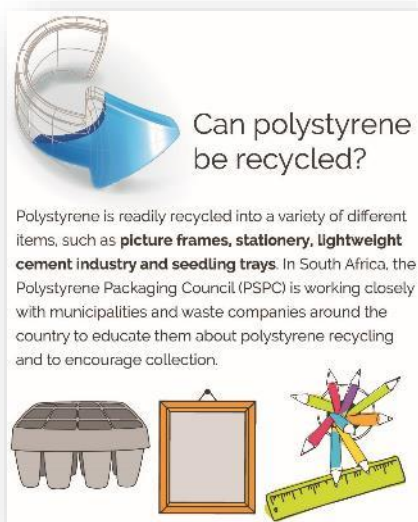
Unprecedented success has been achieved in the development of local end markets for the recycled material to the point where the demand is currently outstripping the supply. In this plan the Polystyrene Association aims to illustrate how the industry aims to be actively growing the amount of polystyrene being recycled in South Africa, create jobs and take responsibility for the polystyrene packaging material that enters the market through forming strategic partnerships and implementing recycling projects.

The impact on the environment of everyday materials is increasingly important and has been pushed to the top of the sustainability agenda. Producers, manufacturers, retailers, recyclers and the end-users all have to make concerted efforts to reduce our carbon footprint and protect our natural heritage for future generations. We believe that Polystyrene is able to make significant contributions in this regard. Our aim, therefore, is to provide you with factual, well-documented information about the environmental credentials of Polystyrene.

About the Polystyrene Association of South Africa

The Polystyrene Association of SA (previously known as the Polystyrene Packaging Council) started its operations in February 2007. The Association was formed because of the need for the polystyrene industry to actively demonstrate its Extended Producer Responsibility and commitment to the environment (through Polystyrene collection and recycling) and to the safety and health of polystyrene food packaging users. Today, it is proud to be representing the major players in South

Africa's polystyrene manufacturing industry and has expanded its operations to become a facilitator between the recyclers and suppliers of recycled polystyrene (post-consumer and post-industrial), and the buyers representing the various end-markets.



Since the start of the current decade, South Africa has been experiencing an unprecedented growth in the sale of fast foods and takeaway meals. This, in turn, has led to a parallel increase in the demand for quality food packaging and utensils that are both hygienic and affordable. Intended as a means with which to ensure a continued yet sustainable future for this highly versatile, plastic material, a polystyrene recycling network was set up by a group of concerned parties in February of 2007.

The Polystyrene Association has been instrumental in the development of the current successful collection and recycling of polystyrene by various end markets in South

Africa. Most of these markets were using virgin material in the production of their products. However, with the support of the Polystyrene Association, all these industries were able to move from using virgin material to up to 100% recyclate in the production of their products - thereby growing the recycling rates as well as increasing the value of polystyrene as a recycled material. This increase in value has contributed to job creation and effective use of resources.

Recently, and in response to the need in the market, the Polystyrene Association has expanded its operations to become a facilitator between recyclers and suppliers of recycled polystyrene, as well as the buyers representing the various end-markets. Our consistent and persistent work to get numerous recycling initiatives off the ground is finally paying off, and we are so excited to finally see the fruits of our labour.

The facilitating role that has been played by the Association has contributed to the exponential growth in the recycling rate. The current end markets consist of recycling into the:

- Décor market (picture frames, cornices, skirtings and blinds)
- Building market (lightweight cement bricks and screeds)
- Beads projects
- Tutu Desk
- Breadtags for wheelchairs

Despite these successes, however, there is still too much used polystyrene that ends up in landfill or pollutes our rivers and oceans. We are mindful of these challenges and that we cannot afford to rest on our laurels. Much work still needs to be done and there are still many challenges that need to be addressed in the pursuit of finding a permanent solution to all of the reasons why high levels of polystyrene still end up in the environment.

The Current Situation

A key benefit of polystyrene is that it can be recycled and the Polystyrene Association is initiating and setting up recycling programmes all over South Africa. Most single use, coated paperboard foodservice packaging materials cannot be recycled because the coating and paper cannot be separated economically. Polystyrene materials, however, can be reprocessed and moulded into new packaging products.

Polystyrene is generally not a high-profile target in recycling terms (unlike glass, paper, aluminium cans, batteries, tyres etc.) but many companies, local authorities and individuals may not have considered the implications of just how much polystyrene they are dumping. The recycling of polystyrene is within everyone's reach and can be done easily with the help of the Polystyrene Association of SA.

Polystyrene Market in South Africa (2017)

In 2017, PS-E accounts for 24% of the total market, with Ext gassed packaging & non-packaging accounting for 56% of the total market (see **Figure below**), while packaging applications make up 66% of the total market.

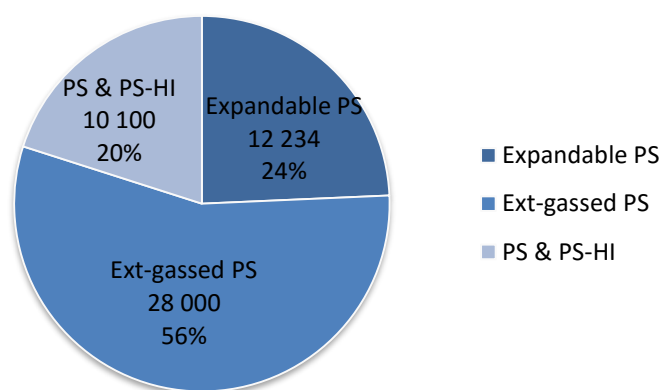


Figure 19: Polystyrene Markets for PS&PS-HI, Expandable PS and Ext-gassed PS, 2017

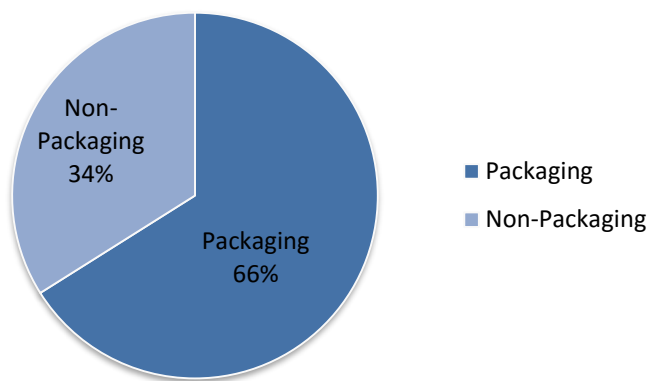


Figure 20: Polystyrene market allocation for packaging and non-packaging, 2017

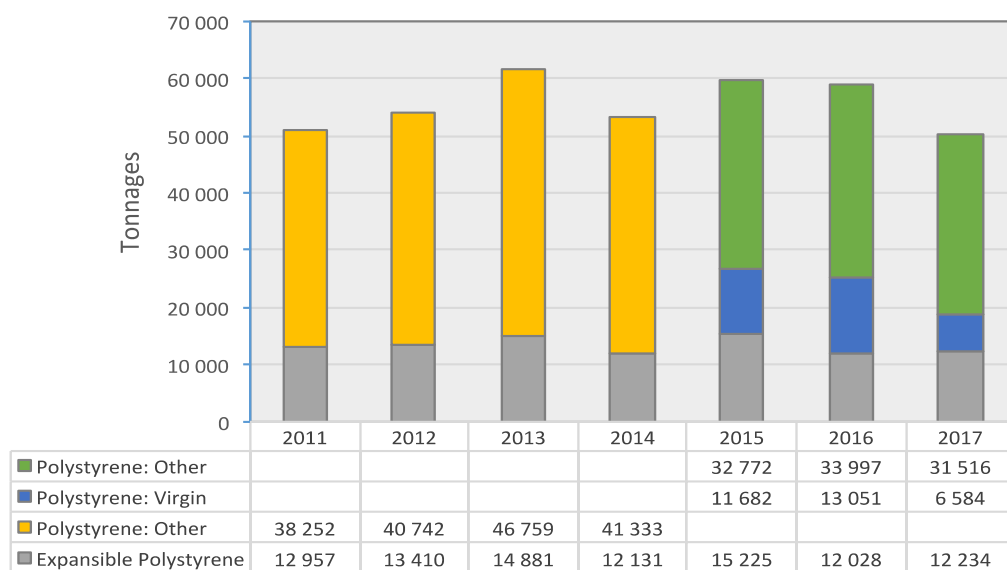


Figure 21: Polystyrene Consumption Statistics, 2017

Table 22: Local production and imported products

	Tariff Code	2011	2012	2013	2014	2015	2016	2017
Polystyrene	39.03.1							
Expansible Polystyrene	39.03.11	12 957	13 410	14 881	12 131	15 225	12 028	12 234
Polystyrene: Other	39.03.19	38 252	40 742	46 759	41 333			
Polystyrene: Virgin	39.03.19.10					11 682	13 051	6 584
Polystyrene: Other	39.03.19.90					32 772	33 997	31 516
Tonnages		51 209	54 152	61 639	53 463	59 679	59 077	50 334

Table 23: Breakdown of Polystyrene material available for recycling in the South African Market

Tariff Codes	2015		2016		2017	
	Packaging	Non-Pack	Packaging	Non-Pack	Packaging	Non-Pack
EXPANSIBLE POLYSTYRENE (PS-E)	5 620	9 605	4 100	7 928	4 250	7 984
Insulation		9 605		7 928		7 984
Cups	2 500		1 800		1 900	
Seedling trays	1 040		800		800	
Protective	2 080		1 500		1 550	
POLYSTYRENE (PS & PS-HI)	33 500	10 954	34 000	13 048	29 000	9 100
Ext gassed trays	25 500		25 000		24 000	
B & C		4 600		5 000		4 000
Sheet for white goods		1 500		1 500		1 000
Thermoforming	8 000		9 000		5 000	
Injection moulding		4 854		6548		4 100
Totals	39 120	20 559	38 100	20976	33 250	17 084

MACHINERY DISTRIBUTION FOR POLYSTYRENE RECYCLE-PROCESSING IN SOUTH AFRICA

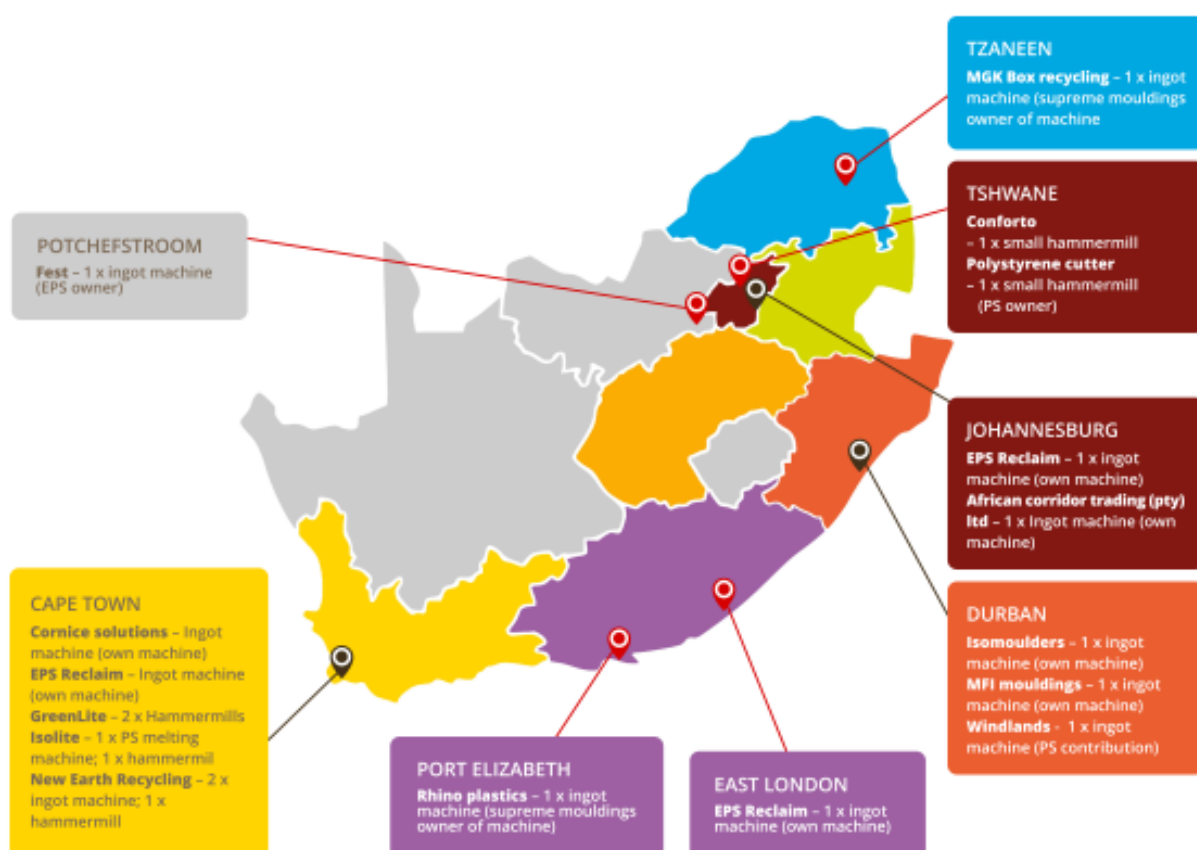


Figure 22: Current machinery distribution for polystyrene recycling in South Africa

The Way Forward: Proposed Plan

After many years of working closely with our industry role players across the entire polystyrene packaging value chain and various consultations with interested parties, it has become clear to us that facilitating the developing polystyrene trading hubs offers a workable solution for keeping the valuable resource out of landfill and in use, again and again and again.

As mentioned earlier, it is the primary objective of the Polystyrene Association of South Africa to increase and develop the markets for recycled polystyrene, and thereby growing the recycling rate of post-consumer polystyrene exponentially.

Through our activities and projects that were launched over the past decade, it has become abundantly clear that logistical and capacity issues are a major stumbling block when it comes to the recycling of polystyrene. Due to the fact that polystyrene is incredibly light, it poses problems for collectors and waste management companies who in essence have to move air.

The Polystyrene Association of South Africa has, in part, been able to overcome this problem by installing balers and granulators are some of the biggest polystyrene collectors and recyclers around the country.

This is only the first step, however, as there are still certain bottle necks in value chain that need to be addressed and solved if a lasting, long-term solution is to be found. We believe that the solution to the growth of the recycling of polystyrene in South Africa lies with the implementation of two types of polystyrene trading hub models that will help to address crucial needs within our society and communities.

Establishing Polystyrene Trading Hubs (Gauteng, Western Cape and KZN)

The Polystyrene Association proposes the formation of a new model for polystyrene collection and recycling in South Africa. Inspired by a similar best-practice model that is currently operational in Europe (covering Germany and many of its neighbouring countries), we would like to see polystyrene trading hubs being formed in Gauteng, Western Cape and KwaZulu Natal as the first phase of the project (see **Figure below**).

BUYERS OF EPS AND HIPS IN AREAS IDENTIFIED FOR POTENTIAL DEVELOPMENT OF POLYSTYRENE TRADING HUBS

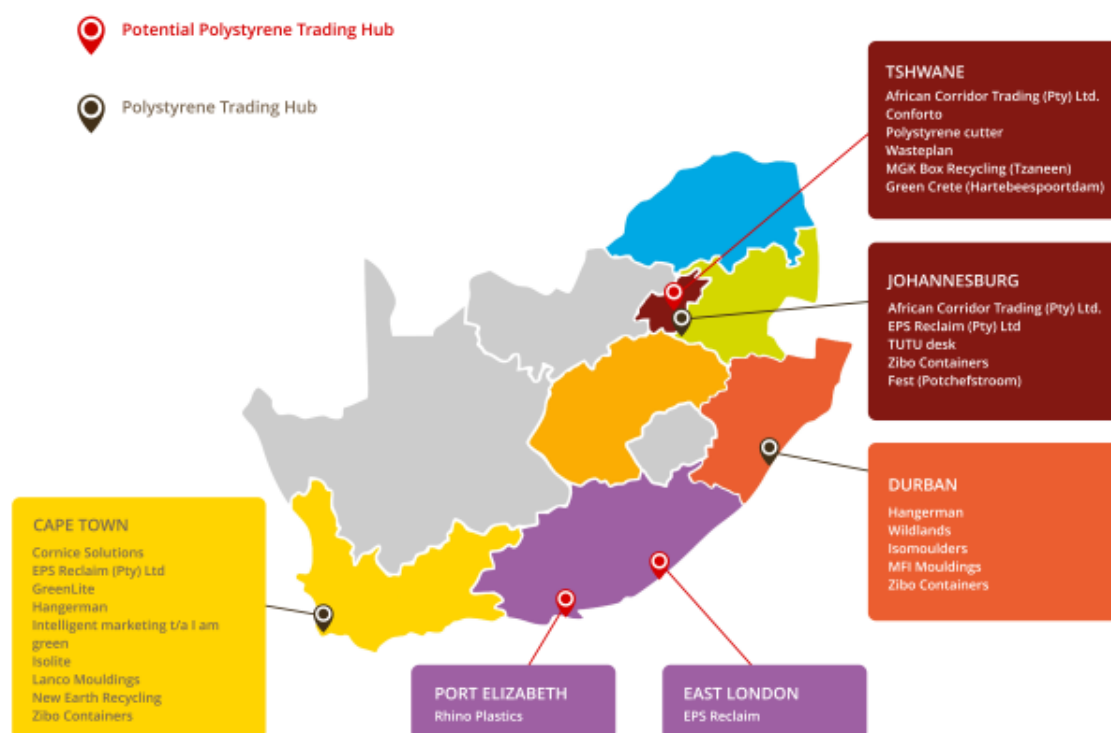


Figure 23: Buyers of EPS and HIPS in areas identified for potential development of Polystyrene Trading Hubs

These trading hubs will be the primary answer to the logistics challenges that have been hampering operations in previous years (see Error! Reference source not found.). Once established and operational, similar trading hubs could be duplicated in the rest of the country's provinces.

One of the biggest challenges facing the recycling of polystyrene in South Africa today, is the transportation and logistics of this lightweight material. There is a substantial (and growing) demand for the recycled material in South Africa and an abundant supply of polystyrene packaging material that can be recycled. However, the industry has experiencing bottlenecks in various areas of this supply chain. A desperate need for material has necessitated the industry to address the logistical issues that are hampering the recycling of polystyrene.

The Polystyrene Association is a non-profit industry body that is in the ideal position to develop, facilitate and support the implementation of a plan that addresses the logistics challenges of recycling polystyrene by forming polystyrene trading hub that represent all relevant industries in the value chain.

This operation will centralize and streamline the process by bringing polystyrene recycling under one roof within a geographical area, thereby relieving the pressure on waste management companies and government by taking the responsibility and cost of transporting and storing polystyrene for recycling into an industry managed operation.

By developing, supporting, facilitating and coordinating the activities of these trading hubs, the Industry and the Polystyrene Association will achieve a substantial growth in the recycling of polystyrene by addressing the logistical pitfalls hampering the recycling of the material. In our efforts,

we will not only demonstrate our responsibility toward the environment, but also have a positive impact on our country's sustainable economic development through job creation, technological advancement and sustainable economic growth.

POLYSTYRENE TRADING HUB

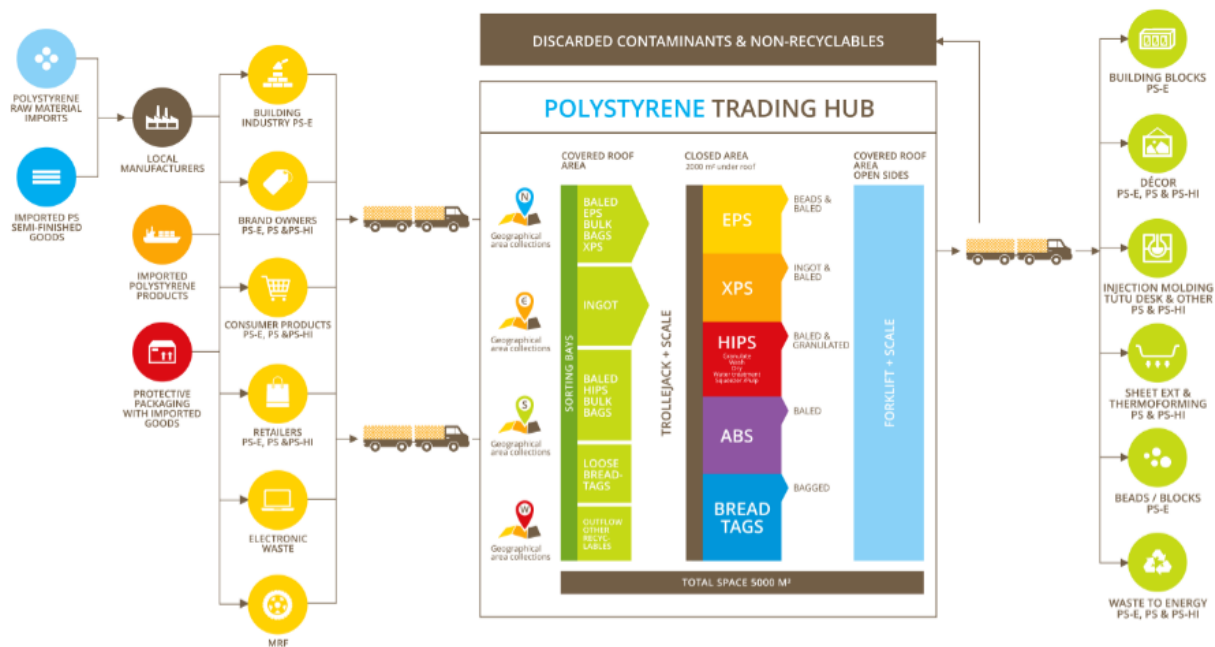


Figure 24: Flow diagram of the Polystyrene Trading Hub

Analysis of business operations

Product

The total amount of polystyrene packaging material that is currently available for recycling in South Africa is 35 250 tons. This amount is based on locally manufactured and produced polystyrene packaging, and does not include the large amount of expanded and high impact polystyrene products that are imported into South Africa in the form of protective polystyrene packaging or other packaging (i.e. white goods).

The hubs seek to specialize in recycling of polystyrene where there is a demand for material within the South African borders. The hubs will identify needs and expectations of buyers through providing a variety of products to meet the demand. The future export market is not ruled out, but local demand must first be met as this increases jobs locally and growth in our own manufacturing industry.

Product Mix

The product mix includes ingots, granulated, baled (future growth into pelletizing and exporting). The product mix caters for an extensive variety of end-market customers who recycle polystyrene in order to produce their products.

Customers of Recycled Polystyrene

Customers in the various end-markets have pressures due to the nature of the material being recycled. Problems with storing and moving the material are currently the most pressing issues that need to be addressed, as waste management companies are not in a position to transport and store the material sustainably.

Recyclers and Buyers of the Material

- **Décor market** (growth into larger product range e.g. blinds and furniture) - this growth has already been indicated ensuring a growth in the local market development. This is important to note, as an availability of material will increase the local manufacturing of new products to be exported. SPECS: Ingots (EPS)
- **Building industry** (bricks, panels and screeds) - this market has huge growth potential as it addresses the need for building material that is affordable, readily available, easy to build with, safe, fire resistant and waterproof. The lack of housing is a burning issue in South Africa and the development in this market will see the increase in training of the labour force, job creation and poverty alleviation. SPECS: Granulated or baled – EPS
- **Stationery** - this is a totally untapped market and the importing of technology is reasonably easy and cost effective. We envisage adding this end-market to the THC's buyer's market, thereby increasing demand for material. SPECS – Granulated Hips
- **Seedling trays** – there is a demand for recycled content into this market locally as most current production is with virgin material and a % of recycled content is a growth opportunity for the industry. SPECS: Granulated or Baled Hips
- **Hangers** – this market is fairly established, as infrastructure exists for hangers to be recycled back into hangers. SPECS: Granulated or Baled Hips
- **Bean bags** – this market is also fairly developed but there is growth opportunity where marketing of the availability of material is crucial. SPECS: Granulated EPS
- **Packaging material** – this is an under-developed market and with logistical support to re-use and recycle the product after use, is crucial to growth. Education of consumers with access to infrastructure and logistics is a growth opportunity. SPECS: Hotwire cut EPS
- **Hotbox** – This is another under-developed market due to the shortage of material supplied to the industry as needed. With the establishment of the THCs, there will be a constant supply that will help to grow this market. The hotbox market currently uses other materials owing to their consistent supply and availability, but polystyrene beads are preferred. SPECS: Granulated EPS
- **Tutu Desk** – there is a massive demand for material to produce these lapdesks made from high impact polystyrene. However, once again the regular quality supply of material has hampered this growth. Currently virgin material is being used, but this can easily be replaced with a larger recycled content with supply and demand being managed effectively. SPECS: Granulated or Baled Hips

Suppliers / biggest sources of used polystyrene packaging in South Africa

- Agricultural industry
- Buy back centres
- Consumers - households
- Co-operatives
- Corporates
- Drop off sites
- Entrepreneurs

- Events managers - Producers of single use polystyrene waste eg festivals, music concerts etc
- Fisheries
- Government (National, Provincial and Local)
- Hospitals
- Industry players
- Laboratories and Pharmaceutical industry
- Mines
- Retailers
- Schools and Tertiary education facilities
- Waste Management companies
- Waste Pickers

Recording of Waste Collected and Processed

Meticulous record keeping will be done as all material collected and sold will be on the basis of weight. This enables data collection of the pilot hub where the data will be instrumental in the further roll out of the hubs.

In the case of developing 3 Polystyrene Trading Hubs across South Africa, it is estimated that there will be an increase in recycling rate of 2.11 % within the first year (see **Table below**).

Table 24: Projected increase in Polystyrene recycling

3 hubs collecting 50 tons per month	
tons per year collected by hubs	1800 tons
tons collected by hubs	6351 tons
Recycling rate current	16.8%
Current collected + 3 new hubs	8151 tons
New rate	18.91%
Increase in recycling rate	2.11%

Projected Demand for Recycled Polystyrene based on Current End-Market

The following are initial projections for demand, based on current end-market demands:

- Décor market – 400 tons per month
- Building market – 200 tons per month
- Beads market – 10 tons per month
- Breadtags market – 2 tons per month
- Tutu Desk market – 10 tons per month

Although sales volumes will be determined by the capacity of the trading hub, it is estimated that the initial output to per HUB to be around 50 tons per month. The current demand, however, already outstrips this figure and this number has to be increased as a matter of urgently. Projected sales of the entities within the cluster, is estimated at 50 tons per facility per month.

The average sales price of polystyrene ranges between R1 p/kg to R6 p/kg, depending of the grading of the material. Working on an average of R3 p/kg, the total projected income will therefore be around R150,000.00 per month and R1,800,000.00 per annum per hub.

With a minimum total of R5,400,000.00 made in sales per year for all 3 clusters, this projection based on a very low entry level. The capacity of the hub can easily be increased by adding additional equipment at a relatively low cost. The collaborative effort between the dti, IDC and the THC members will allow for the enhancement of the competitiveness of the supply value-chain.

- The financial budget is estimated for one Polystyrene Trading Hub (PTH) and is calculated for a running time of 2 years.
- Year 3 to year 4 is dependent on the performance of the hub and all equipment within the hub. It is thus not possible to estimate the budget for year 3 to year 4 and is there for remains “to be determined”.
- This budget is based on creating new jobs and focusses on promoting transformation in the recycling work space. Training and skills development comes with the implementation of the facility.

Job Creation through the Polystyrene Hub

Polystyrene recycling contributed significantly to the 48 000 jobs that were created by the plastic recycling industry in South Africa this past year. It is estimated that these polystyrene trading hubs could create between 35 and 50 primary jobs each, thereby grow into becoming a significant employer for people living in the immediate areas of these hubs.

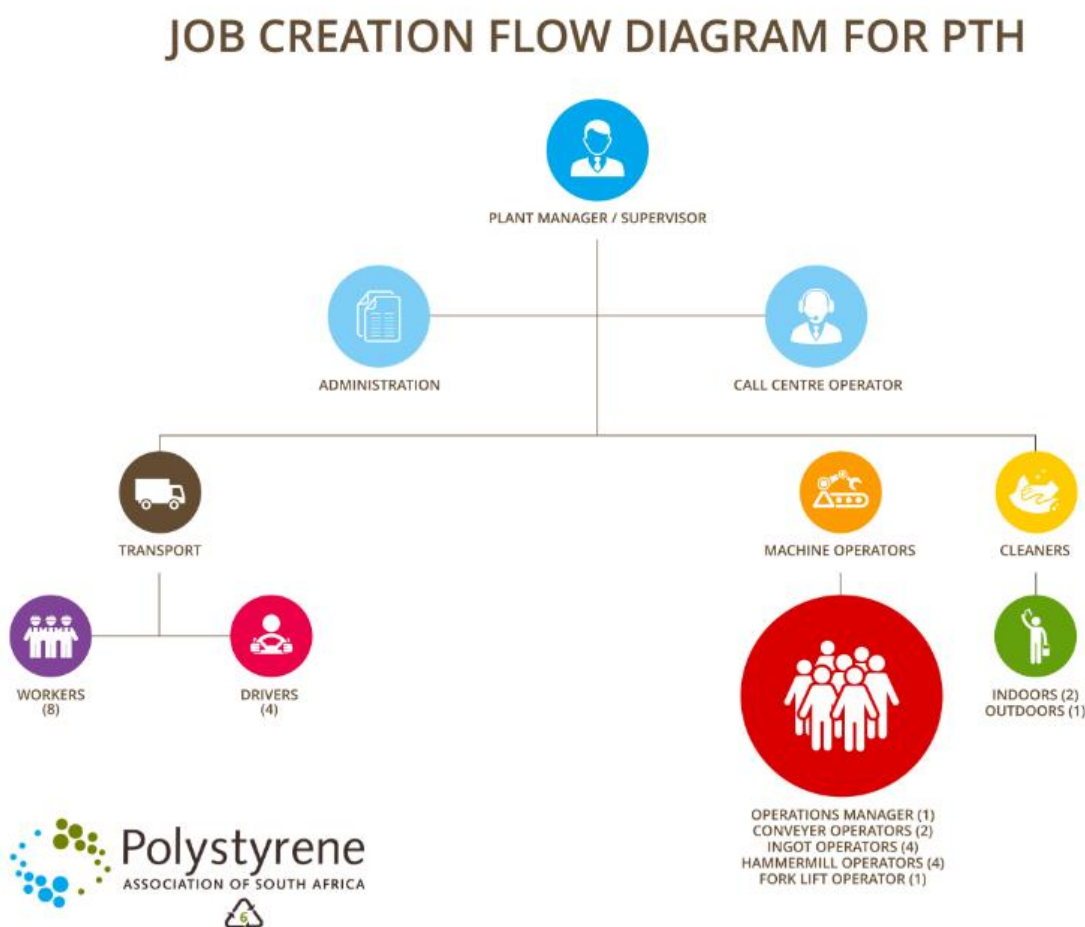


Figure 25: Job creation potential for a Polystyrene Trading Hub

Establishing Municipal Polystyrene Recycling Hubs (Outlying Areas)

The Polystyrene Association of South Africa proposes the developing of small-scale municipal polystyrene recycling hub (MPRH) facilities for some of the small to medium sized municipalities in South Africa. These MPRH facilities aim to develop and grow the recycling of polystyrene, thus enabling job creation, transformation and recycling on a community level. These MPRH facilities also include a new initiative, to bring the solution of polystyrene recycling to the people. The innovation answers the call for local housing with the aim to improve living standards and quality of life in disadvantaged areas of these municipal communities.

Each Municipal Polystyrene Recycling Hub will integrate the collection and recycling of polystyrene into a usable form and the production of lightweight cement blocks on-site, which will be used for housing. It is a well-known fact that housing is a top priority as a very large portion of our population do not have adequate housing, this initiative is aimed at offering a solution at a local municipal level.

These facilities will centralize and streamline the process by bringing polystyrene recycling under one roof within a geographical area. The collection of polystyrene will include local community involvement, thus creating more primary and secondary jobs and raising awareness of polystyrene recycling. These facilities will also make use of a buy-back system, which will encourage locals to drop off their recyclable polystyrene and also put money into the community.

Not only will these facilities focus on EPS (expanded polystyrene) and XPS (extruded polystyrene) conversion into lightweight cement blocks, but also the collection of HIPS.

These facilities also focus on collaborating with two other organisations doing phenomenal work to help mitigate poverty and promote social wellness, namely the Tutu Desk project and the highly successful Bread Tags for Wheelchairs project.

- The Tutu Desk project supplies school desks made from recycled HIPS (high impact polystyrene) to under privileged communities across Africa and offer children their very own workstation creating immediate, high impact and positive change in an instant, under any learning condition. With over 1,5 million desks already in the hands of children and more than 3,000 school handovers conducted, Tutudesk is a proven solution to a literacy development and general infrastructure crisis.
- Other HIPS products (such as breadtags) will also be collected to collaborate with the Breadtags for Wheelchairs project. These breadtags are recycled and provide 2 to 3 wheelchairs to adults and children around South Africa every month. Having a wheelchair gives the recipient independence and mobility and this makes a big difference to their families as well.

It is envisaged that all 9 provinces in South Africa are covered to start off with, setting up a MPRH in at least each province. Each of these facilities will be required to create 10 primary jobs in year one in order to get the operation off the ground. These full-time employees, however, do not include the secondary jobs that will be created once the supply chain has been established, and it is expected that additional jobs will be generated reasonably quickly as the demand for the material increases, as well as the demand for housing solutions. This enables recycling of polystyrene material and offers a larger more sustainably captive market.

(This model is currently being piloted by the Drakenstein Municipality in the Western Cape, who recognised that these lightweight concrete bricks offer a workable, more cost-effective solution to their current housing project that repurposes old shipping containers).

Current situation

The following section elaborates on the current situation of the polystyrene recycling industry by looking at the potential of polystyrene, polystyrene as a challenging plastic and opportunity and threats to the proposed MPRH facilities.

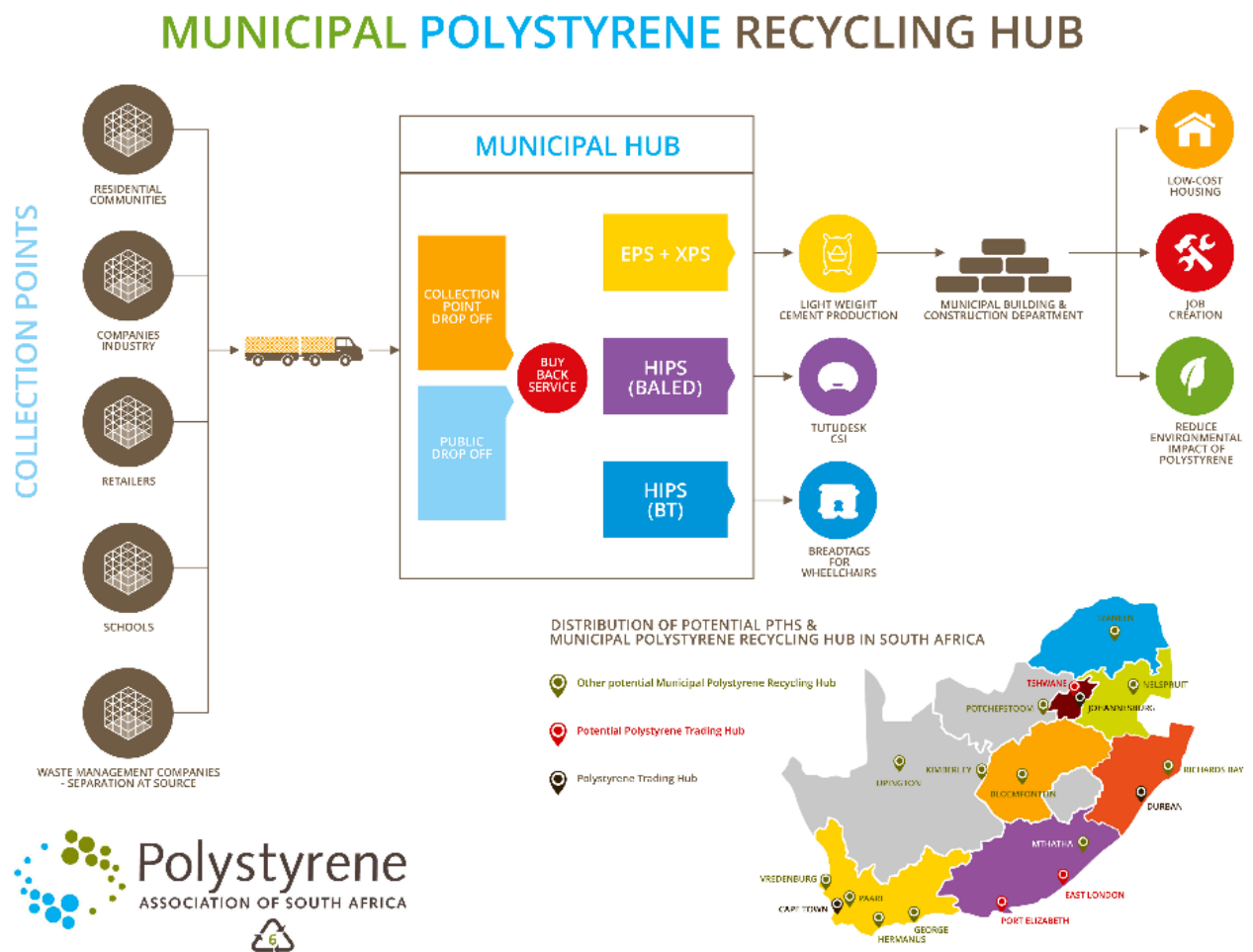


Figure 26: Municipal Polystyrene Recycling Hub

Potential of Polystyrene:

Recycling end markets developed

- During the last 5 years, sustainable end markets for recycled polystyrene have been developed and the demand for polystyrene as recyclable product has increased. This is very positive for the market and effort in this area has already proven to be successful.
- Networks and relationships built in the industry in the past few years are now paying off. Waste management companies are also realizing polystyrene recycling as an untapped

market, although the process is slow and needs a lot of encouragement. This is especially true in the small waste management companies.

- The end markets developed all contribute to job creation, transformation, housing and uplifting of communities, while taking care of the environment.

a. People

- The industry has gained experience and is able to now deliver on recycling targets with networks and end markets in place.
- Support and project management of the smaller, social responsibility projects are self-funded and both awareness and success of these projects are communicated more effectively.
- Projects are touching people's lives and more people are joining and making a difference.

b. Facilitating the recycling of polystyrene

- Polystyrene is seen as a problem/challenging plastic to recycle but shows high potential if more facilities are put into place. A good geographical coverage of recycling solutions is eliminating the challenge of transporting a lightweight product.
- Success stories like the breadtags for wheelchairs and tutudesk projects on a smaller scale have given the foundation for the network and recycling quantities to grow.

c. Wide variety of applicators and end uses

- Very few members of Joe Public are aware of the tremendous versatility of polystyrene. Almost no other medium offers so much practical application value and benefits in so many different ways- ranging from use in fridges to CD Boxes, computers to yoghurt cups and fast food take-away packaging. Polystyrene packaging is thus an everyday household product and is easily identified, thus making the awareness of such a product an easy target for recycling initiatives such as the MPRH.

d. Limited environmental impact

- By improving and facilitating the recycling of polystyrene into the production of new products, less polystyrene waste is diverted to landfill and recycled into a new product.
- The fact that polystyrene is 96% air limits the amount of polystyrene going into landfill by weight.

e. Cost effective packaging solution

- Polystyrene offers retailers and customers the most cost-effective packaging solution. Thus creating a market, which ensures feedstock for these municipal hubs.
 - **Effective insulation:** Polystyrene as packaging material offers excellent insulation properties and is therefore widely used in the manufacture of packaging of take away meals, hospital meals and cups for hot and cold beverages.
 - **Hygienic:** Tests have shown that disposable food service ware such as polystyrene is more sanitary than reusable service ware. Polystyrene is dominantly used in the meat packaging industry.
 - **Durable:** Polystyrene protects against moisture and maintains its strength and shape, even after long periods of time. Polystyrene packaging offers exceptional protection.

Its shape can be custom fit to parts and products, maximizing its excellent cushioning characteristics.

- **Efficient:** Only about 4 percent of a foam packaging is polystyrene, the rest is air. Polystyrene provides superior insulating quality that helps hold food at the optimal eating or drinking temperature for longer than many alternatives.
- **Convenient:** Today's busy lifestyles require convenience of affordable and quick take-out meals. Polystyrene packaging meets the demands of today's modern lifestyles by offering an economical and high-quality food service product.

f. Polystyrene as a challenging plastic

- Polystyrene is seen as a problem and challenging plastic type – it is one of the most misunderstood plastics.
- In its expanded state, polystyrene is bulky and therefore tends to consume space in landfills (by volume not weight).
- In expanded form it therefore "flies and floats" and is visible to the naked eye – creating the impression that there is more environmental waste due to polystyrene and that it causes more harm to the environment than other packaging materials.
- It has not been the subject and focus of rigorous recycling effort and public awareness as has been the case with some other packaging materials.
- Volume- storage and transport disadvantage (formed product very bulky).

Strategy

The strategy of putting up Municipal Polystyrene Recycling Hubs serves multiple purposes as illustrated in this document. To enable this large undertaking, it is crucial to engage with stakeholders and potential supporters of the project. The Industry, various municipalities, CSIR, the DEA, Retailers, SALGA, IDC and Provincial DEA are amongst the parties that have been and will be engaged with to implement this project. Initial meetings have been very positive and the buy in into the project has been put in motion.

The costing and business plan for the proposed Municipal Polystyrene Recycling Hub (MPRH) has been completed and a pilot project with Drakenstein Municipality has been identified. The various players and departments within the municipality are going on a factory tour to get first hand exposure to the project. Thereafter a pilot committee will be formed to implement the project. Funding models for the project have been proposed and are in the process of being approved. The initial pilot will give us access to crucial information for the roll out plan and this data will form part of the larger IWMP.

Operational Plan

Potential distribution of MPRHs

Initially, the focus will be on all provinces with at least one MPRH in a key municipal town/city with the core focus on facilitating polystyrene recycling on community scale. The first identified municipality is in the Western Cape, namely the Drakenstein Municipality, has already been approached and are committed to work toward the pilot to be launched there. It is also suggested that these MPRHs should be included at all Polystyrene Trading Hubs (as mentioned earlier in previous section), thus representing those respected municipalities.

By developing, supporting, facilitating and coordinating the activities of these MPRHs, the Industry and the Polystyrene Association will achieve a substantial growth in the recycling of polystyrene by

addressing the transformation of previously disadvantaged individuals in the works space, awareness of polystyrene recycling, the promotion of jobs in these communities, the promotion of housing and sustainable construction initiatives, as well as logistical pitfalls hampering the recycling of the polystyrene in South Africa.

With the efforts of each municipality, these communities will not only demonstrate their responsibility toward the environment, but also have a positive impact on our country's sustainable economic development.

Implementation

The process of each hub can be divided into three phases:

Phase 1 - Collection and transport phase:

During the collection phase numerous collection cages will be placed at collection points throughout the community. These collection cages will be placed at schools, retailers, industry companies and residential communities. Transport of the collected polystyrene will be done by one transport truck with a mounted mobile baler traveling between the hub and these collection cages. Waste management companies collecting recyclables will also transport their polystyrene materials to the hub, and this will be done through a separation-at-source recycling program in the community. The community will also be encouraged to drop their polystyrene material at the hub.

Phase 2 - Recycling phase:

The recycling process of the polystyrene material will take place at the municipal polystyrene recycling hub (MPRH). There will be two allocated drop-off bays:

- The first drop-off bay will facilitate the drop off of the hub collection truck as well as waste management recycling companies.
- The second drop off bay will act as a public drop off space for the polystyrene collected by the public. This drop off will be based on a buy-back system where members of the community can trade their polystyrene material for money.

The hub will have a hammermill machine, which will chop the EPS and XPS, collected in both bays, into beads and put into bags. These bags will be weighed and payment by the buy-back centre will be based on the weight of the bag and paid per kilogram beads. This proposed method of weighing and paying might be changed due to the nature of the product. A system of material per bag will also be investigated.

The payment onto a recycling card or retailer card or even trading for a food item will be investigated as we do not want to work with cash at these premises.

HIPS material will be sorted into different types (Breadtags, yogurt cups etc.). The buy-back of these products will be based on the weight of the material and also be paid per kilogram. The HIPS products will be stored in bags ready for collection for both collaborating organisations; Tutu Desk and Breadtags for Wheelchairs. The larger HIPS items will then be baled but the breadtags will be kept in bags.

Phase 3 - Re-utilization phase:

During the re-utilizing phase the recycling EPS and XPS beads will be fed into the light weight cement production where it is then used as aggregate mixed with cement and additives to form insulated, soundproof, fireproof, water-resistant lightweight concrete blocks and screed.

This process will take place at the hub where these blocks will be stored. The production of these light weight cement blocks by the MPRH will collaborate with the municipality's efforts with construction of low cost housing. Companies such as Greenlite Concrete and Stumblebloc will be allocated to these hubs where education and training will take place in the production processes of these blocks. This will in essence create a space for local primary and secondary job creation and skills training.

Table 25: Implementation Costs

IMPLEMENTATION COST OF MUNICIPAL POLYSTYRENE RECYCLING HUB					
Cube factory	Quantity of lightweight concrete that can be manufactured in one day. This translates into block moulds.				
VAT	All Values Exclude VAT				
Capacity	Cost	Turnover per month	Staff	Gross profit margin	Houses produced per day
10 Cube Factory	R 800 000.00	R 315 000.00	8 members	30% to 40%	1 x 42m² house

Benefits of Hubs: Transformation and capacitating of previously disadvantaged

Whilst the primary goal and objectives of forming the two forms of polystyrene trading hubs explained will be to increase the recycling rate of polystyrene packaging, reduce the amount of polystyrene that gets sent to landfill or ends up polluting our environment and streamlining the entire value and supply chain, there are also significant socio-economic benefits that will be unlocked through this initiative, namely:

- **Job Creation:** Each of these hubs will employ 12 staff members in year one in order to get the operation off the ground. These full-time employees, however, do not include the secondary jobs that will be created once the supply chain has been established, and it is expected that additional jobs will be generated reasonably quickly as the demand for the material increases.
- **Economic Transformation:** Both the Polystyrene trading hub and the Municipal trading hub offer multiple and exciting opportunities for BBBEE ownership and employment. The focus of the hubs is that it should be built around communities and the assist in the socio-economic empowerment of the area and people in the surrounding areas.
- **Education and skills transfer:** The Polystyrene Association of South Africa and its members are dedicated to imparting knowledge and training in the running of both the proposed models thereby ensuring the success and sustainability of the projects. Formal training and mentorship programmes will be in place for both models.

- **Affordable housing:** The polystyrene that is collected and recycled at the processing facilities will primarily be used in the production of lightweight concrete bricks, which in turn will be used for the building of low cost housing, schools and clinics in the surrounding areas.
- **Assisting and empowering the physically disabled:** Both the processing hub and the trading hubs will be ideally suited to employ physically disabled individuals.
- **Ownership and employment opportunities:**
 - Proposed Polystyrene Trading Hub
 - Proposed Municipal Polystyrene Recycling Hub

6.7 Vinyls

Implemented by the South African Vinyls Association (SAVA) industry. With the support of its members, SAVA addresses PVC related issues and constructively engages with stakeholders and role-players to create a positive environment for a vibrant and sustainable PVC industry.

SAVA is dedicated to enhancing the growth and protecting the stature of the Southern African PVC industry. The Association focuses its attention and activities around the following key areas of focus:

- **Market development:** ensuring the future of the PVC industry by expanding key markets, protecting the stature of the industry and identifying barriers to growth in order to stimulate innovation.
- **Advocacy:**
 - Ensuring that the local PVC industries' priorities are communicated to government, regulatory agencies and civil society, thereby helping to shape the future of the industry.
 - Identifying and prioritising legislative and regulatory issues affecting vinyl and develop relevant strategies for dealing with them.
 - Representing industry interests in appropriate regulatory processes and in the setting of standards and development of legislation.
 - Identifying and developing an approach in dealing with codes, standards and eco-labels impacting the vinyls industry on international and national level.
- **Communication:** enhancing communication with key internal and external audiences on the benefits of vinyl and other relevant industry issues. Providing industry-specific training and be seen as the "go-to" source of industry information, be the collective voice, facilitate knowledge sharing on research, technology, legislative, health, safety, energy and environmental issues.
- **Research:** conducting research of strategic interest to the PVC industry.
- **Sustainability:** providing the industry with leadership and strategic direction to ensure excellence in relation to health and environmental issues and product stewardship.

SAVA is ideally positioned within the local plastics industry with representation on Packaging SA and Plastics SA to ensure that its members are represented on a broader platform. SAVA also participates in knowledge transfer activities with the Australian Vinyls Council, the Global Vinyls Council, Vinyls Plus and other international organisations.

SAVA acknowledges that PVC is part of a mixed waste stream consisting of assorted packaging material types and therefore endeavours to work closely with the other Producer Responsibility Organisations (PRO's) under the banner of Packaging SA to ensure that packaging as a whole is addressed on a macro level, while focusing on PVC packaging at a micro level.

The SAVA Plan will be submitted as part of the Packaging SA Industry's Integrated Waste Management Plan that will be submitted to the Minister for approval. The combined plan will provide a holistic and truly integrated approach to the management of packaging within South Africa, based on circular economy principles.

The chosen framework for implementing the SAVA Extended Producer Responsibility (EPR) scheme to achieve the objectives of the Product Plan aims to ensure least cost to society, industry and government, including operational costs for collection, administrative and compliance costs.

PVC as a Packaging Material

PVC is a chlorinated hydrocarbon polymer and its basic building blocks are chlorine, carbon and hydrogen. These elements are obtained from two hydrocarbons, sea salt or sodium chloride (NaCl) and crude oil or natural gas. PVC is used in a wide range of products such as pipes for our fresh water, drainage pipes, floor coverings, window frames, cabling, toys, pool membranes, kitchen cabinetry, wall cladding, medical drainage tubing and food packaging. PVC is also found in furniture, stationery and in the equipment, we use. Not surprisingly, PVC is the one of the most common plastics in the world. Not only can PVC be made into rigid or flexible products it can be made as either a coloured or transparent material.

PVC is typically the material of choice in the building and construction sector because of its high performance, affordability and environmental properties.

PVC is one of the most researched polymer materials today, partly due to the pursuit of improved safety, health and environmental attributes of this material, but also due to misconceptions which have been shown to be either outdated or purely misleading. PVC products are today safely used to achieve various environmental and sustainability objectives predominantly as a result of the global PVC industry's voluntary initiatives and partnerships with stakeholders. These initiatives have resulted in PVC being recognized for its sustainability credentials and subsequent reversal of previously adopted de-selection policies.

PVC has a wide variety of uses and applications (see **Table below**).

Table 26: Uses of PVC

PVC Industry Usage	
Industrial applications	Used in various industrial applications that require superior toughness; fire resistance; chemical resistance; corrosion resistance
Building / construction / plumbing / electrical	Window profiles; pipes & fittings; gutters; flooring; decking; power and telecommunication cables; electrical conduit; cladding; trunking
Healthcare	Being able to withstand various sterilization & disinfection methods makes it the product of choice for blood bags; intravenous tubing; masks; surgical gloves; flooring at medical facilities; wall coverage at medical facilities.
Packaging	Cling film, shrink wrap, bottles & blister packaging: - For food packaging it offers excellent barrier properties vital for preservation of food product - Superior chemical resistance enables use in pharmaceutical & industrial packaging
Automotive	High temperature wire harnesses; door panels; dashboards; upholstery; various automotive components
Consumer products	Toys, shower curtains, gloves, banners, coated fabric, art, stationery
Fashion	Shoes & boots, jackets/raincoats, umbrellas, skirts, tracksuits
Furniture	Tables, chairs, cupboards, couches
Flooring	Tiles, carpets, mats
Decor	Wall pictures, ornaments, vases, pot plant holders

Recycling of PVC

Poly (vinyl chloride) comes in rigid and flexible formats - PVC-U and PVC-P. Due to international pressure regarding perceived incineration challenges when dealing with end-of-life PVC, the PVC-U packaging market has shrunk to levels where the collection and transport of recyclable PVC packaging waste is no longer feasible. Currently, there are no recyclers that can recycle contaminated, post-consumer PVC packaging and there are only a few that can recycle dirty post-consumer or post-industrial non-packaging PVC waste. For packaging, the ex-factory packaging lumps and out-of-specification waste is recycled.

PVC pipes and profiles are durable and mainly used in the building and construction industry. End-of-life PVC products are easy to identify and easy to recycle and there will always be a demand for good quality PVC recyclate (see **Figure below**).

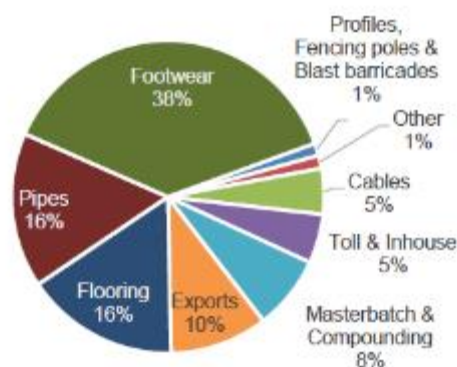


Figure 27: Markets for PVC Recyclate (2017)

Products manufactured this year may only enter the waste stream in 20 to 30 years' time. To be consistent, the PVC recycling rate is calculated on the tonnages manufactured during the same year.

In 2016, 17 844 tons of rigid and flexible PVC were recycled, a 4.5% increase on 2016. In 2017, virgin tonnages declined 13.4% mainly due to the lull in the building sector. The recycling rate is currently 11.3% as recorded by the recyclers. A major flooring supplier started a recycling initiative in 2017. SAVA introduced selective collection of uncontaminated medical waste from medical centres.

Factors Influencing the Recycling Rate

The quantity of PVC waste available is a function of PVC consumption. However, in contrast to most commodity polymers such as Polyethylene terephthalate (PET) or Polypropylene (PP), the majority of PVC products can be found in long-term applications with an expected life-span of 50 years or more. There is therefore a considerable time difference between PVC consumption and PVC waste.

The potential for recycling of PVC waste is largely determined by the degree of contamination, i.e. the degree to which PVC is mixed with other material when collected, and the differences in the

composition of the collected PVC material itself. PVC products does not consist of pure PVC but rather of PVC compounds that contain varying quantities of additives.

The amount of recyclable PVC available greatly affects the feasibility of a recycling system, as it requires a minimum quantity of waste to allow for a technically- and economically feasible operation. Furthermore, the geographical area supplying a recycling plant must not exceed a certain size in order to keep transport distances and associated costs within a reasonable range,” Delanie explains.

As a result of these and other influencing factors, PVC recycling in South Africa is mainly focused on those areas where economic profitability is achieved, e.g. pre-consumer- and post-consumer pipe- and cable waste. The majority of other PVC post-consumer waste is landfilled. Low recycling rates of post-consumer PVC waste can also be contributed to relatively low prices of virgin material and inexpensive landfilling costs. Thus, unless there are legal measures or voluntary agreements put into place, the incentives for the recycling of PVC post-consumer waste remains low (see **Figure below**).

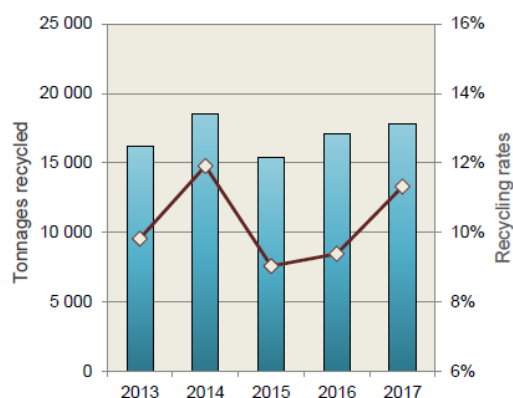


Figure 28: Recycling of PVC in South Africa

Large volumes of miner’s gumboots, mining hoses as well as cables originate from the mines and it makes therefore sense that the larger recyclers are based in the Northwest Province and Gauteng.

Job creation in the PVC Recycling Sector

34 PVC recyclers on record recycle rigid and flexible PVC. Four of these are responsible for 50 % of locally recycled PVC. Their material is re-compounded to match virgin specifications and used in virgin replacement markets. It is estimated that a close to 3 000 indirect or informal jobs related to the collection, transport, cleaning and baling operations were sustained through these recycling operations.

Developing End-Markets for PVC Waste

When it reaches its end of life, PVC can be recycled. In fact, PVC has the longest history of recycling amongst plastics and the most advanced level of mechanical recycling. Recycling coated fabrics, such

as billboards and advertising banners, is especially challenging because of their composite nature. In South Africa, there are various smaller projects geared at the re-use, or upcycling, of these products.

Both these companies manufacture commercially viable products from discarded PVC material and SAVA is proud to be associated with two of these projects, Eco-Smart Solutions and Street Sleeper, by way of business support and equipment donation (see more information below).

In addition, PVC-P recyclate is used for a variety of different applications, including conduits and cables, sheeting, shoe soles and floor tiles. PVC-U recyclate originating from the pipe sector is recycled back into pipe and profiles.

A focus on upliftment and transformation

The core objective of the South African Government is to drastically reduce poverty and unemployment in the country. The Southern African Vinyls Association supports this objective and believes that these goals are feasible through cooperation, partnerships and sustainable development initiatives, encouraging new businesses to proliferate and expand.

Street Sleeper Project

The plight of the poor, the homeless and the vulnerable is always a topic that is near to SAVA's heart. In 2014 the association began to actively support the Cape Town-based Street Sleeper project (<http://www.streetsleeper.org/>) with equipment, business development and advertising assistance. Street Sleeper uses innovation to tackle challenges facing homeless men and women.



Figure 29: Street sleeper project

By upcycling PVC advertising billboards that were originally destined for landfill into survival sleeping bags, protection is offered to the homeless living on the streets against the elements at night. The sleeping bag also doubles as backpacks during the day.

SAVA supports this important “from billboard to bag initiative” by donating a much-needed industrial sewing machines used to convert used PVC billboards into waterproof, windproof survival sleeping bags, as well as through financial donations made by the association and its members, thereby transforming the negative impact of waste into immediate relief of those living on the street.

SAVA has also been assisting the Street Sleeper project with practical tips on occupational health and safety, and has helped to raise awareness of the Street Sleeper project to the media, including interviews this past month on Expresso (SABC3), 5FM, and Radio 702.

Eco Smart Solutions

SAVA has been supporting local entrepreneur Lisa Kuhle and her team of dynamic seamstresses and designers at Eco Smart Solutions (<http://ecosmartgroup.co.za/>) for the past five years (see **Figure 5**). Eco Smart manufactures commercially viable products out of up-cycled waste materials and have developed a niche market making use of corporate PVC banners which they recycle into a variety of top end products, such as recycling boxes, iPad covers, hotel slippers, conference and shopping bags.



Figure 30: Eco Smart Solutions

To date, more than 3 000 pairs of shoes ranging from size 3 to 9 have been sold. Customers buy the shoes because of their comfort, variety of colours and the wide-ranging size options, rather than being up-cycled. They are water proof and has a drawstring which facilitates half and in-between sizes. The shoes are sold in special tote bags that are also covered with one of six colour shwe-shwe cloth. The shews are exported to the UK, USA and Germany and has been ordered by large international brands such as Samsung and the Sheraton Hotels.

Currently, approximately half a ton of waste per month is being diverted from landfill thanks to the team at Eco Smart Solutions and SAVA is proud to be associated with this project and to have assisted in its growth through the donation of two industrial sewing machines to help Lisa Kuhle and her team grow their business even further.

From PVC Waste to School Shoes

In a pioneering and collaborative move between the PVC industry and the healthcare industry, a successful recycling project was launched in 2017 that is helping hospitals deal with their safe healthcare waste in a way that creates functional new products, including school shoes for disadvantaged children.

The innovative project, in which used, non-hazardous intravenous infusion (IV) drip bags and tubing made of polyvinyl chloride (PVC) are recycled into soles for school shoes, today saw roughly 1 000 school shoes handed over to learners of the Masakhane-Tswelopele Primary School in Zandspruit by Mayor Mashaba earlier this year (see **Figure below**).



Figure 31: Schools shoes with recycled soles, handed to children at Masakhane-Tswelopele Primary School

Locally, the hospital PVC recycling project was initiated with the assistance of SAVA, which is implementing a recycling programme whereby non-hazardous material and PVC is recovered for recycling. This is helping transform the plastics industry, encouraging local PVC manufacturers to adopt sustainable practices and the removal of hazardous materials in the manufacturing process.

Conveniently located blue coloured bins were set up specifically for the purpose of segregating uncontaminated used PVC drip bags, nurses were trained, and the PVC waste material was collected by recyclers who then sold it to a company that uses this highest grade and quality PVC plastic to make soles for shoes (see **Figure below**).



Figure 32: PVC recycling at hospitals

Mentoring and Education

As part of our commitment to job creation and Black Economic Empowerment (BEE), SAVA has been offering an institutional strengthening and capacity development programme for Small Medium and Micro Enterprises (SMMEs) in the plastics industry - specifically related to those operating in the PVC value chain.

This SMME Development Programme aims to enhance managerial and business skills and covers subjects of strategic importance to ensure economic and social development in this sector. Furthermore, in relation to BEE compliance, companies supporting the SAVA SMME Development Programme are able to gain up to 5 points on the generic scorecard for supporting socio-economic development initiatives.

The specific objectives of this programme is to:

- Improve the profitability and competitiveness of SMMEs
- Improve the management capability of SMMEs by increasing participants' awareness and application of modern business principles
- Develop the ability of SMME managers to access and improve business performance as part of the continuous learning process
- Facilitate the use of existing networks as a business development tool
- Facilitate the use of business management tools for diagnosing and early warning
- Assist SMME managers in the preparation of business plans

The SAVA SMME Development Programme helps to strengthen the performance and competitiveness of SMMEs (including survivalist, micro, very small, small and medium enterprises) in the plastics industry related to activities in the PVC value chain in, and to pave the way for industry growth and adds to the creation of increased added value production and additional employment opportunities.

6.8 Summary of Job Opportunities Targets

The implementation of the EPR Plan will aim to create job opportunities as summarised below.

Table 27: Job Opportunity Targets

Estimated number of Job Opportunities Created by Year 5	
Direct Jobs	7450
Indirect Jobs	6690

Note:

These numbers are conservative estimates and are highly dependent on a number of factors such as participation rates, support from government and industry etc. They also do not include secondary jobs, businesses or additional industries and income opportunities or full time equivalent jobs created.

The intention is to create more jobs than presented above and this doesn't take into account opportunities that aren't strictly defined by the terms direct or indirect jobs such as decent work and full time equivalent jobs. Every year the EPR Plan will report on and present job creation targets and potential enterprise development targets.

7 Stakeholder Engagement

Stakeholder engagement is a key part of the development this EPR Plan. Initial engagements were held with key stakeholders from industry, government and academia.

A notification letter was also sent out by all the PROs and **PACKAGING SA** to all members inviting interested and affected parties to register to stay informed of the progress of the EPR Plan.

This was followed by public engagement sessions held in 5 locations across South Africa.

7.1 Stakeholder engagement

Two (2) adverts were placed in national newspapers on 15 July 2018, including the Sunday Times Newspaper and the City Press as per the requirements of the Gazette.

Further to the adverts, the following Public sessions were available to attend:

Time: 12h00-13h30

- 25 July – Johannesburg – Plastics SA, 18 Gazelle Avenue, Corporate Park South, Old Pretoria Road, Midrand
- 31 July – Cape Town - Townhouse Hotel, 60 Corporation Street, Cape Town
- 2 August – KZN – Mount Edgecombe Country Club, Gate 2, Golf Course Drive, Mount Edgecombe
- 7 August – Port Elizabeth – The Beach Hotel, Marine Drive, Summerstrand
- 15 August – Bloemfontein – Protea Hotel Bloemfontein, 202 Nelson Mandela Drive, Brandwag

Further to the public engagement, there were designated sessions for government / municipal officials and waste pickers / informal sector to attend to speak about the specific aspects of the EPR Plan.

7.2 Comments and Responses

A comments and responses report will be submitted as part of the final submission to the DEA.

8 Conclusion

PACKAGING SA has drafted an EPR Plan in response to Government Notice 41303 dated 6 December 2017 calling on the paper and packaging industry, electrical and electronic industry and lighting industry to develop and submit Industry Waste Management Plans (IndWMPs). The EPR Plan adheres to the requirements as included in the National Environmental Management: Waste Act, 59 of 2008 (NEMWA), Section 30(2) as well as what has been proposed in the abovementioned Notice issued in the Government Gazette.

Whilst this EPR Plan may be an Industry Led-Industry Managed Model; the intention is to work closely and in collaboration with Government to achieve common goals of social and economic transformation through inclusive growth.

PACKAGING SA look forward to opening the discussion around the proposed EPR Plan.

9 References

- Berryman. (2018, March). Berryman. Retrieved from Benefits of Glass Recycling:
<http://www.berrymanglassrecycling.com/glass-recycling/benefits-of-glass-recycling/>
- BiPRO and the Copenhagen Resource Institute. (2015). Assessment of Separate Collection Schemes in the 28 Capitals of the EU.
- British Glass. (2018, March). Glass is Infinitely Recyclable. Retrieved from About Glass:
<https://www.britglass.org.uk/infinitely-recyclable>
- British Glass. (2018, March). Glass Manufacturing. Retrieved from British Glass:
<https://www.britglass.org.uk/container-glass-manufacture>
- Canadian Stewardship Services Alliance. No date. Guidebook for Stewards.
<http://guidebook.cssalliance.ca/part-one/1-0-introduction/1-10-how-do-i-determine-if-my-business-or-organization-is-responsible-as-the-brand-owner-franchisor-or-first-importer/1-10-1-what-is-a-brand-owner/>
- Communications, D. K. (2010, May 13). Distell Makes Big Glass Savings by Light-Weighting Wine Bottles. Retrieved from Wine.co.za: <https://news.wine.co.za/news.aspx?NEWSID=15722>
- Consol. (2018, April). Sustainability and Recycling. Retrieved from Consol:
<https://www.consol.co.za/why-glass/sustainability-and-recycling>
- Consol. (2018, March). Produce and Process Innovation. Retrieved from Consol:
<https://www.consol.co.za/why-glass/product-and-process-innovation>
- DEA (2005). National Waste Management Strategy Implementation South Africa - Recycling. Department of Environmental Affairs.
- DEA (2009). National Environmental Management Act No 62 of 2008. Department of Environmental Affairs.
- DEA. (2009). No. 59 of 2008: National Environmental Management: Waste Act, 2008. Department of Environmental Affairs.
- DEA. (2010). Generic Guideline Document for Preparing Industry Waste Management Plans. Department of Environmental Affairs.
- DEA. (2011). National Waste Management Strategy. Department of Environmental Affairs.
- DEA. (2014). Act No. 26 of 2014: National Environmental Management: Waste Amendment Act. Department of Environmental Affairs.
- DEA. (2016). National Pricing Strategy for Waste Management.
- DEA. (2017). National Environmental Management: Waste Act (59/2008): Call on the Paper and Packaging Industry, Electrical. Department of Environmental Affairs.
- DEAT, Report Number: 12/ 9/ 6, ANNEXURE F, NATIONAL WASTE MANAGEMENT STRATEGY IMPLEMENTATION SOUTH AFRICA. RECYCLING. EXTENDED PRODUCER RESPONSIBILITY STATUS QUO REPORT <http://sawic.environment.gov.za/documents/233.pdf>

Department of Environmental Affairs. 2016. Wastekhor: Hazardous Waste Management Roadmap. <http://sawic.environment.gov.za/documents/5457.pdf>

Department of Science and Technology (2014). A National Waste R&D and Innovation Roadmap for South Africa: Phase 2 Waste RDI Roadmap. The economic benefits of moving up the waste management hierarchy in South Africa: The value of resources lost through landfilling. Department of Science and Technology: Pretoria

Department of Science and Technology (DST). 2013. South African Waste Sector – 2012. An analysis of the formal private and public waste sector

Department of Science and Technology (DST). 2014. A National Waste R&D and Innovation Roadmap for South Africa: Phase 2 Waste RDI Roadmap. The economic benefits of moving up the waste management hierarchy in South Africa: The value of resources lost through landfilling. Department of Science and Technology: Pretoria. https://www.wasteroadmap.co.za/download/economic_value_sa_waste_rep.pdf

Department of Science and Technology and Centre for Scientific and Industrial Research. (2013). South African Waste Sector – 2012: An Analysis of the Formal Private and Public Waste Sectors in South Africa. Department of Science and Technology.

Distell. (2010, July 29). Distell's New Glass Saving Project to Augment Light-Weighting Campaign. Retrieved from Wine.co.za: <https://news.wine.co.za/news.aspx?NEWSID=16085>

Distell. (2017). 2017 Sustainability Report. Distell.

Exploration of the Role of Extended Producer Responsibility for the circular economy in the Netherlands June 27th 2016, E&Y, Maarten Dubois (EY Belgium), Diana de Graaf (EY Netherlands), Joachim Thieren (EY Belgium)

Fakir, S. 2009. Global Trends in Waste Management: Some pointers for South Africa. Human Sciences Research Council. <https://www.gtac.gov.za/Researchdocs/Global%20Trends%20in%20Waste%20Management%20%20Some%20Pointers%20for%20South%20Africa.pdf>

Fastmoving. (2011, July 14). Nampak Wiegand Glass Produces SA's Lightest Weight 750ml Wine Bottle. Retrieved from Fastmoving: <http://www.fastmoving.co.za/activities/nampak-wiegand-glass-produces-sa-s-lightest-weight-750ml-wine-bottle-656>

Fenton, A. W. (Emhart Glass and Wiegand Glass). Light Weighting Containers. Retrieved from Emhart Glass: <http://old.emhartglass.com/files/A0040.pdf>

German Chamber of Commerce and Industry NPC. 2016. Short Market Analysis: Waste management and Recycling in South Africa. 2016. http://suedafrika.ahk.de/fileadmin/ahk_suedafrika/Waste_Management/Short_Market_Analysis_Waste_South_Africa_Final.pdf

Glass Packaging Institute. (2018, March). Recycling. Retrieved from Glass Packaging Institute: <http://www.gpi.org/recycling/glass-recycling-facts>

Godfrey, L., Strydom, W. and Phukubye, R. 2016. CSIR Briefing Note February 2016 Integrating the Informal Sector into the South African Waste and Recycling Economy in the Context of Extended Producer Responsibility.

https://www.csir.co.za/sites/default/files/Documents/Policy%20Brief_Informal%20Sector_CSIR%20final.pdf

Hancock, T. E. (2010, November 12). Lightweighting of Glass Bottles Grows Worldwide. Retrieved from Engineering News: http://www.engineeringnews.co.za/article/pressure-placed-on-winery-industry-to-reduce-weight-bottles-2010-11-12/rep_id:4136

http://collectacan.co.za/index.php?option=com_content&view=article&id=128:march-2011-a-walk-through-history-with-collect-a-can&catid=5:june-pres

Infrastructure News. (2013, January 10). Alleviating Negative Attitudes Towards Recycling. Retrieved from Infrastructure News: <http://www.infrastructurenews.co.za/2013/01/10/alleviating-negative-attitudes-towards-recycling/>

Lonsway, M. (2006, December 1). Glass Packaging a Clear Choice. Retrieved from Food Quality and Safety: <http://www.foodqualityandsafety.com/article/glass-packaging-a-clear-choice/2/>

Mata, T. a. (1999). Life Cycle Assessment of Different Reuse Percentages for Glass Beer Bottles. Springer Link. Retrieved from <https://link.springer.com/article/10.1007%2FBF02978793>

Nahman, A. 2010. Extended producer responsibility for packaging waste in South Africa: Current approaches and lessons learned Author. Science Direct Volume 54 Issue 3. <https://www.sciencedirect.com/science/article/pii/S0921344909001578>

Neil-Boss, N; Brooks, K. No date. Unwrapping the packaging industry: Seven factors for success. [https://www.ey.com/Publication/vwLUAssets/Unwrapping_the_packaging_industry_%E2%80%93_7_even_factors_for_success/\\$FILE/EY_Unwrapping_the_packaging_industry_-_seven_success_factors.pdf](https://www.ey.com/Publication/vwLUAssets/Unwrapping_the_packaging_industry_%E2%80%93_7_even_factors_for_success/$FILE/EY_Unwrapping_the_packaging_industry_-_seven_success_factors.pdf)

NWMS Implementation Programme Draft Starter Document Final Draft - 18 – Background Document for Waste Recycling May 2000

OECD. 2015. Working party on resource productivity and waste: Extended Producer Responsibility and the informal sector. ENV/EPOC/WPRPW(2015)5. <http://www.oecd.org/environment/waste/Extended-Producer-Responsibility-Updated-Guidance-April-2016.pdf>

Oeko Kauf Wien. (2014). Position Paper on Returnable Drink Packaging.

Oelofse, S. (2015). Composition and Value of Waste in Landfills. CSIR.

Overview of the South African Packaging Industry. 2018 Report. 15 June 2018. BMi Research.

Packaging Council of South Africa. 2014. Packaging and Paper Industry Waste Management Plan. Draft Proposal for Discussion with The DEA. September 2014. Unpublished

Recycling 2016, 1, 242–253; doi:10.3390/recycling1020242 www.mdpi.com/journal/recycling

SimonSays. (2016). Consol Corporate Fact Sheet. Simon Says Communications on behalf of Consol Glass.

South African Market Insights. (2017, October 31). South Africa's Population Density Map. Retrieved from South African Market Insights: <https://www.southafricanmi.com/population-density-map.html>

Statistics South Africa. (2016). General Household Survey. Statistics South Africa.

The EU Circular Economy and Its Relevance to Metal Recycling. Christian Hagelüken, Ji Un Lee-Shin, Annick Carpentier and Chris Heron. Recycling 2016, 1(2), 242-253.

The South African metal recycling industry in focus. Date: 12 May 2017 Tutwa Consulting Group

Tyrrell, H. (2014). Diverting Household Waste from Landfill: Best-Practice Separation-at-Source Recycling amongst some Western Cape Municipalities. Retrieved from Green Edge: <https://greenedge.co.za/2014/11/11/diverting-household-waste-landfill-best-practice-separation-source-recycling-amongst-western-cape-municipalities/>

Van Doorselaer, K. a. (2000). Estimation of the Energy Needs in Life Cycle Analysis of One-Way and Returnable Glass Packaging. Wiley Online Library.

Vetropak. (2018, March). Sustainability Made Easy with Lightweight Glass. Retrieved from Vetropak: <https://www.vetropack.com/en/glass-packaging/lightweight-glass/>

Watts, G. G. (September 2008). Delivering Rightweighted Bottles. WRAP and GTS Environmental.

Whyte, C. (2014). Jobs in Recycling: From Global to Local and Back Again. USE-IT.

WRAP. (2010). Single Trip or Reusable Packaging - Considering the Right Choice for the Environment. WRAP.

WRAP. (2018, March). Recycling Glass in the Hospitality Sector. Retrieved from WRAP: <http://www.wrap.org.uk/content/recycling-glass-hospitality-sector>

WRAP. (n.d.). Lightweight Glass Containers: Understanding Consumer Perceptions. WRAP.

WRAP. (n.d.). Lightweight Wine Bottles: Less is More.

Yes Media. (2018, March). Municipalities of South Africa. Retrieved from Municipalities of South Africa: <https://municipalities.co.za/>

Annexure 1: Definitions and Abbreviations

DEFINITIONS

Term	Definition
Acrylonitrile butadiene styrene (ABS)	Combines acrylonitrile and styrene polymers with polybutadiene rubber. The cost of producing ABS is roughly twice the cost of producing polystyrene however, it is considered superior for its hardness, gloss, toughness, and electrical insulation properties. The styrene gives the plastic a shiny, impervious surface. The polybutadiene, a rubbery substance, provides toughness even at low temperatures.
Beneficiation (<i>waste beneficiation</i>)	<p>The treatment of raw material (as iron ore) to improve physical or chemical properties especially in preparation for smelting.</p> <p>Waste Beneficiation is the treatment of waste to improve its physical or chemical properties to use it as a raw material input into production processes and extracting economic value.</p>
Black Industrialist	<p>A juristic person that includes co-operatives, incorporated in terms of the Companies Act (2008), owned by Black South Africans as defined by the B-BBEE Act who creates and owns value-adding industrial capacity and provides long-term strategic and operational leadership to a business. A Black industrialist can also be a natural person.</p> <p>The following are characteristics of a Black industrialist:</p> <ul style="list-style-type: none"> • provides strategic and operational leadership to the business; • has a high level of ownership (>50%) and/or exercises control over the business; • identifies opportunities and develops business to take advantage of these opportunities (entrepreneurial); • takes personal risk in the business; • does business in the manufacturing sector, with particular reference to IPAP focus areas; and • makes a long-term commitment to the business and is a medium to long-term investor.
Brand Owner	A brand owner is an organization or company that is the registrant of a trademark; if the brand /trademark is unregistered, then the organization or company that owns the intellectual property rights to the brand / trademark takes on the role of “ brand owner ”.
Circular Economy	A circular economy is a regenerative system in which resource inputs and waste, emissions, and energy leakage are minimised by slowing, closing, and narrowing energy and material loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling.[1] This is in contrast to a linear economy which is a 'take, make, dispose' model of production.[2]
Clearinghouse	Third-party central agency or corporation acting as a regulator for a competitive market
Collector	A company, co-operative or individual (usually a business) that collects or purchases post-consumer packaging material for on-sale to another collector or recycler. Sorting and baling material activities are typically undertaken, and in some cases, flaking of PET material. Collectors often handle multiple material types.
Collected packaging materials	All paper and packaging material collected for export, recycling, reprocessing, energy recovery or any other conversion process employed as an alternative to direct disposal to landfill
Co-mingled collection	Co-mingled collection refers to the collection of a mix of dedicated waste materials which is subsequently sorted for recycling at specialised facilities.
Communication campaigns	Communication campaigns encompass strategies for producing effects on the knowledge, attitudes, and behaviour of large populations across a variety of domains. They are purposive attempts to inform, persuade, or motivate behaviour changes in a relatively well-defined and large audience by means of organized communication activities.
Consumer Goods (<i>including Fast moving consumer goods – FMCG</i>)	Consumer goods are products that are purchased for consumption by the average consumer. Alternatively called <u>final goods</u> , consumer goods are the end result of production and manufacturing and are what a consumer will see on the store shelf. Clothing, food and jewellery are all examples of consumer goods. Basic materials such as

Term	Definition
	<p>copper are not considered consumer goods because they must be transformed into usable products.</p> <p>There are three main types of consumer goods: durable goods, nondurable goods and services. Durable goods are consumer goods that have a long-life span and are used over time. The life span is typically three years or more. Examples include bicycles and refrigerators. Nondurable goods are consumed in less than three years and have short life spans. Examples include food and drinks. Services include repairs and haircuts.</p> <p>Consumer goods are also called a final good, or end products. These items are sold to consumers for use in the home or school or for recreational or personal use. Consumer goods exclude motor vehicles.</p> <p>Fast Moving Consumer Goods</p> <p>One of the largest consumer goods groups is called fast moving consumer goods. This segment includes the nondurable goods like food and drinks. Companies and retailers like this segment as they are the fastest-moving consumer goods from stores, offering high shelf space turnover opportunities.</p>
Consumption Calculation	The sum of all packaging and paper manufactured, including direct and indirect imports, is reduced by direct and indirect exports and then summed to the indirect imports volume. This net result is the total packaging and paper consumption size which is, effectively, the available material which potentially could reach South African landfill sites, <i>definition as supplied by the BMI and used within their calculations.</i>
Converter (Processors) Refer also to "Packaging Producer"	<p>Packaging companies (known in the materials industry as "converters") are engaged in the conversion of commodity raw materials such as polymer, board or paper into value-added consumer or industrial packaging.</p> <p>Processors are also referred to as Converters. Processors/Converters do not only operate in the use, recycling, recovery, treatment or disposal of waste, but also in terms of the processing of virgin material into Products.</p>
Corporate social responsibility (CSR)	<p>The European Commission defines CSR as the responsibility of enterprises for their impacts on society.</p> <p>To fully meet their social responsibility, enterprises should have in place a process to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders.</p>
Decent work	As defined by the International Labour Organisation (ILO) Involves opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.
Deposit-refund system / scheme	A deposit-refund system is a surcharge on a product when purchased and a rebate / refund is paid when it is returned. A well-known example is when container deposit legislation mandates that a refund is given when a glass / PET beverage container is returned.
Design for recycling	<p>The strategy and/or operation to design a product or packaging in such a way, that it can be entirely recycled, and if not entirely recyclable, the share of contents that are recyclable is optimized.</p> <p>The designed-for-recycling method incorporates recycling and recyclability criteria (e.g. easy to dismantle, easy to remove parts/components, etc.) into the design phase of products, with the aim of making the recycling of the packaging possible or easier.</p> <p>Examples are the avoidance of multilayer packaging, preferring clear PET instead of using certain colours, avoiding full-body sleeves around bottles etc.</p>
Disposal	According to the EU Waste Framework Directive, disposal means "any operation which is not recovery even where the operation has as a secondary consequence such as the reclamation of substances or energy".
Dual system	The organization of collection infrastructure and collection services, run by private organizations, parallel to municipal collection systems.

Term	Definition
	The “Dual” system is characterized by the fact that a second packaging waste collection system is run in parallel to the waste collection system of the local authorities without their physical and/or financial involvement. It is run physically and financially by one or more compliance schemes on behalf of obliged companies without the involvement of local authorities. It was invented in 1990 in Germany by Der Grüne Punkt Duales System Deutschland GmbH and implemented in a similar way in Austria and Sweden. France then developed the “shared responsibility” approach followed by most of the other European countries.
Economic instruments	encourages or discourages particular behaviour and augments other regulatory instruments.
Economic Transformation	The term is defined by the Strategy for Broad-Based Black Economic Empowerment as the transition from an economy that confined wealth creation to a racial minority to an economy that benefits all citizens; and is characterised by ownership, management and control of factors of production by previously marginalised communities (the dti, 2003).
Employed	persons are those aged 15–64 years who, during the reference week, did any work for at least one hour, or had a job or business but were not at work (i.e. were temporarily absent) – definition as per Statistics South Africa.
Expanded polystyrene	Rigid, tough and lightweight thermoplastic product. Made of pre-expanded polystyrene beads. EPS is ideal for the packaging and construction industries due to its light weight, strong and excellent thermal insulation properties. e.g. trays, plates, bowls and fish boxes.
Extended Producer Responsibility (EPR)	An environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle (i.e. end of life management of the product)
Extruded polystyrene	A rigid, insulating foam that is formed with polystyrene polymer, but manufactured using an extrusion process. Often manufactured with a distinctive colour to identify product brand. Used in crafts and model building, in particular architectural models.
Federation of Plans	Collection of PRO plans under PackagingSA
Filler	The filler, or the brand name owner, is usually the economic player in the packaging chain that has developed the product and puts it into specific packaging.
Free Rider	Obliged companies that do not fulfil their legal obligations, either by not participating in any recovery system at all or by not reporting all obliged packaging. Producers who do not contribute financially to any compliance scheme, but still benefit from their existence and action
Full Time Equivalent	At least the income of a full-time job paid at minimum wage. R20 per hour, 8 hours per day, 5 days per week, 52 weeks per year.
Global Trade Item Number (GTIN)	The GTIN is a globally unique 14-digit number used to identify trade items, products, or services.
Good governance	According to the UN, governance can be defined as “the process of decision-making and the process by which decisions are implemented (or not implemented)”. In this context, good governance has the following eight key characteristics: <ul style="list-style-type: none"> · participatory; · consensus oriented; · accountable; · transparent; · responsive; · effective; and · efficient.
Green Dot	The mark “The Green Dot” on packaging means that, for such packaging, a financial contribution has been paid to a national packaging recovery company (organization) that has been set up in accordance with the principles defined in the European Packaging Directive No. 94/62 and national law.

Term	Definition
	The trademark is owned by Der Grüne Punkt Duales System Deutschland GmbH and licensed for all European countries (besides Germany) to PRO EUROPE ²⁷ which itself has concluded sub-license agreements with several European compliance schemes. These sub-licenses then pass another sublicense to companies which would like to use the Green Dot on their packaging.
High Impact Polystyrene	Versatile, economical and impact-resistant plastic that is easy to machine and fabricate. HIPS is often specified for low strength structural applications when impact resistance, machinability, and low cost are required.
Composting (including home composting)	A stabilised, homogenous, fully decomposed substance of animal or plant origin to which no plant nutrients have been added and that is free of substances or elements that could be harmful to man, animal, plant or the environment. Controlled biological process in which organic materials are broken down by micro-organisms.
Industrial Composting	Industrial composting is an established process with commonly agreed requirements concerning temperature and timeframe for transforming biodegradable waste into stable, sanitised products to be used in agriculture. This process takes place in industrial or municipal composting plants. The criteria for the industrial compostability of packaging are set out in EN 13432. Materials and products complying with this standard can be certified and labelled accordingly.
Industry waste management plans (IWMPs)	Industry waste management plans enable collective planning by industry to manage their products once they become waste and to collectively set targets for waste reduction, recycling and re-use
Informal Collectors	An informal collector is a person who salvages post-consumer reusable or recyclable materials that have been discarded. He/she operates in the informal market. In this context, an informal collector operates by going door-to-door to salvage recyclable materials or salvages from a landfill site. Cross reference to “waste picker”
Informal employment	Informal employment identifies persons who are in precarious employment situations irrespective of whether or not the entity for which they work is in the formal or informal sector. Persons in informal employment therefore comprise all persons in the informal sector, employees in the formal sector, and persons working in private households who are not entitled to basic benefits such as pension or medical aid contributions from their employer, and who do not have a written contract of employment.
Informal sector	The informal sector has the following two components: <ul style="list-style-type: none"> i. Employees working in establishments that employ fewer than five employees, who do not deduct income tax from their salaries/wages; and ii. Employers, own-account workers and persons helping unpaid in their household business who are not registered for either income tax or value-added tax
Job	A job is the work that someone does to earn money
Littering	Littering is the (illegal) act of leaving packaging waste in an open or public place.
Material producer	The material producer is the company that develops those materials that packaging is made of: the plastic, paper, glass or metal producer. In case of glass and metals the material producer can also be the packaging producer.
Material Recovery Facility (MRF)	A specialized plant that receives, separates and prepares recoverable materials for marketing to end user manufacturers.
Material recycling	Following the ISO guidelines on material recycling 18604:2013, material recycling refers to “reprocessing, by means of a manufacturing process, of a used packaging material into a product, a component incorporated into a product, or a secondary (recycled) raw material; excluding energy recovery and the use of the product as a fuel”.

²⁷ PRO Europe is the PRO responsible for managing the sub-license of the “Green Dot” to other European countries

Term	Definition
Material Organisation Also refer to Product Responsibility Organisation	Material Organisation, i.e. a collective entity set up by producers or through legislation, which becomes responsible for meeting the recovery and recycling obligations of the individual producers.
Obligated Industry	Those companies with whom Extended Producer Responsibility lies as per the Gazette.
Packaging	<p>‘packaging’ shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. ‘Non-returnable’ items used for the same purposes shall also be considered to constitute packaging.</p> <p>‘Packaging’ consists of:</p> <ul style="list-style-type: none"> a) sales packaging or primary packaging, i.e. immediate contact with the product; in other words, it is the first packaging layer in which the product is contained b) grouped packaging or secondary packaging, i.e. is intended to protect not only the product, but also the primary packaging, which often is the packaging most visible to the consumer in retail displays. The most common examples of secondary packaging include cardboard cartons, cardboard boxes and cardboard/plastic crates. c) transport packaging or tertiary packaging, i.e. Tertiary packaging facilitates the protection, handling and transportation of a series of sales units or secondary packaging in order to group everything into unit loads during transit. This type of packaging is rarely seen by the consumer.
Packaging Producer Refer also to “Converter”	A packaging producer is the company that converts raw materials into packaging.
Paris Agreement	<p>South Africa has ratified the Paris Agreement on Climate Change and has since submitted its instrument of ratification to the Depository under the United Nations Secretary-General in New York.</p> <p>Ratification of the historic treaty, adopted at the 21st international climate change talks in France on 12 December 2015, was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016. In accordance with decision 1/CP.19 and 1/CP.20 of the Conference of the Parties to the United Nations Framework on Climate Change, South Africa has submitted its intended nationally determined contribution (INDC) on adaptation, mitigation as well as finance and investment requirements for both.</p>
PET Bottles	PET packaging associated with beverages, food, household items etc excl Edible Oil. i.e. cooking oil.
PET Edible Oil	PET packaging associated with food such as cooking oils.
PET Thermoform	PET packaging such as punnets, trays, blister packs.
Point of Sale (POS)	Is the point at which a customer makes a payment to the merchant in exchange for goods or services.
“polluter pays” principle	The selection and use of economic measures, including pricing, taxation, subsidies, incentives and fiscal measures will also be aligned with the principles established by NEMA, including the “polluter pays” principle. According to the “polluter pays” principle, all generators of waste (including businesses and households) are responsible for the costs of managing the waste generated. These include not only the direct financial costs of collection, treatment and disposal of waste, but also externalities such as health and environmental impacts.
Post-consumer	After use by the consumer.
Prevention	According to the Waste Framework Directive, prevention can be defined as: “measures taken before a substance, material or product has become waste, that reduce:

Term	Definition
	<ul style="list-style-type: none"> a) the quantity of waste, including through the re-use of products or the extension of the life span of products; b) the adverse impacts of the generated waste on the environment and human health; or c) the content of harmful substances in materials and products;”
Processors (Converters) Refer also to “Converters”	<p>Processors are also referred to as Converters. Processors/Converters do not only operate in the use, recycling, recovery, treatment or disposal of waste, but also in terms of the processing of <u>virgin</u> material into Products.</p> <p>Packaging companies (known in the materials industry as “converters”) are engaged in the conversion of commodity raw materials such as polymer, board or paper into value-added consumer or industrial packaging.</p>
Producer Responsibility Organization (PRO) Also refer to Material Organisation	<p>Producer Responsibility Organisation, i.e. a collective entity set up by producers or through legislation, which becomes responsible for meeting the recovery and recycling obligations of the individual producers.</p>
Recyclable	<p>Recyclable materials or products can be used again after they have been treated using a mechanical or chemical process.</p> <p>The following four conditions should be met for a product to be considered recyclable:</p> <ul style="list-style-type: none"> • The product must be made with a material that is collected for recycling, has market value and/or is supported by a legislatively mandated program • The product must be sorted and aggregated into defined streams for recycling processes • The product can be processed and reclaimed/recycled with commercial recycling processes • The recycled material becomes a raw material that is used in the production of new products.
Recyclability	<p>Recyclability is the ability of a material to be captured and separated from a waste stream for conversion and further treatment.</p>
Recycler	<p>A recycler is a business that converts sorted recyclable materials into a new product (secondary raw material).</p>
Recycling	<p>Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes.</p> <p>It includes the reprocessing of organic material, but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. (Definition from Waste Framework Directive 2008/98/EC, Article 3.)</p>
Refillable packaging	<p>Packaging that can be refilled or reused more than once.</p>
Retailer	<p>A retailer is a business that sells (packaged) goods to the consumer, as opposed to a wholesaler or supplier, who normally sell their goods to other businesses.</p>
Reuse	<p>Packaging is refilled or used for the same purpose for which it was conceived.</p>
Reverse vending machine	<p>A reverse vending machine accepts used (empty) beverage containers and returns money to the user (the reverse of the typical vending cycle).</p>
Separation at Source	<p>Separation at source refers to the end consumer separating recyclables from other waste at the point of generation. In the context of this document it refers to the end consumer separating recyclables from other waste at household-level for separate collection. The end consumer also includes businesses such as restaurants and hotels.</p>
Shared cost system	<p>A system where the extra costs of separate collection of waste are divided among the mandated companies and/or the compliance schemes and municipalities. This is related to several parameters and variables therefore there are no fixed shares.</p>

Term	Definition
	<p>Within a shared cost system obliged companies within the mandated compliance schemes pay only a part of the costs for the separate collection, sorting and recovery of used packaging to local authorities.</p> <p>The exact share is different from country to country and usually depends on a political compromise between the stakeholders.</p> <p>Often, the shares of the costs are the incremental costs. This approach was developed in France and implemented in a similar way in Spain, Italy, Belgium, Czech Republic and almost all other European countries</p>
Single-use	Designed to be used once and then disposed of or destroyed.
Stewardship organisation	Usually used as synonym to a PRO, mainly used in the US and Canada.
Stakeholders	All participants involved in the value chain of a product: producers, retailers, consumers, local authorities, public and private waste management operators.
Sustainable Development Goals	<p>The Sustainable Development Goals (SDGs), are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.</p> <p>These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another.</p> <p>The SDGs came into effect in January 2016, and they will continue to guide UNDP policy and funding until 2030, led by the United Nations Development Agency (UNDP) across 170 countries and territories.</p>
Sustainable Materials Management (SMM)	Sustainable Materials Management (SMM) is a policy approach that aims to address the social, environmental and economic considerations throughout the life-cycle of a product or material, thereby improving resource security and competitiveness through better resource productivity.
Take-back obligation / system	Obligations for producers or distributors to take back their products from end users at the end of the products' useful life.
Tonnage collected	Tonnage of material bought from collectors, waste collecting companies and or collected from recycling banks (pre-and post-industry waste as well as post-consumer waste), i.e. volumes diverted from landfill
Tonnage exported	Tonnage of material collected and exported
Tonnage used for other applications	Tonnage collected and used for other applications other than recycling e.g. packaging burned to produce energy (does not get recycled). This volume is not used to produce other packaging materials
Total Industry Tons (including imports, excluding exports)	Tonnage of packaging placed on the market for local use. This tonnage excludes volume exported.
Waste	<p>Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered –</p> <ul style="list-style-type: none"> a) That is surplus, unwanted, rejected, discarded, abandoned or disposed of; b) Which the generator has no further use of for the purposes of production; c) That must be treated or disposed of; or d) That is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but- <ul style="list-style-type: none"> (i) A by-product is not considered waste; and (ii) Any portion of waste, once re-used, recycled and recovered, ceases to be waste.
Waste Bureau	The Waste Bureau refers to the Bureau established by The Department of Environmental Affairs in terms of section 34A (1) of the National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008). One of its functions is to support and advise on the development and implementation of Industry Waste Management Plans.
Waste Disposed	Balance of Waste Generated less Waste Recycled.

Term	Definition
Waste Generated	Total tonnage of packaging placed onto the South African market, locally produced and imported.
Waste Hierarchy	The waste management hierarchy consists of options for waste management during the lifecycle of waste, arranged in descending order of priority. All stakeholders must apply the waste management hierarchy in making decisions on how to manage waste.
Waste Picker	A waste picker is a person who salvages post-consumer reusable or recyclable materials that have been discarded from a landfill or door-to-door. Cross reference to “informal collector”
Waste Recycled	Total tonnage of post-consumer waste that: 1) Originates from South Africa and is purchased by recyclers for the purposes of recycling plus 2) Tonnage that is exported from South Africa e.g. in bale or flake form.

ABBREVIATIONS

b	Billion
B-BBEE	Broad-Based Black Economic Empowerment Act
BIP	Black Industrialists Policy
BIs	Black Industrialists
BIS	Black Industrialist Scheme
CGCSA	Consumer Goods Council of South Africa
DEA	National Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DfE	Design for Environment
EPR	Extended Producer Responsibility
EXCO	Executive Committee
FSA	Forestry South Africa
FTE	Full Time Equivalent
GDP	Gross Domestic Product
HDPE	High density polyethylene
IDC	Industrial Development Corporation
IndWMP	Industry Waste Management Plan
IPAP	Industrial Policy Action Plan
IPSA	Institute of Packaging South Africa
ITAC	International Trade Administration Commission of South Africa
KZN	Kwa-Zulu Natal
LL/LDPE	Linear Low and low-density polyethylene
LSM	
MPRH	Municipal Polystyrene Recycling Hub
MRF	Material Recovery Facility
NCPC-SA	National Cleaner Productions Centre – South Africa
NDP	National Development Plan
NEMWA	National Environmental Management: Waste Act, No 59 of 2008
NIPF	National Industrial Policy Framework
NPC	Not for Profit Company
Mill	Million
PACKAGING SA	Packaging South Africa
PACSA	Packaging Council of South Africa
PAMSA	Paper Producer Responsibility Organisation of the Paper Manufacturers Association of South Africa
PDIs	Previously Disadvantaged Individuals
PET	Polyethylene terephthalate
PETCO	The South African PET Plastic Recycling Company
Polyco	Polyolefin Recycling Company
p/kg	Per kilogram
PP	Polypropylene

PPS	Price Preference System
PPI	Producer Price Index
PPPFA	Preferential Procurement Policy Framework Act
PRASA	Paper Recycling Association of South Africa
PS	Polystyrene
PS-E/EPS	Polystyrene - Expansible
PS-HI/HIPS	Polystyrene – High Impact
PSL	Pressure Sensitive Labels
PRO	Producer Responsibility Organisations
PTH	Polystyrene Trading Hub
PVC	Polyvinyl Chloride
R	Rand
RB	Returnable Bottles
R&D	Research and Development
RDI	Research, Development and Innovation
REDISA	Recycling and Economic Development in South Africa
SALGA	The South African Local Government Association
SAVA	South African Vinyl Association
SAWPA	South African Waste Pickers Association
SLA	Service Level Agreements
SMMEs	Small, Medium and Micro-sized Enterprises
T	Tonne
TBCSA	Tourism Business Council of South Africa
TGRC	The Glass Recycling Company
The dti	Department of Trade and Industry
UBC	Used Beverage Cans
UWC	University of the Western Cape
WEIGO	Women in Informal Employment: Globalizing and Organizing
Wits	University of the Witwatersrand
XPS	Extruded Polystyrene

Annexure 2: Legislative Review

1 Legislative Review

1.1 Scope

This Section considers the overarching legal framework to be taken into consideration when developing EPR and waste diversion strategies and the duties of local government in the context of the Industry Waste Management Plan (IndWMP). This overarching framework considers:

- The power and function of local government;
- Considerations impacting waste diversion; and
- Considerations regarding international trends in best practice, policy and regulations.

1.2 Power and function of local government

The aim of the IndWMP is to divert packaging waste from landfill. It is critical to understand that Municipalities can only undertake activities if it is within their mandate, power, and function to do so.

In terms of Section 156(1)(a) of the Constitution of the Republic of South Africa Act No. 108 of 1996 *“a municipality has executive authority in respect of and has the right to administer the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5”*. Part B of Schedule 5 lists that local government are responsible for *“refuse removal, refuse dumps and solid waste disposal”*.

Local government thus has the power and function for municipal solid waste service delivery, including disposal of municipal solid waste collected. Because the local government has the power and function it thus must plan, and budget to deliver the service and to enforce plans through promulgation and implementation of by-laws. These executive and legislative powers vest in the Council of the Municipality.

In terms of Section 152(1) of the Constitution, the objects of local government include *“(b) to ensure the provision of services to communities in a sustainable manner”* and *“(d) to promote a safe and healthy environment”*. The provision of municipal services is further regulated by the Local Government Municipal Systems Act and the Local Government Municipal Finance Management Act.

Various environmental obligations and principles are prescribed by the Municipal Systems Act. Section 4 states that *“(2) The council of a municipality, within the municipality's financial and administrative capacity and having regard to practical considerations, has the duty to -*

- (d) Strive to ensure that municipal services are provided to the local community in a financially and environmentally sustainable manner;*
- (i) Promote a safe and healthy environment in the municipality; and*
- (j) Contribute, together with other organs of state, to the progressive realisation of the fundamental rights contained in Section 24 [i.e. environmental rights] ...of the Constitution.”*

In terms of Section 73 of the Systems Act, municipal services must be equitable and accessible, as well as environmentally and financially sustainable.

Municipalities thus have the power and function to consider and develop strategies regarding refuse removal, refuse dumps and solid waste disposal. This includes the legislative (bylaws), executive (planning and strategy development decision making regarding institutional structuring) and administrative (project implementation and by-law enforcement) functions.

1.3 Legal Framework for waste diversion

Having confirmed local government has the power and function for municipal solid waste services, we consider the waste sector framework to identify key legislation, Regulations and Norms and Standards which would impact the municipality's development of a waste diversion strategy.

Historically, waste management in South Africa focused primarily on end-of-pipe technologies such as landfilling for general and hazardous waste and incineration for medical waste. With the promulgation of the National Environmental Management Act No. 107 of 1998, as amended (NEMA), which aims to give effect to Section 24 of the Constitution – 'to secure an environment that is not harmful to the health and well-being of the people of South Africa' – and the National Environment Management: Waste Act, No. 59 of 2008, as amended (NEM:WA), which aims to, amongst others, implement the principles of the waste hierarchy. In recent years, waste management in South Africa has evolved to include additional requirements including waste diversion from landfill through waste minimisation and recycling. The NEMA and the NEM:WA are guided by integrated environmental management principles that aim to ensure negative environmental impacts are prevented, mitigated and regulated. They provide a range of tools and measures to monitor and manage activities that generate environmental impacts, including integrated planning and institutional arrangements regulating the various stakeholders. With the promulgation of the NEM:WA in 2008, all organs of state (including local government) were bound to achieve the objectives of the waste management hierarchy. Among other things, the NEM:WA sets out to achieve the following objectives:

- minimise the consumption of natural resources.
- avoid and minimise the generation of waste.
- reduce, re-use, recycle and recover waste.
- treat and safely dispose of waste, as a last resort.

To achieve the objectives of the NEM:WA, the National Waste Management Strategy (NWMS) was developed in 2011. The objectives of the NWMS are to promote the waste management hierarchy and ensure effective service delivery, whilst growing the waste economy by improving job creation and business development.

Waste Minimisation Goals, Indicators and Targets Specified in the NWMS are listed in Table 1¹:

Table 1: Waste Minimisation Goals, Indicators and Targets Specified in the NWMS

GOAL	PROPOSED INDICATOR	TARGET (2016)
Goal 1: Promote waste minimisation, re-use, recycling and recovery		
Objective 2: Promote re-use, recycling and recovery	<ul style="list-style-type: none"> • % of recyclables diverted from landfill sites for re-use, recycling and recovery • No. of municipalities in which separation of waste at source initiatives are being implemented 	<ul style="list-style-type: none"> • 25% of recyclables diverted from landfill sites for re-use recycling or recovery by 2015 • All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes by

¹ Table extracted from Western Cape Government Environmental Affairs and Development Planning Municipal Waste Management Guidelines 205

GOAL	PROPOSED INDICATOR	TARGET (2016)
		2015
Goal 3: Growing the contribution of the waste sector to the green economy		
Objective 1: Stimulate job creation in the waste sector	No. of new jobs created in the waste sector	69,000 new jobs created in the waste sector
Objective 2: Broaden participation by SMEs and marginalised communities in the waste sector	No. of additional small and medium enterprises and cooperatives participating in waste service delivery and recycling	2,600 additional SMEs and cooperatives participating in waste service delivery and recycling
Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment		
Objective 1: Municipalities to create awareness of waste management issues	% of municipalities running local awareness campaigns	80% of municipalities running local awareness campaigns
Objective 2: Add waste content to the school curriculum and ensure that there are practical waste projects in the basic education curricula	% of schools implementing waste awareness programmes	80% of schools implementing waste awareness programmes
Goal 5: Achieve integrated waste management planning		
Objective 1: Establish an effective system of IWMPs at local government level	The % of municipalities that have integrated their IWMPs into their IDPs The % of municipalities that have met the targets set in IWMPs	100% of municipalities have integrated their IWMPs with their IDPs 100% municipalities have met the targets set in their IWMPs
Objective 2: Establish and maintain an information base on waste flows.	The % of waste management facilities with waste quantification systems	All waste management facilities required to report to SAWIS have waste quantification systems that report information to the Waste Information System
Goal 6: Ensure sound budgeting and financial management for waste services		
Objective 1: Ensure full-cost accounting for waste at municipal level	% of municipalities that provide waste services that have conducted full-cost accounting for waste services	100% of municipalities that provide waste services have conducted full-cost accounting for waste services
Objective 2: Implement cost reflective and volumetric tariffs	% of municipalities that provide waste services that have implemented cost reflective tariffs	100% of municipalities that provide waste services have implemented cost reflective tariffs
Goal 8: Effective compliance with and enforcement of the NEM:WA		
Objective 1: Systematically monitor and enforce compliance with regulations, authorisation conditions and plans	% of successful enforcement actions against non-compliant facilities	50% increase in the number of successful enforcement actions against non-compliant facilities
Objective 2: Environmental Management Inspectors (EMIs) capacity expanded to enforce the NEM:WA	Number of EMIs dealing with NEM:WA at local, provincial and national level	800 EMIs appointed in the three spheres of government to enforce the NEM:WA

1.3.1 National Environmental Management Act No. 107 of 1998

Section 2(4)(a)(iv) requires that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner.

1.3.2 National Environmental Management Waste Act No. 59 of 2008

The waste management hierarchy of avoiding, minimising, reducing, reusing, recycling, recovering and as last resort treating and safely disposing is one of the main objectives in Section 2 of the Waste Act.

In terms of Section 16(2) of the NEM:WA, a holder of waste must, within his/her powers, take all reasonable measures to -

- Avoid the generation of waste and where such generation cannot be avoided to minimise the toxicity and amounts of waste that are generated;
- Reduce, re-use, recycle, and recover waste;
- Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts;
- Prevent any employee or any person under his or her supervision from contravening this Act; and
- Prevent the waste from being used for an unauthorised purpose.

In terms of Section 16 (2) of the NEM:WA, any person selling a product that may be used by the public, and that is likely to result in the generation of hazardous waste, must take reasonable steps to inform the public of the impact of that waste on health and the environment.

Section 3 requires the state, including local authorities, to put in place uniform measures to ensure that this is achieved.

To this end municipalities may, in terms of Section 9(3) of the NEM:WA, amongst other things, set-

- Local standards for the separation, compacting, and storage of solid waste that is collected as part of the municipal service or that is disposed of at a municipal waste disposal facility;
- Local standards for the management of solid waste that is disposed of by the municipality or at a waste disposal facility owned by the municipality, including requirements with respect to the avoidance and minimisation of the generation of waste and the reuse, recycling and recovery of solid waste; and
- Local standards with respect to solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities.

Whilst waste reduction, reuse, recycling, and recovery are encouraged, Section 17 of the NEM:WA requires that it must be done in a manner which uses less natural resources than disposal and must be less harmful to the environment than disposal.

1.3.2.1 Waste Bureau

One of the primary functions of the Bureau is to review and approve, and to conduct monitoring and evaluation of IndWMPs. The IndWMP's will be drafted by each waste sector and submitted to the Bureau for approval.

In terms of NEM:WA Amendment Act, 2014, the Bureau is responsible for the direct monitoring and

evaluation of –

- Systems for the implementation of volumetric tariffs by municipalities;
- The national implementation of disposal taxes;
- All EPR schemes (and the implementation of IndWMPs); and
- The impact of incentives and disincentives.

34D. Objects of Bureau

The objects of the Bureau are to—

- (a) function as a specialist implementing agent within the Department in respect of matters delegated to the Bureau in terms of this Act;
- (b) promote and facilitate minimisation, re-use, recycling and recovery of waste;
- (c) manage the disbursement of incentives and funds derived from waste management charges contemplated in Sections 13B and 34D for the minimisation, reuse, recycling, recovery, transport, storage, treatment and disposal of waste and the implementation of industry waste management plans;
- (d) monitor implementation of industry waste management plans and the impact of incentives and disincentives;
- (e) progressively build capacity within the Bureau to provide specialist support for the development and implementation of municipal waste management plans and capacity building programmes; and
- (f) support and advise on the development of waste management plans, tools, instruments, processes, systems, norms, standards and municipal waste management plans and capacity building programmes.

34E. Functions of Bureau

(1) The Bureau must—

- (a) implement the disbursement of incentives and funds derived from waste management charges contemplated in Sections 13B and 34D;
- (b) identify and promote best practices in the minimisation, re-use, recycling or recovery of waste;
- (c) progressively build capacity of the Bureau to support municipalities in the development and implementation of integrated waste management plans and capacity building programmes;
- (d) support and advise on the development of industry waste management plans, integrated waste management plans and other tools, instruments, processes and systems, including specialist support for the development of norms or standards for the minimisation, re-use, recycling or recovery of waste and the building of municipal waste management capacity;
- (e) monitor the implementation of industry waste management plans;
- (f) monitor and evaluate the impact of incentives and disincentives; and
- (g) perform any other task or function that the Minister may assign or delegate to the Bureau in relation to the implementation of this Act.

(2) The Bureau may—

- (a) invest any of its money, after having complied with Section 34F(2); and
- (b) charge fees for services rendered, other than services rendered in terms of Section 13A or to the Minister or the Department.

34F. Funding of Bureau

- (1) The funds of the Bureau consist of—
 - (a) money derived and allocated from charges referred to in Section 13B;
 - (b) income derived by it for services rendered;
 - (c) money appropriated by Parliament;
 - (d) voluntary contributions, donations and bequests received consistent with the provisions of the regulations made in terms of Section 76(1)(k) or (l) of the Public Finance Management Act, 1999; and
 - (e) income derived from investments referred to in Section 34E(2)(b).
- (2) The Bureau must utilise its funds to defray expenses incurred in the performance of its functions.
- (3) The Bureau must utilise the donations and contributions referred to in Subsection (1)(d) in accordance with the conditions, if any, imposed by the donor or contributor concerned, but those conditions must be approved by the Minister [of Environmental Affairs], in concurrence with the Minister of Finance, and must not be inconsistent with the objects of the Bureau, provisions of this Act, regulations made in terms of Section 76(1)(k) or (l) of the Public Finance Management Act, 1999, or any other law;
- (4) The Chief Executive Officer must, with the concurrence of the Minister [of Environmental Affairs] and the Minister of Finance—
 - (a) open an account in the name of the Bureau with an institution registered as a bank in terms of the Banks Act, 1990 (Act No. 94 of 1990); and
 - (b) deposit therein all money received in terms of Subsection (1).
- (5) The Chief Executive Officer is responsible and accountable to the Director-General of the Department as the accounting authority for all money received by the Bureau and the utilisation of that money.

1.3.3 Pricing Strategy

1.3.3.1 Waste Management Charges

13A. Pricing strategy for waste management charges

- (1) The Minister must, with the concurrence of the Minister of Finance, by notice in the Gazette, publish a pricing strategy, contemplated in Subsection 13A(5)(b), to achieve the objectives of this Act in relation to waste management or any waste stream, within three months of the commencement of this Act;
- (2) The pricing strategy is to contain the basis and a guiding methodology or methodologies for setting waste management charges, including for the funding of—
 - (a) the implementation of industry waste management plans for those activities that generate specific waste streams;
 - (b) the re-use, recycling or recovery of waste in previously disadvantaged communities;
 - (c) the identification, further development and promotion of best practices in the minimisation, re-use, recycling and recovery of waste;
 - (d) implementation of approved guidelines, norms and standards for the minimisation, re-use, recycling and recovery of waste;
 - (e) the monitoring of the implementation and impact of industry waste management plans;
 - (f) the creation and the monitoring of the impacts of incentives and disincentives for the minimisation, re-use, recycling and recovery of waste; or
 - (g) the management of the disbursements of incentives for the minimisation, re-use, recycling and recovery of waste.

- (3) The pricing strategy may differentiate—
 - (a) in respect of different geographic areas, including on the basis of—
 - (i) socio-economic aspects within the area in question;
 - (ii) the physical attributes of each area; or
 - (iii) the demographic attributes of each area; or
 - (b) in respect of different types of uses, including on the basis of —
 - (i) the manner in which the waste is generated or disposed of;
 - (ii) whether it is re-used, recycled or recovered; or
 - (iii) whether any previously disadvantaged group is impacted upon or derives any benefit therefrom.
- (4) The pricing strategy may provide for a differential rate for waste management charges, including on the basis of—
 - (a) the characteristics of the waste disposed of;
 - (b) the volume of the waste disposed of;
 - (c) the toxicity of the waste disposed of;
 - (d) the nature and extent of the impact on the environment caused by the waste disposed of; or
 - (e) the extent of approved deviation from prescribed waste standards or management practices.
- (5)(a) Before setting a pricing strategy for waste management charges under Subsection (1), the Minister must publish a notice in the Gazette—
 - (i) setting out the proposed pricing strategy;
 - (ii) inviting written comments to be submitted on the proposed strategy, specifying an address to which and a date before which the comments are to be submitted, which date may not be earlier than 60 days after publication of the notice; and
 - (iii) consider what further steps, if any, are appropriate to bring the contents of the notice to the attention of interested persons, and take those steps which the Minister considers to be appropriate; and
- (b) the Minister must consider all comments received on or before the date specified in the notice before publishing the final notice in the Gazette, within 30 days of the date contemplated in paragraph (5)(a)(ii).

13B. Application of pricing strategy

An Act of Parliament, to give effect to necessary elements of the pricing strategy contemplated in Section 13A, is to be tabled in accordance with the provisions of Section 77 of the Constitution, within 3 months of the publication of the pricing strategy contemplated in Section 13A (5)(b) in the Gazette, including detail on—

- (a) the imposition of waste management charges;
- (b) the determination of waste management charges and the review of these waste management charges from time to time;
- (c) procedures for the collection through the national fiscal system; and
- (d) procedures for the appropriation and allocation of such funds referred to in paragraph (c) for the work of the Bureau and the implementation of any approved industry waste management plan for a specific waste stream as outlined in this Act.

1.3.4 Municipal Waste Sector Plan, GN 270 of 2012

The Plan has several objectives besides improving performance and professionalism in municipalities and better service delivery. One of them is to reduce the amount of general and hazardous waste going to

landfills. This is to be achieved through source separation (which is a long-term goal for all municipalities). This intervention in collaboration with the recycling industry could include the establishment of one, or a combination of, buy-back and drop-off centres, kerb-side collection of recyclable materials, and material recovery facilities.

1.3.5 National Domestic Waste Collection Standards, GN 21 of 2011

These Standards state that source separation should be encouraged and supported in line with relevant industry waste management plans. In addition:

- All domestic waste must be sorted at source (i.e. at household level) in all metropolitan and secondary cities;
- The service provider/municipality must provide clear guidelines to households regarding the types of waste, the sorting of waste, appropriate containers, and removal schedules for each type of waste; and
- Community involvement in recycling must be encouraged.

The municipality must provide an enabling environment for households to recycle domestic waste. An enabling environment could include kerbside collection and/or well-kept and easily accessible drop-off centres. Where the municipality does not provide for kerbside collection of the recyclable component of source separated waste, it must co-operate with the recycling sector to ensure either private kerbside collection and/or the provision of facilities where recyclables can be dropped off for collection by service providers. Mainstream recyclables (paper, cardboard, newspapers, magazines, plastic, glass, cans and tins) must therefore, according to the level of service provided, be either collected at households or from communal collection points by the municipality or service providers. Non-mainstream recyclables (electronic waste, scrap metal, batteries, fluorescent lights, used oil, etc.) will in the future be addressed under the approved applicable IndWMPs for these material streams.

1.3.5.1 Guideline for collection of recyclables

The viability of recycling relies heavily on economies of scale. It is therefore important that enough clean recyclables (from separation at source including households) must be accumulated to justify the cost of transport associated with the collection of recyclables. The following issues must be considered:

- The use of existing infrastructure (i.e. garden waste centres, landfills) for temporary accumulation and storage of recyclable waste. This may require an amendment to existing landfill permits;
- Bulk waste transfer facilities for recyclable waste by district municipalities;
- Regionalisation of collection of recyclables to ensure economies of scale especially in remote areas; and
- Collaboration with recycling companies to avoid potential bottlenecks.

If there is no recycling market for source separated recyclables, waste-to-energy options must be considered prior to disposal.

1.3.5.2 Frequency of collection

Recyclable waste must be removed at least once every two weeks and removal must be coordinated with industry (the users of the recyclables) to minimise costs and the clogging of space at transfer stations and depots.

1.3.6 Second-Hand Goods Act, No 6 of 2009

The Second-Hand Goods Act, No. 6 of 2009 (SHGA) requires all dealers of second-hand goods, including scrap metal dealers to register their business in terms of this Act. Chapter 6 details the requirements of all dealers who operate as recyclers of controlled metals to undergo a further registration as a recycler.

1.4 Legal framework for planning

The NEM:WA places considerable emphasis on the development of an integrated waste planning system, through the development of integrated waste management plans (IWMPs) by all spheres of government, and the development of industry waste management plans (IndWMPs) by identified industries.

1.4.1 Government IWMPs

The NEM:WA (RSA, 2009b) requires municipalities to compile and submit integrated waste management plans (IWMP), while provincial departments responsible for waste management are also required to compile and submit IWMPs setting set out how they intend to support municipalities to give effect to the objects of the NEM:WA (RSA, 2009b; RSA, 2014b). The DEA provides strategic guidance through the National Policy for the Provision of Basic Refuse Removal Services to Indigent Households (RSA, 2011b), the Municipal Waste Sector Plan (RSA, 2012a) and the National Waste Management Strategy (RSA, 2012b).

The provision of waste collection services is a municipal function in South Africa and inadequate waste services lead to unpleasant living conditions and a polluted, unhealthy environment (RSA, 2012b). The NEM:WA stipulates that Local Government must prepare an IWMP and must incorporate the IWMP into the municipality's integrated development plan (IDP). Municipal IWMPs will set out the strategy to achieve appropriate waste collection standards in each community. In these plans, municipalities set targets and describe how they will achieve them. The IWMPs will also contain methods to monitor and measure progress against targets. IWMPs are required to:

- Set out priorities and objectives for waste management;
- **Establish targets for the collection, minimisation, re-use and recycling of waste;**
- Set out the approach to planning any new facilities for disposal and decommissioning existing waste disposal facilities;
- Indicate the financial resources required for implementing the IWMP;
- Describe the implementation mechanisms for the IWMP; and
- For the national and provincial departments, the IWMPs should also set out how they intend to support municipalities to give effect to the objects of the NEM:WA.

IWMP Performance indicators include:

- Number of licensed landfill sites established;
- Number of buy-back centres established;
- Number of households benefiting from waste collection;
- Number of IWMPs developed;
- Number of waste bins provided/installed;
- Kilometres of streets cleaned; and
- Area cleared of illegal dumps.

1.4.2 Industry Waste Management Plans

The Notice Calling on the Paper and Packaging Industry to prepare and submit Industry Waste Management Plans (IndWMP) was published in Government Notice 1353 of Government Gazette 41303 on 6 December 2017.

Section 3 of the Notice requires producers to register with and subscribe to at least one (1) IndWMP, approved by the Minister in terms of section 32 of the NEM:WA. Producers are allowed to register and subscribe to any additional IndWMP on a voluntary basis. Such an IndWMP can be developed by a single producer or a producer can subscribe to an existing IndWMP.

Section 4 of the Notice allows a group of producers to establish a non-profit Producer Responsibility Organisation (PRO) for the development and implementation of an IndWMP.

Section 6(1) details the content of an IndWMP as follows:

An industry waste management plan contemplated in paragraph 5 must:

- (a) identify all the parties to the industry waste management plan;
- (b) provide details of the governance model for the industry waste management plan, including how industry representivity and participation will be addressed;
- (c) provide the annual projections over a five-year period of the-
 - (i) quantities and types of waste generated from locally manufactured products and products imported that will become waste and will be managed through the industry waste management plan;
 - (ii) quantities of waste that will be reused, recycled or recovered; and
 - (iii) quantities of waste that will be disposed of.
- (d) indicate how the waste hierarchy is going to be given effect to in the implementation of the industry waste management plan prioritizing reduce, re-use and recycling, then recovery;
- (e) include measures to prevent pollution or ecological degradation;
- (f) include measures or programmes to minimize the generation of a particular waste stream and final disposal of that waste stream;
- (g) include measures or actions to be taken to manage the waste;
- (h) identify the manner in which the waste transporters, storage facilities and processors who will receive the waste through the industry waste management plan will be identified and registered;
- (i) identify any incentives that will be applied in order to encourage the end user to practice good waste management;
- (j) identify the potential number of waste transporters, storage facilities and processors that will be required;
- (k) indicate the manner in which the waste collected and processed will be recorded;
- (l) provide estimations of the costs of implementing the industry waste management plan for a period of five years and the submission of an annual business plan to the Bureau including a breakdown of the activities of the industry waste management plan together with their costs;
- (m) be aligned to the National Pricing Strategy for Waste Management (Extended Producer Responsibility; government managed model) as published under GN904 of 11 August 2016;
- (n) provide targets for waste minimization through the reduction, re-use, recycling and recovery of waste for a period of five years;
- (o) provide details of the manner in which the previously disadvantaged individuals and transformation

- will be integrated in the implementation of the industry waste management plan;
- (p) provide where applicable, an estimate of the revenue that will be generated through the implementation of the industry waste management plan for a period of five years;
 - (q) indicate how the industry waste management plan will raise national awareness regarding the management of the particular waste stream;
 - (r) provide detailed measures on how the industry waste management plan will address issues of social responsibility in the specific waste sector and issues of historically disadvantaged communities;
 - (s) provide specific measures in which historically disadvantaged individuals will meaningfully participate in the waste sector and the implementation of the industry waste management plan;
 - (t) provide specific targets on job creation, the promotion of small businesses, training and development, including the meaningful participation of the historically disadvantaged individuals that will be realized in the waste sector;
 - (u) indicate the frequency and methods of auditing and reporting to the Bureau waste management plan envisaged;
 - (v) provide measures to be implemented to give effect to the best environmental practice for the management of a particular waste stream; and
 - (w) provide details of the manner in which the informal sector will be integrated in the implementation of the industry waste management plans.

1.5 DEA Waste Phakisa

The Chemicals and Waste Economy Phakisa took place between 23 July and 25 August 2017. Although the final Waste Phakisa report has not been published yet, a Parliamentary Monitoring Group Meeting Report Summary, dated 17 October 2017 includes the following relevant information:

The Department of Environmental Affairs (DEA) presented details of the Chemicals and Waste Operation Phakisa to the Committee where much ground was covered, namely, methodology, work streams, initiatives, awareness campaigns and the way forward.

The Committee asked for a separate, follow-up presentation on the consumer drive to 'separate at the source', so that there can be clarity as to how it will function. DEA also endeavoured to return to the Committee to discuss the following in more detail: how tariff formulations were going to work and how certain statistics were arrived at (for example, 36 million tons of ash waste production). It was also agreed that a way must be found to ensure that all the money collected through the levy must reach the implementers of its intended purpose. Further questions were posed on the guidelines for product design, e-waste, ring-fencing of funds to municipalities and metros, transfer stations and involvement of the private sector. It was remarked that although the intention of the Department was well placed, there was much wishful thinking and unanswered questions. Another Member stressed this work of the Department was one that was in progress.

20 initiatives across four (4) workstreams, including two (2) cross-cutting initiatives, were identified:

- *Bulk industrial waste:*
 - 1.) *Increase ash uptake for alternate building materials;*
 - 2.) *Accelerate innovation and commercialise existing research and development;*
 - 3.) *Export ash and ash products;*
 - 4.) *Zero sewage sludge to land(fill);*
 - 5.) *Towards zero meat production waste to land(fill) by 2023;*

- Municipal:
 - 6.) Introduction of an e-waste levy to increase collection rate;
 - 7.) Unlocking government ICT legacy volumes;
 - 8.) Achieving a minimum of 50% of households separating at source by 2023;
 - 9.) Introduction of materials facilities and pelletization plants to increase plastic recycling rates;
 - 10.) Produce building aggregates and construction inputs from rubble and glass;
- Product design and waste minimization:
 - 11.) Developing capacity through a specialised programme which upskilled agri-stakeholders to minimize food loss;
 - 12.) Consumer awareness campaign to use and consume ugly food;
 - 13.) Compilation / update of packaging design guidelines;
 - 14.) Formalising the packaging industry producer responsibility plans;
 - 15.) Establish refuse-derived fuel plants across SA;
- Chemical:
 - 16.) Establish a refrigerant reclamation and reusable cylinder industry;
 - 17.) Ban import of harmful chemicals (e.g. leaded paint/paint pigments);
 - 18.) Collect and dispose stockpiles of harmful substances (asbestos, mercury);
- Cross-cutting Initiatives:
 - 19.) Coordinate Small, Medium and Micro Enterprise (SMME) development opportunities across initiatives; and
 - 20.) Roll out national awareness campaigns.

Mr Gordon agreed that DEA will return with the detail concerning 'separation at source.' Firstly, in response to Ms Edwards regarding the statistic of 60-90 000 informal waste pickers, the SA Waste Pickers Association registered about 90 000 waste pickers. The 400 000 waste pickers to which Minister Molewa referred were waste pickers working in the waste space as an estimate throughout the entire country, i.e. informal waste pickers not necessarily registered and that work in the waste space. Secondly, regarding the packaging plan, a final notice was put out last year calling for final plans where producers, manufacturers and importers of products were asked and obliged to submit plans. These plans must address the entire value chain from production and manufacturing to recycling and disposal. According to the Extended Producer Responsibility principle, manufacturers, through the producer networks, have to submit plans to say how they will deal with the product after the consumer used it. The manufacturers were then held accountable. In terms of Section 28 of the Waste Act, these plans were a legal tool and producers and manufacturers were considered illegal if they did not belong to a plan. Thirdly, with these plans, like the E-Waste plan, there were accompanying levies. This levy, like the tyre levy, will be a government collection levy system through a Money Bill, which was a current customs excise duty Money Bill, that will be amended to provide for these new levies, which, as of the pronounced date, will be collected through the SA Revenue Service directly from manufacturers, importers and producers. The levy was ring-fenced. Fourthly, while currently a lot of E-Waste in SA was dismantled and components exported, DEA was asking for beneficiation to take place in SA. Jobs need to be created from the dismantling, disassembly, refurbishment, repurposing and reusing of all electronic waste products. The E-Waste levy will incentivise the entire value chain. There was agreement and consensus in the Phakisa, together with industry, that, by law, there will be a government collection levy system. The policy of Treasury was to ring-fence and allocate funds through collection of the levy.

The Chairperson noted there were various issues to be followed-up on. As soon as it was presented to Cabinet,

the Committee would like some of the details around the Chemicals and Waste Phakisa. There was a need to have discussion around the issue of levies, for example, the plastic levy. Industries seemed to be unduly profiting. What was its impact? How much will be used for the intended purpose? The notion of ring-fencing must be dispensed with. It was concerning that there were only three initiatives that dealt with chemicals.

The emergence of SMMEs in sectors such as waste management contribute to reducing unemployment, poverty and income inequality, reduces impacts to the environment through improved waste separation and recycling initiatives, and reduce transport and waste disposal costs. Job creation in the waste sector is recognized as a local driver for change, as the waste sector is an emerging economic sector with the opportunity to create new jobs, while at the same time absorbing relatively unskilled labour and addressing environmental issues (DEA, 2016c; DST, 2014a). The NWMS sets a target of creating 69,000 new jobs in the waste sector by 2016 (RSA, 2012b).

The Waste Research, Development and Innovation (RDI) Roadmap observes that while waste legislation is intended to drive waste management away from landfilling towards alternatives such as recycling and composting, many stakeholders feel that current legislation is now constraining waste innovation (DST, 2012c) and may inadvertently pose a threat to job creation and supporting the development of SA's Green Economy (DST, 2012b). The DST (2014c) suggests that the choice in waste streams and technology solutions targeted for waste diversion from landfill be guided by what makes local economic sense, based on, amongst others, the quantities and types of waste generated, the local cost of technology solutions, the value of waste streams to local markets, available skills, the local policy environment, and the local climate for business and investment.

Through the Operation Phakisa: Chemicals and Waste Economy programme, currently in its inception phase, government envisages identifying high impact initiatives to create new jobs, to alleviate poverty, contribute to GDP growth and to reduce the harmful impact of chemicals and waste on the economy (DEA, 2017b).

1.6 National Pricing Strategy for Waste Management

The National Pricing Strategy for Waste Management (NPSWM, 11 August 2016) has been published under the NEM:WA as the framework within which waste management charges will be set in South Africa. The NPSWM recognises that there is currently an under-pricing of waste services. This does not encourage waste generators and holders to reduce waste generation or to re-use, recycle or recover waste, but rather perpetuates the use of landfill which is perceived as the cheapest method of waste disposal. The NPSWM contains a methodology and approach for waste management charges to be applied in South Africa. It outlines possible waste management charges or economic instruments that may be applied in accordance with the overall fiscal and taxation policy of South Africa.

In terms of the IWMS the tariffs must be cost reflective and volumetric. There was also a DEA Municipal Solid Waste Tariff Strategy issued in May 2012. These must be considered when the municipality undertakes its annual budgeting process and executes its tariff determination function.

The following is an extract from the NPSWM:

In the case of EPR schemes, Section 17 of the Waste Amendment Act provides the detail with respect to the transitional arrangements for any existing IndWMPs which may be affected should a waste stream be prioritised by Government; be prioritised for the implementation of waste management charges; or be

identified for the implementation on EPR schemes. If a waste stream has not been prioritised by the Minister for the implementation of a waste charge, and should voluntary EPR schemes (with associated PRO fees) be operating for that waste stream, then these voluntary systems should continue operating to ensure minimal disruption to current waste management activities. These voluntary EPR schemes may however be 'influenced' by DEA, through prioritisation of the waste stream for development of the IndWMPs, the approval and implementation of the relevant IndWMPs (e.g. requiring greater support of EPR schemes to municipalities, setting of recycling targets, monitoring and evaluation by government, etc.).

This strategy will be reviewed after a period of 5 years. The government managed EPR scheme is being proposed and there is provision made for the existing EPR schemes to be aligned to the Pricing Strategy. This transition does not change the operations of the PRO, but more align the funding model with what is contained in the Act and the monitoring to be done by the [Waste Management the NEMWA], the strategy also indicated various and relevant role -players for performing certain actions in order to achieve our recycling economy, through the use of the EPR. These role -players and their actions are indicated in the Action Plan (Annexure A) of this strategy document. Also contained in the Action Plan are the associated timeframes for implementation by responsible parties.

The further details of the implementation of this strategy are as contained the Action Plan of this strategy document.

When selecting an instrument (or combination of instruments, such as a tax-subsidy combination), it is important to ensure that "double-taxation" is avoided, i.e. that externalities that have been addressed through taxation at one point along the chain are not further addressed at another point along the chain. Provided that charges are set at an appropriate level that takes external costs along the lifecycle of a particular product into account, it will not be appropriate to impose charges both upstream and downstream. Instead, a choice must usually be made as to where along the value chain a charge will be levied. This choice will often depend on whose behaviour is being targeted for intervention; that is, who has the ability to make decisions that ultimately affect outcomes with respect to waste generation and recycling. Often, for example, it is decisions made by producers (e.g. with respect to input or material use, recycled content or recyclability) that have the most significant impact on waste generation and recycling; while in other cases it may be more appropriate to target the behaviour of waste generators.

1.7 Legal framework for Climate Change

The South African national legal framework for climate change is still relatively undeveloped. The country is party to several international agreements, but national legislation is yet to be enacted. Policy documents in place are the National Climate Change Response White Paper and the National Climate Change Response Policy of 2011. The latter provides an overarching framework for facilitating a just transition to a low carbon, climate resilient, economy. It enables the use of incentives and disincentives, including regulatory, economic, and fiscal measures to provide appropriate price signals to nudge the economy towards a more sustainable growth path.²

A Carbon Tax Policy Paper and Carbon Offsets Paper were compiled in 2013 and 2014 respectively.

² According to the Background section of the Draft Explanatory Memorandum for the Carbon Tax Bill (pg. 2).

The second Draft Carbon Tax Bill was published in December 2017 for public comment. The draft Bill provides for the introduction of a carbon tax in a phased manner. This gradual approach takes cognisance of the developmental challenges facing South Africa and international climate policy developments. It is hoped that this will also help encourage investments in, and the uptake of, more energy efficient and low carbon technologies.³

The Carbon Tax Bill will enable South Africa to meet its nationally-determined contribution (NDC) commitments in terms of the 2015 Paris Agreement (on climate change), and to reduce our greenhouse gas emissions in line with the National Climate Change Response Policy (NCCRP) and National Development Plan (NDP).

Carbon tax seeks to give effect to the polluter pays principle by ensuring that the real cost of GHG emissions to the environment and society are explicitly incorporated into the prices of carbon intensive production activities. The carbon tax will assist, in a least cost manner, in reducing GHG emissions and ensuring that South Africa will meet its NDC commitments.

Cabinet approved the submission of the draft bill to Parliament on 16 August 2017 and noted carbon tax as an integral part of the system for implementing government policy on climate change.

A National Climate Change Adaptation Strategy has also been developed, for which the Second Draft was released in October 2017. The National Adaptation Strategy (NAS) acts as a common reference point for climate change adaptation efforts in South Africa, and it provides a platform upon which national climate change adaptation objectives for the country can be articulated so as to provide overarching guidance to all sectors of the economy. The strategy help gauges the degree to which development initiatives at different levels of government and business integrate and reflect critical climate change adaptation, as such guides stronger coherence and coordination on climate change adaptation activities between different institutions and levels of government, particularly with regards to planning, implementation and reporting, as such provide inputs to the country's legal framework for adaptation. The strategy is the main vehicle for South Africa in meeting its international obligations under the United Nations Framework Convention on Climate Change (UNFCCC) as contained in the country's adaptation component of the NDC's.

Climate change legislation and policies needs to be reviewed in light of waste management initiatives and the IndWMP development, as climate change drivers will have an ever-increasing effect on waste management policies and plans.

1.8 Alignment of the IndWMP to International legislation, policies and strategies

1.8.1 The Paris Agreement

South Africa ratified the 2015 Paris Agreement in November 2016 and endorsed its NDC, which requires that South Africa's GHG emissions peak in 2020 to 2025, plateau for a ten-year period from 2025 to 2035 and decline from 2036 onwards.

The Paris Agreement comes into operation in 2020, which means that efforts to reduce our GHG emissions and meet our commitments cannot be further delayed. The NDC noted that carbon tax is an important part

³ According to the Background section of the Draft Explanatory Memorandum for the Carbon Tax Bill (pg. 2-3).

of the package of measures to reduce emissions, complemented by appropriate regulations and incentives. The actual date of implementation of the carbon tax will be determined through a separate and later process.

According to the Fifth Assessment Report of the International Panel for Climate Change, Waste and Wastewater sector emissions over the period of 2000-2010 increased substantially in absolute terms but remained around 3% of the total global GHG emissions. In 2010, GHG emissions from waste represented 3.0% of total GHG emissions from all sources (1446 MtCO₂eq), compared to 2.6% in 1970 (734 MtCO₂eq). Solid waste disposal sites accounted for 46% of the waste sector's emissions or around 1.4% of total GHG emissions in 2010 (IPCC, 2014).

1.8.2 The Sustainable Development Goals

The Sustainable Development Goals (SDGs) were born at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012. The objective was to produce a set of universal goals that meet the urgent environmental, political and economic challenges facing our world.

The SDGs came into effect in January 2016, and the intention is that they will continue to guide UNDP policy and funding for the next 15 years (2030 Agenda). As the lead UN development agency, UNDP is uniquely placed to help implement the SDGs through our work in some 170 countries and territories, which include South Africa.

The 17 SDGs build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another.

Besides the 2030 Agenda, African countries have committed to implement the African Union Agenda 2063, which is both a vision and a plan to build a more prosperous Africa in 50 years. The 2030 Agenda for Sustainable Development acknowledges the importance of the AU Agenda 2063 and considers it an integral part of it.

1.8.3 EU Packaging and Packaging Waste Directives

The EU first introduced measures on the management of packaging waste in the early 1980s. Directive 85/339/EEC set rules on the production, marketing, use, recycling and refilling of containers of liquids for human consumption and on the disposal of used containers.

To address the environmental aspects of packaging and packaging waste, some Member States started introducing their own measures in this area. As a consequence, diverging national legislation appeared, a situation that called for harmonization at European level.

To harmonize national measures concerning the management of packaging and packaging waste, and to prevent or reduce its impact on the environment, [Directive 94/62/EC](#) was adopted in 1994. The Directive aims at providing a high level of environmental protection and ensuring the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition.

In 2004, the Directive was amended to provide criteria clarifying the definition of the term 'packaging' and

increase the targets for recovery and recycling of packaging waste. In 2005, the Directive was revised again to grant new Member States transitional periods for attaining the recovery and recycling targets. In 2013, Annex I of the Directive containing the list of illustrative examples of items that are or are not to be considered as packaging, was revised in order to provide more clarity by adding a number of examples to the list.

The latest revision of the Packaging and Packaging Waste Directive occurred on 29 April 2015 with the adoption of [Directive \(EU\) 2015/720](#) of the European Parliament and of the Council amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags.

1.8.4 European Strategy for Plastics⁴

Plastics are an important material in our economy, and modern daily life is unthinkable without them. At the same time however, they can have serious downsides on the environment and health. Action on plastics was identified as a priority in the [2015 Circular Economy Action Plan](#), to help European businesses and consumers to use resources in a more sustainable way.

The first-ever [European Strategy for Plastics in a Circular Economy](#) adopted on 16 January 2018 will transform the way plastic products are designed, used, produced and recycled in the EU. Better design of plastic products, higher plastic waste recycling rates, more and better quality recyclates will help boost the market for recycled plastics. It will deliver greater added value for a more competitive, resilient plastics industry.

The Strategy is part of Europe's transition towards a circular economy and will also contribute to reaching the SDGs, the global climate commitments and the EU's industrial policy objectives. This strategy will help protect our environment, reduce marine litter, greenhouse gas emissions and our dependence on imported fossil fuels. It will support more sustainable and safer consumption and production patterns for plastics.

Improving the economics and quality of plastics recycling

Stepping up the recycling of plastics can bring significant environmental and economic benefits. Higher levels of plastic recycling, comparable with those of other materials, will only be achieved by improving the way plastics and plastics articles are produced and designed. It will also require increased cooperation across the value chain: from industry, plastics manufacturers and converters to public and private waste management companies. Specifically, key players should work together to:

- improve design and support innovation to make plastics and plastic products easier to recycle;
- expand and improve the separate collection of plastic waste, to ensure quality inputs to the recycling industry;
- expand and modernise the EU's sorting and recycling capacity;
- create viable markets for recycled and renewable plastics.

To support these developments, the Commission has already proposed new rules on waste management.

Plastics packaging is a priority area when it comes to design for recyclability. Today it accounts for about 60 % of post-consumer plastic waste⁵ in the EU, and product design is one of the keys to improve recycling

⁴ http://ec.europa.eu/environment/waste/plastic_waste.htm

⁵ Source: Plastics Europe

levels. It has been calculated that design improvements could halve the cost of recycling plastic packaging waste.⁶

Review of Waste Policy and Legislation

The European Commission adopted an ambitious [Circular Economy Package](#), which includes revised **legislative proposals on waste** to stimulate Europe's transition towards a circular economy which will boost global competitiveness, foster sustainable economic growth and generate new jobs.

The **revised legislative proposal on waste** sets clear targets for reduction of waste and establishes an ambitious and credible long-term path for waste management and recycling. To ensure effective implementation, the waste reduction targets in the new proposal are accompanied by concrete measures to address obstacles on the ground and the different situations across EU Member States.

Key elements of the revised waste proposal include:

- A common EU **target for recycling 65% of municipal waste** by 2030;
- A common EU **target for recycling 75% of packaging waste** by 2030;
- A binding landfill target to **reduce landfill to maximum of 10% of municipal waste** by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis – turning one industry's by-product into another industry's raw material; and
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

The following **legislative proposals on waste** amongst others have been adopted:

- Proposed Directive on Waste;
- Annex to proposed Directive on Waste;
- Proposed Directive on Packaging Waste;
- Annex to proposed Directive on Packaging Waste; and
- Analytical note on waste management targets.

1.8.5 Canadian strategy for packaging waste

The Government of Canada defines packaging as follows:

"Packaging refers to all materials, fabricated containers and other components used in the containment, protection, movement and display of a product or commodity. The environmental effects of packaging extend beyond disposal – resources and energy are consumed and pollutants are released during production and transportation of packaging".

In 1990, the Canadian Council of Ministers of the Environment (CCME) developed and endorsed the National Packaging Protocol (NaPP), a voluntary agreement with industry to reduce packaging waste. Though there

⁶ Ellen MacArthur Foundation, The New Plastics Economy: Catalysing action, January 2017.

were no official regulations or control measures, real reductions were achieved on targeted wastes.⁷

In the 1990s, some solutions involving the recycling of individual packaging types were introduced such as provincial level deposit-return schemes for some beverage containers and municipal level out-right bans or surcharges on landfilling of cardboard, leading to reductions of packaging in the waste stream. Various programmes were developed, many on a voluntary basis with industry support. While steps taken in terms of these programmes were helpful in reducing the targeted packaging, they could not slow the increasing volumes of packaging challenging waste managers. Many of the programmes involved Extended Producer Responsibility (EPR).

In 2009, CCME approved a [Canada-wide Action Plan for Extended Producer Responsibility](#) and also announced a [Canada-wide Strategy for Sustainable Packaging](#). The purpose of the latter is to build on the prior to help create a more consistent Canada-wide approach to EPR for packaging and to support a shift by all packaging actors towards greater packaging sustainability. The Canada wide Strategy for Sustainable Packaging aims to increase awareness and information about packaging sustainability among all packaging actors and to promote reductions in packaging and more sustainable packaging choices at all stages of the packaging life cycle – from packaging design to waste management. CCME's ultimate goal is to reduce the overall quantity of packaging materials generated and disposed throughout Canada, with an aspirational goal of zero waste.

While the CCME moved toward a country-wide standard, each Province in Canada is responsible for their own packaging and stewardship regulations. However, by 2012, not all provinces had developed regulations, and where regulations existed, there were discrepancies between them. This uneven approach is problematic for importers, manufacturers and distributors as the specific actions and economic commitment required to comply will vary.

The provincial dialogues accompanying the move toward packaging protocols is of vital interest to those in the plastics industry for three reasons.

1. Plastics are not the single most predominant material used in packaging. Compared to other packaging materials, plastics trail wood, glass and paper when weight is considered. But, plastics are an easy target in EPR dialogue in large part because they are often the last package that the consumer sees before using the product inside. The eyes of those in the Ministries developing the regulations are on plastics. Plastics use in packaging is increasing and for all the right reasons. Plastics are versatile, light and cheaper to transport, rupture resistant, leak-proof, colourful and attractive to consumers as well as often the most economical option. Size, shape and properties can be customized to suit application. The individual containers are becoming both lighter and more durable at the same time. Plastics are recyclable and excellent candidates for other treatment including energy capture. Post-use plastics can have value.
2. A very real challenge facing the recovery industry is the commodity value of some packaging plastics. Even as recycling facilities increase in number and capability, collection and transportation of these newer and lighter containers can exceed their value to processors. This is the single strongest argument in favour of stewardship of plastics. Without some form of "top-up" funding, the value of many collected plastics cannot cover the cost of treatment.

⁷ <http://albertaplasticsrecycling.com/wp-content/uploads/2011/10/provincial-packaging-regulations.pdf>

3. The infrastructure required to treat all plastic packaging does not currently exist in all jurisdictions. And where it does exist, it lacks capacity to move from select, targeted packaging to all packaging overnight.

In Canada, both EPR and product stewardship programs are used to manage products at their end-of-life. The key differences in approaches are explained below:

- EPR programme EPR is an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. It identifies end-of-life management of products as the responsibility of producers. Funding is provided by producers and coe
- Product stewardship programmes: Responsibility is allocated to provincial/territorial or municipal governments. Legislated environmental fees and/or public funds are commonly used as a funding base, however these programmes usually do not allocate financial responsibility to producers.

The CCME, through the Canada-wide Action Plan for EPR, supports the move towards greater producer responsibility, including work towards transforming product stewardship initiatives into full EPR programs. The Canada Wide Action Plan for EPR includes:

- Working with stakeholders to achieve greater consistency on key elements of EPR programmes: product lists for EPR materials, definitions, programme monitoring and reporting metrics, and auditing protocols;
- In collaboration with industry, identifying opportunities and sharing best practices for implementing EPR in northern and remote areas; and

1.8.6 Australian strategy for packaging waste

In November 2009, the Australian environment ministers agreed to the National Waste Policy. The aims of the National Waste Policy are to:

- Avoid the generation of waste, and reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource;
- Ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner, and
- contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land.

The policy has been developed to complement other government actions to deliver greenhouse gas emission reductions, reduce energy and water use, support jobs and invest in future long term economic growth. It aims to provide the basis for collaboration between the jurisdictions to deliver effective and efficient approaches to national waste issues and ensure that waste management remains aligned with Australia's international obligations.

The Waste Management Policy is currently being updated. As part of this, Federal Government, state and territory ministers and the President of the Australian Local Government Association met in April 2018 to set a sustainable path for Australia's recyclable waste. This included, amongst others, a pledge for new product stewardship schemes for photovoltaic solar panels and batteries, while also agreeing to explore waste to

energy further and advocate using recycled materials in government procurement.⁸ The update of the National Waste Policy was in part triggered by China's decision to no longer import certain types of waste from other countries.

In line with the commitments of the National Waste Policy, National Product Stewardship legislation has been developed, including the Product Stewardship Act 2011, which provides the framework to effectively manage the environmental, health and safety impacts of products, and in particular those impacts associated with the disposal of products. The framework includes voluntary, co-regulatory and mandatory product stewardship. This act is also currently under review.

In 1999, the Australian Packaging Covenant Organisation (APCO) was established as a co-regulatory, not for profit organisation partnering with government and industry to reduce the environmental impact of packaging in Australian communities. This model of shared responsibility is delivered through the promotion of sustainable packaging activities including sustainable design, recycling initiatives, waste to landfill reduction and circular economy projects.⁹ As part of the April 2018 announcement by the CCME, to meet the target of making packaging 100% reusable, recyclable or compostable by 2025, APCO undertook a sustainability Brand Audit in June 2018. ACO stated that *"There are a number of basic packaging requirements that all Australian businesses are required to meet – and these are outlined in the National Environmental Protection (Used Packaging Materials) Measure 2011 (NEPM). One of our responsibilities is to notify the businesses who aren't meeting these basic obligations and provide them with the tools, resources and pathways to track and improve their packaging sustainability."* The goal of the NEPM is to reduce environmental degradation arising from the disposal of used packaging and conserve virgin materials through the encouragement of re-use and recycling of used packaging materials by supporting and complementing the voluntary strategies in the Australian Packaging Covenant.

1.8.7 Management of packaging waste in the African context

The following extract from the African Waste Management Outlook report (CSIR, 2018) summarises the legislative context of waste in Africa:

"Environmental problems associated with solid waste management have traditionally been addressed through command-and-control regulations. A review of solid waste management in Africa found that a number of countries have regulations and policies on how waste should be managed (Bello et al., 2016). It appears that despite strong legislation in some countries, the implementation and enforcement of this legislation remains weak."

The African Waste Management Outlook report also provides upstream and downstream examples of economic instruments in the product/waste value chain, see Figure 1.

⁸ <http://wastemanagementreview.com.au/meeting-of-enviro/>

⁹ <https://www.packagingcovenant.org.au/>

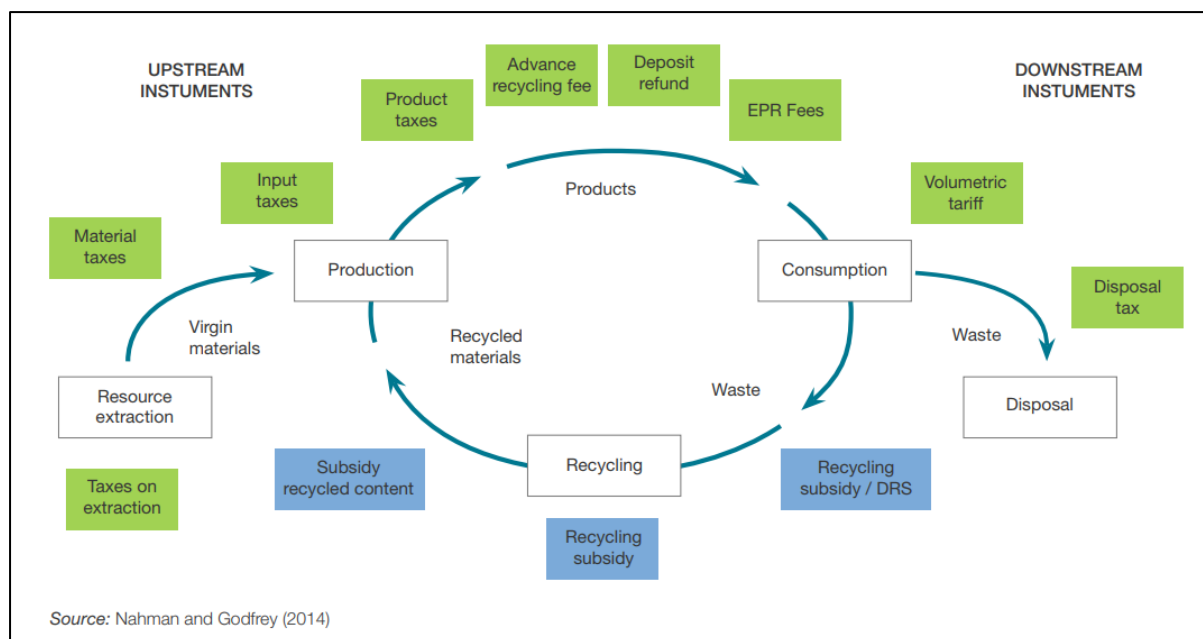


Figure 1: Examples of economic instruments in the product/waste value chain (Africa Waste Management Outlook, CSIR, 2018)

1.8.7.1 Weak regulatory framework

The legal framework for waste management is often fragmented and the provisions dealing with municipal solid waste, weak. This was found in the case of Egypt, for example, where there is no clear distinction between roles and responsibilities of the governorates, municipalities, service providers and waste generators (NSWMP, 2011). Similarly, Nigeria has a plethora of legislation relating to the environment that touches on waste management, but with a lack of implementation and enforcement of the laws (Nwufu, 2010).

1.8.7.2 Unsupportive policy, legal and regulatory environment

The private sector should play an important role in the management of waste throughout Africa, but in some instances municipal by-laws assign full responsibility for waste management to government bodies, creating a barrier to private sector involvement (Bello *et al.*, 2012). Kenya is a case in point, where responsibility for waste collection and disposal, regulation and monitoring of activities of waste companies and generators of solid waste, enforcement of all laws and by-laws relating to solid waste, and coordination of actors involved in solid waste management are all assigned to the local municipality (Van Dijk and Oduro-Kwarteng, 2007). However, in Nairobi, private sector participation in solid waste collection is spontaneous, unplanned and open to competition without regulation. In addition, it is reported that “companies violate many of the solid waste laws and by-laws, especially those on disposal” (Van Dijk and Oduro-Kwarteng, 2007).

The failure of the waste management laws and regulations is largely owing to ineffective provisions and sanctions to deal with transgressors and the inability or unwillingness of officials to enforce laws (Kazungu, 2010). East African countries have policy, laws and regulatory provisions that restrict improvements in solid waste management by restricting cost recovery, which is necessary for service sustainability in the long run and to cover short-term shortfalls from traditional budget sources. In Ghana, the Local Government Act, 1993 (Act 462) confers power to local authorities to promulgate and enforce by-laws to regulate solid waste management, among other things, but private companies cannot operate without the approval of, or a

licence from, the local authority (Van Dijk and Oduro-Kwarteng, 2007).

The lack of operating institutional functions could be a possible explanation for the knowledge gap in policy-making (Göransson, 2012). Experiences in Kampala, Uganda, highlight the knowledge gap for making urban service delivery pro-poor (Lwasa and Kadilo, 2010). While making waste management a municipal function is seen as being crucial to ensuring that all citizens (rich and poor) receive a service, it can result in municipalities becoming gatekeepers to the waste, especially waste that can be reused, recycled and recovered. Public-private partnerships are key to unlocking this opportunity, however, if municipalities are stuck in traditional collect-transport-dump mode, opportunities to move waste up the hierarchy can be lost. Currently, this problem is being somewhat bypassed in Africa as a result of a large, active informal waste sector that is able to access recyclable waste at kerbside and on landfill in spite of local government policies regarding the private sector.

Waste policies and legislation will at best be an exercise in futility if they are not effectively enforced and complied with (Nwufo, 2010). Oelofse and Godfrey (2008) argue that despite some deficiencies, the mere enforcement of available legislation, including municipal by-laws, will improve the waste situation at community level in municipalities. Indiscriminate dumping and littering are by default illegal activities that should be treated as such by law enforcement officers. It is therefore important that enforcement officers know what their responsibilities are under the law, and what actions can be taken under various circumstances. Nigeria has a well-structured National Policy on Environment (1989) and the Rivers State blueprint on sustainable environmental practices (2004), but enforcement remains poor owing to a number of factors, including poor staffing, weak penalties, conflicting roles and attitudinal problems (Nwufo, 2010, Elenwo and Urho 2017). A study in Uganda (Göransson, 2012) found that the solid waste ordinance had not been implemented owing to a lack of enforcement mechanisms. Gray (2003) argues that the gap between legislation and enforcement may be symptomatic of centralized government decision making processes that do not account for the weakness of lower-level institutions.

1.8.7.3 Policies to prevent waste

In August 2017, Kenya joined a number of other African countries that regulate the use of plastic bags through legislation aimed at waste prevention (Njugunah, 2017). These regulations vary considerably, from a ban on only single-use (thin) plastic bags and associated requirements for bag thickness to complete bans on all plastic bags. This movement to ban plastic bags across Africa is sparking discussions between governments and industry on possible further bans on other single-use plastic products, such as polyethylene terephthalate (PET) beverage bottles and food services industry products such as plastic cups, containers, utensils and straws. Zimbabwe, for instance, instituted a ban on expanded polystyrene containers in the food industry in 2017 (Mhofu, 2017). However, while many opportunities for “greener” product replacement exist, such bans must be carefully considered in terms of broader health and safety issues, like access to clean drinking water and safe food in Africa, and opportunities for local recycling of such products.

1.9 Other Legislative Considerations

Minister Dr. Edna Molewa tabled the DEA’s 2017/18 Budget Vote Policy Statement on 25 May 2017. The following is an extract of this statement.

1.9.1 Planning and Supporting the Green Economy – The Phakisa Approach - The recycling or circular economy

The transition to a circular approach to sustainable socio-economic growth and development is emerging as a priority on the international political agenda. The issue was a key policy discussion point at the recently concluded World Economic Forum for Africa.

For South Africa, growing the circular economy and broadening access to the opportunities it presents is a fundamental part of government's programme of radical socio-economic transformation.

This firstly requires a radical rethink of our perception of waste; it is a resource with value once it is recovered, reduced, re-used and recycled; and provides the opportunity for beneficiation, enterprise development, and innovation.

Given the potential to significantly scale up green economy initiatives in this sector, we are preparing to host a Chemicals and Waste Phakisa that will see the Annual Waste Khoro for 2017 taking the form of a Chemicals and Waste Circular Economy Lab Programme.

In taking the industry waste management plans forward, we are currently evaluating the inputs received from various sectors on Industry Waste Management Plans (IWMP's) for the Paper and Packaging, Electrical and Electronic and Lighting Industries. These will be published for implementation this financial year.

1.9.2 Supporting broader integrated Green Economy development

At the recently convened World Economic Forum (WEF) for Africa in Durban, integrating climate change and the SDGs into development planning featured high on the agenda.

To this end, we are implementing phase one of our Greenhouse Gas Emission Mitigation system to allocate carbon budgets to companies that are significant emitters of greenhouse gases.

We will finalise South Africa's National Climate Change Adaptation Strategy, which sets out programmes for responding to expected climate change impacts on our economy, society, and environment.

Notably, South Africa is increasingly becoming a destination for investment in the green economy, and more specifically as a top 10 renewable energy investment destination globally.

By 2016, South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) had already attracted over R200 billion in investment. The Department of Environmental Affairs supported this programme with Strategic Environmental Assessments.

In the past year, the Department finalized authorisations for 124 Renewable Energy development applications, amounting to a total of some 55000 Megawatts of renewable energy, as well as development applications for some 43 Strategic Infrastructure Projects (SIP's).

1.9.3 Enhancing the Regulatory System – The Environmental Justice Approach

The NDP states that pursuing a sustainable development trajectory requires an efficient and effective

regulatory system that reduces cost and increases the ease of doing business; whilst at the same time ensuring the sustainable use and protection of our natural capital and heritage.

This must comprise of coherent legislation; supported by more accessible, user-friendly and efficient decision-making tools, as well as effective enforcement.

The recent experience in developing our “one environment system” in the mining and water sectors has indicated many areas for improving and integrating our environmental regulatory system. To this end, we have conducted a comprehensive review of our environmental legislation with the aim of improving procedural efficiency; reducing duplication and fragmentation, as well as standardizing, streamlining and aligning legislative requirements.

This comprehensive regulatory review process will also address any emerging areas of concern, gaps or inadequate coverage in our regulatory system, among others, including:

In the waste area:

- We need to manage the detrimental impacts of plastics and the phase out of micro-plastics in terms of UN General Assembly and UN Environmental Assembly resolutions, as well as the findings of a Plastic Material Study that we will conduct this year in collaboration with the plastics industry, the South African Bureau of Standards, the National Regulator for Compulsory Specifications, the National Treasury and Department of Health;
- We are considering measures that allow for independent operators to run clean-up and processing operations in the different waste management sectors and their appointment through an open and competitive tender system; and
- We are conducting a feasibility study into the option of a landfill disposal tax as a disincentive to landfill, in conjunction with National Treasury.

To this end, the Department is developing the following:

- A Consolidated Integrated Permitting System (CIPS) to provide a single environmental authorisation and permit application and processing interface. This will enable the issuing of multiple authorizations such as Environmental Impact Assessment (EIA), Waste Licence and an Air Emission Licenses. This work is at an advanced stage and the initial platform will become operational this year.
- An EIA Screening Tool, integrated with the CIPS that will provide for an early focussing of assessments and accelerate the assessment and authorisation process.
- A special initiative in plastic design to improve the recycling of plastic bags, working with the SABS and National Regulator for Compulsory Specifications (NRCS) to ensure that the manufacturers of plastic carrier bags comply with regulatory requirements.

1.9.4 Implementation and Investment – The Economy-Wide Service Delivery Approach

Let me turn to our third strategic thrust, which is to provide the support and services for on-the-ground implementation in promoting scaled up economy-wide investment.

The National Green Fund continues to support investment projects, research and development and capacity development initiatives across the green economy. The government has to date allocated R1.2 billion to the Fund, creating approximately 6 620 direct jobs.

One such project being supported by the Fund is the construction of the flagship Hammarsdale Waste Beneficiation centre in Kwa-Zulu/Natal, that will maximize waste diversion from landfill through innovative recycling technologies. Phase 1 of this project, that is being run by a non-profit called USE-IT, will lead to the creation of 153 permanent jobs, as well as 80 construction jobs. Since its inception, USE-IT has created 2 400 jobs from waste beneficiation and has won a number of national and international awards.

However, the onus to create green jobs cannot be on government alone. In this regard, forging partnerships and incentivising private sector investment, both domestically and internationally, is key.

To this end:

- South Africa is a member of the Partnership for Action on Green Economy (PAGE), that seeks to put sustainability at the heart of economic policies and practices
- Internationally we will continue to enhance our cooperative engagement in the United Nations Environment Assembly (UNEA), the Global Environment Facility (GEF) and the Green Climate Fund (GCF) where we serve on the Board and have Co-Chaired the Board for two terms.
- We continue our cooperative engagement in Multilateral Environmental Agreement bodies to advance the environment, climate change, and sustainable development agenda.
- We continue our cooperative engagement within the African Union and SADC; fostering bilateral relations with key African countries and strengthening South-South Co-operation within key emerging developing markets such as BRIICS.

2 References

- Alberta Plastics Recycling Association. (2018). *Provincial Packaging Regulations – Passing the responsibility to the Producer*. Available at: <http://albertaplasticsrecycling.com/wp-content/uploads/2011/10/provincial-packaging-regulations.pdf> [accessed 12 July 2018].
- APCO. (2018). Empowering Australian businesses to meet their sustainable packaging obligations (25 June 2018). Available at: <https://www.packagingcovenant.org.au/news/empowering-australian-businesses-to-meet-their-sustainable-packaging-obligations> [accessed 12 July 2018].
- Blue Environment, REC. (2016). *Prepared for the Department of the Environment and Energy*. Blue Environment in association with Randal Environmental Consulting. Page 32.
- Canadian Council of Ministries of the Environment. (2009). *A Canada-wide Action Plan for Extended Producer Responsibility*. Available at: https://www.ccme.ca/files/current_priorities/waste/pn_1499_epr_cap_e.pdf [accessed 12 July 2018].
- Canadian Council of Ministries of the Environment. (2009). *A Canada-wide Strategy for Sustainable Packaging*. Available at: https://www.ccme.ca/files/current_priorities/waste/pn_1501_epr_sp_strategy_e.pdf [accessed 12 July 2018].
- Canadian Council of Ministries of the Environment. (2018). *Current Priorities: Extended Producer Responsibility*. Available at: https://www.ccme.ca/en/current_priorities/waste/epr.html [accessed 12 July 2018].
- CSIR. (2018). *African Waste management Outlook report*. Council for Scientific and Industrial Research and United Nations Environment Programme, 2018.
- DEA. (1998). *No. 107 of 1998: National Environmental Management Act*. Department of Environmental Affairs.
- DEA. (2009b). *No. 59 of 2008: National Environmental Management: Waste Act, 2008*. Department of Environmental Affairs.
- DEA. (2010). *Generic Guideline Document for Preparing Industry Waste Management Plans*. Department of Environmental Affairs.
- DEA. (2011). *National Waste Management Strategy*. Department of Environmental Affairs.
- DEA. (2011). *Government Notice No. 413 of 2011: National Policy for the Provision of Basic Refuse Removal Services to Indigent Households*. Department of Environmental Affairs.
- DEA. (2011). *National Climate Change Response Policy*. Department of Environmental Affairs.
- DEA. (2012). *Government Notice No. 270 of 2012: Municipal Waste Sector Plan*. Department of Environmental Affairs.
- DEA. (2012). *National Climate Change Response White Paper*. Department of Environmental Affairs.
- DEA. (2014). *Act No. 26 of 2014: National Environmental Management: Waste Amendment Act*. Department of Environmental Affairs.
- DEA. (2016). *National Pricing Strategy for Waste Management*.
- DEA. (2016). *Government Notice No. 904 of 2016: National Pricing Strategy for Waste Management*. Department of Environmental Affairs.
- DEA. (2017). *National Environmental Management: Waste Act (59/2008): Call on the Paper and Packaging Industry, Electrical*. Department of Environmental Affairs.
- DEA. (2017). *Minister Dr. Edna Molewa tables the Department of Environmental Affairs 2017/18 Budget Vote Policy Statement*. 25 May 2017 Available at: https://www.environment.gov.za/speech/molewa_tables201718budgetvotepolicystatement [Accessed 6 July 2018].

- DEA. (2017). *South Africa National Adaptation Strategy (draft for comments)*. Department of Environmental Affairs. October 2017
- Department of Environment and Energy. (2018). *Voluntary product stewardship arrangements*. Available at: <http://www.environment.gov.au/protection/national-waste-policy/product-stewardship/voluntary-product-stewardship> [accessed 12 July 2018].
- Department of Environment and Energy. (2018). *Proposed national approach to product stewardship action on environmental impacts of products - consultation*. Available at: <http://www.environment.gov.au/protection/national-waste-policy/product-stewardship/consultation-2018> [accessed 12 July 2018].
- DNT. (2013). *Carbon Tax Policy Paper: Reducing greenhouse gas emissions and facilitating the transition to a green economy (policy paper for public comment)*. Department National Treasury, May 2013.
- DNT. (2014). *Carbon Offsets Paper (published for public comment)*. Department National Treasury, April 2014.
- DNT. (2017). *Draft Carbon Tax Bill*. Department National Treasury, December 2017.
- DST, CSIR. (2013). *South African Waste Sector – 2012: An Analysis of the Formal Private and Public Waste Sectors in South Africa*. Department of Science and Technology and Centre for Scientific and Industrial Research
- DST. (2014). *A Waste Research, Development and Innovation Roadmap for South Africa (2015-2025). Summary report*. Department of Science and Technology: Pretoria. Available at: <https://www.wasteroadmap.co.za/roadmap/index.php> [accessed 10 July 2018].
- Ellen MacArthur Foundation. (2017). *The New Plastics Economy: Catalysing action*. Published 20 January 2017. Available at: <https://www.ellenmacarthurfoundation.org/> [accessed on 8 July 2018].
- European Commission. (1994). *Directive 94/62/EC on Packaging and Packaging Waste*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:01994L0062-20150526> [accessed 10 July 2018].
- European Commission. (2004). *Directive 2004/12/EC amending Directive 94/62/EC on packaging and packaging waste*. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32004L0012> [accessed 10 July 2018].
- European Commission. (2005). *Directive 2005/20/EC amending Directive 94/62/EC on packaging and packaging waste (extension of deadlines for the attainment of the recycling and recovery targets for the Member States acceding the EU in 2004)*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32005L0020> [accessed 10 July 2018].
- European Commission. (2009). *Regulation (EC) No 219/2009 adapting a number of instruments subject to the procedure referred to in Article 251 of the Treaty to Council Decision 1999/468/EC with regard to the regulatory procedure with scrutiny*. Available at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009R0219> [accessed 10 July 2018].
- European Commission. (2013). *Commission Directive 2013/2/EU amending Annex I to Directive 94/61/EC on packaging and packaging waste*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013L0002> [accessed 10 July 2018].
- European Commission. (2015). *Directive (EU) 2015/720 of the European Parliament and of the Council of 29 April 2015 amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags*. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L0720> [accessed 10 July 2018].

- European Commission. (2015). Commission Staff Working Document: Additional analysis to complement the impact assessment SWD (2014) 208 supporting the review of EU waste management targets. SWD(2015) 259 final Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015SC0259> [accessed 10 July 2018].
- European Commission. (2015). *Proposal for a Directive of the European Parliament and of the Council amending Directive 94/62/EC on packaging and packaging waste*. COM(2015) 596 final. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0596> [accessed 10 July 2018].
- European Commission. (2015). *Proposal for a Directive of the European Parliament and of the Council amending Directive 2008/98/EC on waste*. COM(2015) 595 final. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0595> [accessed 10 July 2018].
- European Commission. (2018). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: European Strategy for Plastics in a Circular Economy*. COM/2018/028 final. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN> [accessed 10 July 2018].
- European Commission. (2018). *Circular Economy Action Plan*. Available at: http://ec.europa.eu/environment/circular-economy/index_en.htm [accessed on 10 July 2018].
- European commission. (2018). *European Strategy for Plastics in a Circular Economy*. Available at: https://ec.europa.eu/commission/publications/documents-strategy-plastics-circular-economy_en [accessed on 10 July 2018].
- Government of Canada. (2018). *Overview of the Extended Producer Responsibility in Canada*. Available at: <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/overview-extended-producer-responsibility.html> [accessed 12 July 2018].
- National Environment Protection Council. (2018). *National Environment Protection (Used Packaging Materials) Measure*. Available at: <http://www.nepc.gov.au/nepms/used-packaging> [accessed 12 July 2018].
- National Planning Commission. (2012) *National Development Plan 2030: Out Future – Make it Work*. RSA, National Planning Commission, August 2012.
- RSA. (1996). *No. 108 of 1996: Constitution of the Republic of South Africa Act*. Republic of South Africa.
- RSA. (2000). *No. 32 of 2000: Local Government Municipal Systems Act*. Republic of South Africa.
- RSA. (2003). *No. 56 of 2003: Local Government: Municipal Finance Management Act*. Republic of South Africa.
- RSA. (2009). *No 6 of 2009: Second-Hand Goods Act*. Republic of South Africa: South African Police Service.
- RSA. (2017). *Draft Explanatory Memorandum for the Carbon Tax Bill: Background*. Republic of South Africa.
- UN. (2015). *Paris Agreement*. United Nations
- UN. (2012). *Sixty-sixth session agenda item 19: Resolution adopted by the General Assembly on 27 July 2012 [Sustainable Development Goals]*. Report A/RES/66/288, 11 September 2012.
- Waste management Review. (2018). *Meeting of Environment Ministers revives National Waste Policy*. Available at: <http://wastemanagementreview.com.au/meeting-of-enviro/> [accessed 12 July 2018].