

National

PLASTICS

RECYCLING SURVEY 2018



Plastics | SA

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1 EXECUTIVE SUMMARY

1.1 PLASTICS RECYCLING IN SOUTH AFRICA IN 2018

Emotional and depressing images of sea life and birds entangled in plastic, and beaches strewn with litter have recently flooded social and printed media. Internationally, pictures of warehouses full of baled recyclables and piles of unclaimed sorted materials, are circulated. Legislators try to respond to the public outcry and regulations are created, including plastic bans. Single use plastics are considered the main culprit in the increasing levels of visible pollution.

The plastics recycling industry is well developed in South Africa. This report provides the Plastics SA survey results for local demand for virgin plastics consumption and recovery tonnages for 2018. All materials recycled or reprocessed in South Africa are expressed as a percentage of locally manufactured plastics products, unless stated otherwise.

1.1.1 DOMESTIC CONSUMPTION

In 2018, South Africa converted **1 876 250 tons** of polymer into plastics products, an increase of 4.9% from 2017.

This is the total of locally produced polymers, imported polymers and recycled polymers sold to local converters in South Africa. Locally recycled polymer made up 18% of this total.

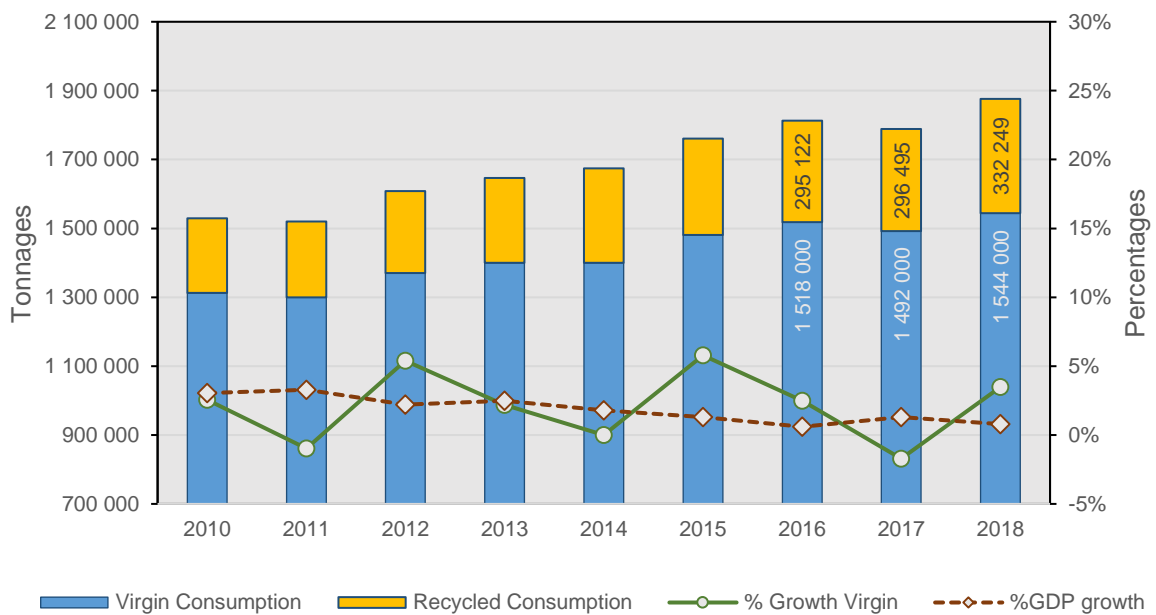


Figure 1: Domestic polymer consumption in South Africa - virgin and recycle

1.1.2 DOMESTIC RECYCLING

South Africa recycled **352 000 tons** of plastics into raw material in 2018. When compared to the recycling rate of 31.1% in Europe, South Africa has an input recycling rate of **46.3%** for all plastics. (Figure 11 explains the methodology followed to derive at the recycling rate.)

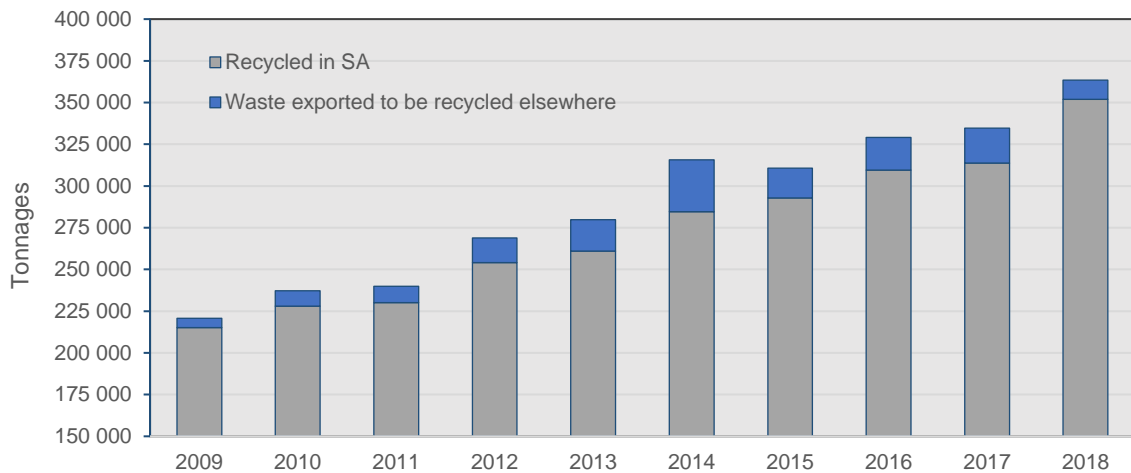


Figure 2: Plastics tonnages recycled into new raw materials

Many of the First World countries are desperate to find solutions for their growing waste problems after China and other Asian countries closed their borders for waste imports. South Africa is in a slightly better position in that the bulk of the locally collected waste was, and still is, locally recycled into raw materials.

1.2 INCOMING RECYCLABLE WASTE STREAM

The largest quantity of recyclables, 70%, was obtained from landfill and other post-consumer sources. In the European community, local government and the plastics industry are all involved in getting the recyclables out of the waste stream as early as possible.

In South Africa, recyclables are sourced from landfill at high costs. Landfill material is of poor quality, contaminated and therefore, expensive to recycle. Process related wastage can be as high as 40% for post-consumer film and sheeting.

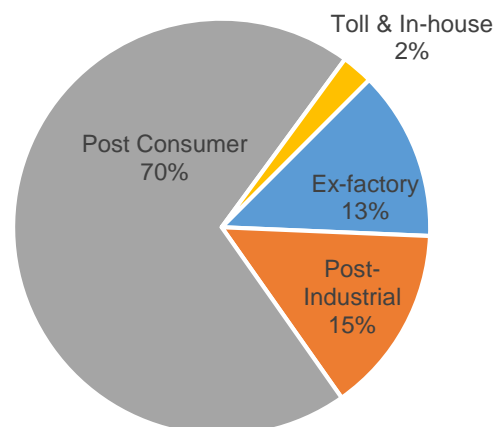


Figure 3: Source of incoming recyclable waste in 2018

Recycling facilities deal with fairly large quantities of one or two materials. Sixty one percent of incoming materials was sourced from the formal sector, collectors and waste management companies. Twelve percent was sourced directly from waste generators.

Although very critical to the value chain, only 4% of recyclables were purchased directly from waste pickers and walk-ins. A further 3% was obtained from buyback- and drop-off centres. Waste pickers supply the collectors who add some value through sorting and compacting the collected waste before supplying it to the recyclers.

Facilities have to be provided for consumers to separate recyclables from wet waste. Infrastructure is required where the public can drop-off their recyclables for free, or for an incentive of sorts. Sorting at a centralised facility could be manual, semi-automatic or fully automatic – as long as it is suitable for the material mix and the volumes. Much cleaner, sorted, compacted recyclables will be available to recyclers if separation at source is regulated in at least the major centres.

Table 1: Overview of collection and recycling of plastics waste in Europe and South Africa

Europe	South Africa
Recycling is based on environmental principles	Recycling is based on financial principles
Accurate waste collection data	Accurate recycling output tonnages
Recyclable waste is obtained from Separation at Source process	Waste pickers collect recyclables from curbside and landfills
Community is involved because it is the right thing to do	Community will only do it if incentivised by money
Up to 2018, the bulk of the recyclables were shipped to third world countries	Less than 5% of collected recyclables is shipped to processors outside South Africa
Landfill restrictions for recyclables in at least 10 European countries	64% of South Africans have access to waste management
Recyclers utilise optical sorting	Manual sorting of recyclables, excluding PET bottles
Very low recycling rates for flexible packaging	PE-LD films has an output recycling rate of 35%
Black products are unrecyclable due to optical sorting	Manual sorters have no problem identifying black items
Input recycling rate in 2017 of 31.1%	Input recycling rate in 2018 of 46.3%
The average European is valuing its national heritage and lifestyle	Many South Africans live below the breadline and are fighting for survival

1.3 RECYCLED POLYMERS

The most widely recycled material is PE-LD and PE-LLD packaging films. Substantial growth was seen in the recycling of PE-LD/LLD as the barrier to entry is fairly low and the collection network well established.

PET beverage bottles showed a steady increase over the last 5 years.

PE-HD bottles, drums and crates were the third largest recycled plastic in 2018 and the demand for milk bottles increased to supply the increasing demand for recycle for the manufacture of carrier bags.

The PP tonnages showed substantial growth as new entrants started to recycle woven PP, raffia and PP films together with the well-established packaging items and domestic ware.

Flexible PVC gumboots, hoses and cable sheathing remained steady. Redundant water- and plumbing pipes, conduit and gutters add to the rigid PVC recyclable waste stream.

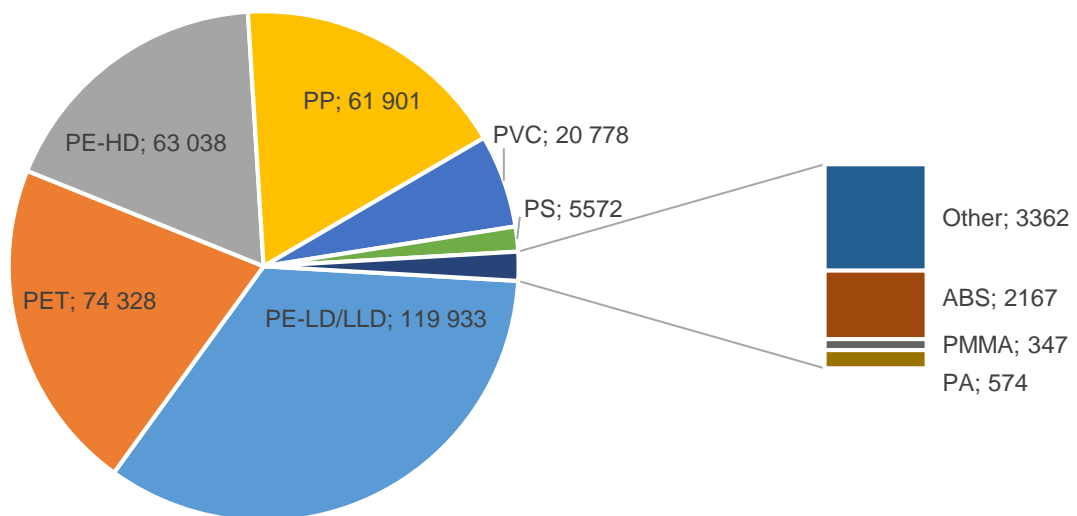


Figure 4: Plastics recycled in South Africa in 2018 in tonnages

1.4 JOB CREATION

Plastics recycling sustained 7892 formal jobs in 2018 in the recycling factories. The tonnages per employee dropped to 44.5 tons. It is estimated that 58 470 workers received an income through the supply chain, 6000 more than in 2017. These include self-employed waste pickers and employees of smaller entrepreneurial collectors. Through the procurement of recyclables, an estimated **R2 267 million** was injected into the economy at primary sourcing level – material bought from waste-pickers, collectors and waste management companies.

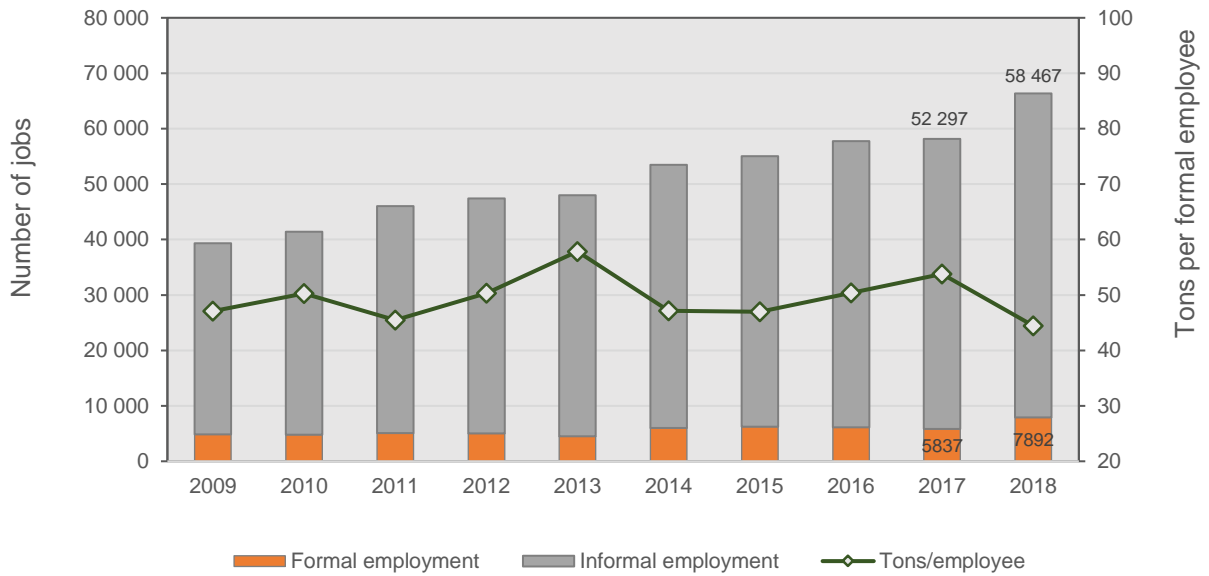


Figure 5: Employment in plastics recycling

1.5 END MARKETS FOR RECYCLATE

End-markets for recyclate were taken for granted for many decades as the demand for recyclate exceeded the supply of recyclable incoming materials. With the increasing awareness of the importance of recycling and consumer involvement, more and more materials are available for recycling. Brand owners are now committing to increased levels of recycled content and new end-markets will have to be developed.

Suitable end-markets are critical for the sustainability of the plastics recycling industry. Only 5.6% of the recycled raw material was exported to plastics converters in neighboring countries.

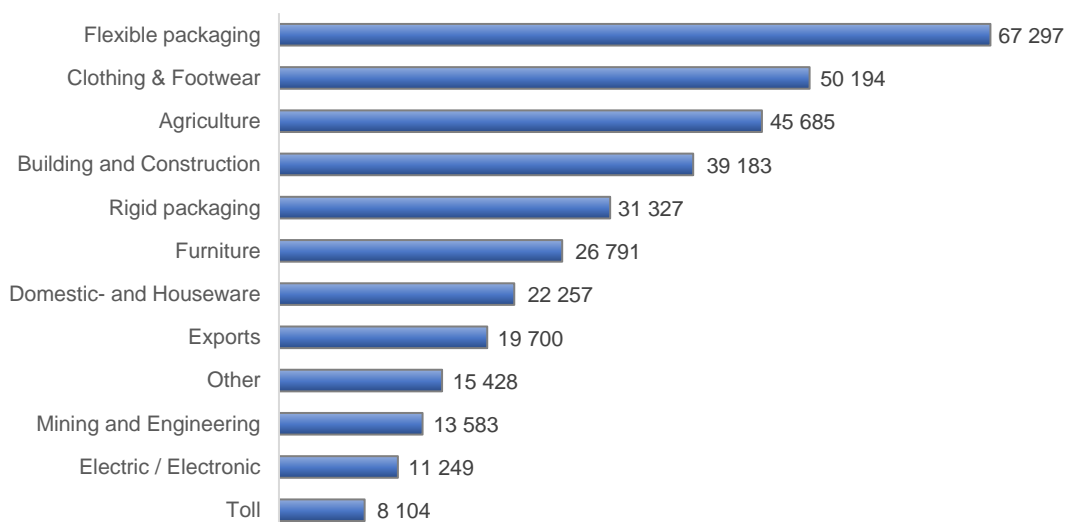


Figure 6: Domestic market applications in 2018 for recycled materials, expressed in tonnages

1.6 RECYCLING OPERATIONS

More than 300 bona fide plastics recyclers in South Africa were included in this survey; 20% of these recyclers converted 70% of the tonnages. Most of them are based in Gauteng (58%), 17% in KZN and 14% in the Western Cape. Thirty nine percent of the recyclers can process post consumer recyclables utilising granulation, washing and pelletising facilities.

Fifty one percent of recycling operations in South Africa is predominantly smaller entrepreneurial owner-businesses. A further 27% is family-owned and only 21% of the recyclers have a minority white ownership.

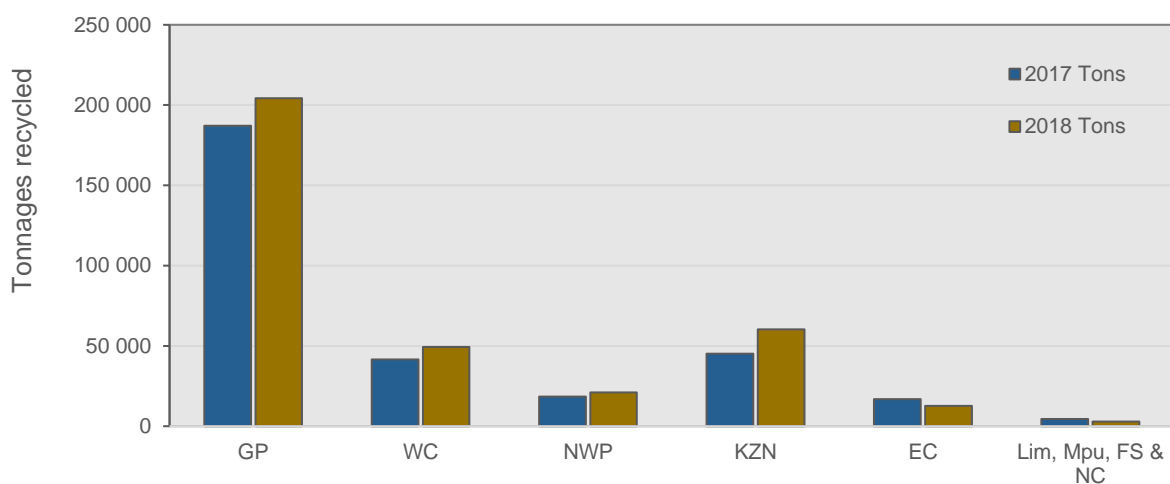


Figure 7: Provincial representation of plastics recyclers in the last two years

There are many new entrants; 27% of the recyclers have been around for less than 3 years, whereas 24% of the companies have more than 20 years’ experience in plastics recycling in South Africa.

The demand for recyclable waste increased and the buying prices of the three polyolefin grades were on average 15% higher than in 2017. Selling prices increased by only 5%, indicating a lower demand, due to more recyclers operating. Many new entrants established themselves as potential suppliers to converters in China. Their export volumes are directly linked to the exchange rate and as the strength of the local currency increases, export volumes decrease. These materials are then sold into the local market.

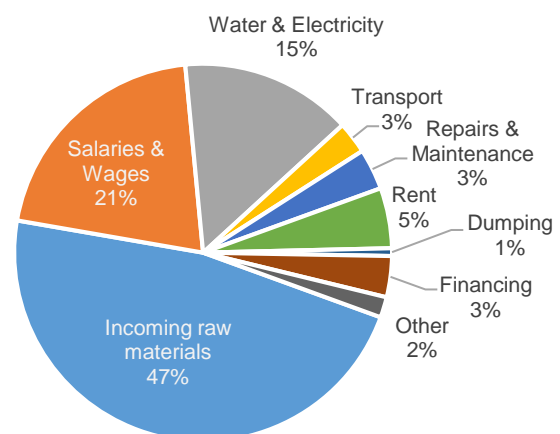


Figure 8: Average input costs for 2018 of granulation, washing and pelletising

Input costs increased by 11% in the last 12 months. Salaries and wages make up 21% of the total input cost of a recycling operation, water and electricity 15%.

Power factor correction, invertors and solar energy are some of the ways recyclers are using to reduce energy costs. Many have stopped using agglomerators and invested in squeezers and force feeders. Smaller recyclers dropped their tonnages during winter to counter the higher electricity tariffs during the three winter months.

1.7 RECOMMENDATIONS

With changing consumption patterns, growing populations and increased urbanisation, developing countries face significant challenges in terms of waste management. The leakage of single-use plastics into the environment, and the resulting pressure from civil society, has resulted in action by both government and business.

The plastics industry managed a 46.3% input recycling rate in 2018, recycled 352 000 tons of raw material - replacing the same amount of virgin resources, and created 58 500 income opportunities to self-employed waste pickers. Recycling, design for recycling and recycled content are familiar to the plastics industry and consumers are more aware of their waste footprint than ever before.

With a strong drive to #BeatPlasticPollution, the United Nations Environment Programme has provided guidance on actions that the public, private sector entities and governments can take to minimise the production and use of single-use plastics. These include:

- (i) Waste management system improvements,
- (ii) Promotion of eco-friendly alternatives,
- (iii) Social awareness and public pressure, and
- (iv) Voluntary reduction strategies and agreements.

The image of plastics has never been as negative as it is today, and discussions regarding the use of plastics, so emotionally charged. With perhaps the exception of a few indigenous peoples, not one of the 7.5 billion people on the planet could live a normal life without plastics, regardless of whether they are conscious of this or not. Plastics is an essential part of our lives.

The fact is plastics and environmental protection are compatible. Issues such as waste collection and collection rates, recovery models, recycling and the circular economy are now more centre stage than ever before.

Plastics are far too valuable to throw away. Recycling of plastic waste tonnages increased by 12.2% in the last year. South Africa is taking the lead in mechanical recycling. Is this enough?

Surely not. What is the way forward? How can the circular economy of plastics be improved? How do we ensure that the value of plastics is repeatedly harvested?

1.7.1 INFRASTRUCTURE

Plastics need to be collected and removed from the environment. Infrastructure and waste management processes need to be in place that will handle recyclable and non-recyclable waste so that the 34% of concerned citizens who currently have no access to waste management services, can also participate.

1.7.2 CONTAMINANTS IN THE WASTE STREAM

Plastics recycling can continue to grow; however, collaboration is urgently required to reduce the contaminants in the incoming waste stream. Increasing amounts of biodegradables, compostables and some forms of oxo-biodegradables find their way into the incoming recyclable waste stream.

Brand owners, retailers and product designers need to be aware of unrecyclable products in their product ranges such as multi-layer or multi-material products, too much printing inks, or even the wrong combination of closures and bottles or webbing and stitching on woven bags.

1.7.3 SUSTAINABLE RECYCLING OPERATIONS

With rising costs of energy, transport and labour, it is an ongoing struggle for recyclers to sustain their businesses. It is advocated that *waste is gold* but the cost of incoming materials to the processor increases continuously. Many new entrants are not legally compliant which adds to the financial burden on compliant recyclers.

1.7.4 ALTERNATIVE RECYCLING

The recycling of low hanging fruit receives a lot of attention. However, there are materials and products that are not economically viable to collect, transport or even recycle. Solutions need to be found for these *difficult-to-recycle* materials. It may require a combination of mechanical recycling and the manufacturing of composites like cement aggregate, paving bricks or generating energy. Where higher volumes are available, chemical recycling (hydrolysis) may be the best option. Each area needs to look at its refuse bins to see what would be the best solution that is cost effective and aligned with the circular economy of keeping plastics plastic for as long as possible.

1.7.5 WAR ON WASTE

Industry, government and society need to collaborate in the war against waste. It is not acceptable that plastics products are blamed for a problem created by society's disregard for litter and waste in general.

The South African Initiative to end Plastic Waste in the Environment has identified four areas that need to be addressed:

- ◆ Infrastructure development to collect and manage waste and increase recycling.
- ◆ Innovation to advance and scale new technologies that make recycling and recovering plastics easier and create value from all post-use plastics.
- ◆ Education and engagement of governments, businesses, and communities to mobilise action.
- ◆ Clean-up of concentrated areas of plastic waste already in the environment, particularly the major conduits of waste, like rivers, that carry land-based plastics waste to the sea.

Recyclables are a valuable resource and should be extracted from the solid waste stream before reaching landfill. All stakeholders - producers, manufacturers, brand owners, consumers, waste management companies and recyclers – have to work together to make plastics the material of choice. South Africa needs to manufacture locally, and process and manage the end-of-life products in an efficient manner that benefits the consumer, the industry and the planet, taking advantage of all of the excellent characteristics of plastics.



The Complete Survey can be purchased from Plastics SA

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ALL PLASTICS 2018

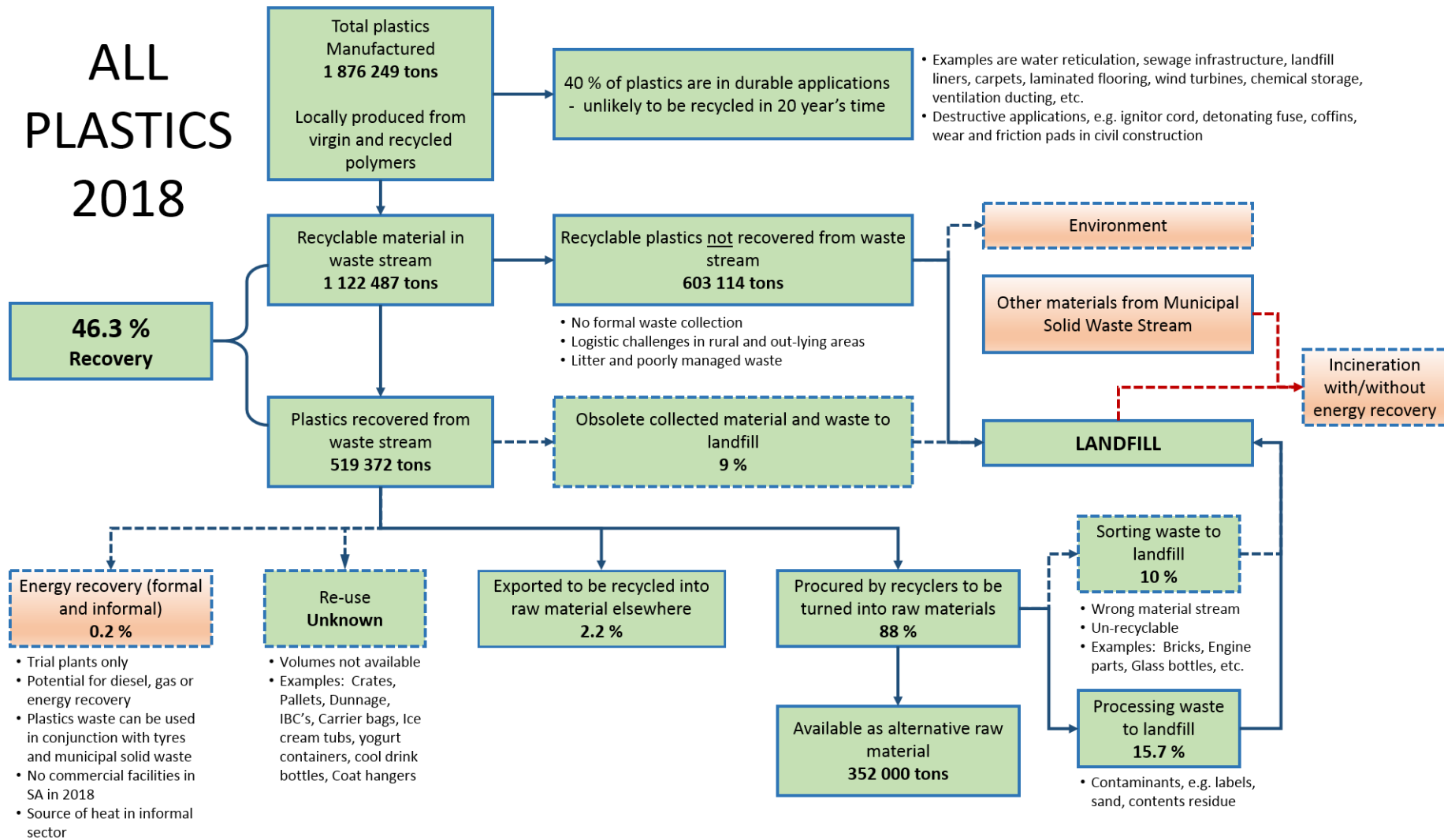


Figure 9: Schematic representation of the methodology followed for 2018 input recycling rates