Executive Summary

South African PLASTICS Recycling Survey 2019

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Plastics SA
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YOU CAN BE FOR THE
ENVIRONMENT,
OR AGAINST PLASTICS
–BUT NOT BOTH!

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1  PLASTICS RECYCLING IN SOUTH AFRICA IN 2019

Plastics are lightweight, durable and fairly inexpensive in large quantities, and can be moulded into a variety of products for a wide range of applications. A major portion of plastics produced each year is used to make disposable items of packaging or other short-lived products that are discarded within a year of manufacture. Because of the durability of the polymers involved, substantial quantities of discarded end-of-life plastics are accumulating as debris in landfills and in natural habitats worldwide.

Recycling is one of the most important actions currently available to reduce the impact and represents one of the most dynamic areas in the plastics industry today. Recycling provides an opportunity to reduce petrochemical usage, carbon dioxide emissions and the quantity of waste to be disposed of.

The collection, documentation and publication of production, processing and recycling data is an important instrument for obtaining a continuous picture of the development of plastics in South Africa. The plastics industry cannot be discussed without looking at end-of-life solutions for plastics waste. This instrument applies not only to the public sector and businesses but also to private consumers. Because of the importance of both the public and economic sector, and because of the demand for such information, Plastics SA commissioned the study for 2019, following on previous studies.

The study delivers a material flow analysis for plastics in South Africa and covers the:

- Production, processing and consumption of virgin plastics;
- Plastics recycling; and
- Plastics recyclate and its areas of application.

2  DOMESTIC CONSUMPTION

In 2019, South Africa converted 1 841 745 tons of polymer into plastics products, a decrease of 1.8% from 2018.

This is the total of locally produced polymers, imported polymers and recycled polymers sold to local convertors in South Africa, and excludes exported polymers, virgin and recycled. Locally recycled polymer made up 18.3% of the total domestic consumption.
The direct contribution to GDP in 2019 was 2.3% with an 18.5% contribution to the Manufacturing GDP. Very few plastics articles are functional on their own – they usually form part of a larger, more valuable product. A plastic bumper, on its own, has no value, but added to the front and rear of a passenger vehicle, adds considerable value. South Africa’s plastics industry is dominated by the packaging industry, which accounts for 49% of the local market followed by Building & Construction and Agriculture.

3 RECYCLING

In 2019, South Africa recycled 352 500 tons of plastics back into raw materials. Of this, 14 755 tons were exported to converters elsewhere; 337 745 tons were converted in South Africa.
Some of the key findings are listed below. (All findings are for 2019, unless stated otherwise – for publication purposes, the figures are rounded to the nearest 100 tons.)

- Total plastics production amounted to **1 841 700 tons** in 2019.
- The total quantity of recyclate used in local manufacturing was **337 700 tons** of which 119 000 tons were used to manufacture new packaging items.
- In total, **503 600 tons** of plastics waste were collected for recycling, including 362 800 tons of packaging and 17 000 tons of imported recyclables from neighbouring- and other countries - an **input recycling rate of 45.7 %**.
- The tonnages recycled into raw material again were the equivalent of 24 million two-litre milk bottles every day!
- **R 2.065 billion** was injected into the informal sector through the purchasing of recyclable plastics waste, creating 58 750 income opportunities.
- Plastics recycling saved 244 300 tons of CO₂ – the equivalent emissions of 51 000 cars in the same year.
- **Tonnages landfilled**, material not collected and value chain fall out, **decreased by 2.2 %** since 2018.
- Recycling rates will increase as brand owners and their manufacturers commit to increased levels of **recycled content** in their products.

4 **RECYCLABLE MATERIALS**

The largest quantity - 70.4% - of recyclables came from **landfill** and other post-consumer sources in 2019. This is the big difference between South Africa and other developed countries: in the European community, local government and the plastics industry are all involved in extracting the recyclables from the waste stream as early as possible; in South Africa, recyclables are mostly sourced from landfill at a high cost.

On a daily basis, recycling facilities deal with fairly large quantities of one or two materials at most. Different plastics cannot be mixed. Different grades should not be mixed, i.e. extrusion grade and injection grade should be kept separate as the recyclate would be used for different conversion processes. Sorting of incoming materials is labour intensive.
The largest volume, 57%, of incoming materials was sourced from the formal sector, collectors and waste management companies – mostly baled but also some loose materials.

Although very critical to the value chain, only 3% of recyclables were sourced directly from waste pickers and walk-ins. The recyclers are not geared to buy small volumes of unsorted, unbaled material. Waste pickers sell their materials to collectors and waste management companies who compact the material before selling it to the recyclers.

5  RECYCLING VALUE CHAIN

The current, relatively well-developed recycling value chain is based on the reclaiming of recyclables from municipal solid waste - represented by the double green lines in the value chain sketch and to a lesser extent the solid green lines. It is unknown, what the actual volumes of recyclable waste sourced from litter, illegally dumped waste and waste discarded into waterways are, but probably negligible.

![Recycling Value Chain Diagram](image)

*Figure 3: Recycling value chain without any separation at source*

Any solution to deal with plastics in the environment will have to look at two different source categories:

A. Low value, less likely to be recycled, portion of the formal waste value chain, as well as
B. Plastics not captured in the value chain.

For (A), technology solutions will have to be found. The (B) waste portion will be the challenge to capture, sort and add value to.

6 RECYCLED POLYMERS

In 2019, South Africa recycled 352 500 tons of material into raw material. This is 0.1% better than in 2018 in terms of tonnages turned into raw material. This does not reflect the emphasis on recycling, the magnitude of the awareness campaigns or the industry’s efforts, but is rather an indication of the economic challenges that the manufacturing industry experienced in general.

![Figure 4: Plastics recycled in South Africa in 2019 in tonnages](image)

7 JOB CREATION

Approximately 58 750 informal income opportunities were sustained through plastics recycling in 2019. These include waste pickers and employees of the smaller entrepreneurial collectors. At an average buying price of R4.10 for polyolefins, a total of **R2 065 million** was contributed to the informal collection industry by the recycling industry.

![Figure 5: Employment in plastics recycling](image)
8 END MARKETS FOR RECYCLATE

Suitable end-marks are critical for the sustainability of the plastics recycling industry. Recyclate finds markets in most local market sectors. Only 4.1% of the recyclate was exported as raw material to plastics convertors in Asia and SADC region.

Brand owners and retailers have committed to recycled content in packaging. Currently, only rPET is used for food contact. Recycled PP, PE-LD and PE-HD are used in non-food applications for personal care and domestic applications. Recycled flexible packaging was the largest market for recyclate in 2019 with 24% of all recycled materials finding a market in shopping bags, refuse bags and general flexible packaging.

![Figure 6: Domestic market applications in 2019 for recycled materials, expressed in tonnages](image)

The rigid packaging market absorbed 10% of all locally recycled materials. It was mainly for rPET in bottles (food and non-food), beverage bottles and sheeting for thermoformed applications. PE-HD is used for crates, domestic- and personal care bottles and jars.

9 RECYCLING OPERATIONS

There were 288 recycling operations recorded in South Africa at the end of 2019. Of the recyclers surveyed, 36% processed post-consumer materials and granulate, wash and pelletise. Only a
portion of these recyclers can successfully process landfill-sourced material. The high capital investment cost of proper wash plants is feasible only for larger operations.

Cleaner post-industrial and pre-consumer materials do not have to be washed and the processors will only granulate and pelletise - 22% of the recyclers in the sample.

52% of the recyclers, who recycled 60% of the tonnages in 2019, are in Gauteng. The number of larger recyclers (tons per recycler) in the Western Cape is higher than in other provinces; 11% of the total number of recyclers are in the Western Cape, recycling 14% of the total tonnages. Recycled tonnages have seen a steady increase in Gauteng in the last three years. Most of the end-markets are in Gauteng.

The tonnages recycled in a specific province are not necessarily an indication of the source of the recyclables. Recyclable waste is transported long distances and recyclers source materials in the larger centres as well as in their immediate surroundings. Return trips transport recyclable materials to the reprocessor when recyclate is delivered to converting customers.

![National distribution of plastics recyclers in 2019](image)

*Figure 7: National distribution of plastics recyclers in 2019*
10 RECOMMENDATIONS

Plastic waste is a significant, global problem. The authors of the “Breaking the Plastic Wave Report”¹ believe that the industry can help build a better future by eliminating waste through ongoing public-private commitments, collaboration, innovation and investment.

There is no single solution to end ocean plastic pollution. Upstream and downstream solutions should be used simultaneously.

There is an urgent need to invest in waste management infrastructure. Some of the recommendations listed are to develop and expand plastic-to-plastic conversion, or advance recycling technologies, and to eliminate unnecessary packaging. The 2040 goals are:

- double mechanical recycling capacity globally,
- scale-up collection rates in middle- and low-income countries,
- reduce waste exports into countries with low collection and high leakage, and
- reduce micro plastic leakage.

Plastics help improve hygiene, nutrition and living standards around the world. In working to end plastic waste, we must seek to maintain the societal benefits made possible through plastics whilst minimising their environmental impact.

“Breaking the Plastic Wave” is not about fighting plastic, it is about fighting plastic pollution. We must realise that although the scale-up of recycling and waste management is critically needed in South Africa and is the cornerstone of a circular economy, these efforts alone will not be enough to avoid plastic pollution.

¹ Breaking the Plastic Wave: A comprehensive assessment of pathways towards stopping ocean plastic pollution; Systemiq and The Pew Charitable Trusts; University of Oxford; University of Leeds; July 2020; 78 pp, illus;
EXECUTIVE SUMMARY

ALL PLASTICS 2019

Total plastics manufactured
- 1 841 745 tons
Locally produced from virgin and recycled polymers

Recyclable material in waste stream
- 1 102 611 tons

Recyclable plastics not recovered from waste stream
- 599 021 tons

Other materials from Municipal Solid Waste Stream

Environment

Incineration with/without energy recovery

LANDFILL

Plastics recovered from waste stream
- 503 590 tons

Obsolete collected material and waste to landfill
- 9%

Energy recovery (formal and informal)
- 0.2%

Re-use
- Unknown

Exported to be recycled into raw material elsewhere
- 0.4%

Procured by recyclers to be turned into raw materials
- 90%

Available as alternative raw material
- 352 500 tons

Sorting waste to landfill
- 9%

Processing waste to landfill
- 14.7%

- Examples are water reticulation, sewage infrastructure, landfill liners, carpets, laminated flooring, wind turbines, chemical storage, ventilation ducting, etc.
- Destructive applications, e.g. ignitor cord, detonating fuse, coffins, wear and friction pads in civil construction

- No formal waste collection
- Logistic challenges in rural and out-lying areas
- Untar and poorly managed waste

Figure 8: Schematic representation of the methodology followed for 2019 input recycling rates
COMPLETED SURVEY REPORT 2019

The complete survey report is available to purchase from Dianne Blumberg (dianne.blumberg@plasticssa.co.za)
Cost: R700 excl. VAT.