TRADE & INDUSTRIAL POLICY STRATEGIES

INDUSTRY STUDY

South Africa's International Trade in Plastics

July 2024

TIPS industry studies aim to provide a comprehensive overview of key trends in leading industries in South Africa. For each industry covered, working papers will be published on basic economic trends, including value added, employment, investment and market structure; trade by major product and country; impact on the environment as well as threats and opportunities arising from the climate crisis; and the implications of emerging technologies. The studies aim to provide background for policymakers and researchers, and to strengthen our understanding of current challenges and opportunities in each industry as a basis for a more strategic response.

This industry study reviews South Africa's international trade in plastics, in terms of both imports and exports. It looks at global plastics production and use, as well as trends in trade.

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1. GLOBAL PLASTICS PRODUCTION AND CONSUMPTION

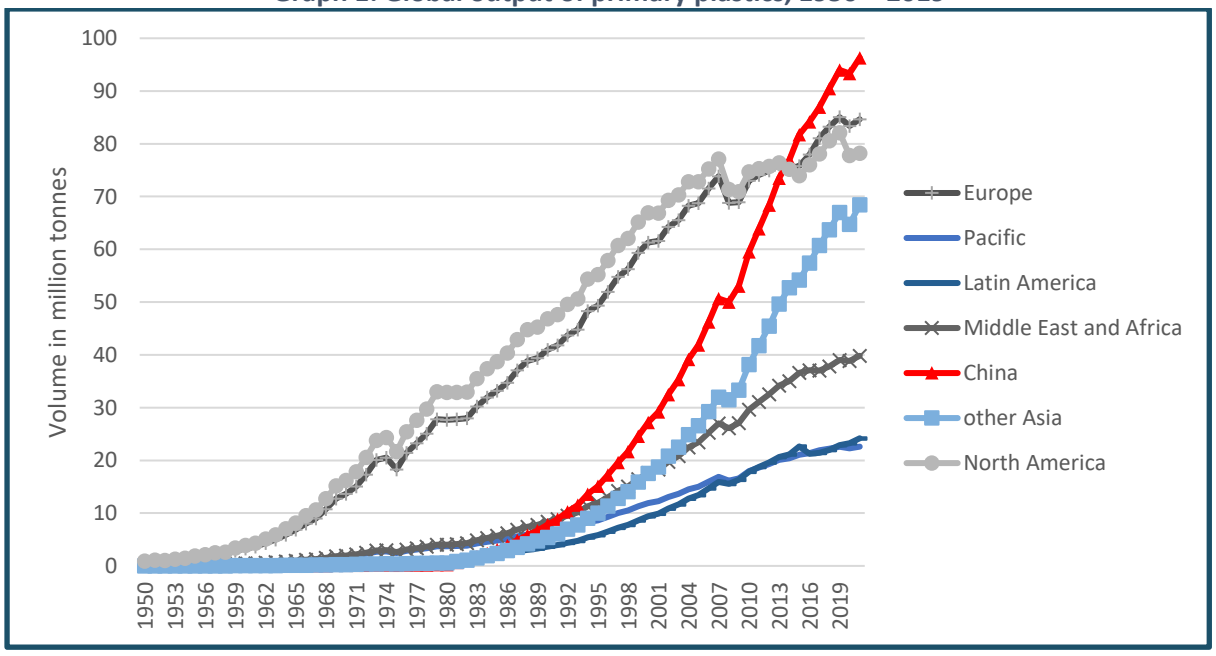
The dynamics of plastic polymers, products, and waste are interlinked with economic activity. Periods of low economic output typically correspond to a reduced supply of plastics (OECD, 2022). For instance, Graph 1 illustrates that during significant downturns – such as the Global Financial Crisis of 2008 and the strict trade restrictions resulting from COVID-19 related regulation in 2020 – resulted in diminished economic activity, consequently lowering the supply and demand of plastics. The relationship between economic output and plastic supply remains the primary driver of changes in the global production of plastics. However, other factors contribute to these fluctuations, including technological advancements and structural shifts. Technological developments and structural changes often lead to increased use of plastic materials in non-traditional sectors or the adoption of innovative applications within existing industries.

In addition, while population growth rates play a minor role in changes in plastics production, their impact varies regionally. In regions with high population growth rates, such as Africa, the influence on plastic demand is more pronounced compared to regions like Europe. However, on a global scale, population growth remains a relatively minor factor influencing plastic demand.

Graph 1 illustrates that the global supply of plastics has been on a steady upward trajectory, doubling approximately every nine years. Notably, China has emerged as a powerhouse in plastic production, increasing its output from 0.680 million tonnes in 1981 to 96 million tonnes in 2019, surpassing both the United States and Europe to become the largest producer of primary plastics. This surge in Chinese plastic production is primarily attributed to structural changes within its economy.

Other regions in Asia have also experienced significant growth, with plastic output increasing from 0.84 million tonnes in 1981 to 68 million tonnes, aligning closely with China's trajectory and comparable to the production levels of North America and Europe. Conversely, North America witnessed rapid growth between 1954 and 2007, but its expansion has since slowed down.

Graph 1: Global output of primary plastics, 1950 – 2019

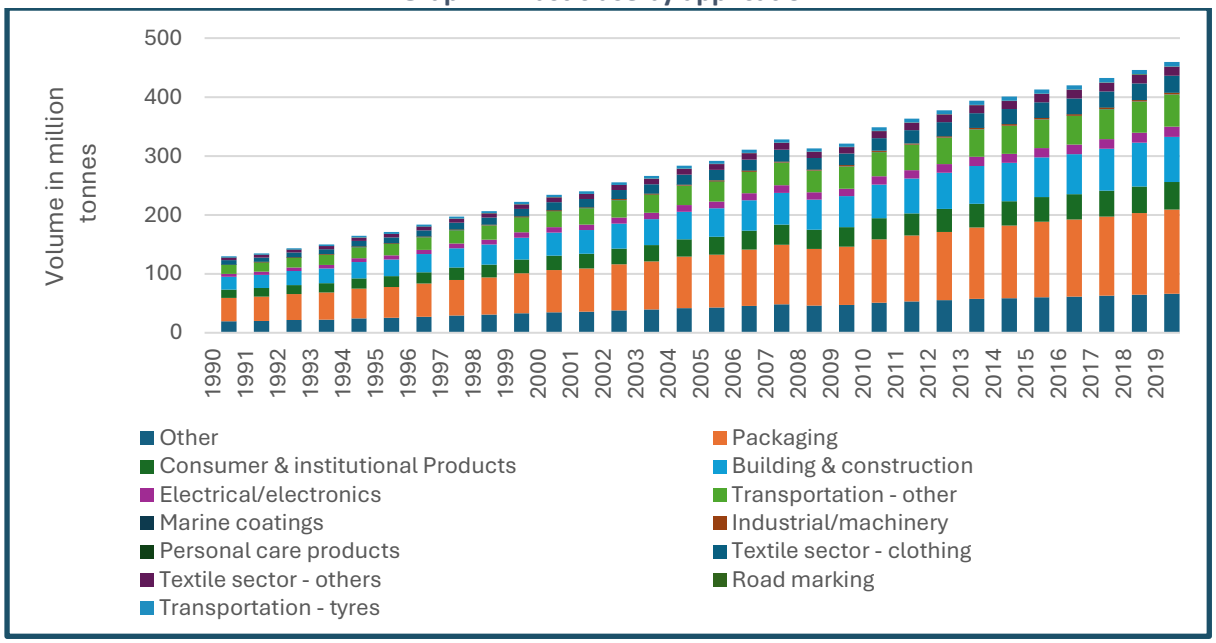


Source: Calculated from OECD iLibrary. Plastic production by region dataset. Available from https://stat.link/r9vlpe.

Internationally, the packaging sector remains the largest consumer of plastic, accounting for 31% of global consumption, while in South Africa, it represents 50% of total usage (Mordor Intelligence, n.d.). Following are the building and construction (7%) and the automotive and transportation sectors (7%), fuelled by factors like a burgeoning global economy and material sourcing by Original Equipment Manufacturers (OEMs) and brand owners (KPMG, 2023). Sectors like mining, engineering, and electric applications have also shown growth.

Graph 2 illustrates an increasing trend since 1990: the escalating demand for plastic products across various industries has been particularly driven by packaging (31%), building and construction (17%), and the automotive and transportation industry (10%). Over the observed period from 1990 to 2019, there has been a consistent uptick in plastic usage in packaging, except for 2008, increasing by 250% from 40 million tonnes to over 140 million tonnes by 2019. Likewise, there have been significant increases in plastic consumption within the building and construction industry, increasing from 22 million tonnes in 1990 to 77 million tonnes in 2019. In the transportation sector, the utilisation of plastic surged from 15 million tonnes in 1990 to 54 million tonnes in 2019, mainly attributed to the substitution of metals with engineering polymers, a trend highlighted in Staits Research's 2021 plastic market report. This transition is exemplified by Volkswagen's adoption of polymers for crafting crankshaft covers, formerly composed of aluminium (Plastics Today, 2013). The innate lightweight characteristics of plastics have made them indispensable across various transportation applications, including glazing, dividers, light diffusers, and headliners.

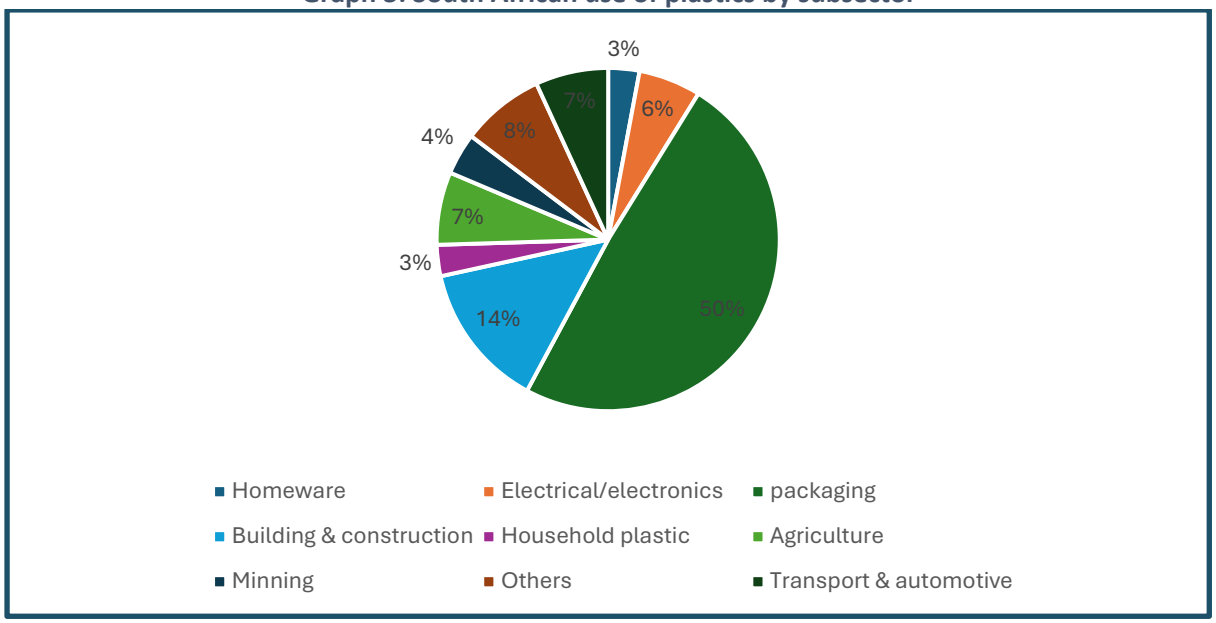
Graph 2: Plastic use by application



Source: Calculated from OECD iLibrary. Plastic. Plastic use by application. Available from https://www.oecd-ilibrary.org/environment/data/global-plastic-outlook_c0821f81-en.

In the South African context, as of 2022, plastic consumption was primarily driven by packaging, representing 50% of the total consumption of locally produced plastics (Plastics SA, 2022). Consistent with global patterns, the building and construction sector accounted for 14%, while the transportation and automotive industries each contributed 7% to overall plastic consumption trends (see Graph 3).

Graph 3: South African use of plastics by subsector



Source: Calculated from Plastics SA Annual Review, 2021-2022.

2. INTERNATIONAL TRADE

This section explores the flow of plastics across borders, analysing both exports and imports of primary plastics and finished plastic products. It further explores major players in the global market, identifies key trends within South Africa's plastic trade, and examines the influence of trade agreements and policies on the sector's development

2.1. Supply side trends

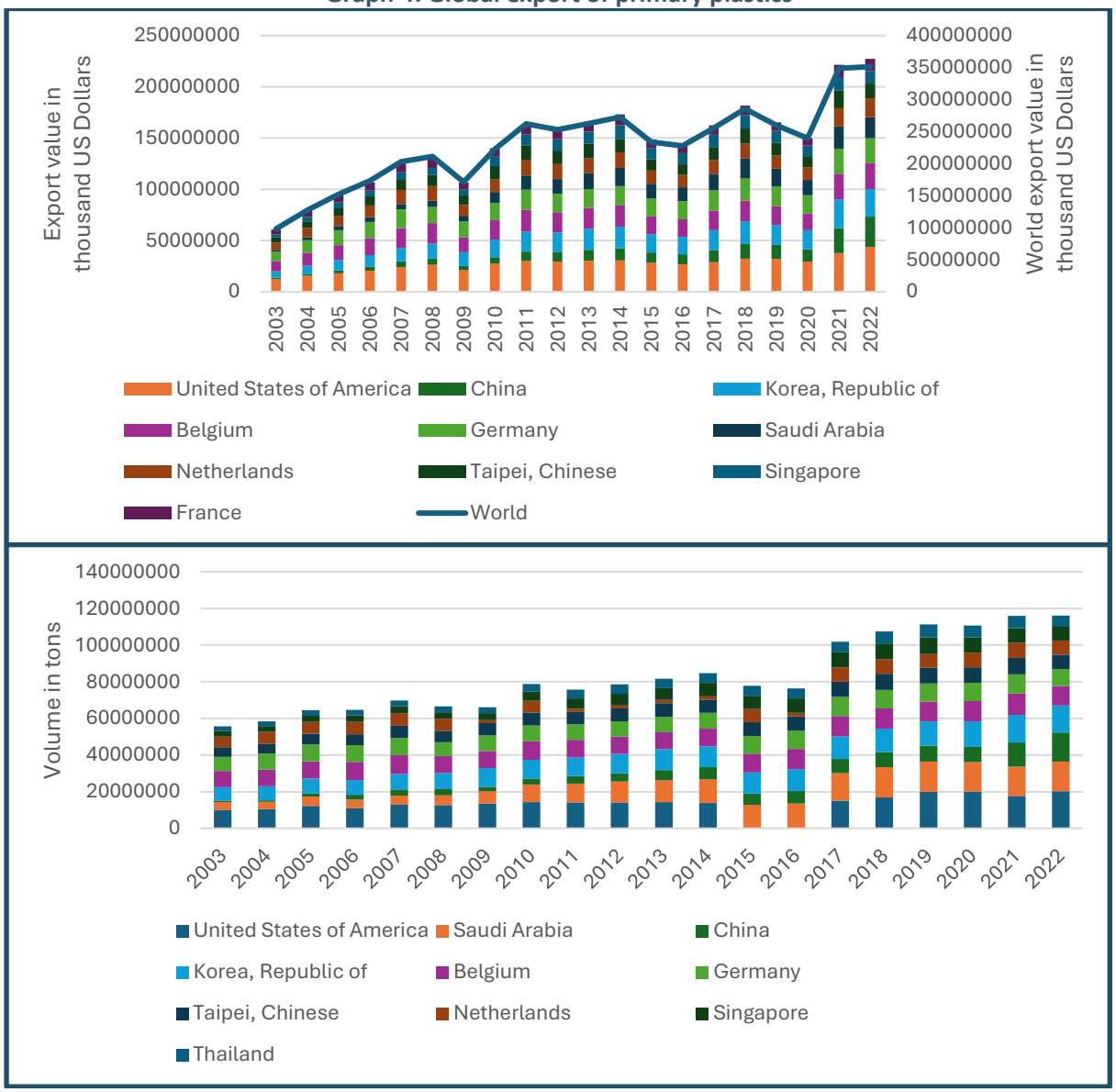
The global export of primary plastics has had an increasing trend since 2003, increasing from US$95 billion to US$350 billion in 2022, though this trend has fluctuated since its recovery from the Global Financial Crisis, in 2010. Graph 4 illustrates the three main disruptions in the increasing trend of exports, in 2009, 2016 and 2020. These points are also observed in the production and demand for plastics (both primary and products). However, what is noticeable is the recovery of exports in 2021, with exports of primary plastics increasing from US$250 billion to US$350 billion, surpassing the pre-COVID-19 level of US$300 billion. This increase correlates with the demand for plastics used in the manufacturing of packaging. During the COVID 19 pandemic single-use plastic, mainly in packaging, increased and drove demand for packaging when economic activity resumed after strict lockdowns.

The United States in 2022 remained the highest exporter of primary plastics, exporting US$43 billion up from US$38 billion in the previous year. This was followed by China for the first time exceeding the Republic of Korea, exporting US$30 billion up from US$24 billion in 2021. Unlike most countries in the top 10 exporters of primary plastics, which either increased exports or exported the same, the Republic of Korea experienced a slight decline in exports of this group of products, falling by 3%.

The top 10 exports collectively rose from just under 60 million tons to less than 120 million tons during this period. China experienced a remarkable surge of 2530%, increasing from 738 thousand tons to 15.9 million tons. Similarly, Saudi Arabia’s exports soared by 289%, climbing from four million to 16 million tons, while the Republic of Korea doubled its export volume, going from 7.3 million to 14.6 million tons. The United States experienced an increase of 98%, from 10.2 million to 20.2 million tons.

Despite the sharp increase in primary plastic exports, the composition and structure of primary plastic exports (by type of plastics) has undergone minor changes. Polymers of Ethylene (PE) increased its share of exports of primary plastics from 25% in 2004 to 29% in 2022. In absolute terms, PE peaked in 2022, reaching US$374 billion. In contrast, the share of Polymers of Styrene fell from 12% in 2004 to stabilise at 8% in 2016.

Graph 4: Global export of primary plastics



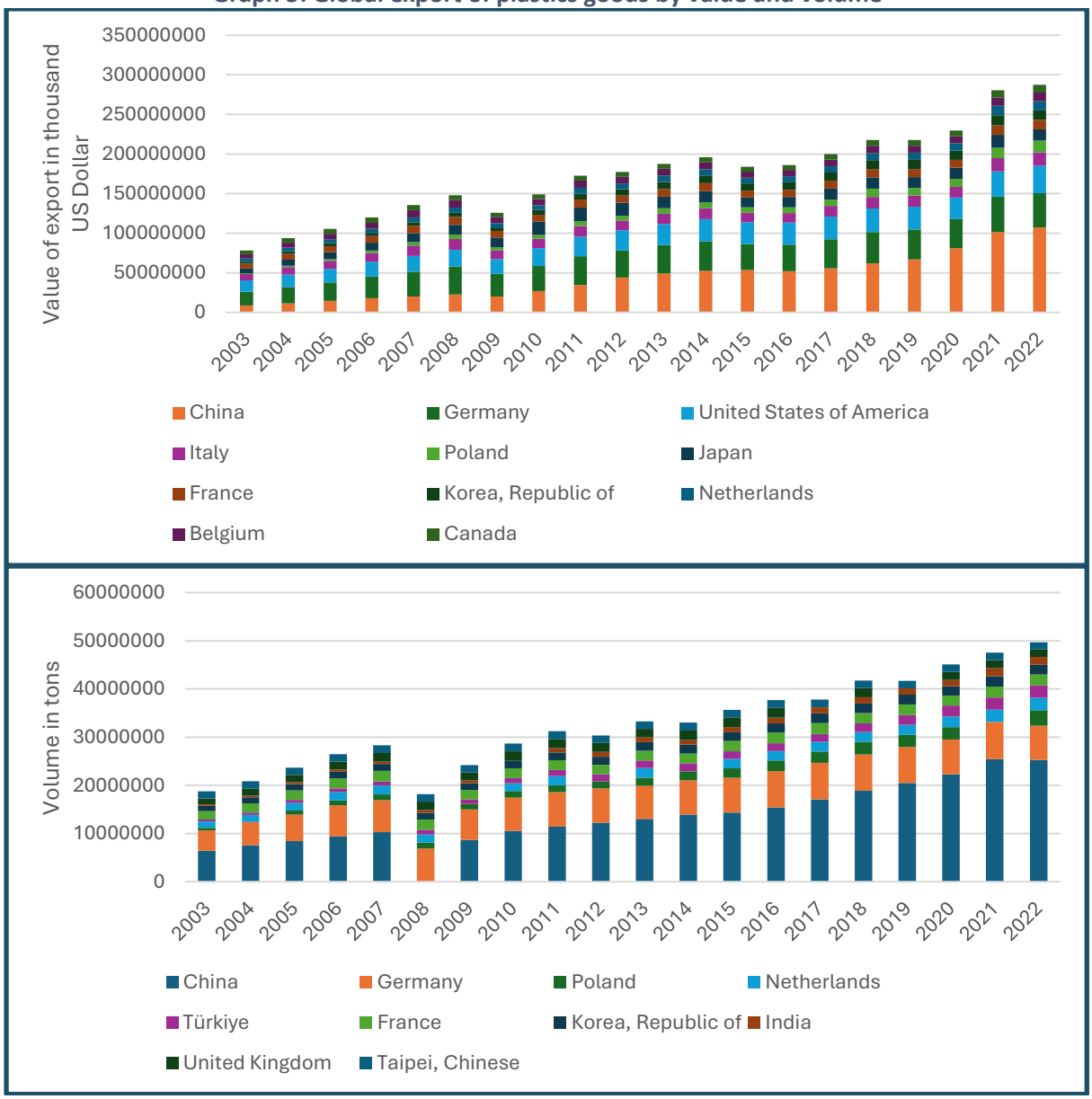
Source: Calculated from Quantec EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za. Note: Mirror data for the US, Belgium and the Netherlands.

The export of plastic products has experienced significant growth, surging by 200% from US$140 billion in 2003 to US$420 billion in 2019. Since 2012, China has increasingly dominated these exports, commanding a 25% share by value in 2022, marking a 143% increase from 2012 when it surpassed Germany (see Graph 5). While Germany historically held the top position as the key exporter of plastics, it is now the second largest exporter of plastics with a share of 10% in 2022. Other major exporters include the US, contributing 8% by value to the global market in 2022. In regard to volume, China increased over the observed period by 296%. Other key emerging countries in the exports of these product include Turkiye (546%), Poland (519%), and India (436%); however, in 2022

these countries only accounted for 5%, 6.5% and 3% of the top 10 exporting countries. These leading exporting nations are home to key players in the global plastics production landscape, with concentrated investments in the plastics value chains. The endowment of fossil fuel resources, coupled with substantial investments in research and development of plastic materials and infrastructure, has enabled dominant countries to not only develop the plastic subsector but also to establish a significant comparative advantage.

In 2022, articles of plastics (24%), plastic sheets (17.5%), and articles of conveyance (17%) collectively comprised 58% of total plastic product exports. These product group encompass a wide range of plastic products or inputs to the manufacturing of a variety of plastic products, including packaging, domestic ware, and other plastic artifacts. While it was expected that plastic waste would constitute a significant portion of exports, its share of global exports is low, accounting for less than 5% of plastic product exports, over the observed period.

Graph 5: Global export of plastics goods by value and volume



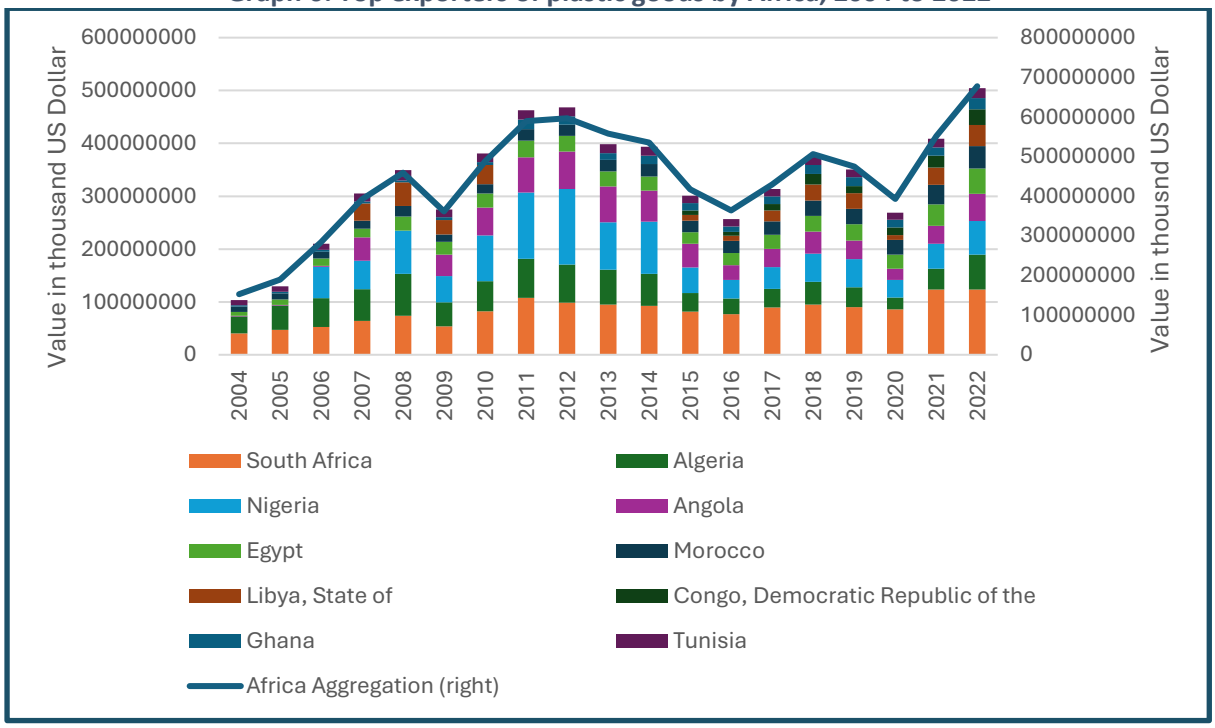
Source: Calculated from Quantec EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za. Note: while there are missing data in volume, the graph shows a general trend.

Graph 6 shows that in 2022 Africa's exports of plastic goods accounted for 2.7% of the global market, totalling US$667 million. Export trends in Africa have closely mirrored global patterns. Over the observed period, the overall trend exhibited a notable 22% increase, surging from US$152 billion in 2004 to US$677 billion in 2022. However, there were downturns, notably a 21% decline in 2009 (from US$459 billion to US$361 billion), a 42% drop between 2012 and 2016 (from US$589 billion to US$ 364 billion), and a further 22% decrease in 2022 (from US$506 billion to US$393 billion).

The region's exports were predominantly led by South Africa, which accounted for 18% of the export share of this product category within the region, followed by Algeria with 10%, Nigeria with 9%, and Angola with 8%. Over the observed period, South Africa's export of this product group surged by 32.5%, climbing from US$40 billion to US$123 billion. Despite this substantial increase, its share of exports has remained relatively stable at around 19% of the region's total export of this product category. Conversely, Algeria's share of exports has experienced a decline, dropping from 20% in 2004 to 9% in 2022.

This product category exhibits significant intra-regional exports, particularly from the top five exporters. South Africa, for instance, primarily directs its exports of this product category within the Southern African Development Community (SADC), representing a substantial 73% of total exports. Similarly, Algeria exports a significant 78% within the region, while Angola exports 74% of this product to neighbouring countries.

Graph 6: Top exporters of plastic goods by Africa, 2004 to 2022

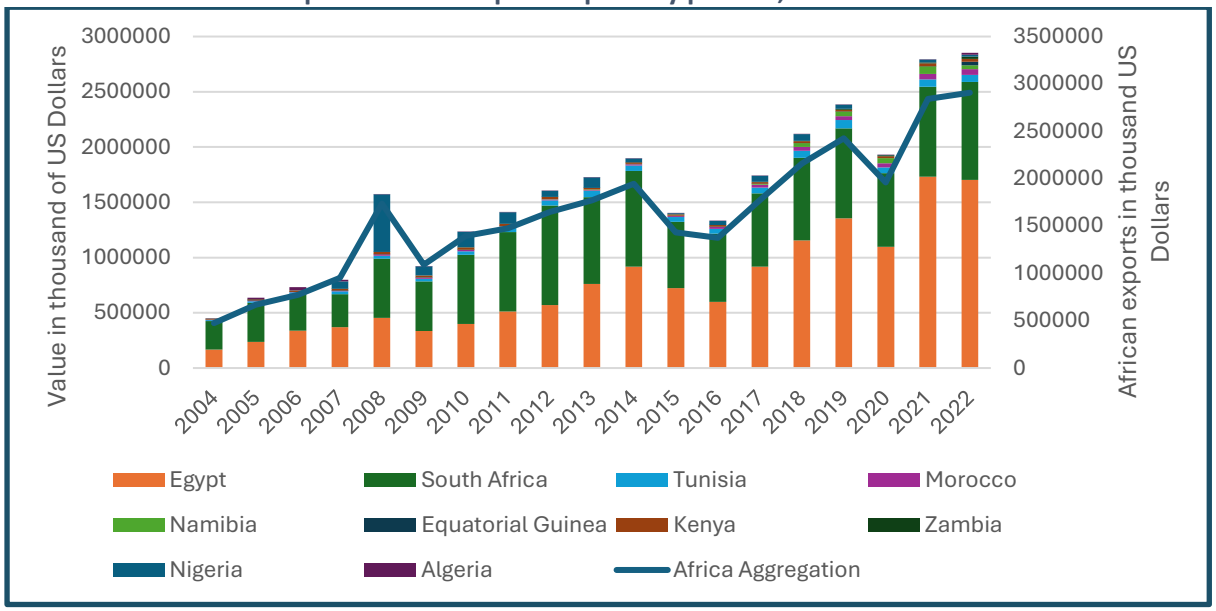


Source: Calculated from Quantec. EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

Exports of primary plastics in Africa have shown a steady upward trend, escalating from US$474 million in 2004 to a significant US$2.9 billion in 2022. Throughout this period, the primary contributors to these exports have been Egypt, commanding 59% of the market share in 2022, and South Africa, with a 30.5% share in the same year. Together, these two nations collectively account for a substantial 89% of the total export volume within this product category.

Egypt's export share has witnessed a notable surge, climbing from 35% in 2004 to the commanding 59% observed in 2022. Meanwhile, South Africa has experienced a proportional decline, sliding from a 54% share in 2004 to 30.5% in 2022. This shift underscores Egypt's increasing dominance in the export market, largely at the expense of South Africa's diminishing share (see Graph 7).

Graph 7: African export of primary plastics, 2002 to 2022.



Source: Calculated from Quantec. EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

2.2. Demand-side trends

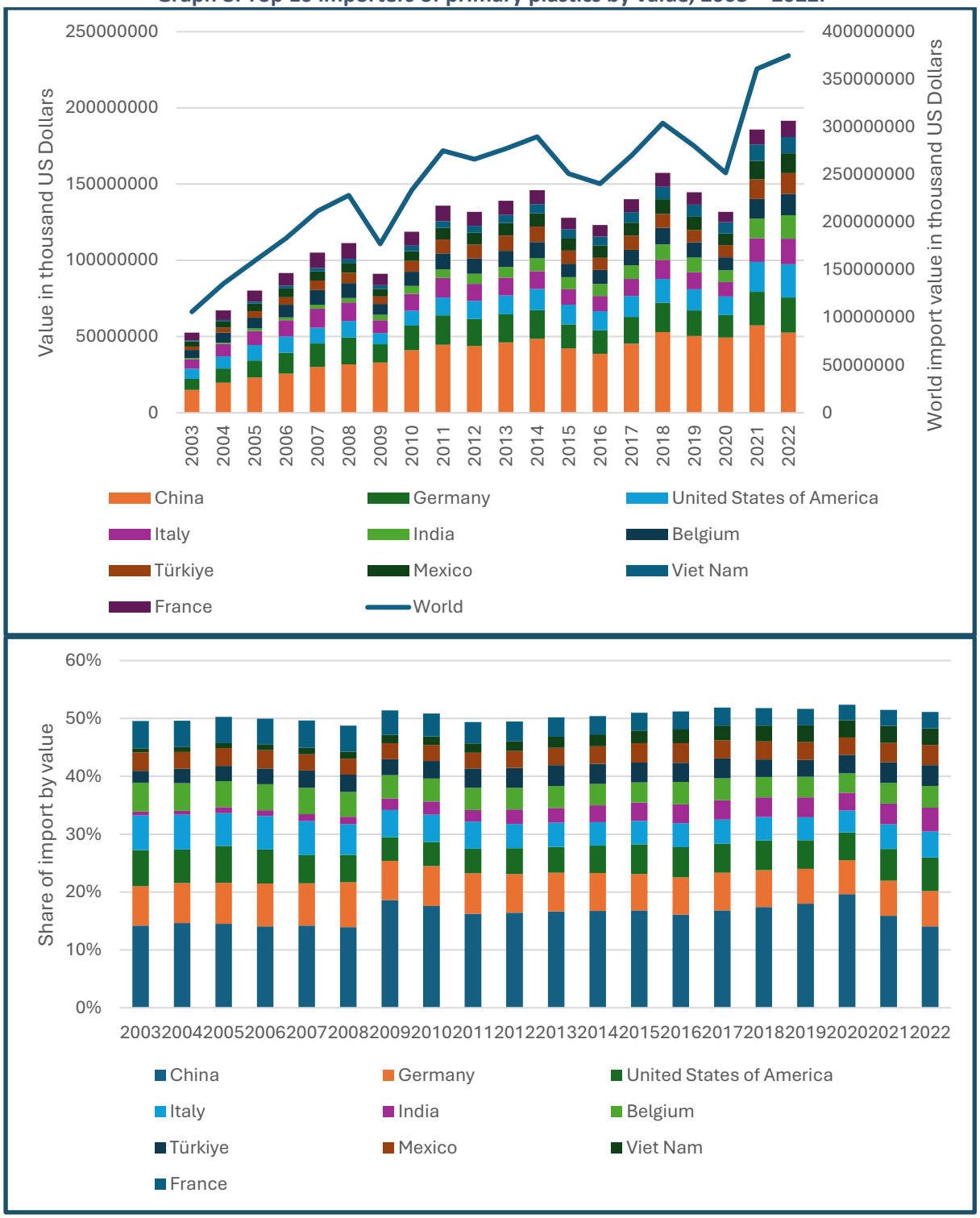
Similar to the export trends, Graph 8 shows the global imports of primary plastics have experienced an increasing trend, as well as three major downturns, in 2009, 2016 and 2019. These periods marked significant downturns in the global economy.

In 2009, the import of primary plastics plummeted by 29%, mirroring the 5% year-on-year decline in global GDP. Similarly, in 2016, the worldwide import of primary plastics dropped by 15%, coinciding with a subdued economy which had decreased by 5%. By 2019, the global economy had already begun to decelerate, and with the onset of the COVID-19 pandemic, the world GDP contracted by 3%, precipitating an 11% reduction in primary plastic product imports.

Over the observed period, 2003 -2022, the list of the top 10 global imports of primary plastics has remained largely consistent. The top 10 global importers of primary plastics have since 2003 accounted for around 50% of global plastic imports. Imports have been dominated by China which has over the observed period driven global import volumes, mainly because China is the largest consumer of primary plastics. Outside of China, Germany, and the US are the other key importers.

In 2022 China imported US$ 53 billion (14%), Germany US$ 23 billion (6%) while the US imported US$ 22 billion (5.8%). Import trends have remained stable, with the exception of Türkiye and Viet Nam which have gained global market share, rising by 2% points, whereas Italy and France declined by 2% points.

Graph 8: Top 10 importers of primary plastics by value, 2003 – 2022.

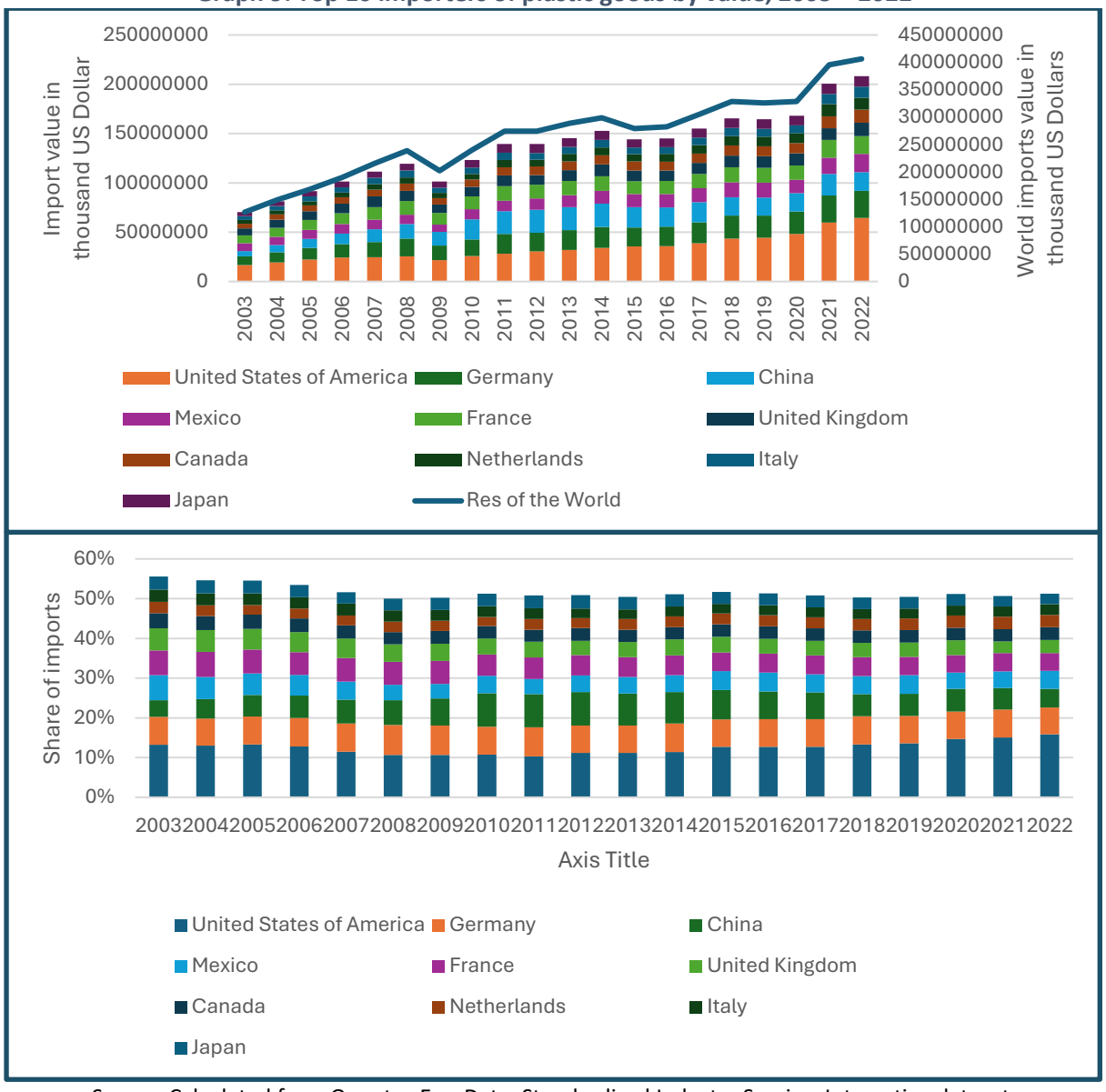


Source: Calculated from Quantec. EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

While there has been an absolute increase in imports of plastic goods, the top 10 importers of plastic goods have declined in their share of imports from 55% in 2003 to 51%, falling by 4% points. The dominant players include the US, which in 2022 imported US$ 64 billion (16%), Germany US$27 billion (7%) and China US$19 billion (5%). During the observed period, imports from the US have steadily increased from US$16 million (13%) to 64 million (16%), in 2022.

Germany also witnessed a steady increase from US$ 8.9 billion (7%) to US$27 billion (7%). While China in contrast experienced an increase between 2003 and 2014, increasing from US$5 billion to US$23 billion, before gradually declining to US$19 billion in 2022. China has undergone a significant transformation in managing plastics, marked by a surge in regulations particularly in waste plastic. For instance, in 2017, China announced a further ban on imports of most plastic waste. Nonetheless, the decline in the share of the top 10 imports of plastics goods has been largely attributed to the decline in the share of imports of these products by the United Kingdom, which fell by 3% points over the observed period (see Graph 9).

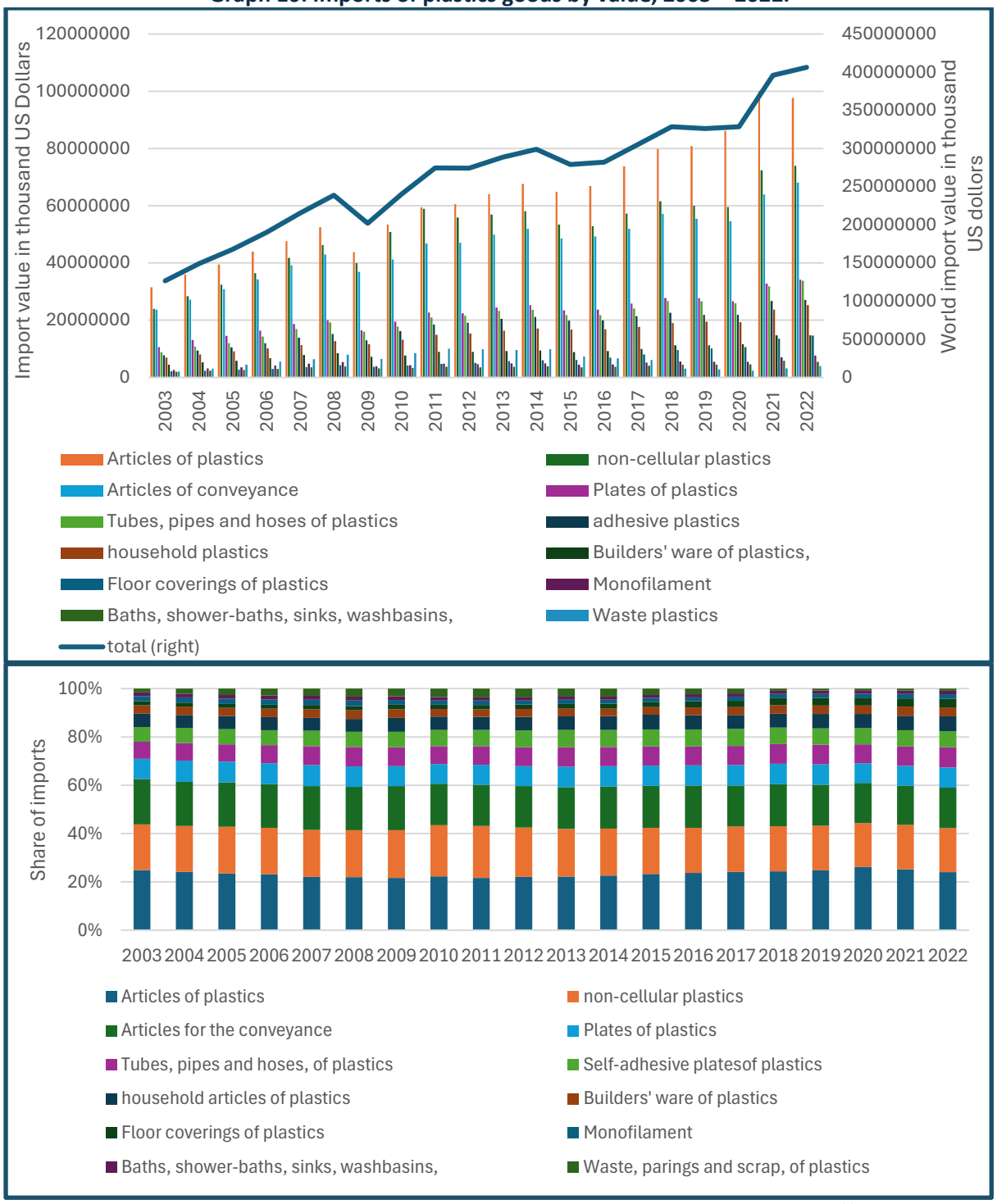
Graph 9: Top 10 importers of plastic goods by value, 2003 – 2022



Source: Calculated from Quantec EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

Despite a steady increase in the absolute import value of plastic goods, increasing from US$126 billion in 2003 to US$406 billion in 2022, the composition of imports has remained relatively stable over time, as shown in Graph 10.

Graph 10: Imports of plastics goods by value, 2003 – 2022.



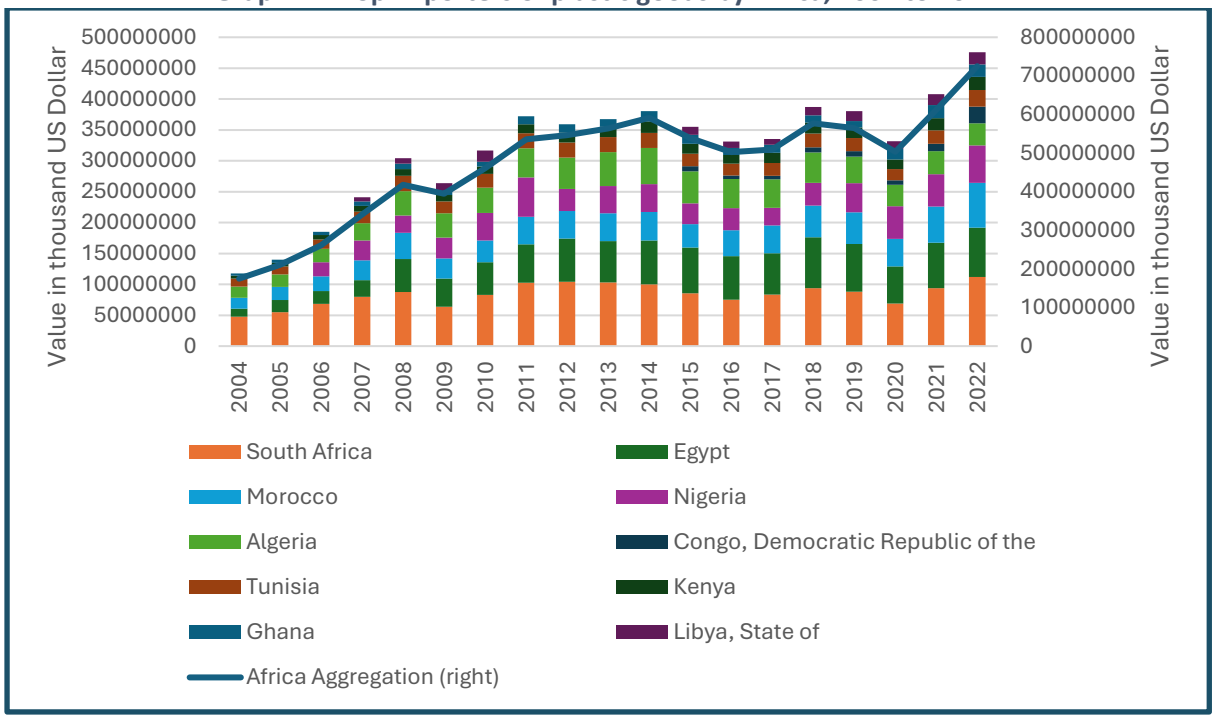
Source: Calculated from OECD iLibrary. Plastic. Plastic use by region. Available from https://www.oecd-ilibrary.org/environment/data/global-plastic-outlook_c0821f81-en.

Global imports of plastic goods have been predominantly comprised of articles of plastics, non-cellular plastics, and articles of conveyance, collectively accounting for approximately 60% of total plastic goods imports. In 2022, countries around the world imported a total of US$97 billion worth of articles of plastics, constituting 24% of all plastic goods imports. Non-cellular plastics amounted to US$73 billion (18%), while articles of conveyance totalled US$68 billion (17%).

The import trend of plastic goods exhibited a similar trend as that of primary plastics with disruptions, in 2009 coinciding with the global financial crisis and, in 2016, coinciding with the subdued global economy which led to a decrease in total imports of the product. Plastic use declined in line with the reduction in demand and economic activity. In 2009, imports of plastic goods fell by 18%. In 2014, they fell by 7.1%. While 2020 also saw declined economic activity, [single] plastic use in the healthcare industry significantly increased, countering the decline in plastic use in other subsectors of the economy.

Graph 11 shows the international trade of primary plastics and plastic products has experienced prominent shifts and expansions over time. While major players like the United States, China, and Germany maintain significant roles, the evolving composition of exports and imports underscores the changing dynamics of the global plastic industry.

Graph 11: Top importers of plastic goods by Africa, 2004 to 2022.



Source: Calculated from Quantec. EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

In 2022, Africa's exports of plastic goods accounted for 2.7% of the global market, totalling US$667 million. Export trends in Africa have closely mirrored global patterns. Over the observed period, the overall trend exhibited a notable 22% increase, surging from US$152 billion in 2004 to US$ 677 billion in 2022. However, there were downturns, notably a 21% decline in 2009 (from US$459 billion to US$ 361 billion), a 42% drop between 2012 and 2016 (from US$ 589 billion to US$364 billion), and a further 22% decrease in 2022 (from US$506 billion to US$393 billion).

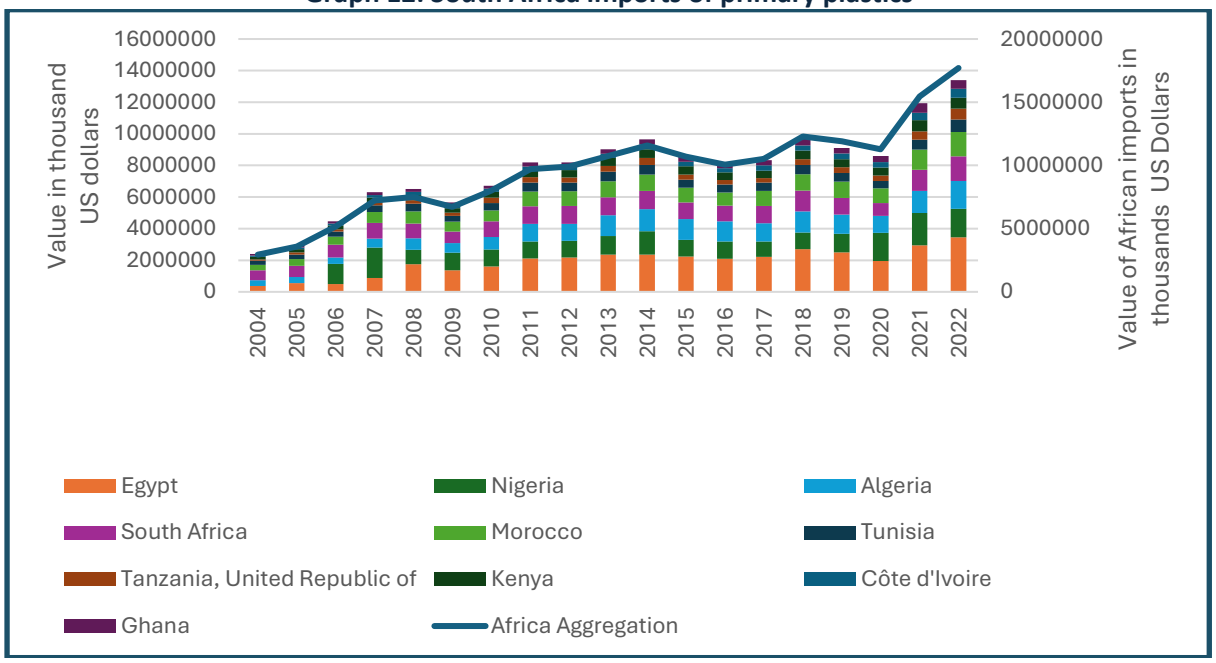
In terms of imports, Africa's imports of plastic goods have increased significantly since 1994, rising from US$174 billion to US$725 billion by 2022, marking a 417% increase. As previously observed, import trends mirror those of exports, experiencing downturns within the same periods due to similar underlying factors. However, it is noteworthy that while import downturns occurred, they were not

as pronounced as those witnessed for exports. For instance, in 2009, imports decreased by a modest 5% compared to a substantial 21% decline in exports during the same year.

Unsurprisingly, South Africa has consistently emerged as a dominant player in imports. In 2022 alone, the country imported goods worth US$111 million, constituting 15% of the total imports within the product category. A significant portion of these imports originate from China (as referenced in Diale, 2024). Other key importers include Egypt, which has steadily increased its share of imports from 7% in 2004 to 11% in 2022. Morocco (10%), Nigeria (8.3%), and Algeria (5%), collectively comprising the top five import destinations for the product within the region.

Imports of primary plastics have seen a surge over the observed period, soaring from US$3.6 billion in 2004 to US$17.7 billion in 2022. The top five import countries collectively command 57% of the total imports within this product category. Egypt leads the pack, accounting for 19% of total imports at US$3.4 billion, closely followed by Nigeria and Algeria, both importing 10% of the total, with figures standing at US$1.8 billion and US$1.79 billion respectively. South Africa also features prominently, importing 9% of the total at US$ 1.5 billion (see Graph 12).

Graph 12: South Africa imports of primary plastics



Source: Calculated from Quantec. EasyData. Standardised Industry Service. Interactive dataset. Available from www.easydata.co.za.

2.3. Policy context

This section reviews the implications of shifting global trade policies, specifically the African Continental Free Trade Area (AfCFTA) and the European Union's Carbon Border Adjustment Mechanism (CBAM).

2.3.1. CBAM

The European Union has proposed a Carbon Border Adjustment Mechanism as a strategic policy response aimed at reducing the carbon footprint along the product value chain (European Commission, n.d). This mechanism involves imposing tariffs on specific products (i.e. steel and cement characterised by carbon-intensive production processes and deemed to be at the highest risk of

carbon leakage. According to the European Commission (n.d.), CBAM serves to establish a fair price for the carbon emissions generated during the production of these targeted goods.

At present, CBAM does not encompass the entire plastics value chain, except for hydrogen, which serves as an alternative input in the production of primary plastics. However, it is important to note that the current predominant method of primary plastic production heavily relies on fossil fuels. Consequently, this places plastics at risk of potential inclusion in the CBAM scope in the future, as the EU has outlined plans to expand the list of products to cover all sectors governed by EU emissions trading by 2030.

2.3.2. AfCFTA

The AfCFTA aims to create a single, integrated market across Africa by reducing tariffs, eliminating trade barriers, and fostering closer economic cooperation among member states. For South African plastic product manufacturers, this means access to a broader market, increased trade opportunities, and the potential to establish a more prominent presence across the continent. South African plastic products are widely exported across the African continent, with a particularly strong presence in SADC. The AfCFTA presents an opportunity for South African plastic product manufacturers to capitalise on their relatively advanced manufacturing capabilities. Given that Africa has only three key players in the plastics industry, South African manufacturers are well-positioned to leverage this advantage to expand into new markets beyond the SADC region.

3. CONCLUSION

This report has examined South Africa's international trade in plastics, encompassing both imports and exports. It explored the dynamics of global plastic production and consumption, highlighting the influence of economic activity, technology, and population growth.

The report then delved into trade trends, examining both export and import patterns for primary plastics and plastic products. This section revealed the dominant players in the global market, with China leading the way. It also observed the prominent role of South Africa within the African context, highlighting its position as a major exporter and importer.

Furthermore, the report acknowledged the potential impact of shifting global trade policies on South Africa's plastic trade. The European Union’s CBAM poses a potential challenge due to the carbon footprint associated with traditional plastic production methods. Conversely AfCFTA presents a significant opportunity for South African plastic product manufacturers to expand their reach across the continent by leveraging their advanced capabilities.

In conclusion, South Africa's international trade in plastics plays a crucial role in its industrial development. While facing challenges associated with environmental considerations, opportunities exist for growth within the African market. Moving forward, it remains essential for South Africa to adapt its plastic production methods to become more sustainable and carbon-neutral. This will ensure continued participation in the global plastic trade while aligning with evolving environmental regulations.

REFERENCES

Diale. R. (2024). Industry Study: Plastics 2024. Available from: https://www.tips.org.za/manufacturing-data/manufacturing-sectors/item/4747-industry-study-plastics?highlight=WyJwbGFzdGljcyJd.

European Commission. (n.d.). Carbon Border Adjustment Mechanism (CBAM). Taxation and Customs Union. Retrieved May 15, 2024, from https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

KPMG. (2023). The future of industry: Focus on plastics manufacturing [PDF]. Available from: https://assets.kpmg.com/content/dam/kpmg/gr/pdf/2023/04/gr-the-future-of-industry-focus-on-plastics-manufacturing-042023.pdf.

Mordor Intelligence. (n.d.). South Africa plastic packaging market. Available from: https://www.mordorintelligence.com/industry-reports/south-africa-plastic-packaging-market.

OECD. n.d. Plastics use by region. OECD iLibrary. Available at: https://www.oecd-ilibrary.org/environment/data/global-plastic-outlook/plastics-use-by-region_bab5b88f-en?parentId=http%3A%2F%2Finstance.metastore.ingenta.com%2Fcontent%2Fthematicgrouping%2Fc0821f81-en.

OECD, (2022), *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*, OECD Publishing, Paris, https://doi.org/10.1787/de747aef-en.

Plastics SA. 2022. Plastics SA Annual Review 2021-2022. Available at: https://www.plasticsinfo.co.za/wp-content/uploads/2022/12/PSA-AR-2122_interactive.pdf.

Plastics Today. 2013. Environmentally friendly polyamide cranks up presence in auto sector. Available at: https://www.plasticstoday.com/plastics-processing/environmentally-friendly-polyamide-cranks-up-presence-in-auto-sector

Straits Research. 2012. Plastic Market 2022 – Industry Analysis, Size, Share, Trends, Segment and Forecasts. Available at: https://straitsresearch.com/report/plastic-market#:~:text=According%20to%20DSM%2C%20several%20international,weight%20was%20reduced%20by%2040%25.