



International Waste Trade

A global effort to reduce plastic waste exports and increase recycling

MarketLine Case Study

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1. Overview

1.1. Catalyst

Plastic has become one of the most used materials in packaging and consumer products and industry thanks to its durability, flexibility, low cost of production, resistant to corrosion and light weight characteristics, which make it useful for a variety of purposes. However, our affinity with plastic goods and packaging has resulted in a staggering amount of plastic waste, which is polluting ecosystems and internationally recognized as a major global environmental crisis. Historically, developed countries have produced the highest volumes of plastic waste and lack the recycling capacity to manage plastic waste sustainably. Therefore, these economies have continued to export their plastic waste to lower income economies where recycling is cheaper. This has benefited both developed and low-income economies, helping plastic waste producers dispose of their waste while low-income economies benefit from a supply of cheap recyclable plastic which can be used to manufacture higher valued goods. However, in recent the sheer volume of waste being exported has started to overwhelm recycling capacity in developing countries. Starting from January 1, 2021, the global trade of plastics waste will be regulated by an international treaty (Basel Convention), designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries.

1.2. Summary

China's decision to ban plastic imports which weren't 99.5% pure had a significant impact on global waste trade. Prior to the decision, which was enacted January 1, 2018, China was the world's largest plastic waste importer with most plastic waste producers overly dependent on China as a trade partner for plastic waste disposal. The ban initially stimulated an increase of plastic waste imports in neighboring South East Asia which were soon overwhelmed and imposed their own waste trade restrictions. After which a new international treaty was formed known as the Basel Convention which includes 187 countries that share ambitions to better regulate plastic waste trade and ensure exports don't overwhelm lower economically developed countries.

In recent years, the EU has introduced new policies to improve the regions capacity to recycle plastics and reduce plastic consumption to deal with increased domestic waste volumes anticipated after the implementation of global plastic export restrictions. However, achieving plastic waste recycling targets will be difficult for some European markets including the UK who currently produce the most plastic waste per capita per year in Europe. Illegal waste exports have already become a problem in the UK and other nations, who are struggling to manage waste that would previously have been shipped abroad.

Some countries are starting to initiate national strategies to help reduce plastic waste volumes and increase recycle rates as they pursue circular economies. Countries leading the chase for circular economies in terms of recycling include Japan, China and Germany. In addition, companies are complementing national initiatives with their own circular business model strategies which aim to curb the use of plastics or use recyclable plastics. However, a global shortage in recycling capacity could cause supply shortages in recycled materials.

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2. International plastic waste trade is unsustainable

Waste trade has matured into a multibillion-dollar industry with 50 million tons of used materials – such as scrap plastics, metals, electronics, paper, and second-hand clothes – worth around \$315bn exported during 2019. For years, developed countries have shipped waste to developing countries who have cheaper labor and a higher capacity to recycle used goods and packaging into new materials. This system has provided economic benefits for both exporters and importers; for countries that lack sufficient national recycling capacity, the option of exporting waste has been frequently viewed as cheaper and more economically efficient. Waste exporters can profit from the disposal of waste, while importers receive a cheap source of recyclable materials which can be used to produce more profitable materials. However, the waste trade system is unsustainable, and the mismanagement of waste is starting to have severe environmental repercussions. In many cases, waste exports result both in negative environmental and health impacts in the countries of destination.

2.1. Plastic waste production continues to outgrow global recycling capacity

Despite national and international efforts to curb the production of waste, plastic production continues to grow. According to The United Nations Environment Programme (UNEP), more than 8.3 billion tons of plastic has been produced since the early 1950s, of which, 60% has ended up at landfill sites or the natural environment. And by 2050, the world is expected to generate 3.40 billion tons of waste annually, according to World Bank estimates.

Waste is expected to keep growing in correlation with virgin plastic production (plastic made from direct resin produced from a petrochemical feedstock, such as natural gas or crude oil). In 2019, 368 million tons of virgin plastics were produced. According to new data collected by the United Nations Conference on Trade and Development (UNCTD), international trade of primary, intermediate, and final forms of plastics was worth a sum of approximately \$1tn in 2018, or 5% of the total value of global trade. This was almost 40% higher than previous estimates.

Meanwhile, the development of new plastic recycling capacity continues to be outpaced by waste production. According to OECD data, Global plastic recycling rates (percentage of plastic waste recycled) were between 14%-16% in 2018. Most plastic waste is either incinerated, disposed of in landfill or leaks into the environment. The rapid accumulation of plastic waste in landfills and the environment is starting to worry authorities and environmentalists, and global efforts to curb plastic trade exports have exacerbated concerns as domestic waste becomes more of a problem for large plastic waste producers.

2.2. China's ban on plastic waste had a significant impact on global waste trade

July 27, 2017, China announced a ban on its import of most plastic waste, resulting in a sharp decline in global plastic waste trade and no longer buys recycled plastic scrap that was not 99.5% pure. Prior to the ban, China was the world's largest plastic waste importer, importing about 55.7% of world's plastic waste with annual imports 8.88 million tons. However, as much as 70.6% of plastic waste was being buried or even mismanaged and environmental concerns encouraged China to impose restrictions. After China introduced its plastic import ban, other countries diverted their exports to other countries. However, overall waste trade was reduced, resulting in the build up of domestic waste.

The Chinese plastic waste ban was symbolic of the country's economic transition. The Chinese economy is becoming increasingly consumer driven and less reliance is being placed on the nation's manufacturing capabilities. As a result, China has started to produce increasing amounts of its own plastic waste, making international waste imports an unnecessary inconvenience, and environmental concern.

2.2.1. South East Asia has become a new dumping ground for waste exports

After China imposed strict plastic waste import legislation, exporters immediately started to find alternative countries that would be willing to take on waste. Increasing amounts of waste was directed towards South East Asia. However, a surge in waste imports from the likes of Thailand, Vietnam and Malaysia has raised concerns with officials, resulting in these economies implementing their own restrictions on waste trade. Thailand plans to stop all imports of foreign plastic scrap by 2021, the country had wanted to stop imports by June 2018, but import licenses valid until 2021 prevented Thailand from implementing its import plan sooner.

2.2.2. China's waste ban catalyzed waste management reform in developed countries.

The inability to export plastic waste to China has had significant repercussions for economies that relied on China as an importer of their plastic. Recent import restrictions introduced by China and other developing economies have exposed the overdependence most of Europe and the US have on foreign waste treatment. However, this has also mobilized the recycling industry to increase its capacity and add value to waste.

During May 2019, 187 countries agreed terms to restrict the shipment of hard-to-recycle plastics to from developed countries to developing countries after importing countries such as Indonesia, Thailand and Malaysia experienced a build up of waste which was being mismanaged and polluting the environment. The amendment, known as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, is expected to make the global trade in plastic waste more transparent and better regulated and became effective January 1, 2021

2.3. Europe crack down on plastic waste trade

In 2019, the EU exported 1.5 million tons of plastic waste, mostly to Turkey and Asian countries such as Malaysia, Indonesia, Vietnam, India and China. The share of exported plastic waste to China has radically fallen since the country's adoption of restrictions on the import of plastic waste in 2018. This has encouraged the region to develop strategies to reduce the amount of plastic waste produced and exported, to prevent plastic waste from flooding domestic landfills and spilling into the environment.

The European Commission (EC) adopted the new circular economy action plan (CEAP) in March 2020. The CEAP compliments the EU New Green Deal and will make a significant contribution to achieving climate neutrality by 2050 and decoupling economic growth from resource use. Re-evaluating waste exports will play a critical role in the EC's circular economy ambitions. The EU have collectively set targets including a plastic recycling rate of 50% by 2030; and all plastic packaging placed on the EU market is reusable or can be recycled in a cost-effective manner

During December 2020, the EC announced new rules regarding the export, import and intra-EU shipment of plastic waste. This was the first EU wide strategy that addressed the management of plastic waste. Under the group's new plans, all plastic packaging on the EU market will be recyclable by 2030, the consumption of single-use plastics will be reduced and the intentional use of microplastics will be restricted.

The EC also introduced new rules for exporting including the banning prohibition of hazardous plastic waste exports and plastic waste that is hard to recycle from the EU to non-OECD countries. Exporting to OECD countries is subject to a "prior notification and consent procedure", whereby both the importing and exporting country must authorize the shipment. In addition, exporting clean, non-hazardous waste (which is destined for recycling) to non-OECD countries are only allowed under the conditions laid down by the importing country.

On January 1, 2021 the EU introduced a plastics tax of at a rate of EUR0.80 per kilogram to the weight of plastic packaging waste that is not recycled. The tax was introduced to encourage Member States to reduce packaging waste and stimulate Europe's transition towards a circular economy by implementing the European Plastics Strategy.

2.4. Despite promises to curb waste exports developed economies continue to dump waste on lower income markets.

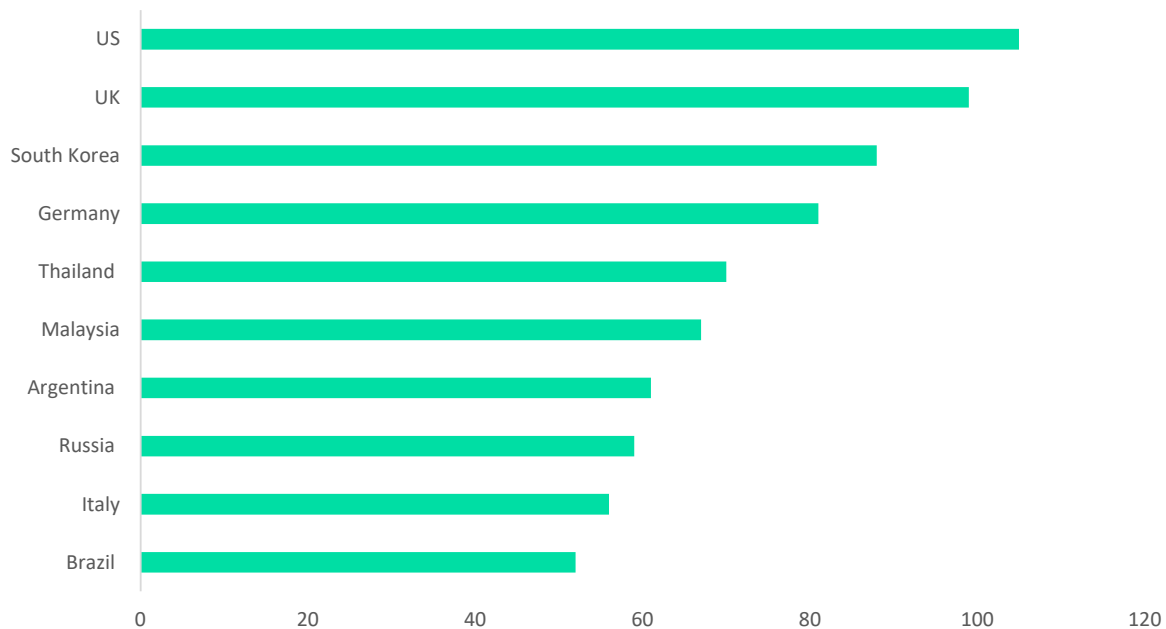
The UK is a major contributor to the global plastic crisis, producing the highest amount of plastic waste per person per year, second only to the US. According to UK statistics, the nation produced 2.48 million tons of plastic packaging waste in 2020, up from 2.37 million tons produced in 2018. Plastic packaging accounts for 44% of plastic used in the UK, but 67% of plastic waste. National statistics also suggest 47.4% of plastic packaging waste is recycled, although most of this is expected to occur overseas. The British Plastics Federation (BPF), the world's longest running plastics trade association, estimates that 46% of the UK's plastic waste is incinerated, 19% is exported and 17% goes to landfill.

2.4.1. The UK remains Europe's largest plastic waste producer

The UK is dependent on plastic exports because it currently lacks the recycling capacity to process the amount of waste produced as a nation. Approximately two-thirds of plastic waste in the UK is sent overseas to be recycled - in part, to reduce costs. Exiting the EU has meant that the UK has adopted different rules regarding its waste exports and does not adhere to EU wide export rules which started to be enforced January 1, 2020. However, the UK is under increasing pressure to reduce the volume of waste exported to other countries, with campaigners including non-governmental environmental organization, Greenpeace, asking the government to mandate a 50% reduction in single-use plastic by 2025. Reducing the consumption of single-use plastics would help prevent exporting plastic waste to Turkey and Malaysia which have become overwhelmed by the large volumes of waste shipped by the UK. Turkey received nearly 40% of the UK's plastic waste exports in 2020.

New import restrictions in Malaysia limit the UK's ability to export plastic waste to the country. However, According to Malaysian state officials, in 2018 more than 250 shipping containers of plastic waste were imported illegally to Malaysia from many countries, including the UK. In January 2020, Malaysia returned 150 shipping containers filled with plastic back to their country of origin including 42 containers from the UK.

The UK responded to campaigns by banning the use of single use plastic straws, stirrers, and plastic-stemmed cotton buds. While this demonstrated a step in the right direction, the policy was directed towards the reduction of plastic waste entering the ocean and not the prevention of plastic exports. However, the government is expected to announce a more significant new tax on the production and import of plastic packaging with less than 30% recycled content. The new tax, which is expected to commence April 2022, will encourage greater use of recycled plastic, and help to reduce plastic waste by charging producers GBP200.0 (\$253.3) per ton. BPF predict that by 2030, the UK will have halved plastic packaging exports export and almost completely inhibited the export of low-quality plastics.

Figure 1: Countries with the highest plastic waste production (kg) per capita, per annum

Source: Law et al, Science Advances 2020

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2.4.2. The US continue to export plastic waste and needs to expand recycling capacity

The US produces more plastic waste per capital then another country worldwide and its plastic production volumes far outweigh its national plastic recycling capacity. The Environmental Protection Agency (EPA) estimated 14.5 million tons of plastic containers and packaging were generated in 2018. However just 1.98 million tons were recycled, equivalent to 13.65% of waste production.

There is little legislation regulating the use of recycled plastics in the US. In 2020, California became the first US state to legally mandate the use of recycled content in packaging after approving the Assembly Bill 739 in September. The new bill requires all plastic packaging to contain a minimum of 15% Post-Consumer Recycled (PCR) plastic materials by 2022, with the share increasing to 25% in 2025 and 50% in 2030. However, other states in the US don't require mandatory recycled materials in plastic products which is partly responsible for the US excessive plastic waste production. Indiana, Massachusetts, Maine and Oregon are considering similar bills to the one approved in 2020, but many environmentalists believe that this will do little to prevent the buildup of plastics in domestic landfill.

While the US is not party to the Basel Convention, there are 187 countries which have agreed to the amendment, meaning exports and imports of US plastic recyclables will be disrupted, with many US waste trading partners implementing the Basel plastic scrap and waste amendments. The new regulations now effectively ban the trade in most kinds of plastic waste between the United States and the rest of the world. However, regulations have not prevented the US from offloading plastic waste on poorer countries. According to January 2021 data the US exported 48 million tons of plastic waste, up from 45 million tons exported during the same moth one year prior.

Table 1: Total Plastic Containers and Packaging MSW by Weight (mt) 2000 – 2018 US

	2020	2005	2010	2015	2017	2018
Waste produced (mt)	11.19	12.42	13.68	14.68	14.49	14.53
Landfill	73.3%	73.4%	71.2%	72.8%	70%	69.4%
Incinerated	17.5%	16.3%	15.3%	16.75%	17%	14.5%
Recycled	9.2%	10.3%	13.52%	14.64%	13.04%	13.6%

Source: American Chemistry Council and National Association for PET Container Resources (NAPCOR)

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2.5. Countries leading the pursuit for a circular economy

A circular economy is one in which products and materials are recycled, repaired, and reused rather than thrown away, where waste from one industrial process becomes a valued input into another. This is the alternative to a linear economy where products are manufactured, used, and disposed. Achieving a circular economy has been prioritized by a number of countries.

2.5.1. Japan has been pushing the circular concept for decades

Japan has been actively promoting a circular economy strategy since 2000, when the Japanese Government enacted the law entitled “Basic Act on Establishing a Circular Society” and has enacted on its Three R’s strategy (reduce, reuse, recycle). The nation’s Ministry of Economy, Trade and Industry (METI) compiled the Circular Economy Vision 2020, designed to shift company’s new business models with higher circularity.

Japan is also developing innovative methods to treat plastic waste. The nation is primarily focused on the development of biomass plastics, non-biodegradable plant-based plastics which can be incinerated to produce energy. Japan hopes to produce 2 million tons of all bioplastics a year by 2030 according to the Resource Circulation Strategy for Plastics, outlined by The Ministry of the Environment. The strategy also outlines plans to reduce single use plastic consumption 25% by 2030; have reusable and recyclable designs for 100% of packaging and containers by 2025; increase recycling rate for packaging and containers to 60% by 2030; and double the usage of recycled plastics by 2030.

2.5.2. China is making aggressive efforts, but has a long way to go

China may be the world’s largest producer of plastic waste, but the country is also making significant strides into becoming a circular economy since banning the importation of foreign plastic waste in 2018. In 2019 the nation introduced a two-year “waste-free cities” pilot program which aimed to accelerate the treatment of waste and cut the amount of waste its cities produce by encouraging new green development methods and lifestyles. 16 cities and regions across the country, including Shenzhen, downtown Chongqing, Sanya in Hainan, and eight other cities across China; as well as The Xiongan New Area, Beijing Economic-Technological Development Area in Yizhuang, China-Singapore Tianjin Eco-city, Guangze County in Fujian Province and Ruijin in Jiangxi Province.

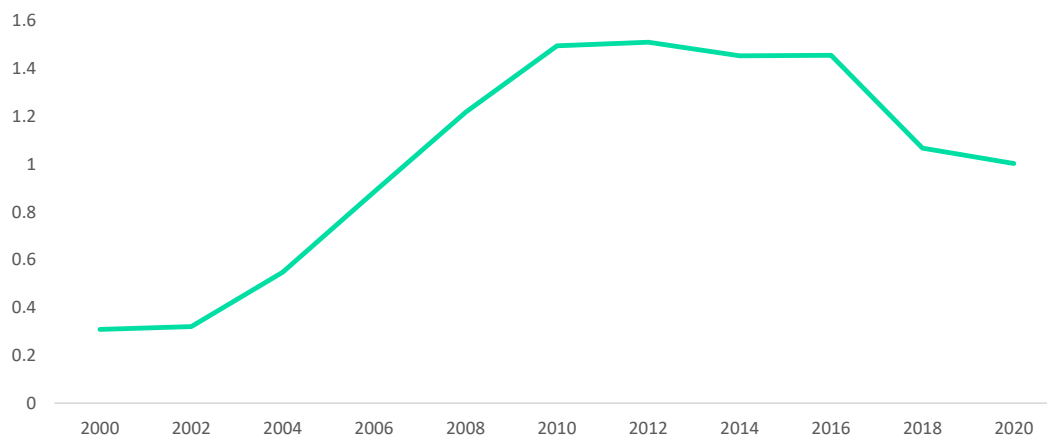
In 2020, China introduced bans on several types of non-degradable single-use plastics and initiated a phase out plan for non-degradable plastic bags in major cities by the end of 2020 and all cities and towns by 2022. This is a more aggressive strategy than nation-wide implementation of the shopping bag charging schemes in other countries.

In addition, China is ramping up production of biodegradable plastics made from plants and organic matter. China BBKA Group aims to build up its bio plastic capacity so that it outweighs global demand. The group plans to reach the capacity to produce 700,000 tons of polylactic acid (PLA) polymers annually by 2023.

2.5.3. Germany has the best recycling capacity worldwide

Germany has the largest recycling capacity in Europe and boasts the world's highest plastic recycling rate, approximately 60%. Recently, the Federal Statistical Office (Destatis) reported that just over one million tons of plastic waste were exported to other countries in 2020. However, the country reduced its plastic waste exports by 8% Y-o-Y and has reduced exports by 33% over the past decade. Malaysia and the Netherlands were the nations largest export destinations for plastic waste 2020. Despite efforts to reduce the volume of plastic waste shipped to other countries, Germany remains Europe's largest exporter of plastic waste.

Figure 2: German plastic waste exports (mt), 2000 – 2020



Source: Destatis

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2.6. Proactive brand strategies compliment national plastic waste initiatives

Global Corporations are supporting national initiatives to increase the volume of recycled waste plastics by making commitments to increase the usage of recycled plastics. This has helped businesses improve brand image and helps them conform to consumer trends, as consumers become increasingly aware of plastic waste. According to GlobalData's 2020 Coronavirus (COVID-19) Recovery Consumer Survey, almost half (48%) of global consumers say "plastic-free packaging" is slightly/strongly more important, or "now my top priority".

2.6.1. Danone to make 100% of packaging recyclable by 2025

In 2018, Danone announced its ambition to make all its packaging recyclable, reusable or compostable by 2025, and will attempt to aid the development of recycling infrastructure to increase recycling rates. The company has set three goals to help achieve the transition towards a circular economy: Improving the design of its products; incorporating more recycled materials into packaging; and investing in effective and efficient recycling systems. Danone aims to eliminate problematic and unnecessary plastic packaging from its portfolio and will launch alternatives to plastic packaging or single-use packaging

in all its major water markets by 2025. By 2020, Danone Waters UK revealed that 100% recycled PET will be used for Evian bottles from April, bringing the amount of recycled plastic across the Evian range to 70% globally. It is also working to achieve B Corp accreditation, a third-party standard that meets social sustainability and environmental performance quality, by the end of 2020, ahead of global certification set for 2022.

2.6.2. Unilever half virgin plastic use by 2025

Unilever, one of the largest fast-moving consumer goods (FMCG) companies and used 690,000 metric tons of plastic packaging during 2020. However, the company has made recent commitments to half the number of virgin plastics the company uses in the packaging of its products by 2025 and achieve an absolute reduction of more than 100,000 tonnes in plastic use. The company currently uses Post-consumer recycled (PCR) plastics, a material made from recycled plastic, such as water and beverage bottles and other packaging, in 11% of its products, but also hopes to increase this to 25% by 2025.

2.6.3. Increased demand for recycled plastic creates supply shortage

Demand for recycled plastics could start to outpace the addition of new recycled capacity, which means companies wanting to increase the usage of recycled plastics could experience a shortage in supply. New recycling capacity is required worldwide to help countries manage their waste domestically and reduce their dependence on exports but also to provide corporations with a reliable supply of recycled plastics.

3. Appendix

3.1. Abbreviations and acronyms

CEAP - Circular economy action plan

BPF - British Plastics Federation

EC – European Commission

PLA - polylactic acid

PCR - Post-Consumer Recycled

UNCTD - United Nations Conference on Trade and Development

UNEP - United Nations Environment Programme

3.2. Sources

Global Data Thematic Research: Circular Plastic Economy in Consumer Goods (September 2020)

JEQ Japan Environment Quarterly (2019) – Ministry of the Environment

Trashed – Greenpeace plastics report (2020)

UNCTAD Research Paper: Global trade in plastics: insights from the first life-cycle trade database

United States Environmental Protection Agency (EPA): Containers and Packaging: Product-Specific Data (2018)

www.destatis.de

www.gov.uk

www.unep.org/interactive/beat-plastic-pollution/

World Bank - What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050

3.3. Further reading

Packaging in the UK: Trends and opportunities in the UK packaging industry - Case Studies published by MarketLine on 28 Jun 2021

Recycling Plastic Goods: Key trend in consumer goods is the circular plastic economy - Case Studies published by MarketLine on 25 Sep 2020

4. Ask the analyst

We hope that the data and analysis in this case study will help you make informed and imaginative business decisions. If you have any questions or further requirements, MarketLine's research team may be able to help you. The MarketLine Research team can be contacted at ReachUs@MarketLine.com.

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