

The war on plastic - plastic solutions and long-term winners

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5th June 2021 marked the annual World Environment Day; a day led by the United Nations for encouraging awareness and action for the protection of the environment. A key environmental issue today is the 'plastic planet', where plastic is both polluting our oceans and natural systems around the world, and contributing to higher CO2 emissions. The current way we consume and use plastic, in a linear take-make-waste model, is unsustainable and if it does not change, will have catastrophic results on the environment.

In this blog, we raise awareness to the planet's need for plastic solutions, scope the size of the market opportunity that the plastic packaging crisis represents and identify the technologies and long-term winners that can help save our planet.

The demand for plastic is still growing - our use of plastic packaging is forecasted to grow at 4% p.a between 2019 - 2030

Since the invention of the first synthetic polymer in 1869, plastics have infiltrated our world and become an indispensable part of our lives. Consumption has surged since World War II (Figure 1). In 1950 only 2mn tonnes p.a. of plastic were consumed globally (Source: Geyer et al.), increasing 200-fold to 406mn tonnes p.a. in 2019 (Source: Plastics Europe).

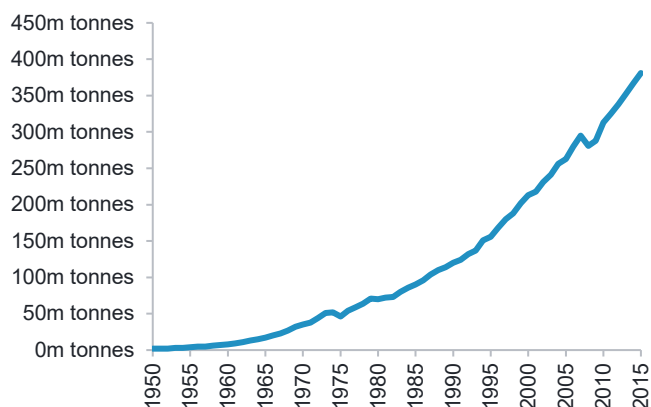
Today plastic is used across almost every sector, but packaging accounts for the largest usage (Figure 2). In 2018 45% (174mn tonnes) of all plastic produced was used for packaging (Source: Conversio Market & Strategy GmbH).

Plastics are the ideal material for packaging because they are low-cost, versatile, durable, light weight, and also bring environmental benefits when compared to the alternatives. To illustrate, plastic reduces food waste by keeping food fresher for longer, and its low weight helps to reduce fuel consumption and emissions when transporting goods. Plastics are therefore increasingly replacing other packaging materials. Between 2000 and 2015 plastics increased their share of global packaging volumes from 17% to 25% (Source: Euromonitor).

As a result of these benefits, plastic packaging volumes are on a strong growth trajectory of 4% p.a. By 2030, this should result in c.281mn tonnes of plastic packaging being demanded globally, up from c.180mn today. (Source: Fidelity analysis).

► **Figure 1: Global plastics production**

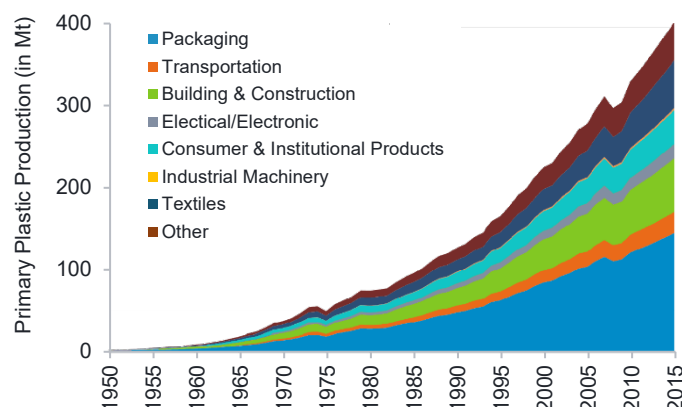
Consumption of plastics has surged post World War II



Source: Greyer et al. (2017). Annual global polymer resin and fiber production (plastic production), measured in metric tonnes per year.

► **Figure 2: Global plastics production by usage**

Packaging accounts for the largest usage



Source: Greyer et al. (2017)

The current model of plastic packaging negatively impacts the environment

Despite its benefits, plastic packaging is problematic because the way we currently use it, in a linear 'take-make-dispose' model, is unsustainable and wasteful. We take oil and gas from the earth to make plastic packaging, that is often only used once, and then we dispose of it. This is in stark contrast to a circular 'reduce - reuse - recycle' model; an economic model aimed at eliminating waste, facilitating the continual use of resources and contributing to decarbonisation. To put this into perspective, only 9% of all plastic waste ever produced has been recycled (Source: UN Environment Programme, 2020).

The disposal of plastic packaging poses significant environmental issues and is unsustainable in the long run. At current levels, only 24% of all global packaging is being recycled. For the remaining waste, only 70% is collected for disposal and managed, however two thirds of this ends up in landfill and releases high levels of methane gas and CO₂, contributing to global warming. For the remaining 30% of 'leaked' waste, this is degrading natural systems such as forests and oceans. If no action is taken, it is expected there will be more plastic in the ocean than fish by 2050 (Source: Ellen MacArthur Foundation).

With the projected expansion in demand, these environmental issues are set to become even more serious. The world therefore *needs* to change to become more circular. We require new recycling solutions and the volumes of plastic packaging used must be reduced.

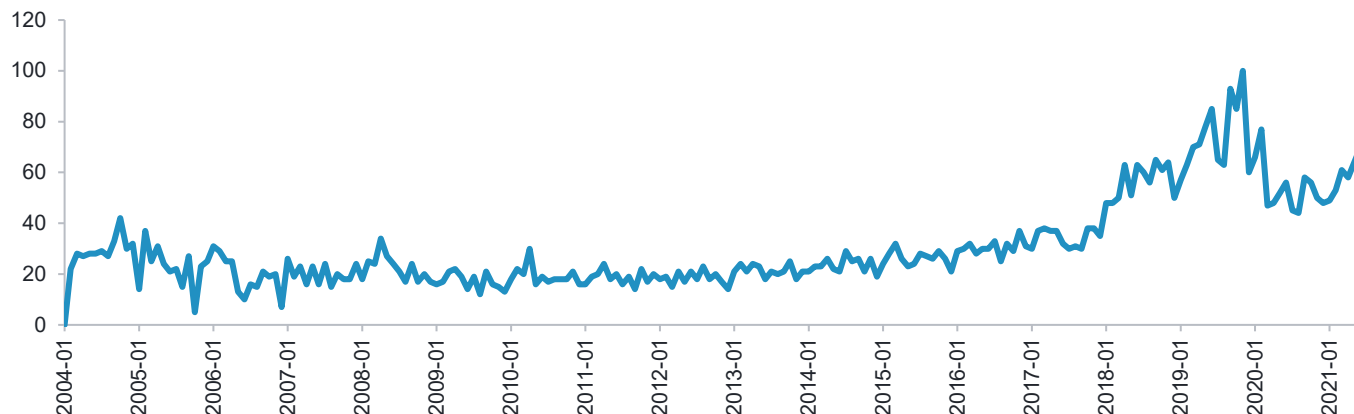
Demand for plastic recycling and sustainable packaging solutions is growing as result of shifting sentiment from consumers, regulators and leading fast moving consumer goods (FMCG) companies

The environmental issues caused by plastic packaging have not gone unnoticed, and consumers, regulators and leading FMCG companies are responding to the climate crisis.

With regards to consumers, public awareness around plastic issues has increased considerably over the past five years (Figure 3). In 2019, 42% of consumers in the UK and US said that products that use sustainable materials are important when it comes to their day-to-day purchases (Source: GlobalWebIndex). This has been fuelled by graphic images of marine plastic pollution, as shown in David Attenborough's Blue Planet II series - the most watched TV show of 2017 with 14mn viewers (Source: BBC).

► Figure 3: Worldwide plastic waste interest over time

Public awareness of environmental issues has increased considerably over the past five years



Source: Google trends

Across all continents, governments are responding to public outcry regarding plastic packaging waste, with Europe being the most advanced region when it comes to sustainability. Nevertheless, across the globe, aggressive recycling targets are being implemented, significant taxes for non-recyclable packaging will be apparent, and additional legislation is being proposed to only use recycled packaging.

Furthermore, the most significant change to plastic waste regulations since 1997, will be the Extended Producer Responsibility (EPR) reforms (which come into force in the UK in 2023). The proposed changes will shift the full cost of collecting household waste from the taxpayer to businesses that place plastic packaged products into the market. Firms therefore have no choice but to address and adopt plastic recycling efforts.

As a result of public pressure and increasing regulation, companies are responding with aggressive plastic recycling targets. For example, Coca Cola, Kellogg's and Nestle are among 250 major brands who have promised to eliminate all single use plastics and invest in new technologies so all packaging can be recycled by 2025. Furthermore, Fidelity analyst conversations with 41 of the top FMCG firms, has highlighted that 26 of these FMCG firms have committed to increasing the proportion of plastic packaging that is recyclable or compostable.

In addition to recycling, many companies have made huge efforts to reduce plastic packaging volumes used. These range from emerging tiny brands, (for example companies providing refillable toothpaste tablets or solid shampoos), to large brands, such as Heineken and P&G. Heineken UK is eliminating plastic from millions of cans (by removing the plastic holding individual cans together) as it rolls out innovative sustainable packaging designed to reduce plastic and minimise waste. It is estimated that these actions will eliminate over 517 tonnes of plastic annually (Heineken, 2021). In addition, P&G announces the launch of its first P&G Beauty aluminium reusable bottle and refill system in hair care, which will enable millions of households across Europe to reduce, reuse and recycle their packaging.

Combining all three driving forces of demand together (consumer, regulation and corporate), it is predicted that circular packaging solutions will grow at CAGR of 24% between 2019 - 2050, increasing from 8mn to 84mn tonnes. (Source: Fidelity analysis).

New technologies are required to meet the surge in plastic recycling demand

So, how will companies meet the surge in demand for circular packaging solutions? What technologies are available, and is this enough to meet desired recycling levels so that we can save our planet?

As a society, we need to reduce the volumes of plastic packaging used and we need to invest in new technologies to move plastic packaging to a circular model with high recycle rates and minimal wastage. Through talks with industry experts and company engagements, Fidelity research has highlighted two possible solutions that needed to be adopted to win the war on plastic packaging recycling: post - consumer recycled plastic (PCR), which is itself recyclable, or bio-based plastic packaging, which is compostable.

Firms prefer PCR plastic packaging over bio-based plastic packaging because it is cheaper. However, not all demand for circular plastic packaging will be able to be fulfilled by PCR plastic packaging because of supply constraints. PCR plastic packaging can be split into two segments: mechanical (where plastic is processed back into resin pellets, but the chemical structure remains unchanged) and chemical (plastic polymers are broken down into building blocks, which can be rebuilt). For mechanical, there are multiple shortcomings. This method can only handle specific types of waste (i.e. plastics must be uncontaminated and homogenous), and it 'downcycles' plastics (which drastically reduces the quality of the material). Furthermore, the process is highly inefficient, and 28% of plastic packaging that is sent for mechanical recycling is lost to the process (Source: Ellen MacArthur Foundation).

With chemical recycling, the above issues are not as problematic. In theory it is an infinite recycling process that keeps plastic packaging in a closed packaging loop. However, chemical recycling is still very much in its infancy and the volumes of plastic packaging waste it can process are currently somewhat limited.

These shortcomings limit the supply of PCR plastic packaging that is available, and therefore, the bio-based plastic will be required to make up the shortfall in supply. This creates very interesting investment opportunities into both the PCR and Bio-based plastic packaging markets. To put this in perspective, to meet the surge in demand, by 2030, it is predicted that the PCR market will grow at CAGR of 23% (with a 9-fold expansion), whilst biobased plastic packaging is predicted to grow even faster, at CAGR 33% (with a 21-fold expansion) (Source: Fidelity analysis).

The winners of the plastic recycling war will be the firms with the lowest cost recycling technologies at scale

With this huge investment opportunity, it is important for investors to be able to identify the key technologies and the companies that will gain first mover advantage and be able to profitably scale the technology. The winners and dominant players of the plastic recycling will likely be in the chemical recycling PCR markets (as chemical recycling is a superior process to mechanical recycling) and bio-based plastic packaging markets, and it will be the companies with the leading, lowest cost technologies, that can operate at scale.

Furthermore, recycled plastic has a 30% lower carbon footprint than virgin plastics (Source: C Balance, Recycle Guru: Carbon Savings Achieved by Recycling, 2013). These recycling efforts are thus vital to contribute to decarbonisation and to achieve global carbon neutrality by 2050.

Conclusion

At present, we are at the very beginning of the 'boom' in the plastic solutions market. Through our global research platform and close relationship with companies, we are able to understand the market opportunity that the plastic packaging crisis represents and can identify the winning companies who will lead the plastic solutions market's direction of travel.

As long term investors, it is our duty to influence positive environmental change. By using fundamental, bottom up stock selection, we will be able to identify the key leaders that can drive a step change in the 'plastic planet' crisis. Furthermore, by supplying capital to fund innovative technologies, increase scale and reduce the cost of capital, we can facilitate these leaders to save our oceans and planet.

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