



The next wave of plastic

**Changing consumer
sentiment around plastics**



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[KPMG.com.au](https://www.kpmg.com.au)

"Welcome to the era of the mindful consumer"¹

For many years, plastics have been an integral part of the economy. Recently, however, there has been a sharp shift in consumer sentiment regarding plastic use. This reflects a broader global trend of growing public concern about climate change. Consumers are increasingly rejecting single-use plastics, and asking that companies and governments adopt alternatives. Governments around the world are responding to public demand and implementing regulations on plastic use. When these are combined with the resource value being lost because of the uneconomical, 'linear' way in which plastic is currently being used, the result is significant disincentives for continuing to take a 'business as usual' approach. Many businesses have seen an opportunity to respond to shifting consumer sentiments and are already making changes.

¹ Waitrose Food and Drink Report 2018-2019 (2019), p. 1, <https://www.waitrose.com/content/dam/waitrose/Inspiration/Waitrose%20&%20Partners%20Food%20and%20Drink%20Report%202018.pdf>



Dramatic shifts in consumer sentiment

In 2013, industry organisation PlasticsEurope noted “an increasingly negative perception of plastics in relation to health, environment and other issues”²

The issue of plastic is increasingly weighing on people’s minds. In 2017, more than 14.1 million people watched the first episode of the BBC’s David Attenborough series, Blue Planet II, making it the most watched program of the year. The second episode had even more viewers.³ The series, sold to at least 30 other countries, documents the natural history of the world’s oceans. Through extraordinary photography and footage now synonymous with Attenborough’s work, viewers were exposed to images of albatrosses unwittingly feeding plastic to their chicks, and a mother whale carrying the body of her calf for four days after it had died from consuming plastic, until she couldn’t carry it any further.

These powerful images, among others, have contributed to a real rise in the conversation about plastic. Research shows that tweets on plastic waste, plastic pollution, and other related key words more than doubled between 2017 and 2018.⁴

And the discussion is translating into changes in consumer sentiments. UK company Waitrose and Partners noted that Blue Planet II sparked a “consumer revolution”, and particularly, a “war on plastic.”⁵ In their 2019 report, Waitrose states that “a new era of environmentalism has taken hold, and attitudes towards single-use plastic bags,

disposable plastic straws, and packaging, will never be the same.”⁶ Their research, based on polling of 2000 people of all ages across the UK, as well as in-depth focus groups and sales data, found that 88 percent of Blue Planet II viewers altered the way they used plastics after watching the program. They note an 800 percent increase in inquiries about plastic to their customer services team. Other observed changes in behaviour include increases in the use of refillable water bottles, and reusable coffee cups. Customers are avoiding plastic-packaged fruit and vegetables, with sales of loose pears, for example, growing at 30 times the rate of bagged pears.⁷

Consumers are calling on businesses to make changes in their packaging, in many instances with particular brands being called out. This includes social media posts of photos of discarded packaging in the ocean with a brand logo clearly visible and petitions circulating demanding companies take action on plastic waste reduction. Some of the companies are responding with public pledges to cut plastic packaging waste. The conversation also promotes what is viewed as the good work of some companies, for example a shoe company making shoes from recycled plastic waste.⁸

Bad guy... or irreplaceable component in our daily lives? The issue of plastic and its harmful environmental impact is right at the top of the news agenda. And with good reason.

– KPMG 2019, To Ban or Not to Ban?

² PlasticsEurope (2013), Plastics – The Wonder Material

³ <https://www.theguardian.com/media/2017/nov/06/blue-planet-ii-years-most-watched-tv-show-david-attenborough>

⁴ ‘Plastic Data: Consumers are Becoming More Interested in Plastic Waste’, Brandwatch React analysis of online trends, published 5 April 2018, <https://www.brandwatch.com/blog/react-plastic-data/>

⁵ Waitrose Food and Drink Report 2018-2019 (2019), ‘Trend #1 – The War on Plastic’, <https://www.waitrose.com/content/dam/waitrose/Inspiration/Waitrose%20&%20Partners%20Food%20and%20Drink%20Report%202018.pdf>

⁶ Waitrose Food and Drink Report 2018-2019 (2019), ‘Trend #1 – The War on Plastic’, <https://www.waitrose.com/content/dam/waitrose/Inspiration/Waitrose%20&%20Partners%20Food%20and%20Drink%20Report%202018.pdf>

⁷ Waitrose Food and Drink Report 2018-2019 (2019), ‘Trend #1 – The War on Plastic’, p. 4, <https://www.waitrose.com/content/dam/waitrose/Inspiration/Waitrose%20&%20Partners%20Food%20and%20Drink%20Report%202018.pdf>

⁸ <https://www.businessinsider.com.au/adidas-shoe-from-plastic-ocean-waste-2016-11/#-1>

Government regulation

Calls to ban plastics outright trigger as many questions as they answer. The world's reliance on plastics can't be rolled back overnight. And while alternative materials exist, in some cases they can create as many problems as they solve.

– KPMG 2019,
To Ban or Not to Ban?

The pressures from consumers are driving governments all over the world to regulate on plastic manufacturing and use (see Figure 1). There are more and more instances where public pressure is acting as a trigger for governments at all levels to make policy decisions

to limit plastic use. There are several ways this can happen, including regulatory instruments such as bans and prohibitions, economic instruments such as levies on suppliers, retailers and/or consumers, and a combination of the two.

Figure 1: Estimated number of new regulations on single-use plastics entering into force at the national level worldwide.⁹



Governments at national and sub-national levels have introduced bans on the production and use of plastic bags. In Europe, there was a substantial increase in these kinds of policies after 2015, partially due to the EU Directive 2015/70 which encourages member states to set reduction targets or adopt economic instruments for reducing 'lightweight' carrier bags (a thickness not exceeding 50 microns, or 0.05 millimetres).¹⁰ The European Commission's adoption of a Circular Economy package included a call to develop strategies on plastics, with a target to increase plastic packaging recycling, a binding target to reduce landfill to 10 percent of all waste by 2030, and a total ban on landfilling of

all separately collected waste.¹¹ At local level, examples include campaigning by local primary school children in Glasgow, Scotland, motivating the City Council to ban plastic drinking straws, among other initiatives.¹²

African governments, also, are regulating against the production and use of plastic bags. Indeed, over 25 African countries have introduced national bans on plastic bags. For example, Rwanda introduced a national ban on plastic bags in 2008 after a Ministry of Environment study revealed that plastic bag litter was threatening agricultural production, contaminating water sources, killing fish, and creating visual pollution.¹³

⁹ United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 24, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

¹⁰ United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 23, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

¹¹ European Commission (2015), Closing the Loop: An ambitious EU Circular Economy Package

¹² <https://www.resourceefficientscotland.com/blog/12-ways-your-office-can-help-tackle-plastic-problem>

¹³ United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 49, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y



While initially, the ban resulted in a black market for plastic bags, over time, use has greatly reduced. Rwandans now use paper bags or reusable cotton bags. In addition to the ban, the government provided tax incentives to companies which were willing to invest in plastic recycling equipment or in manufacturing environmentally friendly bags.¹⁴ Kenya has banned single-use plastic bags with laws that are the most severe in the world. In 2017, the government announced the ban on the production, sale, importation and use of plastic bags, and offenders can face fines of up to USD 40,000 or four year gaol terms.¹⁵

In Asia, Bhutan, China, India, Mongolia, Sri Lanka, and Vietnam have introduced national level bans or levies. Local-level bans or levies (or both) have been introduced in China, India, Indonesia, Malaysia, Myanmar, Pakistan, and Philippines. In Bali, Indonesia, two teenage sisters spearheaded a campaign to mobilise people to say no to plastic bags. The 'Bye Bye Plastic Bags' initiative collected over 100,000 signatures on a petition that ultimately overturned local government resistance and resulted in a Memorandum of Understanding to phase out plastic

bags. It has now become a global movement very active on social media.¹⁶

Many local jurisdictions in Canada and the United States of America have introduced local bans and levies. In the US this includes the cities of Washington DC, San Francisco, Austin, New York City, Chicago, Seattle, and the state of California.¹⁷ Many countries in Central and South America and Oceania have also introduced levies, bans or both at national or local levels. Australia has a range of local bans, including in South Australia, the Australian Capital Territory, the Northern Territory, and Queensland. Vanuatu has announced plans to be the first country to ban disposable nappies as part of its plan to introduce a range of policies to reduce plastics.¹⁸ Many of those countries who have not yet implemented bans or levies have announced their intention to do so.¹⁹

In addition to regulations reducing plastic manufacture and use, governments are being encouraged to provide incentives to industry to investigate alternatives to single-use plastics. For example, UNEP, the UN environmental protection agency, released a report in 2018 setting out a detailed a roadmap for policymakers

to minimise single-use plastic waste. The UNEP roadmap includes incentives such as provisions to allow time to adapt to the transition and tax rebates and financial incentives to stimulate production of cost-effective alternatives. The report also suggests means for enforcing policies including prosecution.²⁰

In addition to government regulation banning or imposing levies on plastic bags, there are many cases where the public and private sectors have responded to public pressure with voluntary agreements to reduce plastics use. In New Zealand, public support for action including by local council mayors' own efforts to reduce plastic use resulted in the government engaging with the two largest supermarket chains to encourage them to either charge for, or voluntarily ban, single-use carrier bags. Shortly after the meeting, both chains announced they would phase out the use of such bags by the end of 2018, and have since done so. Similar voluntary public-private partnerships can be found around the world, including Thailand, Austria, Finland, Germany, Luxembourg, Spain, Sweden, Switzerland, Canada, and Australia.

14 <https://www.theguardian.com/commentisfree/2014/feb/15/rwanda-banned-plastic-bags-so-can-we>

15 <https://www.theguardian.com/world/2018/apr/25/nairobi-clean-up-highs-lows-kenyas-plastic-bag-ban>

16 <http://www.byebyeplasticbags.org/>

17 United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 27, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

18 <https://www.abc.net.au/news/2019-03-22/vanuatu-to-ban-disposable-nappies/10924586>

19 United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 44, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

20 United Nations Environment Programme (2018), Single-use Plastics: A Roadmap for Sustainability, p. 44, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?sequence=1&isAllowed=y

Governments also have a crucial role to play in improving waste management systems and boosting the re-use of plastic through initiatives that incentivise resource efficiency and a circular economy.

– KPMG 2019,
To Ban or Not to Ban?

Environmental challenges are increasing the pressure on governments to find ways to reduce environmental damage while minimising harm to economic growth. Governments have a range of tools at their disposal... Taxes in particular are a key part of this toolkit.

– OECD 2011

Environmental Taxation – A guide for policy makers

It is worth noting that these policy responses are not always successful. There are certainly criticisms around the effectiveness of levies or bans on plastic bags. Implementation and enforcement can be patchy. Alternatives to plastic bags can be expensive for individuals and small businesses and can cause economic difficulties. Regardless, the trend is likely to continue.

A role for tax policy?

The OECD is clear that there is an important role for government in harnessing tax and tradable permit systems for environmental and climate policy. They note that taxes can a) directly address the failure of markets to take environmental impacts into account by incorporating these impacts into prices, and b) maximise flexibility for consumers and businesses when determining how to reduce their environmental 'footprint'. This enables lowest-cost solutions, provides incentives for innovation, and minimises the government 'picking winners'.²¹ The OECD notes that for environmental tax policy to be effective, it must be well designed so as to maximise positive environmental impacts. Key principles include: targeting the tax base to the pollutant or polluting behaviour; ensuring the scope of the tax is as broad as the scope of the environmental damage; applying the taxes uniformly with few exceptions (if any); and setting the tax rate so that it is directly commensurate with society's value of the environmental damage. It must also of course be credible and predictable.²²

The prevailing tax systems in many countries are not well aligned with environmental goals. For example, in the EU, increasing taxes on the consumption of natural resources could incentivise the adoption of more resource-efficient business models. A shift from taxing labour to taxing the consumption of resources would make it less costly to repair, maintain and recycle goods. KPMG modelling of a scenario in which personal and corporate income taxes and social contributions are reduced, and are offset by increasing taxes on fossil fuels, carbon emissions, and water and electricity use, as well as increasing VAT. The modelling revealed several socio-economic and environmental benefits, including increases in GDP, employment and real incomes, with dramatic drops in carbon emissions and energy consumption.²³

In general, most environmentally related taxes do not raise significant government revenue. Indeed, the intent of environmental taxes is to shrink the size of the tax base. As such, there is only limited potential for the 'double dividend' concept, in which environmental taxes could both yield environmental benefits (the first dividend) and also raise revenues to reduce the effects of existing distortions of the tax system (the second dividend). The double dividend also does not account for distortions that an environmental tax may itself cause – often deliberately.

21 Organisation for Economic Cooperation and Development (2011), Environmental Taxation – a guide for policy makers, <http://www.oecd.org/env/tools-evaluation/48164926.pdf>

22 Organisation for Economic Cooperation and Development (2011), Environmental Taxation – a guide for policy makers, <http://www.oecd.org/env/tools-evaluation/48164926.pdf>, pp 4-7

23 <https://www.weflive.com/story/3c546fc01e5911e9aed7934b2d047253>

24 Organisation for Economic Cooperation and Development (2011), Environmental Taxation – a guide for policy makers, <http://www.oecd.org/env/tools-evaluation/48164926.pdf>, p 9



Which sectors use the most plastics?

Some sectors are more exposed than others. In particular, the consumer and retail sector: grocery packaging – a key area in which consumer sentiment is seeing dramatic shifts – is by far the largest user of plastic packaging.

Of the 2,361 kilotons of plastic packaging used in 2017 in the UK, 65 percent was

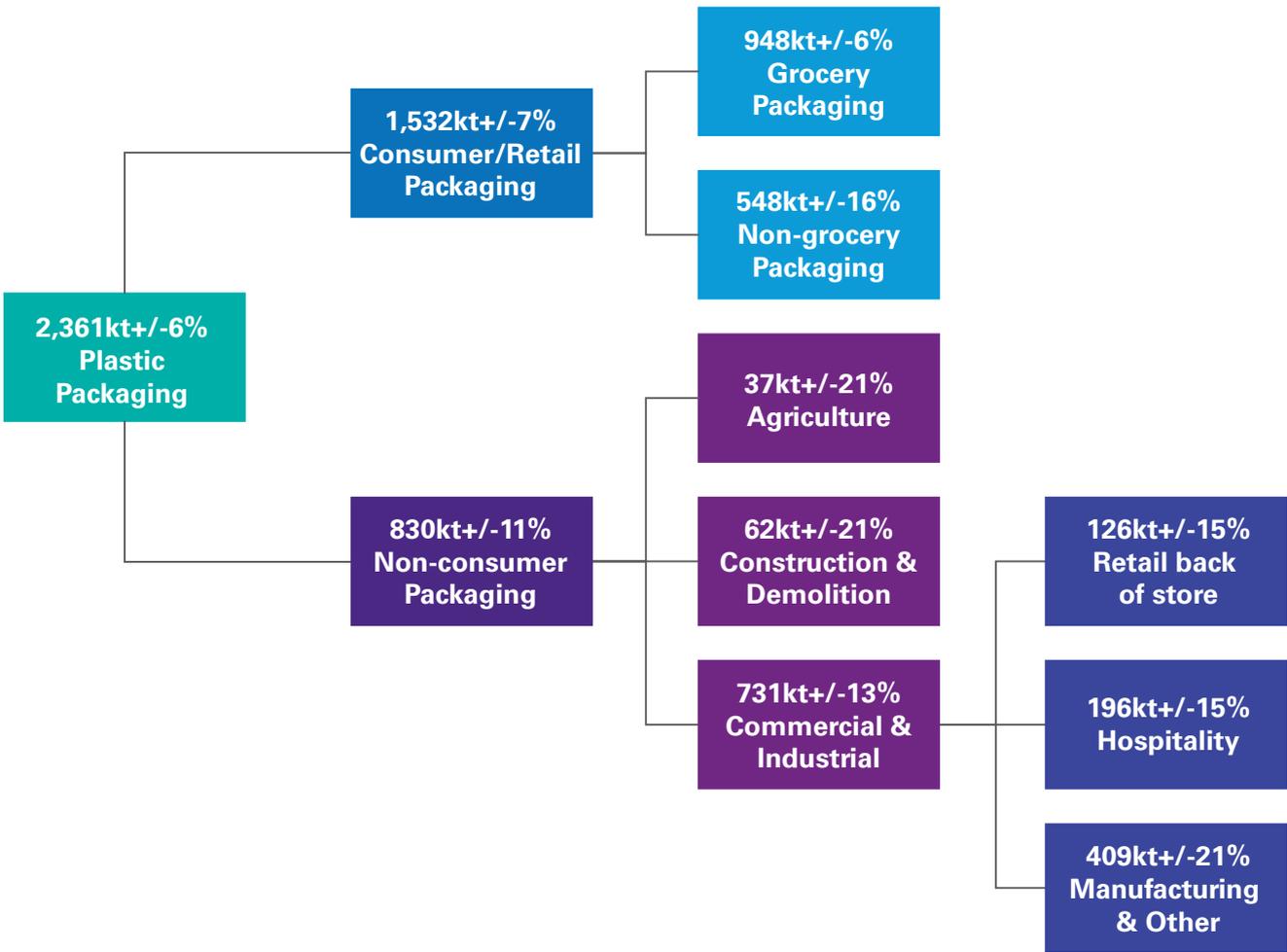
consumer/retail packaging. Grocery packaging made up 62 percent of that amount, more than the total of plastics used in non-consumer packaging.²⁵

Of non-consumer packaging, the greatest proportion was in the commercial and industrial sector, including hospitality, manufacturing and other, and retail back

of store. Construction and demolition (7.5 percent) and agriculture (4.5 percent) made up the rest (see Figure 2).

The sectors have particular opportunities to make changes to respond to consumer sentiments.

Figure 2: Plastic packaging placed on the market by sector.²⁶



²⁵ PlasticFlow 2025 p 1

²⁶ WRAP (2018), PlasticFlow2025: Plastic Packaging Flow Data Report, p. 1, http://www.wrap.org.uk/sites/files/wrap/PlasticFlow%202025%20Plastic%20Packaging%20Flow%20Data%20Report_0.pdf

Other business costs of single-use plastics

In addition to the dramatic shift in consumer sentiment around plastic, the potential value benefits from moving away from a 'linear' or single-use model of plastics use are also driving some businesses to change their approach.

The industrial economy today draws on the linear resource consumption model established in the early days of industrialisation, following a 'take-make-dispose' pattern. Companies extract materials, use them to manufacture products, and sell products to consumers who then discard them often after a single use.

The World Economic Forum (WEF) argues that this system, based on single-use consumption of raw materials and finite resources, entails significant losses of value all along the material chain.²⁷ For example, in the consumer goods sector, the linear consumption pattern sends goods worth more than USD 2.6 trillion annually into landfill and incineration.²⁸ Currently, just 5 percent of the potential material value of plastic packaging is captured after one use cycle. This linear way of operating is now under pressure for significant inefficiencies.

Reducing these inefficiencies can have significant cost saving benefits. For example, product case study analyses in a subset of EU manufacturing sectors shows that there could be annual net

material cost savings opportunities of up to USD 380 billion in a transition scenario (with assumptions based on modest changes in product designs and reverse supply chain skills), and up to USD630 billion in an advanced scenario (modelled on more ambitious changes including reverse technologies and infrastructure, and other enabling conditions).²⁹ Benefits in the advanced scenario are highest in the automotive sector (USD 170-200 billion per annum) followed by machinery and equipment (USD110 – 130 billion p.a.) and electrical machinery (USD75-90 billion p.a.). Even if achieving the full potential value of a resource is overly ambitious, redesigning materials, formats, and after-use systems, enabling secondary markets, and innovations around technology and materials, could allow the capture of a significantly larger share.³¹

The risks inherent in the existing linear approach to resource use are exacerbated by increasing resource prices and risks of supply disruptions. The turn of the millennium saw the real prices of natural resources begin to climb, erasing a century's worth of real price declines (see Figure 3).³² At the same time, volatility in prices for metals, food, and on-food agricultural output in the first decade of this century were higher than in any single decade in the 20th century.³³

The current economy largely relies on business practices that stem from the Industrial Revolution ...the assumption that there will be a constant, economically viable supply of natural resources. Companies that continue to operate in the old paradigm are at risk of losing clients and access to markets, increased costs, etc.

– KPMG 2019, *Linear Risks*, p 7¹

27 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2013), *Towards The Circular Economy: Economic and business rationale for an accelerated transition*, p. 14, <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

28 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), *The New Plastics Economy – Rethinking the future of plastics*, p. 16, https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

29 The more conservative 'transition scenario' assumptions around product design and reverse supply chain skills include improvements in underlying economics, collection rate increases of 20 to 30 percentage points, and approximately 30 percentage point shift from recycling to refurbishing or remanufacturing activities. The 'advanced scenario' includes what is noted above, as well as other cross-chain and cross-sector collaboration and changes to legal frameworks. The analyses assume further collection rate increases of 30 to 40 percentage points and an additional 5 to 10 percentage points shift for refurbishing or remanufacturing. World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2013), *Towards The Circular Economy: Economic and business rationale for an accelerated transition*, p. 38, <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

30 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2013), *Towards The Circular Economy: Economic and business rationale for an accelerated transition*, pp. 7-8, <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

31 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), *The New Plastics Economy – Rethinking the future of plastics*, p. 35, https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

32 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), *The New Plastics Economy – Rethinking the future of plastics*, p. 14 https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

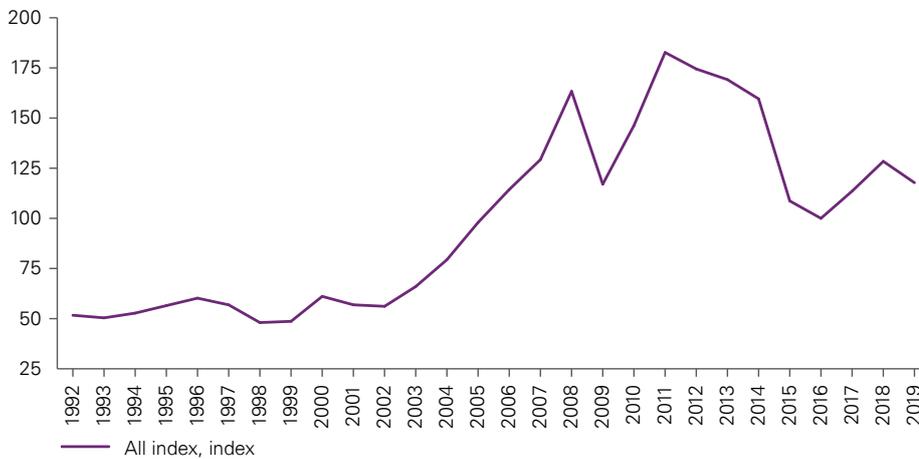
33 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), *The New Plastics Economy – Rethinking the future of plastics*, p. 14 https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

This volatility is likely to continue as populations grow and urbanise, and resource extraction prices continue to rise. Oil supply and price volatility is particularly relevant to the case of plastics. Over 90 percent of plastics produced are derived from fossil feedstocks, accounting for around 6 percent of global oil consumption, the equivalent of the consumption of the global aviation sector.³⁴ Increased geopolitical tension and uncertainty mean that supply and price will continue to be unpredictable in the near to mid-term future at least. Recent developments in the Middle East and the likelihood of oil tankers requiring

armed escorts to transit the Strait of Hormuz, along with the costs and delays this will entail, demonstrate this point. In this scenario, the WEF notes that decoupling plastic manufacture from a reliance on fossil feedstocks can deliver better system-wide economic outcomes, a positive for business.³⁵ The WEF posits that to better hedge against this uncertainty, a new industrial model that decouples revenues from material input, a circular rather than linear economic model, is required.³⁶ Their research shows that adopting a circular economic model could mitigate a number of strategic challenges faced by companies today.³⁷

Businesses face these risks if they utilise scarce and non-renewable resources, prioritise sales of new products, fail to collaborate, and fail to innovate or adapt. If unresolved, these could have serious effects on the financial industry and our global economy.¹

Figure 3: Market developments create business risks.

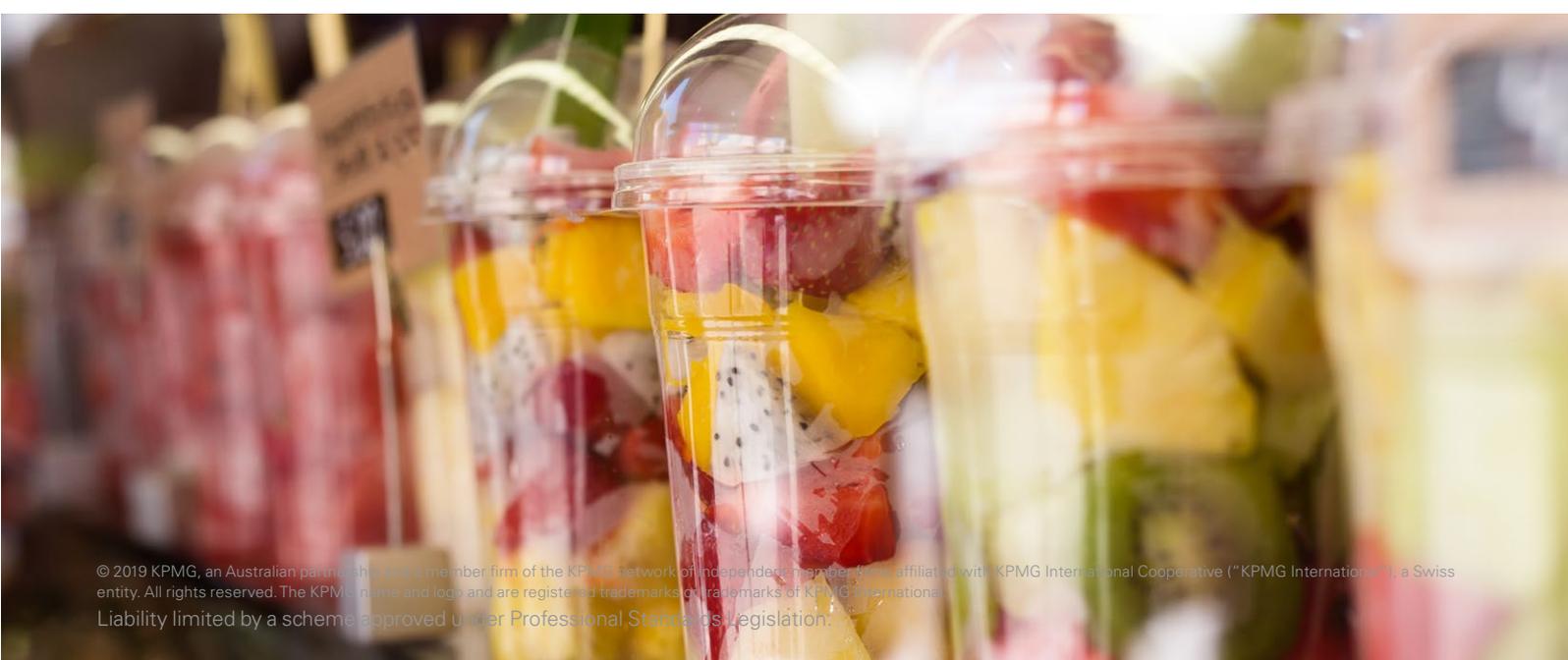


34 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), The New Plastics Economy – Rethinking the future of plastics, p. 17, https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

35 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2016), The New Plastics Economy – Rethinking the future of plastics, p. 31, https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

36 The WEF defines a circular economy as an industrial system that is restorative or regenerative by intention and design. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, and aims for eliminating waste through better design of materials, products, systems, and business models. (WEF 2013, p. 7)

37 World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company (2013), Towards The Circular Economy: Economic and business rationale for an accelerated transition, p. 11, <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>





The corporate sector taking action

One example of a company responding to the evolution and intensification of the trend away from single use plastic is the world's largest retailer, Walmart. In 2005, then-CEO Lee Scott set three aspirational goals for the company: create zero waste, operate with 100 percent renewable energy, and sell products that "sustain resources and the environment". In 2016, Walmart announced a series of sustainability goals for 2025, this time with hard targets and timetables. In the course of the decade, the company has, among other environmental initiatives, pledged to use 100 percent recyclable packaging for all private-label brands. The company has also developed a Sustainable Packaging Playbook to provide suppliers with best practices in sustainable packaging both for consumer-facing packaging as well as across the entire packaging system.³⁸ The company's Chief Sustainability Officer cites a desire to increase consumers' "trust and transparency" as a means to take advantage of economic opportunity as a primary driver behind these commitments. As the executive vice president of corporate affairs noted, "It's interesting that the inflection point on our sustainability goals ... came at a time when our company was going through an inflection point on how we're going to serve customers for the next 50 years. And we didn't look at these things separately."³⁹ These goals can also be seen as a response to a rapidly changing environment where doing business as usual needs to be fundamentally rethought.⁴⁰

In 2018, UK food retailer ASDA – owned by Walmart – announced plans to reduce plastic use by 10 percent in 2018 through replacing 2.4 million drinking straws, and by the end of 2019, removing all single-use cups and cutlery.⁴¹ Fast food chain McDonald's, likewise, has decided to ensure 100 percent of its packaging from renewable, recycled, or certified sustainable sources by 2025. On their website they specifically cite consumer pressure: "Our customers tell us that their number one environmental concern for us to address is the environmental impact of McDonald's restaurant packaging and waste. We're listening."⁴² One of the world's largest coffee companies, Costa Coffee, has committed to recycling as many takeaway cups as they sell by 2020, their own or other brands. They are paying waste collectors for every tonne of cups collected to support investment in the infrastructure needed to collect and recycle cups. In an innovative move, in November 2018 Costa launched a 'Clever Cup' – a reusable cup with integrated contactless payment technology.⁴³ They also use 70 percent recycled materials in their plastic cups, introduced glass drinking cups in-store, removed single-use plastic straws and removed napkins from their condiment units, reducing paper waste by 43 percent.⁴⁴

Many companies have reduced the amount of plastics in their packaging by 'light-weighting'. Today, a one-litre washing up liquid bottle uses 64 percent less material than in the 1970s, and a two-litre soft drink bottle, 30 percent less.⁴⁵ In response to

38 https://www.walmartsustainabilityhub.com/media-library/document/sustainable-packaging-playbook-deep-dive/_proxyDocument?id=00000169-15fc-dd5e-a3eb-75fc34d80000

39 <https://www.greenbiz.com/article/inside-walmarts-2025-sustainability-goals>

40 <https://www.greenbiz.com/article/inside-walmarts-2025-sustainability-goals>

41 <http://www.climateaction.org/news/5-companies-leading-the-movement-to-go-plastic-free>

42 <https://corporate.mcdonalds.com/content/corpmcd/scale-for-good/packaging-and-recycling.html>

43 <https://www.costa.co.uk/behind-the-beans/our-planet/recycling/>

44 <https://www.costa.co.uk/behind-the-beans/our-planet/reducing-waste/>

45 <https://incpen.org/too-much-packaging/>

Keenly aware of the huge volumes of plastic waste being created, and the environmental damage caused, many companies – and consumers – are now taking matters into their own hands.

– KPMG 2019

To ban or not to ban

rising consumer demand for eco-friendly packaging, there has also been a rise in demand among manufacturers for bio-PET, a naturally derived polyester resin.⁴⁶ Some manufacturers such as Coca Cola, whose bio-based PET bottles currently contain 30 percent bio-PET, have committed to using 100 percent bio-PET in the future.⁴⁷

In a shift towards implementing a circular approach to its products, household appliance manufacture Philips has been working with Veolia since 2010 to increase the proportion of recycled materials in its products. The ultimate goal is to produce the recycled plastic from used household appliances to completely close the loop.⁴⁸

Organisations and companies are also committing to going plastic-free. The North London soccer club Tottenham Hotspurs is banning all single-use plastics across the entire club. Any new contracts

which come up for tender will also include a requirement to reduce single-use plastics.⁴⁹ In Sydney, over 50 businesses, including Fox Studios, Star Entertainment Group, the Sydney Opera House, YHA, and KPMG have pledged to be 'zero-waste' by 2030 or before, as part of the City of Sydney's goal to be zero waste.⁵⁰

As well as individual efforts, industry coalitions are implementing cross-value-chain collaborations. For example, in Southeast Asia, more than 40 global and regional chemical companies, packagers, consumer goods manufacturers and waste managers have created the Alliance to End Plastic Waste, pledging to invest up to USD1.5 in plastic waste management.

The good news is that there are many other examples as well, that unfortunately this report does not have the space to cover.⁵¹

46 <https://www.grandviewresearch.com/industry-analysis/bio-based-polyethylene-terephthalate-pet-industry>

47 Ellen MacArthur Foundation, *The New Plastics Economy: Rethinking the future of plastics*, 2016, p. 94 <https://www.ellenmacarthurfoundation.org/publications/the-new-plastics-economy-rethinking-the-future-of-plastics>. NB please refer to table on p. 13 on pros and cons of bioplastics.

48 <https://www.planet.veolia.com/en/philips-boosts-its-appliances-recycled-plastic>

49 <https://www.tottenhamhotspur.com/the-club/spurs-cares/plastic-reduction-measures/>

50 <https://www.betterbuildingspartnership.com.au/sydney-businesses-sign-up-to-our-no-plastics-pledge/>

51 Boston Consulting Group (2019), 'A Circular Solution to Plastic Waste', <https://www.bcg.com/publications/2019/plastic-waste-circular-solution.aspx>



Weighing up some alternatives

Bioplastic is a material made from plants and biological material rather than petroleum. It is produced either by extracting sugar from plants such as corn and sugarcane and converting it into polylactic acids (PLAs), or from polyhydroxyalkanoates (PHAs) engineered from microorganisms. PHA is used for medical devices such as cardiovascular patches, while PLA plastic is commonly used in food packaging. PLA is often the cheapest source of bioplastic as it originates from the same large industrial facilities that make products such as ethanol. As such, it is the most common type, also used in plastic bottles, utensils, and textiles.⁵² Bioplastics contribute less carbon to the atmosphere than petroleum-based plastic because they return only the amount of carbon sucked up by the plants from the soil rather than releasing carbon trapped underground in the form of oil.

Nevertheless, there is a downside. A 2011 study from Pittsburgh established that there are environmental issues associated with growing plants for bioplastic. That includes the pollution created from fertilisers and cases where land usage is diverted from essential food production.⁵³ There is also the ethical question of whether we should be using food such as corn to create plastic, given the food shortages faced by much of the world's population.

Then there's the issue of disposal. Is it better to deliver it to a landfill, recycle it or send it to the industrial composite

site? If the latter, the material needs to be heated at high enough temperatures to allow the microbes to break it down. Without that intense heat, the bioplastics won't degrade in a meaningful timeframe. If they end up in marine environments, they will have exactly the same harmful effects as petroleum-based plastic.

Paper is the most common alternative to single use plastic items, as seen in straws, cups and bags. This is because usually it can perform the same function as its plastic sibling without the harmful microplastics, chemical leaching and fumes released during burning, which plastic waste creates. Does this mean paper could be out answer to solving the plastic problem? No – not entirely as there are environmental trade-offs to take into account.⁵⁴ Research done by the Northern Ireland Assembly shows that it takes more than four times as much energy to manufacture a paper bag as it does a plastic bag. And during the production of a paper bag, trees – which would otherwise absorb greenhouse gases – need to be cut down to fuel this demand. What's more, most paper bags are made by heating chips of wood under high temperature and pressure within a chemical solution, inevitably resulting in the emission of greenhouse gasses. The toxic chemicals involved also contribute to water pollution – and cause a long-term problem as they work its way through the food chain.⁵⁵ Even more toxicity is created when paper bags degrade. Strikingly, paper bags generate 70% more air and

50 times more water pollutants than plastic bags. Then there's the issue of the space they consume: around seven lorries would be needed to transport exactly the same number of paper bags as could be delivered by a single lorry carrying plastic bags.⁵⁶ Then there's the fact that paper bags are almost never reusable and also tend to be very fragile. Plastic bags, on the other hand, can be very lightweight and yet still strong enough to carry a full load of shopping. A plastic bag can carry 2,500 times its own weight and stay strong when wet and also put to many other uses in the home. Reusable plastic bags ('bags for life') go even further, more sustainable than all types of lightweight plastic carrier bags if they are used at least four times. For that reason, some argue that they offer the best environmental benefits of all over the full life cycle.⁵⁷ The Welsh Assembly Government studied the environmental impacts of different types of carrier bags. It concluded that, for a paper bag to have match the environmental impacts of plastic bags, it would need to be used at least four times. However, most paper bags would not be durable enough to be used four times to test that theory.⁵⁸ Moreover, in terms of recycling, it takes 91% less energy to recycle a pound of plastic than it does to recycle a pound of paper.⁵⁹

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52 <https://www.nationalgeographic.com/environment/2018/11/are-bioplastics-made-from-plants-better-for-environment-ocean-plastic/>

53 Sustainability Metrics: Life Cycle Assessment and Green Design in polymers, Michael Angelo D. Tabone, James J. Cregg, t, Šeric J. Beckman, and Amy E. Landis, Mascaro Center for Sustainable Innovation, Department of Chemical Engineering, Department of Civil and Environmental Engineering, University of Pittsburgh, Pittsburgh, Pennsylvania 15261 Received May 13, 2010. Revised manuscript.

54 Research leverages lifecycle assessment conducted between 2005 – 2011 by national government in the UK which are still very much valid and is widely cited in publications and literature reviews.

55 <http://www.niassembly.gov.uk/globalassets/documents/raise/publications/2011/environment/3611.pdf>

56 <https://enviro-literacy.org/environment-society/life-cycle-analysis/paper-or-plastic/>

57 <https://www2.gov.scot/Resource/Doc/57346/0016899.pdf>

58 <https://gov.wales/>

59 <https://www.vivaterra.com/en/best-sellers/c/7633>



Action opportunities: reduce, reuse, recycle

This moment of change provides businesses opportunities to respond to and indeed take advantage of strong and growing consumer sentiments.

In many ways, now is an ideal moment to take advantage of an alignment of new technologies unlocking new opportunities, the build-up of after-use infrastructure, increasing regulations and incentives, and growing social concerns which are seeing plastics use shift from a marginal to an increasingly central issue.⁶⁰ Companies that look ahead and turn risk assessments of climate change into opportunities to innovate will foster competitive advantages in meeting consumer demands, and may end up saving on costs and reducing risks at the same time.

As outlined, different sectors utilise plastics in different ways, offering a range of opportunities to reduce single-use plastics. The references in this report provide more detailed information.⁶¹

Four immediate action opportunities include:

1. Conduct a waste audit of your facility and evaluate the supply chain of items that become waste. What gets thrown away? What can you switch? E.g., are there a lot of water bottles? Can you install a water cooler and provide reusable mugs and bottles? Global financial services firm Morgan Stanley's Glasgow office reduced waste management and purchasing costs by providing reusable cups and bottles.⁶²
2. Examine your organisation's waste hierarchy, and then reduce and simplify. Ask, what is the plastic that is not essential, that can be removed either by design or different

purchasing choices? Eliminating single-use containers saved Pepsi-Cola USD 44 million.⁶³

- Currently, standard black bottles cannot be detected for recycling which means they are sent to landfill – Unilever has developed a new detectable black pigment which means their bottles can be detected, potentially removing around 2,500 tonnes of plastic from going to waste.
3. Shift procurement practice to favour reusable or recycled goods. Choose more modular products that can be repaired or upgraded more easily. Specify recycled content.
 - One possibility is carpet – carpet manufacturer Niaga ('again' spelt backwards) has developed a 100% recoverable and recyclable carpet material. The carpet also reduces water and energy consumption in production, reduces installation time, and eliminates volatile organic compound (VOC) emissions to improve air quality.⁶⁴
 - Consider prioritising companies who meet ESG (Environmental, Social and Governance) criteria.⁶⁵
 4. Ensure the waste/recycling industry is able to deal with eco products eg compostable cups or biodegradable bottles.⁶⁶ While now, the production system is optimised for throughput, capacity for reuse is likely to increase over time as regulations and incentives increase.

**Finding solutions:
Consider open innovation and looking cross-industry to help find the solutions that will work for you. AkzoNobel's Paint the Future campaign called on startups, scale-ups, entrepreneurs and innovators to be part of their quest to innovate in the world of paints and coatings.¹**

60 Ellen MacArthur Foundation, The New Plastics Economy, p 36

61 See in particular the work done by the Ellen MacArthur Foundation

62 https://www.resourceefficientscotland.com/sites/default/files/MorganStanley%20Case%20Study_March2014.pdf

63 <https://www3.epa.gov/epawaste/conserv/smm/wastewise/wrr/cost.htm>

64 <https://www.ellenmacarthurfoundation.org/case-studies/production-and-material-reclaim-of-carpets>

65 <https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp>,

66 <https://www.greenbiz.com/article/5-ways-businesses-cut-down-their-plastic-waste>

How we can help

KPMG's team of sustainability experts draw on the insights and experience of a global multidisciplinary practice.

We have particular expertise in advising clients in:

- Strategy creation and development
- Circular Metrics and target setting, evaluating circularity⁶⁷
- Circular Economy Model implementation⁶⁸
- Impact assessments and supply chain modelling
- Consumer Behaviour Change models and impact
- Collaboration and Convening initiatives across markets
- Regulation assessments
- Risk Integration
- ESG Due Diligence
- Non-Financial Assurance and Reporting services



67 <https://www.wbcscd.org/Programs/Circular-Economy/Factor-10/Resources/Circular-Transition-Indicators>

68 <https://home.kpmg/xx/en/home/insights/2019/04/circular-economy-services.html>

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